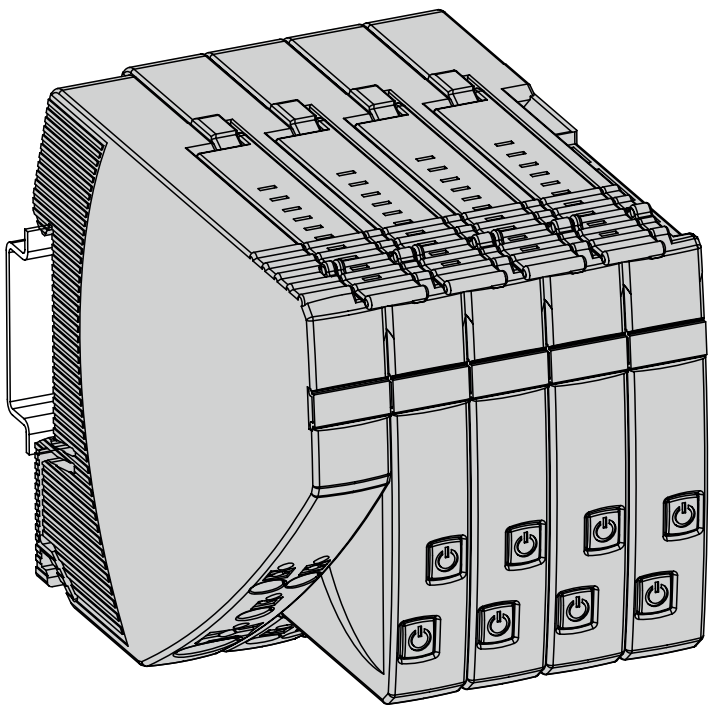
Installation instructions

Electronic circuit breakers, standard for the 24 V DC secondary circuit

DF11xx
DF12xx

UK



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1 Preliminary note

This document applies to the DF11xx supply modules and the DF12xx circuit protection modules.

Read this document before use to familiarise yourself with operating conditions, installation and operation. Keep this document during the entire duration of use of the device.

Adhere to the warning notes and safety instructions (→ 2 Safety instructions).

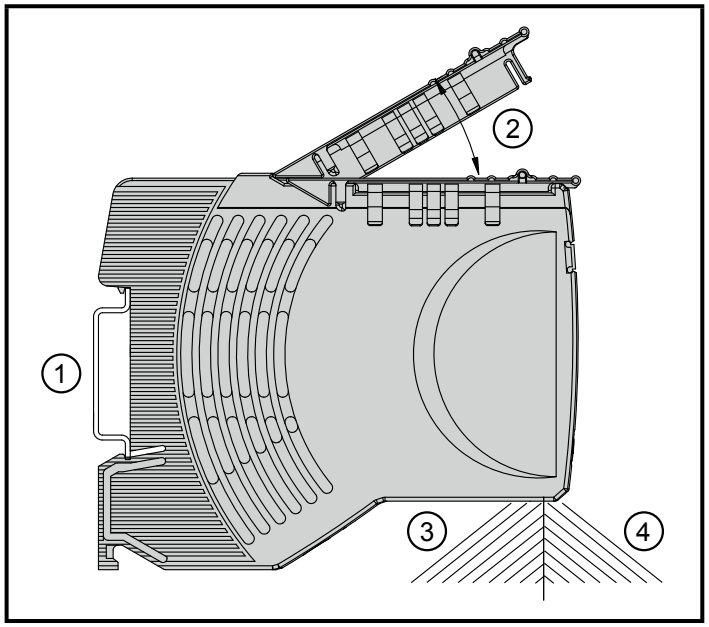
The devices are not suitable for battery-backed applications.

2 Safety instructions

- The devices are intended for use with a 24 V DC safety extra-low voltage.
- A wrong connection to voltage which is higher and/or not safely isolated may lead to damage or conditions which are dangerous to life.
- Use the supply module only with the matching circuit protection modules.
- Observe the technical data of the circuit protection modules used.
- The devices must be installed, connected and put into operation by a qualified electrician.
- Adhere to the national regulations regarding the installation and selection of cables.
- Do not mount the devices and do not actuate the contact levers while live.
- Supply the devices with energy only after they have been properly installed.
- After triggering a circuit protection module and before power on again, remove the cause of triggering (short circuit or overload).
- Check the devices for damage prior to installation. Faulty devices must not be used.
- In case of malfunction of the unit or queries, please contact the manufacturer. Any tampering with the device can seriously affect the safety of operators and machinery.This is not permitted and leads to the exclusion of any liability and warranty claims.

3 Installation

▶ Mount the devices on a 35 mm rail.



Example DF12xx circuit protection module

1: rail
2: contact lever
3: installation area
4: operating area

UK

4 Electrical connection

▶ Dimension cables according to input and output current.
▶ Insert wires directly into the terminals as shown on the device label.

Art. no.	Terminals	Potential	Cross-section [mm²]	Stripping length [mm]
DF11xx	24 V DC	supply	0.5...10	18
	0 V		0.14...2.5	8...10
	13-14	NO contacts	0.14...2.5	8...10
DF12xx	O1 or O1/O2	current outputs	0.14...2.5	8...10

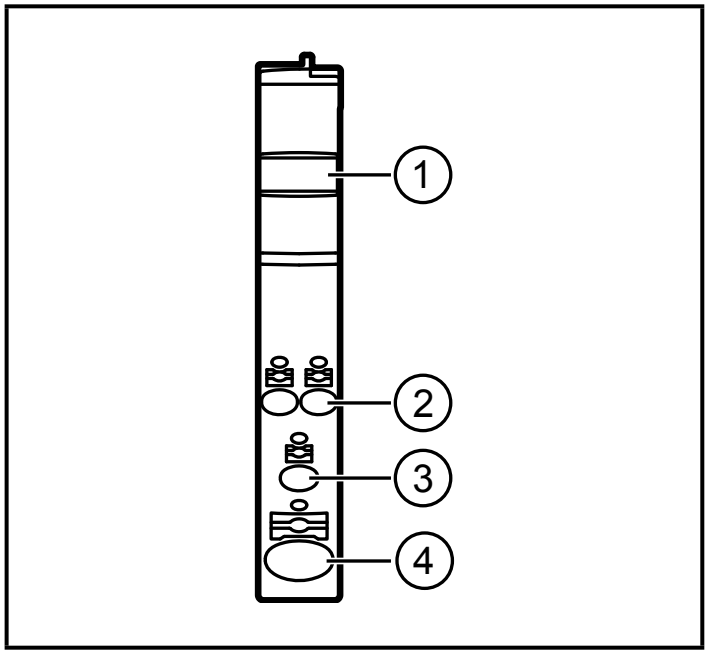
To disconnect press the orange pusher using a suitable tool.
To open the push-in terminals IO-Link use a 2 mm wide micro screwdriver.

As soon as the supply module is supplied with voltage, the device closes the contacts connected to terminals 13 and 14. If a fault occurs at min. one of the connected channels, the device opens the contacts again.

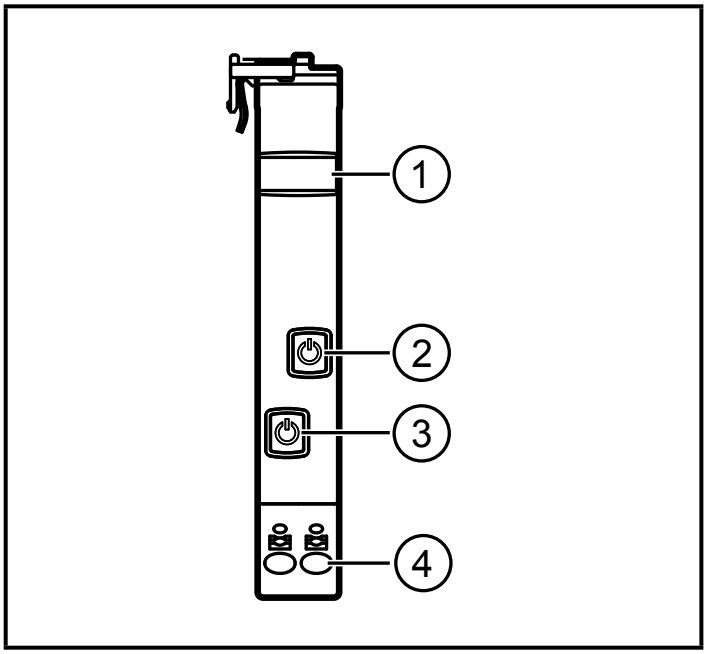
4.1 Supply and potential modules

In combination with GND potential modules (DF311x) the GND supply modules (DF310x) are used to reduce wiring. A LOAD potential module (DF320x) is used to extend +24 V DC circuit protection outputs to other connections.

5 Operating and display elements



Example DF11xx supply module
1: panel for labelling
2: push-in terminals switching output 13/14
3: push-in terminal 0 V
4: push-in terminal 24 V DC



Example DF12xx circuit protection module
1: panel for labelling
2: ON/OFF/reset button and status LED (channel 2)
3: ON/OFF/reset button and status LED (channel 1)
4: push-in terminals outputs 1/2

5.1 DF12xx circuit protection modules

The different operating states of the circuit protection modules are indicated by LEDs.

Status LED		Operating status	Status of load output
—	off	missing operating voltage, error in initialisation or channel switched off via button	off
Green	on	channel switched on, no fault	on
Green/ orange	flashing	load current limit reached	on
Orange	on	overload or short circuit until disconnection	on
		channel switched off	off
Red	on	triggering via short circuit or overload	off
		undervoltage in ON status with automatic switching on again	

5.2 Interrogation of module to confirm the set nominal current

Only for circuit protection modules with adjustable nominal current.

▶ Press the ON/OFF/reset button of the requested channel between 2 and 5 seconds.

> The status LED of the selected channel flashes red once.

> The status LED flashes orange to display the set nominal current. The LED Flashes red once to confirm completion of the cycle. The LED flashes orange, once or multiple times, in accordance with nominal current setting in amperes (orange flashing once = 1 A; orange flashing twice = 2 A; etc.).

> The set nominal current is displayed five times. After 5 cycles the display changes to the current operating status.To interrupt/stop the interrogation cycle, and return to normal status indication mode, press the ON/OFF/reset button of the requested channel at any time.

5.3 Setting of the nominal current

Only for circuit protection modules with adjustable nominal current.

▶ Press the ON/OFF/reset button of the requested channel min. 5 seconds.

> The status LED of the selected channel flashes red once.

> The status LED slowly flashes green, max. 10 times, then red once.

▶ Press the ON/OFF/reset button of this channel when the LED signals the requested nominal current value (after the first time flashing green = 1 A; after the second time flashing green = 2 A; etc.).

> The selected nominal current is set for this channel.

> Display changes to the current operating status.

6 Technical data

Art. no.		DF1100	DF1208	DF1210	DF1212	DF1214	DF1216	DF1220
Supply module		●	-					
Circuit protection module		-	●					
Interface		-						
Number of circuit protection modules		-	≤ 10 per supply module					
Electrical data								
Input voltage	[V]	18...30 DC (SELV/PELV)						
Nominal voltage	[V]	24 DC						
NEC Class 2		-	-	-	●	●	-	-
Input current (= max. total current)	[A]	40	-					
Number of channels		-	1		2			
Nominal current I_N fail-safe I_N	[A]	-	8 (8)	10 (10)	2 (2)	4 (4)	6 (6.3)	1...10 (16)
Mechanical data								
Installation		rail TH35 (to EN 60715)						
Device width	[mm]	12.5						
Ambient temperature	[°C]	-25...60						
Storage temperature	[°C]	-40...70						
Protection rating (→ 3 Installation)		IP 30 (installation area) IP 20 (operating area)						
Electrical connection								
Type		push-in terminals, contact lever/strip						

● = applicable

Data sheets are available at:www.ifm.com
When read with a smartphone, the printed QR codes directly lead to the data sheet and more information.

6.1 Temperature factor / continuous current rating

The time-current characteristic curve depends on the ambient temperature. To determine the max. permitted load current multiply the nominal device current by the temperature factor taking into consideration the series connection.

Ambient temperature [°C]	0	10	23	40	50	60
Temperature factor	1	1	1	0.95	0.90	0.85

With series installation the nominal device current can be max. 80% or has to be overdimensioned accordingly. With increased temperature the load current warning limit "warning limit typ. 0.8 x I_N" is reduced by the temperature factor.

6.2 Fail-safe element

The load circuits are additionally protected by the circuit protection modules that are equipped with a fail-safe element (integrated fuse). The fail-safe element is adapted to the nominal current I_N of the respective circuit protection module and the respective wire cross-sections.