

Universal Motor Controller UMC22-FBP

High-grade Motor Protection
and Control

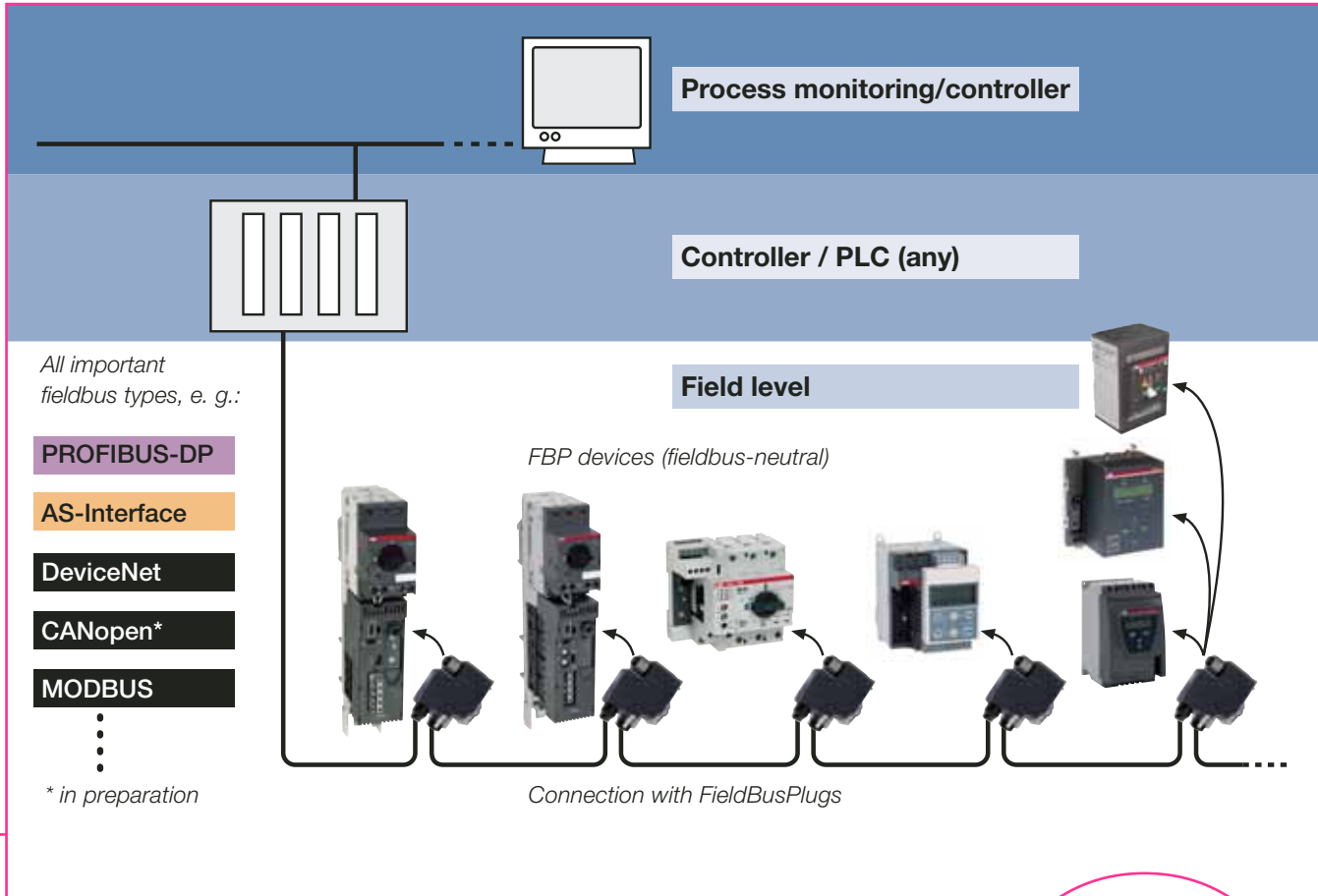


IndustrialIT
enabled™

ABB

The FieldBusPlug concept

This new ABB product family is a communication device range with switching and automation components which can be combined easily with standard fieldbus systems.



One device for all fieldbus types

Each complete device, and each function module within the product family, has a fieldbus-neutral interface. A specially prefabricated connection cable establishes the communications connection with its bus-specific plug interface. In this way, flexibility, transparency and reliability in the process are achieved. The connecting, operating and diagnostic elements are placed at the front of all devices providing increased ease of installation.

The components

The fieldbus plug (FieldBusPlug) is the central communications element of the new product family. It connects devices and device combinations of different functions and characteristics as well as simple sensors with automation devices. A great variety of switching and automation modules belong to the product family separated into similar performance characteristics, e.g. devices for motor protection, motor control and standard sensors.

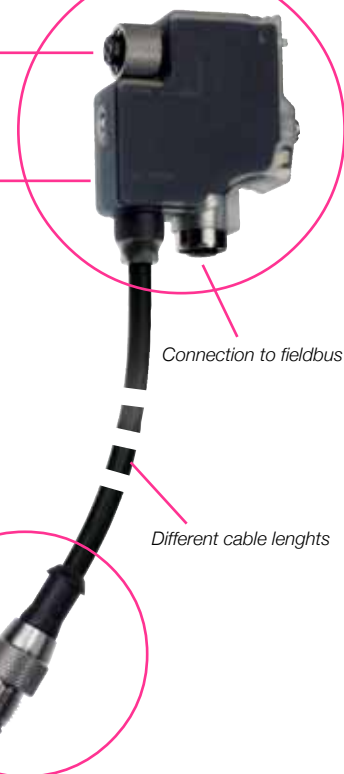
Fieldbus-neutral device connection

Bus-specific electronics

Connection to fieldbus

Different cable lengths

Fieldbus connection (M12)



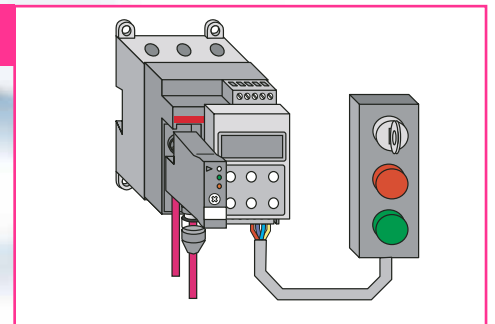
Overview



Features

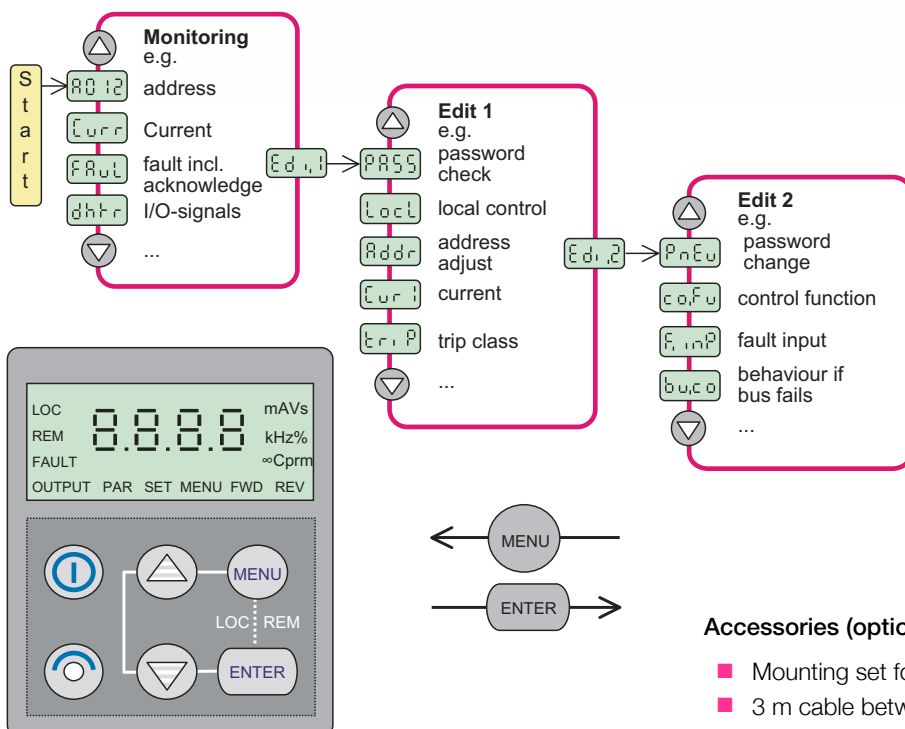
- Integrated motor control and protection
- Current range of 0.24 to 63 A within one device
- Connection of current transformers for higher currents
- 6 digital inputs (24 V DC) and 3 relay outputs (230 V AC)
- FieldBusPlug interface (Fieldbus neutral)
- Control Panel mountable on the front
- Different control functions selectable, e.g. direct starter, reversing starter, star-delta starter, ...
- Electronic overload protection
- Trip classes 5, 10, 20, 30
- Phase loss protection
- Motor blocking protection
- Fault input for e.g. external thermistor, earth fault module or emergency stop
- Control
 - Via control system and fieldbus
 - Manual via mountable Control Panel
 - Manual via digital inputs with switches/push buttons

- ① Mounting by four screws M4
- ② Current path
- ③ Terminals for digital outputs
- ④ Control Panel
- ⑤ FieldBusPlug interface (Fieldbus neutral)
- ⑥ Terminals for digital inputs
- ⑦ Terminals for external supply voltage



Control Panel (optional)

Features (extract)

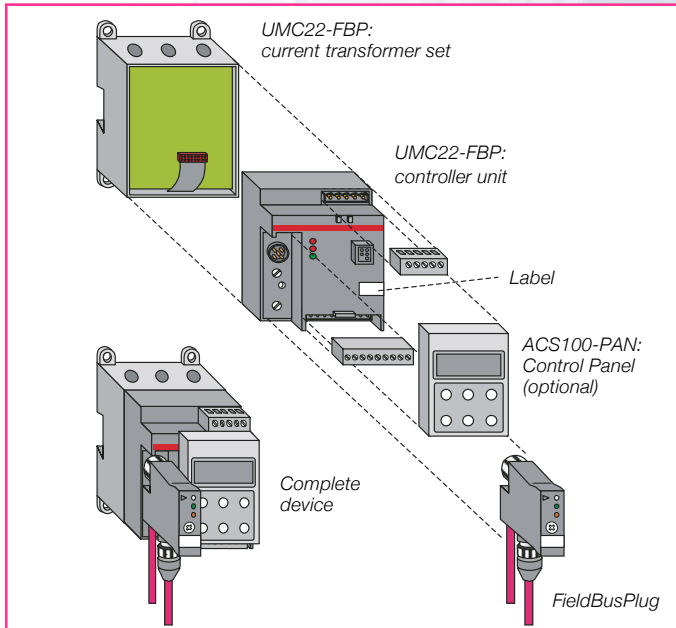


Accessories (optional)

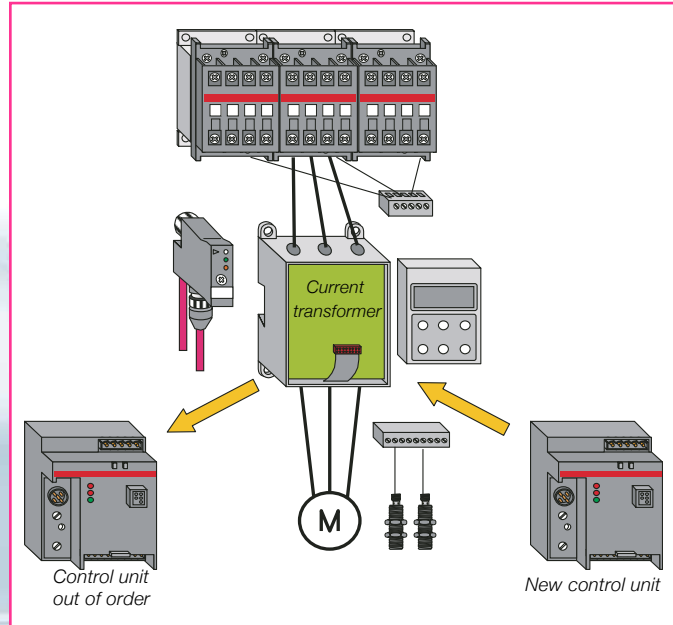
- Mounting set for e.g. drawer unit, IP 65
- 3 m cable between UMC22-FBP and Control Panel

Construction

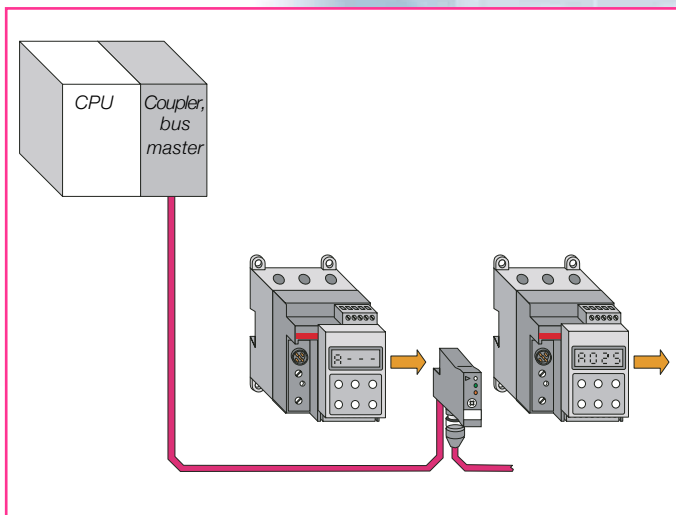
This modular construction allows the easy replacement of parts



Replacement of the control unit only



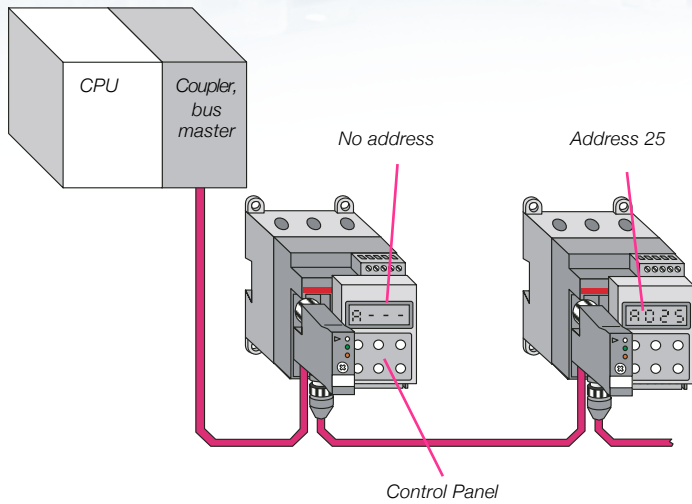
Replacement of the complete UMC22-FBP



- Remove FieldBusPlug and I/O terminals
- Replace only the control unit
- The motor lines need not be removed
- Insert the FieldBusPlug and the I/O terminals
- The parameters are uploaded from the current transformer during power on automatically

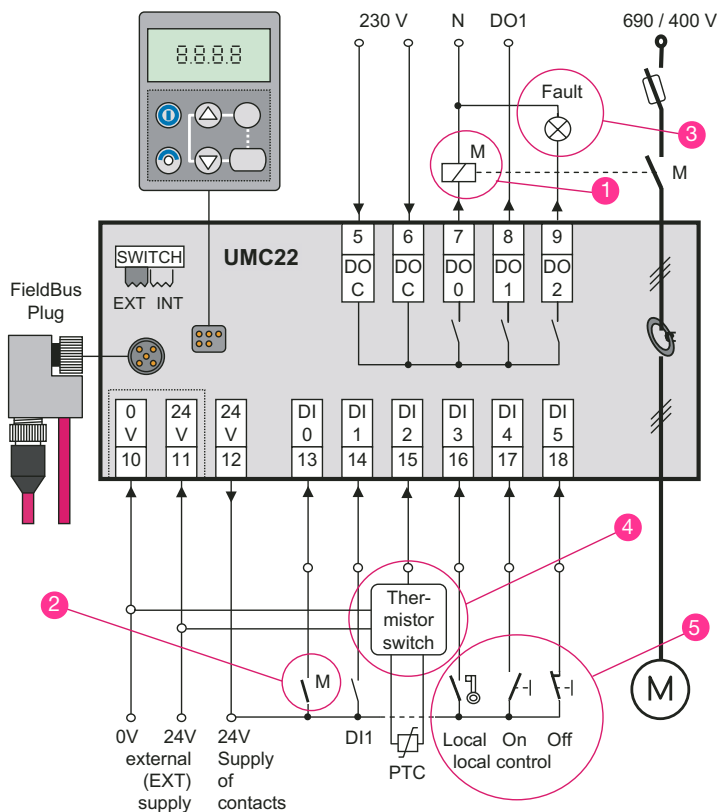
- When the device is removed the FieldBusPlug informs the automation system. The FieldBusPlug retains the slave address.
- When the new device is fitted the FieldBusPlug programs it with the former slave address.
- The automation system can now download the correct parameters and start the device.

Addressing



1. The address appears immediately on the Control Panel
 - with power on (Control Panel mounted)
 - when mounting the Control Panel.
2. In principle the address in the UMC22-FBP dominates to keep the relation to the motor. The address can be changed with the control panel.
3. If the UMC22-FBP does not contain any address but the FieldBusPlug does, the address in the plug is valid.
4. If no address is set, the UMC22-FBP will not start.
5. If the address in the UMC22-FBP is different from the address in the plug, a fault will be indicated. Manual setting will be necessary.

Example of Parameters



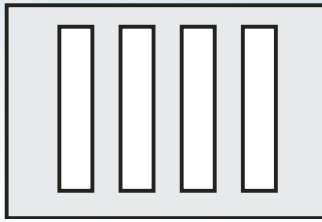
Direct Starter with all functions

Parameter Options:

- ① Control function
- ② check-back via auxiliary contact
- ③ Fault output, e.g. to lamp
- ④ Fault signal input, e.g. for thermistor
- ⑤ Local control via inputs

Monitoring Signals, Commands and Diagnosis Signals

Controller / PLC (any)



1 Commands

2 Monitoring Signals

3 Diagnosis



4 UMC outputs

5 UMC inputs

I/O Modules



① Commands

- Run Forward
- Of
- Run Reverse*
- Auto Mode
- Fault Reset

② Monitoring Signals

- Run Forward
- Of
- Run Reverse*
- Local Control
- Fault
- Warning
- Reversing lock-out time

③ Diagnosis

- Self test failed
- External fault
- Overload fault
- Motor blocked**
- Communication fault
- Parameter out of range
- Current check-back fault**
- Relay 1-3 check-back fault**
- Motor current high/low threshold**
- Cooling time running**
- Reversing Lock-out time running**
- Parameter number

④ UMC outputs

- Digital Output DO0*
- Digital Output DO1*
- Digital Output DO2*

⑤ UMC inputs

- Digital Input DI0*
- Digital Input DI1*
- Digital Input DI2*
- Digital Input DI3*
- Digital Input DI4*
- Digital Input DI5*

* used depending by appropriate Control function

** if activated by appropriate Control function

Technical Details and Dimensions

Main Power Lines

Voltage (three-phase systems)	max. 690 V AC, 50 Hz
Conductor holes through the current transformers	max. 25 mm ² (max. diameter incl. insulation 11 mm)
Settable current range for overload protection	0.24 A ... 63 A
Trip classes	5, 10, 20, 30
Short-circuit protection	seperate fuses on the power line side
Protection for three-phase motors	complete overload protection

Control Unit

Supply voltage mode	internal or external
Supply voltage	19.2 ... 31.2 V DC including ripple
Supply current (incl. inputs, relays)	max. 130 mA (at 18 ... 30 V DC)
Total device power dissipation	max. 3.1 W (at 24 V DC)
Reverse polarity protection	yes
Number of digital inputs	6 (DI0 ... DI5)
Number of relay outputs	3 (DO0 ... DO2)
Number of bus interfaces	1 (for connecting an ABB FieldBusPlug)
Number of Control Panel interfaces	1 (to mount Control Panel ACS100-PAN)
Internal signal processing of control function and other properties	selectable by parameters
Parameter setting	via fieldbus, via Control Panel
Bus address setting	e.g. with Control Panel
LEDs on front	LED 1, green: device ready for operation LED 2, yellow: motor current > 33% of Is LED 3, red: fault (trip, device fault, ect.)

FieldBusPlug connection

Mounting	plug connection, fastening with integrated screw
Suitable ABB FieldBusPlug types	Order Code (cable length: 0.25 m / 0.5 m / 1 m / 5 m) 1SAJ 240 000 R0003 / R0005 / R0010 / R0050 1SAJ 230 000 R0003 / R0005 / R0010 / R0050 1SAJ 250 000 R0003 / R0005 / R0010 / R0050
PDP21-FBP (PROFIBUS-DP)	
DNP21-FBP (DeviceNet Plug)	
MRP21-FBP (MODBUS)	
in preparation:	
COP21-FBP (CANopen)	

Digital inputs

Number of digital inputs	6 (DI0 ... DI5)
Supply for digital inputs	internal or external
Supply output current for inputs	max. 70 mA (at terminal 12)
Voltage when standard contacts are used	min. 18 V
Isolation	none
Input signal bounce suppression	typ. 4 ms
Input signal voltage	
1-Signal (range including ripple)	+13 V ... +31.2 V
0-Signal (range including ripple)	-31.2 V ... +5 V
Input current per channel (24 V DC)	typ. 6.0 mA
Input resistor to 0 V	3.9 kOhm
Line length unshielded	max. 600 m
Line length shielded	max. 1000 m

Digital outputs

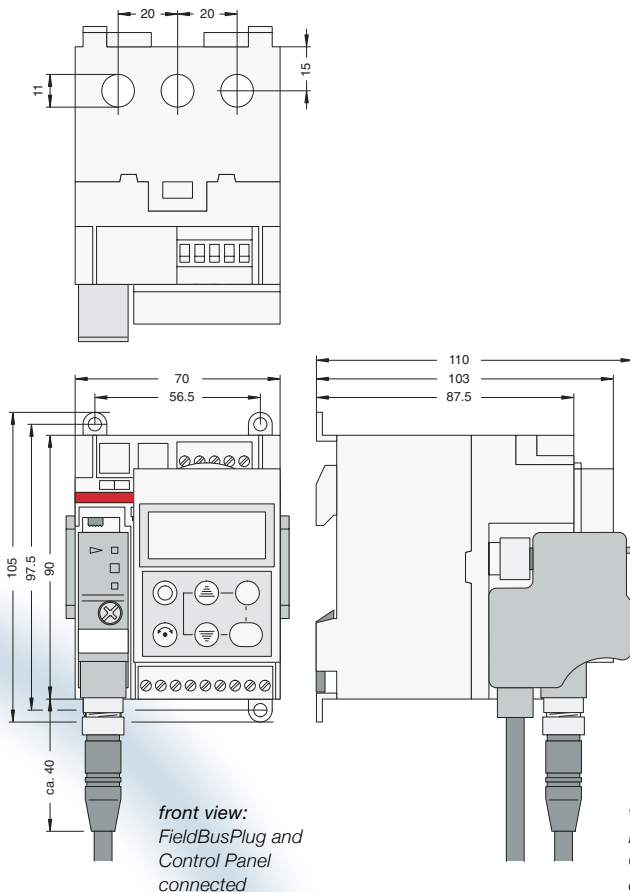
Number of digital outputs	3 outputs (DO0...DO2)
Type of digital outputs	relay contacts
Grouping of contacts	3 contacts with 1 common
Voltage range of contacts	12 ... 250 V AC/DC
Switching capacity per relay contact	
240 V AC (AC15 / EN 60947-5-1)	max. 1.5 A (AC15, electromagnetic load)
120 V AC (AC15 / EN 60947-5-1)	max. 3 A (AC15, electromagnetic load)
250 V DC (DC13 / EN 60947-5-1)	max. 0.11 A (DC13, electromagnetic load)
125 V DC (DC13 / EN 60947-5-1)	max. 0.22 A (DC13, electromagnetic load)
24 V DC (DC13 / EN 60947-5-1)	max. 0.1 A (DC13, electromagnetic load)
Total current all contacts (terminal 5 or 6)	max. 4 A (thermal limit)
Lowest switching power for correct signals	1 W or 1 VA
Switching of inductive power	Inductive loads need additional measures for spark suppression. Diodes for DC voltage and varistors / RC elements for AC voltage are suitable. Some DC coil contactors contain rectifiers which suppress sparks perfectly.
Relay contact lifetime, mechanical	500 000 switching cycles
Lifetime 250 V AC / 0.5 A	100 000 switching cycles
Lifetime 250 V AC / 1.5 A	50 000 switching cycles
Internal clearance and creepage distances	> 5.5 mm (safety insulation up to 250 V AC) relay contacts to 24 V circuit (EN 60947-1, Pollution degree 2)

Environmental and mechanical data

Mounting	on DIN rail (EN 50022-35) or with 4 screws M4
Dimensions (W x H x D)	70 x 105 x 110 mm (incl. FieldBusPlug and Control Panel)
Net weight (current transf. + control unit)	0.39 kg
Terminal conductor cross section	max. 2.5 mm ² or max. 2 x 1.5 mm ²
Current transformer bushing holes	11 mm Ø (25 mm ²)
Degree of protection	IP 20
Storage temperature range	-25...+70 °C
Operating temperature range	0...+55 °C
Approvals	CE, UL, CSA, ATEX
Approvals (pending)	GL, BV, LRS

Ordering data

Universal Motor Controller UMC22-FBP	Order Code 1SAJ 510 000 R0100
Control Panel ACS100-PAN	Order Code 1SAJ 510 001 R0001
Control Panel Extension Cable ACS100-CAB	Order Code 1SAJ 510 002 R0001
Technical description CD-ROM	Order Code 2CDC 135 004 D02xx Order Code 2CDC 190 008 E04xx



Universal Motor Controller UMC22-FBP



**High-grade Motor Protection
and Motor Control in modern
switchgear centres**

Brochure No. 2 CDC 135003D0202 Printed in the Federal Republic of Germany (06.04) subject to modification



ABB STOTZ-KONTAKT GmbH
P. O. Box 10 16 80
69006 Heidelberg
Germany
Telephone: ++49 62 21 / 701-0
Telefax: ++49 62 21 / 701-729
<http://www.abb.de/stotz-kontakt>
Email: desst.info@de.abb.com

ABB Global Contact Directory

The ABB Contact Directory (<http://www.abb.com/contacts/>) helps you find local contacts for ABB products in your country. Please select the relevant product group from the dropdown menu to the right or from the page.