



The LED lighting system for furniture and rooms.



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#### Point light

Recess/surface mounted downlights Recess mounted downlights Surface mounted downlights Surface mounted lights

Flexible surface mounted lights

Distributing

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#### Häfele Connect Mesh

6-way distributor Adapter multi-white, RGB, fittings Remote control Push button switch, wall mounted 2-channel interface

#### Term definition

Distributor Extension leads Modular leads Switch leads Leads and connectors for LED strip lights

#### Adapters Loox5/Loox

Power cords Cable routing

#### Connections and control concep

**Drivers** Converters

#### Technical data **LED** strip lights

Inspirations for designing with light

Light effects and lighting technology

Test symbols and symbols Technical terms

Technical questions

Documentation on the Internet Item no. index

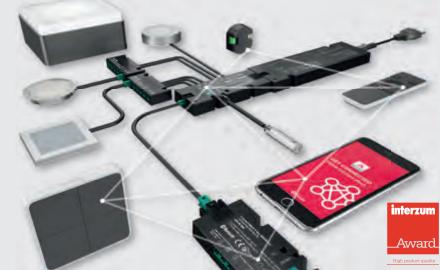
**HAFELE** 

Page

2

High-performance LED strip lights and design-oriented aluminum profiles – also available in designer finishes: black and brushed stainless steel colored.







Häfele Connect Mesh

Page

96

The wireless network of lights and electrically operated fittings – with optional integration of the electrical installation of buildings.



Compatibility > Page 122

Adapters ensure compatibility:
Using different Loox generations in one installation.

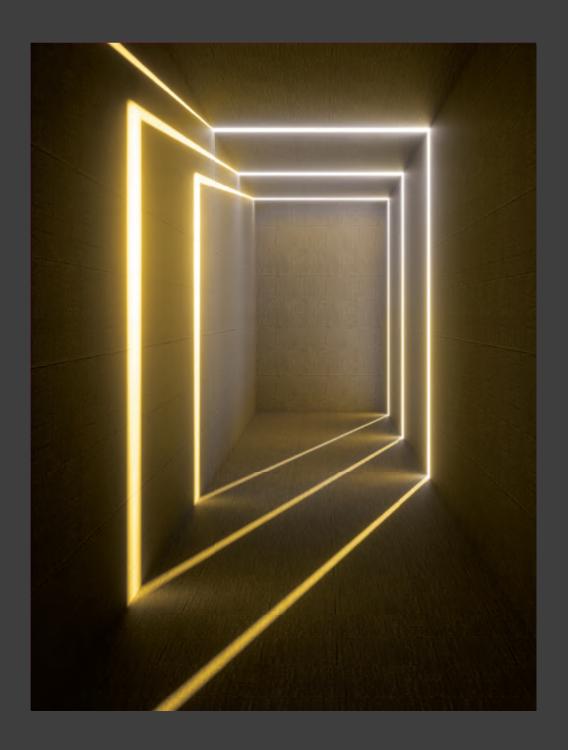


**Technical data** > **Page 148**By professionals for professionals – all facts about LED strip lights at a glance.



Task light, > Page 159
Ambient light,
Accent light
Suitable areas of application for each light – now in a quick overview.

# 





We have invested many hours working with LED lights, we have developed and researched, we have had many valuable discussions with partners in trade and industry – and we have learned a great deal. The market is demanding digital answers.

The result after four generations of Loox LED lights is therefore not simply further development, but a new level. Our development has accelerated. Because the world is accelerating, and the demands of our customers are growing at an equally rapid rate.

# The essence of four generations.

We are driven by the same questions time and time again.

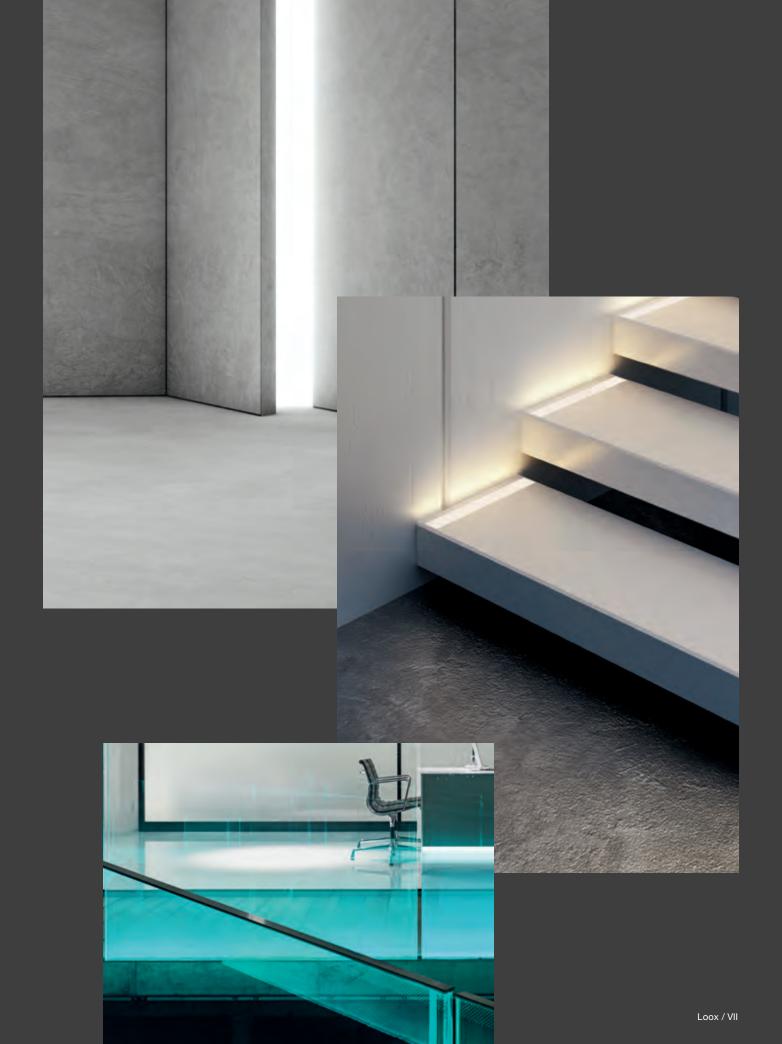
How can it be made easier?
How can it be made better?
How can it be made more intelligent?



The essence of our experience therefore has a new face.

Welcome to Loox5.

# Easy. Logical. Linear.



# Loox5

# Supplying.

Output current 5 A. Suitable for longer installation routes. Engineered by Häfele.

# Loox5

# Distributing.

Wired.

6-way distributor for monochrome lights. With connector for all standard switches from the Loox product range.

Switch

Driver

Monochrome lights

6-way distributor with switching function

# Straight down the line.

# Loox5

# Networking.

Wireless.

Häfele Connect Mesh 6-way distributor. For RGB, multi-white and monochrome lights. Engineered by Häfele.

Häfele Connect Mesh push button, wallmounted

wall-mounted External product

Push button,



Networking via Häfele Connect Mesh 2-channel interface Häfele Connect Mesh App



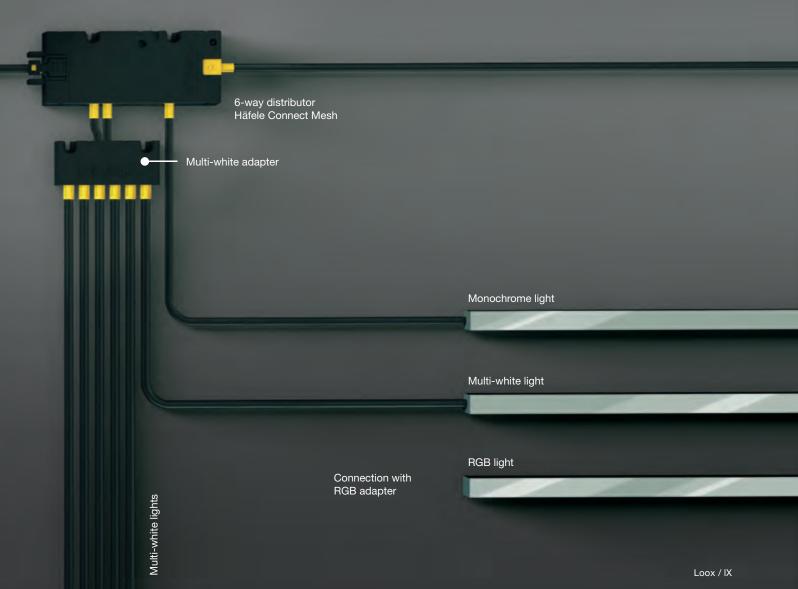
Loox5

# Illuminating.

Equipped with high-quality LEDs made by Samsung.

Häfele Connect Mesh remote control





Loox5

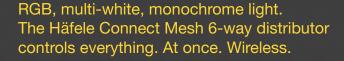
Color codes.



Intu



# itive nec\_tions.



# Intelligent light, intelligently solved.

All-in-one

The Loox5 light control.



Häfele Connect Mesh App Häfele Connect Mesh push button, wall-mounted

Häfele Connect Mesh remote control







Control light and configure the lighting individually – it's that simple with the Loox5 system: all of the Loox5 lights installed in the house "register" in the Häfele Connect Mesh App and are integrated into the app interface in just a few steps. Now the lights can be individually activated,

dimmed, their light color can be changed, or they can be simply switched on and off. At the same time, different lighting scenarios can be created and saved. Operation can take place completely in accordance with requirements: via the app, via remote control or using wall-mounted push buttons. Integrating the Häfele Connect Mesh 2-channel interface also makes every standard wall-mounted push button compatible with the app. Loox5. A modular networking kit which can be described with one word: EASY.

# Light is easy.

# Few criteria. Many solutions.

Light color Light intensity Light source Monochrome | Multi-white | RGB
Task light | Ambient light | Accent light

Linear light | Point light

Alignment

Directly or indirectly | Up or down |

Forward or backward | To the side

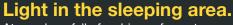
Position on the cabinet

Outside | Inside

Installation type

Recess mounted | Surface mounted

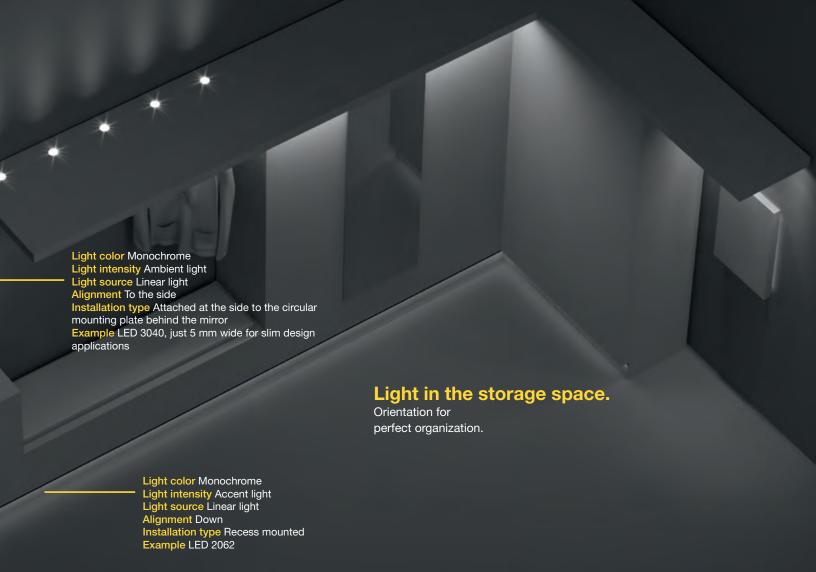


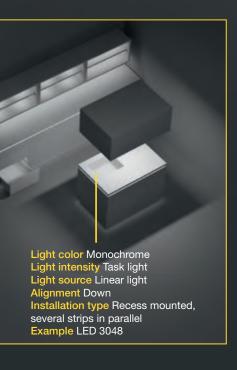


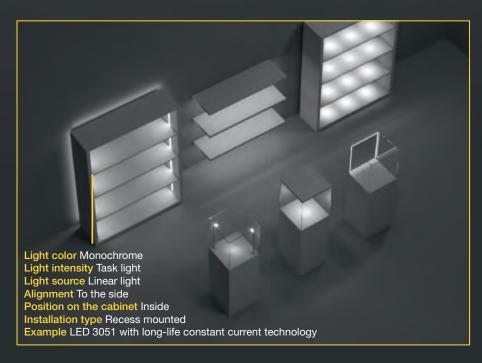
Atmosphere full of ambience for rest areas.



**Light in the kitchen.** Functionality for every action.







#### Light in store fixtures.

Value for the presentation of goods.

# Light is plannable.

The need to observe only a few planning steps structures and simplifies the planning of lighting in furniture.



# Illuminating.

At the start of the development process, determine the lighting purposes of the furniture (multiple choices possible)

- > Task light for pleasant and safe working
- > Ambient light for highlighting or staging
- > Accent light for storage spaces or paths

Also take into account the overall brightness of the room and the finishes to be illuminated: Sufficiently bright ceiling lighting or sunlight makes the orientation light unnecessary during the day, but at night it may be very pleasant if the ceiling lighting does not need to be used and a few furniture pieces provide some orientation light.

For confidence in the planning process, test lighting and finishes or use bright lighting with dimmers to achieve a balance of incident light and reflection.

The form factor of a light (linear, point) and the number used affects the planarity of the illumination. Light color, installation type, position on the cabinet, and alignment are further criteria to select the perfect light.



# Extending.

Häfele Loox5 drivers supply not only lights, but also charging stations (inductive and USB), audio systems, as well as electrically operated flap fittings, sliding doors, or TV lifts. Take advantage of the potential of Häfele Loox5. Create furniture that can do more than simply look good.

The chapter structure of the Loox brochure simplifies the ordering process by using this simple planning process.

Take advantage of the potential of Häfele Loox5 and create furniture that can do more than simply look good.



# Switching.

Plan switch requirements and switch positions. Simple mechanical switches or convenient sensors and dimmers can be grouped together by means of multi-driver or multi-switch boxes to conveniently operate lights from a single location or from different locations.



# Networking.

The Häfele Connect Mesh 6-way distributor is the central element for controlling monochrome lights, multi-white lights, or RGB lights individually or jointly. 6-way distributors can be networked. They can be controlled by remote control, wall-mounted push button, or app.



# Distributing.

Plan the concealed cable routing and provide holes, grooves, or panels. An extensive range of extension leads and distributors facilitates suitable cabling of your project.



# Supplying.

Add up the wattage of all lights and other devices.

If necessary, take into account possible later expansions and select a driver of the appropriate performance class. Lights of the same voltage type or current may be connected to a common driver. Converters are also available and are necessary if lights with different voltage types and currents will share a driver.

Choose a distributor for your current needs (with or without switching function or with Häfele Connect Mesh). The distributor can be easily replaced at a later time. Therefore, make sure the drivers are accessible in the furniture.





## **Linear light**

#### Task light: Illuminate work spaces with > 500 lx at a distance of 500 mm (19 11/16")

Illuminance max. at a distance of 500 mm (19 11/16") lx

					(19 11/10 ) 1X	
LED 3052	24 V	Constant current	8 mm (5/16")	19.2 W/m	1840	> Page 14
LED 3051	24 V	Constant current	8 mm (5/16")	14.4 W/m	1400	> Page 14
LED 3048	24 V		8 mm (5/16")	14.4 W/m	1320	> Page 12
LED 3050	24 V	Constant current	8 mm (5/16")	9.6 W/m	1010	> Page 14
LED 2068	12 V		8 mm (5/16")	9.6 W/m	955	> Page 10
LED 3045	24 V		8 mm (5/16")	9.6 W/m	955	> Page 12
LED 2061	12 V		5 mm (3/16")	9.6 W/m	860	> Page 8
LED 3041	24 V		5 mm (3/16")	9.6 W/m	860	> Page 10
LED 3046	24 V	Silicone	8 mm (5/16")	9.6 W/m	860	> Page 16
LED 2077	12 V	Constant current	8 mm (5/16")	9.6 W/m	830	> Page 14



#### Ambient light: 150-500 lx at a distance of 500 mm (19 11/16")

Illuminance max. at a distance of 500 mm (19 11/16") lx

					(19 11/10 ) IX	
LED 2062	12 V		8 mm (5/16")	4.8 W/m	470	> Page 10
LED 2065	12 V		8 mm (5/16")	4.8 W/m	470	> Page 10
LED 3042	24 V		8 mm (5/16")	4.8 W/m	470	> Page 12
LED 2060	12 V		5 mm (3/16")	4.8 W/m	430	> Page 8
LED 3040	24 V		5 mm (3/16")	4.8 W/m	430	> Page 10
LED 2063	12 V	Silicone	8 mm (5/16")	4.8 W/m	425	> Page 16
LED 3043	24 V	Silicone	8 mm (5/16")	4.8 W/m	425	> Page 16
LED 2099	12 V	Edge lit silicone	8 mm (5/16")	9.6 W/m	215	> Page 24
LED 3099	24 V	Edge lit silicone	8 mm (5/16")	9.6 W/m	215	> Page 24



#### Multi-white lights

Illuminance max. at a distance of 500 mm (19 11/16") lx

=\00000	LED 3049	24 V		8 mm (5/16")	14.4 W/m	1200	> Page 20
***	LED 2070	12 V		8 mm (5/16")	9.6 W/m	865	> Page 18
=\\.	LED 3047	24 V		8 mm (5/16")	9.6 W/m	865	> Page 20
=\\\:	LED 3061	24 V	Silicone	8 mm (5/16")	9.6 W/m	865	> Page 20
-)•(-	LED 2064	12 V		8 mm (5/16")	4.8 W/m	445	> Page 18
-)•	LED 3044	24 V		8 mm (5/16")	4.8 W/m	445	> Page 20
-)•(-	LED 3060	24 V	Silicone	8 mm (5/16")	4.8 W/m	445	> Page 20



#### RGB lights

LED 2080	12 V	10 mm (3/8")	9.6 W/m	> Page 22
LED 3080	24 V	10 mm (3/8")	9.6 W/m	> Page 22
LED 2042	12 V	8 mm (5/16")	9.6 W/m	> Page 26



#### **HXFELE**

Aluminum	profiles	for recess	mounting
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Model	Internal dimension	
1104	8 mm (5/16")	> Page 28
1103	11 mm (7/16")	> Page 28
1105	11 mm (7/16") Asymmetrical light distribution	> Page 29
1107	8 mm (5/16") Asymmetrical light distribution	> Page 31
1106	11 mm (7/16") Asymmetrical light distribution	> Page 31
1190, 1191	16 mm (5/8")	> Page 30



#### Aluminum profiles for surface mounting

2101, 2102	11 mm (7/16")		> Pages 32-33
2103	11 mm (7/16")	With concealed fixing mounting clips	> Pages 34-35
2104	11 mm (7/16")	With concealed fixing mounting clips, asymmetrical light distribution	> Pages 34-35
2190, 2191	16 mm (5/8")	-	> Page 36
5105		Glass edge profile	> Page 42
2195	14 mm (9/16")	Corner mounting	> Page 42
2194	14 mm (9/16")	Drawer profile	> Page 41
4105, 4106	16 mm (5/8")	Designer profile	> Page 38
2190, 2191, 2197	16 mm (5/8")	With flat lens	> Page 37



#### One-piece plastic profiles

1102	4.5 mm (3/16")	For 5 mm (3/16") LED strips	> Page 39
1101	8.6 mm (5/16")	For 8 mm (5/16") LED strips	> Page 39
3108	15.1 mm (9/16")		> Page 40
4108	16 mm (5/8")		> Page 40



#### Aluminum wardrobe tubes

5111	15 mm (9/16")	> Page 43



#### **Diffusers**

For profiles1103-1107, 2101-2104	> Page 44
For corner profile 2195	> Page 44
For profiles 1190, 1191, 2190 and 2191	> Page 44



#### Covers and mounting strips

Dado lens cover	> Page 45
Mounting strips	> Page 46



#### Aluminum cooling strip

2196 10 mm (3/8") > Page 45



## **Point light**

#### Task light

Illuminate work spaces with > 500 lx at a distance of 500 mm (19 11/16")

JIE.	LED 2032	12 V	Surface mounted	300 x 180 mm (11 13/16" x 7 1/16")	3 W	> Page 47
	LED 2025	12 V	Recess mount- ed/surface mounted	Drill hole Ø 58 mm (2 5/16")	3.8 W	> Page 48
	LED 3023	24 V	Surface mounted	Ø 180 mm (7 1/16")	4.8 W	> Page 66
	LED 3025	24 V	Surface mounted	205 x 205 mm (8 1/16" x 8 1/16")	5.8 W	> Page 67



#### - Ambient light

Stage furnishings with 150-500 lx at a distance of 500 mm (19 11/16")

_	-						
CHILIDRE	LED 2092	12 V	Recess mounted/	Drill hole Ø 58 mm	3.4 W	> Page 48	
	LED 3092	24 V	surface mounted	(2 5/16")	5.4 VV	> Fage 40	
	LED 2040	12 V	Recess mounted/ surface mounted	Drill hole Ø 35 mm (1 3/8")	3.4 W	> Page 54	
1	LED 2090	12 V	Recess mounted/	Drill hole Ø 26 mm (1")	1.2 W	> Page 56	
	LED 3090	24 V	surface mounted		1.2 ۷۷	>1 age 50	
	LED 2047	12 V	Recess mounted/	Drill hole Ø 55 mm	3.0 W	► Page 59	
	LED 3038	24 V	surface mounted	(2 3/16")	3.0 VV	> Page 58	
	LED 2022	12 V	Recess mounted/ surface mounted	Drill hole Ø 26 mm (1")	1.5 W	> Page 60	
	LED 2027	12 V	Surface mounted	Ø 65 mm (2 9/16")	2.6 W	> Page 64	



#### Multi-white lights

	LED 2091	12 V	_ Recess mounted/ surface mounted	Drill hole	0.414/	. Dana 50
	LED 3091			Ø 58 mm (2 5/16")	3.4 VV	> Page 50



#### Spotlight with narrow refraction angle

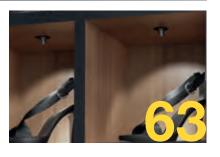
Highlight objects with > 500 lx at a distance of 500 mm (19 11/16")



LED 2093 12 V

Recess Drill hole Ø 35 mm (1 3/8")

1.0 W > Page 63







#### Orientation light



LED 2028 12 V

Recess mounted Drill hole Ø 54 mm (2 1/8")

0.3 W > Page 62



#### Flexible surface mounted lights



LED 2034 12 V

LED 3034 24 V

Surface mounted, with charging station

1.5 W > Page 65





#### **RGB** lights



LED 2081 12 V LED 3081 24 V

Surface mounted

65 x 65 mm (2 9/16" x 0.7 W > Page 68 2 9/16")



#### Light bars and lighted wardrobe tubes

T.	5111	12 V lighted wardrobe tube, LED 2065	> Page 69
Carrena	2191	12 V surface mounted light bar, LED 2068	> Pages 71, 72
	2103	12 V surface mounted light bar, LED 2068	> Pages 72, 73
	2194 12 V	Drawer light, with IR sensor, LED 2065	> Page 74





#### **Multi-functional mirror**

DC 12 V Multi-functional mirror

> Page 75





#### Battery operated lights



LED 9004 With motion sensor

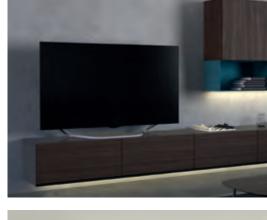
120 x 65 mm (4 3/4" x 2 9/16")

0.8 W > Page 76

> Page 77 LED 9005 Drawer light 0.6 W

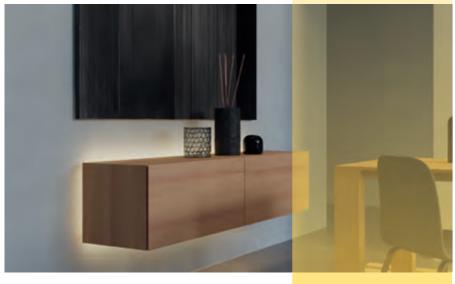


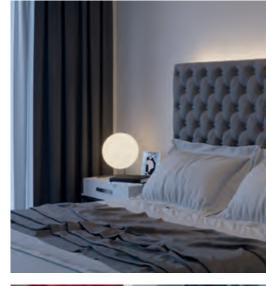
















# **Linear light**

For universal use in furniture.

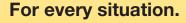






#### Good reasons.

- > Continuous light line with diffused glow
- > Minimalistic design
- > Virtually invisible, glare-free light source
- > Easy installation



- > Radiant task light for work spaces
- > Discreet ambient light for relaxed living spaces
- > Splash-proof silicone strip lights for bathroom applications
- > Plastic profiles for vertical illumination in storage spaces
- > Aluminum profiles in designer finishes for top-of-the-line design demands



Monochrome, 5 mm (3/16"), 12 V/24 V

Häfele Loox5 LED 2060/2061/3040/3041



LED 2060/2061



LED 3040/3041

**EXTRA NARROW** 5 mm (3/16")

#### Illuminance value in Ix applies to 1 m (39 3/8") strip length:

2700 K	3000 K	4000 K	5000 K	120°			
940 lx	970 lx	1000 lx	1030 lx	※	+	250 mm	(9 13/16")
400 lx	420 lx	430 lx	430 lx		+	500 mm	<mark>(1</mark> 9 11/16")
220 lx	235 lx	240 lx	240 lx		+	750 mm	(29 1/2")
135 lx	145 lx	145 lx	145 lx	*	+	1000 mm	(39 3/8")

LED 2060/3040

2700 K	3000 K	4000 K	5000 K	120°			
1860 lx	1960 lx	2000 lx	2060 lx	菜	F	250 mm	(9 13/16")
790 lx	850 lx	860 lx	860 lx	崇	+	500 mm	(19 11/16")
440 lx	470 lx	480 lx	480 lx		+	750 mm	(29 1/2")
270 lx	290 lx	290 lx	290 lx		+ 1	1000 mm	(39 3/8")

LED 2061/3041

#### **Equipped with high-quality Samsung® LEDs**

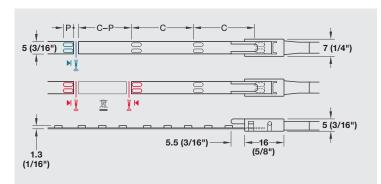
> Dimmable: Yes Plastic > Material: > Color: White > Width: 5 mm (3/16") > Height: 1.3 mm (1/16") > Life time L80/B10: >50,000 h > Energy efficiency class:

> Degree of protection: IP20 > Mounting: Self-adhesive

> Supplied with: 1 roll

> Order reference: Please order lead separately, see page 9.

Aluminum profile recommended from 9.6 W/m, see pages 28-46.



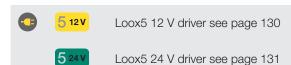
Cut LED strip light to length

(one contact side remains on the remainder piece; reusable)

Connect LED strip lights (two contact sides required)

C = section length

P = length of contact surface



#### Note

Loox lights and drivers are "Suitable for use within closet storage spaces"



Jimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice



Monochrome, 5 mm (3/16"), 12 V/24 V

#### Häfele Loox5 LED 2060/2061/3040/3041

Voltage	Quantity	Color temperature	Wattage	Luminous flux	Luminous efficacy	Color	index CRI	Weighted energy consumpt.	Section length C	Length of contact surface P	Max. strip length (visual)	Available ler	ngth
V	LEDs/m	K	W/m	lm/m	lm/W	R	R <sub>o</sub>	kWh/ 1000 h				5 m (196 7/8")	15 m (590 9/16")
5 12 V	LED 206		*	*		a a	9					(1001)	(0000)
J 12 V		2700	4.8	440	92	>90	>50	5.28	25 (1")	3 (1/8")	4.0 (157 1/2")	833.74.320	833.74.324
	100	3000	4.8	460	96	>90	>50	5.28	25 (1")	3 (1/8")	4.0 (157 1/2")	833.74.321	833.74.325
	120	4000	4.8	480	100	>90	>50	5.28	25 (1")	3 (1/8")	4.0 (157 1/2")	833.74.322	833.74.326
		5000	4.8	495	103	>90	>50	5.28	25 (1")	3 (1/8")	4.0 (157 1/2")	833.74.323	833.74.327
	<b>LED 206</b>	1											
		2700	9.6	870	91	>90	>50	10.56	25 (1")	3 (1/8")	3.0 (118 1/8")	833.74.328	833.74.332
	120	3000	9.6	830	97	>90	>50	10.56	25 (1")	3 (1/8")	3.0 (118 1/8")	833.74.329	833.74.333
	120	4000	9.6	955	99	>90	>50	10.56	25 (1")	3 (1/8")	3.0 (118 1/8")	833.74.330	833.74.334
		5000	9.6	990	103	>90	>50	10.56	25 (1")	3 (1/8")	3.0 (118 1/8")	833.74.331	833.74.335
5 24 V	LED 304	0											
		2700	4.8	440	92	>90	>50	5.28	50 (2")	3 (1/8")	8.0 (314 15/16")	833.76.300	833.76.304
	120	3000	4.8	460	96	>90	>50	5.28	50 (2")	3 (1/8")	8.0 (314 15/16")	833.76.301	833.76.305
	120	4000	4.8	480	100	>90	>50	5.28	50 (2")	3 (1/8")	8.0 (314 15/16")	833.76.302	833.76.306
		5000	4.8	495	103	>90	>50	5.28	50 (2")	3 (1/8")	8.0 (314 15/16")	833.76.303	833.76.307
	LED 304	1											
		2700	9.6	870	91	>90	>50	10.56	50 (2")	3 (1/8")	5.5 (216 9/16")	833.76.308	833.76.312
	120	3000	9.6	930	97	>90	>50	10.56	50 (2")	3 (1/8")	5.5 (216 9/16")	833.76.309	833.76.313
	120	4000	9.6	955	99	>90	>50	10.56	50 (2")	3 (1/8")	5.5 (216 9/16")	833.76.310	833.76.314
		5000	9.6	990	103	>90	>50	10.56	50 (2")	3 (1/8")	5.5 (216 9/16")	833.76.311	833.76.315



Maximum visual strip length applies for an imperceptible drop in luminous flux of max. 30%. Maximum wattage-dependent strip length on the driver, see pages 148–149.



Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to atter specifications without notice



> 3.5 A/20 AWG lead for 5 mm (3/16") LED strip light

	· -	
Voltage	Length	Item No.
5 12 V	100 (4")	833.93.740
	2000 (78 3/4")	833.95.705
5 24 V	100 (4")	833.93.741
	2000 (78 3/4")	833.95.711



> 3.5 A/20 AWG lead with female socket and clip for 5 mm (3/16") LED strip light

Voltage	Length	Item No.
5 12 V	100 (4")	833.93.744
5 24 V	100 (4")	833.93.745



> 3.5 A/20 AWG interconnecting lead for 5 mm (3/16") LED strip light

Length	Item No.
50 (2")	833.89.194
500 (19 11/16")	833.89.195
2000 (78 3/4")	833.89.196



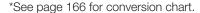
- > 3.5 A Clip connector for 5 mm (3/16") LED strip light
- > Supplied with: 10 pcs.

Item No.
833.89.207

- > 3.5 A Corner connector, 90° rigid, left or right, for 5 mm (3/16") LED strip light
- > Supplied with: 10 pcs.

Item No.
833.89.190





Monochrome, 8 mm (5/16"), 12 V

#### Häfele Loox5 LED 2062/2065/2068



.........

LED 2065/2068

#### **Equipped with high-quality Samsung® LEDs**

> Dimmable: Yes> Material: Plastic> Color: White

> Width: 8 mm (5/16") > Height: 1.3 mm (1/16") > Life time L80/B10: >50,000 h

> Energy efficiency class: A+ > Degree of protection: IP20

> Mounting: Self-adhesive

> Supplied with: 1 roll

#### Illuminance value in Ix applies to 1 m (39 3/8") strip length:

2700 K	3000 K	4000 K	5000 K	120°		
1050 lx	1090 lx	1120 lx	1130 lx	※ -	250 mm	(9 13/16")
435 lx	455 lx	460 lx	470 lx	- <del>-</del>	500 mm	(19 11/16")
240 lx	245 lx	260 lx	260 lx		750 mm	(29 1/2")
145 lx	150 lx	155 lx	160 lx		1000 mm	(39 3/8")

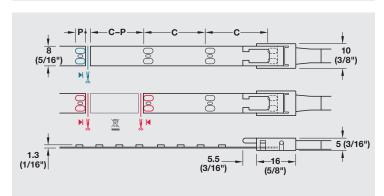
LED 2062/2065

2700 K	3000 K	4000 K	5000 K	12	0°			
2145 lx	2250 lx	2300 lx	2300 lx	Ä	(= -	+	250 mm	(9 13/16")
900 lx	940 lx	950 lx	955 lx	÷	(= -		500 mm	(19 11/16")
480 lx	505 lx	510 lx	515 lx	冷	(= -		750 mm	(29 1/2")
300 lx	310 lx	320 lx	320 lx		(	1	000 mm	(39 3/8")

LED 2068

Order reference:
Please order lead separately, see page 11.

Aluminum profile recommended from 9.6 W/m, see pages 28–46.



Cut LED strip light to length

(one contact side remains on the remainder piece; reusable)

Connect LED strip lights (two contact sides required)

C = section length

P = length of contact surface





#### Note

Loox lights and drivers are "Suitable for use within closet storage spaces"

Jimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

**HÄFELE** 

# **LED** strip lights

Monochrome, 8 mm (5/16"), 12 V

#### Häfele Loox5 LED 2062/2065/2068

Voltage	Quantity	Color temperature	Wattage	Luminous flux	Luminous efficacy	Color		Weighted energy consumpt.	Section length C	Length of contact surface P	Max. strip length (visual)	Available length	
V	LEDs/m	K	W/m	lm/m	lm/W	R	R <sub>o</sub>	kWh/ 1000 h				5 m (196 7/8")	50 m (1968 1/2")
5 12 V	LED 206		*	*	,	a	9	100011				(100 170 )	(1000 1/2 )
J 12 V		2700	4.8	440	92	>90	>50	5.28	50 (2")	4 (3/16")	6.0 (236 1/4")	833.74.336	833.74.340
	60	3000	4.8	465	97	>90	>50	5.28	50 (2")	4 (3/16")	6.0 (236 1/4")	833.74.337	833.74.341
		4000	4.8	490	102	>90	>50	5.28	50 (2")	4 (3/16")	6.0 (236 1/4")	833.74.338	833.74.342
		5000	4.8	495	103	>90	>50	5.28	50 (2")	4 (3/16")	6.0 (236 1/4")	833.74.339	833.74.343
	LED 2065												
		2700	4.8	440	92	>90	>50	5.28	25 (1")	4 (3/16")	6.0 (236 1/4")	833.74.354	833.74.358
	120	3000	4.8	465	97	>90	>50	5.28	25 (1")	4 (3/16")	6.0 (236 1/4")	833.74.355	833.74.359
	120	4000	4.8	490	102	>90	>50	5.28	25 (1")	4 (3/16")	6.0 (236 1/4")	833.74.356	833.74.360
		5000	4.8	495	103	>90	>50	5.28	25 (1")	4 (3/16")	6.0 (236 1/4")	833.74.357	833.74.361
	LED 206	В											
		2700	9.6	920	96	>90	>50	10.56	25 (1")	4 (3/16")	4.0 (157 1/2")	833.74.362	833.74.366
	120	3000	9.6	970	101	>90	>50	10.56	25 (1")	4 (3/16")	4.0 (157 1/2")	833.74.363	833.74.367
	120	4000	9.6	1000	104	>90	>50	10.56	25 (1")	4 (3/16")	4.0 (157 1/2")	833.74.364	833.74.368
		5000	9.6	1040	108	>90	>50	10.56	25 (1")	4 (3/16")	4.0 (157 1/2")	833.74.365	833.74.369

<sup>\*</sup>See page 166 for conversion chart.





> 5 A/18 AWG lead for 8 mm (5/16") LED strip light

Voltage	Length	Item No.
5 12 V	100 (4")	833.93.736
0	500 (19 11/16")	833.95.701
	2000 (78 3/4")	833.95.700



> 5 A/18 AWG interconnecting lead for 8 mm (5/16") LED strip light

Length	Item No.
50 (2")	833.89.191
500 (19 11/16")	833.89.192
2000 (78 3/4")	833.89.193



> 5 A/18 AWG lead with female socket and clip for 8 mm (5/16") LED strip light

Voltage	Length	Item No.
5 12 V	100 (4")	833.93.746



> 5 A Clip connector for 8 mm (5/16") LED strip light

> Supplied with: 10 pcs

Cappiloa	*******	, poo.		
			Item No.	
			833.89.206	



- > 5 A Corner connector, 90° rigid, left or right, for 8 mm (5/16") LED strip light
- > Supplied with: 10 pcs.

Item No.
833.89.187

Monochrome, 8 mm (5/16"), 24 V

Häfele Loox5 LED 3042/3045/3048



LED 3042/3045/3048

#### **Equipped with high-quality Samsung® LEDs**

> Dimmable: Yes > Material: Plastic > Color: White > Width: 8 mm (5/16")

> Height: 1.3 mm (1/16") > Life time L80/B10: >50,000 h > Energy efficiency class: A+

> Degree of protection: IP20

> Mounting: Self-adhesive

> Supplied with: 1 roll

Illuminance value in lx applies to 1 m (39 3/8") strip length:

2	2700 K	3000 K	4000 K	5000 K	120°		
	1050 lx	1090 lx	1120 lx	1130 lx	※ -	250 mm	(9 13/16")
	435 lx	455 lx	460 lx	470 lx		500 mm	(19 11/16")
	240 lx	245 lx	260 lx	260 lx	->	750 mm	(29 1/2")
	145 lx	150 lx	155 lx	160 lx		1000 mm	(39 3/8")

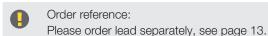
LED 3042

2700 K	3000 K	4000 K	5000 K	120°			
2145 lx	2250 lx	2300 lx	2300 lx	※	+	250 mm	(9 13/16")
900 lx	940 lx	950 lx	955 lx	崇	+	500 mm	(19 11/16")
480 lx	505 lx	510 lx	515 lx	崇	+	750 mm	(29 1/2")
300 lx	310 lx	320 lx	320 lx		+	1000 mm	(39 3/8")

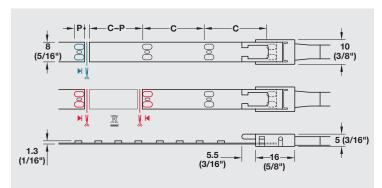
LED 3045

2700 K	3000 K	4000 K	5000 K	120°		
2870 lx	3000 lx	3100 lx	3100 lx	※ -	250 mm	(9 13/16")
1210 lx	1270 lx	1310 lx	1320 lx	* -	500 mm	(19 11/16")
665 lx	695 lx	715 lx	715 lx	* -	750 mm	(29 1/2")
415 lx	430 lx	445 lx	450 lx		1000 mm	(39 3/8")

LED 3048



Aluminum profile recommended from 9.6 W/m, see pages 28-46.



. Cut LED strip light to length

(one contact side remains on the remainder piece; reusable) Connect LED strip lights

(two contact sides required)

C = section length

P = length of contact surface



Loox5 24 V driver see page 131



#### Note

Loox lights and drivers are "Suitable for use within closet

Jimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

#### HAFELE

## **LED** strip lights

Monochrome, 8 mm (5/16"), 24 V

#### Häfele Loox5 LED 3042/3045/3048

Voltage	Quantity	Color temperature	Wattage	Luminous flux	Luminous efficacy	Color rendering	LIGOX SOLUTION	Weighted energy consumpt.	Section length C	Length of contact surface P	Max. strip length (visual)	Available length	
V	LEDs/m	K	W/m	lm/m	lm/W	R	R <sub>o</sub>	kWh/ 1000 h				5 m (196 7/8")	50 m (1968 1/2")
5 24 V	LED 3042		••/			a a	9	1000 11				(100 170 )	(1000 1/2 )
5241		2700	4.8	440	92	>90	>50	5.28	50 (2")	4 (3/16")	12.0 (472 7/16")	833.76.316	833.76.320
	120	3000	4.8	465	97	>90	>50	5.28	50 (2")	4 (3/16")	12.0 (472 7/16")	833.76.317	833.76.321
		4000	4.8	490	102	>90	>50	5.28	50 (2")	4 (3/16")	12.0 (472 7/16")	833.76.318	833.76.322
		5000	4.8	495	103	>90	>50	5.28	50 (2")	4 (3/16")	12.0 (472 7/16")	833.76.319	833.76.323
	LED 3045												
		2700	9.6	920	96	>90	>50	10.56	50 (2")	4 (3/16")	8.0 (314 15/16")	833.76.334	833.76.338
	120	3000	9.6	970	101	>90	>50	10.56	50 (2")	4 (3/16")	8.0 (314 15/16")	833.76.335	833.76.339
	120	4000	9.6	1000	104	>90	>50	10.56	50 (2")	4 (3/16")	8.0 (314 15/16")	833.76.336	833.76.340
		5000	9.6	1040	108	>90	>50	10.56	50 (2")	4 (3/16")	8.0 (314 15/16")	833.76.337	833.76.341
	LED 3048	В											
		2700	14.4	1270	88	>90	>50	15.84	50 (2")	4 (3/16")	6.2 (244 1/8")	833.76.352	833.76.356
	120	3000	14.4	1305	91	>90	>50	15.84	50 (2")	4 (3/16")	6.2 (244 1/8")	833.76.353	833.76.357
	120	4000	14.4	1340	93	>90	>50	15.84	50 (2")	4 (3/16")	6.2 (244 1/8")	833.76.354	833.76.358
		5000	14.4	1430	99	>90	>50	15.84	50 (2")	4 (3/16")	6.2 (244 1/8")	833.76.355	833.76.359

<sup>\*</sup>See page 166 for conversion chart.





> 5 A/18 AWG lead for 8 mm (5/16") LED strip light

Voltage	Length	Item No.
5 24 V	100 (4")	833.75.743
<u> </u>	500 (19 11/16")	833.95.707
	2000 (78 3/4")	833.95.706



> 5 A/18 AWG interconnecting lead for 8 mm (5/16") LED strip light

Length	Item No.
50 (2")	833.89.191
500 (19 11/16")	833.89.192
2000 (78 3/4")	833.89.193



> 5 A/18 AWG lead with female socket and clip for 8 mm (5/16") LED strip light

Voltage	Length	Item No.		
5 24 V	100 (4")	833.93.747		



> 5 A Clip connector for 8 mm (5/16") LED strip light

> Supplied with: 10 pcs.

Item No.
833.89.206



- > 5 A Corner connector, 90° rigid, left or right, for 8 mm (5/16") LED strip light
- > Supplied with: 10 pcs.

Item No.
833.89.187

Monochrome, constant current, 8 mm (5/16"), 12 V/24 V

#### Häfele Loox5 LED 2077/3050/3051/3052



LED 2077



LED 3050/3051/3052

#### Illuminance value in lx applies to 1 m (39 3/8") strip length:

2700 K	3000 K	4000 K	5000 K	120			
1775 lx	1850 lx	1950 lx	1950 lx	澿		250 mm	(9 13/16")
760 lx	790 lx	830 lx	830 lx	淙		500 mm	(19 11/16")
425 lx	440 lx	465 lx	465 lx		_	750 mm	(29 1/2")
265 lx	270 lx	285 lx	285 lx		_	1000 mm	(39 3/8")

#### LED 2077

2700 K	3000 K	4000 K	5000 K	120°			
2050 lx	2150 lx	2205 lx	2340 lx	菜	+	250 mm	(9 13/16")
890 lx	930 lx	990 lx	1010 lx	澿		500 mm	(19 11/16")
490 lx	520 lx	545 lx	550 lx	※	-	750 mm	(29 1/2")
305 lx	325 lx	335 lx	340 lx		+	1000 mm	(39 3/8")
LED 3	250						

2700 K	3000 K	4000 K	5000 K	120°		
3150 lx	3170 lx	3190 lx	3200 lx	※ -	250 mm	(9 13/16")
1365 lx	1385 lx	1390 lx	1400 lx	× -	500 mm	(19 11/16")
760 lx	770 lx	770 lx	770 lx	<b>※</b> -	750 mm	(29 1/2")
470 lx	480 lx	480 lx	480 lx		1000 mm	(39 3/8")
LED 30	751					

2700 K	3000 K	4000 K	5000 K	120°			
4070 lx	4160 lx	4220 lx	4260 lx	崇	+	250 mm	(9 13/16")
1750 lx	1780 lx	1800 lx	1840 lx	淡	+	500 mm	(19 11/16")
970 lx	990 lx	1000 lx	1020 lx	**		750 mm	(29 1/2")
600 lx	620 lx	625 lx	630 lx	***	+ -	1000 mm	(39 3/8")

LED 3052

#### Constant current technology

- > Achieves uniform brightness over the entire strip light length
- > Increased life time, higher visual strip length, higher luminous efficacy
- > Equipped with high-quality Samsung® LEDs

> Dimmable:	Yes
> Material:	Plastic
> Color:	White
> Width:	8 mm (5/16")
> Height:	1.5 mm (1/16")
> Life time L80/B10:	>70,000 h
> Energy efficiency class:	A+
> Degree of protection:	IP20
	0 16 11 1

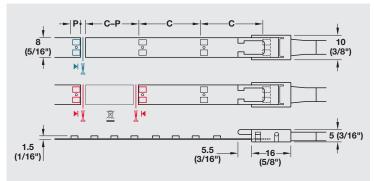
> Mounting: Self-adhesive

> Supplied with: 1 roll

#### Order reference:

Please order lead separately, see page 15.

Aluminum profile recommended from 9.6 W/m, see pages 28-46.



- Cut LED strip light to length
  - (one contact side remains on the remainder piece; reusable)
- Connect LED strip lights (two contact sides required)

C = section length

P = length of contact surface



5 12 V

Loox5 12 V driver see page 130



Loox5 24 V driver see page 131



Loox lights and drivers are "Suitable for use within closet storage spaces"



#### HAFELE

## **LED** strip lights

Monochrome, constant current, 8 mm (5/16"), 12 V/24 V

#### Häfele Loox5 LED 2077/3050/3051/3052

Voltage	Quantity	Color temperature	Wattage	Luminous flux	Luminous efficacy	Color		Weighted energy consumpt.	Section length C	Length of contact surface P	Max. strip length (visual)	Available ler	ngth
V	LEDs/m	K	W/m	lm/m	lm/W	R <sub>a</sub>	R <sub>o</sub>	kWh/ 1000 h				5 m (196 7/8")	50 m (1968 1/2")
5 12 V	LED 207	7	*	*		a							
		2700	9.6	810	84	>90	>50	10.56	25 (1")	4 (3/16")	6.2 (244 1/8")	833.74.372	833.74.376
	100	3000	9.6	860	90	>90	>50	10.56	25 (1")	4 (3/16")	6.2 (244 1/8")	833.74.373	833.74.377
	120	4000	9.6	900	94	>90	>50	10.56	25 (1")	4 (3/16")	6.2 (244 1/8")	833.74.374	833.74.378
		5000	9.6	905	94	>90	>50	10.56	25 (1")	4 (3/16")	6.2 (244 1/8")	833.74.375	833.74.379
5 24 V	LED 305	0											
		2700	9.6	945	98	>90	>50	10.56	50 (2")	3 (1/8")	9.0 (354 5/16")	833.76.362	833.76.366
	140	3000	9.6	1030	107	>90	>50	10.56	50 (2")	3 (1/8")	9.0 (354 5/16")	833.76.363	833.76.367
	140	4000	9.6	1060	110	>90	>50	10.56	50 (2")	3 (1/8")	9.0 (354 5/16")	833.76.364	833.76.368
		5000	9.6	1080	113	>90	>50	10.56	50 (2")	3 (1/8")	9.0 (354 5/16")	833.76.365	833.76.369
	<b>LED 305</b>	1											
		2700	14.4	1430	99	>90	>50	15.84	50 (2")	3 (1/8")	6.2 (244 1/8")	833.76.370	833.76.374
	140	3000	14.4	1520	106	>90	>50	15.84	50 (2")	3 (1/8")	6.2 (244 1/8")	833.76.371	833.76.375
	140	4000	14.4	1605	111	>90	>50	15.84	50 (2")	3 (1/8")	6.2 (244 1/8")	833.76.372	833.76.376
		5000	14.4	1650	115	>90	>50	15.84	50 (2")	3 (1/8")	6.2 (244 1/8")	833.76.373	833.76.377
	LED 305	2											
		2700	19.2	1850	96	>90	>50	21.12	50 (2")	3 (1/8")	4.6 (181 1/8")	833.76.378	833.76.382
	140	3000	19.2	2015	105	>90	>50	21.12	50 (2")	3 (1/8")	4.6 (181 1/8")	833.76.379	833.76.383
	140	4000	19.2	2050	107	>90	>50	21.12	50 (2")	3 (1/8")	4.6 (181 1/8")	833.76.380	833.76.384
		5000	19.2	2100	109	>90	>50	21.12	50 (2")	3 (1/8")	4.6 (181 1/8")	833.76.381	833.76.385



The maximum visual strip length for Loox5 constant current strips is the length without drop in luminous flux. Maximum wattage-dependent strip length on the driver, see pages 150–151.

\*See page 166 for conversion chart.





> 5 A/18 AWG lead

Voltage	Length	Item No.
5 12 V	100 (4")	833.93.736
	500 (19 11/16")	833.95.701
	2000 (78 3/4")	833.95.700
5 24 V	100 (4")	833.75.743
	500 (19 11/16")	833.95.707
	2000 (78 3/4")	833.95.706



> 5 A/18 AWG interconnecting lead

Length	Item No.
50 (2")	833.89.191
500 (19 11/16")	833.89.192
2000 (78 3/4")	833.89.193



> 5 A/18 AWG lead with female socket and clip

Voltage	Length	Item No.
5 12 V	100 (4")	833.93.746
5 24 V	100 (4")	833.93.747



- > 5 A Clip connector
- > Supplied with: 10 pcs.

ı	Item No.
	833.89.206



- > 5 A Corner connector, 90° rigid, left or right
- > Supplied with: 10 pcs.

Item No.
833.89.187

# **LED** silicone strip lights

Monochrome, 8 mm (5/16"), 12 V/24 V

Häfele Loox5 LED 2063/3043/3046



LED 2063



LED 3043/3046

#### **Equipped with high-quality Samsung® LEDs**

> Dimmable: Yes> Material: Plastic> Color: White

> Width: Strip: 8 mm (5/16")

Silicone sleeve: 10 mm (3/8")

> Height: Strip: 1.3 mm (1/16")

Silicone sleeve: 4.8 mm (3/16")

> Life time L80/B10: >50,000 h

> Energy efficiency class: A+

Degree of protection: IP44 / IP20 optional
 Mounting: Self-adhesive
 Supplied with: 1 roll

#### Illuminance value in Ix applies to 1 m (39 3/8") strip length:

2700 K	3000 K	4000 K	5000 K	120°			
920 lx	960 lx	975 lx	1010 lx	※	+	250 mm	(9 13/16")
390 lx	410 lx	415 lx	425 lx		+	500 mm	(19 11/16")
215 lx	225 lx	230 lx	235 lx		+	750 mm	(29 1/2")
135 lx	140 lx	145 lx	145 lx	<b>&gt;</b>	+	1000 mm	(39 3/8")

LED 2063 /3043

2700 K	3000 K	4000 K	5000 K	120°			
1855 lx	1895 lx	1960 lx	2020 lx	※		250 mm	(9 13/16")
790 lx	805 lx	840 lx	860 lx	崇	_	500 mm	(19 11/16")
435 lx	445 lx	465 lx	475 lx		_	750 mm	(29 1/2")
270 lx	275 lx	290 lx	295 lx			1000 mm	(39 3/8")

LED 3046

#### •

#### Note

Loox lights and drivers are "Suitable for use within closet storage spaces"

16 / Illuminating

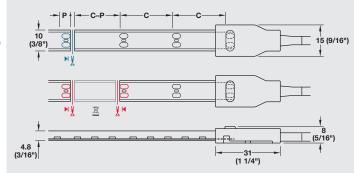
#### Minimal color deviations due to silicone sleeve:

Color temperature of the LED	Color deviation
2700 K	–30 K
3000 K	-40 K
4000 K	-50 K
5000 K	-80 K

#### 0

#### Order reference:

Please order lead separately, see page 17.



Cut LED strip light to length

(one contact side remains on the remainder piece; reusable)

Connect LED strip lights (two contact sides required)

(two dontable blade rog

C = section length

P = length of contact surface

#### 0

#### Note

Dimensions apply to 3060, 3061 on page 20.



5 12 V

Loox5 12 V driver see page 130



Loox5 24 V driver see page 131

limensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice



## **LED** silicone strip lights

Monochrome, 8 mm (5/16"), 12 V/24 V

#### Häfele Loox5 LED 2063/3043/3046

Voltage	Quantity	Color temperature	Wattage	Luminous flux	Luminous efficacy	Color rendering		Weighted energy consumpt.	Section length C	Length of contact surface P	Max. strip length (visual)	Available len	ngth
V	LEDs/m	K	W/m	lm/m	lm/W	R	R <sub>o</sub>	kWh/ 1000 h				5 m (196 7/8")	15 m (590 9/16")
	LED 206		*	*	1111/ 44	In <sub>a</sub>	119	100011				(190 1/0 )	(390 9/ 10 )
5 12 V		2700	4.8	415	86	>90	>50	5.28	50 (2")	4 (3/16")	6.0 (236 1/4")	833.74.344	833.74.348
	00	3000	4.8	440	92	>90	>50	5.28	50 (2")	4 (3/16")	6.0 (236 1/4")	833.74.345	833.74.349
	60	4000	4.8	455	95	>90	>50	5.28	50 (2")	4 (3/16")	6.0 (236 1/4")	833.74.346	833.74.350
		5000	4.8	460	96	>90	>50	5.28	50 (2")	4 (3/16")	6.0 (236 1/4")	833.74.347	833.74.351
5 24 V	LED 3043	3											
		2700	4.8	415	86	>90	>50	5.28	50 (2")	4 (3/16")	12.0 (472 7/16")	833.76.324	833.76.328
	120	3000	4.8	440	92	>90	>50	5.28	50 (2")	4 (3/16")	12.0 (472 7/16")	833.76.325	833.76.329
	120	4000	4.8	455	95	>90	>50	5.28	50 (2")	4 (3/16")	12.0 (472 7/16")	833.76.326	833.76.330
		5000	4.8	460	96	>90	>50	5.28	50 (2")	4 (3/16")	12.0 (472 7/16")	833.76.327	833.76.331
	LED 3046	6											
		2700	9.6	820	85	>90	>50	10.56	50 (2")	4 (3/16")	8.0 (314 15/16")	833.76.342	833.76.346
	120	3000	9.6	870	91	>90	>50	10.56	50 (2")	4 (3/16")	8.0 (314 15/16")	833.76.343	833.76.347
	120	4000	9.6	900	94	>90	>50	10.56	50 (2")	4 (3/16")	8.0 (314 15/16")	833.76.344	833.76.348
		5000	9.6	930	97	>90	>50	10.56	50 (2")	4 (3/16")	8.0 (314 15/16")	833.76.345	833.76.349



Maximum visual strip length applies for an imperceptible drop in luminous flux of max. 30%. Maximum wattage-dependent strip length on the driver, see pages 150–151.



#### Degree of protection IP44



> 5 A/18 AWG lead for 8 mm (5/16") LED silicone strip light

Voltage	Length	Item No.
5 12 V	2000 (78 3/4")	833.95.703
5 24 V	2000 (78 3/4")	833.95.709



> 5 A/18 AWG interconnecting lead for 8 mm (5/16") LED silicone strip light

Length	Item No.
50 (2")	833.89.203
500 (19 11/16")	833.89.204
2000 (78 3/4")	833.89.205



- > End cap set with adhesive for 8 mm (5/16") LED silicone strip light
- > For sealing the shortened silicone sleeve; achieves degree of protection IP44

Item No.
833.89.184

#### Supplied with

5 pcs. with 5 ml adhesive



> Silicone stripping tool

Item No.
006.13.485

#### Note

Please order separately



Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice.

#### **Degree of protection IP20**

If necessary, you can realize an IP20 version using leads, interconnecting leads and clip connectors for 8 mm (5/16") monochrome LED strip lights, see accessories page 11.











<sup>\*</sup>See page 166 for conversion chart.

Multi-white, 8 mm (5/16"), 12 V





Häfele Loox5 LED 2064/2070



9	ii Eii	II BU	8 8	10
		 -		

LED 2070

Illuminance value in lx applies to 1000 mm (39 3/8") strip length:

2700 K	5000 K	120°		
1025 lx	1075 lx	※	250 mm	(9 13/16")
425 lx	445 lx		500 mm	(19 11/16")
230 lx	245 lx	->	750 mm	(29 1/2")
145 lx	150 lx		1000 mm	(39 3/8")

LED 2064

2700 K	5000 K	120°		
1865 lx	2045 lx	菜	250 mm	(9 13/16")
785 lx	865 lx	- <del>\</del>	- 500 mm	(19 11/16")
430 lx	475 lx	->	750 mm	(29 1/2")
270 lx	295 lx		1000 mm	(39 3/8")

LED 2070



18 / Illuminating

Note Loox lights and drivers are "Suitable for use within closet storage spaces"

### Optimized light mixture

- > Cool white and warm white LEDs in the smallest of spaces
- > Optimal light mixture without flickering

> Dimmable: Yes > Material: Plastic > Color: White > Width: 8 mm (5/16")

> Height: 1.3 mm (1/16") > Life time L80/B10: >50,000 h

> Energy efficiency class: A+ > Degree of protection: IP20

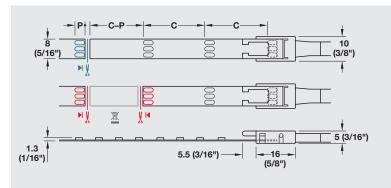
Self-adhesive > Mounting:

> Supplied with: 1 roll

Order reference:

Please order lead separately, see page 19.

Aluminum profile recommended from 9.6 W/m, see pages 28-46.



Cut LED strip light to length

(one contact side remains on the remainder piece; reusable)

Connect LED strip lights (two contact sides required)

C = section length

P = length of contact surface



5 12 V

Loox5 12 V driver see page 130



Color control only via 6-way distributor Häfele Connect Mesh with multi-white adapter and remote control or smartphone. Please order separately, see Networking, page 96.

Jimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice





Multi-white, 8 mm (5/16"), 12 V

#### Häfele Loox5 LED 2064/2070

Voltage	Quantity	Color temperature	Wattage	Luminous flux	Luminous efficacy	Color	index CRI	Weighted energy consumpt.	Section length C	Length of contact surface P	Max. strip length (visual)	Available len	ngth	
V	LEDs/m	K	W/m	lm/m	lm/W	R	R <sub>9</sub>	kWh/ 1000 h				5 m (196 7/8")	15 m (590 9/16")	50 m (1968 1/2")
5 12 V	LED 206	4	*	*										
	2 x 60	2700 5000	4.8	425 465	89 97	>90	>50	5.28	50 (2")	4 (3/16")	4.5 (177 3/16")	833.74.352	-	833.74.353
	LED 207	0												
	2 x 120	2700 5000	9.6	825 930	86 97	>90	>50	10.56	25 (1")	3.5 (1/8")	3.5 (137 13/16")	833.74.370	-	833.74.371



Maximum visual strip length applies for an imperceptible drop in luminous flux of max. 30%. Maximum wattage-dependent strip length on the driver, see pages 152–153.

\*See page 166 for conversion chart.





- > 3.5 A/20 AWG lead, for 8 mm (5/16") multi-white LED strip light
- > For silicone multi-white strip lights, use 833.95.708 or 833.93.743

Voltage	Length	Item No.
5 12 V	100 (4")	833.93.742
	2000 (78 3/4")	833.95.702



> 3.5 A/20 AWG interconnecting lead, for 8 mm (5/16") multi-white LED strip light

Length	Item No.
50 (2")	833.89.197
500 (19 11/16")	833.89.198
2000 (78 3/4")	833.89.199



> 3.5 A/20 AWG lead with female socket and clip for 8 mm (5/16") multi-white LED strip light

Voltage	Length	Item No.
5 12 V	100 (4")	833.93.717



- > 3.5 A Clip connector, for 8 mm (5/16") multi-white LED strip light
- > Supplied with: 10 pcs.

	•	
		Item No.
		833.89.208



- > 3.5 A Corner connector, 90° rigid, left or right, for 8 mm (5/16") multi-white LED strip light
- > Supplied with: 10 pcs.

Item No.
833.89.188

Multi-white, 8 mm (5/16"), 24 V





#### Häfele Loox5 LED 3044/3047/3049/3060/3061

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LED 3044/3047/3049

### Illuminance value in lx applies to 1000 mm (39 3/8") strip length:

2700 K	5000 K	120°		
1025 lx	1075 lx	※ -	250 mm	(9 13/16")
425 lx	445 lx		500 mm	(19 11/16")
230 lx	245 lx		750 mm	(29 1/2")
145 lx	150 lx	- <b>Þ</b> -	1000 mm	(39 3/8")

LED 3044 / 3060 silicone

2700 K	5000 K	120°		
1865 lx	2045 lx	澿	250 mm	(9 13/16")
785 lx	865 lx	- <del>\</del>	- 500 mm	(19 11/16")
430 lx	475 lx		750 mm	(29 1/2")
270 lx	295 lx		1000 mm	(39 3/8")

LED 3047 / 3061 silicone

2700 K	5000 K	120°			
2780 lx	2800 lx	澿	-	250 mm	(9 13/16")
1180 lx	1200 lx	澿	-	500 mm	(19 11/16")
650 lx	660 lx	澿	-	750 mm	(29 1/2")
405 lx	415 lx		-	1000 mm	(39 3/8")

LED 3049

Loox lights and drivers are "Suitable for use within closet storage spaces"

#### Optimized light mixture

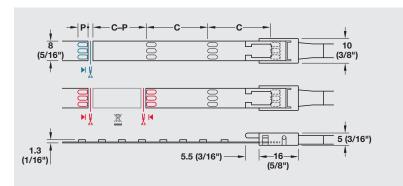
- > Cool white and warm white LEDs in the smallest of spaces
- > Optimal light mixture without flickering

> Dimmable: Yes > Material: Plastic > Color: White > Width: 8 mm (5/16") > Height: 1.3 mm (1/16") > Life time L80/B10: >50,000 h > Energy efficiency class: A+ > Degree of protection: IP20

Self-adhesive > Mounting: > Supplied with: 1 roll

Order reference: Please order lead separately, see page 21.

Aluminum profile recommended from 9.6 W/m, see pages 28-46.



Cut LED strip light to length

(one contact side remains on the remainder piece; reusable)

Connect LED strip lights (two contact sides required)

C = section length

P = length of contact surface

See page 16 for dimensions and drawing details related to LED 3060 and LED 3061





Loox5 24 V driver see page 125



Color control only via 6-way distributor Häfele Connect Mesh with multi-white adapter and remote control or smartphone. Please order separately, see Networking, page 96.

Jimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice



Multi-white, 8 mm (5/16"), 24 V

Häfele Loox5 LED 3044/3047/3049/3060/3061

Voltage	Quantity	Color temp.	Wattage	Luminous flux	Luminous efficacy	Color	index CRI	Weighted energy consumpt.	Section length C	Length of contact surface P	Max. strip length (visual)	Available ler	ngth	
V	LEDs/m	K	W/m	lm/m	lm/W	R	R <sub>o</sub>	kWh/ 1000 h				5 m (196 7/8")	15 m (590 9/16")	50 m (1968 1/2")
5 24 V	LED 304	4												
	2 x 120	2700 5000	4.8	425 465	89 97	>90	>50	5.28	50 (2")	3.5 (1/8")	8.5 (334 5/8")	833.76.332	-	833.76.333
	LED 304	7												
	2 x 120	2700 5000	9.6	825 930	86 97	>90	>50	10.56	50 (2")	3.5 (1/8")	6.5 (255 7/8")	833.76.350	-	833.76.351
	LED 3049	9												
	2 x 120	2700 5000	14.4	1230 1370	85 95	>90	>50	15.84	50 (2")	3.5 (1/8")	5.0 (196 7/8")	833.76.360	-	833.76.361
	LED 306	0 Silico	ne											
	2 x 120	2700 5000	4.8	425 465	89 97	>90	>50	5.28	50 (2")	3.5 (1/8")	8.5 (334 5/8")	833.76.387	833.76.388	-
	LED 306	1 Silico	ne											
	2 x 120	2700 5000	9.6	825 930	86 97	>90	>50	10.56	50 (2")	3.5 (1/8")	6.5 (255 7/8")	833.76.389	833.76.390	-



Maximum visual strip length applies for an imperceptible drop in luminous flux of max. 30%. Maximum wattage-dependent strip length on the driver, see pages152–153.

\*See page 166 for conversion chart.



- > 3.5 A/20 AWG lead, for 8 mm (5/16") multi-white LED strip light
- > For silicone multi-white strip lights, use 833.95.708 or 833.93.743

Voltage	Length	Item No.
5 24 V	100 (4")	833.93.743
	2000 (78 3/4")	833.95.708



> 3.5 A/20 AWG interconnecting lead, for 8 mm (5/16") multi-white LED strip light

Length	Item No.
50 (2")	833.89.197
500 (19 11/16")	833.89.198
2000 (78 3/4")	833.89.199



> 3.5 A/20 AWG lead with female socket and clip for 8 mm (5/16") multi-white LED strip light

Voltage	Length	Item No.
5 24 V	100 (4")	833.75.751



- > 3.5 A Clip connector, for 8 mm (5/16") multi-white LED strip light
- > Supplied with: 10 pcs.

Item No.
833.89.208



- > 3.5 A Corner connector, 90° rigid, left or right, for 8 mm (5/16") multi-white LED strip light
- > Supplied with: 10 pcs.

Item No.
833.89.188

RGB, 10 mm (3/8"), 12 V/24 V





Häfele Loox5 LED 2080/3080



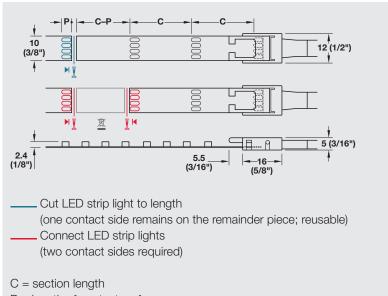
LED 2080/3080

> Dimmable: Yes > Material: Plastic > Color: White > Width: 10 mm (3/8") > Height: 2.4 mm (1/8")

> Energy efficiency class: A+ > Degree of protection: IP20 > Mounting: Self-adhesive > Supplied with: 1 roll

Order reference: Please order lead separately, see page 23.

Aluminum profile recommended from 9.6 W/m, see page 28.



P = length of contact surface

5 12 V Loox5 12 V driver see page 130

> 5 24 V Loox5 24 V driver see page 131

Color control only via 6-way distributor Häfele Connect Mesh with RGB adapter and remote control or smartphone. Please order separately, see Networking, page 96.

Loox lights and drivers are "Suitable for use within closet storage spaces"

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

HAFELE

Item No. 833.89.209

# LED strip lights

RGB, 10 mm (3/8"), 12 V/24 V

#### Häfele Loox5 LED 2080/3080

< Voltage	Number of	X Color temperature	Wattage 3/	Luminous flux	Luminous efficacy	Weighted 000 h consumpt.	Section length C	Length of contact surface P	Max. strip length (visual)	2 Delivery ength length
5 12 V	LED 2080	)	*	*						
	120	RGB	9.6	530	51	10.78	25 (1")	3.8 (1/8")	3.0 (118 1/8")	833.74.380
5 24 V	LED 3080									
	120	RGB	9.6	530	51	10.78	50 (2")	3.8 (1/8")	6.5 (255 7/8")	833.76.386



Maximum visual strip length applies for an imperceptible drop in luminous flux of max. 30%. Maximum wattage-dependent strip length on the driver, see pages 152–153.





> 3.5 A/20 AWG lead, for 10 mm (3/8") LED RGB strip light

Voltage	Length	Item No.
5 12 V	100 (4")	833.93.713
	2000 (78 3/4")	833.95.704
5 24 V	100 (4")	833.75.749
	2000 (78 3/4")	833.95.710



> 3.5 A/20 AWG lead with female socket and clip for 10 mm (3/8") LED RGB strip light

Voltage	Length	Item No.
5 12 V	100 (4")	833.93.719
5 24 V	100 (4")	833.75.752



> 3.5 A Corner connector, 90° rigid, left or right, for 10 mm (3/8") LED RGB strip light

for 10 mm (3/8") LED RGB strip light

> Supplied with: 10 pcs.

> 3.5 A Clip connector,

> Supplied with: 10 pcs.

Item No.
833.89.189



> 3.5 A/20 AWG interconnecting lead, for 10 mm (3/8") LED RGB strip light

Length	Item No.
50 (2")	833.89.200
500 (19 11/16")	833.89.201
2000 (78 3/4")	833.89.202

\*See page 166 for conversion chart.

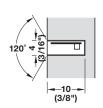
Flexible edge lit silicone strip light, 8 mm (5/16") 12 V/24 V

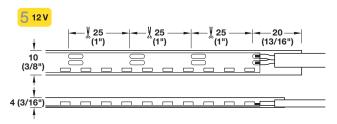
#### Häfele Loox5 LED 2099/3099

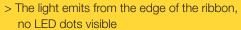




2700 K	3000 K	4000 K	5000 K	120°		
820 lx	840 lx	845 lx	860 lx	※ -	250 mm	(9 13/16")
190 lx	195 lx	205 lx	215 lx		500 mm	(19 11/16")
85 lx	90 lx	100 lx	100 lx		750 mm	(29 1/2")
50 lx	50 lx	55 lx	55 lx	> <b>-</b>	1000 mm	(39 3/8")







- > Designed for recessed installation in a 4 mm wide groove
- > Mounts flush with the panel
- > Flexible silicone allows for curved applications (radius min. 30 mm (1 3/16")

> Dimmable: Yes Silicone > Material: Matt white > Finish:

> Width: Strip: 8 mm (5/16")

Silicone sleeve 10 mm (3/8") > Height: Silicone sleeve 4 mm (5/32")

> Routing depth: 10 mm (3/8") > Routing width: 4 mm (5/32") > Radius min.: 30 mm (1 3/16") > Life time L80/B10: > 50,000 h> Color rendering index R9: > 50

> Color rendering index Ra: > 90 > Energy efficiency class: A+

> Weighted energy

consumption: 10.56 kWh / 1000 h

IP44 > Degree of protection: > Max. strip length (visual): 3.0 m

> Mounting: For embedding in routed channel > Supplied with: 1 LED strip with 200 mmm leads

soldered on each end. Strip can be

divided into two sections.

#### Note

Loox lights and drivers are "Suitable for use within closet storage spaces"

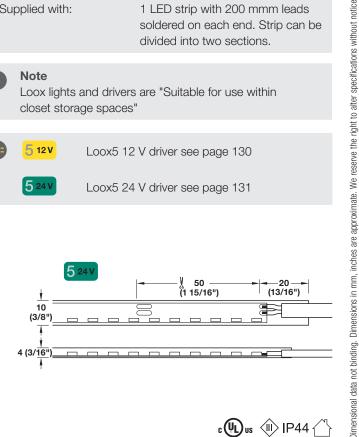


5 12 V

Loox5 12 V driver see page 130

5 24 V

Loox5 24 V driver see page 131





Flexible edge lit silicone strip light, 8 mm (5/16"), 12 V/24 V

#### Häfele Loox5 LED 2099/3099

< Voltage	Jo nagemny LEDs/m	A Color temperature	Wattage	Luminous flux flux	Luminous efficacy	Section length C	m (118 1/8")
5 12 V	LED 2099						
		2700	9.6	500	52	25 (1")	833.74.260
	100	3000	9.6	520	54	25 (1")	833.74.261
	120	4000	9.6	540	56	25 (1")	833.74.262
		5000	9.6	540	56	25 (1")	833.74.263
5 24 V	LED 3099						
		2700	9.6	500	52	50 (2")	833.75.260
	120	3000	9.6	520	54	50 (2")	833.75.261
	120	4000	9.6	540	56	50 (2")	833.75.262
		5000	9.6	540	56	50 (2")	833.75.263



A 200 mm lead cable (3.5A / 20 AWG) is soldered on each end of the roll.

Maximum visual strip length applies for an imperceptible drop in luminous flux of max. 30%. Please note: A strip section with a new power supply that follows immediately is noticeably brighter.

Single color flexible strip light, 8 mm (5/16"), 12 V





Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

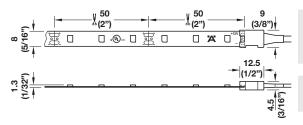






LED 2042





> Material: Plastic White > Color: > Dimmable: Yes

> Width: 8 mm (5/16") > Height: 1.3 mm (1/16") 20,000 h > Life time: > Energy efficiency class: A+ > Degree of protection: IP20

42 W > Mounting: Self-adhesive with aluminum profile

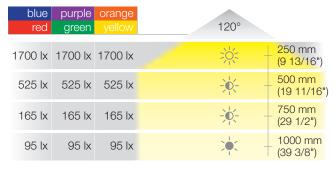
or cooling strip

Order reference

> Max. watts/lead:

Consider the width of clip connector when choosing an aluminum profile (see drawing).

Aluminum profile recommended from 9.6 W/m, see pages 28-46.





#### Note

The values above apply to a strip light length of 0.5 m (19 11/16").

Loox lights and drivers are "Suitable for use within closet storage spaces"



# **LED Strip Lights**

Single color flexible strip light, 8 mm (5/16"), 12 V

#### Häfele Loox5 LED 2042

< Voltage	O Cuantity	Color temperature	M/M	Weighted ham weighted ham weighted ham consumpt.	Section length	Available length	Item No.
5 12 V	LED 2042		*				
		blue	4.8	5.28	50 (2")	15 m (590 9/16")	833.74.190
		red	4.8	5.28	50 (2")	15 m (590 9/16")	833.74.191
	60	purple	4.8	5.28	50 (2")	15 m (590 9/16")	833.74.192
	00	green	4.8	5.28	50 (2")	15 m (590 9/16")	833.74.193
		orange	4.8	5.28	50 (2")	15 m (590 9/16")	833.74.194
		yellow	4.8	5.28	50 (2")	15 m (590 9/16")	833.74.195



#### Note

Loox lights and drivers are "Suitable for use within closet storage spaces"





> 5 A/18 AWG lead for 8 mm (5/16") LED strip light

Voltage	Length	Item No.
5 12 V	100 (4")	833.93.736
0	500 (19 11/16")	833.95.701
	2000 (78.3/4")	833.95.700



- > 5 A Clip connector for 8 mm (5/16") LED strip light
- > Supplied with: 10 pcs.

Item No.
833.89.206



> 5 A/18 AWG interconnecting lead for 8 mm (5/16") LED strip light

Length	Item No.
50 (2")	833.89.191
500 (19 11/16")	833.89.192
2000 (78 3/4")	833.89.193



- > 5 A Corner connector, 90° rigid, left or right, for 8 mm (5/16") LED strip light
- > Supplied with: 10 pcs.

833.89.187

<sup>\*</sup>See page 166 for conversion chart.



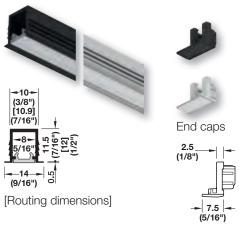
### **Profiles for recess mounting**

Aluminum

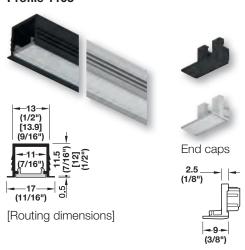
### Häfele Loox5 profile 1104/1103



#### Profile 1104



#### Profile 1103



Diffusers see page 44
1 0

> Material:	Profile: Aluminum
	Diffuser: Plastic

> Finish/Color: Profile: Anodized; Diffuser: White opal,

transmittance 70-80%

> Length: 2337 mm (92")

> Diffuser width: Profile 1104: 8 mm (5/16")
Profile 1103: 11 mm (7/16")

> Supplied with: 1 profile 1 diffuser

1104 1103 833.94.203 833.94.201

833.94.202

833.94.200



Finish

Black

#### Note

Silver colored

Profile 1104 is usable for LED strip lights up to max. 5 mm (3/16") width

Routing dimensions are for reference only. Furniture construction may affect dimensions.



### End caps for Häfele Loox5 profile 1104/1103

> Material: Plastic

> Version: With cable outlet

> Supplied with: 10 pcs.

Color	For 1104	For 1103
Black	833.95.769	833.95.767
Silver colored	833.95.768	833.95.766



#### Diffusers

The diffuser creates a uniform light.

The LED points are invisible from 120 LEDs/m.

If required, please order alternative diffusers in black or transparent separately.

**HXFELE** 

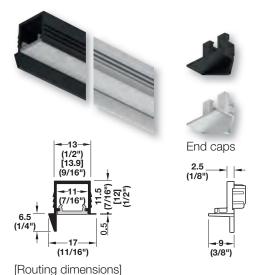
# **Profiles for recess mounting**

Aluminum

Häfele Loox5 profile 1105 - asymmetric light distribution



#### Profile 1105



### **Anti-glare shield**

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice.

Asymmetric light distribution allows for a glare-free light source.

> Material: Profile: Aluminum Diffuser: Plastic

> Finish/Color: Profile: Anodized; Diffuser: White opal,

transmittance 70-80%

2337 mm (92") > Length: > Diffuser width: 11 mm (7/16") > Supplied with: 1 profile 1 diffuser

Finish	Item No.
Black	833.94.205
Silver colored	833.94.204



#### End caps for Häfele Loox5 profile 1105

> Material: Plastic

> Version: With cable outlet

> Supplied with: 10 pcs.

Color	Item No.
Black	833.95.771
Silver colored	833.95.770



#### **Diffusers**

The diffuser creates a uniform light. The LED points are invisible from 120 LEDs/m. If required, please order alternative diffusers in black or transparent separately.



Diffusers see page 44



Routing dimensions are for reference only. Furniture construction may affect dimensions.

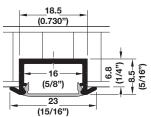
### **Profiles for recess mounting**

Aluminum

### Häfele Loox profile 1190/1191

#### Profile 1190







End cap

> Material: Aluminum

> Finish: Silver colored anodized

 $> L \times W$ : 2500 x 18 mm (98 7/16" x 11/16")

> Height: 8.5 mm (5/16") > Supplied with: 1 profile, 1 diffuser

Diffuser	Item No.
Milk	833.72.864
Frosted	833.72.865

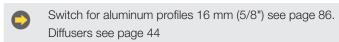
LED points are always visible when this profile is used

### End cap with cable outlet for profile 1190

> Material/Finish: Plastic, silver colored

> Supplied with:

- Cappiloa With	2 poo.		
		Item No.	
		833.72.855	



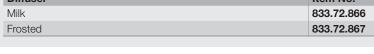
> Material: Aluminum

Silver colored anodized > Finish:

> L x W: 2500 x 18 mm (98 7/16" x 11/16")

> Height: 13 mm (1/2") > Supplied with: 1 profile, 1 diffuser

Diffuser	Item No.
Milk	833.72.866
Frosted	833.72.867



### End cap with cable outlet for profile 1191

> Material/Finish: Plastic, silver colored

> Supplied with: 2 pcs.

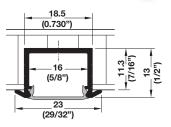
	'	
		Item No.
		833.72.854

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice



#### Profile 1191







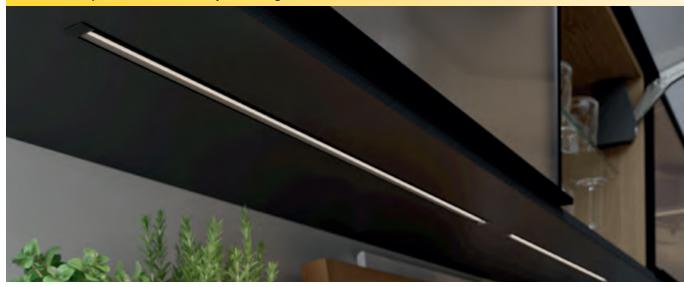
End cap

HAFELE

## **Profiles for recess mounting**

Aluminum

Häfele Loox5 profile 1107/1106 - asymmetric light distribution

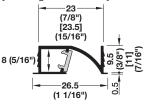


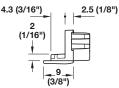
#### Profile 1107





End caps [Routing dimensions]



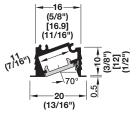


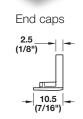
#### Profile 1106





[Routing dimensions]





Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice

Routing dimensions are for reference only. Furniture construction may affect dimensions.

> Material: Profile: Aluminum Diffuser: Plastic

> Finish/Color: Profile: Anodized; Diffuser: White opal,

transmittance 70-80%

> Length: 2337 mm (92")

> Diffuser width: Profile 1107: 8 mm (5/16") Profile 1106: 11 mm (7/16")

> Supplied with: 1 profile, 1 diffuser

Finish	1107	1106
Black	833.94.209	833.94.207
Silver colored	833.94.208	833.94.206



Profile 1106 is usable for LED strip lights up to max. 5 mm (3/16") width with clip.

Profile 1107 is usable for LED strip lights up to max. 5 mm (3/16")

Glare-free light, ideal for vertical installation in wardrobes.

#### End caps for Häfele Loox5 profile 1107/1106

> Material: Plastic

> Version: With cable outlet > Supplied with: 10 pcs. with screws

Color	For 1107	For 1106
Black	833.95.820	833.95.773
Silver colored	833.95.821	833.95.772



#### **Diffusers**

The diffuser creates a uniform light. If required, please order alternative diffusers in black (for 1107 only) or transparent separately.

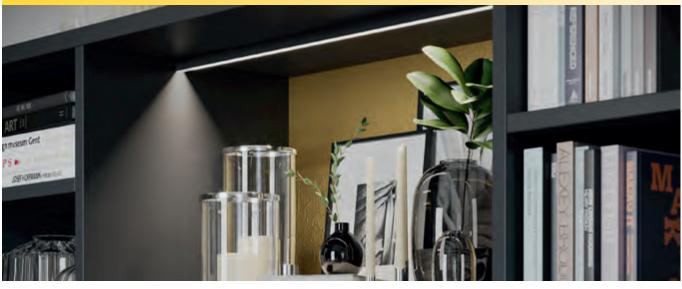


Diffusers see page 44

### Profiles for surface/recess mounting

Aluminum

Häfele Loox5 profile 2101/2102



Profile 2101





Surface mounted diffuser

> Material: Profile: Aluminum Diffuser: Plastic

> Finish/Color: Profile: Anodized; Diffuser: White opal,

transmittance 70-80%

> Length: 2337 mm (92")

> Diffuser width: Profile 2101: 13 mm (1/2")

Profile 2102: 11 mm (7/16")

> Supplied with: 1 profile

1 diffuser

Finish	2101	2102
Black	833.94.211	833.94.214
Brushed stainless steel colored	833.94.212	833.94.215
Silver colored	833.94.210	833.94.213

#### Profile 2102





Flush recess mounted diffuser

#### Diffusers

The diffuser creates a uniform light.

The LED points are invisible from 120 LEDs/m.

If required, please order alternative diffusers in black or transparent (only for 2102) separately.





2101 can be surface or recess mounted.



### **Profiles for surface mounting**

#### Aluminum

#### Häfele Loox5 profile 2101/2102

#### Profile 2101









End caps

Profile 2102









End caps

### Profiles 2101/2102









#### End caps for Häfele Loox5 profile 2101/2102

> Material: Plastic

> Version: With drill mark for cable outlet

> Supplied with: 10 pcs.

• •		
Color	End cap 2101	End cap 2102
Black	833.95.775	833.95.778
Brushed stainless steel colored	833.95.776	833.95.779
Silver colored	833.95.774	833.95.777



#### Slotted end caps for Häfele Loox5 profile 2101/2102

> Material: Plastic

> Version: With slot for cable outlet - fits 2101/2102

> Supplied with: 10 pcs.

Color	Item No.
Black	833.88.432
Brushed stainless steel colored	833.88.433
Silver colored	833.88.434

#### Adhesive tape - for profile 2101/2102



> Area of application: For fixing aluminum on wood, metal,

or plastic

> Version: Double-sided, high instant adhesion,

high temperature resistance

> Length: 33 m (108' 3 3/16") > Width: 10 mm (3/8") > Thickness: 0.6 mm (1/32")

,

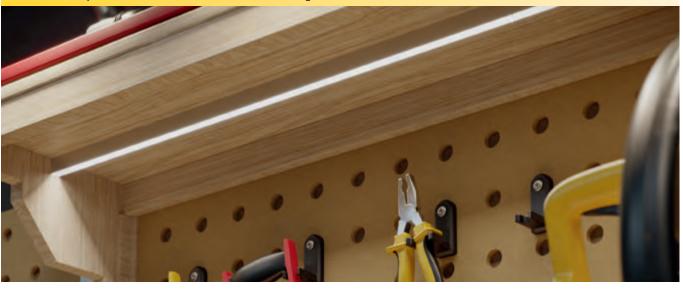
Item No. 833.89.266



## **Profiles for surface mounting**

Aluminum

Häfele Loox5 profile 2103/2104 - with concealed fixing



Profile 2103





> Material:

Profile: Aluminum Diffuser: Plastic

> Finish/Color:

Profile: Anodized; Diffuser: White opal,

transmittance 70-80%

> Length:

2337 mm (92") 11 mm (7/16")

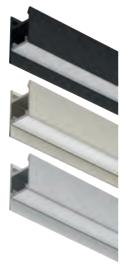
> Diffuser width: > Supplied with:

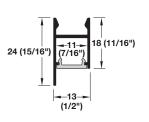
1 profile

1 diffuser

Finish	2103	2104
Black	833.94.217	833.94.220
Brushed stainless steel colored	833.94.218	833.94.221
Silver colored	833.94.216	833.94.219

#### Profile 2104, with asymmetric light distribution





#### Order reference

Please order (required) mounting bracket separately, see page 36.

### **Diffusers**



The diffuser creates a uniform light. The LED points are invisible from 120 LEDs/m. If required, please order alternative diffusers in black or transparent separately.



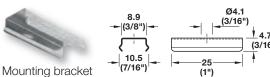
Diffusers see page 44

**HÄFELE** 

### **Profiles for surface mounting**

Aluminum

### Häfele Loox5 profile 2103/2104 - with concealed fixing





### **Mounting bracket**

> Material:

> Version:

Color Black

> Supplied with:

Silver colored

Brushed stainless steel colored

> Material: Stainless Steel > Mounting: For screw fixing > Supplied with: 10 pcs.

End caps for Häfele Loox5 profile 2103/2104

Plastic

10 pcs.

- 1- 1-		- 1					
					Item N	0.	
					833.95	.761	

With drill mark for cable outlet

For 2103

833.95.781

833.95.782

833.95.780

For 2104

833.95.784

833.95.785

833.95.783

#### Profile 2103

for concealed fixing



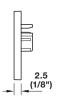




End caps







Profile 2104







Slotted end caps for Häfele Loox5 profile 2103/2104

> Material: Plastic

> Version: With slot for cable outlet - fits 2103/2104

> Supplied with: 10 ncs

> oupplied with. To pos.	
Color	Item No.
Black	833.88.436
Brushed stainless steel colored	833.88.435
Silver colored	833.88.437

#### Profiles 2103/2104



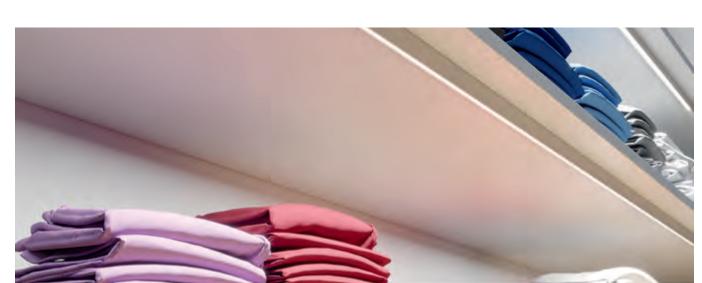








Slotted end caps



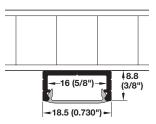
# **Profiles for surface mounting**

Aluminum

### Häfele Loox profile 2190/2191

#### Profile 2190



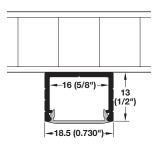




End cap

#### Profile 2191







End cap





Retaining clip 40° Retaining clip

> Material: Aluminum

> Finish: Silver colored anodized > L x W x H: 2500 x 18.5 x 9.5 mm (98 7/16" x 3/4" x 3/8")

1 profile, 1 diffuser > Supplied with:

Cover	Item No.
Milk	833.72.860
Frosted	833.72.863



LED points are always visible when this profile is used.

#### Order reference

Please order retaining clip (optional) separately



#### End cap for profile 2190

> Material/Finish: Plastic, silver colored

> Supplied with: 2 pcs.

• •	•	
		Item No.
		833.72.852



Switch for aluminum profiles 16 mm (5/8") see page 86.

Diffusers see page 44

> Material: Aluminum

> Finish: Silver colored anodized > L x W x H: 2500 x 18.5 mm x 14 mm (98 7/16" x 3/4" x 9/16")

> Supplied with: 1 profile, 1 diffuser

Cover	Item No.
Milk	833.72.861
Frosted	833.72.862



#### Order reference

Please order retaining clip (optional) separately



### End cap for profile 2191

> Material/Finish: Plastic, silver colored

> Supplied with: 2 pcs.

Item No.
833.72.853



#### Mounting clip, optional

> Material/Finish: Stainless Steel, silver colored

> Supplied with: 2 pcs.

·	
Version	Item No.
Retaining clip	833.74.832
Retaining clip 40°	833.74.833



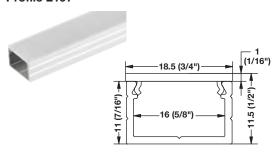
Switch for aluminum profiles 16 mm (5/8") see page 86. Diffusers see page 44

### Profiles for surface/recess mounting

With flat lens cover

Häfele Loox profile - for surface mounting with flat lens 12.5 mm (1/2")

#### Profile 2197



> Material/Finish: Aluminum, clear anodized  $> L \times W \times H$ : 2500 x 18.5 x 12.5 mm (98 7/16" x 3/4" x 1/2")

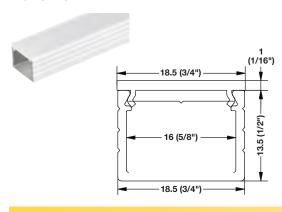
> Cover: Milk

> Item No. 833.71.929

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Häfele Loox profile - for surface mounting with flat lens 14.5 mm (9/16")

#### Profile 2191



> Material/Finish: Aluminum, clear anodized  $> L \times W \times H$ : 2500 x 18.5 x 13.5 mm (98 7/16" x 3/4" x 9/16")

> Cover: Milk

> Item No. 833.71.853

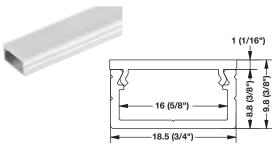


#### Note

Mounting clips sold separately, see page 36.

Häfele Loox profile - for shallow surface mounting with flat lens 8.8 mm (3/8")

#### Profile 2190



> Material/Finish: Aluminum, clear anodized  $> L \times W \times H$ : 2500 x 18.5 x 9.8 mm (98 7/16" x 3/4" x 3/8") > Cover: Milk

Item No. 833.71.852



#### Note

Mounting clips sold separately, see page 36.

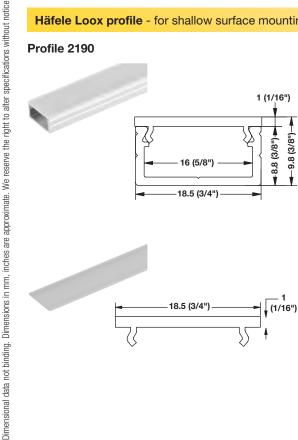


### Flat Lens Cover for profiles 2190, 2191 and 2197 Polycarbonate, milk

> Material/Cover:	Polycarbonate, mik
> L x W x H:	2500 x 18.5 x 3.9 mm
	(98 7/16" x 3/4" x 1/8")

(00 17 10	X 0/ 1	X 1/0 )	

Item No.
833.74.783



End cap

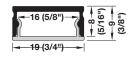
## One piece plastic profiles

Aluminum, with flat lens cover

Designer surface mount profile - 9 mm (3/8")

#### Profile 4105





> Material/Finish: Aluminum, clear anodized > L x W: 2000 x 19 mm x 9 mm (78 3/4" x 3/4" x 3/8")

> Application: For surface or flush mounting

Item No.
833.01.760

LED points are always visible when this profile is used. Lens sold separately.



#### End cap

> Material/Color: Plastic, gray 9 mm (3/8") > Height:

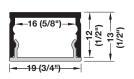
Item No.
833.01.765

### Designer surface mount profile - 13 mm (1/2")

#### Profile 4106

End cap





Aluminum, clear anodized > Material/Finish: > L x W: 2000 x 19 mm x 13 mm (78 3/4" x 3/4" x 1/2")

> Application: For surface or flush mounting

Item No.
833.01.761



#### Note

Lens sold separately.



#### End cap

> Material/Color: Plastic, gray > Height: 13 mm (1/2")

	•	
		Item No.
		833 01 764

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice



### Flat lens for profiles 4105 and 4106

> Material: Plastic

2000 mm (78 3/4") > Length:

Finish	Item No.
Milk	833.01.762
Frosted	833.01.763



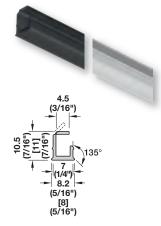
LED points are always visible when frosted lens is used.

### One-piece plastic profiles

Häfele Loox5 profile 1102/1101



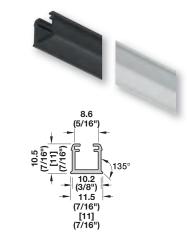
#### Profile 1102



[Routing dimensions]

#### Profile 1101

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice



[Routing dimensions]

> Material: Plastic

> Length: 2500 mm (98 7/16")

> Supplied with: 1 profile

Color	Transmittance	1102	1101
Black	~20 %	833.95.803	833.95.801
White opal	70-80 %	833.95.802	833.95.800



#### Note

Profile 1102 and 1101 are usable for LED strip lights up to max 9.6 W/m.

Profile 1102 is usable for LED strip lights up to max. 5 mm (3/16") width.

Profile 1101 is usable only for LED strip lights with a width of precisely 8 mm (5/16").

The diffuser creates a uniform light. The LED points in the white version are invisible from 120 LEDs/m.

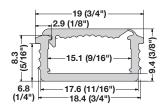
Routing dimensions are for reference only. Furniture construction may affect dimensions.

## One-piece plastic profiles

Co-extruded profile - recess mounted

#### Profile 3108





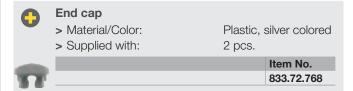
Material:Cover:

> L x W x H:

Polypropylene Aluminum color, frosted 2500 x 20 x 10 mm (98 7/16" x 13/16" x 3/8")

Item No.
833.00.710

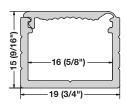
Only for LED strips with max. 9.6 W per meter (3.0 W per foot)



Co-extruded profile - surface mounted

#### Profile 4108



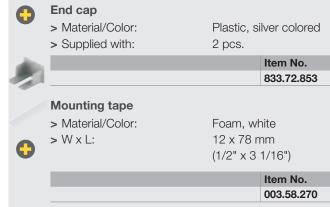


Material:Cover:L x W x H:

Polypropylene Aluminum color, milk 2500 x 19 x 15 mm (98 7/16" x 3/4" x 9/16")

Item No.
833.01.700

> Only for LED strips with max. 9.6 W per meter (3.0 W per foot)



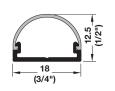
### HAFELE

## **Profiles for surface mounting**

#### Aluminum

#### Häfele Loox drawer profile 2194





> Material: Aluminum

> Finish/Color: Profile: Silver colored anodized

Diffuser: Milk

> L x W: 2500 x 18 mm (98 7/16" x 11/16")

> Height: 12.5 mm (1/2")
> Supplied with: 1 profile

1 diffuser

Item No.
833.71.928





Retaining clip



#### End cap set

> Material/Finish: ABS Plastic, silver colored
> Supplied with: 5 sets of end caps,

fixing screws

Item No.
833.74.877

#### Retaining clip

> Material/Finish: Stainless Steel, silver colored

> Supplied with: 2 pcs.

Item No.
833.74.893

### Loox5 door sensor for Häfele Loox drawer profile

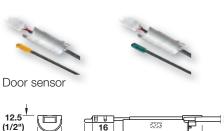
Voltage	Switching capacity Item No.	
5 12 V	60 W	833.89.251
<b>5</b> 24 V	90 W	833.89.253

#### Loox5 motion detector for Häfele Loox drawer profile

> Delay time: 30 sec.

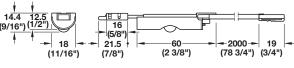
> Sensor range: 0-3000 mm (0"-118 1/8")

Voltage	Switching capacity	Item No.
5 12 V	60 W	833.89.252
5 24 V	90 W	833.89.254



12.5 16 16	
18 21.5 21.5 (11/16") (7/8")	60 - 2000 - 19 - (78 3/4") (3/4")



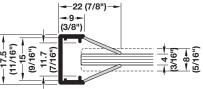


### **Profiles for surface mounting**

Aluminum

#### Häfele Loox glass edge profile 5105





Effect of the glass edge on the light

- > Glass edge with satin finish = even light line
- > Clear glass edge = point light

> Material: Plastic

> Finish/Color: Profile: Silver colored

Diffusers: Milk

> L x W: 2000 x 17.5 mm (78 3/4" x 11/16")

> Height: 22 mm (7/8")
> Application: For screw fixing

> Supplied with: 1 profile 2 diffusers

Item No.
833 74 733



For manufacturing customized glass edge lighting for glass

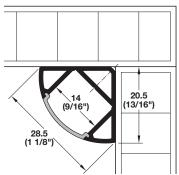
thicknesses of 4–8 mm (3/16"–5/16"). Without load bearing function.

Only for LED strip lights with max. 9.6 W/m.

Note the dimensions of the clip connector.

#### Häfele Loox corner profile 2195











End cap Holder

Mounting plate

> Material: Aluminum

> Finish/Color: Profile: Silver colored anodized

Diffuser: Milk

> Cover: Milk

> L x W: 2500 x 28 mm (98 7/16" x 1 1/8")

> Height: 20.5 mm (25/32")

> Supplied with: 1 profile

1 diffuser

Item No.
833.71.927



> Material/Finish: End cap and holder:

Plastic, silver colored

Mounting plate: Stainless Steel

> Supplied with: 2 pcs.

Version	Item No.
End cap with cable outlet	833.74.822
Holder	833.74.825
Mounting plate	833.74.826

### **HXFELE**

### Elite wardrobe tube profiles

Aluminum

#### Wardrobe tube 5111









matt

matt aluminum

oil-rubbed

polished chrome

nickel



slate

matt aold

Material/Finish:Insert:

Aluminum, anodized

sert: Plastic

> Supplied with: 1 pc. with milk lens

Length	Finish/insert	Item No.
2438 mm (8')	Matt aluminum/clear	830.28.700
2438 mm (8')	Matt nickel/clear	830.28.710
2438 mm (8')	Polished chrome/clear	830.28.720
2438 mm (8')	Oil-rubbed bronze/black	830.28.730
2438 mm (8')	Matt gold/clear	830.28.790
2438 mm (8')	Slate/black	830.28.800
1219 mm (4')	Matt aluminum/clear	830.28.701
1219 mm (4')	Matt nickel/clear	830.28.711
1219 mm (4')	Polished chrome/clear	830.28.721
1219 mm (4')	Oil-rubbed bronze/black	830.28.731
1219 mm (4')	Matt gold/clear	830.28.705
1219 mm (4')	Slate/black	830.28.706



#### Lens

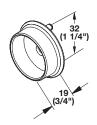
> Material: Plastic > Cover: Milk

> Height: 13 mm (1/2")

Item No. 833.74.781

### Wardrobe tube support







- > Unique two-part design allows the support to fully surround the tube ends
- > Connect the wedge shaped brackets into line bore holes and side supports onto the end of the tube
- > Side supports connect to the wedge shaped brackets
- > With two pins for 5 mm (3/16") holes
- > 32 mm (1 1/4") spacing with an additional screw hole for side panel mounting

> Material:	Zinc-plated
> Diameter:	32 mm (1 1/4")

Finish	Item No.
Matt aluminum	803.39.410
Matt nickel	803.39.610
Polished chrome	803.39.210
Oil-rubbed bronze	803.39.110
Matt gold	803.39.910
Slate	803.39.710

### **Diffusers and lenses**

#### Diffusers Häfele Loox5 for profiles - for 1103-1107 and 2101-2104



Dimensions

1.3 (1/16") 8 (5/16")

For profile

1104, 1107

(1/16") -11-(7/16")

For profile 1103, 1105, 1106, 2102, 2103, 2104



For profile 2101

(1/2")

> Material: Plastic

> Length: 2500 mm (98 7/16")

> Supplied with: 1 diffuser

Width	For profles	Transmittance		
		transparent ~90 %	white opal 70-80 %	black ~20 %
8 (5/16")	1104, 1107	_	833.95.804	833.95.808
11 (7/16")	1103.1105, 1106, 2102, 2103, 2104	833.95.807	833.95.805	833.95.809
13 (1/2")	2101	-	833.95.806	833.95.810

•

The white diffuser creates a uniform light.

The LED points are invisible from 120 LEDs/m. When using the black diffuser, LED points may be visible.

LED points are always visible when the transparent diffuser is used.

### Semi-round lens for corner profile 2195



> Material: Plastic > Cover: Milk

> Length: 2500 mm (98 7/16")

Item No.
833.74.807

#### Replacement lenses for 1190, 1191, 2190 and 2191





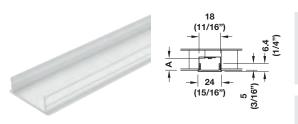
> Material: Plastic

> Length: 2500 mm (98 7/16")

Cover	Item No.
Frosted	833.74.780
Milk	833.74.781

### Lens cover and cooling strip

#### **Dado lens cover**



> Material: Plastic > Cover: Milk

> Length: 2500 mm (98 3/8")
> Application: For recess mounting

Item No. 833.00.733

Item No.

833.77.700



#### Note

Only for LED strips with max 9.6 W per m (3.0 W per ft).

### Häfele Loox cooling strip 2196



> Material: Aluminum

> L x W: 1000 x 10 mm (39 3/8" x 3/8")

> Height: 2 mm (1/16")

> Mounting: For screw fixing, drill holes

at 250 mm (9 13/16"), 500 mm (19 11/16"), and 750 mm (29 1/2")

		••		
250	10 250		250	2 (1/16") —
(9 13/16")	(9 13/16")	(9 13/16")	(9 13/16")	
				[ [ ] ] 10 (3/8")
				5` `

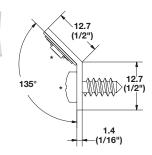


### LOX5

# **Mounting strips**

For LED Strip Lights

Profile 5115 - for Loox strip 135°



> Material/Color:

Plastic, white > Length: 2500 mm (98 7/16")

Item No.

833.00.800

#### Note

Loox LED strip and screw shown for application and position only.

### Corner profile 5116



12.7 (1/2")

> Material/Finish:

> Length:

> Application:

Solid Poplar Wood, natural

2500 mm (98 7/16")

For surface mounting

Item No. 833.02.840



#### Note

Loox LED strip shown for application and position

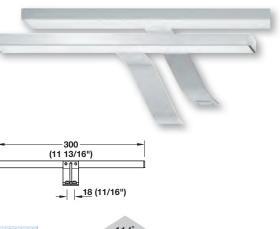
## Surface mounted light

Monochrome, length 300 mm (11 13/16"), 12 V



**HÄFELE** 





4000 K	114°		
1033 lx	淡	250 mm	(9 13/16")
258 lx		500 mm	(19 11/16")
115 lx	*	750 mm	(29 1/2")
64 lx	<b>*</b>	1000 mm	(39 3/8")

> Dimmable: Yes > Material: Aluminum

 $> L \times W \times H$ : 300 x 180 x 50 mm

(11 13/16" x 7 1/16" x 2")

> Energy efficiency class: Α+ > Degree of protection: IP44 > Number of LEDs: 27

> Mounting: For screw fixing

> Supplied with: 1 light with 2000 mm (78 3/4") lead,

including fixing materials

Loox5 12 V driver see page 130

Please order 6-piece adapter set 833.95.753

separately, see page 122

### Note

Loox lights and drivers are "Suitable for use within closet storage

x Color temperature	★ Wattage	E Luminous flux	Luminous efficacy	B Color rendering index CRI	Weighted energy consumpt.	Finish	Item No.
4000	3	200	67	84	3.30	Silver colored	833.74.070
4000	3	200	67	84	3.30	Chrome-plated	833.74.080

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice

## Recess/surface mounted lights

Modular monochrome, drill hole Ø: 58 mm (2 5/16"), 12 V/24 V







2700 K	3000 K	4000 K	5000 K	80°		
2600 lx	2650 lx	2700 lx	2800 lx	* -	250 mm	(9 13/16")
730 lx	750 lx	780 lx	800 lx	× -	500 mm	(19 11/16
320 lx	350 lx	345 lx	350 lx		750 mm	(29 1/2")
180 lx	185 lx	185 lx	190 lx		1000 mm	(39 3/8")

LED 2025

			80°	K	5000 K	4000 K	3000 K	2700 K
")	(9 13/16"	250 mm	>0<	lx	2135 lx	2025 lx	1990 lx	1870 lx
3")	(19 11/16	500 mm	>0:	lx	580 lx	540 lx	540 lx	500 lx
,	`		715					
	(29 1/2")	750 mm	-6-	lx	240 lx	235 lx	230 lx	210 lx
	(20 ./2 )	70011111	7					
	(20.2/0")	1000 mm	-	lv	135 ly	130 lv	105 ly	120 ly
	(00 0/0 )	1000 11111			100 1	100 1X	123 IX	120 1X
6'	(19 11/16 (29 1/2")	- 500 mm - 750 mm - 1000 mm	<b>※</b>	lx	240 lx		230 lx	210 lx

LED 2092/3092

### LED 2092 and LED 3092, equipped with high-quality Samsung® LEDs

> Dimmable:	Yes
> Material:	Aluminum
> Energy efficiency class:	A+

> Degree of protection: IP44 as recess mounted light IP20 as surface mounted light

> Mounting: For mounting in drilled hole, for clamp or screw fixing

58 mm (2 5/16")

> Drill hole Ø: > Supplied with: 1 light module



#### Note

The IP44 degree of protection is reduced to IP20 when surface mounting or recess mounting with through hole.

Loox lights and drivers are "Suitable for use within closet storage spaces"

#### Order reference

Please order lead and housing separately, see page 49.



5 12 V

Loox5 12 V driver see page 130

5 24 V

Loox5 24 V driver see page 131

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

HAFELE

## Recess/surface mounted lights

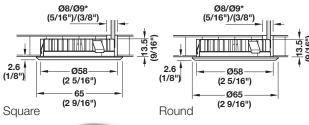
Modular monochrome, drill hole Ø: 58 mm (2 5/16"), 12 V/24 V

Häfele Loox LED 2025, Loox5 2092/3092

< Voltage	© Something Some	A Color temperature	★ Wattage	E Luminous flux	I Luminous  A efficacy	B. Color rendering index CRI	$R_9$	Weighted energy consumpt.	Item No.
5 12 V	LED 2025 (	compatible with	Loox5 lead with	n snap-in conne	ctor)				
		2700	3.8	270	71	>90	_	4.18	833.72.350
	4	3000	3.8	300	78	>90	_	4.18	833.72.351
		4000	3.8	306	80	>90	_	4.18	833.72.352
		5000	3.8	345	90	>83	_	4.18	833.72.323
	LED 2092								
		2700	3.4	220	65	>90	>55	3.74	833.72.474
	6	3000	3.4	240	71	>90	>55	3.74	833.72.475
	В	4000	3.4	250	74	>90	>55	3.74	833.72.476
		5000	3.4	260	76	>90	>55	3.74	833.72.477
5 24 V	LED 3092								
		2700	3.4	220	65	>90	>55	3.74	833.75.174
		3000	3.4	240	71	>90	>55	3.74	833.75.175
	6	4000	3.4	250	74	>90	>55	3.74	833.75.176
		5000	3.4	260	76	>90	>55	3.74	833.75.177



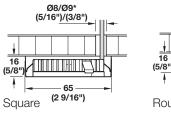
Recess mount housing

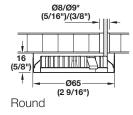




Surface mount housing

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice.





Housings are suitable for monochrome lights and for multi-white lights.



> Lead, 1.5 A/24 AWG, with snap-in connector

Voltage	Length	Item No.
5 12 V	1000 (39 3/8")	833.95.789
	2000 (78 3/4")	833.95.788
5 24 V	2000 (78 3/4")	833.95.791



> Housing, recess mounted, Plastic

Color	Round	Square
Black	833.72.168	833.72.172
Anthracite	833.72.380	833.72.383
Brown	833.72.381	833.72.384
Matt nickel-plated	833.72.170	833.72.174
Stainless steel colored	833.72.382	833.72.385
Silver colored	833.72.126	833.72.127
White, RAL 9003	833.72.171	833.72.175



Color	Round	Square
Black	833.72.160	833.72.164
Anthracite	833.72.193	833.72.195
Brown	833.72.192	833.72.196
Matt nickel-plated	833.72.162	833.72.166
Stainless steel colored	833.72.194	833.72.197
Silver colored	833.72.124	833.72.125
White, RAL 9003	833.72.163	833.72.167

Illuminating / 49

<sup>\*</sup> valid for multi-white plugs.

### Recess/surface mounted lights

Modular multi-white, drill hole Ø: 58 mm (2 5/16"), 12 V/24V





Häfele Loox5 LED 2091/3091





> Dimmable: Yes Aluminum > Material:

> Energy efficiency class: IP44 as recess mounted light > Degree of protection:

IP20 as surface mounted light

> Mounting: For mounting in drilled hole, for clamp or screw fixing

> Drill hole Ø: 58 mm (2 5/16") > Supplied with: 1 light module

2700 K	5000 K	80°		
2000 lx	2100 lx	※	250 mm	(9 13/16")
520 lx	550 lx	※	500 mm	(19 11/16")
220 lx	235 lx		750 mm	(29 1/2")
120 lx	125 lx	> <b> </b>	1000 mm	(39 3/8")



The IP44 degree of protection is reduced to IP20 when surface mounting or recess mounting with through hole.

Loox lights and drivers are "Suitable for use within closet storage spaces"

#### Order reference

Please order lead and housing separately, see page 51.



5 12 V

Note

Loox5 12 V driver see page 130



Loox5 24 V driver see page 131



Color control only via 6-way distributor Häfele Connect Mesh with multi-white adapter and remote control or smartphone. Please order separately, see Networking page 95.

Jimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

**HÄFELE** 



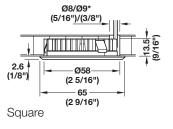
Modular multi-white, drill hole Ø: 58 mm (2 5/16"), 12 V/24 V

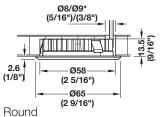
#### Häfele Loox5 LED 2091/3091

< Voltage	s Quantity	X Color temperature	✓ Wattage	Hux flux	E Luminous  S efficacy	B. Color rendering index CRI	$R_{s}$	Weighted energy consumpt.	Item No.
5 12 V	LED 2091								
	12	2700 5000	3.4	240 270	72 80	>90	>55	3.74	833.72.478
5 24 V									
	12	2700 5000	3.4	240 270	72 80	>90	>55	3.74	833.75.178



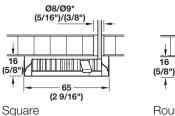
Recess mount housing

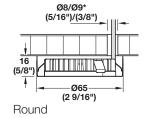






Surface mount housing









- > Lead, 1.5 A/24 AWG, with snap-in connector for multi-white lights
- > Length: 2000 mm (78 3/4")

Voltage	Item No.
5 12 V	833.95.787
<u>5 24 V</u>	833.95.790



> Housing, recess r	mounted, Plastic
---------------------	------------------

	Color	Round	Square
	Black	833.72.168	833.72.172
	Anthracite	833.72.380	833.72.383
	Brown	833.72.381	833.72.384
	Matt nickel-plated	833.72.170	833.72.174
	Stainless steel colored	833.72.382	833.72.385
	Silver colored	833.72.126	833.72.127
	White, RAL 9003	833.72.171	833.72.175



#### > Housing, surface mounted, Plastic

Color	Round	Square
Black	833.72.160	833.72.164
Anthracite	833.72.193	833.72.195
Brown	833.72.192	833.72.196
Matt nickel-plated	833.72.162	833.72.166
Stainless steel colored	833.72.194	833.72.197
Silver colored	833.72.124	833.72.125
White, RAL 9003	833.72.163	833.72.167

Housings are suitable for monochrome and multi-white lights.

\* valid for multi-white plugs.

## Recess mounted modular pucks

Metal trim rings for recess mounted modular pucks, drill hole: Ø58 mm (2 5/16")

#### **Recess mount housing**

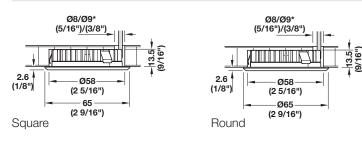


> Material:	Steel
> Suitable for:	Loox5 modular puck lights with a 58 mm (2 5/16")
	diameter drill hole: 2025, 2091, 2092, 3091, 3092



•			◆ IP20 ↑ IP44
	Finish	Round	Square
	Silver colored	833.72.500	833.72.506
·	Black	833.72.501	833.72.507
	White	833.72.502	833.72.508
	Polished chrome colored	833.72.503	833.72.509
	Brass colored	833.72.504	833.72.510
	Copper colored	833.72.505	833.72.511





<sup>\*</sup> For multi-white plugs.

**HÄFELE** 

IP20

# Surface mounted modular pucks

Metal trim rings for surface mounted modular pucks, drill hole: Ø58 mm (2 5/16")

#### **Surface mount housing**



> Material: Steel

> Suitable for:

Loox5 modular puck lights with a 58 mm (2 5/16") diameter drill hole: 2025, 2091, 2092, 3091, 3092

> Degree of protection: IP20 with surface mount housing





chrome colored

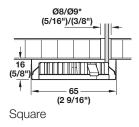
Finish Round Square 833.72.512 833.72.518 Silver colored 833.72.513 833.72.519 Black White 833.72.514 833.72.520 Polished chrome colored 833.72.521 833.72.515 Brass colored 833.72.516 833.72.522 Copper colored 833.72.517 833.72.523

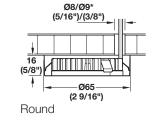


Brass colored









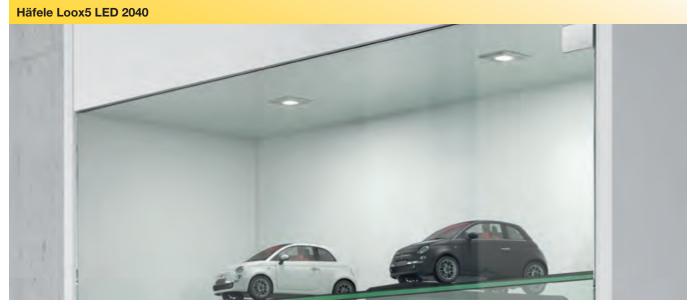
<sup>\*</sup> For multi-white plugs.



Modular monochrome, drill hole Ø: 35 mm (1 3/8"), 12 V

Recess/surface mounted lights







2700 K	3000 K	4000 K	5000 K	90°		
530 lx	660 lx	720 lx	800 lx	<b>※</b> -	250 mm	(9 13/16")
135 lx	180 lx	185 lx	220 lx		500 mm	(19 11/16")
55 lx	80 lx	85 lx	95 lx	<b>*</b> -	750 mm	(29 1/2")
35 lx	40 lx	50 lx	55 lx	× -	1000 mm	(39 3/8")

> Dimmable: Yes > Material: Aluminum

> Energy efficiency class:

> Degree of protection: IP44 as recess mounted light

IP20 as surface mounted light For mounting in drilled hole,

for clamp or screw fixing

> Drill hole Ø: 35 mm (1 3/8") > Supplied with: 1 light module



#### Note

> Mounting:

The IP44 degree of protection is reduced to IP20 when surface mounting or recess mounting with through hole.

Loox lights and drivers are "Suitable for use within closet storage spaces"

#### Order reference

Please order lead and housing separately, see page 55.





Loox5 12 V driver see page 130

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

HAFELE

# Recess/surface mounted lights

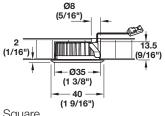
Modular monochrome, drill hole Ø: 35 mm (1 3/8"), 12 V

#### Häfele Loox5 LED 2040

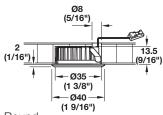
< Voltage	SOM	A Color temperature	★ Wattage	E Luminous	Uminous A efficacy	By Color rendering index CRI	Weighted energy consumpt.	Item No.
5 12 V		2700	1.5	75	50	90	1.65	833.72.370
	3	3000	1.5	88	59	90	1.65	833.72.371
	J	4000	1.5	96	64	90	1.65	833.72.372
		5000	1.5	110	73	83	1.65	833.72.333



Recess mount housing



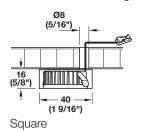
Square

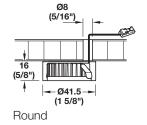


Round



Surface mount housing















#### > Lead, 1.5 A/24 AWG, with snap-in connector

Voltage	Length	Item No.
5 12 V	1000 (39 3/8")	833.95.789
	2000 (78 3/4")	833.95.788

#### > Housing, recess mounted, Plastic

Color	Round	Square
Black	833.72.184	833.72.188
Matt nickel-plated	833.72.186	833.72.190
Silver colored	833.72.145	833.72.146
White, RAL 9003	833.72.187	833.72.191

#### > Housing, surface mounted, Plastic

Color	Round	Square
Black	833.72.176	833.72.180
Matt nickel-plated	833.72.178	833.72.182
Silver colored	833.72.143	833.72.144
White, RAL 9003	833.72.179	833.72.183

### Recess/surface mounted lights

Monochrome, drill hole Ø: 26 mm (1"), 12 V/24 V

Häfele Loox5 LED 2090/3090





2700 K	3000 K	4000 K	5000 K	55°		
930 lx	990 lx	1005 lx	1005 lx	淡	250 mm	(9 13/16")
230 lx	240 lx	250 lx	260 lx	- <b>;</b> •• -	500 mm	(19 11/16")
95 lx	100 lx	110 lx	115 lx	*	750 mm	(29 1/2")
50 lx	55 lx	60 lx	60 lx	*	1000 mm	(39 3/8")

LED 2090

2700 K	3000 K	4000 K	5000 K	55°			
825 lx	870 lx	935 lx	940 lx	崇	H	250 mm	(9 13/16")
220 lx	225 lx	235 lx	245 lx		+	500 mm	(19 11/16")
95 lx	95 lx	100 lx	105 lx	*	-	750 mm	(29 1/2")
50 lx	55 lx	55 lx	60 lx	*	+	1000 mm	(39 3/8")
LED 30	90						

> Narrow beam angle for staging objects

> Dimmable: Yes > Material: Aluminum

> Energy efficiency class:

> Degree of protection: IP44 as recess mounted light IP20 as surface mounted light

> Mounting: For mounting in drilled hole, for clamp or screw fixing

> Drill hole Ø: 26 mm (1")

> Supplied with: 1 light module with 2000 mm

(78 3/4") lead



The IP44 degree of protection is reduced to IP20 when surface mounting or recess mounting with through hole.

Loox lights and drivers are "Suitable for use within closet storage spaces"

#### Order reference

Please order housing separately, see page 57.



5 12 V

Loox5 12 V driver see page 130



Loox5 24 V driver see page 131

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

HAFELE

# Recess/surface mounted lights

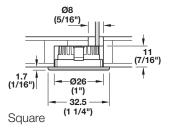
Monochrome, drill hole Ø: 26 mm (1"), 12 V/24 V

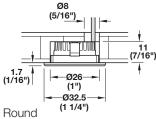
#### Häfele Loox5 LED 2090/3090

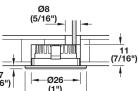
< Voltage	© SD	X Color temperature	✓ Wattage	E Luminous flux	Luminous efficacy	B Color rendering index CRI	$R_{\rm s}$	Weighted energy consumpt.	Item No.
5 12 V	LED 2090								
0 121		2700	1.2	80	67	>90	>60	1.32	833.72.470
	4	3000	1.2	90	75	>90	>60	1.32	833.72.471
	'	4000	1.2	95	79	>90	>60	1.32	833.72.472
		5000	1.2	100	83	>90	>60	1.32	833.72.473
5 24 V	LED 3090								
		2700	1.2	75	63	>90	>60	1.32	833.75.170
	4	3000	1.2	80	67	>90	>60	1.32	833.75.171
	I	4000	1.2	80	67	>90	>60	1.32	833.75.172
		5000	1.2	85	71	>90	>60	1.32	833.75.173



Recess mount housing







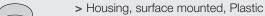


Surface mount housing

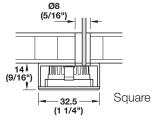


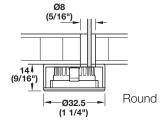
### > Housing, recess mounted, Plastic

Color	Round	Square
Black	833.89.225	833.89.232
Anthracite	833.89.226	833.89.233
Brown	833.89.227	833.89.234
Matt nickel-plated	833.89.223	833.89.230
Stainless steel colored	833.89.228	833.89.235
Silver colored	833.89.222	833.89.229
White, RAL 9003	833.89.224	833.89.231



Color	Round	Square
Black	833.89.239	833.89.246
Anthracite	833.89.240	833.89.247
Brown	833.89.241	833.89.248
Matt nickel-plated	833.89.237	833.89.244
Stainless steel colored	833.89.242	833.89.249
Silver colored	833.89.236	833.89.243
White, RAL 9003	833.89.238	833.89.245

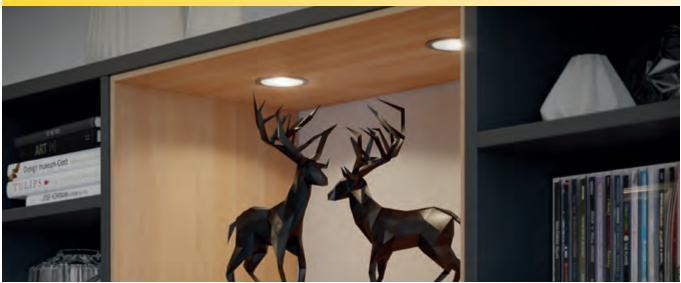




## Recess/surface mounted lights

Monochrome, drill hole Ø: 58 mm (2 5/16"), 12 V/24 V

Häfele Loox LED 2094/3094





2700 K	3000 K	4000 K	5000 K	105°		
800 lx	930 lx	940 lx	965 lx	澿	250 mm	(9 13/16")
200 lx	230 lx	235 lx	240 lx	<b>-</b> ∳;-	- 500 mm	(19 11/16")
90 lx	100 lx	105 lx	110 lx	*	- 750 mm	(29 1/2")
50 lx	60 lx	60 lx	60 lx	*	-1000 mm	(39 3/8")

LED 2094

2700 K	3000 K	4000 K	5000 K	105°		
860 lx	995 lx	1000 lx	1030 lx	※ -	250 mm	(9 13/16")
215 lx	250 lx	250 lx	260 lx	- <b>ķ</b> -	500 mm	(19 11/16")
95 lx	110 lx	110 lx	115 lx	* -	750 mm	(29 1/2")
54 lx	60 lx	60 lx	65 lx	* -	1000 mm	(39 3/8")

LED 3094

> Dimmable:	Yes
> Housing Material:	Aluminum
> Diffuser Material:	Plastic
> Number of LEDs:	6
> Wattage:	2.5 W
> Lifetime:	30,000 h
> Color rendering index Ra:	> 90
> Color rendering index R9:	> 50
Weighted energy	

> Weighted energy

consumption: 2.75 kWh / 1000 h

> Energy efficiency class: A > Degree of protection: IP2

> Mounting: Recess mounting in drilled hole,

or surface mounting with trim

ring (sold separately)

> Drill hole Ø: 58 mm (2 5/16")

> Supplied with: 1 light with 2000 mm (78 3/4")

lead



5 12 V

Loox5 12 V driver see page 130



Loox5 24 V driver see page 131



#### Note

Loox lights and drivers are "Suitable for use within closet storage spaces"

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to atter specifications without notice

### HAFELE

# Recess/surface mounted lights

Monochrome, drill hole Ø: 58 mm (2 5/16"), 12 V/24 V

#### Häfele Loox LED 2094/3094

> LEDs: 6 2.5 W > Wattage:

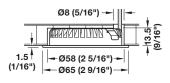
< Voltage	Quantity LEDs	X Color temperature	★ Wattage	E Luminous flux	E Luminous A efficacy	Chrome	Black	White	Bronze	Nickel colored	
5 12 V	LED 2094										
		2700	2.5	135	54	833.72.530	833.72.534	833.72.538	833.72.542	833.72.546	
	120	3000	2.5	150	60	833.72.531	833.72.535	833.72.539	833.72.543	833.72.547	
	120	4000	2.5	160	64	833.72.532	833.72.536	833.72.540	833.72.544	833.72.549	
		5000	2.5	165	66	833.72.533	833.72.537	833.72.541	833.72.545	833.72.548	
5 24 V	LED 3094										
		2700	2.5	140	56	833.75.320	833.75.324	833.75.328	833.75.332	833.75.546	
	100	3000	2.5	160	64	833.75.321	833.75.325	833.75.329	833.75.333	833.75.547	
	120	4000	2.5	165	66	833.75.322	833.75.326	833.75.330	833.75.334	833.75.548	
		5000	2.5	175	70	833.75.323	833.75.327	833.75.331	833.75.335	833.75.549	



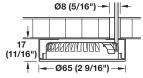


> Surface mounted trim ring, Aluminum

Finish	Item No.
Chrome colored	833.72.809
Black	833.72.806
White	833.72.807
Bronze colored	833.72.808
Nickel colored	833.72.528







Surface mounting



## Recess/surface mounted lights

Monochrome, drill hole Ø: 26 mm (1"), 12 V







> Dimmable: Yes Aluminum > Material: > Energy efficiency class:

> Degree of protection: IP44 as recess mounted light IP20 as surface mounted light

> Number of LEDs: 3

> Mounting: For mounting in drilled hole, for clamp

or screw fixing

> Drill hole Ø: 26 mm (1")

1 light with 2000 mm (78 3/4") lead > Supplied with:

3000 K	4000 K	5000 K	90°		
650 lx	650 lx	650 lx	禁	250 mm	(9 13/16")
163 lx	163 lx	163 lx		500 mm	(19 11/16")
72 lx	72 lx	72 lx	*	750 mm	(29 1/2")
40 lx	40 lx	40 lx	> <b>ф</b> <	1000 mm	(39 3/8")



12V 512V

Loox5 12 V driver see page 130 Please order 6-piece adapter set 833.95.753 separately, see page 122.



The IP44 degree of protection is reduced to IP20 when surface mounting or recess mounting with through hole.



Loox lights and drivers are "Suitable for use within closet storage spaces"

< Voltage	★ Color temperature	■ Wattage	E Luminous flux	Efficacy  Figure 1. The state of the state o	"W Color rendering index CRI	Weighted energy consumpt.	Silver colored anodized	Polished chrome- plated
12 V	3000	1.5	105	70	82	1.65	833.72.040	833.72.043
	4000	1.5	105	70	87	1.65	833.72.041	833.72.044
	5000	1.5	105	70	88	1.65	833.72.042	833.72.045

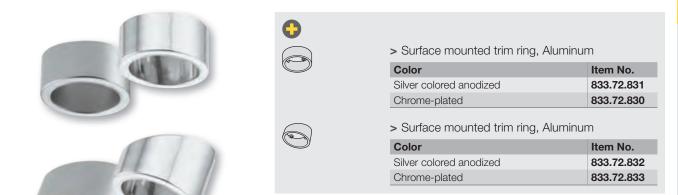
Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

### **HXFELE**

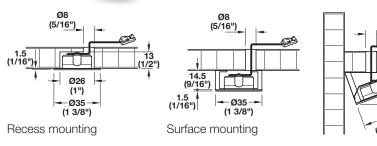
## Recess/surface mounted lights

Monochrome, drill hole Ø: 26 mm (1"), 12 V

#### Häfele Loox LED 2022



Ø8 (5/16")



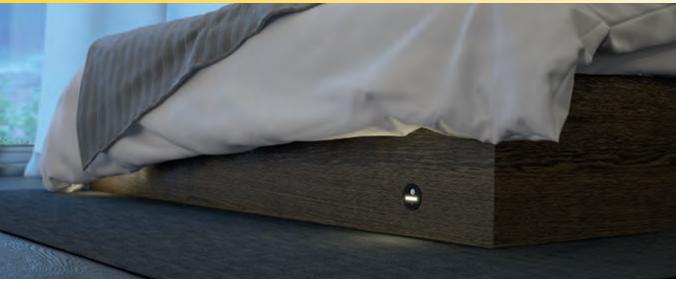


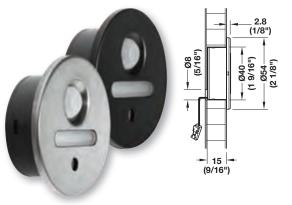
### **Recess mounted lights**

Monochrome, sensor-controlled, drill hole Ø: 40 mm (1 9/16"), 12 V



Häfele Loox LED 2028 - with motion detector





> Not dimmable

> Material: Stainless Steel, Plastic

> Version: With motion detector active from ambient

light less than 15 lx

> Energy efficiency class: A+

> Degree of protection: IP44

> Delay time: approx. 2 min.

> Sensor range: 0-3000 mm (0-9' 10 1/8")

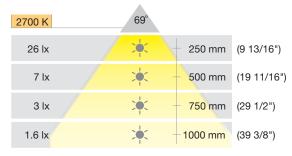
> Number of LEDs: 3

> Mounting: For mounting in drilled hole

> Drill hole Ø: 40 mm (1 9/16")

> Supplied with: 1 light with 2000 mm (78 3/4") lead,

fixing materials





Note

Loox5 12 V driver see page 130 Please order 6-piece adapter set 833.95.753 separately, see page 122.



Loox lights and drivers are "Suitable for use within closet storage spaces"

< Voltage	A Color temperature	■ Wattage  The state of th	M Luminous flux	Efficacy  Fefficacy	"a Color rendering index CRI	Weighted energy consumpt.	Black	Matt
12 V	2700	0.3	4	13	90	0.37	833.73.111	833.73.110

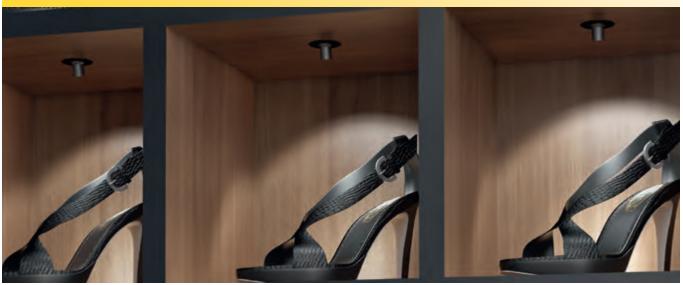
Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

**HÄFELE** 

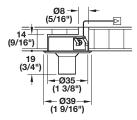
## **Recess mounted lights**

Spotlight monochrome, Ø 35 mm (1 3/8"), 12 V

#### Häfele Loox LED 2093







### Silver colored

2700 K	3000 K	4000 K	5000 K	24°		
5440 lx	5500 lx	5700 lx	5950 lx	禁	250 m	nm (9 13/16")
1220 lx	1280 lx	1320 lx	1360 lx	禁	- 500 m	nm (19 11/16")
535 lx	568 lx	579 lx	598 lx	※	750 m	nm (29 1/2")
290 lx	308 lx	315 lx	327 lx	- <u>;</u> ф:-	1000 m	im (39 3/8")

#### Black

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice.

				A		
2700 K	3000 K	4000 K	5000 K	24°		
5380 lx	5580 lx	5710 lx	5930 lx	*X	250 mm	(9 13/16")
1200 lx	1270 lx	1340 lx	1330 lx	談	- 500 mm	(19 11/16")
522 lx	557 lx	588 lx	580 lx	淡	750 mm	(29 1/2")
283 lx	302 lx	322 lx	316 lx	->ф(-	1000 mm	(39 3/8")

> Dimmable: Yes

> Material/Color: Aluminum

Swiveling light head > Version:

Powerful spotlight Metal housing

> Energy efficiency class: A+ > Number of LEDs:

For mounting in drilled hole, for clamp > Mounting:

fixing

> Drill hole Ø: 35 mm (1 3/8")

1 light with 2000 mm (78 3/4") lead > Supplied with:

5 12 V

Loox5 12 V driver see page 130

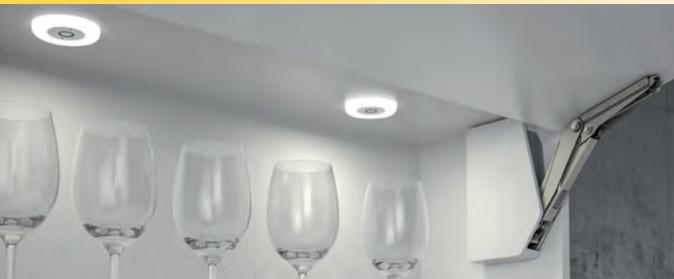


Loox lights and drivers are "Suitable for use within closet storage

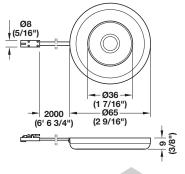
< Voltage	Color	X Color temperature	■ Wattage	E Luminous flux	<ul><li>Luminous</li><li>efficacy</li></ul>	<sub>∞</sub> Color rendering	ea index CRI	Item No.
5 12 V		2700	1.0	70	70	90	>50	833.72.055
0 121	Silver	3000	1.0	75	75	90	>50	833.72.056
	colored	4000	1.0	78	78	90	>50	833.72.057
		5000	1.0	80	80	90	>50	833.72.058
		2700	1.0	50	50	90	>50	833.72.075
	Black	3000	1.0	53	53	90	>50	833.72.076
	DIACK	4000	1.0	56	56	90	>50	833.72.077
		5000	1.0	60	60	90	>50	833.72.078

Monochrome, Ø 65 mm (2 9/16"), 12 V









> Dimmable: Yes

> Material/Finish: Aluminum, silver colored, Plastic

> Diameter: 65 mm (2 9/16") > Height: 9 mm (3/8")

> Energy efficiency class: A+> Degree of protection: IP20> Number of LEDs: 27

> Mounting: For screw fixing

> Supplied with: 1 light with 2000 mm (78 3/4") lead,

fixing materials

12 V 5 12

Loox5 12 V driver see page 130 Please order 6-piece adapter set 833.95.753 separately, see page 122.



#### Note

Loox lights and drivers are "Suitable for use within closet storage spaces"

3000 K	4000 K	5000 K	117			
867 lx	884 lx	918 lx	涂	- 2	50 mm	(9 13/16")
216 lx	221 lx	229 lx	- <b>)</b> ¢-	- 5	00 mm	(19 11/16")
96 lx	98 lx	102 lx	<b>*</b>	- 7	50 mm	(29 1/2")
54 lx	55 lx	57 lx	<b>*</b>	- 10	00 mm	(39 3/8")

< Voltage	A Color temperature	★ Wattage	E Luminous flux	☐ Luminous ★ efficacy	"a Color rendering index CRI	Weighted energy consumpt.	Item No.
12 V	3000	2.6	190	73	85	2.86	833.72.050
	4000	2.6	208	80	85	2.86	833.72.051
	5000	2.6	218	84	85	2.86	833.72.052

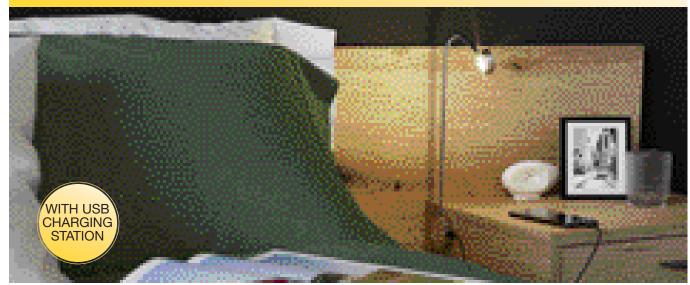
Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to atter specifications without notice.

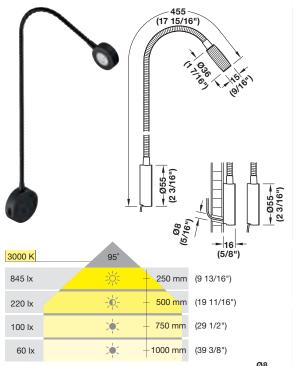
HAFELE

### Flexible surface mounted lights

Monochrome with USB, 12 V/24 V

Häfele Loox5 LED 2034/3034





Lead, 5 A/18 AWG, with snap-in connector	
------------------------------------------	--

Voltage V	2.0 meter	1.0 meter
5 12 V	833.95.830	833.95.831
5 24 V	833.95.835	833.95.836

> Version: Integrated 5 V / 2.5 A USB charging

station; push button switch for 2 brightness levels; magnetic cover for base;

modular power lead

> Material: Aluminum

 $> L \times W \times H$ : 455 x 55 x 15.5 mm

(17 15/16" x 2 3/16" x 5/8")

> Color temperature: 3000 K (warm white) > Wattage (including USB): Max. 17 W (light 1.5 W)

> Luminous flux: 120 lm > Luminous efficacy: 80 lm/W > Color rendering index Ra: ≥90

> Mounting: For screw mounting under magnetic cover

> Supplied with: 1 light, including mounting materials

#### Order reference

Please order 5A modular lead separately



5 12 V

Loox5 12 V driver see page 130. Loox5 24 V driver see page 131.

5 24 V

Min. 20 W driver per light for optimum operation of

the USB charging station.



Loox lights and drivers are "Suitable for use within closet storage spaces"

Voltage V	Black	Chrome-plated
5 12 V	833.74.088	833.74.089
<b>5</b> 24 V	833.75.088	833.75.089



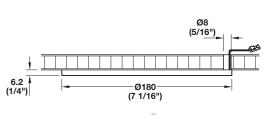
Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

Monochrome, Ø 180 mm (7 1/16"), 24 V

Häfele Loox LED 3023







3000 K	4000 K	110°		
1874 lx	2273 lx	※ -	250 mm	(9 13/16")
468 lx	568 lx	※ -	500 mm	(19 11/16")
208 lx	252 lx		750 mm	(29 1/2")
117 lx	142 lx	<b>*</b>	1000 mm	(39 3/8")

> Dimmable: Yes

Material/Color: Plastic, silver coloredHeight: 6.2 mm (1/4")

> Energy efficiency class: A++> Degree of protection: IP20> Number of LEDs: 77

> Mounting: For screw fixing

> Supplied with: 1 light with 2000 mm (78 3/4") lead,

fixing materials

#### Note

Use only with Loox drivers

Loox lights and drivers are "Suitable for use within closet storage spaces"

24 V 5 24 V

Loox5 24 V driver see page 131 Please order 6-piece adapter set 833.77.838 separately, see page 122.

< Voltage	A Color temperature	✓ Wattage	E Luminous flux	☐ Luminous À efficacy	"a Color rendering index CRI	Weighted energy consumpt.	Item No.
24 V	3000	4.8	362	75	82	5.50	833.77.130
	4000	4.8	408	85	82	5.50	833.77.131

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice.

Monochrome, 205 x 205 mm (8 1/16" x 8 1/16"), 24 V

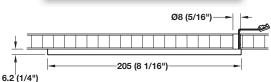


**HÄFELE** 









> Dimmable: Yes

> Material/Color: Plastic, silver colored

205 x 205 mm (8 1/16" x 8 1/16") > L x W:

> Height: 6.2 mm (1/4")

> Energy efficiency class: A++ > Degree of protection: IP20 > Number of LEDs: 70

> Mounting: For screw fixing

1 light with 2000 mm (78 3/4") lead, > Supplied with:

fixing materials

#### 3000 K 4000 K 110° 2153 lx 2581 lx 250 mm (9 13/16") 538 lx 645 lx 500 mm (19 11/16") 239 lx 286 lx -)0(-750 mm (29 1/2") -:0:-134 lx 161 lx 1000 mm (39 3/8")



Use only with Loox drivers

Loox lights and drivers are "Suitable for use within closet storage

spaces"



Loox5 24 V driver see page 131 Please order 6-piece adapter set 833.77.838

separately, see page 122.

< Voltage	A Color temperature	✓ Wattage	E Luminous	Inminous  A efficacy	"a Color rendering index CRI	Weighted energy consumpt.	Item No.
24 V	3000	5.8	430	74	82	7.15	833.77.120
	4000	5.8	530	91	82	7.15	833.77.121

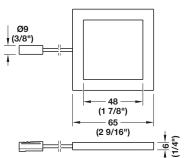
Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice.

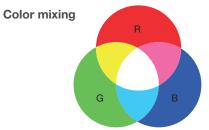
RGB, 65 x 65 mm (2 9/16" x 2 9/16"), 12 V/24 V

Häfele Loox5 LED 2081/3081









> Material: Plastic

> L x W: 65 x 65 mm (2 9/16" x 2 9/16")

> Height: 6 mm (1/4")
> Degree of protection: IP20
> Refraction angle: 115°

> Mounting: For screw fixing

> Supplied with: 1 light with 2000 mm (78 3/4") lead,

fixing materials

5 12 V Loox5 12 V driver see page 130

5 24 V driver see page 131

Note

Loox lights and drivers are "Suitable for use within closet storage spaces"

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

Color control only via 6-way distributor Häfele Connect Mesh with RGB adapter and remote control or smartphone.

Please order separately, see Networking, page 96.

#### **RGB** lights

- > Mix any combination of intensive light colors
- > Creative decorative effects
- > Create an invigorating or relaxing atmosphere

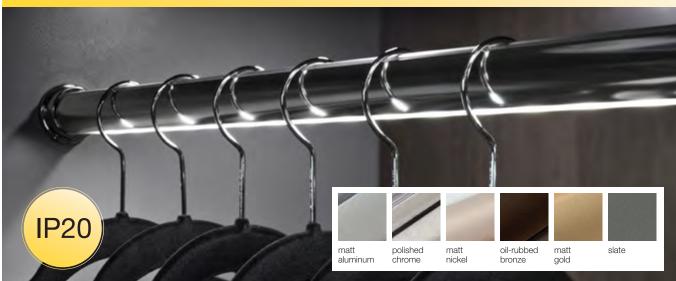
< Voltage	Number of TEDs	X Color temp.	■ Wattage	E Luminous flux	Huminous efficacy	Weighted energy consumpt.	Item No.
5 12 V	Häfele Loox5 LED	2081					
	6	RGB	0.7	20	29	0.77	833.74.127
5 24 V	Häfele Loox5 LED	3081					
	6	RGB	0.7	20	29	0.77	833.77.230

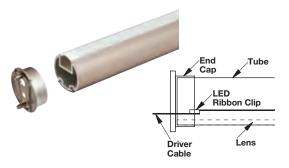
**HÄFELE** 

## Lighted wardrobe tubes

Elite wardrobe tubes, 6 finishes, 12 V

#### Profile 5111 with Loox LED 2065





3000 K	4000 K	120°		
1090 lx	1120 lx	× -	250 mm	(9 13/16")
455 lx	460 lx	- <b>Þ</b> -	500 mm	(19 11/16
245 lx	260 lx		750 mm	(29 1/2")
150 lx	155 lx		1000 mm	(39 3/8")

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

- > CRI 90 lights are Title 24 compliant
- > CRI 90 lights offer more vibrant, true color rendering than lower CRI
- > A great way to brighten up your closet space
- > 2 color temperatures available
- > 6 finishes to choose from
- > Comes ready to install
- > Tube is cut 6 mm (1/4") shorter than nominal size to allow room for end caps and driver cable exit
- > Degree of protection: IP20

#### Note

Position cable around and out of tube between lens and end cap or through end cap exit hole.

Loox lights and drivers are "Suitable for use within closet storage spaces"



5 12 V

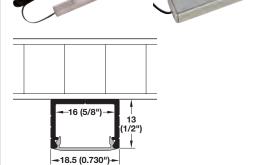
Loox5 12 V driver see page 130

Light Color (K)	3000 (warm	white)			4000 (cool white)				
Matt aluminum	833.96.020	833.96.021	833.96.022	833.96.023	833.96.024	833.96.025	833.96.026	833.96.027	
Polished chrome	833.96.028	833.96.029	833.96.030	833.96.031	833.96.032	833.96.033	833.96.034	833.96.035	
Matt nickel	833.96.036	833.96.037	833.96.038	833.96.039	833.96.040	833.96.041	833.96.042	833.96.043	
Oil-rubbed bronze	833.96.044	833.96.045	833.96.046	833.96.047	833.96.048	833.96.049	833.96.050	833.96.051	
Matt gold	833.96.052	833.96.053	833.96.054	833.96.055	833.96.056	833.96.057	833.96.058	833.96.059	
Slate	833.96.060	833.96.061	833.96.062	833.96.063	833.96.064	833.96.065	833.96.066	833.96.067	
Length	457 (18")	610 (24")	762 (30")	915 (36")	457 (18")	610 (24")	762 (30")	915 (36")	
Wattage	2.2	2.9	3.7	4.4	2.2	2.9	3.7	4.4	
Lumen	213	283	354	425	224	299	373	448	
CRI	90*	90*							
Material	Aluminum	Aluminum							
Supplied with	Tube, lens, Lo	oox5 2065 flexib	ole strip light, 20	00 mm (78 3/4 <sup>1</sup>	) driver cable, 2	end caps			

With inline dimmer switch, 12 V

#### Profile 2091 with Loox LED 2068





3000 K	4000 K	120°		
2250 lx	2300 lx	* -	250 mm	(9 13/16")
940 lx	950 lx	× -	500 mm	(19 11/16")
505 lx	510 lx	<b>*</b>	750 mm	(29 1/2")
310 lx	320 lx		1000 mm	(39 3/8")

- > CRI 90 lights are Title 24 compliant
- > Life time: 30,000 hours
- > Supplied ready to install
- > Optimal lengths for installing under your wall cabinets to brighten up your countertop workspace
- > Linkable to other light bars see page 71

•

5 12 V

Loox5 12 V driver see page 130

•

#### Note

Loox lights and drivers are "Suitable for use within closet storage spaces"

#### Components

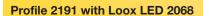
> Profile: 2091 - see page 36.
> LED strip: 2068 - see page 10.
> Mounting brackets: see page 36.
> Inline touch dimmer: 833.95.751

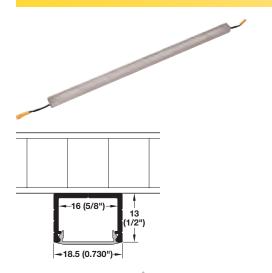
Light Color (K) Lumen per watt	3000 (warm white) 101				4000 (cool w	4000 (cool white)			
Item No.	833.88.738	833.88.730	833.88.732	833.88.731	833.88.734	833.88.740	833.88.737	833.88.735	
Length	229 (9")	381 (15")	457 (18")	533 (21")	2229 (9")	381 (15")	457 (18")	533 (21")	
Wattage	1.4	2.9	3.6	4.3	1.4	2.9	3.6	4.3	
LEDs	18	36	45	54	18	36	45	54	
Lumen	146	291	364	437	150	300	375	450	
Item No.	833.88.729	833.88.739	833.88.738	-	833.88.736	833.88.741	833.88.742	-	
Length	686 (27")	762 (30")	1143 (45")	_	686 (27")	832 (33")	1143 (45")	_	
Wattage	5.8	6.5	10.1	-	5.8	7.2	10.1	-	
LEDs	72	81	126	_	72	90	126	_	
Lumen	582	655	1019	-	582	750	1050	-	
Material	erial Aluminum; Lens: Plastic, opal								
Supplied with	2000 mm (78	3/4") driver conn	nection cable wit	h integrated swit	tch, 100 mm (4"	) female mini dri	ver cable, mount	ing brackets	

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice



With linkable cable, 12 V





3000 K	4000 K	120°		
2250 lx	2300 lx	淡	250 mm	(9 13/16")
940 lx	950 lx	淡	500 mm	(19 11/16"
505 lx	510 lx	> <b> </b>	750 mm	(29 1/2")
310 lx	320 lx		1000 mm	(39 3/8")

- > CRI 90 lights are Title 24 compliant
- > CRI 90 lights offer more vibrant, true color rendering than lower CRI products
- > Life time: 30,000 hours
- > Supplied ready to install
- > Optimal lengths for installing under your wall cabinets to brighten up your countertop workspace
- > Linkable to other light bars see page 70



5 12 V

Loox5 12 V driver see page 130



#### Note

Loox lights and drivers are "Suitable for use within closet storage spaces"

#### Components

> Profile: 2091 - see page 36.
> LED strip: 2068 - see page 10.
> Mounting brackets: see page 36.

> Lead cables: 100 mm (4") male and female

Light Color (K)	3000 (warm v	white)			4000 (cool white)				
Lumen per watt	101				104				
Item No.	833.88.700	833.88.701	833.88.702	833.88.703	833.88.714	833.88.715	833.88.716	833.88.717	
Length	152 (6")	229 (9")	305 (12")	381 (15")	152 (6")	229 (9")	305 (12")	381 (15")	
Wattage	1.0	1.7	2.4	3.1	1.0	1.7	2.4	3.1	
LEDs	12	21	30	39	12	21	30	39	
Lumen	97	170	243	315	100	175	250	325	
Item No.	833.88.704	833.88.705	833.88.706	833.88.707	833.88.718	833.88.719	833.88.720	833.88.721	
Length	457 (18")	533 (21")	610 (24")	686 (27")	457 (18")	533 (21")	610 (24")	686 (27")	
Wattage	3.8	4.6	5.3	6.0	3.8	4.6	5.3	6.0	
LEDs	48	57	66	75	48	57	66	75	
Lumen	388	461	534	606	400	475	550	625	
Item No.	833.88.708	833.88.709	833.88.710	833.88.711	833.88.722	833.88.723	833.88.724	833.88.725	
Length	762 (30")	832 (33")	915 (36")	991 (39")	762 (30")	832 (33")	915 (36")	991 (39")	
Wattage	6.7	7.4	8.2	8.9	6.7	7.4	8.2	8.9	
LEDs	84	93	102	111	84	93	102	111	
Lumen	679	752	825	897	700	775	850	925	
Item No.	833.88.712		833.88.713		833.88.726		833.88.727		
Length	1067 (42")		1143 (45")		1067 (42")		1143 (45")		
Wattage	9.6		10.3		9.6		10.3		
LEDs	120		129	129		120		129	
Lumen	970		1043	1043		1000			
CRI	90*								
Material	Aluminum; Le	ns: Plastic, opal							

100 mm (4") male mini driver cable, 100 mm (4") female mini driver cable, mounting brackets

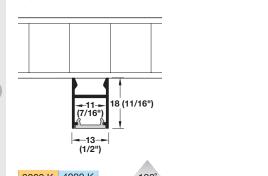
Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

Supplied with

With inline dimmer switch, 12 V

#### Profile 2103 with Loox LED 2068





30	100 K	4000 K	120		
22	50 lx	2300 lx	※ -	250 mm	(9 13/16")
9	40 lx	950 lx	淡·	500 mm	(19 11/16")
5	05 lx	510 lx	> <b> </b>	750 mm	(29 1/2")
3	10 lx	320 lx		1000 mm	(39 3/8")

- > CRI 90 lights are Title 24 compliant
- > Life time: 30,000 hours
- > Supplied ready to install
- > Optimal lengths for installing under your wall cabinets to brighten up your countertop workspace
- > Linkable to other light bars see page 73

5 12 V

Loox5 12 V driver see page 130



#### Note

Loox lights and drivers are "Suitable for use within closet storage spaces"

#### Components

> Profile: 2103 - see page 34.
> LED strip: 2068 - see page 10.
> Mounting brackets: see page 36.
> Inline touch dimmer: 833.89.281

Light Color (K)	3000 (warm	white)			4000 (cool w	hite)		
Lumen per watt	101				104			
Item No.	833.70.647	833.70.648	833.70.649	833.70.650	833.70.661	833.70.662	833.70.663	833.70.664
Length	152 (6")	229 (9")	305 (12")	381 (15")	152 (6")	229 (9")	305 (12")	381 (15")
Wattage	0.7	1.4	2.2	2.9	0.7	1.4	2.2	2.9
LEDs	9	18	27	36	9	18	27	36
Lumen	73	146	218	291	75	150	225	300
Item No.	833.70.651	833.70.652	833.70.653	833.70.654	833.70.665	833.70.666	833.70.667	833.70.668
Length	457 (18")	533 (21")	610 (24")	686 (27")	457 (18")	533 (21")	610 (24")	686 (27")
Wattage	3.6	4.3	5	5.8	3.6	4.3	5	5.8
LEDs	45	54	63	72	45	54	63	72
Lumen	364	437	509	582	375	450	525	600
Item No.	833.70.655	833.70.656	833.70.657	833.70.658	833.70.669	833.70.670	833.70.671	833.70.672
Length	762 (30")	832 (33")	915 (36")	991 (39")	762 (30")	832 (33")	915 (36")	991 (39")
Wattage	6.5	7.2	7.9	8.6	6.5	7.2	7.9	8.6
LEDs	81	90	99	108	81	90	99	108
Lumen	655	728	800	873	675	750	825	900
Item No.	833.70.659		833.70.660		833.70.673		833.70.674	
Length	1067 (42")		1143 (45")		1067 (42")		1143 (45")	
Wattage	9.4		10.1		9.4		10.1	
LEDs	117		126		117		126	
Lumen	946		1019		975		1050	
CRI	90*							
Material	Aluminum; Le	ns: Plastic, opal						
Supplied with	2000 mm (78	3/4") driver con	nection cable wi	th integrated swi	tch. 100 mm (4	') female mini dri	ver cable, moun	ting brackets

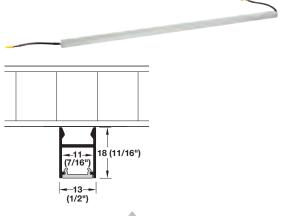
Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to atter specifications without notice



With linkable cable, 12 V







	13— (1/2")	_		
3000 K	4000 K	120°		
2250 lx	2300 lx	※ -	250 mm	(9 13/16")
940 lx	950 lx	** -	500 mm	(19 11/16")
505 lx	510 lx	<b>*</b>	750 mm	(29 1/2")
310 lx	320 lx		1000 mm	(39 3/8")

- > CRI 90 lights are Title 24 compliant
- > CRI 90 lights offer more vibrant, true color rendering than lower CRI
- > Life time: 30,000 hours
- > Supplied ready to install
- > Optimal lengths for installing under your wall cabinets to brighten up your countertop workspace
- > Linkable to other light bars see page 72





Loox5 12 V driver see page 130



#### Note

Loox lights and drivers are "Suitable for use within closet storage

#### Components

> Profile: 2103 - see page 34. > LED strip: 2068 - see page 10. > Mounting brackets: see page 36.

> Lead cables: 100 mm (4") male and female

Light Color (K) Lumen per watt	,				,	4000 (cool white) 104			
Item No.	833.70.818	833.70.819	833.70.820	833.70.821	833.70.832	833.70.833	833.70.834	833.70.835	
Length	152 (6")	229 (9")	305 (12")	381 (15")	152 (6")	229 (9")	305 (12")	381 (15")	
Wattage	1.0	1.7	2.4	3.1	1.0	1.7	2.4	3.1	
LEDs	12	21	30	39	12	21	30	39	
Lumen	97	170	243	315	100	175	250	325	
Item No.	833.70.822	833.70.823	833.70.824	833.70.825	833.70.836	833.70.837	833.70.838	833.70.839	
Length	457 (18")	533 (21")	610 (24")	686 (27")	457 (18")	533 (21")	610 (24")	686 (27")	
Wattage	3.8	4.6	5.3	6.0	3.8	4.6	5.3	6.0	
LEDs	48	57	66	75	48	57	66	75	
Lumen	388	461	534	606	400	475	550	625	
Item No.	833.70.826	833.70.827	833.70.828	833.70.829	833.70.840	833.70.841	833.70.842	833.70.843	
Length	762 (30")	832 (33")	915 (36")	991 (39")	762 (30")	832 (33")	915 (36")	991 (39")	
Wattage	6.7	7.4	8.2	8.9	6.7	7.4	8.2	8.9	
LEDs	84	93	102	111	84	93	102	111	
Lumen	679	752	825	897	700	775	850	925	
Item No.	833.70.830		833.70.831		833.70.844		833.70.845		
Length	1067 (42")		1143 (45")		1067 (42")		1143 (45")		
Wattage	9.6		10.3		9.6		10.3		
LEDs	120		129		120		129		
Lumen	970		1043		1000		1075		
CRI	90*								
Material	Aluminum; Lei	ns: Plastic, opal							
Supplied with	100 mm (4") n	nale mini driver d	able, 100 mm (4	1") female mini dr	river cable, mou	nting brackets			

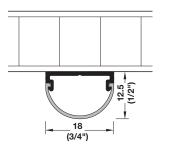
Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice

## Surface mounted drawer lights

With IR sensor, 12 V

#### Profile 2194 with Loox LED 2065





3000 K	4000 K	120°		
816 lx	901 lx	***	250 mm	(9 13/16")
204 lx	225 lx	***	500 mm	(19 11/16")
91 lx	100 lx	***	750 mm	(29 1/2")
51 lx	5 <mark>6 l</mark> x	淡	1000 mm	(39 3/8")

> CRI 90 lights are Title 24 Compliant

> CRI 90 lights offer more vibrant, true color rendering than lower CRI products

> Lifetime: 50,000 hours

> Supplied ready to install

> Optimal lengths for installing behind face frames and in frameless cabinets for drawer applications (brackets required)

> W x H: 18 x 12.5 mm (3/4" x 1/2")

5 12 V

Loox5 12 V driver see page 130

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#### Note

Loox lights and drivers are "suitable for use within closet storage spaces"

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#### Drawer light bar clip

> Optional brackets for frameless cabinet mounting

Item No.
260.26.933

#### Components

Drawer profile: see page 41.
LED strip: 2065 - see page 10.
Door sensor see page 41.

Light Color (K)	3000 (warm white)			4000 (cool white)			
Lumen per watt	102			107			
Item No.	833.73.865	833.73.866	833.73.867	833.73.871	833.73.872	833.73.873	
Length	250 (10")	330 (13")	406 (16")	250 (10")	330 (13")	406 (16")	
Wattage	0.73	1.03	1.33	0.73	1.03	1.33	
LEDs	21	30	39	21	30	39	
Lumen	60	85	111	56	80	104	
Item No.	833.73.868	833.73.869	833.73.870	833.73.874	833.73.875	833.73.876	
Length	559 (22")	711 (28")	864 (34")	559 (22")	711 (28")	864 (34")	
Wattage	1.93	2.53	3.13	1.93	2.53	3.13	
LEDs	21	30	39	21	30	39	
Lumen	170	213	272	160	200	256	
CRI	90*						
Material	Aluminum, clear anodized; Lens: milk						
Supplied with	2000 mm (78 3/8") d	cable, mounting bracke	ets				

Jimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

HAFELE

### **Bath fixtures**

#### Häfele multi-functional mirror







Touch Control Icons:









- > Make-up lighting, mood lighting, demister to prevent the mirror from steaming up and a sound system in one product
- > Pre-configured mirror unit is easy to install
- > Integrated touch switch on mirror surface allows for easy cleaning

mirror color.

2700 K, >90

DC 12 V

2700/4000 K, >90

> Demister stand-by after 45 min.

> Lighting a front color temperature/color rendering index:

> Background lighting color temperature/color rendering index:

> Nominal voltage:

> Input voltage: 100-240 V; 50-60 Hz > Designer touch switch blue, warm white, red stand-by/Operation:

> Sound system/password: Bluetooth® sound transducer, 0000 > Material: Mirror: Glass, LED profile: Aluminum

> Mounting: Vertically or horizontally

> Supplied with: Drilling template, connection lead for 90°

AC plug, z-bracket, fixing material

Memory function for previously selected





#### Note

The mirror is equipped with built-in LED lights that cannot be replaced. LED lights energy efficiency: Class A

WxHXD	Lumen	Wattage	Item No.
900 x 600 x 54 (35 7/16" x 23 5/8" x 2 1/8")	1080	95	983.19.512
900 x 900 x 54 (35 7/16" x 35 7/16" x 2 1/8")	1300	102	983.19.522
1200 x 900 x 54 (47 1/4" x 35 7/16" x 2 1/8")	1560	111	983.19.532

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice

## **Battery-operated light**

With motion sensor, rechargeable, 120 x 65 mm (4 3/4" x 2 9/16")

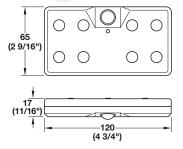




Häfele Loox LED 9004







4000 K	90°		
270 lx		250 mm	(9 13/16")
95 lx	<b>&gt;</b>	500 mm	(19 11/16")
50 lx	*	750 mm	(29 1/2")
30 lx	<b>*</b>	-1000 mm	(39 3/8")

> Version: With motion detector, twilight switch with built-in rechargeable lithium-ion

battery

> Material/Color: Plastic, silver colored

> L x W: 120 x 65 mm (4 3/4" x 2 9/16")

> Height: 17 mm (11/16")

> Energy efficiency class: A++> Degree of protection: IP20 > Number of LEDs:

> Sensor range 0-2000 mm (0-78 3/4")

120° > Sensor angle: > Delay time: 30 sec. > Operating time: 8 hrs. > Charging time: 3 hrs.

> Two operating modes: Motion: permanently active motion detector

Auto: motion detector active with residual

brightness of <5 lx

> Mounting: Mounting plate for screw fixing;

light for sliding on

> Supplied with: 1 light with mounting plate

> for screw fixing and 0.8 m micro-USB cable

The light can be recharged using the supplied micro-USB cable

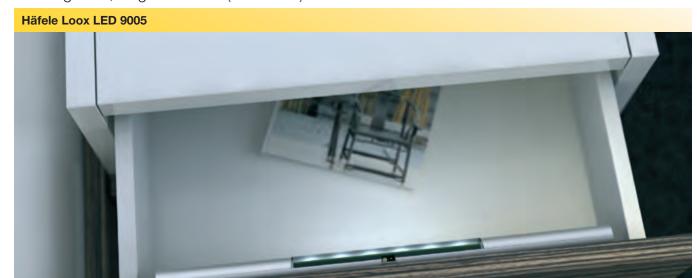
X Color temperature	★ Wattage	Im flux	M Luminous A efficacy	"a Color rendering index CRI	Item No.
4000	0.8	55	69	>90	833.87.021

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

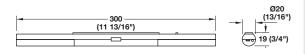
# HAFELE

## **Battery-operated drawer light**

Rechargeable, length 300 mm (11 13/16")







110°

-0-

250 mm

(9 3/16")

500 mm (19 11/16")

750 mm (29 1/2")

1000 mm (39 3/8")

> Version: With automatic shut-off > Material: Plastic

20 mm (13/16") > Diameter: > Length: 300 mm (11 13/16")

IP20 > Degree of protection: > Number of LEDs: 6 > Operating time: 6 hrs. > Charging time: 3-4 hrs.

> 2 operating modes: 1. Door sensor switch (factory setting):

> Door open, light on - door closed, light off. Energy-saving mode after 30 seconds: LED flashes 2 to 3 times and then turns off.

2. Sensor switch: Manual on/off switching

at the sensor

> Mounting: The light is slid onto the mounting plate > Supplied with: 1 light with mounting plate for screw fixing

and 0.8 m (31 1/2") micro-USB cable

The light can be recharged using the supplied micro-USB cable

ж Color temperature	■ Wattage	M flux	A efficacy	Endering index CRI	Color	Item No.
6500	0.6	51	85	82	Silver color lacquered	833.87.020

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice

6500 K

350 lx

85 lx

38 lx

22 lx



# **Extending**

### **Charging stations**

ESC 2001 USB charging station, modular

> Page 79



### Sound systems

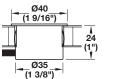
105 sound system	> Page 80
420 E sound system, exciter speakers	> Page 81

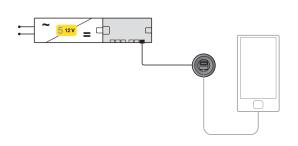


# **Charging stations**

Häfele Loox ESC 2001 USB charging station, modular - for 12 V system







Material: Plastic, matt
 Output voltage: 5 V
 Output current: 2 A
 Power consumption: Max. 15 W

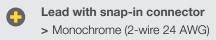
> Power consumption: Max. 15 W > Drill hole Ø: 35 mm (1 3/8")

> Mounting: For mounting in drilled hole,

for clamp fixing

> Supplied with: 1 USB charging station

Color	Round	Straight- edged
Black	833.73.751	833.73.754
Nickel-plated	833.73.753	833.73.756
White	833.73.752	833.73.755



Length	Item No.
100 (39 3/8")	833.95.789
2000 (78 3/4")	833.95.788

Please order lead separately.



### LOX5

# **Sound systems**









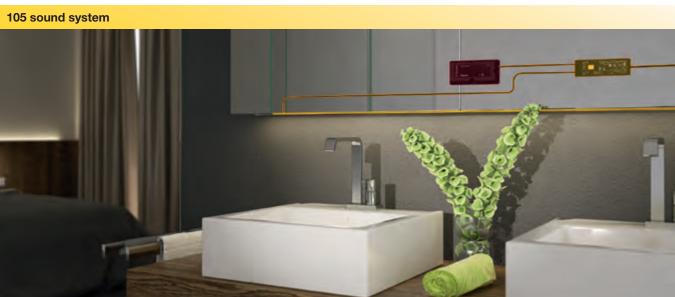
















Sound system (mono with integrated exciter speaker)

> Material/Color: Plastic, black

 $> L \times W \times H$ : 140 x 66 x 25 mm (5 1/2" x 2 5/8" x 1")

> Power consumption: Operation: 7 W,

standby: <0.3 W

> Music wattage: 5 W (RMS)

> Reception range: Max. 10,000 mm (32' 9 11/16")

> Mounting: For screw fixing

> Supplied with: 1 Bluetooth® receiver and 2000 mm

(78 3/4") lead

Item No. 822.65.000



Please observe the installation regulations for bathrooms.





Loox5 12 V driver see page 130 Please order 6-piece adapter set 833.95.753

separately, see page 122.



Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to atter specifications without notice

### **Sound systems**

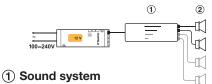




> App for individual settings available on request







2 Exciter speakers

• PI

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice

Please order extension lead 2000 mm (78 3/4") 833.73.766 for exciter speaker separately.

> Material/Color: Plastic, black

> L x W x H: 140 x 45 x 15 mm (5 1/2" x 1 3/4" x 9/16")
> Power Operation with 2 exciter speakers: Max. 19 W, operation with 4 exciter speakers: Max. 32 W,

standby: <0.3 W

> Music wattage: Operation with 2 or 4 exciter speakers:

2 x 10 W (RMS)

> Reception range: Max. 10 m (32' 9 11/16")

> Mounting: For screw fixing

> Supplied with: 1 Bluetooth® receiver with 2000 mm (78 3/4")

lead and 4 connections for exciter speakers,

incl. 2 exciter speakers

Item No. 822.65.034



Please observe the installation regulations for bathrooms. Can be installed on glass and mirror glass 3–6 mm (1/8"–1/4"), acrylic glass 3 mm (1/8"), chipboard 10–20 mm (3/8"–3/4") and mineral composite boards.





Loox5 12 V driver see page 130 Please order 6-piece adapter set 833.95.753 separately, see page 122.



#### Exciter speaker

Dimensions:
 Wattage:
 Mounting:
 Supplied with:
 Ø 65 x 22 mm (2 9/16" x 7/8")
 Rated/music load capacity 4/15 W
 For screw fixing or for glue fixing
 1 exciter speaker with 1 m (39 3/8")
 speaker lead

Item No. 822.65.039



### **LOX**5

# **Switching**

#### Sensor switches

Sensor switch	> Page 83
Door sensor switch	> Page 83
Motion detector	> Page 83
Dimmer	> Page 84
Capacitive switch/	> Page 84
dimmer	
Sensor switch, surface	> Page 85
mounted	
Door sensor switch, surface	> Page 85
mounted	
Dimmer, surface mounted	> Page 85



### Sensor switch for aluminum profiles

Dimmer	> Page 86
Motion detector	> Page 86
Inline profile switches	> Page 87
Dimmer motion detector	> Page 88



#### **Mechanical switches**

Universal door contact switch	> Page 89
Door contact switch	> Page 89
Push switch	> Page 89
Rocker switch	> Page 90
Housing for switch, surface mounted	> Page 90
Magnetic reed switch	> Page 91



#### **Dimmer interface**

Dimmer interface 0–10 V, modular > Page 92



### Multi-switch box, multi-driver box

Multi-switch box	> Page 93
Multi-driver box	> Page 93



#### Symbol overview

Sensor switch Touch-Free, soft on/off switching		<b>-</b> 99
Door sensor switch Soft on/off switching		—(m))
Motion detector Automatic on/off switching		<b>ッ</b> *
<b>Dimmer</b> Soft on/off switching and dimming		10%
Capacitive switch/dimmer Soft on/off switching and dimming		
Universal door contact switch On/off switching	*	<b>*</b>
Door contact switch On/off switching, door closed = light off, door open = light on		-(11) - *
Push switch On/off switching		<u> </u>
Rocker switch On/off switching		<b>S</b>



### HAFELE

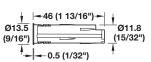
### Sensor switches

#### Häfele Loox sensor switch, modular - touch-free, soft on/off switching

#### **TOUCH-FREE**







> Material/Color: Plastic, silver colored

> Degree of protection: IP20

> Sensor range: 0-80 mm (0-3 1/8")

> Power consumption: ≤0.3 W
> Drill hole Ø: 12 mm (1/2")
> Supplied with: 1 switch

Item No.
922 90 127



Please order lead with snap-in connector for modular switches driver separately. Length 2000 mm (78 3/4"): Item No. 833.89.142, see page 89.

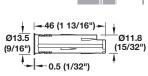


On/off state is stored without the need for power supply (memory function).

#### Häfele Loox door sensor switch, modular - soft on/off switching







> Material/Color: Plastic, silver colored

> Degree of protection: IP20

> Sensor range: 0–100 mm (0–4")

> Power consumption: ≤0.3 W
> Drill hole Ø: 12 mm (1/2")
> Supplied with: 1 switch

Item No.
833.89.128

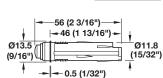


Please order lead with snap-in connector for modular switches driver separately. Length 2000 mm (78 3/4"): Item No. 833.89.142, see page 89.

#### Häfele Loox motion detector, modular - automatic on/off switching







> Material/Color: Plastic, silver colored

> Degree of protection: IP20

> Sensor range: 0–3000 mm (0–118")

> Sensor angle: 120 °
> Power consumption: ≤0.1 W
> Drill hole Ø: 12 mm (1/2")
> Supplied with: 1 motion detector

Delay time	Item No.
30 sec.	833.89.129
320 sec.	833.89.148



Please order lead with snap-in connector for modular switches driver separately. Length 2000 mm (78 3/4"): Item No. 833.89.142, see page 89.

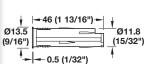
### Sensor switches

#### Häfele Loox dimmer, modular - soft on/off switching and dimming

TOUCH/ TOUCH-FREE







> Material/color: Plastic, silver colored

> Degree of protection: IP20 > Power consumption: ≤0.3 W > Drill hole Ø: 12 mm (1/2") > Supplied with: 1 dimmer

	Sensor range	Item No.
Touch	_	833.89.058
Touch-free	0-60 mm (0-2 3/8')	833.89.126



Please order lead with snap-in connector for modular switches driver separately. Length 2000 mm (78 3/4"): Item No. 833.89.142, see page 89.

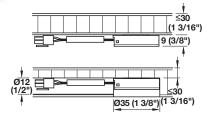


Dimming value is stored without the need for voltage supply (memory function)

#### Häfele Loox capacitive switch/dimmer, modular - soft on/off switching and dimming







This completely invisible operating solution opens up new possibilities in continuously adjustable light control.

- > Manual operation (proximity sensor), memory function
- > Concealed installation in wood, glass or stone (not in ferrous metal materials) at a maximum depth of 30 mm (1 3/16")
- > For screw fixing or recess mounting (drill hole Ø 35 mm (1 3/8")
- > A distance of min. 500 mm (19 11/16") away from electromagnetic fields (power lines, microwave) must be adhered to.

Material/Color: Plastic, silver colored
Diameter: 35 mm (1 3/8")
Height: 10 mm (3/8")

> Degree of protection: IP20
> Power consumption: ≤1 W
> Supplied with: 1 switch

Item No.
833.89.133



Please order lead with snap-in connector for modular switches driver separately. Length 2000 mm (78 3/4"): Item No. 833.89.142, see page 89.

### Sensor switches

#### Häfele Loox sensor switch, surface mounted modular - touch-free on/off switching



> Material/Color: Plastic, silver colored

> L x W x H: 40 x 40 x 8.5 mm (1 9/16" x 1 9/16" x 5/16")

> Degree of protection: IP20

> Sensor range: 0-80 mm (0-3 1/8")

> Power consumption: ≤0.3 W

> Supplied with: 1 switch with fixing material

> Item No. 833.89.136

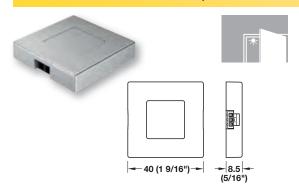
HXFELE

Please order lead with snap-in connector for modular switches driver separately. Length 2000 mm (78 3/4"):

Item No. 833.89.142, see page 89.

On/off state is stored without the need for power supply (memory function).

#### Häfele Loox door sensor switch, surface mounted modular - soft on/off switching



> Material:

> L  $\times$  W  $\times$  H: 40 x 40 x 8.5 mm (1 9/16" x 1 9/16" x 5/16")

> Degree of protection: IP20

0-100 mm (0-4") > Sensor range:

> Power consumption: ≤0.3 W

> Supplied with: 1 switch with fixing material

Silver colored	Black	White
833.89.137	833.89.182	833.89.183



> Material:

 $> L \times W \times H$ :

> Sensor range: > Power consumption:

> Supplied with:

> Degree of protection: IP20

Please order lead with snap-in connector for modular switches

40 x 40 x 8.5 mm (1 9/16" x 1 9/16" x 5/16")

driver separately. Length 2000 mm (78 3/4"):

Item No. 833.89.142, see page 89.

#### Häfele Loox dimmer, surface mounted modular - soft on/off switching and dimming





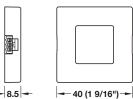






Touch Touch-free

(S)	
<del></del>	-



/
7

	/	/
/		

	_
6	3





≤0.3 W

0-100 mm (0-4")

1 switch with fixing material



Please order lead with snap-in connector for modular switches driver separately. Length 2000 mm (78 3/4"): Item No. 833.89.142, see page 89.

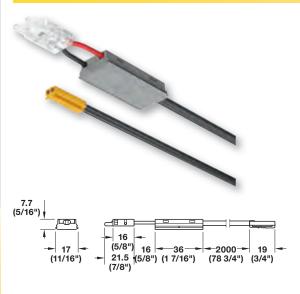


Dimming value is stored without the need for voltage supply (memory function)

## Inline profile switches

For monochrome 8 mm (5/16") strip lights in aluminum profiles

Loox5 aluminum profile dimmer - soft on/off switching with dimming

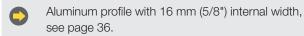


> Area of application:	For monochrome 8 mm (5/16") Loox5
	LED strip lights in aluminum profiles with
	16 mm (5/8") internal width
> Material/Color:	Plastic, silver colored
> Drill hole Ø:	Plug 8 mm (5/16")
> Mounting:	For push fitting into aluminum profile

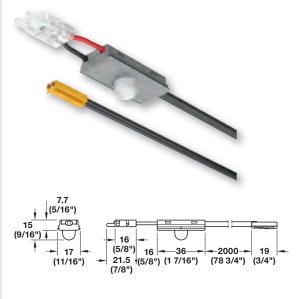
> Mounting:	For push fitting into aluminum profile
> Supplied with:	1 switch with clip/plug and 2 m (78 3/4")
	lead

Voltage	Max. connected wattage	Item No.
5 12 V	60	833.95.751
5 24 V	90	833.77.836

•	Dimming value is stored without the need for voltage supply
	(memory function)



### Loox5 aluminum profile motion detector - automatic on/off switching



> Area of application:	For monochrome 8 mm (5/16") Loox5 LED strip lights in aluminum profiles with 16 mm (5/8") internal width
> Material/Color:	Plastic, silver colored
> Drill hole Ø:	Plug 8 mm (5/16")
> Mounting:	For push fitting into aluminum profile
> Sensor range:	0–3000 mm (0–118 1/8")
> Delay time:	30 sec.
> Supplied with:	1 switch with clip/plug and 2 m (78 3/4") lead

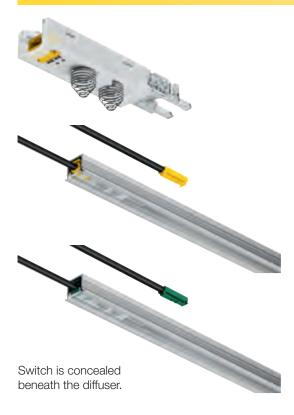
Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.95.750
5 24 V	90	833.77.835



# **HÄFELE**

## Inline profile switches

#### Loox5 aluminum profile touch dimmer switch



		12 (1/2")
19 (3/4")	(3/8") 39 (1 9/16")	<b>—</b>
	<b>→</b> 53 (2 1/16") <b>→</b>	

(5/16") in Loox5 aluminum profiles with

11 mm (7/16") internal width

Profile 1103 > Suitable for:

> Profile 1105 Profile 2102 Profile 2103 Profile 2104 Plastic

> Material: > Switching function Soft on/off > Dimming range 5%-100%

> Memory function Dimming level is after switching off

> Assembly

> Sensor range 3 meters (10 ft.)

> Assembly Slides into aluminum profile

> Installation information Switch is concealed underneath the

diffuser.

Voltage	Max wattage	Item No.
5 12 V	60	833.89.281
<b>5</b> 24 V	120	833.89.291



#### Order reference

Please order modular lead separately.

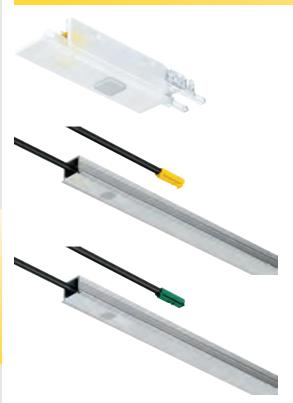
12 V/5 A, 2000 mm: 833.95.830 12 V/5 A, 1000 mm: **833.95.831** 24 V/5 A, 2000 mm: 833.95.835 24 V/5 A, 1000 mm: 833.95.836



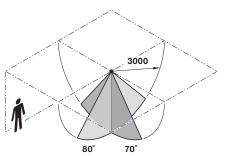
### LOX5

### Inline profile switches

#### Loox5 aluminum profile motion detector - automatic on/off switching



		12 (1/2")
19 (3/4")	46	+
	02 (2 1/10 )	



>	Version:	For	'n	nor	100	chro	me	Lo	XC	LED	strip	s 8	3 mm	1

(5/16") in Loox5 aluminum profiles with

11 mm (7/16") internal width

> Suitable for: Profile 1103
Profile 1105
Profile 2102

Profile 2103
Profile 2104

Material: PlasticColor/surface: OpalSwitching function Soft on/off

> Delay time 3 options: 1 minute, 3 minutes, 5 minutes

Horizontal sensor angle 80°Vertical sensor angle 70°

> Sensor range 3 m (10 ft.)

> Assembly Slides into aluminum profile

> Installation information Shorten LED strip light by approx. 50 mm

(1 15/16") in relation to the total length of the aluminum profile. Shorten the diffuser

by 45.5 mm (1 13/16").

Voltage	Max wattage	Delay time	Item No.
5 12 V		60	833.89.282
	60	180	833.89.283
		300	833.89.284
<b>5</b> 24 V		60	833.89.292
	120	180	833.89.293
		300	833.89.294



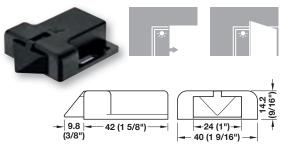
#### Order reference

Please order modular lead separately.

12 V/5 A, 2000 mm: **833.95.830** 12 V/5 A, 1000 mm: **833.95.831** 24 V/5 A, 2000 mm: **833.95.835** 24 V/5 A, 1000 mm: **833.95.836** 

### **Mechanical switches**

#### Häfele Loox universal door contact switch, modular - on/off switching



The universal door contact switch is suitable for hinged doors or single sliding doors.

> Material/Color: Plastic, black

> Degree of protection: IP20

 $> L \times W \times H$ : 51.8 x 40 x 14.2 mm

(2 1/16" x 1 9/16" x 9/16")

> Supplied with: 1 switch with fixing material

> Item No. 833.89.143

HAFELE



Please order 2000 mm (78 3/4") lead with snap-in connector for modular switches driver separately below, Item No. 833.89.142.

#### Häfele Loox lead with snap-in connector - for modular switches



> Material/Color: Plastic, black > Degree of protection: IP20 > Supplied with: 1 lead

Length	Item No.
500 (19 11/16")	833.89.140
1000 (39 3/8")	833.89.141
2000 (78 3/4")	833.89.142



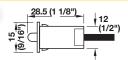
Required for modular switches



Drill hole Ø for plug: 12 mm (1/2")

#### Häfele Loox door contact switch - on/off switching







> Material/Color: Plastic, black

> Degree of protection: IP20

> Drill hole Ø: 12 mm (1/2") 28 mm (1 1/8") > Length:

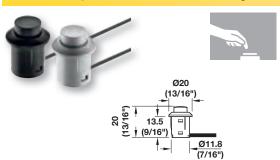
> Supplied with: 1 switch with 2000 mm (78 3/4") lead

Item No. 833.89.059



Drill hole Ø for plug: 12 mm (1/2")

#### Häfele Loox push switch - on/off switching



> Material: Plastic

> Length: 20 mm (13/16") > Drill hole Ø: 12 mm (1/2")

> Supplied with: 1 switch with 2000 mm (78 3/4") lead

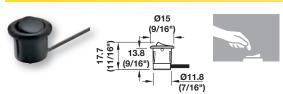
Color	Item No.
black	833.89.108
gray	833.89.107



Drill hole Ø for plug: 12 mm (1/2")

### **Mechanical switches**

#### Häfele Loox rocker switch - on/off switching



> Material/Color: Plastic, black
> Diameter: 15 mm (9/16")
> Height: 17.7 mm (11/16")
> Drill hole Ø: 12 mm (1/2")

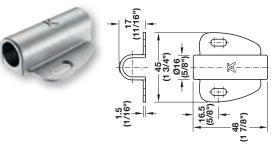
> Supplied with: 1 switch with 2000 mm (78 3/4") lead

Item No. 833.89.106

•

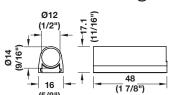
Drill hole Ø for plug: 12 mm (1/2")

#### Housing for switch - surface mounted



Material/Color: Plastic, silver colored
 Supplied with: 1 housing
 Application: For switch Ø 12 mm (1/2")

Ø	LxWxH	Item No.
16 (5/8")	48 x 45 x 17 (1 7/8" x 1 3/4" x 11/16")	833.89.090
14 (9/16")	48 x 16 x 17 (1 7/8" x 5/8" x 11/16")	833.89.092



Suitable for 32 mm (1 1/4") series drilled holes

#### Housing - for switch, face frame, surface mounted





> Material: Plastic

> Application: For switch  $\varnothing$  12 mm (1/2")

> W x D x H: 19 x 19 x 25.4 mm (3/4" x 3/4" x 1")

Item No.
830.38.423
830.38.424



# Magnetic reed switches

For interior cabinet lighting

#### Magnetic reed switch with in-line lead cable



> Mat	erial/F	-inisł	า:	Pla	estic	, blacł

Interior cabinet lighting > Area of application:

Light turns on when cabinet door > Function:

is opened; when door closes

(magnet and reed switch are <2" apart),

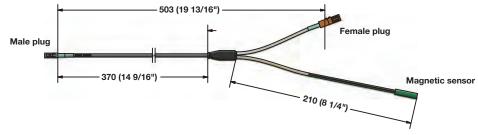
the lights will turn off.

> Length: 306 mm (12")

> Supplied with: 1 reed switch sensor/lead cable, 1 plug,

1 socket, 1 magnet

Voltage	Max. connected wattage W	Item No.
12 V	60	833.02.855
24 V	90	833.05.856



#### Housing for magnetic reed switch



	Motorial	Dlootic
>	Material:	Plastic

> Area of application: For mounting magnetic reed switch

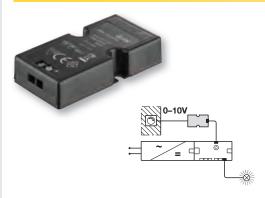
and cables

> Length: 500 mm (59 1/16") > Supplied with: 1 reed housing

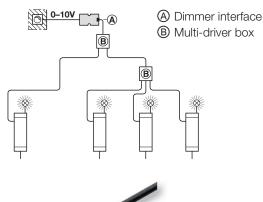
Color	Item No.
Anthracite	833.02.674
Beige	833.02.675
Gray	833.02.676
White	833.02.677

### **Dimmer interface**

Häfele Loox dimmer interface 0-10 V, modular - for 12 V and 24 V



Installation example: Wall dimmer with  $\varnothing$ -10 V control output. No connection of the dimmer to power cord voltage.





#### **Design advantage**

> Wall dimmers can be used for the control of furniture lights in the design of the house installation

> Material/Color: Plastic, black

> L x W x H: 68.9 x 34.7 x 13.5 mm

(2 11/16" x 1 3/8" x 9/16")

> Degree of protection: IP20

> Supplied with: 1 dimmer interface

Item No. 833.89.144

•

Use dimmer only, if monochrome lights are connected. Not suitable for the connection of converters or control devices. Direct connection to a normal household dimmer with a 0–10 V control output and connection via a lead with snap-in connector for modular switches to the switching input of a 12 V or 24 V Loox driver or a distributor.

Please order lead with snap-in connector for modular switches driver separately.

Installation example: Multi-driver boxes for controlling several drivers (12 V, 24 V) or distributors with switching function.

No connection of the dimmer to power cord voltage.



Drill hole Ø for plug: 12 mm (1/2")



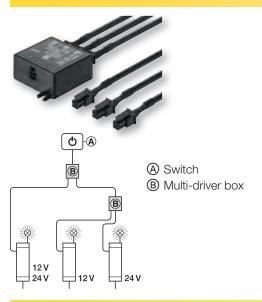
#### Lead with snap-in connector for modular switches

Length	Item No.
500 (19 11/16")	833.89.140
1000 (39 3/8")	833.89.141
2000 (78 3/4")	833.89.142



### **Switch accessories**

#### Häfele Loox multi-driver box



Material/Color: Plastic, blackStandby power 1.5 W

consumption W:

> L x W H: 50 x 40 x 19 mm (2" x 1 9/16" x 3/4")
> Supplied with: 1 multi-driver box with 3 x 1000 mm

(39 3/8") lead for switch

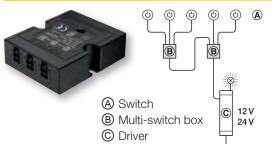
Item No. 833.89.061

Max. 3 x 75 W per multi-driver box.

Up to 3 LED drivers with different voltages or distributors with a switching function can be controlled with 1 switch.

Several lights in the room can be switched on and off with one switch. These can also be 3 of the same driver if you require additional power in a 12 V system, for example.

#### Häfele Loox multi-switch box



1 LED driver operated by up to 3 switches. Allows the LED driver or distributor with switching function to be switched on and off from different positions.



Drill hole Ø for plug: 12 mm (1/2")

Alternative to the supplied 1000 mm (39 3/8") lead for multi-switch box.

The drill hole  $\varnothing$  for the male plug and the female socket of the switch leads is 12 mm (1/2").



Drill hole Ø for plug: 12 mm (1/2")

Alternative to the supplied three 1000 m (39 3/8") leads for multi-driver box.

The drill hole  $\varnothing$  for the male plug and the female socket of the switch leads is 12 mm (1/2").

> Function:

2 operating modes can be selected using an integrated toggle switch.

Cross: On/off switching at different switches

**No cross:** Switching on with switch 1, 2 or 3. For switching off, all switches that were switched on have to be activated again

> Material/Color: Plastic, black

> Standby power consumption W: ≤0.3

> L x W x H: 55 x 45 x 16 mm

(2 3/16" x 1 3/4" x 5/8")

> Degree of protection: IP20

> Supplied with: 1 multi-switch box

With 1000 mm (39 3/8") lead for

switch

Item No. 833.89.066

# •

#### Lead from multi-boxes to switching input

> Supplied with: 1 lead

Supplied With.

500 (19 11/16")	833.89.068
2000 (78 3/4")	833.89.069

#### Häfele Loox extension lead - for switches



> Length: 2000 mm (78 3/4")

> Supplied with: 1 lead

Item No.
833.89.067



Drill hole Ø for plug: 12 mm (1/2")

Can also be used for the multi-switch and multi-driver boxes.

The maximum lead length of a switch is 6000 mm (236 1/4").

The drill hole  $\emptyset$  for the male plug and the female socket of the switch leads is 12 mm (1/2").



# **Networking**

Bluetooth® wireless system components

### Häfele Connect Mesh 6-way distributor

6-way distributor > Page 96



#### Häfele Loox5 multi-white and RGB adapters

Multi-white adapter	> Page 97
RGB adapter	> Page 97



#### Häfele Connect Mesh remote controls and wall switches

Remote control	> Page 98
Push button, wall-mounted	> Page 98
4-button remote and wall plate kit	> Page 99
4-button remote for Decora wall plate	> Page 99
EnOcean wireless wall switch	> Page 100



#### Häfele Connect Mesh interface

2-channel interface > Page 101



Dimensional data not binding, Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice.

#### Häfele Connect BLE box

BLE box > Page 102





### **Networking**

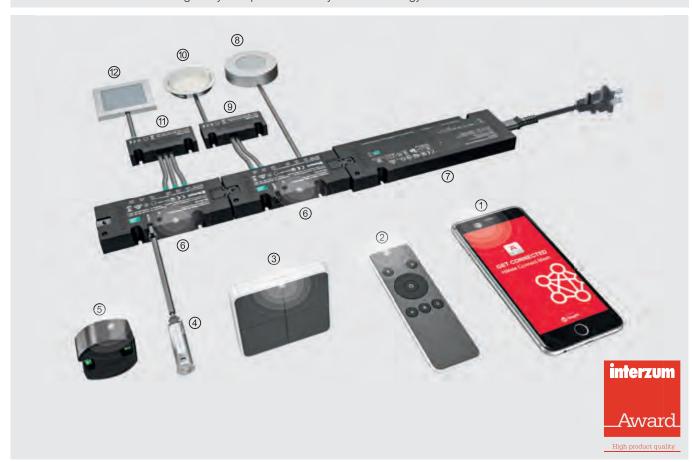
#### Häfele Connect Mesh

Häfele Connect Mesh consists of components for the smart control of lights and electrically operated fittings in furniture – with optional integration of the electrical installation of buildings.

Mesh means networking, and it uses the Bluetooth® Mesh network technology by the Bluetooth® Special Interest Group, which has the potential to become the global smart building standard.

#### The advantages are:

- > Scalable: From the simple remote control of a furniture light to complex concepts in hotels or store fixtures
- > Fail-safe: All nodes in the network forward control information
- > Protected: Individual network key on your personal mobile device
- > Standardized: Bluetooth® is a globally accepted and widely used technology





Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

Dimensional data not binding.

#### Häfele Connect Mesh active components

#### > Senso

- 1 Mobile device with Häfele Connect app
- ② Remote control
- 3 Push button, wall-mounted
- 4 Loox switch (switching function programmable via app)

#### > Actuator and sensor

- ⑤ 2-channel interface: 2 switching input ports (switching function programmable via app) Output port 80–230 V
- 6 Häfele Connect Mesh 6-way distributor

#### Passive components without networking function

- 7 Drive
- 8 Monochrome light or electrically operated fitting
- Multi-white adapter
- 10 Multi-white light
- 1 RGB adapter
- 12 RGB light



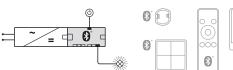
### LOX5

### **Distributor**

Häfele Connect Mesh 6-way distributor - with switching function

- > Control several light colors on one box.
- > Each output port can be controlled individually.







Häfele Connect Mesh App

- > Detects and reports new nodes in the network independently
- > Intuitively assign functions to switches
- > Set up light groups and scenes
- > Share your protected access with others
- > The Häfele Connect Mesh App is free for Apple iOS® and Android™.



> Area of application:

> Version:

For on/off switching and dimming (0-100%) of monochrome lights; or, in conjunction with adapters, for the operation of multi-white lights, RGB lights, and electrically operated fittings With programmable switching input

For standard Loox switches (switching function programmable via app; each active component can control each passive component, see page 97)

> Material/Color: Plastic, black  $> L \times W \times H$ : 120 x 50 x 16 mm (4 3/4" x 2" x 5/8")

> Number of connections: 1x input port with box to box plug

1x output port with box to box socket

1x input port switch socket

6x output ports device sockets (2-pin), can be controlled from any active component of the network

> Supplied with: 1 distributor

Voltage	Max. connected wattage W	Item No.
5 12 V	60	850.00.042
5 24 V	90	850.00.043



The distance between the smartphone or tablet to the nearest Häfele Connect Mesh component is approx. 10,000 mm (393"). Multiple components create a network, and can also be placed approximately 10,000 mm (393") apart.





6-way distributor for monochrome lights or other 2-pin powered devices, such as electrically operated fittings, see page 105.

limensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

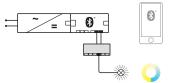
HAFELE

## **Adapters**

For multi-white and RGB lights

Häfele Loox5 multi-white adapter - for Häfele Connect Mesh 6-way distributor





> Area of application: For connecting multi-white lights to the Häfele

Connect Mesh 6-way distributor

> Material/Color: Plastic, black

 $> L \times W \times H$ : 70 x 30 x 14 mm (2 3/4" x 1 3/16" x 9/16")

> Number of connections: 2x input port with plug, monochrome

6x output ports device sockets, multi-white

> Supplied with: 1 distributor with 80 mm (3 1/8") lead

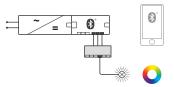
Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.95.745
5 24 V	90	833.77.830



1 multi-white adapter occupies 2 output ports at the 6-way distributor.

Häfele Loox5 RGB adapter - for Häfele Connect Mesh 6-way distributor





> Area of application: For connecting RGB lights to the Häfele Connect Mesh 6-way distributor

> Material/Color: Plastic, black

 $> L \times W \times H$ : 70 x 30 x 14 mm (2 3/4" x 1 3/16" x 9/16")

> Number of connections: 3x input ports with plug, monochrome

6x output ports for device sockets, RGB

> Supplied with: 1 distributor with 80 mm (3 1/8") lead

Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.95.746
5 24 V	90	833.77.831



1 RGB adapter occupies 3 output ports at the 6-way distributor.



### Remote controls

#### Häfele Connect Mesh remote control



#### **Easiness**

> One remote control for all applications: monochrome lights, multi-white lights, RGB lights and electrically operated fittings

> Area of application: For controlling components at the Häfele

Connect Mesh 6-way distributor

> Function: Easy, direct pairing with a 6-way

> distributor or programming of buttons via app to control each node of the network

> Version: Multi-function control panel

> Material: **Plastic** 

> Color: Faceplate: Black; Housing: White

 $> L \times W \times H$ : 130 x 42 x 11 mm (5 1/8" x 1 5/8" x 7/16")

> Supplied with: 1 remote control

> Item No. 850.00.040



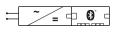
Please order Häfele Connect Mesh 6-way distributor separately, see page 96.

Please order 2 replaceable CR2032 button cell lithium batteries (2 x 002.99.032) separately, see page 147.



#### Häfele Connect Mesh push button - wall-mounted







> Area of application: For controlling components on the 6-way

> distributor, Häfele Connect Mesh (all functions that are accessible by

pressing or holding a button)

> Function: Easy, direct pairing with a 6-way

distributor or programming of buttons via app to control each node of the network

> Version: 4-button panel

> Material: **Plastic** 

> Color: Faceplate: Black; Frame: White

 $> L \times W \times H$ : 81 x 81 x 12 mm

(3 3/16" x 3 3/16" x 1/2")

> Mounting: For screw or glue fixing to any wall

> Supplied with: 1 push button, wall-mounted

> Item No. 850.00.041

limensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice



Please order Häfele Connect Mesh 6-way distributor separately, see page 96.

Please order 1 replaceable CR2430 button cell lithium battery (1 x 002.99.034) separately, see page 147.





### HAFELE

### Wireless wall switch

#### Häfele Connect Mesh 4-button remote and wall plate kit



> Version: 4-button remote with wall plate, mounting bracket and battery

> Material: Plastic > Color: White

> L x W x H: 119 x 75 x 8 mm (4 11/16" x 3" x 5/16")
> Mounting: Screw mounted on a wall surface

or installed over a wall box

> Supplied with: 4-button remote (850.00.951)

Decora style wall plate with mounting

screws (820.66.753)

Mounting bracket for remote control

(825.73.775)

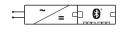
CR2032 button cell lithium battery

(002.99.032)

Item No. 450.80.868



Please order Häfele Connect Mesh 6-way distributor separately, see page 96.



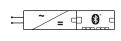




Battery included in kit only

### Häfele Connect Mesh 4-button remote - for Decora style wall plate









Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

Battery not included.

Please order 1 replaceable CR2430 button cell lithium battery (1 x 002.99.034) separately, see page 147.

#### Design advantage

> Designed to fit with Decora style wall plates, this wireless 4-button switch provides a clean contempory appearance, and can be mounted flush to the wall

> Area of application: For controlling lights connected to

Connect Mesh distributors

> Function: Each button can be programmed with

the Häfele Connect Mesh App to control a group of lights or to activate specific

scenes

Material: PlasticColor: White

> L x W x H: 67 x 33 x 8 mm (2 5/8" x 1 5/16" x 5/16")
> Mounting: Use as a handheld control or wall mount

with a Decora style wall plate and

mounting bracket

> Supplied with: 4-button remote switch

Item No. 850.00.951







### Wireless wall switch

EnOcean wall switch - for Häfele Connect Mesh



**Single** 





**Double** 

> Area of application:

For controlling components connected to the Häfele Connect Mesh distributors or

Häfele Connect BLE box

> Function: Wall switch functions by pressing or

holding down a button to:

Switch on/off and dimming of white, multi-white and RGB lights and setting the color temperature of multi-white

lights.

> Can be placed anywhere,

no wires required

> Maintenance free (batteries

not required)

> Material: Plastic > Color white

> Mounting: Surface mount for screw fixing > Supplied with: Wall switch, base, wall plate, cover

Version	LxWxH	Item No.
Single	126 x 82 x 19 (4 15/16" x 3 1/4" x 3/4")	850.00.025
Double	126 x 115 x 19 (4 15/16 x 4 1/2" x 3/4")	850.00.026



19 (3/4")

126 (4 15/16"



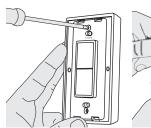
126 (4 15/16")

Please order Häfele Connect Mesh distributor or Häfele Connect BLE box separately.

#### Installation



(3 1/4")



115 (4 1/2")



#### Compatible with:





Häfele Connect Mesh

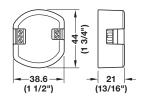
Häfele Connect

### HXFELE

### 2-channel interface

Häfele Connect Mesh 2-channel interface - with potential free relay

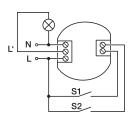




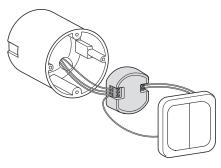








Installation example



Installation in a deep switch box

#### Design advantage

> Use switches in the design of the house installation for the control of furniture and room lights with Häfele Connect Mesh

> Area of application: For on/off control of room lighting or other

home installations via the Häfele Connect Mesh and for integrating conventional

wall-mounted toggle switch into the

Häfele Connect Mesh

> Version: Function programmable via app, each

active component can control each passive component, see page 97.

> Number of connections: 2 switching input port for conventional

wall-mounted toggles switches

(double-throw),

1 output port for on/off switching of 80-230 V, 3 A (can be controlled from any active component of the network)

> Material: Plastic

 $> L \times W \times H$ : 39 x 44 x 21 mm

(1 9/16" x 1 3/4" x 13/16")

Suitable for installation in switch boxes. > Mounting:

Recommended switch box depth:

60 mm (2 3/8").

> Supplied with: 1 2-channel interface

> Item No. 850.00.046



Please order Häfele Connect Mesh 6-way distributor separately, see page 96.



Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice



### LOX5

## **BLE** box

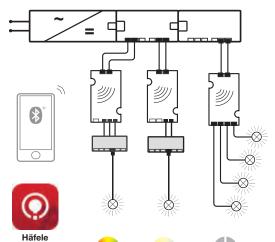
For use with Häfele Connect app

### \*

#### Häfele Connect BLE box

- > The Häfele Connect BLE (Bluetooth® low energy) box makes it possible to control Loox lights using the Häfele Connect app or the BLE wireless Bluetooth® wall switch, see page 101.
- > BLE Box connects to Loox5 drivers via Loox5 6-Way distributor, see page 104.





#### Häfele Connect App

Connect

> Ability to manage a single BLE box or an entire network of BLE boxes with a smartphone or tablet

Multi-white

Monochrome

- > Controls on/off, brightness (0-100%), color temperature (multi-white lights) and the light color (RGB lights)
- > Set up light groups and scenes
- > Time controlled programming of brightness, color temperature, light color
- > The Häfele Connect Mesh App is free for Apple iOS<sup>®</sup> and Android<sup>™</sup>.

> Area of application: For on/off switching and dimming

(0–100%) of monochrome lights; or, in conjunction with adapters, for the operation of multi-white or RGB lights.

Version: 4 channel
 Material/Color: Plastic, black
 L x W x H: 100 x 57 x 17 mm

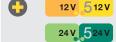
(4" x 2 1/4" x 11/16") > Number of connections: 2x 300 mm (11 3/16")

4x output ports

> Supplied with: 1 BLE box

Voltage	Max. connected wattage W	Item No.
12 V	60	850.00.005
24 V	90	850.00.006

- The distance between the smartphone or tablet to the nearest Häfele Connect Mesh component is approx. 10 m (32' 9 3/4"). Multiple BLE boxes create a network, and can also be placed 10 m (32' 9 3/4") apart.
- Please order adapter for multi-white lights, RGB lights, see page 96.



To connect Loox5 leads to BLE box, please order 12V or 24V Loox5>Loox adapter set separately, see page 123.

To connect BLE box leads to Loox5 distributors, please order 12V or 24V Loox>Loox5 adapter set separately, see page 122.

# **Distributing**

Distributor	
6-way distributor, switching function	> Page 105
6-way distributor	> Page 105
6-way distributor,	> Page 106
multi-switching function	
6-way distributor,	> Page 107
multi-white controller	
6-way distributor,	> Page 108
RGB controller	
2-way Y distributor	> Page 109
6-way distributor -	> Page 109
for hardwire applications	



#### Leads and connectors for LED strip lights

Leads for LED strip light	> Page 117
monochrome, 5 mm (3/16")	
Leads for LED strip light	> Page 118
monochrome, 8 mm (5/16")	
Leads for LED silicone strip	> Page 119
light monochrome, 8 mm	
(5/16")	
Leads for LED strip light	> Page 120
multi-white, 8 mm (5/16")	
Leads for LED strip lights	> Page 121
RGB, 10 mm (3/8")	



#### **Extension leads**

Extension lead	> Page 110
monochrome/2-pin	
Extension lead multi-white	> Page 110
Extension leads CL3R	> Page 111
Extension lead RGB	> Page 112
4-way extension lead monochrome/2-pin	> Page 112



#### Adapters

Adapters Loox/Loox5	> Pages 122-123
Adapter leads	> Page 123
for LED strip lights	



#### Accessories

Female socket	> Page 113
Male plug	> Page 113
CL3R cable	> Page 113
Wire stripper	> Page 114
Terminal clipper	> Page 114
Wire splice	> Page 114



#### Cable routing

Cable channel	> Page 124
Cable cover	> Page 124



#### Modular leads

Lead for modular lights and other modular devices





#### Acessories

Drill bits > Pages 125-126



#### Switch leads

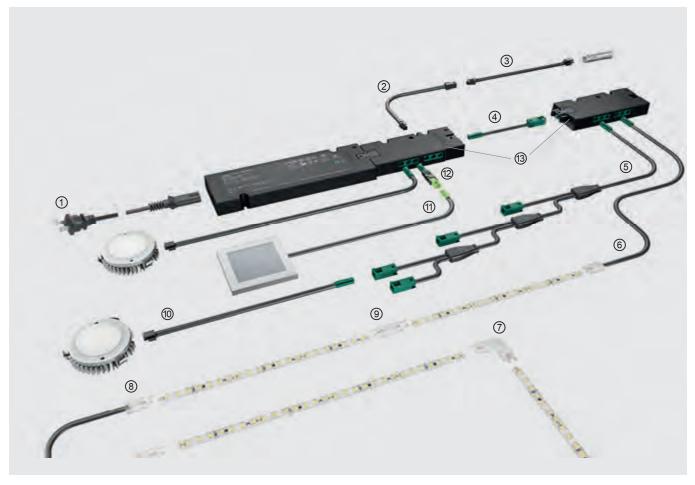
Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice.

Extension lead for switches	> Page 116
Lead for modular switches	> Page 116
Lead for switches	> Page 116



# **Distributing**

#### **Definition of terms**



- ① Power cord
- 2 Extension lead for switch
- 3 Lead for modular switches
- 4 Extension lead
- (5) 4-way extension lead
- 6 Lead for LED strip light
- 7 Corner connector for LED strip light

- 8 Interconnecting lead for LED strip light
- Olip connector for LED strip light
- 10 Lead for modular lights
- 1 Light with permanent lead
- 2 Adapter
- 3 6-way distributor



### **Distributors**

#### Häfele Loox5 box to box 6-way distributor

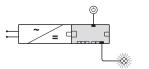
#### Plug connection box to box

- > The connection of the distributors with the driver can be done via a box to box plug-in connection or via an extension lead. Any number of distributors can be connected to the driver. Observe maximum wattage!
- > Häfele Connect Mesh 6-way distributor, see page 96

### Häfele Loox5 box to box 6-way distributor - with switching function



1 switch controls all output ports



> Material/Color: Plastic, black  $> L \times W \times H$ : 120 x 50 x 16 mm

(4 3/4" x 2" x 5/8")

> Number of connections: 1 x input port with box to box plug

1 x output port with box to box socket

1 x input port switch socket

6 x output ports

> Supplied with: 1 distributor

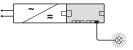
Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.95.748
5 24 V	90	833.77.833

#### Loox5 distributor with Loox output ports

Voltage	Max. connected wattage W	Item No.
12 V	42	833.95.749
24 V	84	833.77.834

#### Häfele Loox5 box to box 6-way distributor - without switching function





Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice

> Material/Color:	Plastic, black
> L x W x H:	120 x 50 x 16 mm
	(4 3/4" x 2" x 5/8")

> Number of connections: 1 x input port with box to box plug

1 x output port with box to box socket

6 x output ports

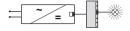
1 distributor > Supplied with:

Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.95.747
5 24 V	90	833.77.832

#### Häfele Loox5 6-way distributor - without switching function



Can also be connected to 6-way distributor.



> Material/Color: Plastic, black  $> L \times W \times H$ : 70 x 30 x 14 mm

(2 3/4" x 1 3/16" x 9/16")

> Number of connections: 1 x input port with box to box plug

1 x output port with box to box socket

6 x output ports

> Supplied with: 1 distributor

Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.95.786
5 24 V	90	833.77.839

### **Distributors**

#### Häfele Loox5 6-way distributor with multi-switching function

- > Multi-switching function for up to 3 switches, saving space and cost
- > 3 switching mode options
- > Permanent soft on/off function, regardless of the switch that is used



(0–100%) > Material/Color: Plastic, black > L x W x H: 120 x 50 x 16 mm (4 3/4" x 2" x 5/8")

> Number of connections: 1 x input port with box to box plug

1 x output port with box to box socket

3 x input switch sockets

6 x output ports

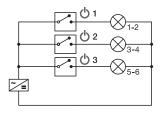
> Supplied with: 1 distributor

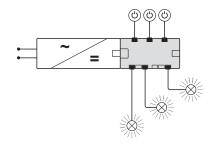
Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.95.828
5 24 V	90	833.95.829

#### 3 modes of operation

#### Parallel (red indicator light)

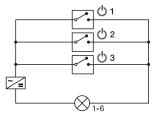
Switch 1 = controls outputs 1 and 2 Switch 2 = controls outputs 3 and 4 Switch 3 = controls outputs 5 and 6





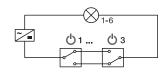
#### No cross (blue indicator light)

Any of the three switches can turn the lights on. To turn lights off, all switches must be turned off.



#### **Cross (green indicator light)**

Any of the 3 switches can turn on/off the lights.



**HÄFELE** 

### **Distributors**

#### Häfele Loox5 6-way distributor with manual multi-white control

- > Connect multi-white lights directly without adapters
- > Change color temperature by pushing button on distributor; no Bluetooth® or app required
- > Toggle between four color temperatures (2700 K, 3000 K, 4000 K, 5000 K)



> Area of application: For setting multi-white light color temperature during installation;

not designed for end-user control

> Material/Color: Plastic, black

> Version: Box to box, 3-wire multi-white,

with switch port

> L x W x H: 120 x 50 x 16 mm

(4 3/4" x 2" x 5/8")

> Number of connections: 1 x input port with box to box plug

1 x output port with box to box socket

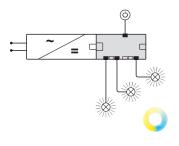
1 x input switch socket

6 x output ports for 3-wire multi-white

lights

> Supplied with: 1 distributor

Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.95.892
5 24 V	90	833.95.893



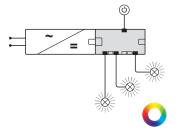
# **Distributors**



- > Connect RGB lights directly without adapters
- > Change color by pushing button on distributor; no Bluetooth® or app required
- > Toggle between eight colors (red, orange, yellow, green, cyan, blue, violet and magenta)
- > With another push of the button, colors will rotate through all the colors on an 80-second cycle







> Area of application: For setting preferred color for RGB lights

> Material/Color: Plastic, black

> Version: Box to box, RGB, with switch port

> L x W x H: 120 x 50 x 16 mm (4 3/4" x 2" x 5/8")

> Number of connections: 1 x input port with box to box plug

1 x output port with box to box socket

1 x input switch socket

6 x output ports for RGB lights

> Supplied with: 1 distributor

Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.95.890
5 24 V	90	833.95.891

### **HÄFELE**

### **Distributors**

#### 6-way distributor - with bare wire ends for hardwired applications



> Area of Application: Add to any hardwired dimmable driver to

turn output into modular connectors for

Loox lights

> Material/Color: Plastic, black  $> L \times W \times H$ : 70 x 30 x 16 mm

(2 3/4" x 1 3/16" x 9/16")

> Type of cable: 18 AWG wires are marked for polarity

Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.95.870
5 24 V	90	833.95.880

#### Häfele Loox5 2-way Y distributor monochrome - 1 male, 2 female

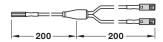


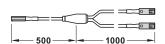
> Material/Color: Plastic, black > Length: 400 mm (15 3/4")

> Supplied with: 1 lead

1 plug/2 sockets

Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.95.874
5 24 V	90	833.95.884





> Material/Color: Plastic, black 1500 mm (59 1/16") > Length:

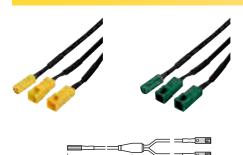
> Supplied with: 1 lead

1 plug/2 sockets

Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.93.737
5 24 V	90	833.75.744

#### Häfele Loox5 2-way Y distributor multi-white - 1 male, 2 female

1000



500

> Material/Color:	Plastic, black
> Length:	1500 mm (59 1/16")
<ul> <li>Supplied with:</li> </ul>	1 lood

Supplied with: 1 plug/2 sockets

Voltage	Max. connected wattage W	Item No.
5 12 V	60	833.93.738
5 24 V	90	833.93.739

### **Extension leads**

#### Häfele Loox5 extension leads

Maximum lead length from the Loox5 driver to the device is 10,000 mm (393 11/16").

Long cable lengths in combination with large loads (strip light lengths) can result in voltage losses in the cable. These lead to visible loss of brightness in the lights. The illuminance listed with the lights has been determined with the rated output voltage of the driver. (12 V or 24 V).

#### Häfele Loox5 extension leads monochrome



12 V monochrome

	,
> Supplied with:	1 extension lead
	1 plug/1 socket



24 V monochrome

> Area of application:	For monochrome lights and other 2-wire devices and distributors
. Matarial	Diagram

For managhrama lights and other 2 wire devices and distributors

> Material: Plastic > Current carrying capacity: Max. 5 A > Type of cable: 2-wire 18 AWG

> Drill hole Ø: Plug 8 mm (5/16"), socket 13 mm (1/2")

Voltage	200 mm (7 7/8")	300 mm (11 13/16")	500 mm (19 11/16")	600 mm (23 5/8")	750 mm (29 1/2")	1000 mm (39 3/8")	2000 mm (78 3/4")
5 12 V	833.95.911	833.95.912	833.95.712	833.95.914	833.95.915	833.95.713	833.95.714
5 24 V	833.95.921	833.95.922	833.95.719	833.95.924	833.95.925	833.95.718	833.95.717





#### Häfele Loox5 extension leads multi-white



12 V multi-white



24 V multi-white

> Area of application: For multi-white lights

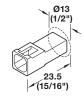
Plastic > Material: > Current carrying capacity: Max. 3.5 A > Type of cable: 3-wire 20 AWG

> Drill hole Ø: Plug 9 mm (3/8"), socket 13 mm (1/2")

> Supplied with: 1 extension lead 1 plug/1 socket

Voltage	200 mm (7 7/8")	300 mm (11 13/16")	500 mm (19 11/16")	600 mm (23 5/8")	750 mm (29 1/2")	1000 mm (39 3/8")	2000 mm (78 3/4")
5 12 V	833.95.931	833.95.933	-	833.95.935	833.95.936	833.95.937	833.95.715
5 24 V	833.95.792	833.95.793	833.95.794	833.95.795	-	833.95.796	833.95.720





### HXFELE

### **Extension leads**

#### Meets the following codes for wire and cable locations:

- > NEC article 411 Lighting systems operating at 30 V or less attached to Class 2 power
- > NEC article 725.135 Installation of Class 2 cable > NEC article 411.5 Specific Location Requirements

#### Häfele Loox5 CL3R extension leads monochrome



> Area of application: For monochrome lights and other 2-wire powered

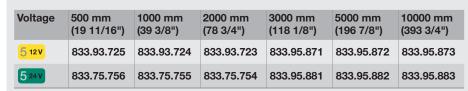
devices and distributors

> Material: Plastic > Current carrying capacity: Max. 5 A

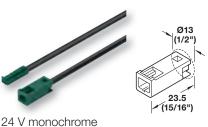
> Type of cable: Wire gauge: 18AWG; Wire type: CL3R

Construction: 2-conductor, stranded copper Rating: Class 2, double insulated

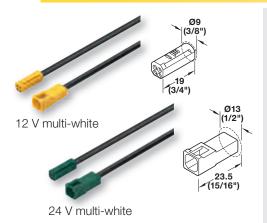
> Drill hole Ø: Plug 8 mm (5/16"), socket 13 mm (1/2") > Supplied with: 1 extension lead, 1 plug/1 socket







#### Häfele Loox5 CL3R extension leads multi-white



> Area of application: For multi-white lights

> Material: **Plastic** > Current carrying capacity: Max. 3.5 A

> Type of cable: Wire gauge: 20AWG; Wire type: CL3R

Construction: 3-conductor, stranded copper Rating: Class 2, double insulated

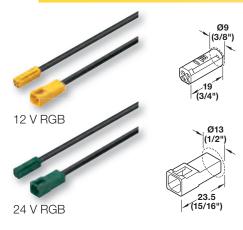
Plug 9 mm (3/8"), socket 13 mm (1/2")

> Drill hole Ø: 1 extension lead, 1 plug/1 socket > Supplied with:

Voltage	Length	Item No.
<b>5</b> 12 V	2000 (78 3/4")	833.93.731
5 24 V	2000 (78 3/4")	833.75.757



#### Häfele Loox5 CL3R extension leads RGB



- > Area of application: For RGB lights > Material: Plastic > Current carrying capacity: Max. 3.5 A
- > Type of cable: Wire gauge: 20AWG; Wire type: CL3R Construction: 4-conductor, stranded copper

Rating: Class 2, double insulated

> Drill hole Ø: Plug 9 mm (3/8"), socket 13 mm (1/2") > Supplied with: 1 extension lead, 1 plug/1 socket

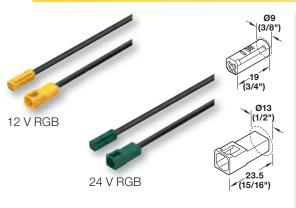
Voltage	Length	Item No.
<b>5</b> 12 V	2000 (78 3/4")	833.93.732
5 24 V	2000 (78 3/4")	833.75.758

### **LOX**5

### **Extension leads**

### 0

#### Häfele Loox5 extension leads RGB



> Area of application:
 > Material:
 > Current carrying capacity:
 Type of cable:
 For RGB lights
 Plastic
 Max. 3.5 A
 4-wire 20 AWG

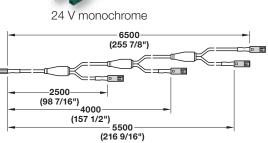
> Drill hole Ø: Plug 9 mm (3/8"), socket 13 mm (1/2")

> Length: 2000 mm (78 3/4")
> Supplied with: 1 extension lead
1 plug/1 socket

Voltage	Item No.
5 12 V	833.95.716
5 24 V	833.95.721

#### Häfele Loox5 4-way extension leads - monochrome





> Area of application: For monochrome lights and other 2-wire powered devices and distributors

Current carrying capacity: Max. 5 A
Type of cable: 2-wire 18 AWG
Drill hole Ø: Plug 8 mm (5/16")
Length: 6500 mm (255 7/8")
Supplied with: 1 extension lead
1 plug/4 sockets

Voltage	Item No.
5 12 V	833.95.742
5 24 V	833.95.743



Maximum lead length from the Loox5 driver to the device is 10,000 mm (393 11/16"). Long cable lengths in combination with large loads (strip light lengths) can result in voltage losses in the cable. These lead to visible loss of brightness in the lights. The illuminance listed with the lights has been determined with the rated output voltage of the driver.

(12 V or 24 V).

### **HXFELE**

### **Accessories**

Custom length extension lead components

#### Loox5 female socket

12 <b>V</b>	24V
-	

> Material:	Plastic
> Supplied with:	100 pcs.
Voltage	

Voltage	Item No.
5 12V	833.89.918
5 24 V	833.89.917

#### Loox5 male plug



> Material:	Plastic	
> Supplied with:	100 pcs.	
Voltage		Item No.
5 12 V		833.89.916
5 24 V		922 90 015

#### Cable, CL3R 2-conductor, 18AWG 12/24V



Meets the following codes for wire and cable locations:

- > NEC article 411 Lighting systems operating at 30V or less attached to Class 2 power
- > NEC article 725.135 Installation of Class 2 cable
- > NEC article 411.5 Specific Location Requirements

> Length: 76 m (250')
> Material/Color: Plastic/black

Item No.
833.93.748

#### Pin for female socket 12/24V



<ul><li>Material/Finish:</li><li>Supplied with:</li></ul>	Steel, chrome-plated 200 pcs.
	Item No.
	833.89.914

#### Pin for male plug 12/24V

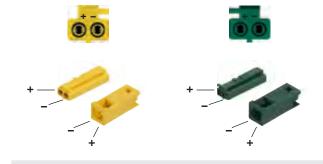


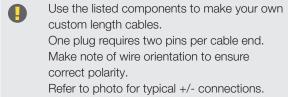
<ul><li>Material/Finish:</li><li>Supplied with:</li></ul>	Steel, chrome-plated 200 pcs.
	Item No.
	833.89.913

#### Loox5 male plug extraction tool



> Material:	Stainless Steel
	Item No.
	833.89.912





### LOX5

### **Accessories**

Custom cable assembly tools and accessories

#### Wire insulation stripper



> Material/Color:	Steel/Plastic, black/red	
		Item No.
		006.11.050

#### Terminal crimper, molex



> Material/Color:	Steel/Plastic, black/red	
		Item No.
		006.17.011

#### Wire splice



> L x W x H: 18 x 8.5 x 5.5 mm (11/16" x 5/16" x 3/16") > Material: Plastic, white > Supplied with: 100 pcs.

Item No. 824.19.397

#### Wire splice



 $> L \times W \times H$ : 18 x 12.5 x 8.5 mm (11/16" x 1/2" x 5/16") > Material: Plastic, clear > Supplied with: 50 pcs.

> Item No. 824.19.398

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice

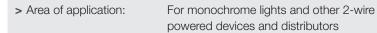
### HAFELE

### Leads

#### Modular design

#### Häfele Loox5 lead - for modular lights and other modular devices





> Version: With snap-in connector

Current carrying capacity: Max. 1.5 A
 Type of cable: 2-wire 24 AWG
 Drill hole Ø: Plug 8 mm (5/16")
 Supplied with: 1 lead plug/plug

Voltage	Length	Item No.
5 12 V	1000 (39 3/8")	833.95.789
3 12 V	2000 (78 3/4")	833.95.788
5 24 V	2000 (78 3/4")	833.95.791

### Häfele Loox5 lead - for modular multi-white lights





> Area of application:	Modular multi-white lights
> Version:	With snap-in connector
> Current carrying capacity:	Max. 1.5 A
	0 1 0 1 1110

> Type of cable: 3-wire 24 AWG
> Drill hole Ø: Plug 9 mm (3/8")
> Length: 2000 mm (78 3/4")
> Supplied with: 1 lead plug/plug

Voltage	Item No.
5 12 V	833.95.787
5 24 V	833.95.790

### —— Switch leads

#### Häfele Loox extension lead - for switches



> Area of application: Switches and modular switches

> Drill hole Ø: Plug 12 mm (1/2")
> Length: 2000 mm (78 3/4")
> Supplied with: 1 extension lead plug/socket

Item No. 833.89.067



The maximum lead length of a switch is 6 m (236 1/4").

#### Häfele Loox lead - for modular switches



> Area of application: Modular switches
 > Version: With snap-in connector
 > Drill hole Ø: Plug 12 mm (1/2")
 > Supplied with: 1 lead plug/plug

Length	Item No.
500 (19 11/16")	833.89.140
1000 (39 3/8")	833.89.141
2000 (78 3/4")	833.89.142

#### Häfele Loox lead - for multi-boxes to switching input



Area of application: Multi-switch and multi-driver box
 Drill hole Ø: Plug 12 mm (1/2")
 Supplied with: 1 lead plug/plug

Length	Item No.
500 (19 11/16")	833.89.068
2000 (78 3/4")	833.89.069

HAFELE

### Leads

For LED strip light monochrome, 5 mm (3/16")

Häfele Loox5 lead - for LED strip light monochrome, 5 mm (3/16")



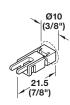
> Current carrying capacity: Max. 3.5 A > Type of cable: 2-wire 20 AWG > Width: Clip 7 mm (1/4") Plug 8 mm (5/16") > Drill hole Ø:

> Length: 2000 mm (78 3/4") > Supplied with: 1 lead plug/clip

Voltage	Item No.
5 12 V	833.95.705
5 24 V	833.95.711

#### Häfele Loox5 interconnecting lead - for LED strip light monochrome, 5 mm (3/16")





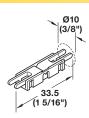
> Current carrying capacity: Max. 3.5 A > Type of cable: 2-wire 20 AWG > Width: Clip 7 mm (1/4") > Drill hole Ø: Clip 10 mm (3/8")

> Supplied with: 1 interconnecting lead clip/clip

Length	Item No.
50 (2")	833.89.194
500 (19 11/16")	833.89.195
2000 (78 3/4")	833.89.196

#### Häfele Loox5 clip connector - for LED strip light monochrome, 5 mm (3/16")





> Current carrying capacity: Max. 3.5 A > Width: Clip 7 mm (1/4") > Drill hole Ø: Clip 10 mm (3/8") > Length: 33.5 mm (1 5/16")

> Supplied with: 10 pcs.

Item No.
833.89.207

#### Häfele Loox5 corner connector - for LED strip light monochrome, 5 mm (3/16")



> Current carrying capacity: Max. 3.5 A

> L x W: 21 x 21 mm (13/16" x 13/16")

> Supplied with: 10 pcs.

Item No.
833.89.190

### Leads



For LED strip light monochrome, 8 mm (5/16")

#### Häfele Loox5 lead - for LED strip light monochrome, 8 mm (5/16")

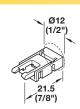


Current carrying capacity: Max. 5 A
Type of cable: 2-wire 18 AWG
Width: Clip 10 mm (3/8")
Drill hole Ø: Plug 8 mm (5/16")
Supplied with: 1 lead plug/clip

Voltage	Length	Item No.
	100 (4")	833.93.736
5 12 V	500 (19 11/16")	833.95.701
	2000 (78 3/4")	833.95.700
	100 (4")	833.75.743
5 24 V	500 (19 11/16")	833.95.707
	2000 (78 3/4")	833.95.706

#### Häfele Loox5 interconnecting lead - for LED strip light monochrome, 8 mm (5/16")



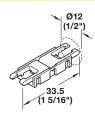


Current carrying capacity: Max. 5 A
Type of cable: 2-wire 18 AWG
Width: Clip 10 mm (3/8")
Drill hole Ø: Clip 12 mm (1/2")
Supplied with: 1 lead clip/clip

Length	Item No.
50 (2")	833.89.191
500 (19 11/16")	833.89.192
2000 (78 3/4")	833.89.193

#### Häfele Loox5 clip connector - for LED strip light monochrome, 8 mm (5/16")





> Current carrying capacity: Max. 5 A

> Width: Clip 10 mm (3/8")
> Drill hole Ø: Clip 12 mm (1/2")
> Length: 33.5 mm (1 5/16")

> Supplied with: 10 pcs.

Item No.
833.89.206

#### Häfele Loox5 corner connector - for LED strip light monochrome, 8 mm (5/16")



> Current carrying capacity: Max. 5 A

> L x W: 24 x 24 mm (15/16" x 15/16")

> Supplied with: 10 pcs.

Item No.
833.89.187



### Leads

For LED silicone strip light monochrome, 8 mm (5/16")

#### Häfele IP44 Loox5 lead - for LED silicone strip light monochrome, 8 mm (5/16")



> Current carrying capacity: Max. 5 A > Type of cable: 2-wire 18 AWG

> Width: Silicone plug 15 mm (9/16")

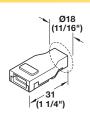
> Drill hole Ø: Plug 8 mm (5/16") > Length: 2000 mm (78 3/4") > Supplied with: 1 lead plug/clip

Voltage	Item No.
<u>5 12 V</u>	833.95.703
5 24 V	833.95.709

#### Häfele IP44 Loox5 interconnecting lead - for LED silicone strip light monochrome, 8 mm (5/16")



24 V monochrome



> Current carrying capacity: Max. 5 A > Type of cable: 2-wire 18 AWG > Width: Clip 15 mm (9/16") > Drill hole Ø: Clamp 18 mm (11/16")

> Supplied with: 1 lead clip/clip

Length	Item No.
50 (2")	833.89.203
500 (19 11/16")	833.89.204
2000 (78 3/4")	833.89.205



The leads and clips on page 118 can be used to make IP20 connections for the monochrome 8 mm (5/16") silicon strip.



### Leads

For LED strip light multi-white, 8 mm (5/16")

#### Häfele Loox5 lead - for LED strip light multi-white, 8 mm (5/16")



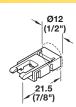
Current carrying capacity: Max. 3.5 A
Type of cable: 3-wire 20 AWG
Width: Clip 10 mm (3/8")
Drill hole Ø: Plug 9 mm (3/8")
Length: 2000 mm (78 3/4")
Supplied with: 1 lead plug/clip

Voltage	Item No.
5 12 V	833.95.702
5 24 V	833.95.708

#### Häfele Loox5 interconnecting lead - for LED strip light multi-white, 8 mm (5/16")



24 V multi-white

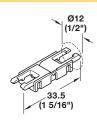


Current carrying capacity: Max. 3.5 A
Type of cable: 3-wire 20 AWG
Width: Clip 10 mm (3/8")
Drill hole Ø: Clip 12 mm (1/2")
Supplied with: 1 lead clip/clip

Length	Item No.
50 (2")	833.89.197
500 (19 11/16")	833.89.198
2000 (78 3/4")	833.89.199

#### Häfele Loox5 clip connector - for LED strip light multi-white, 8 mm (5/16")





> Current carrying capacity: Max. 3.5 A

> Width: Clip 10 mm (3/8")
> Drill hole Ø: Clip 12 mm (1/2")
> Length: 33.5 mm (1 5/16")

> Supplied with: 10 pcs.

Item No.
833.89.208

#### Häfele Loox5 corner connector - for LED strip light multi-white, 8 mm (5/16")



> Current carrying capacity: Max. 3.5 A

> L x W: 24 x 24 mm (15/16" x 15/16")

> Supplied with: 10 pcs.

Item No.
833.89.188

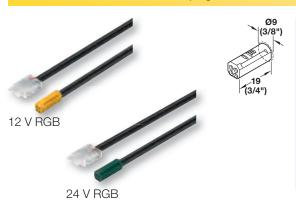
### **HXFELE**

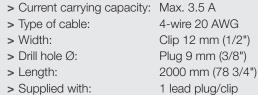
### Leads

For LED strip light RGB, 10 mm (3/8")



#### Häfele Loox5 lead - for LED strip light RGB, 10 mm (3/8")

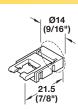




Voltage	Item No.
5 12 V	833.95.704
5 24 V	833.95.710

#### Häfele Loox5 interconnecting lead - for LED strip light RGB, 10 mm (3/8")



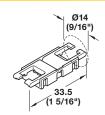


> Current carrying capacity: Max. 3.5 A 4-wire 20 AWG > Type of cable: > Width: Clip 12 mm (1/2") > Drill hole Ø: Clip 14 mm (9/16") > Supplied with: 1 lead clip/clip

Length	Item No.
50 (2")	833.89.200
500 (19 11/16")	833.89.201
2000 (78 3/4")	833.89.202

#### Häfele Loox5 clip connector - for LED strip light RGB, 10 mm (3/8")





> Current carrying capacity: Max. 3.5 A > Width: Clip 12 mm (1/2") > Drill hole Ø: Clip 14 mm (9/16") > Length: 33.5 mm (1 5/16")

> Supplied with: 10 pcs.

Item No.
833.89.209

#### Häfele Loox5 corner connector - for LED strip light RGB, 10 mm (3/8")



> Current carrying capacity: Max. 3.5 A

> L x W: 26 x 26 mm (1" x 1")

> Supplied with: 10 pcs.

Item No.
833.89.189

# **Adapter**

Loox5 driver > Loox device

Adapter for devices with Loox plug - for connecting to Loox5 driver





12 V: Loox socket/Loox5 plug



24 V: Loox socket/Loox5 plug

> Area of application: For connecting Loox devices to Loox5

drivers or Loox5 distributors. Suitable for all devices with Loox plug, e.g. monochrome lights, distributors, charging stations, color mixers for multi-white and RGB as well as electrically operated

fittings, converters, etc.

> Length: 50 mm (2")
> Current carrying capacity: Max. 3.5 A
> Drill hole Ø: 12 mm (1/2")

> Packing 6 pcs.

Device	Driver	Max. connected wattage W	Item No.
12 V	5 12 V	Max. 42	833.95.753
24 V	5 24 V	Max. 84	833.77.838



Not suitable for 3-wire Loox plugs (multi-white) or 4-wire Loox plugs (RGB).

The current carrying capacity is limited to 3.5 A. Observe maximum wattage.

### **HÄFELE**

## **Adapter**

Loox driver > Loox5 device





12 V: Loox5 socket/Loox plug



24 V: Loox5 socket/Loox plug

> Area of application:

For connecting Loox5 devices to Loox drivers or Loox distributors. Suitable for all devices with 2-wire Loox5 plug, e.g. monochrome lights, distributors, charging stations, etc.

45 mm (1 3/4") > Current carrying capacity: Max. 3.5 A > Drill hole Ø: 13 mm (1/2")

> Packing 6 pcs.

Device	Driver	Max. connected wattage W	Item No.
5 12 V	12 V	Max. 42	833.95.752
5 24 V	24 V	Max. 84	833.77.837



> Length:

Not suitable for 4-wire Loox5 plugs (multi-white or RGB). The current carrying capacity is limited to 3.5 A. Observe maximum wattage.

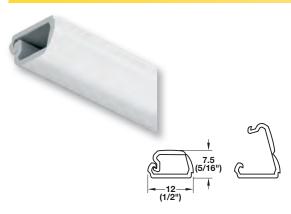
#### Adapter leads for LED strip lights with Loox5 clip - for connecting to Loox driver or color mixer

> Length: 2000 mm (78 3/4")

Device	Driver/color mixer	for LED strip light	Item No.
	12V	monochrome 5 mm (3/16")	833.72.742
5 12 V		monochrome 8 mm (5/16")	833.72.716
0 12 V		multi-white 8 mm (5/16")	833.72.717
		RGB 10 mm (3/8")	833.72.718
	24 V	monochrome 5 mm (3/16")	833.75.732
<b>5</b> 24 V		monochrome 8 mm (5/16")	833.75.705
5241	24 V	multi-white 8 mm (5/16")	833.75.706
		RGB 10 mm (3/8")	833.75.707

# **Cable routing**

#### Häfele Loox cable channel



Color		Item No.
> Supplied with:	1 cable channel with adhesive	tape
- Application.	and cabinets	Tillaro
> Application:	Concealing visible cables in fur	niture
	(98 7/16" x 1/2" x 5/16")	
> I x W x H:	2500 x 12 x 7.5 mm	
> Material:	Plastic	

#### Cable management channel



> Material: Plastic > L x W x H: 2438 x 36.5 x 5 mm (96" x 1 7/16" x 3/16")

Black, RAL 9005

Brown, RAL 8007

White, RAL 9010

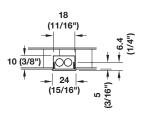
> Application: Concealing visible cables in furniture

and cabinets

Color	Item No.
Tan	833.16.040
Black	833.16.041
White	833.16.042

#### Wire management cover - recess mounted





<ul><li>Material/Color:</li><li>Length:</li><li>Application:</li></ul>	Plastic, white RAL 9010 2500 mm (98 3/8") Concealing visible cables in furniture and cabinets	niture
	Item No.	
	833.00.730	)

#### Wire management cover - recess mounted



> Material:	Plastic
> L x W x H:	51 x 25 x 16 mm
	(2" x 1" x 5/8")

Color	Item No.
Black	824.19.396
White	824.19.796

833.89.033

833.89.023

833.89.013

# **Accessories**

Drill bits and systems

### Machine boring bit - RH



> Material:	Carbide	
Dimensions		Item No.
Ø 26 x 70 (1" x 2 3/4")		001.08.004
Ø 28 x 70 (1 1/8" x 2 3	/4")	001.08.012
Ø 35 x 70 (1 3/8" x 2 3	/4")	001.08.006
Ø 40 x 57 (1 5/8" x 2 1	/4")	001.06.865

### Machine boring bit - with center spur - RH



> Material:	Carbide	
Dimensions		Item No.
Ø 55 x 57 (2 3/16" x 2	2 1/4")	001.07.513
Ø 58 x 57 (2 5/16" x 2	2 1/4")	001.07.522
Ø 60 x 57 x 10 (2 3/8	" x 2 1/4" x 3/8")	001.08.040
Ø 68 x 70 x 10 (2 11/	16" x 2 3/4" x 3/8")	001.08.016



# **Accessories**

Drill bits and systems

### Drilling jig - for puck light



> Supplied with:	Jig, 2 boring bits, 1 drill bit	
		Item No.
		001.35.052

### Drill bit - for puck light, with stop



> Material: M2 HSS Steel > Ø x L: 10 x 457 mm (3/8" x 18")

> Supplied with: Hex key

Item No. 001.35.053

High grade steel material for increased drill life.
Allows for deeper wire holes.

### Forstner bit assembly - for puck light



<ul><li>Material:</li><li>Supplied with:</li></ul>	HSS Steel Adjustable depth stop, collar, hex key
Ø	Item No.
54 (2 1/8")	001.35.054



56 (2 1/4")

Superior Austrian quality.

High grade steel material with patented wave cutting edge. Patented cutting edge drills 10x faster than standard bits. Modified low-profile brad point tip for flat bottom hole.

001.35.055

# **Supplying**

### Häfele Loox5 plug-in drivers 12 V

Wall plug drivers 12 V

> Page 129



### Häfele Loox5 constant voltage drivers

12 V constant voltage drivers, 20 W, 40 W, 60 W	> Page 130
24 V constant voltage drivers, 20 W, 40 W, 90 W	> Page 131
24 V constant voltage driver, 270 W	> Page 132
Power cords for Loox5 constant voltage drivers	> Pages
	130–132



### Hardwired wall switch and driver for dimming and multi-white control

DimTech wall switch and driver, monochrome dimming control	> Page 133
DimTone wall switch and driver, dimming and multi-white control	> Page 134
WarmTone wall switch, dim-to-warm control of multi-white	> Page 135



### E-series drivers

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice.

Hardwired driver 12 V	> Page 136
Hardwired driver 24 V	> Page 137



### Lutron drivers and dimming control

Hardwired driver 12 V	> Page 138
Hardwired driver 24 V	> Page 139
Ecosytem® 3-wire driver	> Pages
and wireless receiver 12 V/24 V	140–141
Lutron LV, CL and 0-10 V wall dimming	> Pages
controls and wall plates	142–144
Lutron Caséta Pro wall dimming control	> Page 145
Pico wireless remote for Caséta Pro	> Page 146
Gateway Smart bridge for Caséta Pro	> Page 146



### 6-channel wireless controls

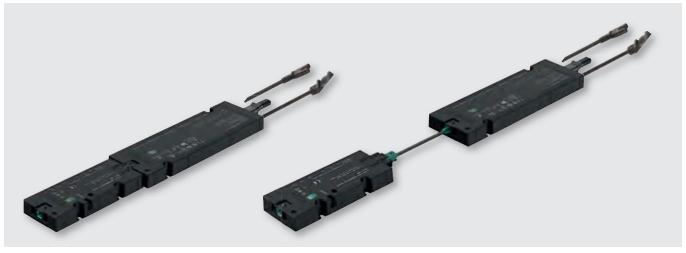
RF receivers, remotes and batteries

> Page 147



# **Supplying**

### Central or decentralized supply



### Central and compact

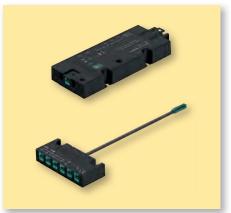
Driver with 6-way distributor via box to box plug-in connection for compact dimensions.

### **Decentralized**

Driver at the entry point of a given socket position. Decentralized 6-way distributor via cable connection.

### 3-level control concept

Loox5 specializes the tasks: on the one hand, professional drivers with top performance in terms of energy efficiency, life time, overload protection, and rectification, and on the other hand, the 6-way distributor with a 3-level control concept that can be combined as desired:



**Level 1**Distributor without switching function



**Level 2**Distributor with switching function



**Level 3**Distributor with switching function and Bluetooth® chip for the network control in the Häfele Connect Mesh

- > 6-way distributors see page 105
- > Häfele Connect Mesh 6-way distributor see page 96
- > Extension leads see page 112

# **Plug-in drivers**

### Häfele Loox5 wall plug driver 12 V



> Material/Color: Plastic, black

> Degree of protection: IP20

> Input voltage: 100-240 V~; 50-60 Hz

> Output voltage: DC 12 V

> Standby

power consumption: 0.1 W

> Supplied with: 1 wall plug driver with 100 mm (3 15/16")

cable with socket

Plug design/ designation	Output power W	LxWxH	Item No.
II US	6	61 x 37 x 43 (2 3/8" x 1 1/2" x 1 11/16")	833.74.631
	15	78 x 46 x 54 (3 1/16" x 1 13/16" x 2 1/8")	833.74.634



# **Drivers**

12 V

### Häfele Loox5 driver constant voltage 12 V









### Note

Loox lights and drivers are "Suitable for use within closet storage spaces"

> Version: With overload protection

> Material/Color: Plastic, black

> Degree of protection: IP20

> Input voltage: 100-240 V~; 50-60 Hz

> Output voltage: DC 12 V

> Number of connections: 1x socket Loox5 12 V
> Life time: >70,000 hours
> Safety: Class 2

> Supplied with: 1 driver with mounting accessories

1 US power cord

5 12 V	Output power	Output current	Standby power consumpt.	LxWxH	Item No.
	w	A	w		
0	20	1.67	≤0.2 W	140 x 50 x 16 (5 1/2" x 2" x 5/8")	833.95.000
2	40	3.33	≤0.3 W	191 x 60 x 16 (7 1/2" x 2 3/8" x 5/8")	833.95.002
3	60	5.00	≤0.3 W	230 x 70 x 16 (9 1/16" x 2 3/4" x 5/8")	833.95.003

Ambient temperature –25 °C to +45 °C (60 W: 40 °C)
Ensure that there is a sufficient air supply and circulation at the mounting location.

Maximum lead length from the Loox5 driver to the device is 10,000 mm (393 11/16"). Long cable lengths in combination with large loads (strip light lengths) can result in voltage losses in the cable. These lead to visible loss of brightness in the lights. The illuminance listed with the lights has been determined with the rated output voltage of the driver.

(12 V or 24 V).

### Country-specific power cords - 2000 mm (78 3/4") lead length, socket at the cable: C7

							3000 mm (118")		
Plug design			$\bigcirc$	••				>	
Description	US	UK	AU	EU	JP	CN	KR	US	US
Supplied with	1 pc.	1 pc.	1 pc.						
Item No.	833.89.003	833.89.000	833.89.001	833.89.002	833.89.016	833.89.005	833.89.006	833.89.050	833.89.008

### Power cord - with 90° plug



> Length: 2000 mm (78 3/4") > Material/Color: Plastic, black

Item No. 833.89.017

### 90° plug adapter



> Material/Color: Plastic, black

Item No. 833.89.018



Jimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

# **Drivers**

24 V

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice

### Häfele Loox5 driver constant voltage 24 V



**⊕** c**⊕** us **(!**) □ SELV IP20 **(!** 

> Version: With overload protection

> Material/Color: Plastic, black

> Degree of protection: IP20

> Input voltage: 100-240 V~; 50-60 Hz

> Output voltage: DC 24 V

> Number of connections: 1x socket Loox5 24 V >70,000 hours > Life time: > Safety: Class 2

> Supplied with: 1 driver with mounting accessories

1 US power cord

<b>5</b> 24 V	Output power	Output current	Standby power consumpt.	LxWxH	Item No.
	w	A	W		
1	20	0.83	≤0.2 W	140 x 50 x 16 (5 1/2" x 2" x 5/8")	833.95.008
2	40	1.67	≤0.3 W	191 x 60 x 16 (7 1/2" x 2 3/8" x 5/8")	833.95.010
3	90	3.75	≤0.3 W	316 x 70 x 16 (12 7/16" x 2 3/4" x 5/8")	833.95.011

Ambient temperature -25 °C to +45 °C Ensure that there is a sufficient air supply and circulation at the mounting location.

Maximum lead length from the Loox5 driver to the device is 10,000 mm (393 11/16"). Long cable lengths in combination with large loads (strip light lengths) can result in voltage losses in the cable. These lead to visible loss of brightness in the lights. The illuminance listed with the lights has been determined with the rated output voltage of the driver. (12 V or 24 V).



Loox lights and drivers are "Suitable for use within closet storage spaces"

### Country-specific power cords - 2000 mm (78 3/4") lead length, socket at the cable: C7

									3000 mm (118")
Plug design			$\bigcirc$					>=	
Description	US	UK	AU	EU	JP	CN	KR	US	US
Supplied with	1 pc.								
Item No.	833.89.003	833.89.000	833.89.001	833.89.002	833.89.016	833.89.005	833.89.006	833.89.050	833.89.008

### Power cord - with 90° plug



> Length: 2000 mm (78 3/4")

> Material/Color: Plastic, black

> Supplied with: 1 pc.

Item No.
833.89.017

### 90° plug adapter



> Material/Color: Plastic, black

> Supplied with: 1 pc.

	Item No.
	833.89.018
-	

# **Drivers**

24 V

LOX5

### Häfele Loox5 driver constant voltage 24 V



Driver 270 W, 100-120 V~ 833.95.022



> Version: With overload protection

> Material/Color: Plastic, black

> Degree of protection: IP20 > Standby power consumption: <0.5 W > Output voltage: DC 24 V

> L x W x H: 234 x 75 x 38 mm

(9 3/16" x 2 15/16" x 1 1/2")

> Life time: >70,000 hours > Safety: Class 2

> Supplied with: 1 driver with mounting accessories

1 US power cord

5 24 V	Input voltage	Output power	Output current	Number of connections Loox5 24 V	Item No.		
100-120 V~: typical input voltage in US, JP, CN, TW							

4   100–120 V~,   270 (3 x 90)   3 x 3.75   3x socket   833.95.022
--------------------------------------------------------------------

- Please pay attention to the regional input voltage when choosing the driver.
- Ambient temperature -25 °C to +45 °C (270 W: 40 °C) Ensure that there is a sufficient air supply and circulation at the mounting location.
- Maximum lead length from the Loox5 driver to the device is 10,000 mm (393 11/16"). Long cable lengths in combination with large loads (strip light lengths) can result in voltage losses in the cable. These lead to visible loss of brightness in the lights. The illuminance listed with the lights has been determined with the rated output voltage of the driver. (12 V or 24 V).

### Note

Loox lights and drivers are "Suitable for use within closet storage spaces"

### Country-specific power cords - 2000 mm (78 3/4") lead length, socket at the cable: C13

Plug design			<b>•••</b>			(.)	<b>•••</b>		<b>&gt;</b>	<b>&gt;</b>
Description	UK	AU	EU	US	JP	CN	KR	TW	EU	US
Supplied with	1 pc.	1 p.c	1 pc.	1 pc.						
Item No.	833.89.256	833.89.257	833.89.258	833.89.259	833.89.260	833.89.261	833.89.262	833.89.263	833.89.265	833.89.264



Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

# DimTech hardwired wall switch and driver

For dimming control of monochrome LED lights

### **DimTech wall switch dimming control**



- > Dim-to-off with selectable dimming curve
- > Flicker-free dimming Compliant to IEEE and Title 24
- > A single wall switch can control multiple drivers
- > Classic design to match existing style switches
- > Simple installation with no compatibility issues

> Material/Finish: Plastic, white

For on/off and dimming (0-100%) > Area of application:

of monochrome lights

> Function: On/off rocker switch with side slide

dimming control. Dimmer controls driver

via sireless RF signal

600 > Wattage:

 $> L \times W \times H$ : 119 x 75 x 41 mm

(4 11/16" x 3 7/8" x 1 3/4")

> Mounting: Fits US Standard gang box

> Supplied with: Wall plate, mounting screws, wire nuts,

installation instructions

Item No. 833.03.008

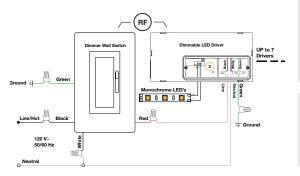


Use in conjunction with DimTech dimmable drivers (sold separately)

### DimTech dimmable driver

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice





- > Same wire set as a standard LED driver
- > Superior dimming flicker free to 0.1%
- > No minimum load
- > Wiring compartment with knockouts for safe and easy installation

120 V 60 Hz > Input voltage: 119 x 75 x 41 mm  $> L \times W \times H$ :

(4 11/16" x 3 7/8" x 1 3/4")

> Supplied with: Mounting screws, wire nuts, installation

instructions

Voltage	Wattage	Item No.
12 V	60 W	833.03.004
24 V	90 W	833.03.006



Use in conjunction with DimTech wall dimming controls (sold separately).

For installation by a qualified electrician in accordance with all local and national electrical codes.





# DimTone hardwired wall switch and driver

For color temperature and dimming control of multi-white LED lights

### DimTone wall switch with color temperature and dimming control



- > Smooth color tempertature control
- > Flicker-free dimming Compliant to IEEE and Title 24
- > A single wall switch can control multiple drivers
- > Classic design to match existing style switches
- > Simple installation with no compatibility issues

> Material/Finish: Plastic, white

> Area of application: For on/off, dimming (0-100%), and color

temperature control of 3-wire multi-white

(tunable) lights

> Function: On/off rocker switch with side slide color

temperature and dimming controls.

Dimmer controls driver via wireless RF

signal.

> Wattage: 600

> L x W x H: 119 x 75 x 41 mm

(4 11/16" x 3 7/8" x 1 3/4") Fits US Standard gang box

> Mounting: Fits US Standard gang box

> Supplied with: Wall plate, mounting screws, wire nuts,

installation instructions

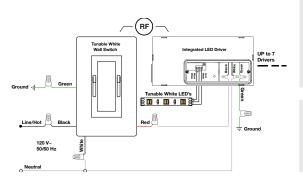
Item No. 833.03.009



Use in conjunction with DimTone dimmable drivers (sold separately)

### DimTone dimmable driver with color temperature control





- > Compatible with 3-wire multi-white lights
- > Same wire set as a standard LED driver
- > Superior dimming flicker free to 0.1%
- > No minimum load

> Supplied with:

> Wiring compartment with knockouts for safe and easy installation

> Input voltage: 120 V 60 Hz > L x W x H: 213 x 104 x 38 mm

(8" x 4 1/8" x 1 1/2")

Mounting screws, wire nuts, installation

instructions

Voltage	Wattage	Item No.
12 V	60 W	833.03.005
24 V	90 W	833.03.007



Use in conjunction with DimTech or Dim-to-Warm wall dimming and color temperature controls (sold separately).

For installation by a qualified electrician in accordance with all local and national electrical codes.

HXFELE

# WarmTone hardwired wall switch

For dim-to-warm control of multi-white LED lights

### Wall switch with dim-to-warm control



- > While dimming, color temperature simultaneously is reduced, simulating incandescent lights
- > Flicker-free dimming Compliant to IEEE and Title 24
- > A single wall switch can control multiple drivers
- > Classic design to match existing style switches
- > Simple installation with no compatibility issues

> Material/Finish: Plastic, white

> Area of application: For on/off, and dim-to-warm control

of 3-wire multi-white (tunable) lights

On/off rocker switch with side slide > Function:

> dimming/color temperature control. Color temperature ranges from 4000K

at 100% to 2700K at 0%.

600 > Wattage:

 $> L \times W \times H$ : 119 x 75 x 41 mm

> (4 11/16" x 3 7/8" x 1 3/4") Fits US Standard gang box

> Supplied with: Wall plate, mounting screws, wire nuts,

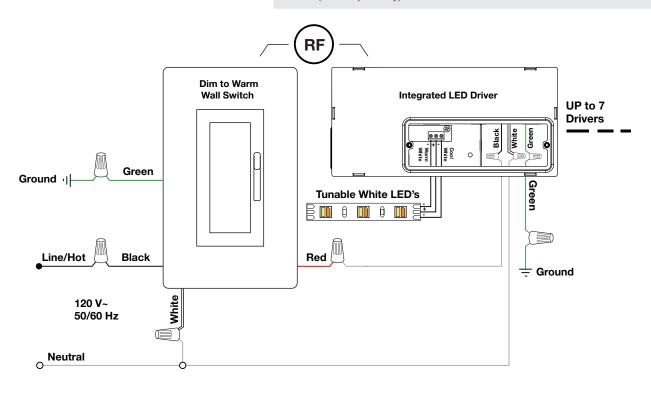
installation instructions

Item No. 833.03.011



> Mounting:

Use in conjunction with DimTone dimmable drivers (sold separately)



136 / Supplying

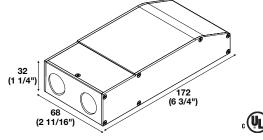


# Hardwired driver

E-Series

### Dimmable 12 V driver





> Material/Finish: Aluminum, black  $> L \times W \times H$ : 172 x 69 x 32 mm

(6 3/4" x 2 11/16" x 1 1/4")

Max. load	Output current	Item No.
20 W	1.67 A	833.02.964
40 W	3.33 A	833.02.963
60 W	5 A	833.02.962

Output Voltage: 12 VDC Input Voltage: 120 V 60 Hz

Degree of protection: Nema 3R enclosure type

Hard wired by licensed electrician only.

Dimmable with any standard MLV/CL (Triac) forward phase

Dimmer switch.

Class 2 low voltage power supply.

8 W min load

### High output dimmable 12 V driver



> Material/Finish: Steel, white > Input voltage: 120 V 60 Hz > Output voltage: 12 VDC > Max. load: 180 W > Output current: 15 A

> Degree of protection: Nema 3R enclosure type  $> L \times W \times H$ : 279.4 x 304.8 x 54 mm

(11" x 12" x 2.13")

Item No. 833.02.927



3 x 60 W independent output circuits.

Hard wired by licensed electrician only.

Dimmable with any standard MLV/CL/Incandescent

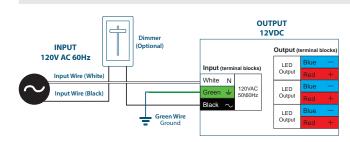
(Triac) forward phase dimmer switch.

Class 2 low voltage power supply.

Auto-reset protection for short circuits and over-voltage.

Easy installation using terminal blocks.

8 W min per circuit



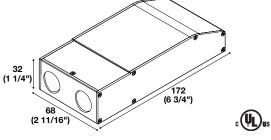
Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

# Hardwired driver

E-Series

### Dimmable 24 V driver







(6 3/4" x 2 11/16" x 1 1/4	∤")
----------------------------	-----

Max. load	Output current	Item No.
20 W	0.83 A	833.02.970
40 W	1.66 A	833.02.969
60 W	2.5 A	833.02.968
75 W	3.13 A	833.02.967
96 W	4.0 A	833.02.966

Output Voltage: 24 VDC Input Voltage: 120 V 60 Hz

Degree of protection: Nema 3R enclosure type

Hard wired by licensed electrician only.

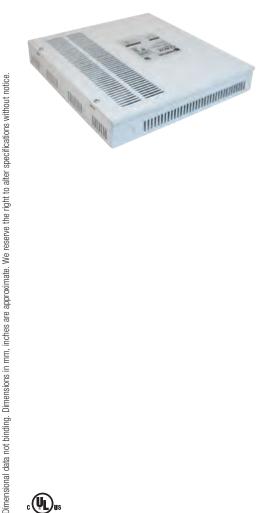
Dimmable with any standard MLV/CL (Triac) forward phase

dimmer switch.

Class 2 low voltage power supply.

8 W min load.

### High output dimmable 24 V driver



> Material/Finish: Steel, white > Input voltage: 120 V 60 Hz 24 VDC > Output voltage: 288 W > Max. load: > Output current: 12 A

> Degree of protection: Nema 3R enclosure type  $> L \times W \times H$ : 279.4 x 304.8 x 54 mm

(11" x 12" x 2.13")

Item No. 833.02.928



3 x 96 W independent output circuits.

Hard wired by licensed electrician only.

Dimmable with any standard MLV/CL/Incandescent.

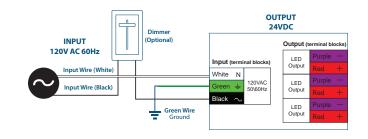
(Triac) forward phase dimmer switch.

Class 2 low voltage power supply.

Auto-reset protection for short circuits and over-voltage.

Easy installation using terminal blocks.

8 W min per circuit.





# Lutron

### Hardwired driver







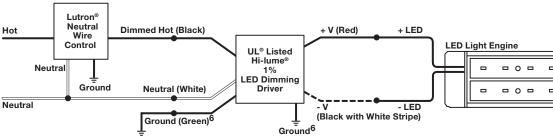
> Wattage: 40

> Input voltage: 110-120 VAC > Output voltage: 12 VDC

> W x H x D: 124 x 100 x 68 mm (4 7/8" x 4" x 2 5/8")

Item No. 833.02.961

### **Controls Requiring a Neutral Wire**





Control multiple LED light bars, LED strip lights and pucks up to 40 W.

10 W minimum load.

Remote mount driver up to 40 ft. away from LED source for 12 V option.

Provided on a junction box for easy installation and wire termination.

Dimming to 1% with smooth, continuous,

flicker-free performance.

Class 2 protection device.

Arrives ready to install.

Operate between 32 °F (0 °C) and 104 °F (40 °C).

0% to 90% humidity, non-condensing.

Hi-lume 1% LED dimming drivers offer a filtered, regulated power source that works well with LED solid state lights.

3 wire eco-systems driver solutions are available upon request.



installation.

For installation by a qualified electrician in accordance with all local and national electrical codes. For indoor use and copper conductors only. Check to see that the driver type and rating are suitable for the application. Compatible with CL dimmers and other Lutron dimmers and systems. DO NOT install if product has any visible damage. If moisture or condensation

is evident, allow the product to dry completely before





### Hardwired driver



HXFELE

### 24 V driver



> Wattage: 40

> Input voltage: 110-120 VAC > Output voltage: 24 VDC

> W x H x D: 124 x 100 x 68 mm

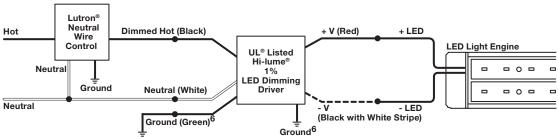
(4 7/8" x 4" x 2 5/8")

> Supplied with: Driver, double gang box, wire nuts,

instructions

833.05.905

### **Controls Requiring a Neutral Wire**





Control multiple LED light bars, LED strip lights and pucks up to 40 W.

10 W minimum load.

Remote mount driver up to 40 ft. away from LED source for 24 V option.

Provided on a junction box for easy installation and wire

Dimming to 1% with smooth, continuous, flicker-free performance.

Class 2 protection device.

Arrives ready to install.

Operate between 32 °F (0 °C) and 104 °F (40 °C). 0% to 90% humidity, non-condensing.

Hi-lume 1% LED dimming drivers offer a filtered, regulated power source that works well with LED solid state lights.

24 VDC 96 W driver available upon request.



For installation by a qualified electrician in accordance with all local and national electrical codes. For indoor use and copper conductors only. Check to see that the driver type and rating are suitable for the application.

Compatible with CL dimmers and other Lutron dimmers and systems. DO NOT install if product has any visible damage. If moisture or condensation is evident, allow the product to dry completely before installation.







# Lutron

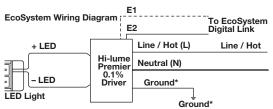
Hardwired driver

### EcoSystem® 3-wire driver





To EcoSystem Digital Link **EcoSystem Controls** E1 From Line/Control 120 – 277 V~ 50 / 60 Hz To LED Load + LED Line / Hot (L) - LED Neutral (N) Ground\*



> Mounting: Surface 100%-1% > Dimming: > Material/Finish: Steel, white

> Supplied with: Wire connection, mounting hardware,

instructions

Voltage	Output Voltage	Input Voltage	Item No.
5 12 V	12 VDC, 2-40 W	120-277 VAC, 50-60 Hz, 1A	833.02.965
5 24 V	24 VDC, 2–96 W	120-277 VAC, 50-60 Hz	833.02.929



Control methods: Ecosystem® smart digital control, 3-wire control Soft-on, fade-to-black dimming technology (Ecosystem® control only) Rated lifetime: 50,000 hours at 40° C (104° F) ambient temperature.

Compliance: UL Listed for United States and Canada, NOM certified, FCC part 15 for residential and commercial applications, NEMA 410, RoHS.

Control lights wirelessly from multiple locations.

Allows the freedom for multiple dimmer placements within a room. Add cabinet light controls right alongside existing rooms controls. Smooth, flicker-free dimming from 100% down to 1%.

Provides immunity to electrical noise that can cause flicker at low noise levels.

Integrates into a planned or existing EcoSystem® or Vive™ lighting control solution.

Control terminals protect from miswiring up to 277V.

Remote mount up to 100' from the light source.

Non-volatile memory restores all settings after power failure. Precision microprocessor control and integral thermal management deliver energy savings and extended product life (rated 50,000 hours).

100% performance tested at factory.

### Note

Drivers and receivers must be installed by licensed electrician and are subject to applicable national, state and local electrical codes. Use in conjunction with wireless receiver (sold separately). Controlled by wireless remote (sold separately).



Wireless receiver see page 141. Wireless remote see page 146.



Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice



# **Lutron hardwired driver**

Wireless reciever

Wireless receiver - for EcoSystem™ 3-wire drivers



Material/Color: Plastic, white
 Output voltage: 120 VAC
 Mounting: Surface/threaded

Item No.
833.01.818



Controls up to 3 Ecosystem® drivers.

Uses Lutron Clear Connect® RF technology.

Designed to give a linear response to changes in viewed light level. 2 wire connection between optional sensor and control module - the wires are interchangeable to eliminate miswiring.

Programmed rapid start design ensures full rated lamp life.

Lamps turn on to any dimmed level without flashing to full brightness.

End-of-lamp-life protection circuitry ensures safe operation.

Ultra-quiet operation

Non-volatile memory restores all ballast settings after power failure. 100% performance tested at factory.

### Note

Drivers and receivers must be installed by licensed electrician and are subject to applicable national, state and local electrical codes.



# **Lutron wall dimmer**

2 wire low voltage (LV)



### Wall dimming controls - 110-120 VAC

Diva



Ariadni



> Material: Plastic, Aluminum

> Wattage: 600

> L x W x H: 115 x 57 x 55 mm

(4 1/2" x 2 1/4" x 2 3/16")

> Supplied with: Mounting screws, wire nuts, installation

instructions

Color	Diva	Ariadni
Light almond	820.66.452	820.66.455
lvory	820.66.652	820.66.655
White	820.66.752	820.66.755

light almond	ivory	white

### Wall plates



Control multiple LED light bars, LED strip lights and pucks up to 600 W.

Great for dining rooms, bedrooms, bathrooms, and kitchens.

Dimming offers energy savings over standard wall switches.

Dimming to 1% with smooth, continuous, flicker-free performance. Arrives ready to install.

Input voltage: 110 - 120 VAC, 60 Hz, 600 VA / 450 W

Operate between 32 °F (0 °C) and 104 °F (40 °C).

0% to 90% humidity, non-condensing 12 VDC E-Series drivers see page 136. 24 VDC E-Series drivers see page 137. Lutron drivers see pages 138–141. > Material: Plastic

> L x W x H: 120 x 70 x 10 mm

(4 3/4" x 2 3/4" x 3/8")

> Supplied with: Mounting screws, cover plate

Color	Diva	Ariadni
Light almond	820.66.453	820.66.456
lvory	820.66.653	820.66.656
White	820.66.753	820.66.756



For installation by a qualified electrician in accordance with all local and national electrical codes. Use copper conductors only. For indoor use only. Check to see that the driver type and rating are suitable for the application. **Compatible with E-series and Lutron low voltage drivers.** DO NOT install if product has any visible damage. If moisture or condensation is evident, allow the product to dry completely before installation.





Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

# **Lutron wall dimmer**

2 wire forward phase (CL)



### **Diva and Ariadni wall dimming controls**

Diva







> Material: Plastic, Aluminum

> Wattage: 150

> L x W x H: 115 x 57 x 55 mm

(4 1/2" x 2 1/4" x 2 3/16")

> Supplied with: Mounting screws, wire nuts, installation

instructions

Color	Diva	Ariadni
Light almond	820.66.451	820.66.454
Ivory	820.66.651	820.66.654
White	820.66.751	820.66.754

### Diva and Ariadni wall plates





Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice.

Control up to 150 W of LED light bars, LED strip lights or pucks.

Great for dining rooms, bedrooms, bathrooms, closets and kitchens. Dimming offers energy savings over standard wall switches.

Dimming to 1% with smooth, continuous, flicker-free performance. Arrives ready to install.

Input voltage: 110 - 120 VAC, 60 Hz Operate between 32 °F (0 °C) and 104 °F (40 °C).

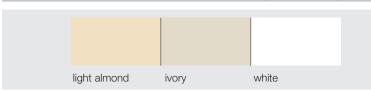
0% to 90% humidity, non-condensing 12 VDC E-Series drivers see page 136. 24 VDC E-Series drivers see page 137. Lutron drivers see pages 138–141. > Material: Plastic

> L x W x H: 120 x 70 x 10 mm

(4 3/4" x 2 3/4" x 3/8")

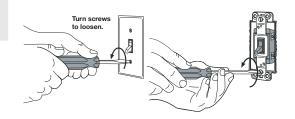
> Supplied with: Mounting screws, cover plate

Color	Diva	Ariadni
Light almond	820.66.453	820.66.456
lvory	820.66.653	820.66.656
White	820.66.753	820.66.756





For installation by a qualified electrician in accordance with all local and national electrical codes. Use copper conductors only. For indoor use only. Check to see that the driver type and rating are suitable for the application. **Compatible with E-series and Lutron low voltage drivers.** DO NOT install if product has any visible damage. If moisture or condensation is evident, allow the product to dry completely before installation.







# **Lutron wall dimmer**

2-conductor signal wire (0-10 V)





### **Diva wall dimmers**



Color	Item No.
Light almond	820.66.450
lvory	820.66.650
White	820.66.750

light almond	ivory	white

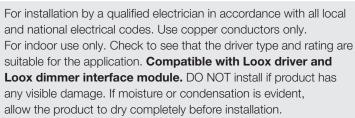
### **Diva wall plates**

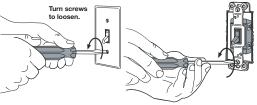


Color	Item No.
Light almond	820.66.453
lvory	820.66.653
White	820.66.753

•	Great for dining rooms, bedrooms, bathrooms, closets and kitchens. Dimming offers energy savings over standard wall switches. Dimming to 1% with smooth, continuous, flicker-free performance. Arrives ready to install. Works with Loox dimmer Interface Module and Loox driver to offer secondary side dimming. Operate between 32 °F (0 °C)

and 104 °F (40 °C). 0% to 90% humidity, non-condensing 12 VDC Loox drivers see page 136. 24 VDC Loox drivers see page 137. Loox dimmer Interface see page 92.





Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to atter specifications without notice

# **Lutron wall dimmer**

2 wire Caséta Pro

### Caséta Pro wall dimmers



> Material: Plastic, Aluminum

> Wattage: 250

 $> L \times W \times H$ : 115 x 57 x 55 mm

(4 1/2" x 2 1/4" x 2 3/16")

> Supplied with: Mounting screws, wire nuts, installation

instructions

Color	Item No.
Light almond	820.66.400
lvory	820.66.410
White	820.66.780

### **Diva wall plates**



Control multiple LED light bars, LED strip lights and pucks up to 250 W. Great for dining rooms, bedrooms, bathrooms, closets and kitchens. Dimming to 1% offers energy savings over standard wall switches. Single pole/multi-location 250 W dimmable LED/CFL 1000 W incandescent/halogen; 1000 VA MLV Neutral optional 434 MHz

Operate between 32 °F (0 °C) and 104 °F (40 °C). 0% to 90% humidity, non-condensing 12 VDC E-Series drivers see page 136. 24 VDC E-Series drivers see page 137. Lutron drivers see pages 138-141.

Works with remote and gateway

for multiple control locations.

> Material: Plastic

120 x 70 x 10 mm  $> L \times W \times H$ :

(4 3/4" x 2 3/4" x 3/8")

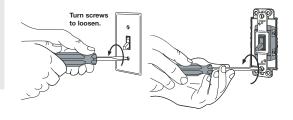
> Supplied with: Mounting screws, cover plate

Color	Item No.
Light almond	820.66.453
lvory	820.66.653
White	820.66.753





For installation by a qualified electrician in accordance with all local and national electrical codes. Use copper conductors only. For indoor use only. Check to see that the driver type and rating are suitable for the application. Compatible with E-series and Lutron low voltage drivers. DO NOT install if product has any visible damage. If moisture or condensation is evident, allow the product to dry completely before installation.





Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to after specifications without notice

# **Lutron wall dimmer**

Caséta Pro wireless remote





### Pico remote control - for Caséta wall dimmer







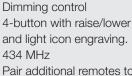
> Material: Plastic

 $> W \times H \times D$ : 67 x 33 x 8 mm

(2 5/8" x 1 5/16" x 5/16")

> Supplied with: CR2032 battery

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Pair additional remotes to main wall dimmer for added dimming control locations.

3 V - 10 mA

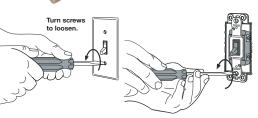
Uses single CR 2032 battery

Color	Item No.
Light almond	825.73.771
lvory	825.73.772
White	825.73.770

light almond ivony white				
light almond ivony white				
light almond ivony white				
light almond ivon white				
light almond ivon white				
	light almond	ivory	white	

### Diva wall plate





> Material:	Plastic

 $> L \times W \times H$ : 120 x 70 x 10 mm

(4 3/4" x 2 3/4" x 3/8")

> Supplied with: Mounting screws, cover plate

Color	Item No.
Light almond	820.66.453
lvory	820.66.653
White	820.66.753

light almond	ivory	white
ngi it amirioria	11019	***************************************



### Gateway smart bridge for Caséta Pro, 5 V

> Material/Color: Plastic, white

 $> W \times H \times D$ : 70 x 70 x 30 mm

(2 3/4" x 2 3/4" x 1 3/16")

> Supplied with: 120 V-5 V, 300 mA power

supply

Item No.
830.69.887

	_
- 4	

### Mounting bracket for remote control

> Allows for easy installation of a remote control over an existing wall box or directly on any wall surface.

> Material/Color: Plastic, clear  $> W \times H \times D$ : 95 x 35 x 10 mm (3 3/4" x 1 3/8" x 3/8")

Item No.
825.73.775



Enables control of lights, shades, and temperature using the Lutron App.

Compatible with Caséta® wireless dimmers and switches, Serena® battery-powered shades, Lutron wireless thermostat, Nest Learning thermostat, and select Honeywell® Wi-Fi thermostats.

Easy to install; just plugs into your Wi-Fi router.

Uses Clear Connect® wireless technology - no callbacks.



### Lutron app for smart devices

Works in conjunction with the Caséta® Pro wall dimmer and Smart Bridge PRO.

Control individual lights, shades, and thermostats even when you're away from home.

Add scenes to control multiple lights and shades with a single touch.

Schedule scenes to adjust lights and shades automatically. Download for free from the App Store<sup>©</sup> or Google Play™.





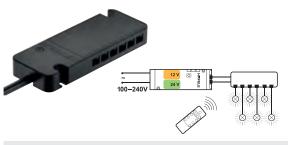
Jimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

HXFELE

SUPPLYING

# RF receiver and remotes

### Premium 6-channel remote receiver



> Material/Finish: Aluminum, black  $> L \times W \times H$ : 172 x 69 x 32 mm

(6 3/4" x 2 11/16" x 1 1/4")

System	Wattage (W)	Max. wattage per slot (W)	Item No.
12 V	60	30	833.73.741
24 V	90	60	833.77.785



White LED lights can be remote controlled with this system.

Remote system requires at least 1 remote and 6-channel receiver to control lights. Three lighting scenes can be stored. Remote switches can be added that are compatible with both the 12 V and the 24 V system.

Max. 10 remote receivers can be combined. Light state and scene stored in memory and recalled upon start up.

### Note

Not suitable for multi-white or RGB lights.

### **Premium 6-channel remote**



> Application: 12 V and 24 V system > Material/Color: Plastic, black

> Supplied with: Replaceable CR2032 lithium battery

Item No. 833.89.121



For controlling Loox 6-channel remote receivers for white LEDs. Soft on/off with dimming function for 6 channels.

3 lighting scenes can be stored.

Max. 10 remote receivers can be controlled within a radius of 15 m (49').

### Remote switch 12 V/24 V - recess mounted



> Drill hole Ø x H: 40 x 14.4 mm (1 5/8" x 9/16") > Material/Color: Plastic, silver colored

> Supplied with: Replaceable CR2032 lithium battery

Item No.

Ħ	

Dimensional data not binding. Dimensions in mm, inches are approximate. We reserve the right to alter specifications without notice

For controlling all channels or one channel of Loox remote receiver for white LEDs. Soft on/off and dimming.

Max. 10 remote receivers can be controlled within a radius of 15 m (49').



### Housing for surface mounting

> Round for screw mounting

	_	_	_	
a				b,
×		0		×
	-	_	-	
7				

Item No.
833.89.123

### Coin battery, lithium-ion, CR2032 - for remotes, CR2430 - for wall switch



Description	Ø	Item No.
CR2032	20 (13/16")	002.99.032
CR2430	24 (15/16")	002.99.034

833.89.122

# LED strip lights

Technical data, monochrome 5 mm / 8 mm

	Voltage	Model Häfele Loox5	Quantity	Color temperature	Illuminance Ix Distance					Wattage	
	V		I EDo/m	V	250 mm	500 r			1000 mm		
LED strip lights monochrome, 5 mm	V		LEDs/m	N.	(9 13/16")	(19 1	1/10")	(29 1/2")	(39 3/8")	W/m	
LED strip lights monochrome, 5 mm		LED		2700	940		400	220	135	4.8	
	5 12 V	2060		3000	970	١.	420	235	145	4.8	
		2000	120								
				4000	1000		430	240	145	4.8	
		1.50		5000	1030		430	240	145	4.8	
		LED 2061		2700	1860		790	440	270	9.6	
		2001	120	3000	1960	:X:	850	470	290	9.6	
				4000	2000	(1)	860	480	290	9.6	
		. ==		5000	2060		860	480	290	9.6	
	5 24 V	LED 3040		2700	940		400	220	135	4.8	
		3040	120	3000	970		420	235	145	4.8	
				4000	1000	*	430	240	145	4.8	
X X X X X X X X X X X X X X X X X X X				5000	1030		430	240	145	4.8	
maladina basa amasa		LED 3041	120	2700	1860	***	790	440	270	9.6	
				3000	1960		850	470	290	9.6	
			.20	4000	2000		860	480	290	9.6	
				5000	2060		860	480	290	9.6	
LED strip lights monochrome, 8 mm		, LED									
	5 12 V			2700	1050	- <b>,</b> \(\dot\)-	435	240	145	4.8	
X A A A A		2062	60	3000	1090		455	245	150	4.8	
				4000	1120	7	460	260	155	4.8	
				5000	1130		470	260	160	4.8	
		LED		2700	1050		435	240	145	4.8	
		2065	120	3000	1090	-;ф:-	455	245	150	4.8	
			120	4000	1120	7	460	260	155	4.8	
				5000	1130		470	260	160	4.8	
		LED		2700	2145		900	480	300	9.6	
		2068	120	3000	2250	:X:	940	505	310	9.6	
			120	4000	2300	-X-	950	510	320	9.6	
				5000	2300		955	515	320	9.6	
	5 24 V	LED		2700	1050		435	240	145	4.8	
		3042	100	3000	1090	*	455	245	150	4.8	
			120	4000	1120		460	260	155	4.8	
				5000	1130		470	260	160	4.8	
		LED		2700	2145		900	480	300	9.6	
en en m nen		3045	100	3000	2250	24	940	505	310	9.6	
			120	4000	2300	***	950	510	320	9.6	
				5000	2300		955	515	320	9.6	
		LED		2700	2870		1210	665	415	14.4	
		3048		3000	3000	14	1270	695	430	14.4	
			120	4000	3100	>次:	1310	715	445	14.4	
				5000	3100		1320	715	450	14.4	
	1		1							1	

<sup>\*</sup>See page 166 for conversion chart.



Luminous flux	Luminous efficacy	Section length	Color rendering index CRI		Available length			Max. strip length (visual)	Max. strip length wattage-dependent	on the Loox5 driver		
. ,					5 m	15 m	50 m					
lm/m *	lm/W	mm	R <sub>a</sub>	R <sub>9</sub>	(196 7/8")	(590 9/16")	(1968 1/2")	m	20 W	40 W	60 W	90W
440		05 (1")	>90	>50	833.74.320	833.74.324		10(1511/0")				
460	92 96	25 (1")	>90	>50	833.74.321	833.74.325	-	4.0 (154 1/2")				
		25 (1")					-	4.0 (154 1/2")	4.10	8.30	12.50	_
480	100	25 (1")	>90	>50	833.74.322	833.74.326	_	4.0 (154 1/2")				
495	103	25 (1")	>90	>50	833.74.323	833.74.327	_	4.0 (154 1/2")				
870	91	25 (1")	>90	>50	833.74.328	833.74.332	-	3.0 (118 1/8")				
830	97	25 (1")	>90	>50	833.74.329	833.74.333	_	3.0 (118 1/8")	2.00	4.10	6.20	_
955	99	25 (1")	>90	>50	833.74.330	833.74.334	-	3.0 (118 1/8")				
990	103	25 (1")	>90	>50	833.74.331	833.74.335	_	3.0 (118 1/8")				
440	92	50 (2")	>90	>50	833.76.300	833.76.304	-	8.0 (314 15/16")				
460	96	50 (2")	>90	>50	833.76.301	833.76.305	-	8.0 (314 15/16")	4.10	8.30	_	18.70
480	100	50 (2")	>90	>50	833.76.302	833.76.306	-	8.0 (314 15/16")				
495	103	50 (2")	>90	>50	833.76.303	833.76.307	-	8.0 (314 15/16")				
870	91	50 (2")	>90	>50	833.76.308	833.76.312	-	5.5 (216 9/16")				
930	97	50 (2")	>90	>50	833.76.309	833.76.313	-	5.5 (216 9/16")	2.00	4.10	_	9.30
955	99	50 (2")	>90	>50	833.76.310	833.76.314	-	5.5 (216 9/16")	2.00	4.10		0.00
990	103	50 (2")	>90	>50	833.76.311	833.76.315	_	5.5 (216 9/16")				
440	92	50 (2")	>90	>50	833.74.336	-	833.74.340	6.0 (236 1/4")				
465	97	50 (2")	>90	>50	833.74.337	_	833.74.341	6.0 (236 1/4")	4.10	8.30	12.50	_
490	102	50 (2")	>90	>50	833.74.338	_	833.74.342	6.0 (236 1/4")	4.10	0.00	12.00	
495	103	50 (2")	>90	>50	833.74.339	_	833.74.343	6.0 (236 1/4")				
440	92	25 (1")	>90	>50	833.74.354	_	833.74.358	6.0 (236 1/4")				
465	97	25 (1")	>90	>50	833.74.355	_	833.74.359	6.0 (236 1/4")	4.10	8.30	12.50	
490	102	25 (1")	>90	>50	833.74.356	_	833.74.360	6.0 (236 1/4")	4.10	0.30	12.50	_
495	103	25 (1")	>90	>50	833.74.357	_	833.74.361	6.0 (236 1/4")				
920	96	25 (1")	>90	>50	833.74.362	_	833.74.366	4.0 (154 1/2")				
970	101	25 (1")	>90	>50	833.74.363	_	833.74.367	4.0 (154 1/2")	2.00	4.10	6.00	
1000	104	25 (1")	>90	>50	833.74.364	_	833.74.368	4.0 (154 1/2")	2.00	4.10	6.20	_
1040	108	25 (1")	>90	>50	833.74.365	_	833.74.369	4.0 (154 1/2")				
440	92	50 (2")	>90	>50	833.76.316	_	833.76.320	12.0 (472 7/16")				
465	97	50 (2")	>90	>50	833.76.317	_	833.76.321	12.0 (472 7/16")	4.10	0.00		10.70
490	102	50 (2")	>90	>50	833.76.318	_	833.76.322	12.0 (472 7/16")	4.10	8.30	_	18.70
495	103	50 (2")	>90	>50	833.76.319	_	833.76.323	12.0 (472 7/16")				
920	96	50 (2")	>90	>50	833.76.334	_	833.76.338	8.0 (314 15/16")				
970	101	50 (2")	>90	>50	833.76.335	_	833.76.339	8.0 (314 15/16")	0.00	4.45		0.00
1000	104	50 (2")	>90	>50	833.76.336	_	833.76.340	8.0 (314 15/16")	2.00	4.10	_	9.30
1040	108	50 (2")	>90	>50	833.76.337	_	833.76.341	8.0 (314 15/16")				
1270	88	50 (2")	>90	>50	833.76.352	-	833.76.356	6.2 (244 1/8")				
1305	91	50 (2")	>90	>50	833.76.353	_	833.76.357	6.2 (244 1/8")				
1340	93	50 (2")	>90	>50	833.76.354	_	833.76.358	6.2 (244 1/8")	1.30	2.70	_	6.20
1010		00 (2)	700	200	333.7 3.334		3000.000	3.2 (2 17 1/0 )		1	1	



For quick selection of linear light, see page 2

**L X**5

# LED strip lights

Technical data, monochrome constant current 8 mm / silicone 8 mm

	Voltage	Model Häfele Loox5	Quantity	Color temperature	Illuminance X Distance	500 n		750 mm	1000 mm	Wattage	
	V		LEDs/m	K	(9 13/16")	(19 1	1/16")	(29 1/2")	(39 3/8")	W/m	
LED strip lights monochrome constant current 8 mm										*	
	5 12 V	LED		2700	1775		760	425	265	9.6	
		2077	120	3000	1850	:X:	790	440	270	9.6	
			120	4000	1950	77.	830	465	285	9.6	
				5000	1950		830	465	285	9.6	
	5 24 V	LED		2700	2050		890	490	305	9.6	
		3050	140	3000	2150	:X:	930	520	325	9.6	
				4000	2205	7	990	545	335	9.6	
				5000	2340		1010	550	340	9.6	
		LED		2700	3150		1365	760	470	14.4	
		3051	140	3000	3170	:X:	1385	770	480	14.4	
			140	4000	3190	<b>※</b>	1390	770	480	14.4	
				5000	3200		1400	770	480	14.4	
		LED		2700	4070		1750	970	600	19.2	
		3052		3000	4160	:X:	1780	990	620	19.2	
				4000	4220	-X-	1800	1000	625	19.2	
				5000	4260		1840	1020	630	19.2	
LED silicone strip lights monochrome, 8 mm						-					
	5 12 V	LED		2700	920		390	215	135	4.8	
X X X		2063	00	3000	960	1	410	225	140	4.8	
			60	4000	975		415	230	145	4.8	
				5000	1010		425	235	145	4.8	
	5 24 V	LED		2700	920		390	215	135	4.8	
		3043	100	3000	960	1	410	225	140	4.8	
			120	4000	975		415	230	145	4.8	
THE PROPERTY OF THE PARTY OF TH				5000	1010		425	235	145	4.8	
		LED		2700	1855		790	435	270	9.6	
		3046	100	3000	1895	1	805	445	275	9.6	
			120	4000	1960	:X:	840	465	290	9.6	
				5000	2020		860	475	295	9.6	

<sup>\*</sup>See page 166 for conversion chart.

Luminous flux		Luminous efficacy	Section length	Color rendering index CRI		Available length			Max. strip length (visual)	Max. strip length wattage-	on the Loox5 driver	on the Loox5 driver			
	m/m	lm/W	mm	R <sub>a</sub>	$R_9$	5 m (196 7/8")	15 m (590 9/16")	50 m (1968 1/2")	m	20 W	40 W	60 W	90W		
*	810	* 84	25 (1")	>90	>50	833.74.372	_	833.74.376	6.2 (244 1/8")						
	860	90	25 (1")	>90	>50	833.74.373	_	833.74.377	6.2 (244 1/8")						
	900	94	25 (1")	>90	>50	833.74.374	_	833.74.378	6.2 (244 1/8")	2.00	4.10	6.20	_		
	905	94	25 (1")	>90	>50	833.74.375	_	833.74.379	6.2 (244 1/8")						
_	945	98	50 (2")	>90	>50	833.76.362	_	833.76.366	9.0 (354 5/16")						
	1030	107	50 (2")	>90	>50	833.76.363	_	833.76.367	9.0 (354 5/16")						
_	1060	110	50 (2")	>90	>50	833.76.364	_	833.76.368	9.0 (354 5/16")	2.00	4.10	_	9.30		
	080	113	50 (2")	>90	>50	833.76.365	_	833.76.369	9.0 (354 5/16")						
1	1430	99	50 (2")	>90	>50	833.76.370	_	833.76.374	6.2 (244 1/8")						
1	520	106	50 (2")	>90	>50	833.76.371	_	833.76.375	6.2 (244 1/8")	1.00	0.70		0.00		
1	1605	111	50 (2")	>90	>50	833.76.372	_	833.76.376	6.2 (244 1/8")	1.30	2.70	_	6.20		
1	650	115	50 (2")	>90	>50	833.76.373	_	833.76.377	6.2 (244 1/8")						
1	850	96	50 (2")	>90	>50	833.76.378	-	833.76.382	4.6 (181 1/8")						
2	2015	105	50 (2")	>90	>50	833.76.379	_	833.76.383	4.6 (181 1/8")	1.00	2.00		4.60		
2	2050	107	50 (2")	>90	>50	833.76.380	_	833.76.384	4.6 (181 1/8")	1.00	2.00	_	4.00		
2	2100	109	50 (2")	>90	>50	833.76.381	_	833.76.385	4.6 (181 1/8")						
	115	86	50 (2")	>90	>50	833.74.344	833.74.348	-	6.0 (236 1/4")						
_	140	92	50 (2")	>90	>50	833.74.345	833.74.349	_	6.0 (236 1/4")	4.10	8.30	12.50	_		
	155	95	50 (2")	>90	>50	833.74.346	833.74.350	-	6.0 (236 1/4")		0.00	12.00			
_	160	96	50 (2")	>90	>50	833.74.347	833.74.351	_	6.0 (236 1/4")						
	115	86	50 (2")	>90	>50	833.76.324	833.76.328	-	12.0 (472 7/16")						
_	140	92	50 (2")	>90	>50	833.76.325	833.76.329	-	12.0 (472 7/16")	4.10	8.30	_	18.70		
	155	95	50 (2")	>90	>50	833.76.326	833.76.330	-	12.0 (472 7/16")						
_	160	96	50 (2")	>90	>50	833.76.327	833.76.331	-	12.0 (472 7/16")						
	320	85	50 (2")	>90	>50	833.76.342	833.76.346	-	8.0 (314 15/16")						
_	370	91	50 (2")	>90	>50	833.76.343	833.76.347	-	8.0 (314 15/16")	2.00	4.10	_	9.30		
	900	94	50 (2")	>90	>50	833.76.344	833.76.348	-	8.0 (314 15/16")						
18	930	97	50 (2")	>90	>50	833.76.345	833.76.349	_	8.0 (314 15/16")						



For quick selection of linear light, see page 2

### **LOX**5

# LED strip lights

Technical data, multi-white 8 mm / RGB 10 mm

	< Voltage	Model Häfele Loox5	Onantity LEDs/m	X Color temperature	Illuminanoe X Illuminanoe X Illuminanoe Distanoe Distanoe (9 13/16")	500 mm (19 11/16")		1000 mm (39 3/8")	M/W
LED strip lights multi-white, 8 mm									*
	5 12 V	LED 2064	2 x 60	2700	1025	425	230	145	4.8
			2 X 00	5000	1075	445	245	150	4.0
gu sus uğu sus uğu sus uğ		LED 2070	70	2700	1865	785	430	270	9.6
929 2 2 2 2 2 2 2 2 2 2 2 2			2 x 120	5000	2045	865	475	295	9.6
	5 24 V	LED 3044	2 x 120	2700	1025	425	230	145	4.8
			2 X 120	5000	1075	445	245	150	4.0
		LED 3060	0 v 100	2700	1025	425	230	145	4.8
		Silicone	2 x 120	5000	1075	445	245	150	4.0
		LED 3047	0 v 100	2700	1865	785	430	270	0.6
			2 x 120	5000	2045	865	475	295	9.6
		LED 3061	2 x 120	2700	1865	785	430	270	9.6
		Silicone	2 X 120	5000	2045	865	475	295	9.0
		LED 3049	2 x 120	2700	2780	1180	650	405	14.4
			Z X 120	5000	2800	1200	660	415	14.4
LED strip lights RGB, 10 mm									
100 m m m m m m m m m m m m m m m m m m	5 12 V	LED 2080	120	RGB	-	-	_	_	9.6
100 - 0 - 10 - 0 - 0 - 0 - 0 - 0 - 0 - 0	5 24 V	LED 3080	120	RGB	-	_	_	_	9.6

<sup>\*</sup>See page 166 for conversion chart.

# **H**ÄFELE

Luminous flux	Luminous efficacy	Section length	Color rendering index CRI		Available length			Max. strip length (visual)	Max. strip length wattage-dependent	on the Loox5 driver			
lm/m	lm/W	mm	R <sub>a</sub>	R <sub>9</sub>	5 m (196 7/8")	15 m (590 9/16")	50 m (1968 1/2")	m	20 W	40 W	60 W	90W	
*	*												
425	89	50 (2")	>90	>50	833.74.352	_	833.74.353	4.5	4.10	8.30	12.50	_	
465	97	00 (2 )	700	700	00017 11002		00011 11000	(177 3/16")	1.10	0.00	12.00		
825	86	25 (1")	>90	>50	833.74.370	_	833.74.371	3.5	2.00	4.10	6.20	_	
930	97	20(1)	700	200	00011 11010			(137 13/16")	2.00	1.10	0.20		
425	89	50 (2")	>90	>50	833.76.332	_	833.76.333	8.5	4.10	8.30	_	18.70	
465	97	00 (2 )	7 00	, 00				(334 5/8")		0.00			
425	89	50 (2")	>90	>50	833.76.387	833.76.388	_	8.5	4.10	8.30	_	18.70	
465	97	,						(334 5/8")					
825	86	50 (2")	>90	>50	833.76.350	_	833.76.351	6.5	2.00	4.10	_	9.30	
930	97	(= /						(255 7/8")					
825	86	50 (2")	>90	>50	833.76.389	833.76.390	_	6.5	2.00	4.10	_	9.30	
930	97	00 (2 )	700	200	00011 01000	00011 01000		(255 7/8")	2.00	1.10		0.00	
1230	85	50 (2")	>90	>50	833.76.360	_	833.76.361	5.0	1.30	2.70	_	6.20	
1370	95	00 (2 )			0.000		000.70.001	(196 7/8")	1.00	2.70		0.20	
530	51	25 (1")	-	-	833.74.380	_	_	3.0 (118 1/8")	2.00	4.10	6.20	_	
530	51	50 (2")	-	-	833.76.386	_	-	6.5 (225 7/8")	2.00	4.10	_	9.30	

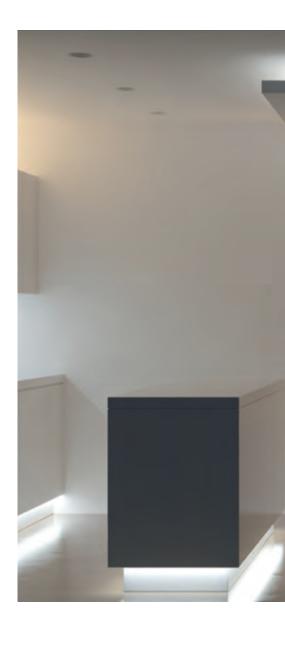
For quick selection of linear light, see page 2





# Light changes spaces.

The interplay of light in rooms and light in furniture promotes a feeling of well-being.



### Cooking.

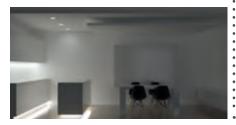
Bright, neutral white light makes for a pleasant illumination of the important work spaces and ensures the proper reflection of the color of food and products.

## Eating.

The combination of direct, flat light for a perfect illumination of the dining table, supplemented with indirect, warm effect lights on ceilings and walls creates an atmosphere of ambience.

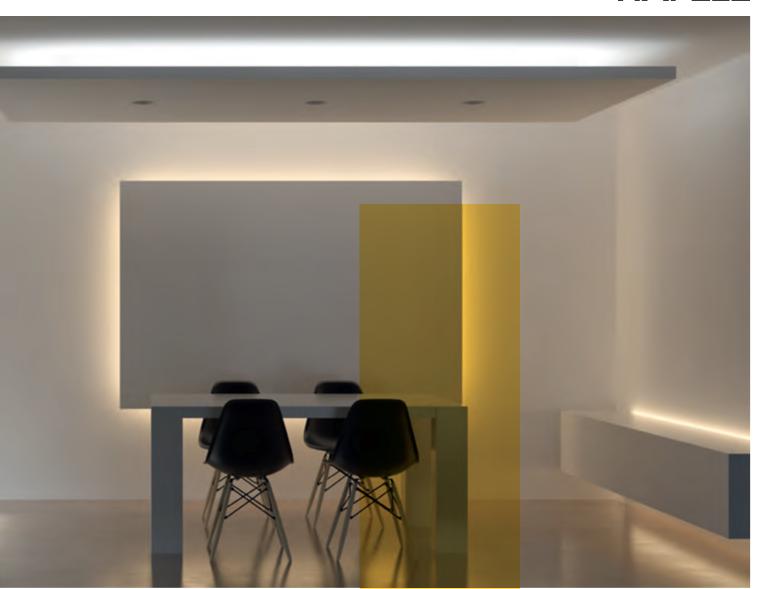
### Relaxation.

The interaction of areas of light and horizons created by light creates a comfortable and cozy atmosphere.









Bright cool light promotes concentration, warm and dimmed light promotes relaxation.



# Light and intensity.

When lighting a room, using a combination of several light sources is critical.

In the 1950s, Richard Kelly, a pioneer of lighting design, already differentiated between light to see – ambient luminescence, focal glow – the illumination of an object or area, and play of brilliants – in which the light itself is the object to observe.



Depending on the purpose for the lighting plan of a room and specific areas, task light is used. To create a specific ambience, ambient light is used.



### Task light.

For example, the lighting need in a home office can differ and depends on the location of the desk as well as the influx of daylight. When work is done on a computer or tablet, a glarefree light source is required. Since the screen is the work area, a backlight can be sufficient. However, drawing or writing requires a well lit work surface.



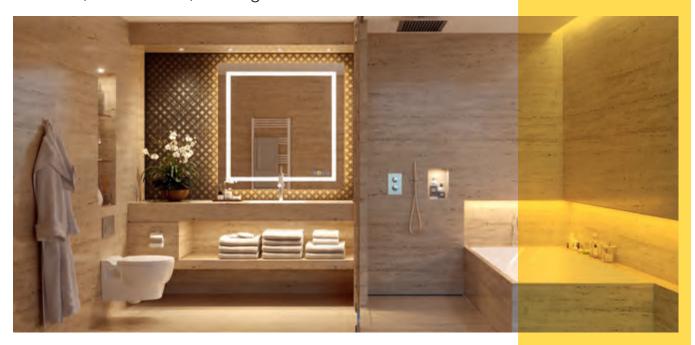
### Ambient light.

To create an atmospheric ambience, the room light can also be used as indirect lighting in the furniture. Ambient light provides less illumination and serves to create an appealing environment. The light source is often hidden, for example it can be embedded in shelving or behind moldings. It's important that ambient light beams do not create brightly lit surfaces or produce sharp edges.



# Light evokes emotions.

Light situations trigger associations: romantic, comfortable, relaxing and cold.





### Staging.

Spotlights make the illuminated objects on shelves and showcases the focus. And wall wash light makes wall structures visible.



### Highlighting.

Highlighting functional areas with even, bright light is a sensible addition to the general room light.

With a smart lighting plan specific moods can be created in the living environment. The Häfele Loox system can turn a purposefully designed bathroom into a spa. Edge lighting creates an artificial horizon, dimmable spotlights create a candlelight atmosphere. Warm light creates a mood simulating a sunset.



### Setting accents.

The Loox lighting system offers many possibilities to set accents in a room. With the appropriate light composition corners, edges and surfaces can be dramatized.

# Light and color.



### Light makes color visible.

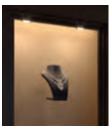
Light is made up of electromagnetic waves which only become visible to the human eye through reflection on objects. A red object reflects only the red color. The other colors are absorbed. All light sources are tested and measured based on the accuracy of their color reproduction, the so-called color rendering index (CRI). The higher the CRI, the higher the quality of color reproduction.



## Warm light. Cool light.

The color of the light, also referred to as color temperature, controls our state of well-being. Light with a high blue component has an invigorating effect on the body. Just like the cool fresh light of an early morning.

By comparison, strong red and yellowcolored light has a relaxing effect and evokes a state of rest. Just like the warm glow in the late afternoon or a candle.





#### Consistent color quality and performance.

An important factor for new technologies is the reliability in use.

Häfele has set high standards for the selection of materials, which are continually tested and certified internationally. Setting a narrow binning is one of them. All LEDs are tested and sorted to specified quality criteria after production. Häfele selects the highest quality class LEDs for maximum life time, energy efficiency and to ensure aftermarket replacement quality.

Loox / 161



# Light with effect.

Every room comes to life with light and shadows.





## Linear light.

Linear illumination is created with LED strip lights. Inside cabinets and shelves, on work surfaces or enclosures of furniture, LED strip lights provide uniform light with a broad area of illumination.



## Directional light.

Narrow beam Loox spotlights can create directional lighting effects to highlight specific objects. With surface mounted or built-in spotlights in a row it's possible to achieve flat surface illumination of specific areas. A special effect is created by overlapping cones of light.

Linear illumination can be used to create horizons. With direct light objects can be partially emphasized. Wall wash light can highlight and reinforce structures (stone structures, relief wallpapers).

# Light and surfaces.



Depending on the material and structure a surface reacts differently to light. Light is partially absorbed, a part is reflected and depending on the surface it's scattered. With translucent or transmissive materials, the light can also shine through the body.

Depending on the material and structure a surface reacts differently to light.



#### Dark surfaces.

Dark materials absorb light, so it's necessary to use stronger light. However, too much light destroys the ambiance and comfort.



## **Bright surfaces.**

A bright floor or bright materials reflect the light much better than dark materials. A brightly designed space therefore requires less overall light. Extra effect lighting adds freshness and a feeling of spaciousness to the room.



# Light and control.

A Smart Home also includes the smart control of different lighting scenes inside the space.

The Häfele Loox system offers several solutions for controlling lights; from the direct control via simple switching points to the remote control of more complex lighting scenarios.



In addition to the lighting, digital solutions can also be used to centrally operate and control the stereo, television, heating, alarm system and more.

## **HAFELE**



## Remote control of light.

Especially important is the control of light scenes in multi-functional rooms. Depending on the application, remote controls can be used for easy control of several light sources, from multi-white lights to colored RGB lights.



## Control light (and more) centrally.

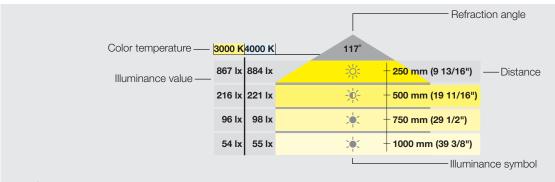
An app connects and centrally controls all installed light components and allows the design of light effects individually with a smartphone or tablet. In this way multiple scenes can be saved and programmed, or simply retrieved with just a fingertip.





## Light effects and lighting technology

#### **Cone of light**



>500 lx 150–500 lx <150 lx



#### Note:

The illuminance symbol always represents the best value of all color temperatures and is meant to be for quick reference only. Please note the specific values of the individual color temperatures and the refraction angle before ordering.

#### **Recommendation for illumination of interior rooms**

Interior room type	Illuminance in Lux at 500 mm	Color temperature
Kitchen, dining area	300–500	2700–4000 K
Store fixtures, galleries	300–500	4000–6500 K
Bedroom, living room	200–300	2700–4000 K
Bathroom	200–500	3500–4000 K
Storage room	100	4000–5000 K
Orientation light, hallway, wardrobe	10–50	4000–5000 K

#### **Conversion chart**

Wattage						
W/m	W/ft.					
4.8	1.5					
9.6	3.0					
14.4	4.5					
19.2	6.0					

Luminus Flux									
lm/m	lm/ft.	lm/m	lm/ft.						
415	127	970	296						
425	130	990	302						
440	134	1000	305						
455	139	1030	314						
460	140	1040	317						
465	142	1060	323						
480	146	1080	329						
490	149	1230	375						
495	151	1270	387						
530	162	1305	398						
810	247	1340	409						
820	250	1370	418						
825	252	1430	436						
860	262	1520	464						
870	265	1605	490						
900	275	1650	503						
905	276	1850	564						
920	281	2015	615						
930	284	2050	625						
945	288	2100	641						
955	291								



## Test symbols and symbols

#### **Product features**



Dimmable



**RGB** light



Multi-white light



Bluetooth®: industry standard for data transmission between electronic devices by radio over a short distance. The Bluetooth® word mark and logos are registered trademarks of Bluetooth SIG, Inc., and Häfele uses these marks under licence. Other trademarks and names are the property of their respective owners.

#### **Test symbol**



TÜV seal of quality



Confirmation from manufacturer that the product complies with the product-specific applicable European norms and standards.

Häfele will not use the certification in advertising.

**RoHS** 

Restriction of Hazardous Substances (EU directive 2011/65/EU).

Häfele will not use the certification in advertising.



Underwriters Laboratories, correspondence with the national standards in the USA and Canada



Energy efficiency standard level VI (USA) meets DOE new standards



Product Safety Electrical Appliance and Material Safety Law (for Japan)



Regulatory Compliance Mark (for Australia)



China Compulsory Certification



Eurasian Conformity, for CU countries (Russia, Kazakhstan, Belarus)



Korea Certification Mark



Bureau of Standards, Metrology & Inspection BSMI (for Taiwan)



Thai Industrial Standards Institute TISI



European Norms Electrical Certification, with indication of the testing laboratory (one of 18 European national institutes)



Declaration of Conformity for telecommunication and radio equipment (USA)



Telecommunication and Radio Equipment (Japan)

#### **Protection classes**

Protection class II



Protection class III

#### **Degrees of protection**

IP20 Only for use in dry locations

**IP44** Penetration by solid foreign bodies **q** ≥1 mm is

prevented. Water spray protection

(water from all directions)

IP65 Dustproof, protection from water spray (jet) from

any angle.

IP44 after installation



IP65 after installation

#### Safety symbols



Installation permitted on or in furniture, whose ignition properties are unknown.



Max. surface temperature in case of fault



Lights to be used indoors only. Not to be used outdoors.



Do not use components that impede thermal radiation.



Waste of Electrical and Electronic Equipment. Do not dispose of in residential waste!



Driver, converts alternating current to direct current

#### Voltage supply

SELV Safety Extra Low Voltage



Independent operating unit for use outside of light without additional cover.



Short-circuit proof with safety isolation



## **Technical terms**

#### **Technical terms**

#### Refraction angle

The refraction angle (beam angle) describes the angle between two imagined straight lines in a plane through the visual beam axis, whereby these straight lines go through the center of the front of the lamp and through the points at which the illuminance is 50% of the illuminance on the visual beam axis.

#### Illuminance

The illuminance is the **luminous flux** (lm) in relation to a surface (m²) and it is indicated in Lux (lx). It is used to measure the brightness with which a surface is illuminated.

#### **Binning**

During industrial manufacture, LEDs differ from each other with regard to color, luminous flux (brightness) and forward voltage. In order to achieve consistent light quality with the same brightness level and a uniform light color, they are therefore sorted according to color, luminous flux and forward voltage and separated into bins ("containers") during manufacturing. This sorting process is known as Binning. Häfele exclusively uses bins with a high degree of brightness in order to achieve high efficiency.

#### Bluetooth® Mesh

Network technology which was introduced in 2017, based on Bluetooth® Low Energy, in which all components (controls, devices) form a joint network, which is ideal for controlling lights. Häfele Connect Mesh uses this technology.

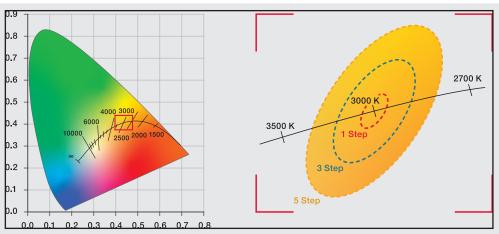
#### **Energy efficiency class**

The energy efficiency class provides information about the relevant energy consumption. Lamps and lights are categorized in classes E to A++. LED lights achieve the highest classes A to A++.

## Color temperature and light color

The color temperature is a specification of the color appearance of a white light source and is measured in Kelvin (K). The lower the color temperature, the warmer the light color; the higher the color temperature, the cooler the light color. White light sources with a color temperature below 3400 K are considered "warm white" by Häfele, white light sources with a color temperature between 3400 K and 5700 K are considered "cool white". White light sources above 5700 K are referred to as "daylight white".

#### Color consistency/ color differences



Color differences are specified in stages, so called "MacAdams Ellipses" or "SDCM" (Standard Deviation of Color Matching). Häfele uses 3 SDCM binnings for its LED products. This is a good value, because it is statistically unlikely that LEDs with a maximum color difference will be next to each other on the strip light or in the light and that the color difference is visible. In its ErP directive, the EU Commission stipulates that 6 SDCMs may not be exceeded for LED products.

SDCM	Visibility
1	Only people with extremely good vision can see the most minimal color differences.
2	Most minimal color differences are visible.
3	Very small color differences are visible.
4	Color differences are visible.
5	Significant color differences are visible.
>5	Very clear color differences are visible.

## Color rendering index CRI

The color rendering index is a parameter that can be used to compare the color rendering quality of light sources at the same color temperature. The higher the value, the better the color rendering. A value of 100 corresponds to the color rendering of sunlight.

#### Weighted energy consumption

The weighted energy consumption is rounded to two decimal places in kilowatt hours in relation to 1,000 hours of use. It applies to operation of the LED with an external driver. The calculation and publication of this value is defined by EU ordnance No. 874/2012.



Technical terms							
Constant current technology	The same current flows t drop in luminous flux is			s of all LEDs is the same, and a ength of the strip lights.			
Life time	environment, the shorter	the life time. The replace	ement rate in years is calc	of the products. The hotter the culated from the total life time and s a planning aid. The specified life			
	Indoor use	Annual operating time (EN 15193) hours	Replacement rate Years	Life time installation Hours			
	Office Education Hospital Hotel Restaurant Shop	2,500 2,000 5,000 5,000 2,500 5,000	20 25 10 10 10 10	50,000 50,000 50,000 50,000 25,000 50,000			
Life time L80/B10	may have less than 80% Häfele tests all LEDs it us method, which allows pr is a manufacturer-indepe of an LED is tested at the	L80 is the time after which the LED is still emitting 80% of its original light. B10 means that 10% of the LEDs may have less than 80% of the original light output.  Häfele tests all LEDs it uses in accordance with the LM-80 standard. LM-80 is a standardized testing method, which allows products to bear the EPA's (Environmental Protection Agency) Energy Star. The test is a manufacturer-independent comparison of LEDs. During the test the luminous flux (Lumen maintenance) of an LED is tested at three different temperatures for a minimum of 6,000 hours. Then the life time L80 is calculated by means of extrapolation. The extrapolation procedure is described in regulation IES TM-21.					
LED	A light-emitting diode (LED) is a semi-conductor element that emits light when electricity passes through it. This semi-conductor element consists of a crystal that is attached to a metal base, and both are encapsulated in protective plastic. LEDs are mostly based on inorganic, i.e. non-carbon based materials.						
Luminous efficacy	The luminous efficacy is the ratio of the luminous flux and the wattage absorbed. It is used to measure the operating efficiency of the light source. It is indicated in Lumens per Watt (lm/W).						
Luminous flux	It is indicated in Lumen (I emits. The value may be	•	•	e. the quantity of light a source fluctuations of ±10%.			
Drop in luminous flux	The brightness of the LEDs on LED strip lights decreases with the length of the strip light due to the increasing resistance of the copper line. A drop in luminous flux from the first to the last LED of up to 30% is imperceptible to the human eye. That's why Häfele specifies a <b>maximum strip light length</b> for this visual value. Generally, it is possible to operate strip lights with longer lengths, but a difference in brightness will be visible. Exception: The LEDs of the strip lights with constant current technology (LED 2077/3050/3051/3052) always have the same brightness.						
Max. strip light length	Visual value Strip light length with an	imperceptible <b>drop in lu</b>	minous flux of max. 30°	%.			
	value is greater than the	t power of driver / watta visual value, a difference	in brightness will be perc	eter. If the wattage-dependent ceivable. Exception: The LEDs 951/3052) always have the same			
Multi-white	The light color of shades white to cool white.	of white can be changed	d as required with Häfele	Connect Mesh, e.g. from warm			
RGB	RGB is the abbreviation combination can be crea			e Connect Mesh, almost any color			
RoHS – Lead in Loox products	All Loox products are CE	compliant. Häfele does	not advertise the CE con	. RoHS is part of CE conformity.  If ormity in its catalogs, since only ormity is available online at www.			
Transmittance	Ratio of transmitted light	to incidental light. An ide	eal transparent body wou	lld have a transmittance of 100%.			



## Technical questions

Technical questions								
How do I clean an LED strip light?	LED strip lights without with a damp, anti-station the LEDs.			0	1 0			
May I use drivers from other manufacturers?	In order to ensure the s explicitly approved by I connected and coupled must be performed by	Häfele may be us d with on-site ele	sed. If an electror ectrical equipmen	nics technician in	stalls the system, Lo	oox can also be		
What is the life time of the products in permanent operation?	wall plug drivers 30,000 Provide for sufficient air Loox5 LED strip lights:	Loox5 drivers >70,000 hrs. with max. ambient temperature (40 °C/45 °C), wall plug drivers 30,000 hrs. at an ambient temperature of max. 40 °C.  Provide for sufficient air supply and circulation at the mounting location of the driver.  Loox5 LED strip lights >50,000 hrs. at an ambient temperature of max. 45 °C.  Cooling with an aluminum profile is recommended from 9.6 W/m (3.0 W/ft.).						
Can the multi switch box, the multi driver box and the 3-way distributor with switching function be connected in series multiple times?	No, because the signals can no longer be transmitted properly.							
Can 12 V and 24 V lights be used together?	Yes, please use our res	spective converte	er. (See converter	rs in Supplying)				
How can sensor switch malfunctions be avoided?	Check for correct switch situation.	ch installation. Th	e TOP lettering o	on the switch mu	ıst point upwards in	the installation		
How is consistent bulb light color guaranteed?	and long-lasting LEDs t	Häfele makes high demands on the selection of the materials. All Loox5 strip lights contain high-quality and long-lasting LEDs from Samsung and Lumileds. Setting very tight quality specifications ensures not only luminous flux and breakdown voltage, but also consistent light color for follow-up purchases.						
What is the maximum wattage that I can connect to a device output of the driver?	With 12 V systems it is 12 V x 5.0 A = 60 W with a 60 W driver With 24 V systems it is 24 V x 3.75 A = 90 W with a 90 W driver							
How long may the lead between the driver and the device be?	The maximum lead length from the Loox5 driver to the device is 10 m (32' 9 11/16"). Long cable lengths in combination with large loads (strip light lengths) can result in voltage losses in the cable. These lead to visible loss of brightness in the lights. The illuminance listed with the lights has been determined with the rated output voltage of the driver. (12 V or 24 V).							
What is AWG?	AWG stands for Americ It is the coding for wire cross-section of wires i	diameters in ele	ctrical leads that			his identifies the		
What is the current carrying	Häfele allows the follow	ving current carry	ing capacity and	l wattage:				
capacity of my cable?	Type of cable	24 AWG	22 AWG	20 AWG	18 AWG			
	Current carrying capacity	1.5 A	2.5 A	3.5 A	5.0 A			
	Voltage Wattage	12 V 24 V 18 W 36 W	12 V 24 V 30 W 60 W	12 V 24 V 42 W 84 W	12 V 24 V 60 W 110 W			
	The type of cable is imp	orinted on the co	ating of the cabl	e.				
Can an LED flexible strip light be used behind acrylic glass?	Yes, however the acrylideviations are therefore	0	s the color variati	ons (binning) up	to four times and m	inimal color		
Can Loox lights be operated using multiple switches?	Yes, please use the mubox (multi-switch box s		do this. Up to th	ree switches car	n be connected to th	ne multi switch		
Why do the lights have to be plugged in first before connecting the high voltage mains plug?	If the driver is connecte leads to overvoltage an					side, which		
Can Loox lights be used in RVs/boats/cars?	Yes. We have special IC problems. Our regular L peaks may reduce the	LED strip lights o						

#### **Technical questions**

Can I use Loox in a sauna/
bathroom?

We offer special lights that offer IP44 and IP65 protection when installed. This is sufficient for many applications. Our LED silicone strip lights are IP44 protected as well. However, it must be ensured that the driver and power cord are dry. Furthermore, a maximum ambient temperature of 45° C or 113° F must be ensured.

Why does my LED light flash?

Flashing is a sign of (under or) overloading.

Use a driver with higher power or reduce the number of lights.

## **Documentation on the Internet**

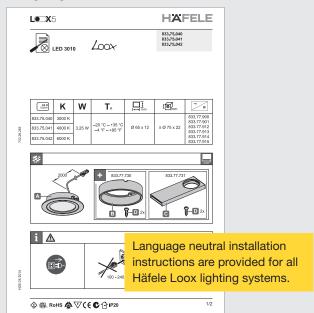
## Video guides

Language neutral for all markets
Language-independent videos are available for
the Loox radio remote controls and other selected
products at www.hafele.com/us.



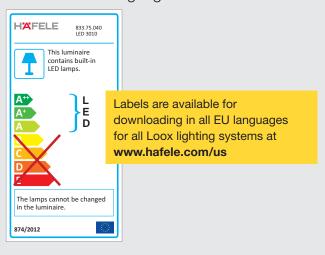
## **Installation instructions**

Language neutral for all markets



## Energy efficiency class

Label in all EU languages





Item No.	Page No.	Item No.	Page No.	Item No.	Page No.	Item No.	Page No.	Item No.	Page No.
001.06.865	125	820.66.755	142	833.02.961	138	833.70.818 .	73	833.72.124 .	49, 51
001.07.513	125	820.66.756	142, 143	833.02.962	136	833.70.819 .	73	833.72.125 .	49, 51
001.07.522	125	820.66.780	145	833.02.963	136	833.70.820 .	73	833.72.126 .	49, 51
001.08.004	125	822.65.000	80	833.02.964	136	833.70.821 .	73	833.72.127 .	49, 51
001.08.006	125	822.65.034	81	833.02.965	140	833.70.822 .	73	833.72.143 .	55
001.08.012	125	822.65.039	81	833.02.966	137	833.70.823 .	73	833.72.144 .	55
001.08.016	125	824.19.396	124	833.02.967	137	833.70.824 .	73	833.72.145 .	55
001.08.040 .	125	824.19.397	114	833.02.968	137	833.70.825 .	73	833.72.146 .	55
001.35.052	126	824.19.398	114	833.02.969	137	833.70.826 .	73	833.72.160 .	49, 51
001.35.053 .		824.19.796	124	833.02.970	137	833.70.827 .		833.72.162 .	49, 51
001.35.054	126	825.73.770	146	833.03.004	133	833.70.828 .	73	833.72.163 .	49, 51
001.35.055 .	126	825.73.771	146	833.03.005	134	833.70.829 .	73	833.72.164 .	49, 51
002.99.032	147	825.73.772	146	833.03.006	133	833.70.830 .	73	833.72.166 .	49, 51
002.99.034	147	825.73.775	146	833.03.007	134	833.70.831 .	73	833.72.167 .	49, 51
003.58.270	40	830.28.700	43	833.03.008	133	833.70.832 .	73	833.72.168 .	49, 51
006.11.050	114	830.28.701	43	833.03.009	134	833.70.833 .	73	833.72.170 .	49, 51
006.13.485	17	830.28.705	43	833.03.011	135	833.70.834 .	73	833.72.171 .	49, 51
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260.26.933 .	74	830.28.711	43	833.16.040	124	833.70.837 .	73	833.72.175 .	49, 51
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803.39.110			43	833.16.042	124	833.70.839 .		833.72.178 .	55
803.39.210	43	830.28.730	43	833.70.647	72	833.70.840 .	73	833.72.179 .	55
803.39.410	43	830.28.731	43	833.70.648	72	833.70.841 .	73	833.72.180 .	55
803.39.610	43	830.28.790	43	833.70.649	72	833.70.842 .	73	833.72.182 .	
803.39.710	43	830.28.800	43		72	833.70.843 .		833.72.183 .	
803.39.910	43	830.38.423	90	833.70.651	72	833.70.844 .	73	833.72.184 .	
820.66.400			90		72	833.70.845 .		833.72.186 .	
820.66.410	145	830.69.887	146		72	833.71.852 .		833.72.187 .	
820.66.450			40		72	833.71.853 .		833.72.188 .	
820.66.451			124		72	833.71.927 .		833.72.190 .	
820.66.452			45		72	833.71.928 .		833.72.191 .	
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820.66.455			38		72	833.72.042 .		833.72.195 .	
820.66.456			38		72	833.72.043 .		833.72.196 .	
820.66.650			38		72	833.72.044 .		833.72.197 .	
820.66.651			38		72	833.72.045 .		833.72.323 .	
820.66.652			38		72	833.72.050 .		833.72.333 .	
820.66.6531		833.01.818			72	833.72.051 .		833.72.350 .	
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820.66.654		833.02.675			72	833.72.055 .		833.72.352 .	
820.66.655		833.02.676			72	833.72.056 .		833.72.370 .	
820.66.656		833.02.677			72	833.72.057 .		833.72.371 .	
820.66.750			46		72	833.72.058 .		833.72.372 .	
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833.72.501         52         833.72.807         59         833.74.195         27         833.74.342         1.49         833.74.367         1.49           833.72.502         52         833.72.806         59         833.74.260         25         833.74.343         1.11         833.74.368         1.19           833.72.504         52         833.72.830         61         833.74.261         25         833.74.344         1.77         833.74.369         1.11           833.72.505         52         833.72.831         61         833.74.263         25         833.74.344         151         833.74.369         1.19           833.72.506         52         833.72.832         61         833.74.320         19         833.74.345         151         833.74.370         19           833.72.506         52         833.72.852         36         833.74.321         19         833.74.346         151         833.74.370         152           833.72.509         52         833.72.852         36         833.74.322         149         833.74.346         151         833.74.371         152           833.72.510         52         833.72.855         30         833.74.322         149         833.74.347         151	833.72.478	51	833.72.768	40	833.74.193	27	833.74.341	149	833.74.366	149
833.72.502         52         833.72.808         59         833.74.260         25         833.74.343         11         833.74.368         11           833.72.503         52         833.72.809         59         833.74.261         25         833.74.344         149         833.74.368         149           833.72.506         52         833.72.830         61         833.74.263         25         833.74.344         161         833.74.369         149           833.72.506         52         833.72.833         61         833.74.320         9         833.74.345         151         833.74.370         19           833.72.507         52         833.72.853         36         833.74.320         149         833.74.345         151         833.74.371         19           833.72.509         52         833.72.853         36         833.74.321         149         833.74.346         151         833.74.371         152           833.72.510         52         833.72.863         36         833.74.322         9         833.74.347         151         833.74.371         152           833.72.513         53         833.72.860         36         833.74.322         149         833.74.347         151         833.74	833.72.500	52	833.72.806	59	833.74.194	27	833.74.342	11	833.74.367 .	11
833.72.503         52         833.72.809         59         833.74.261         25         833.74.343         149         833.74.368         149           833.72.504         52         833.72.803         61         833.74.262         25         833.74.344         17         833.74.369         119           833.72.505         52         833.72.832         61         833.74.320         9         833.74.344         151         833.74.370         19           833.72.506         52         833.72.852         61         833.74.320         19         833.74.345         151         833.74.370         152           833.72.508         52         833.72.852         36         833.74.321         19         833.74.346         151         833.74.370         152           833.72.509         52         833.72.852         36         833.74.321         149         833.74.346         151         833.74.371         152           833.72.510         52         833.72.856         30         833.74.322         19         833.74.347         17         833.74.371         152           833.72.511         52         833.72.866         36         833.74.322         14         833.74.347         17         833.74.	833.72.501	52	833.72.807	59	833.74.195	27	833.74.342	149	833.74.367	149
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833.72.505         52         833.72.831         61         833.74.263         25         833.74.344         151         833.74.369         149           833.72.506         52         833.72.832         61         833.74.320         9         833.74.345         17         833.74.370         19           833.72.507         52         833.72.852         36         833.74.320         149         833.74.345         151         833.74.370         19           833.72.509         52         833.72.852         36         833.74.321         19         833.74.346         151         833.74.371         152           833.72.810         52         833.72.865         30         833.74.322         9         833.74.347         17         833.74.372         15           833.72.511         52         833.72.865         30         833.74.322         9         833.74.347         17         833.74.372         15           833.72.512         53         833.72.865         36         633.74.322         149         833.74.344         17         833.74.372         15           833.72.512         53         833.72.866         36         833.74.322         19         833.74.348         151         833.74.373 <td>833.72.503</td> <td> 52</td> <td>833.72.809</td> <td> 59</td> <td>833.74.261</td> <td> 25</td> <td>833.74.343</td> <td> 149</td> <td>833.74.368</td> <td>149</td>	833.72.503	52	833.72.809	59	833.74.261	25	833.74.343	149	833.74.368	149
833.72.506         52         833.72.832         61         833.74.320         .9         833.74.345         17         833.74.370         .19           833.72.507         .52         833.72.833         .61         833.74.320         .149         833.74.346         .151         833.74.371         .19           833.72.509         .52         833.72.853         .36         40         833.74.321         .19         833.74.346         .151         833.74.371         .19           833.72.510         .52         833.72.854         .30         833.74.322         .19         833.74.347         .17         833.74.372         .15           833.72.511         .52         833.72.865         .30         833.74.322         .149         833.74.347         .17         833.74.372         .15           833.72.512         .53         833.72.861         .36         833.74.322         .149         833.74.348         .17         833.74.373         .15           833.72.512         .53         833.72.861         .36         833.74.322         .149         833.74.348         .17         833.74.373         .15           833.72.513         .33         833.72.862         .36         833.74.322         .149         833.7	833.72.504	52	833.72.830	61	833.74.262	25	833.74.344	17	833.74.369 .	11
833,72,507         52         833,72,833         61         833,74,320         149         833,74,346         151         833,74,370         152           833,72,508         52         833,72,852         36         833,74,321         9         833,74,346         17         833,74,371         19           833,72,510         52         833,72,854         30         833,74,322         19         833,74,347         151         833,74,372         15           833,72,511         52         833,72,855         30         833,74,322         149         833,74,344         17         833,74,372         151           833,72,513         53         833,72,860         36         833,74,322         149         833,74,348         17         833,74,373         15           833,72,513         53         833,72,861         36         833,74,324         19         833,74,348         17         833,74,374         15           833,72,515         53         833,72,862         36         833,74,324         19         833,74,349         151         833,74,374         156           833,72,516         53         833,72,866         30         833,74,325         19         833,74,350         17         833,74,375	833.72.505	52	833.72.831	61	833.74.263	25	833.74.344	151	833.74.369 .	149
833.72.508         52         833.72.852         36         833.74.321         9         833.74.346         15         833.74.371         152           833.72.509         52         833.72.853         36,40         833.74.321         149         833.74.346         151         833.74.372         152           833.72.510         52         833.72.855         30         833.74.322         149         833.74.347         151         833.74.372         151           833.72.511         52         833.72.856         30         833.74.323         149         833.74.348         17         833.74.373         156           833.72.513         53         833.72.861         36         833.74.323         19         833.74.348         151         833.74.373         151           833.72.514         53         833.72.862         36         833.74.324         19         833.74.349         17         833.74.374         15           833.72.516         53         833.72.864         30         833.74.325         19         833.74.349         117         833.74.377         15           833.72.516         53         833.72.866         30         833.74.325         149         833.74.350         151         83	833.72.506	52	833.72.832	61	833.74.320	9	833.74.345	17	833.74.370 .	19
833.72.509         52         833.72.853         36, 40         833.74.321         149         833.74.346         151         833.74.371         152           833.72.510         52         833.72.854         30         833.74.322         9         833.74.347         17         833.74.372         15           833.72.511         52         833.72.860         36         833.74.322         149         833.74.347         151         833.74.372         151           833.72.513         53         833.72.861         36         833.74.323         149         833.74.348         161         833.74.373         161           833.72.514         53         833.72.862         36         833.74.324         19         833.74.349         17         833.74.374         15           833.72.515         53         833.72.863         36         833.74.324         149         833.74.349         151         833.74.374         151           833.72.516         53         833.72.865         30         833.74.325         149         833.74.350         151         833.74.377         151           833.72.517         53         833.72.866         30         833.74.326         149         833.74.351         17 <td< td=""><td>833.72.507</td><td> 52</td><td>833.72.833</td><td> 61</td><td>833.74.320</td><td> 149</td><td></td><td></td><td>833.74.370 .</td><td> 152</td></td<>	833.72.507	52	833.72.833	61	833.74.320	149			833.74.370 .	152
833.72.510         52         833.72.854         30         833.74.322         .9         833.74.347         .17         833.74.372         .15           833.72.511         .52         833.72.865         .30         833.74.322         .149         833.74.347         .151         833.74.372         .151           833.72.512         .53         833.72.861         .36         833.74.323         .19         833.74.348         .17         833.74.373         .151           833.72.514         .53         833.72.862         .36         833.74.324         .19         833.74.349         .17         833.74.374         .15           833.72.515         .53         833.72.863         .36         833.74.324         .19         833.74.349         .17         833.74.374         .15           833.72.516         .53         833.72.866         .30         833.74.325         .9         833.74.350         .17         833.74.375         .15           833.72.517         .53         833.72.866         .30         833.74.326         .9         833.74.350         .151         833.74.376         .15           833.72.520         .53         833.73.110         .62         833.74.327         .9         833.74.352         .	833.72.508	52			833.74.321	9	833.74.346	17	833.74.371 .	19
833.72.511         52         833.72.855         30         833.74.322         149         833.74.347         151         833.74.372         151           833.72.512         53         833.72.860         36         833.74.323         .9         833.74.348         .17         833.74.373         .15           833.72.513         53         833.72.861         .36         833.74.324         .9         833.74.349         .17         833.74.374         .15           833.72.516         53         833.72.862         .36         833.74.324         .19         833.74.349         .17         833.74.374         .15           833.72.516         .53         833.72.864         .30         833.74.325         .9         833.74.350         .17         833.74.375         .16           833.72.517         .53         833.72.866         .30         833.74.326         .9         833.74.350         .151         833.74.375         .15           833.72.519         .53         833.72.866         .30         833.74.326         .9         833.74.350         .151         833.74.376         .15           833.72.519         .53         833.73.110         .62         833.74.327         .9         833.74.351         .151	833.72.509	52	833.72.853	36, 40	833.74.321	149	833.74.346	151	833.74.371 .	152
833.72.512         53         833.72.860         36         833.74.323         9         833.74.348         17         833.74.373         15           833.72.513         53         833.72.861         36         833.74.323         149         833.74.348         151         833.74.373         151           833.72.514         53         833.72.862         36         833.74.324         9         833.74.349         17         833.74.374         15           833.72.516         53         833.72.864         30         833.74.325         9         833.74.350         17         833.74.375         15           833.72.516         53         833.72.866         30         833.74.325         19         833.74.350         151         833.74.375         15           833.72.518         53         833.72.866         30         833.74.326         9         833.74.351         17         833.74.376         15           833.72.521         53         833.72.867         30         833.74.326         19         833.74.351         151         833.74.376         15           833.72.521         53         833.73.111         62         833.74.327         9         833.74.352         19         833.74.377	833.72.510	52	833.72.854	30	833.74.322	9	833.74.347	17	833.74.372	15
833.72.513         53         833.72.861         36         833.74.323         149         833.74.348         151         833.74.373         151           833.72.514         53         833.72.862         36         833.74.324         9         833.74.349         17         833.74.374         15           833.72.516         53         833.72.864         30         833.74.325         9         833.74.350         17         833.74.375         15           833.72.517         53         833.72.866         30         833.74.325         19         833.74.350         151         833.74.375         15           833.72.518         53         833.72.866         30         833.74.326         9         833.74.351         17         833.74.376         151           833.72.518         53         833.72.867         30         833.74.326         9         833.74.351         17         833.74.376         151           833.72.520         53         833.73.110         62         833.74.327         19         833.74.351         15         833.74.376         151           833.72.521         53         833.73.751         79         833.74.328         19         833.74.352         19         833.74.377	833.72.511	52	833.72.855	30	833.74.322	149	833.74.347	151	833.74.372	151
833.72.514         53         833.72.862         36         833.74.324         9         833.74.349         17         833.74.374         15           833.72.515         53         833.72.863         36         833.74.324         149         833.74.349         151         833.74.374         1.51           833.72.516         53         833.72.866         30         833.74.325         19         833.74.350         151         833.74.375         1.51           833.72.518         53         833.72.866         30         833.74.326         19         833.74.351         17         833.74.376         1.51           833.72.519         53         833.72.867         30         833.74.326         149         833.74.351         151         833.74.376         1.51           833.72.520         53         833.73.110         62         833.74.327         19         833.74.352         19         833.74.377         1.51           833.72.521         53         833.73.111         62         833.74.327         149         833.74.352         19         833.74.377         151           833.72.522         53         833.73.51         79         833.74.328         19         833.74.353         19         833	833.72.512	53	833.72.860	36			833.74.348	17	833.74.373 .	15
833.72.515         53         833.72.863         36         833.74.324         149         833.74.349         151         833.74.374         151           833.72.516         53         833.72.864         30         833.74.325         9         833.74.350         17         833.74.375         15           833.72.517         53         833.72.866         30         833.74.326         9         833.74.351         17         833.74.376         15           833.72.519         53         833.72.867         30         833.74.326         149         833.74.351         151         833.74.376         15           833.72.520         53         833.73.110         62         833.74.327         9         833.74.352         19         833.74.377         15           833.72.521         53         833.73.741         147         833.74.322         149         833.74.352         19         833.74.377         15           833.72.522         53         833.73.751         79         833.74.322         149         833.74.353         19         833.74.378         15           833.72.528         59         833.73.751         79         833.74.329         9         833.74.354         111         833.74.379 <td></td>										
833.72.516         53         833.72.864         30         833.74.325         9         833.74.350         17         833.74.375         15           833.72.517         53         833.72.866         30         833.74.326         149         833.74.351         17         833.74.376         151           833.72.518         53         833.72.867         30         833.74.326         19         833.74.351         17         833.74.376         15           833.72.520         53         833.73.110         62         833.74.327         19         833.74.352         19         833.74.377         15           833.72.521         53         833.73.111         62         833.74.327         149         833.74.352         19         833.74.377         15           833.72.522         53         833.73.111         62         833.74.322         149         833.74.353         19         833.74.377         15           833.72.522         53         833.73.751         79         833.74.328         19         833.74.353         19         833.74.378         15           833.72.530         59         833.73.755         79         833.74.329         149         833.74.354         111         833.74.379 <td>833.72.514</td> <td> 53</td> <td>833.72.862</td> <td> 36</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	833.72.514	53	833.72.862	36						
833.72.517         53         833.72.665         30         833.74.325         149         833.74.550         151         833.74.975         151           833.72.518         53         833.72.666         30         833.74.326         9         833.74.351         17         833.74.376         15           833.72.519         53         833.72.667         30         833.74.327         9         833.74.351         151         833.74.377         151           833.72.521         53         833.73.110         62         833.74.327         19         833.74.352         19         833.74.377         15           833.72.522         53         833.73.741         147         833.74.328         9         833.74.353         19         833.74.378         15           833.72.523         53         833.73.751         79         833.74.328         149         833.74.353         152         833.74.378         15           833.72.530         59         833.73.753         79         833.74.329         149         833.74.354         149         833.74.354         149         833.74.379         15           833.72.531         59         833.73.755         79         833.74.330         19         833.74.355										
833.72.518         53         833.72.866         30         833.74.326         9         833.74.351         17         833.74.376         15           833.72.519         53         833.72.867         30         833.74.326         149         833.74.351         151         833.74.376         151           833.72.520         53         833.73.110         62         833.74.327         19         833.74.352         19         833.74.377         151           833.72.521         53         833.73.111         62         833.74.328         9         833.74.353         19         833.74.378         151           833.72.522         53         833.73.751         79         833.74.328         149         833.74.353         19         833.74.378         151           833.72.528         59         833.73.755         79         833.74.329         149         833.74.354         11         833.74.379         15           833.72.530         59         833.73.755         79         833.74.330         9         833.74.355         11         833.74.360         15           833.72.531         59         833.73.755         79         833.74.330         149         833.74.355         149         833.74.360<										
833.72.519         53         833.72.867         30         833.74.326         149         833.74.351         151         833.74.376         151           833.72.520         53         833.73.110         62         833.74.327         9         833.74.352         19         833.74.377         15           833.72.521         53         833.73.111         62         833.74.327         149         833.74.352         152         833.74.377         151           833.72.522         53         833.73.751         79         833.74.328         9         833.74.353         19         833.74.378         15           833.72.523         53         833.73.752         79         833.74.329         9         833.74.354         11         833.74.379         15           833.72.530         59         833.73.753         79         833.74.329         149         833.74.354         149         833.74.379         15           833.72.531         59         833.73.755         79         833.74.330         9         833.74.355         11         833.74.380         152           833.72.533         59         833.73.866         79         833.74.331         19         833.74.356         14         833.74.631 <td></td>										
833.72.520         53         833.73.110         62         833.74.327         9         833.74.352         19         833.74.377         15           833.72.521         53         833.73.111         62         833.74.327         149         833.74.352         152         833.74.377         151           833.72.522         53         833.73.741         147         833.74.328         9         833.74.353         19         833.74.378         15           833.72.523         53         833.73.751         79         833.74.328         149         833.74.353         152         833.74.378         151           833.72.528         59         833.73.752         79         833.74.329         9         833.74.354         11         833.74.379         15           833.72.530         59         833.73.753         79         833.74.320         9         833.74.354         149         833.74.379         151           833.72.531         59         833.73.755         79         833.74.330         9         833.74.355         11         833.74.380         152           833.72.533         59         833.73.866         79         833.74.331         9         833.74.356         149         833.74.631 <td></td>										
833.72.521         53         833.73.111         62         833.74.327         149         833.74.352         152         833.74.377         151           833.72.522         53         833.73.741         147         833.74.328         9         833.74.353         19         833.74.378         15           833.72.523         53         833.73.751         79         833.74.328         149         833.74.353         152         833.74.378         151           833.72.528         59         833.73.752         79         833.74.329         9         833.74.354         11         833.74.379         15           833.72.530         59         833.73.753         79         833.74.329         149         833.74.354         149         833.74.354         149         833.74.379         15           833.72.531         59         833.73.755         79         833.74.330         9         833.74.355         11         833.74.380         152           833.72.532         59         833.73.756         79         833.74.331         19         833.74.356         11         833.74.631         129           833.72.534         59         833.73.866         74         833.74.332         19         833.74.35										
833.72.522       53       833.73.741       147       833.74.328       9       833.74.353       19       833.74.378       15         833.72.523       53       833.73.751       .79       833.74.328       149       833.74.353       152       833.74.378       151         833.72.528       .59       833.73.752       .79       833.74.329       .9       833.74.354       .11       833.74.379       .15         833.72.530       .59       833.73.753       .79       833.74.329       .149       833.74.354       .149       833.74.379       .15         833.72.531       .59       833.73.754       .79       833.74.330       .9       833.74.355       .11       833.74.380       .23         833.72.532       .59       833.73.756       .79       833.74.331       .9       833.74.356       .149       833.74.380       .152         833.72.533       .59       833.73.865       .74       833.74.331       .9       833.74.356       .149       833.74.631       .129         833.72.534       .59       833.73.866       .74       833.74.332       .9       833.74.356       .149       833.74.733       .42         833.72.536       .59       833.73.868										
833.72.523         53         833.73.751         79         833.74.328         149         833.74.353         152         833.74.378         151           833.72.528         59         833.73.752         79         833.74.329         .9         833.74.354         .11         833.74.379         .15           833.72.530         59         833.73.754         79         833.74.329         149         833.74.354         149         833.74.379         .151           833.72.531         59         833.73.754         79         833.74.330         .9         833.74.355         .11         833.74.380         .23           833.72.532         59         833.73.756         79         833.74.331         .9         833.74.356         .14         833.74.631         .129           833.72.534         59         833.73.865         74         833.74.331         .9         833.74.356         .14         833.74.634         .129           833.72.536         59         833.73.866         74         833.74.332         .9         833.74.357         .11         833.74.733         .42           833.72.536         59         833.73.866         74         833.74.332         .9         833.74.356         .14 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>										
833.72.528         59         833.73.752         79         833.74.329         9         833.74.354         11         833.74.379         15           833.72.530         59         833.73.753         79         833.74.329         149         833.74.354         149         833.74.379         151           833.72.531         59         833.73.754         79         833.74.330         9         833.74.355         11         833.74.380         23           833.72.532         59         833.73.756         79         833.74.331         9         833.74.356         149         833.74.631         129           833.72.534         59         833.73.865         74         833.74.331         149         833.74.356         149         833.74.634         129           833.72.535         59         833.73.866         74         833.74.332         9         833.74.357         11         833.74.634         129           833.72.536         59         833.73.866         74         833.74.332         9         833.74.357         149         833.74.780         44           833.72.536         59         833.73.866         74         833.74.333         9         833.74.358         11         833.74.780 <td></td>										
833.72.530         59         833.73.753         79         833.74.329         149         833.74.354         149         833.74.379         151           833.72.531         59         833.73.754         79         833.74.330         9         833.74.355         11         833.74.380         23           833.72.532         59         833.73.756         79         833.74.331         9         833.74.356         149         833.74.631         129           833.72.534         59         833.73.865         74         833.74.331         149         833.74.356         149         833.74.634         129           833.72.535         59         833.73.866         74         833.74.332         9         833.74.357         11         833.74.733         42           833.72.536         59         833.73.866         74         833.74.332         149         833.74.357         149         833.74.780         44           833.72.537         59         833.73.868         74         833.74.333         149         833.74.358         11         833.74.780         44           833.72.538         59         833.73.869         74         833.74.333         149         833.74.358         149         833.74.7										
833.72.531       59       833.73.754       79       833.74.330       9       833.74.355       11       833.74.380       23         833.72.532       59       833.73.755       79       833.74.330       149       833.74.355       149       833.74.380       152         833.72.533       59       833.73.756       79       833.74.331       9       833.74.356       11       833.74.631       129         833.72.534       59       833.73.865       74       833.74.331       149       833.74.356       149       833.74.634       129         833.72.535       59       833.73.866       74       833.74.332       9       833.74.357       11       833.74.733       42         833.72.536       59       833.73.868       74       833.74.332       149       833.74.358       149       833.74.780       44         833.72.537       59       833.73.868       74       833.74.333       149       833.74.358       11       833.74.781       43, 44         833.72.538       59       833.73.869       74       833.74.333       149       833.74.358       149       833.74.807       44         833.72.540       59       833.73.871       74       83										
833.72.532         59         833.73.755         79         833.74.330         149         833.74.355         149         833.74.380         152           833.72.533         59         833.73.756         79         833.74.331         9         833.74.356         11         833.74.631         129           833.72.534         59         833.73.865         74         833.74.331         149         833.74.356         149         833.74.634         129           833.72.535         59         833.73.866         74         833.74.332         9         833.74.357         11         833.74.780         44           833.72.536         59         833.73.868         74         833.74.333         9         833.74.358         11         833.74.781         43,44           833.72.538         59         833.73.869         74         833.74.333         149         833.74.358         149         833.74.783         37           833.72.539         59         833.73.870         74         833.74.334         19         833.74.359         11         833.74.807         44           833.72.540         59         833.73.871         74         833.74.334         149         833.74.359         11         833.74.8										
833.72.533       59       833.73.756       79       833.74.331       .9       833.74.356       .11       833.74.631       .129         833.72.534       59       833.73.865       .74       833.74.331       .149       833.74.356       .149       833.74.634       .129         833.72.535       .59       833.73.866       .74       833.74.332       .9       833.74.357       .11       833.74.780       .42         833.72.536       .59       833.73.868       .74       833.74.332       .149       833.74.358       .11       833.74.780       .44         833.72.537       .59       833.73.869       .74       833.74.333       .149       833.74.358       .149       833.74.781       .43, 44         833.72.539       .59       833.73.870       .74       833.74.334       .19       833.74.359       .11       833.74.807       .44         833.72.540       .59       833.73.871       .74       833.74.334       .149       833.74.359       .11       833.74.822       .42         833.72.541       .59       833.73.872       .74       833.74.335       .9       833.74.359       .149       833.74.822       .42         833.72.541       .59       833.73.872<										
833.72.534       59       833.73.865       74       833.74.331       149       833.74.356       149       833.74.634       129         833.72.535       59       833.73.866       74       833.74.332       9       833.74.357       11       833.74.733       42         833.72.536       59       833.73.867       74       833.74.332       149       833.74.357       149       833.74.780       44         833.72.537       59       833.73.868       74       833.74.333       9       833.74.358       11       833.74.781       43, 44         833.72.538       59       833.73.869       74       833.74.333       149       833.74.358       149       833.74.783       37         833.72.539       59       833.73.870       74       833.74.334       9       833.74.359       11       833.74.807       44         833.72.540       59       833.73.871       74       833.74.334       149       833.74.359       149       833.74.822       42         833.72.541       59       833.73.872       74       833.74.335       9       833.74.360       11       833.74.825       42										
833.72.535       59       833.73.866       74       833.74.332       9       833.74.357       11       833.74.733       42         833.72.536       59       833.73.867       74       833.74.332       149       833.74.357       149       833.74.780       44         833.72.537       59       833.73.868       74       833.74.333       9       833.74.358       11       833.74.781       43, 44         833.72.538       59       833.73.869       74       833.74.333       149       833.74.358       149       833.74.783       37         833.72.539       59       833.73.870       74       833.74.334       9       833.74.359       11       833.74.807       44         833.72.540       59       833.73.871       74       833.74.334       149       833.74.359       149       833.74.822       42         833.72.541       59       833.73.872       74       833.74.335       9       833.74.360       11       833.74.825       42										
833.72.536       59       833.73.867       74       833.74.332       149       833.74.357       149       833.74.780       44         833.72.537       59       833.73.868       74       833.74.333       9       833.74.358       11       833.74.781       43, 44         833.72.538       59       833.73.869       74       833.74.333       149       833.74.358       149       833.74.783       37         833.72.539       59       833.73.870       74       833.74.334       9       833.74.359       11       833.74.807       44         833.72.540       59       833.73.871       74       833.74.334       149       833.74.359       149       833.74.822       42         833.72.541       59       833.73.872       74       833.74.335       9       833.74.360       11       833.74.825       42										
833.72.537       59       833.73.868       74       833.74.333       9       833.74.358       11       833.74.781       .43, 44         833.72.538       59       833.73.869       74       833.74.333       149       833.74.358       149       833.74.783       .37         833.72.539       59       833.73.870       74       833.74.334       9       833.74.359       11       833.74.807       .44         833.72.540       59       833.73.871       74       833.74.334       149       833.74.359       149       833.74.822       .42         833.72.541       59       833.73.872       74       833.74.335       9       833.74.360       11       833.74.825       .42										
833.72.538       59       833.73.869       74       833.74.333       149       833.74.358       149       833.74.783       37         833.72.539       59       833.73.870       74       833.74.334       9       833.74.359       11       833.74.807       44         833.72.540       59       833.73.871       74       833.74.334       149       833.74.359       149       833.74.822       42         833.72.541       59       833.73.872       74       833.74.335       9       833.74.360       11       833.74.825       42										
833.72.539       59       833.73.870       74       833.74.334       9       833.74.359       11       833.74.807       44         833.72.540       59       833.73.871       74       833.74.334       149       833.74.359       149       833.74.822       42         833.72.541       59       833.73.872       74       833.74.335       9       833.74.360       11       833.74.825       42										
833.72.540										
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833.75.170 .			9		17	833.76.351 .		833.76.376 .	
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833.75.174 .			9		17	833.76.353 .		833.76.378 .	
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833.75.177 .			149		151	833.76.354 .		833.76.380 .	
833.75.178 .		833.76.305			17	833.76.355 .		833.76.380 .	
833.75.260 .		833.76.305			151	833.76.355 .		833.76.381 .	
833.75.261 .		833.76.306			17	833.76.356 .		833.76.381 .	
833.75.262 .			149		151	833.76.356		833.76.382	
833.75.263 .			9		21	833.76.357		833.76.382 .	
833.75.320 .		833.76.307			152	833.76.357		833.76.383 .	
833.75.321 .		833.76.308		833.76.333		833.76.358 .		833.76.383 .	
833.75.322 .		833.76.308		833.76.333		833.76.358 .		833.76.384 .	
833.75.323 .		833.76.309			132	833.76.359 .		833.76.384 .	
833.75.324 .			149		149	833.76.359 .		833.76.385 .	
833.75.325 .			9		149	833.76.360 .		833.76.385 .	
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833.94.216	833.94.214	32	833.95.721	112	833.95.796	110	833.96.023 .	69	850.00.041	98
833.94.217. 3.4 833.95.745 9.7 833.95.802 3.9 833.96.026 6.9 880.00.046 101 833.94.218 3.4 833.95.745 9.7 833.95.803 3.9 833.96.027 6.9 800.00.651 9.9 833.94.218 3.4 833.95.741 105 833.95.804 4.4 833.96.026 6.9 983.19.12 7.5 833.94.220 3.4 833.95.749 105 833.95.806 4.4 833.96.026 6.9 983.19.12 7.5 833.94.221 3.4 833.95.749 105 833.95.806 4.4 833.96.020 6.9 883.19.522 7.5 833.95.000 1.30 833.95.750 8.6 833.95.807 4.4 833.96.031 6.9 883.19.522 7.5 833.95.002 130 833.95.750 8.6 833.95.807 4.4 833.96.033 6.9 833.95.002 130 833.95.750 8.6 833.95.808 4.4 833.96.033 6.9 833.95.002 130 833.95.751 8.6 833.95.809 4.4 833.96.032 6.9 833.95.006 131 833.95.761 8.6 833.95.809 4.4 833.96.033 6.9 833.95.006 131 833.95.761 8.6 833.95.809 4.4 833.96.033 6.9 833.95.006 131 833.95.761 8.6 833.95.809 4.4 833.96.032 6.9 833.95.006 131 833.95.761 8.6 833.95.201 3.1 833.96.036 6.9 833.95.761 1.1 833.95.761 8.6 833.95.201 3.1 833.96.036 6.9 833.95.761 1.1 833.95.761 8.6 833.95.201 3.1 833.96.036 6.9 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.761 8.6 833.95.771 8.7 8 833.95.771 8.7 8 833.95.771 8.7 8 833.95.771 8.7 8 833.95.771 8.7 8 833.95.771 8.7 8 833.95.771 8.7 8 833.95.771 8.7 8 833.95.771 8.7 8 833.95.771 8.8 83.95.771 8.8 83.95.772 8.7 8 833.95.771 8.8 83.95.772 8.7 8 833.95.771 8.8 83.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7 8 833.95.772 8.7	833.94.215	32	833.95.742	112	833.95.800	39	833.96.024 .	69	850.00.042	96
833.94.218. 34 833.95.746 97 833.95.803 39 833.96.027 69 850.00.951 99 833.94.219 34 833.95.747 105 833.95.606 44 833.96.028 69 983.19.512 75 833.94.221 34 833.95.749 105 833.96.806 44 833.96.028 69 983.19.522 76 833.95.000 130 833.95.761 05 833.95.806 44 833.96.030 69 833.95.761 86 833.95.807 44 833.96.031 69 833.95.001 130 833.95.761 86 833.95.808 44 833.96.032 69 833.95.801 130 833.95.761 86 833.95.808 44 833.96.032 69 833.95.801 131 833.95.761 86 833.95.808 44 833.96.032 69 833.95.801 131 833.95.761 35 833.95.801 44 833.96.033 69 833.95.761 131 833.95.761 35 833.95.801 44 833.96.033 69 833.95.761 86 833.95.761 35 833.95.801 44 833.96.033 69 833.95.761 131 833.95.761 35 833.95.801 44 833.96.035 69 833.95.701 131 833.95.761 28 833.95.802 31 833.96.035 69 833.95.701 131 833.95.766 28 833.95.828 106 833.95.036 69 833.95.700 11,15 833.95.769 28 833.95.828 106 833.95.036 69 833.95.700 111 8 83.95.772 31 833.95.760 65 833.95.701 115 833.95.773 31 833.95.830 65 833.96.039 69 833.95.701 115 833.95.773 31 833.95.830 65 833.96.042 69 833.95.701 115 833.95.773 31 833.95.837 111 833.96.044 69 833.95.701 115 833.95.773 31 833.95.837 111 833.96.044 69 833.95.703 17 833.95.774 33 833.95.877 111 833.96.044 69 833.95.703 17 833.95.776 33 833.95.870 111 833.95.776 33 833.95.870 111 833.95.776 33 833.95.870 111 833.95.776 33 833.95.881 111 833.96.044 69 833.95.703 17 833.95.776 33 833.95.881 111 833.96.046 69 833.95.704 121 833.95.776 33 833.95.881 111 833.96.046 69 833.95.704 121 833.95.776 33 833.95.881 111 833.96.046 69 833.95.704 121 833.95.776 35 833.95.881 111 833.96.066 69 833.95.704 121 833.95.781 35 833.95.881 111 833.96.066 69 833.95.704 121 833.95.781 115 833.95.781 110 833.95.780 69 833.95.791 110 833.95.791 110 833.95.791 110 833.95.791 110 833.95.791 110 833.95.791 110 833.95.791 110 833.95.791 110 833.95.790 69 833.95.791 110 833.95.790 69 833.95.791 110 833.95.790 69 833.95.791 110 833.95.790 69 833.95.791 110 833.95.790 69 833.95.791 110 833.95.790 69 833.95.791 110 833.95.790 69 833.95.791 110 833.95.790 69 8	833.94.216	34	833.95.743	112	833.95.801	39	833.96.025 .	69	850.00.043	96
833.94.219	833.94.217	34	833.95.745	97	833.95.802	39	833.96.026 .	69	850.00.046	101
833.94.220	833.94.218	34	833.95.746	97	833.95.803	39	833.96.027 .	69	850.00.951	99
833.96.000 130 833.95.760 86 833.95.806 44 833.96.030 69 853.19.532 75 833.95.000 130 833.95.761 86 833.95.807 44 833.96.032 69 8833.95.003 130 833.95.761 86 833.95.809 44 833.96.032 69 8833.95.003 130 833.95.762 128 833.95.800 44 833.96.033 60 833.95.003 130 833.95.762 128 833.95.800 44 833.96.035 69 833.95.001 131 833.95.766 22 833.95.10 31 833.96.035 69 833.95.011 131 833.95.766 22 833.95.20 31 833.96.035 69 833.95.011 131 833.95.766 22 833.95.820 106 833.96.036 69 833.95.701 11,5 833.95.702 11,5 833.95.700 11,5 833.95.702 29 833.95.80 65 833.95.80 69 833.95.700 11,5 833.95.770 29 833.95.80 65 833.95.80 69 833.95.004 69 833.95.701 11,5 833.95.770 29 833.95.701 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.780 11,7 833.95.780 11,7 833.95.780 11,7 833.95.780 11,7 833.95.780 11,7 833.95.780 11,8 833.95.780 11,8 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.78	833.94.219	34	833.95.747	105	833.95.804	44	833.96.028 .	69	983.19.512	75
833.96.000 130 833.95.760 86 833.95.806 44 833.96.030 69 853.19.532 75 833.95.000 130 833.95.761 86 833.95.807 44 833.96.032 69 8833.95.003 130 833.95.761 86 833.95.809 44 833.96.032 69 8833.95.003 130 833.95.762 128 833.95.800 44 833.96.033 60 833.95.003 130 833.95.762 128 833.95.800 44 833.96.035 69 833.95.001 131 833.95.766 22 833.95.10 31 833.96.035 69 833.95.011 131 833.95.766 22 833.95.20 31 833.96.035 69 833.95.011 131 833.95.766 22 833.95.820 106 833.96.036 69 833.95.701 11,5 833.95.702 11,5 833.95.700 11,5 833.95.702 29 833.95.80 65 833.95.80 69 833.95.700 11,5 833.95.770 29 833.95.80 65 833.95.80 69 833.95.004 69 833.95.701 11,5 833.95.770 29 833.95.701 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,5 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.770 11,7 833.95.780 11,7 833.95.780 11,7 833.95.780 11,7 833.95.780 11,7 833.95.780 11,7 833.95.780 11,8 833.95.780 11,8 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.780 11,9 833.95.78	833.94.220	34	833.95.748	105	833.95.805	44	833.96.029 .	69	983.19.522	75
833.95.002 130 833.95.751 86 833.95.808 44 833.96.032 69 833.95.003 130 833.95.752 123 833.95.809 44 833.96.033 69 833.95.011 131 833.95.761 35 833.95.800 44 833.96.035 69 833.95.011 131 833.95.766 28 833.95.820 31 833.96.035 69 833.95.011 131 833.95.766 28 833.95.821 31 833.96.035 69 833.95.011 131 833.95.768 28 833.95.829 106 83.96.037 69 833.95.700 11,15 833.95.769 28 833.95.829 106 833.96.038 69 833.95.700 27 833.95.769 28 833.95.831 65 833.96.039 69 833.95.701 111 833.95.779 29 833.95.831 65 833.96.040 69 833.95.701 118 833.95.772 31 833.95.835 65 833.96.041 69 833.95.701 118 833.95.774 33 833.95.870 118 833.96.040 69 833.95.702 120 833.95.774 33 833.95.871 111 833.96.044 69 833.95.702 120 833.95.775 33 833.95.872 111 833.96.044 69 833.95.702 120 833.95.776 33 83.95.872 111 833.96.046 69 833.95.704 121 833.95.777 33 83.95.872 111 833.96.046 69 833.95.704 121 833.95.776 33 83.95.871 111 833.96.046 69 833.95.704 121 833.95.776 33 83.95.872 111 833.96.046 69 833.95.704 121 833.95.776 33 83.95.872 111 833.96.046 69 833.95.704 121 833.95.776 33 83.95.872 111 833.96.046 69 833.95.705 117 833.95.776 33 83.95.873 110 833.96.046 69 833.95.706 13, 15 83.95.776 33 83.95.883 111 833.96.046 69 833.95.707 120 833.95.776 33 83.95.883 111 833.96.046 69 833.95.707 120 833.95.776 33 83.95.891 109 833.96.047 69 833.95.706 13, 15 833.95.780 35 833.95.883 111 833.96.049 69 833.95.707 118 833.95.786 35 833.95.883 111 833.96.049 69 833.95.707 118 833.95.786 36 833.95.891 108 833.96.049 69 833.95.707 118 833.95.786 36 833.95.891 108 833.96.049 69 833.95.700 171 833.95.786 36 833.95.891 108 833.96.049 69 833.95.700 171 833.95.786 36 833.95.891 108 833.96.059 69 833.95.701 121 833.95.788 49 55 833.95.891 108 833.96.059 69 833.95.700 171 833.95.788 175 833.95.991 110 833.96.056 69 833.95.701 121 833.95.788 175 833.95.991 110 833.96.056 69 833.95.701 121 833.95.789 175 833.95.991 110 833.96.066 69 833.95.710 121 833.95.789 175 833.95.991 110 833.96.066 69 833.95.710 121 833.95.799 175 833.95.993 110 833.96.067 69 833.95.710 112 833.9	833.94.221	34			833.95.806	44			983.19.532	75
833,95,003 130 833,95,752 123 833,95,809 44 833,96,033 69 833,95,006 131 833,95,761 122 833,95,810 44 833,96,034 69 833,95,011 131 833,95,766 28 833,95,820 31 833,96,036 69 833,95,022 132 833,95,767 28 833,95,828 106 833,96,037 69 833,95,700 11,15 833,95,769 28 833,95,829 106 833,96,038 69 833,95,700 118 833,95,770 29 833,95,831 65 833,96,040 69 833,95,701 11,15 833,95,770 29 833,95,831 65 833,96,041 69 833,95,701 118 833,95,771 29 833,95,835 66 833,96,041 69 833,95,701 118 833,95,772 31 833,95,876 118 833,95,771 118 833,95,773 31 833,95,871 111 833,96,044 69 833,95,702 119 833,95,774 33 833,95,871 111 833,96,044 69 833,95,702 120 833,95,776 33 833,95,871 111 833,96,045 69 833,95,703 179 833,95,776 33 833,95,871 111 833,96,045 69 833,95,704 121 833,95,776 33 833,95,871 111 833,96,045 69 833,95,704 121 833,95,776 33 833,95,871 111 833,96,046 69 833,95,704 121 833,95,776 33 833,95,872 111 833,96,045 69 833,95,704 121 833,95,776 33 833,95,871 111 833,96,045 69 833,95,704 121 833,95,776 33 833,95,872 111 833,96,046 69 833,95,704 121 833,95,776 33 833,95,872 111 833,96,046 69 833,95,704 121 833,95,776 33 833,95,872 111 833,96,046 69 833,95,704 121 833,95,778 33 833,95,879 111 833,96,046 69 833,95,704 121 833,95,778 33 833,95,879 111 833,96,046 69 833,95,704 121 833,95,778 33 833,95,882 111 833,96,046 69 833,95,706 117 833,95,778 35 833,95,882 111 833,96,046 69 833,95,706 118 833,95,781 35 833,95,883 111 833,96,066 69 833,95,706 118 833,95,781 36 833,95,883 111 833,96,066 69 833,95,706 119 833,95,786 105 833,95,786 105 833,95,786 106 833,95,786 110 833,95,786 106 833,95,781 110 833,96,066 69 833,95,710 121 833,95,789 115 833,95,891 110 833,96,066 69 833,95,710 121 833,95,789 115 833,95,911 110 833,96,066 69 833,95,710 121 833,95,799 115 833,95,911 110 833,96,066 69 833,95,711 110 833,95,799 115 833,95,791 110 833,96,066 69 833,95,711 110 833,95,799 115 833,95,931 110 833,96,066 69 833,95,716 110 833,95,799 115 833,95,931 110 833,96,066 69 833,95,716 1110 833,95,799 115 833,95,931 110 833,96,066 69 833,95,716 1110 833	833.95.000	130	833.95.750	86	833.95.807	44	833.96.031 .	69		
833.95.008	833.95.002	130	833.95.751	86	833.95.808	44	833.96.032 .	69		
833,95,010	833.95.003	130	833.95.752	123	833.95.809	44	833.96.033 .	69		
833.95.011	833.95.008	131	833.95.753	122	833.95.810	44	833.96.034 .	69		
833,95,702 1,11 5 833,95,767 28 833,95,828 106 833,96,037 69 833,95,700 11 15 833,95,768 28 833,95,829 106 833,96,033 69 833,95,700 118 833,95,770 29 833,95,831 65 833,96,040 69 833,95,701 11,15 833,95,771 29 833,95,831 65 833,96,041 69 833,95,701 11,16 833,95,772 31 833,95,836 65 833,96,041 69 833,95,701 11,18 833,95,772 31 833,95,870 109 833,96,042 69 833,95,702 120 833,95,774 33 833,95,871 111 833,96,044 69 833,95,702 120 833,95,775 33 833,95,872 111 833,96,045 69 833,95,703 119 833,95,775 33 833,95,872 111 833,96,045 69 833,95,704 121 833,95,777 33 833,95,872 111 833,96,046 69 833,95,705 117 833,95,777 33 833,95,872 111 833,96,046 69 833,95,706 118 833,95,778 33 833,95,874 109 833,96,047 69 833,95,706 118 833,95,778 33 833,95,880 109 833,96,046 69 833,95,706 117 833,95,780 35 833,95,881 111 833,96,046 69 833,95,706 118 833,95,781 35 833,95,881 111 833,96,050 69 833,95,706 118 833,95,781 35 833,95,881 111 833,96,050 69 833,95,706 118 833,95,781 35 833,95,881 110 833,96,050 69 833,95,707 13,15 833,95,781 35 833,95,881 110 833,96,056 69 833,95,707 13,15 833,95,782 35 833,95,889 109 833,96,056 69 833,95,707 13,15 833,95,781 35 833,95,889 109 833,96,056 69 833,95,707 13,15 833,95,781 35 833,95,889 109 833,96,056 69 833,95,707 13 833,95,781 35 833,95,881 110 833,96,056 69 833,95,708 121 833,95,787 51 833,95,891 108 833,96,056 69 833,95,708 121 833,95,787 51 833,95,991 100 833,96,056 69 833,95,708 121 833,95,787 51 833,95,991 110 833,96,056 69 833,95,701 121 833,95,789 175 833,95,991 110 833,96,066 69 833,95,710 121 833,95,789 175 833,95,992 110 833,96,066 69 833,95,711 121 833,95,789 175 833,95,992 110 833,96,066 69 833,95,711 121 833,95,789 175 833,95,991 110 833,96,066 69 833,95,711 121 833,95,789 175 833,95,992 110 833,96,066 69 833,95,711 121 833,95,789 175 833,95,992 110 833,96,066 69 833,95,711 110 833,95,789 175 833,95,992 110 833,96,066 69 833,95,711 110 833,95,791 149 833,95,993 110 833,96,066 69 833,95,711 110 833,95,791 115 833,95,993 110 833,96,066 69 833,95,711 110 833,95,791 115 833,95,993 110 830,9	833.95.010	131	833.95.761	35	833.95.820	31	833.96.035 .	69		
833.95.700	833.95.011	131	833.95.766	28	833.95.821	31	833.96.036 .	69		
833.95.700	833.95.022	132	833.95.767	28	833.95.828	106	833.96.037 .	69		
833.95.700	833.95.700	11, 15	833.95.768	28	833.95.829	106	833.96.038 .	69		
833,95,701         11,15         833,95,771         29         833,95,835         65         833,96,041         69           833,95,701         27         833,95,772         31         833,95,836         65         833,96,042         69           833,95,702         19         833,95,774         33         833,95,870         111         833,96,044         69           833,95,702         120         833,95,776         33         833,95,872         111         833,96,045         69           833,95,703         17         833,95,776         33         833,95,873         111         833,96,047         69           833,95,704         13         833,95,778         33         833,95,873         111         833,96,047         69           833,95,704         123         833,95,778         33         833,95,880         109         833,96,049         69           833,95,704         121         833,95,779         33         833,95,880         109         833,96,050         69           833,95,705         117         833,95,781         35         833,95,883         111         833,96,051         69           833,95,706         13, 15         833,95,782         35         833,95,884	833.95.700	27	833.95.769	28	833.95.830	65	833.96.039 .	69		
833,95,701         11,15         833,95,771         29         833,95,835         65         833,96,041         69           833,95,701         27         833,95,772         31         833,95,836         65         833,96,042         69           833,95,702         19         833,95,774         33         833,95,870         111         833,96,044         69           833,95,702         120         833,95,775         33         833,95,872         111         833,96,045         69           833,95,703         17         833,95,776         33         833,95,873         111         833,96,046         69           833,95,704         23         833,95,778         33         833,95,880         109         833,96,047         69           833,95,704         23         833,95,779         33         833,95,880         109         833,96,049         69           833,95,705         9         833,95,780         35         833,95,882         111         833,96,050         69           833,95,705         117         833,95,781         35         833,95,884         109         833,96,051         69           833,95,706         13,15         833,95,782         35         833,95,884 <td>833.95.700</td> <td> 118</td> <td>833.95.770</td> <td> 29</td> <td>833.95.831</td> <td> 65</td> <td>833.96.040 .</td> <td> 69</td> <td></td> <td></td>	833.95.700	118	833.95.770	29	833.95.831	65	833.96.040 .	69		
833.95.701         27         833.95.772         31         833.95.836         65         833.96.042         69           833.95.701         118         833.95.773         31         833.95.870         109         833.96.043         69           833.95.702         19         833.95.775         33         833.95.872         111         833.96.045         69           833.95.703         17         833.95.776         33         833.95.873         111         833.96.046         69           833.95.703         119         833.95.777         33         833.95.874         109         833.96.047         69           833.95.704         23         833.95.778         33         833.95.880         109         833.96.048         .69           833.95.704         21         833.95.780         35         833.95.881         111         833.96.050         .69           833.95.705         19         833.95.781         35         833.95.882         111         833.96.050         .69           833.95.706         13         833.95.783         35         833.95.883         111         833.96.051         .69           833.95.707         13         833.95.893         107         833.96.054 <td>833.95.701</td> <td> 11, 15</td> <td></td> <td></td> <td>833.95.835</td> <td> 65</td> <td>833.96.041 .</td> <td> 69</td> <td></td> <td></td>	833.95.701	11, 15			833.95.835	65	833.96.041 .	69		
833.95.702         19         833.95.774         33         833.95.871         111         833.96.044         69           833.95.702         120         833.95.775         33         833.95.872         111         833.96.045         69           833.95.703         17         833.95.776         33         833.95.874         109         833.96.046         69           833.95.704         23         833.95.778         33         833.95.880         109         833.96.048         69           833.95.704         121         833.95.779         33         833.95.880         109         833.96.049         69           833.95.705         9         833.95.780         35         833.95.882         111         833.96.050         69           833.95.706         117         833.95.781         35         833.95.882         111         833.96.051         69           833.95.706         118         833.95.783         35         833.95.884         109         833.96.053         69           833.95.707         13, 15         833.95.785         35         833.95.891         108         833.96.054         69           833.95.708         21         833.95.786         105         833.95.892<	833.95.701	27			833.95.836	65	833.96.042 .	69		
833.95.702         120         833.95.775         33         833.95.872         111         833.96.045         69           833.95.703         17         833.95.776         33         833.95.873         111         833.96.046         69           833.95.704         119         833.95.778         33         833.95.880         109         833.96.047         69           833.95.704         121         833.95.780         35         833.95.881         111         833.96.049         69           833.95.705         9         833.95.780         35         833.95.882         111         833.96.050         69           833.95.706         13, 15         833.95.782         35         833.95.883         111         833.96.051         69           833.95.706         13, 15         833.95.782         35         833.95.890         108         833.96.052         69           833.95.707         13, 15         833.95.784         35         833.95.891         108         833.96.054         69           833.95.708         21         833.95.786         105         833.95.892         107         833.96.056         69           833.95.709         17         833.95.787         51         833.	833.95.701	118	833.95.773	31	833.95.870	109	833.96.043 .	69		
833.95.703         17         833.95.776         33         833.95.873         111         833.96.046         69           833.95.703         119         833.95.777         33         833.95.884         109         833.96.048         69           833.95.704         23         833.95.779         33         833.95.881         111         833.96.049         69           833.95.705         19         833.95.780         35         833.95.882         111         833.96.050         69           833.95.706         117         833.95.781         35         833.95.884         109         833.96.051         69           833.95.706         13, 15         833.95.782         35         833.95.884         109         833.96.052         69           833.95.707         13, 15         833.95.784         35         833.95.890         108         833.96.054         69           833.95.707         118         833.95.785         35         833.95.891         108         833.96.056         69           833.95.708         21         833.95.786         105         833.95.91         107         833.96.056         69           833.95.709         17         833.95.788         115         833.95.	833.95.702	19	833.95.774	33	833.95.871	111	833.96.044 .	69		
833.95.703         .119         833.95.777         .33         833.95.874         .109         833.96.047         .69           833.95.704         .23         833.95.778         .33         833.95.880         .109         833.96.048         .69           833.95.705         .121         833.95.780         .35         833.95.882         .111         833.96.050         .69           833.95.705         .137         833.95.781         .35         833.95.883         .111         833.96.051         .69           833.95.706         .13, 15         833.95.782         .35         833.95.884         .109         833.96.052         .69           833.95.706         .118         833.95.783         .35         833.95.890         .108         833.96.052         .69           833.95.707         .13, 15         833.95.784         .35         833.95.891         .108         833.96.054         .69           833.95.708         .21         833.95.786         .105         833.95.892         .107         833.96.055         .69           833.95.709         .17         833.95.787         .51         833.95.911         .110         833.96.056         .69           833.95.710         .23         833.95.788	833.95.702	120	833.95.775	33	833.95.872	111	833.96.045 .	69		
833.95.704         23         833.95.778         33         833.95.880         109         833.96.048         69           833.95.704         .121         833.95.779         .33         833.95.881         111         833.96.049         69           833.95.705         .9         833.95.781         .35         833.95.882         111         833.96.051         69           833.95.706         .117         833.95.782         .35         833.95.884         109         833.96.052         69           833.95.706         .118         833.95.783         .35         833.95.890         108         833.96.053         69           833.95.707         .13, 15         833.95.784         .35         833.95.890         108         833.96.054         .69           833.95.707         .118         833.95.786         .35         833.95.892         107         833.96.055         .69           833.95.708         .21         833.95.786         .105         833.95.893         107         833.96.056         .69           833.95.709         .17         833.95.788         .49,55         833.95.911         .110         833.96.056         .69           833.95.710         .23         833.95.788         .49,55	833.95.703	17	833.95.776	33	833.95.873	111	833.96.046 .	69		
833.95.704         121         833.95.779         33         833.95.881         111         833.96.049         69           833.95.705         .9         833.95.780         .35         833.95.882         111         833.96.050         .69           833.95.706         .13, 15         833.95.782         .35         833.95.884         .109         833.96.052         .69           833.95.706         .118         833.95.784         .35         833.95.890         .108         833.96.054         .69           833.95.707         .13, 15         833.95.784         .35         833.95.891         .108         833.96.054         .69           833.95.708         .118         833.95.785         .35         833.95.892         .107         833.96.054         .69           833.95.708         .21         833.95.786         .105         833.95.893         .107         833.96.055         .69           833.95.709         .17         833.95.787         .51         833.95.912         .110         833.96.057         .69           833.95.710         .23         833.95.788         .49         .55         833.95.914         .110         833.96.069         .69           833.95.711         .19         833	833.95.703	119	833.95.777	33	833.95.874	109	833.96.047 .	69		
833.95.705         .9         833.95.780         .35         833.95.882         .111         833.96.050         .69           833.95.705         .117         833.95.781         .35         833.95.883         .111         833.96.051         .69           833.95.706         .13, 15         833.95.782         .35         833.95.890         .108         833.96.052         .69           833.95.707         .13, 15         833.95.784         .35         833.95.891         .108         833.96.054         .69           833.95.707         .118         833.95.786         .35         833.95.892         .107         833.96.055         .69           833.95.708         .21         833.95.786         .105         833.95.892         .107         833.96.056         .69           833.95.708         .120         833.95.787         .51         833.95.911         .110         833.96.057         .69           833.95.709         .17         833.95.788         .49, 55         833.95.912         .110         833.96.058         .69           833.95.710         .23         833.95.788         .49, 55         833.95.915         .110         833.96.069         .69           833.95.711         .19         833.95.789<	833.95.704	23	833.95.778	33	833.95.880	109	833.96.048 .	69		
833.95.705         .117         833.95.781         .35         833.95.883         .111         833.96.051         .69           833.95.706         .13, 15         833.95.782         .35         833.95.884         .109         833.96.052         .69           833.95.706         .118         833.95.783         .35         833.95.890         .108         833.96.053         .69           833.95.707         .13, 15         833.95.784         .35         833.95.892         .107         833.96.055         .69           833.95.708         .21         833.95.786         .105         833.95.893         .107         833.96.056         .69           833.95.708         .120         833.95.787         .51         833.95.911         .110         833.96.057         .69           833.95.709         .17         833.95.788         .49, 55         833.95.914         .110         833.96.058         .69           833.95.710         .23         833.95.788         .79         833.95.915         .110         833.96.060         .69           833.95.711         .19         833.95.789         .49, 55         833.95.922         .110         833.96.061         .69           833.95.711         .19         833.95.789	833.95.704	121	833.95.779	33	833.95.881	111	833.96.049 .	69		
833.95.706       .13, 15       833.95.782       .35       833.95.884       .109       833.96.052       .69         833.95.706       .118       833.95.783       .35       833.95.890       .108       833.96.053       .69         833.95.707       .13, 15       833.95.784       .35       833.95.892       .107       833.96.054       .69         833.95.708       .21       833.95.786       .105       833.95.893       .107       833.96.056       .69         833.95.708       .120       833.95.787       .51       833.95.911       .110       833.96.057       .69         833.95.709       .17       833.95.788       .49, 55       833.95.912       .110       833.96.058       .69         833.95.710       .23       833.95.788       .49, 55       833.95.915       .110       833.96.060       .69         833.95.711       .9       833.95.788       .15       833.95.921       .110       833.96.061       .69         833.95.711       .9       833.95.789       .49, 55       833.95.922       .110       833.96.062       .69         833.95.712       .110       833.95.789       .15       833.95.935       .110       833.96.066       .69	833.95.705	9	833.95.780	35	833.95.882	111	833.96.050 .	69		
833.95.706         118         833.95.783         35         833.95.890         108         833.96.053         69           833.95.707         13, 15         833.95.784         35         833.95.892         107         833.96.055         69           833.95.708         21         833.95.786         105         833.95.893         107         833.96.056         69           833.95.708         120         833.95.787         51         833.95.911         110         833.96.057         69           833.95.709         17         833.95.787         115         833.95.912         110         833.96.058         69           833.95.709         17         833.95.788         49, 55         833.95.914         110         833.96.059         69           833.95.710         23         833.95.788         49, 55         833.95.915         110         833.96.060         69           833.95.711         19         833.95.788         15         833.95.922         110         833.96.061         69           833.95.711         19         833.95.789         49, 55         833.95.922         110         833.96.062         69           833.95.712         110         833.95.789         15 <t< td=""><td>833.95.705</td><td> 117</td><td>833.95.781</td><td> 35</td><td>833.95.883</td><td> 111</td><td>833.96.051 .</td><td> 69</td><td></td><td></td></t<>	833.95.705	117	833.95.781	35	833.95.883	111	833.96.051 .	69		
833.95.707       13, 15       833.95.784       35       833.95.891       108       833.96.054       69         833.95.707       118       833.95.785       35       833.95.892       107       833.96.055       69         833.95.708       21       833.95.786       105       833.95.893       107       833.96.056       69         833.95.708       120       833.95.787       51       833.95.911       110       833.96.057       69         833.95.709       17       833.95.788       49, 55       833.95.912       110       833.96.058       69         833.95.710       23       833.95.788       79       833.95.915       110       833.96.060       69         833.95.711       19       833.95.789       49, 55       833.95.921       110       833.96.061       69         833.95.711       19       833.95.789       15       833.95.922       110       833.96.061       69         833.95.711       10       833.95.789       79       833.95.924       110       833.96.062       69         833.95.713       110       833.95.790       51       833.95.935       110       833.96.066       69         833.95.716       112	833.95.706	13, 15	833.95.782	35	833.95.884	109	833.96.052 .	69		
833.95.707       118       833.95.785       35       833.95.892       107       833.96.055       69         833.95.708       21       833.95.786       105       833.95.893       107       833.96.056       69         833.95.708       120       833.95.787       51       833.95.911       110       833.96.057       69         833.95.709       17       833.95.788       49,55       833.95.912       110       833.96.058       69         833.95.710       23       833.95.788       79       833.95.915       110       833.96.060       69         833.95.710       121       833.95.788       115       833.95.921       110       833.96.061       69         833.95.711       19       833.95.789       49,55       833.95.922       110       833.96.062       69         833.95.712       110       833.95.789       49,55       833.95.924       110       833.96.063       69         833.95.712       110       833.95.790       15       833.95.931       110       833.96.066       69         833.95.714       110       833.95.791       49       833.95.933       110       833.96.066       69         833.95.716       112	833.95.706	118	833.95.783	35	833.95.890	108	833.96.053 .	69		
833.95.708       .21       833.95.786       .105       833.95.893       .107       833.96.056       .69         833.95.708       .120       833.95.787       .51       833.95.911       .110       833.96.057       .69         833.95.709       .17       833.95.788       .49,55       833.95.912       .110       833.96.058       .69         833.95.710       .23       833.95.788       .79       833.95.915       .110       833.96.060       .69         833.95.710       .121       833.95.788       .115       833.95.921       .110       833.96.061       .69         833.95.711       .9       833.95.789       .49,55       833.95.922       .110       833.96.062       .69         833.95.711       .17       833.95.789       .49,55       833.95.924       .110       833.96.063       .69         833.95.712       .110       833.95.789       .15       833.95.925       .110       833.96.064       .69         833.95.713       .110       833.95.790       .51       833.95.931       .110       833.96.066       .69         833.95.716       .112       833.95.791       .49       833.95.935       .110       833.96.067       .69	833.95.707	13, 15	833.95.784	35	833.95.891	108	833.96.054 .	69		
833.95.708         .120         833.95.787         .51         833.95.911         .110         833.96.057         .69           833.95.709         .17         833.95.788         .49, 55         833.95.914         .110         833.96.059         .69           833.95.710         .23         833.95.788         .79         833.95.915         .110         833.96.060         .69           833.95.710         .121         833.95.788         .115         833.95.921         .110         833.96.061         .69           833.95.711         .9         833.95.789         .49, 55         833.95.922         .110         833.96.062         .69           833.95.711         .117         833.95.789         .79         833.95.924         .110         833.96.063         .69           833.95.712         .110         833.95.789         .115         833.95.925         .110         833.96.064         .69           833.95.713         .110         833.95.790         .51         833.95.931         .110         833.96.066         .69           833.95.716         .112         833.95.791         .49         833.95.935         .110         833.96.067         .69           833.95.717         .110         833.95.792 <td>833.95.707</td> <td> 118</td> <td>833.95.785</td> <td> 35</td> <td>833.95.892</td> <td> 107</td> <td>833.96.055 .</td> <td> 69</td> <td></td> <td></td>	833.95.707	118	833.95.785	35	833.95.892	107	833.96.055 .	69		
833.95.709       .17       833.95.787       .115       833.95.912       .110       833.96.058       .69         833.95.709       .119       833.95.788       .49, 55       833.95.914       .110       833.96.059       .69         833.95.710       .23       833.95.788       .79       833.95.915       .110       833.96.060       .69         833.95.710       .121       833.95.788       .115       833.95.921       .110       833.96.061       .69         833.95.711       .9       833.95.789       .49, 55       833.95.922       .110       833.96.062       .69         833.95.712       .110       833.95.789       .79       833.95.925       .110       833.96.064       .69         833.95.713       .110       833.95.790       .51       833.95.931       .110       833.96.065       .69         833.95.714       .110       833.95.791       .49       833.95.935       .110       833.96.066       .69         833.95.716       .112       833.95.791       .115       833.95.936       .110       850.00.005       .102         833.95.718       .110       833.95.793       .110       833.95.937       .110       850.00.005       .102     <	833.95.708	21	833.95.786	105	833.95.893	107	833.96.056 .	69		
833.95.709       119       833.95.788       49, 55       833.95.914       110       833.96.059       69         833.95.710       23       833.95.788       79       833.95.915       110       833.96.060       69         833.95.710       121       833.95.788       115       833.95.921       110       833.96.061       69         833.95.711       9       833.95.789       49, 55       833.95.922       110       833.96.062       69         833.95.712       110       833.95.789       79       833.95.925       110       833.96.063       69         833.95.713       110       833.95.790       51       833.95.931       110       833.96.065       69         833.95.714       110       833.95.790       115       833.95.933       110       833.96.066       69         833.95.715       110       833.95.791       49       833.95.935       110       833.96.067       69         833.95.717       110       833.95.792       110       833.95.937       110       850.00.006       102         833.95.718       110       833.95.793       110       833.96.020       69       850.00.025       100	833.95.708	120	833.95.787	51	833.95.911	110	833.96.057 .	69		
833.95.710       23       833.95.788       79       833.95.915       110       833.96.060       69         833.95.710       121       833.95.788       115       833.95.921       110       833.96.061       69         833.95.711       .9       833.95.789       .49, 55       833.95.922       .110       833.96.062       .69         833.95.711       .117       833.95.789       .79       833.95.924       .110       833.96.063       .69         833.95.712       .110       833.95.789       .115       833.95.925       .110       833.96.064       .69         833.95.713       .110       833.95.790       .51       833.95.931       .110       833.96.066       .69         833.95.714       .110       833.95.791       .49       833.95.935       .110       833.96.067       .69         833.95.716       .112       833.95.792       .110       833.95.937       .110       850.00.006       .102         833.95.718       .110       833.95.793       .110       833.96.020       .69       850.00.025       .100	833.95.709	17	833.95.787	115	833.95.912	110	833.96.058 .	69		
833.95.710       121       833.95.788       115       833.95.921       110       833.96.061       69         833.95.711       .9       833.95.789       .49, 55       833.95.922       .110       833.96.062       .69         833.95.711       .117       833.95.789       .79       833.95.924       .110       833.96.063       .69         833.95.712       .110       833.95.789       .115       833.95.925       .110       833.96.064       .69         833.95.713       .110       833.95.790       .51       833.95.931       .110       833.96.065       .69         833.95.714       .110       833.95.791       .49       833.95.935       .110       833.96.067       .69         833.95.716       .112       833.95.791       .115       833.95.936       .110       850.00.005       .102         833.95.718       .110       833.95.793       .110       833.96.020       .69       850.00.025       .100	833.95.709	119	833.95.788	49, 55	833.95.914	110	833.96.059 .	69		
833.95.711       .9       833.95.789       .49, 55       833.95.922       .110       833.96.062       .69         833.95.711       .117       833.95.789       .79       833.95.924       .110       833.96.063       .69         833.95.712       .110       833.95.789       .115       833.95.925       .110       833.96.064       .69         833.95.713       .110       833.95.790       .51       833.95.931       .110       833.96.065       .69         833.95.714       .110       833.95.791       .49       833.95.935       .110       833.96.067       .69         833.95.716       .112       833.95.791       .115       833.95.936       .110       850.00.005       .102         833.95.717       .110       833.95.792       .110       833.95.937       .110       850.00.005       .102         833.95.718       .110       833.95.793       .110       833.96.020       .69       850.00.025       .100	833.95.710	23	833.95.788	79	833.95.915	110	833.96.060 .	69		
833.95.711       117       833.95.789       .79       833.95.924       .110       833.96.063       .69         833.95.712       .110       833.95.789       .115       833.95.925       .110       833.96.064       .69         833.95.713       .110       833.95.790       .51       833.95.931       .110       833.96.065       .69         833.95.714       .110       833.95.790       .115       833.95.933       .110       833.96.066       .69         833.95.715       .110       833.95.791       .49       833.95.935       .110       833.96.067       .69         833.95.716       .112       833.95.791       .115       833.95.936       .110       850.00.005       .102         833.95.717       .110       833.95.792       .110       833.95.937       .110       850.00.005       .102         833.95.718       .110       833.95.793       .110       833.96.020       .69       850.00.025       .100	833.95.710	121	833.95.788	115	833.95.921	110	833.96.061 .	69		
833.95.712       110       833.95.789       115       833.95.925       110       833.96.064       69         833.95.713       110       833.95.790       51       833.95.931       110       833.96.065       69         833.95.714       110       833.95.790       115       833.95.933       110       833.96.066       69         833.95.715       110       833.95.791       49       833.95.935       110       833.96.067       69         833.95.716       112       833.95.791       115       833.95.936       110       850.00.005       102         833.95.717       110       833.95.792       110       833.95.937       110       850.00.006       102         833.95.718       110       833.95.793       110       833.96.020       69       850.00.025       100	833.95.711	9	833.95.789	49, 55	833.95.922	110	833.96.062 .	69		
833.95.713       110       833.95.790       51       833.95.931       110       833.96.065       69         833.95.714       110       833.95.790       115       833.95.933       110       833.96.066       69         833.95.715       110       833.95.791       49       833.95.935       110       833.96.067       69         833.95.716       112       833.95.791       115       833.95.936       110       850.00.005       102         833.95.717       110       833.95.792       110       833.95.937       110       850.00.006       102         833.95.718       110       833.95.793       110       833.96.020       69       850.00.025       100	833.95.711	117	833.95.789	79	833.95.924	110	833.96.063 .	69		
833.95.714       110       833.95.790       115       833.95.933       110       833.96.066       69         833.95.715       110       833.95.791       49       833.95.935       110       833.96.067       69         833.95.716       112       833.95.791       115       833.95.936       110       850.00.005       102         833.95.717       110       833.95.792       110       833.95.937       110       850.00.006       102         833.95.718       110       833.95.793       110       833.96.020       69       850.00.025       100	833.95.712	110	833.95.789	115	833.95.925	110	833.96.064 .	69		
833.95.715       110       833.95.791       49       833.95.935       110       833.96.067       69         833.95.716       112       833.95.791       115       833.95.936       110       850.00.005       102         833.95.717       110       833.95.792       110       833.95.937       110       850.00.006       102         833.95.718       110       833.95.793       110       833.96.020       69       850.00.025       100	833.95.713	110	833.95.790	51	833.95.931	110	833.96.065 .	69		
833.95.716	833.95.714	110	833.95.790	115	833.95.933	110	833.96.066 .	69		
833.95.717       110       833.95.792       110       833.95.937       110       850.00.006       102         833.95.718       110       833.95.793       110       833.96.020       69       850.00.025       100	833.95.715	110	833.95.791	49	833.95.935	110	833.96.067 .	69		
833.95.718 110 833.95.793 110 833.96.020 69 850.00.025 100	833.95.716	112	833.95.791	115	833.95.936	110	850.00.005 .	102		
	833.95.717	110	833.95.792	110	833.95.937	110	850.00.006 .	102		
833.95.719 110 833.95.794 110 833.96.021 69 850.00.026 100			833.95.793	110			850.00.025 .	100		
	833.95.719	110	833.95.794	110	833.96.021	69	850.00.026 .	100		

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