

# Universal Motor Controller UMC22-FBP

Excellent motor protection  
and control



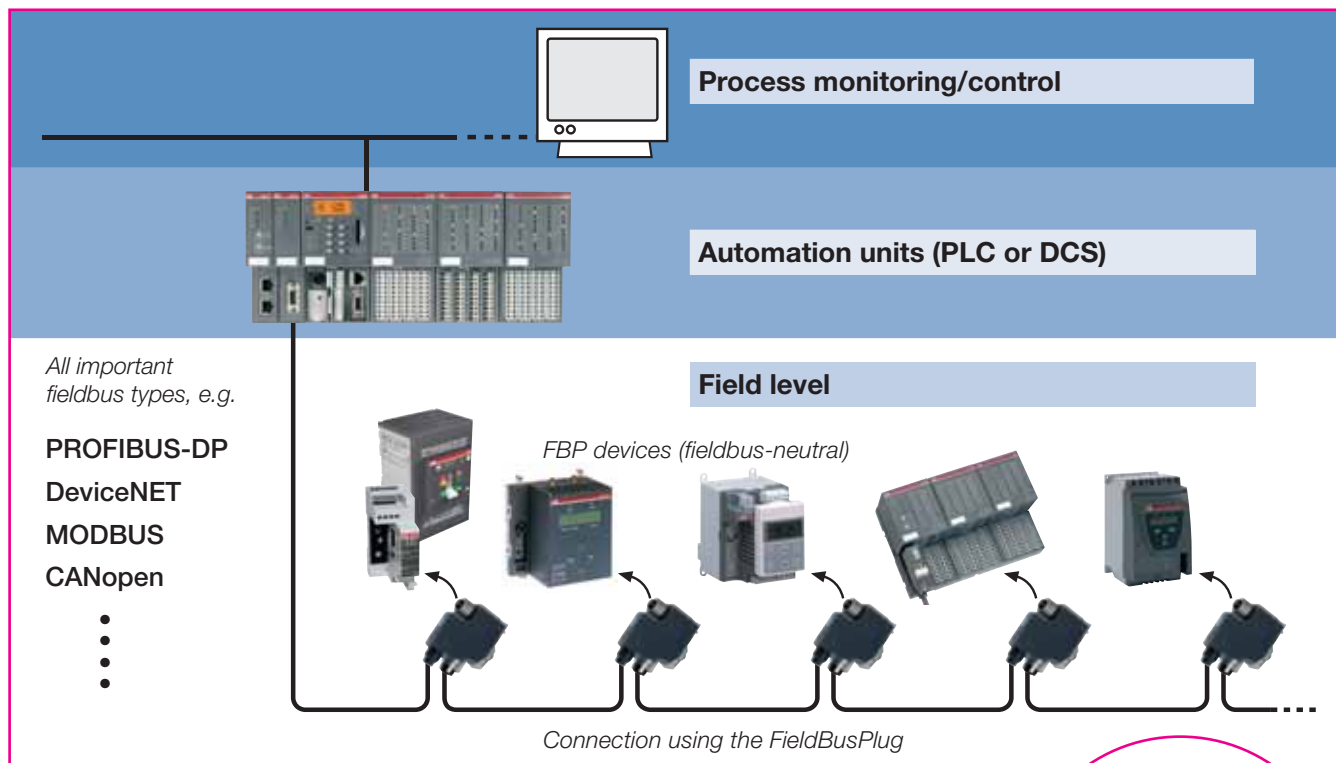
ATEX

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**ABB**

# FieldBusPlug: the concept

ABB's communicative product family comprises a wide range of switching, controlling and automation components. It can be easily combined with all common standard Fieldbus systems.



## One device for all fieldbuses

Each device within the product family like the Universal Motor Controller UMC22 has a fieldbus-neutral interface to connect a bus-specific FieldBusPlug. The UMC22 itself is independent from the fieldbus communication – just one type fits for all. Due to this, the design can be done without even considering the fieldbus communication. The concept to separate communication and device functionality also allows to assemble the device and FieldBusPlug separately. This is often used in withdrawable applications with the UMC22

- does not affect the fieldbus communication
- the fieldbus slave is still working
- diagnosis informs about the missing device

After returning the drawer it is automatically integrated in the communication again.

## The FieldBusPlugs

The FieldBusPlug (FBP) is the communicative element of this system. It contains the fieldbus-dependent electronics and is the link between device and fieldbus. Integrated LEDs show at a glance the status of communication and device functionality. All relevant fieldbus systems like Profibus DP, DeviceNet, Modbus and CANopen are covered.

Due to the plugs in robust housings with M12 connectors, preassembled cables and a wide range of accessories a reliable use in hard industrial environment is guaranteed.

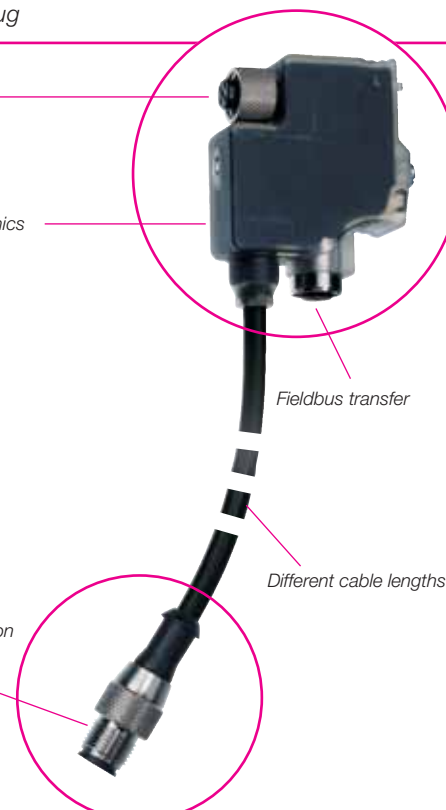
Fieldbus-neutral  
Device connection

Bus-specific electronics

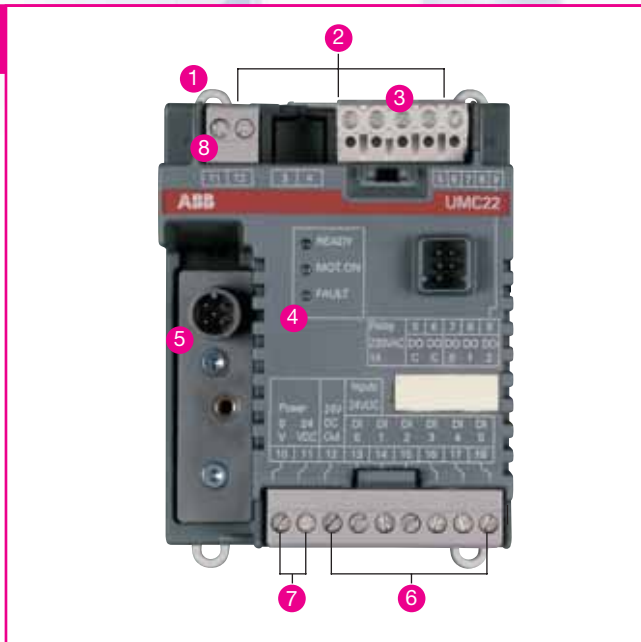
Fieldbus transfer

Different cable lengths

Fieldbus connection  
(M 12)



## Overview



- ① Screw or DIN-rail mounting
- ② Bushing type transformer
- ③ Connection terminals for the digital outputs
- ④ UMC status with LEDs
- ⑤ FieldBusPlug interface
- ⑥ Connection terminals for the digital inputs
- ⑦ Connection terminals for the external supply voltage
- ⑧ PTC input

### Motor protection and monitoring

- Electronic overload protection
- Tripping classes 5, 10, 20, 30
- Phase failure
- Motor blocking
- Motor temperature with PTC
- Earth connection via external sensor CEM11-FBP

### Control functions and operation

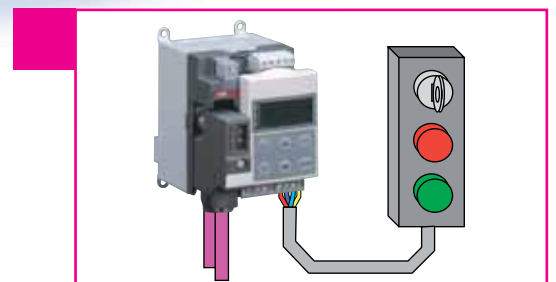
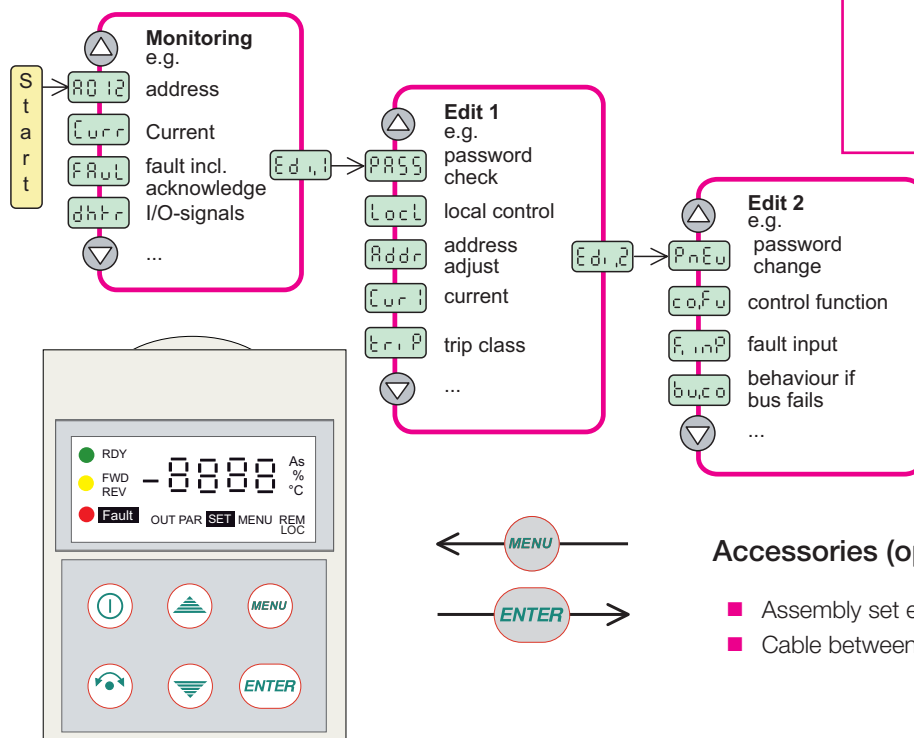
- Direct start, reversing start, star-delta start-up, slide valve/valve control (open-closed), pin changeover drive, actuator drive
- Emergency start
- Device control via
  - the automation system and fieldbus
  - manual controls using the removable operating panel
  - manual controls using the digital inputs and switches/buttons

### General properties

- Current range of 0.24 to 63 A in one device
- Currents of up to 850 A via external transformer (accessories)
- 6 digital inputs, 3 relay outputs
- Connection for FieldBusPlug for communication via the fieldbus
- Operating panel (option) for display and parameter setting purposes
- Indication of motor current in A or as % of nominal current
- Operating hours counter, counts the protective switching cycles
- Error output with flashing option
- ATEX approval

### Operating panel (optional)

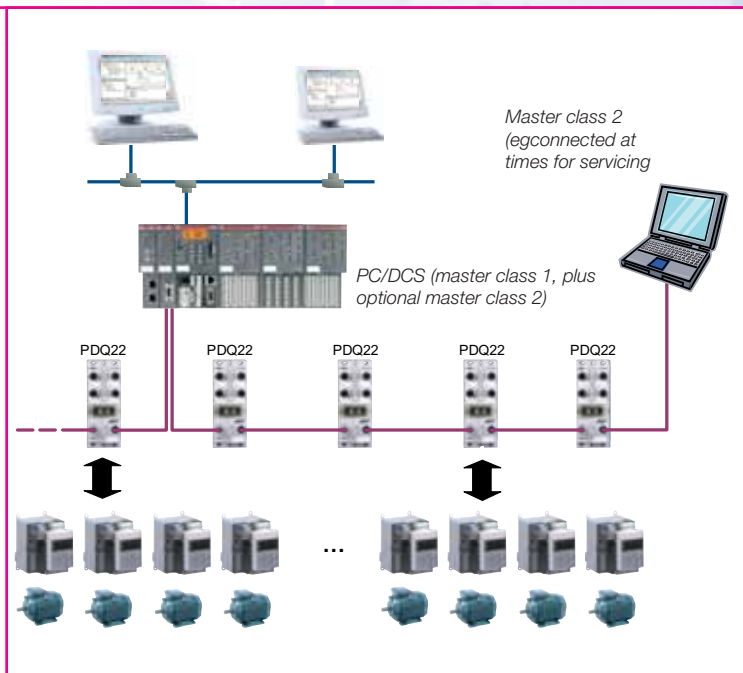
The functions (extracts thereof)



### Accessories (optional)

- Assembly set e.g. for plug-in modules, IP 65
- Cable between UMC22-FBP and operating panel

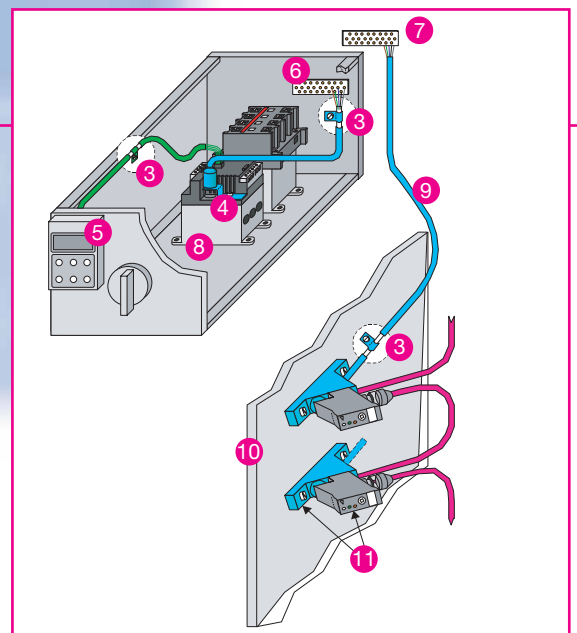
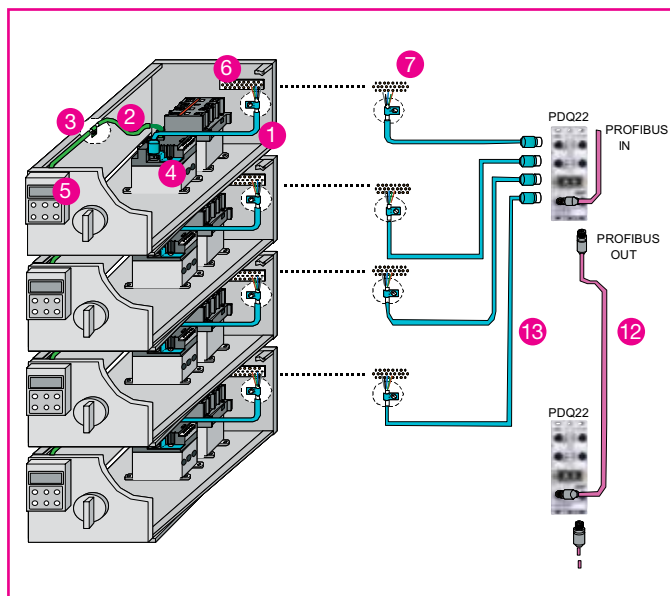
## PROFIBUS integration with PDQ22



- Up to four FBP devices at one bus node
- Reliable system concept
  - Detection of interchanged/incorrect devices
  - Indication of bus and device status
- Simple system integration:
  - Transparent access to parameter, service and diagnosis data of the attached devices
  - Integration in maintenance management

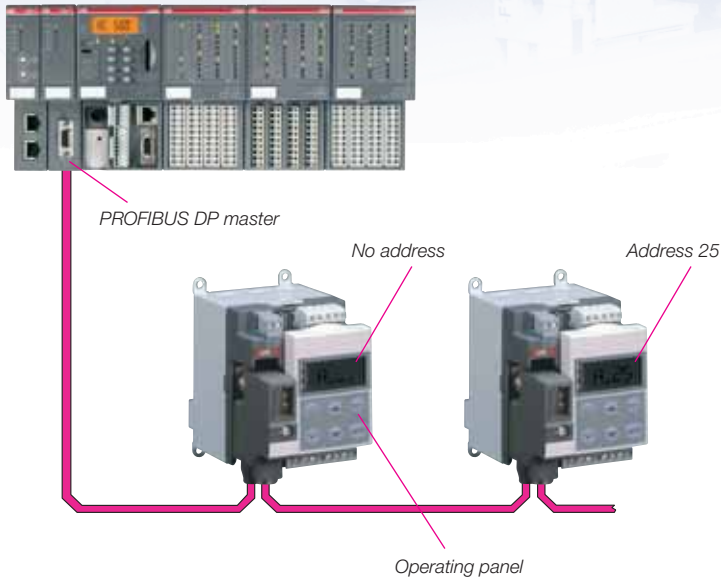
## Innovative solutions for your drawer system

- ① CDP13-FBP: Passive cable for plug-in connection (internal)
- ② ACS100-CAB.070: extension cable for connecting up a UMC-PAN operating device for UMC22-FBP
- ③ Shield earthing
- ④ CDP11-FBP: passive plug retaining bracket for connecting the CDP13-FBP to the UMC22-FBP
- ⑤ UMC-PAN: operating device for UMC22-FBP
- ⑥ Plug on rear of plug-in module



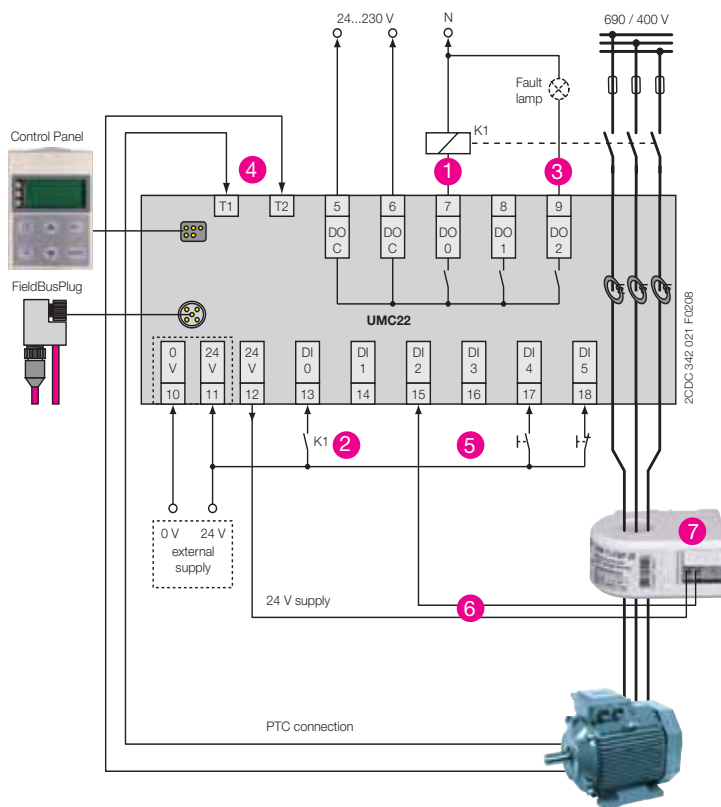
- ⑦ Plug in supply room
- ⑧ UMC22-FBP: Universal Motor Controller
- ⑨ CDP12-FBP passive cable for plug-in connection (external)
- ⑩ Partition to plug-in module area e.g. perforated plate
- ⑪ Thanks to the CDP12-FBP angle, the plug LEDs can also be observed in the terminal chamber
- ⑫ PDX11-FBP PROFIBUS extension cable
- ⑬ Passive cable for plug-in connection (external) CDP16-FBP

## Addressing



1. The address is displayed on the operating panel:
  - when switching on (with the operating panel plugged in)
  - when plugging in the operating panel
2. The address can be changed on the operating panel.
3. If the UMC22-FBP does not have an address, but the FieldBusPlug does, the FieldBusPlug's address applies.
4. The UMC22-FBP does not start if an address is not issued.
5. Different addresses in the UMC22-FBP and plug are signalled. In such cases, the address will have to be entered manually.

## Example of set-up



Main circuit diagram

### Direct starter with all functions

Control functions:

- 1 Control function
- 2 Feedback via auxiliary contact
- 3 Error output, e.g. to a lamp
- 4 PTC input
- 5 Local control via inputs
- 6 Earth connection monitoring
- 7 Earth leakage monitor CEM11

# Monitoring signals, commands and diagnosis signals

Automation unit



1 Commands

2 Monitoring signals

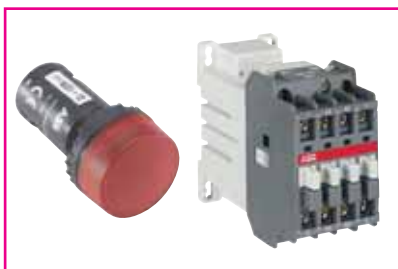
3 Diagnosis



4 UMC outputs

5 UMC inputs

I/O module



## ① Commands

- Start forward
- Stop
- Start reverse
- Auto mode
- Fault reset
- Emergency start

## ② Monitoring signals

- Motor run forward
- Motor stopped
- Motor run reverse
- Local control
- Fault
- Warning
- Reverse lock-out time running
- Input status

## ③ Diagnosis

- Overload
- Motor blocked
- Phase loss
- Earth fault
- External Fault
- Self-test
- Communication error
- Parameter out of range
- Current check-back fault
- Relay check-back fault
- Motor current low / high threshold
- PTC short circuit
- PTC wire broken
- PTC too hot
- Cooling time running

## ④ UMC outputs

- Switching the main contactors
- Configurable fault output

## ⑤ UMC inputs

- Local control:
  - Start forward / reverse
  - Stop
- Multifunction inputs:
  - Fault input
  - Earth-fault sensor CEM11
  - Fault reset
  - Testposition
- PTC input

# Technical data and dimensions

## Mains power supply

|                                            |                                                                                      |
|--------------------------------------------|--------------------------------------------------------------------------------------|
| Voltage                                    | max. 1000V AC (see manual)                                                           |
| Frequency                                  | 45...65 Hz                                                                           |
| Motor current                              | 0,24...63 A, without accessories<br>up to 850 A with external<br>current transformer |
| Conductor holes through<br>the transformer | diameter 11mm (max. 25 mm <sup>2</sup> )                                             |
| Trip classes                               | 5, 10, 20, 30                                                                        |
| Short circuit protection                   | separate fuses on mains side                                                         |

## Control unit

|                             |                                                                            |
|-----------------------------|----------------------------------------------------------------------------|
| Supply voltage              | 24 V DC/19,2...31,2 V DC inc. ripple                                       |
| Supply current              | max. 160 mA (at 18...30 V DC)                                              |
| Total power dissipation     | max. 3.7 W (at 24 V DC)                                                    |
| Reverse polarity protection | yes                                                                        |
| In-/Outputs                 | 1 PTC input<br>6 digital inputs<br>3 digital outputs                       |
| Interfaces                  | 1 for ABB FieldBusPlug<br>1 for operator panel UMC-PAN                     |
| Parameter setting           | via fieldbus, operator panel<br>and/or software                            |
| Address setting             | operator panel or addressing set                                           |
| Front LEDs                  | LED1 green UMC ready<br>LED2 yellow motor running<br>LED3 red fault (trip) |

## FieldBusPlugs

|           |                                                                                              |
|-----------|----------------------------------------------------------------------------------------------|
| Assembly  | screw fastening                                                                              |
| PDP22-FBP | PROFIBUS DP V0/V1                                                                            |
| PDQ22-FBP | PROFIBUS DP V0/V1<br>1 to 4 UMC22-FBP can be<br>connected to a PDQ22-FBP<br>with cable CDP15 |
| DNP21-FBP | DeviceNet                                                                                    |
| MRP21-FBP | Modbus                                                                                       |
| COP21-FBP | CANopen                                                                                      |

## Digital inputs

|               |                   |
|---------------|-------------------|
| Quantity      | 6                 |
| Isolation     | no                |
| 1-signal      | +13...31,2 V      |
| 0-signal      | -31,2...5 V       |
| Input current | 6 mA / at 24 V DC |

## PTC Input (Thermistor, binary)

|            |                                                                                  |
|------------|----------------------------------------------------------------------------------|
| Isolation  | no                                                                               |
| Resistance | broken wire<br>response cold<br>short circuit                                    |
|            | > 5 k $\Omega$<br>3,4...3,8 k $\Omega$<br>< 1,5 k $\Omega$<br>< 15...27 $\Omega$ |
|            | all values incl. connection<br>cable                                             |

## Digital outputs

|                                |                               |
|--------------------------------|-------------------------------|
| Quantity                       | 3                             |
| Type                           | Relay with common root        |
| Voltage                        | 12...250 V AC/DC (see manual) |
| Lowest switching power         | 1 W or 1VA                    |
| Total current for all contacts | max. 4 A                      |

## Environmental and mechanical data

|                        |                                                                 |
|------------------------|-----------------------------------------------------------------|
| Mounting               | DIN rail (EN50022-35)<br>or with 4 screws M4                    |
| Dimensions (W x H x D) | 70 x 105 x 110 mm<br>(incl. FieldBusPlug and<br>operator panel) |
| Weight                 | 0.39 kg                                                         |
| Connection             | max 2.5 mm <sup>2</sup> or 2 x 1.5 mm <sup>2</sup>              |

## Approvals

CE, cUL, LRS, RMRS, CCC, DNV

## Ordering data

|                            |                    |
|----------------------------|--------------------|
| Universal Motor Controller |                    |
| UMC22-FBP.0                | 1SAJ 510 000 R0600 |
| UMC22-FBP.0 ATEX           | 1SAJ 510 000 R0500 |
| Operator panel UMC-PAN     | 1SAJ 510 001 R0002 |

## Configuration Tool

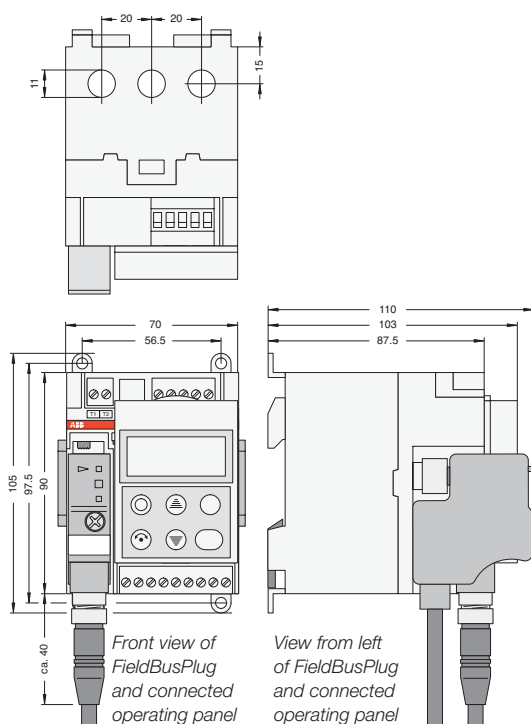
|                       |                    |
|-----------------------|--------------------|
| Device Type Manager   |                    |
| Software PBDTM-FBP    | 1SAJ 924 012 R0002 |
| USB cable UTF21-FBP.0 | 1SAJ 929 400 R0001 |

## Earth Leakage monitors

|                            |                    |
|----------------------------|--------------------|
| Current setting in 8 steps |                    |
| CEM11-FBP.020              | 1SAJ 929 200 R0020 |
| Ø 20 mm, 80...1700 mA      |                    |
| CEM11-FBP.035              | 1SAJ 929 200 R0035 |
| Ø 35 mm, 100...3400 mA     |                    |
| CEM11-FBP.060              | 1SAJ 929 200 R0060 |
| Ø 60 mm, 120...6800 mA     |                    |
| CEM11-FBP.120              | 1SAJ 929 200 R0120 |
| Ø 120 mm, 300...13600 mA   |                    |

## Documentation

|                          |                    |
|--------------------------|--------------------|
| FBP system CD engl./ger. | 2CDC 190 008 E0407 |
|--------------------------|--------------------|



# Universal Motor Controller UMC22-FBP



Excellent motor protection and control



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