

CFP* Illuminated Pushbuttons

Manual

With regard to the supply of products, the current issue of the following document is applicable:
The General Terms of Delivery for Products and Services of the Electrical Industry, published
by the Central Association of the Electrical Industry (Zentralverband Elektrotechnik und Elek-
troindustrie (ZVEI) e.V.) in its most recent version as well as the supplementary clause:
"Expanded reservation of proprietorship"

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1 Introduction

1.1 Content of this Document

This document contains information required to use the product in the relevant phases of the product life cycle. This may include information on the following:

- Product identification
- Delivery, transport, and storage
- Mounting and installation
- Commissioning and operation
- Maintenance and repair
- Troubleshooting
- Dismounting
- Disposal

Note

For full information on the product, refer to the further documentation on the Internet at www.pepperl-fuchs.com.

The documentation comprises the following parts:

- This document
- Datasheet

The documentation may also comprise the following parts, if applicable:

- EU-type examination certificate
- EU declaration of conformity
- Attestation of conformity
- Certificates
- Control drawings
- Instruction manual
- Functional safety handbook
- Other documents

1.2 Target Group, Personnel

The personnel must be appropriately trained and qualified in order to carry out mounting, installation, commissioning, operation, maintenance, and dismounting of the device. The trained and qualified personnel must have read and understood the instruction manual.

Prior to using the product make yourself familiar with it. Read the document carefully.

1.3 Intended Use

Always operate the device as described in these instructions. Only in this way, the safe function of the device and the connected systems is guaranteed.

The protection of operating personnel and plant is only given if the device is used in accordance with its intended use.

1.4 Symbols Used

This document contains symbols for the identification of warning messages and of informative messages.

Warning Messages

You will find warning messages, whenever dangers may arise from your actions. It is mandatory that you observe these warning messages for your personal safety and in order to avoid property damage.

Depending on the risk level, the warning messages are displayed in descending order as follows:



Danger!

This symbol indicates an imminent danger.

Non-observance will result in personal injury or death.



Warning!

This symbol indicates a possible fault or danger.

Non-observance may cause personal injury or serious property damage.



Caution!

This symbol indicates a possible fault.

Non-observance could interrupt the device and any connected systems and plants, or result in their complete failure.

Informative Symbols



Note

This symbol brings important information to your attention.



Action

1. This symbol indicates a paragraph with instructions. You are prompted to perform an action or a sequence of actions.

1.5 General

Responsibility for planning, assembly, commissioning, operation, maintenance, and dismounting lies with the plant operator.

Installation and commissioning of all devices may be performed only by trained and qualified personnel.

Protection of operating personnel and the system is not ensured if the product is not used in accordance with its intended use.

Observe the applicable laws and regulations regarding the intended use of the device. The devices are only approved for proper use for the intended purpose. Improper use will void any warranty and liability claims.

The corresponding datasheets, declarations of conformity, and/or EC-type examination certificates form an integral part of this document. The data sheet contains the electronic data of the EC-type-examination certificate.

These documents can be found at www.pepperl-fuchs.com or contact your local Pepperl+Fuchs representative.

2 Certificates and approvals

2.1 Reference to Further Documentation

Observe directives, standards, and national laws applicable to the intended use and the operating location. Observe Directive 1999/92/EC in relation to hazardous areas.

The corresponding datasheets, manuals, declarations of conformity, EU-type examination certificates, certificates, and control drawings if applicable supplement this document. You can find this information under www.pepperl-fuchs.com.

3 Installation

3.1 Storage and Transportation

Keep the original packaging. Always store and transport the device in the original packaging. Store the device in a clean and dry environment. The permitted ambient conditions must be considered, see datasheet.

3.2 Unpacking

Check the product for damage while unpacking. In the event of damage to the product, inform the post office or parcel service and notify the supplier.

Check the package contents against your purchase order and the shipping documents for:

- Delivery quantity
- Device type and version in accordance with the type label
- Any accessories ordered

Retain the original packaging in case you have to store or ship the device again at a later date.

Should you have any questions, please contact Pepperl+Fuchs.

3.3 Mounting and Installation

Observe the installation instructions according to IEC/EN 60079-14.

If you intend to install the device or enclosure in areas that may be exposed to aggressive substances, ensure that the stated surface materials are compatible with these substances.

If required, contact Pepperl+Fuchs for further information.

Illuminated Pushbutton Actuator Heads

Tighten the thread with the appropriate torque, see datasheet.

Use the appropriate tool to tighten the thread, see datasheet.

Image is generic for this device type and may deviate from the specific variant.

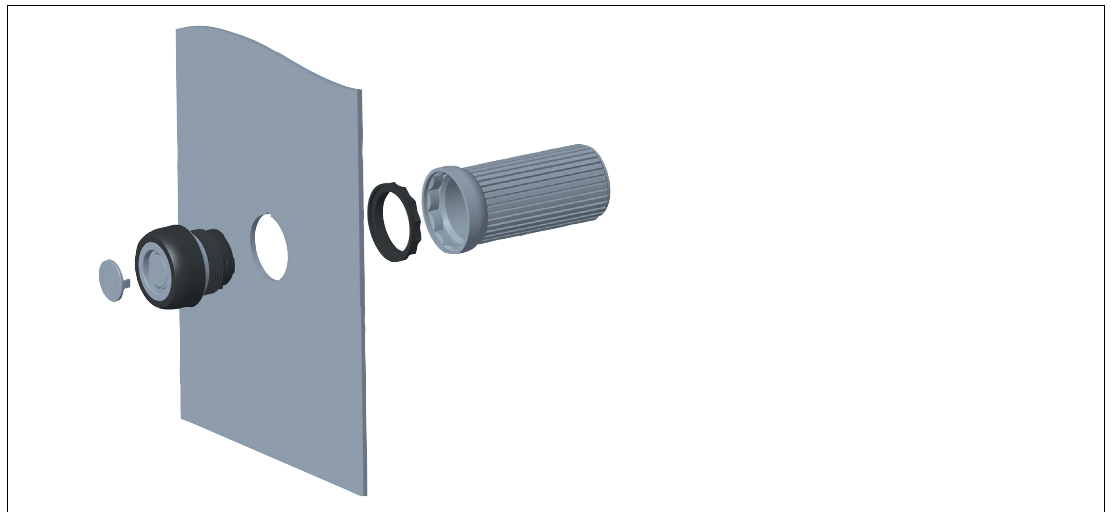


Figure 3.1

Illuminated Pushbutton LED Contact Modules

The CFP.I* illuminated pushbutton actuator head series is provided by P+F for use with the CFP.** explosion-protected illuminated pushbutton LED contact modules series.

The CFP.** explosion-protected illuminated pushbutton LED contact modules series is suitable for use in hazardous area zones 1 and 2.

Use the explosion-protected illuminated pushbutton LED contact modules under the following atmospheric conditions:

- The pressure is 80 kPa ~110 kPa.
- The volume ratio of standard oxygen is 21% air.
- The components must be enclosed in an explosion-protected enclosure suitable for the environment.

This series of components can be used together with the CFP.I* illuminated pushbutton actuator head series manufactured by P+F.

Install this series of components in accordance with IEC60947-5-1.

Tighten the thread with the appropriate torque, see datasheet.

Mount the module securely and reliably.

During wiring, the creepage distance of the bare current-carrying must be ≥ 10 mm, the electrical clearance must be ≥ 6 mm.

Rules for bringing in additional thru-holes for illuminated pushbutton actuator heads

Thru-holes for illuminated pushbutton actuator heads must be as shown in the drawing below. Make sure the minimum hole spacing is maintained. Hole spacing distance can be larger than the minimum shown in this hole pattern, but the thru-hole dimensions must be exact.

Hole Pattern

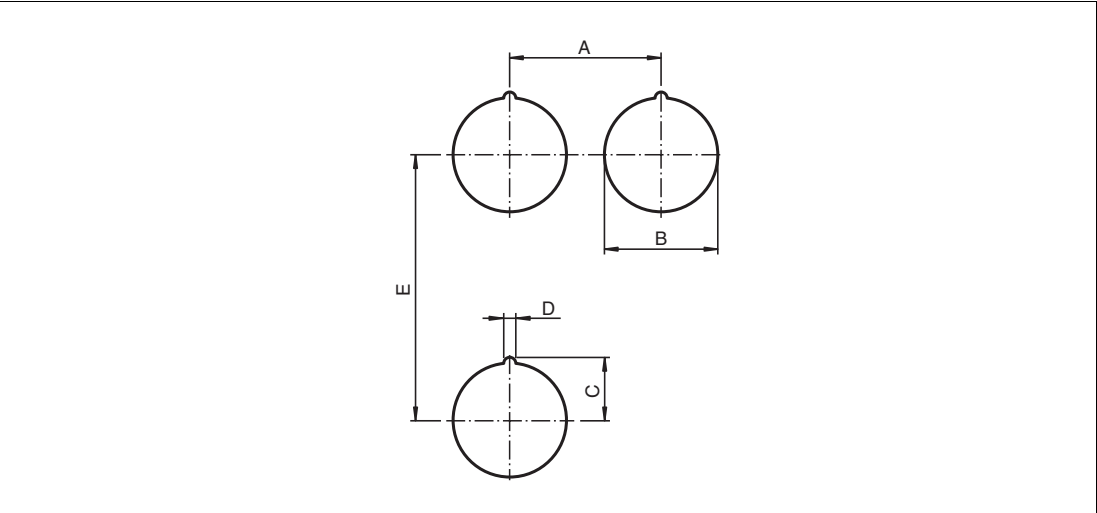


Figure 3.2

Legend

	Dimensions [mm]
A	40
B	30.6
C	16.7
D	3.2
E	70

Table 3.1

Make the additional thru-holes using an appropriate tooling method.
Make sure that the thru-hole diameters match the gaskets and actuator heads to be installed.
Make sure that the enclosure surfaces around the thru-holes are clean and undamaged to maintain the degree of protection.

4 Operation

4.1 Operation, Maintenance, Repair

Observe IEC/EN 60079-17 for maintenance and inspection.

If there is a defect, always replace the device with an original device.

Do not modify or manipulate the device.

4.2 Delivery, Transport, Disposal

The device, built-in components, packaging, and any batteries contained within must be disposed in compliance with the applicable laws and guidelines of the respective country.

4.3 Technical Data

Illuminated Pushbutton Actuator Heads

Mechanical specifications	
Degree of protection	IP66
Material	
Housing	Polyamide (PA)
Finish	inherent color black
Washer gasket	silicone
Ambient conditions	
Ambient temperature	-40 ... 55 °C (-40 ... 131 °F)
Service Temperature	-40 ... 65 °C (-40 ... 149 °F)
Data for application in connection with hazardous areas	
EU-Type examination certificate	CML 16 ATEX 3339U
Marking	Ex II 2 GD Ex e IIC Gb Ex tb IIIC Db
International approvals	
IECEx approval	IECEx CML 16.0114U
Conformity	
Degree of protection	EN 60529
CE marking	0102

Table 4.1

Illuminated Pushbutton LED Contact Modules

CFP.I*, CFP.J*, CFP.K*, CFP.H*

Electrical specifications	
Operating voltage	250 V max.
Operating current	10 A max.
Power consumption	1 W max.
Terminal capacity	2.5 mm ²
Terminal torque	0.8 Nm
Usage category	AC15: 20... 250 V AC – 10 A DC13: 20... 24 V DC – 1 A
Mechanical specifications	
Mechanical life	300000 switching operations
Degree of protection	IP20
Material	
Housing	Polyamide (PA)
Ambient conditions	
Service temperature	-40 ... 85 °C (-40 ... 185 °F)
Data for application in connection with hazardous areas	
EU-Type examination certificate	CML 16 ATEX 3339U
Marking	Ⓔ II 2 G Ex de IIC Gb
International approvals	
IECEEx approval	IECEEx CML 16.0114U
Conformity	
Degree of protection	EN 60529
Usage category	IEC / EN 60947
CE marking	0102

Table 4.2

Illuminated Pushbutton LED Contact Modules

CFP.IL, CFP.II, CFP.JL, CFP.JI, CFP.KL, CFP.KI, CFP.HL, CFP.HI

Electrical specifications	
Operating voltage	28 V max.
Operating current	10 A max.
Power consumption	1 W max.
Terminal capacity	2.5 mm ²
Terminal torque	0.8 Nm
Usage category	AC15: 10 ... 28 V AC – 10 A DC13: 10 ... 28 V DC – 1 A
Mechanical specifications	
Mechanical life	300000 switching operations
Degree of protection	IP20
Material	
Housing	Polyamide (PA)
Ambient conditions	
Service temperature	-55 ... 90 °C (-67 ... 194 °F)
Data for application in connection with hazardous areas	
EU-Type examination certificate	CML 19 ATEX 1178U
Marking	Ⓔ II 2 G Ex db eb IIC Gb
Intrinsically safe variants	
Marking	Ⓔ II 1 G Ex ia IIC Ga
Usage category	AC15: 10 ... 28 V AC – 93 mA DC13: 10 ... 28 V DC – 93 mA
Voltage U _i	LED 28 V switch 30 V
Current I _i	LED 93 mA switch 100 mA
Power P _i	LED 0.651 W switch 1 W
Internal capacitance C _i	LED 0.01 µF switch 0 µF
Internal inductance L _i	LED 2.2 mH switch 0 mH
International approvals	
IECEx approval	IECEx CML 19.0054U
Conformity	
Degree of protection	EN 60529
Usage category	IEC / EN 60947
CE marking	2460

Table 4.3

4.4 Dimensions

CFP.I* Illuminated Pushbutton Actuator Heads

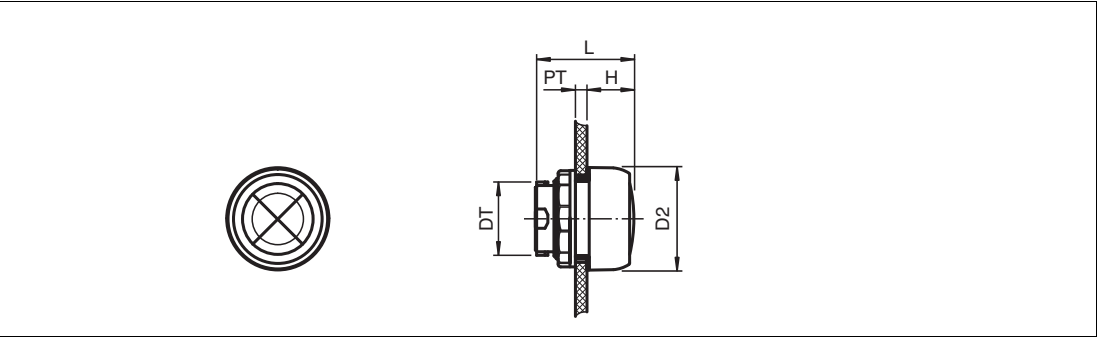


Figure 4.1

CFP.** Illuminated Pushbutton LED Contact Modules base-mounted

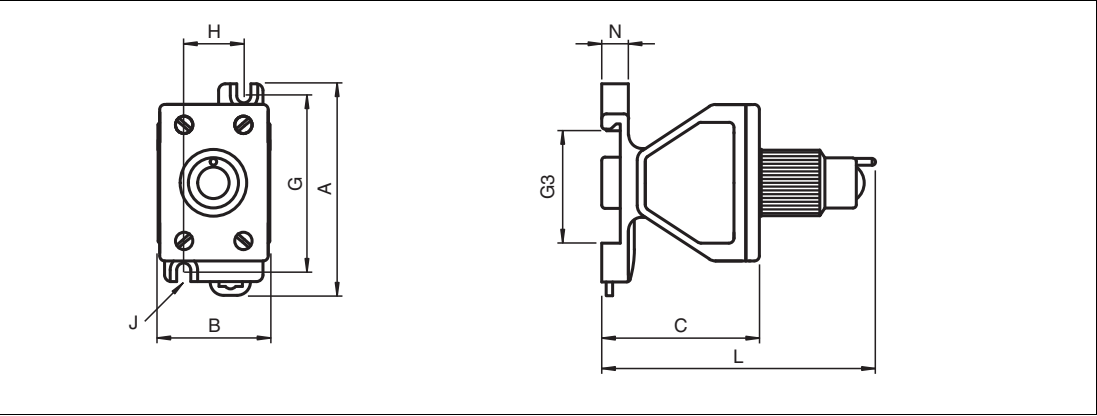


Figure 4.2

CFP.** Illuminated Pushbutton LED Contact Modules cover-mounted

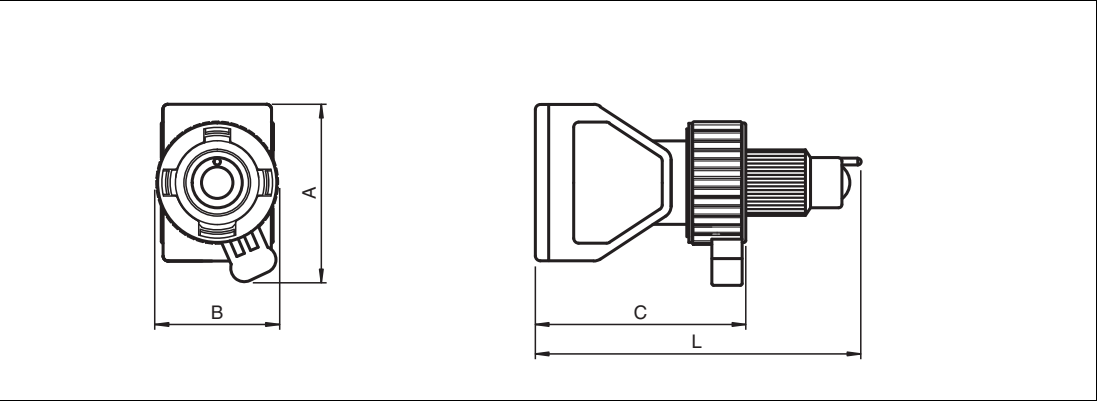


Figure 4.3

4.5 Type Code / Model Number

Illuminated Pushbutton Actuator Heads

1		2	3		4
CFP	.	*	*	.	*
CFP	.	I	R	.	SP

Example: CFP.IR.SP
control element Ex e, illuminated pushbutton actuator head black housing, red, spare part

1	Series
CFP	control element Ex e

2	Operating Element Type	3	Details
I	illuminated pushbutton actuator head, black housing	R	red
		G	green
		O	amber
		W	white
		B	blue

4	Product Type
SP	spare part

Illuminated Pushbutton LED Contact Modules

1		2	3		4
CFP	.	*	*	.	*
CFP	.	I	L	.	SP

Example: CFP.IL.SP
control element Ex e, LED contact module, 10 – 28 V AC/DC, with 1x NO contact, white, base-mounted

1		2	3		4
CFP	.	*	*	.	*
CFP	.	K	L	.	SP

Example: CFP.KL.SP
control element Ex e, LED contact module, 10 – 28 V AC with 1x NO contact, white, cover-mounted

1	Series
CFP	control element Ex e

2	Operating Element Type	3
I	LED contact module	
		L
		I
J	LED contact module	
		L
		I
K	LED contact module	
		L
		I
H	LED contact module	
		L
		I

4	Product Type
SP	spare part

4.6 Variant-Specific Data

Illuminated Pushbutton Actuator Heads - Dimensions

Actuator head diameter [mm]	Panel wall thickness [mm]	Diameter thru-hole [mm]	Length outside enclosure [mm]	Total length [mm]	Mass [g]	Mounting
D2	PT	DT	H	L		
39	1 ... 6	30.6	17.5	36.8	21	use with base-mounted and cover-mounted contact modules

Table 4.4

Values might differ slightly due to manufacturing tolerances.

Illuminated Pushbutton LED Contact Modules - Dimensions base-mounted

Mounting	External dimensions [mm]				Mounting holes [mm]			Mounting brackets [mm]	DIN rail receptacle [mm]	Mass [g]
	A	B	C	L	G	H	Diam. J	N	G3	
base-mounted	63	33.4	47	82	52	18	4.2	8	35.6	72

Table 4.5

Values might differ slightly due to manufacturing tolerances.

Illuminated Pushbutton LED Contact Modules

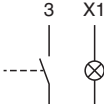
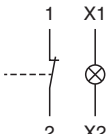
Type	Mounting	Operating voltage [V]	Number of poles	Contact configuration	Color	Switching diagram	Image
CFP.IL	base-mounted	10 – 28 V AC/DC	1	1x NO	white		
CFP.I	base-mounted	20 – 250 V AC/DC	1	1x NO	white		
CFP.II	base-mounted	10 – 28 V AC/DC Ex ia	1	1x NO	white		
CFP.JL	base-mounted	10 – 28 V AC/DC	1	1x NC	white		
CFP.J	base-mounted	20 – 250 V AC/DC	1	1x NC	white		
CFP.JI	base-mounted	10 – 28 V AC/DC Ex ia	1	1x NC	white		

Table 4.6

Image is an example and color may differ.

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Illuminated Pushbutton LED Contact Modules - Dimensions cover-mounted

Mounting	External dimensions [mm]				Mounting holes [mm]			Mounting brackets [mm]	DIN rail receptacle [mm]	Mass [g]
	A	B	C	L	G	H	Diam. J	N	G3	
cover-mounted	54	37	63	88	-	-	-	-	-	82

Table 4.7

Values might differ slightly due to manufacturing tolerances.

Illuminated Pushbutton LED Contact Modules

Type	Mounting	Operating voltage [V]	Number of poles	Contact configuration	Color	Switching diagram	Image
CFP.KL	cover-mounted	10 – 28 V AC/DC	1	1x NO	white		
CFP.K	cover-mounted	20 – 250 V AC/DC	1	1x NO	white		
CFP.KI	cover-mounted	10 – 28 V AC/DC Ex ia	1	1x NO	white		
CFP.HL	cover-mounted	10 – 28 V AC/DC	1	1x NC	white		
CFP.H	cover-mounted	20 – 250 V AC/DC	1	1x NC	white		
CFP.HI	cover-mounted	10 – 28 V AC/DC Ex ia	1	1x NC	white		

Table 4.8

Image is an example and color may differ.

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- Remote I/O Systems
- Electrical Ex Equipment
- Purge and Pressurization
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- Mobile Computing and Communications
- HART Interface Solutions
- Surge Protection
- Wireless Solutions
- Level Measurement

Industrial Sensors

- Proximity Sensors
- Photoelectric Sensors
- Industrial Vision
- Ultrasonic Sensors
- Rotary Encoders
- Positioning Systems
- Inclination and Acceleration Sensors
- Fieldbus Modules
- AS-Interface
- Identification Systems
- Displays and Signal Processing
- Connectivity

Pepperl+Fuchs Quality

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