



Catalog

Universal Motor Controller UMC100

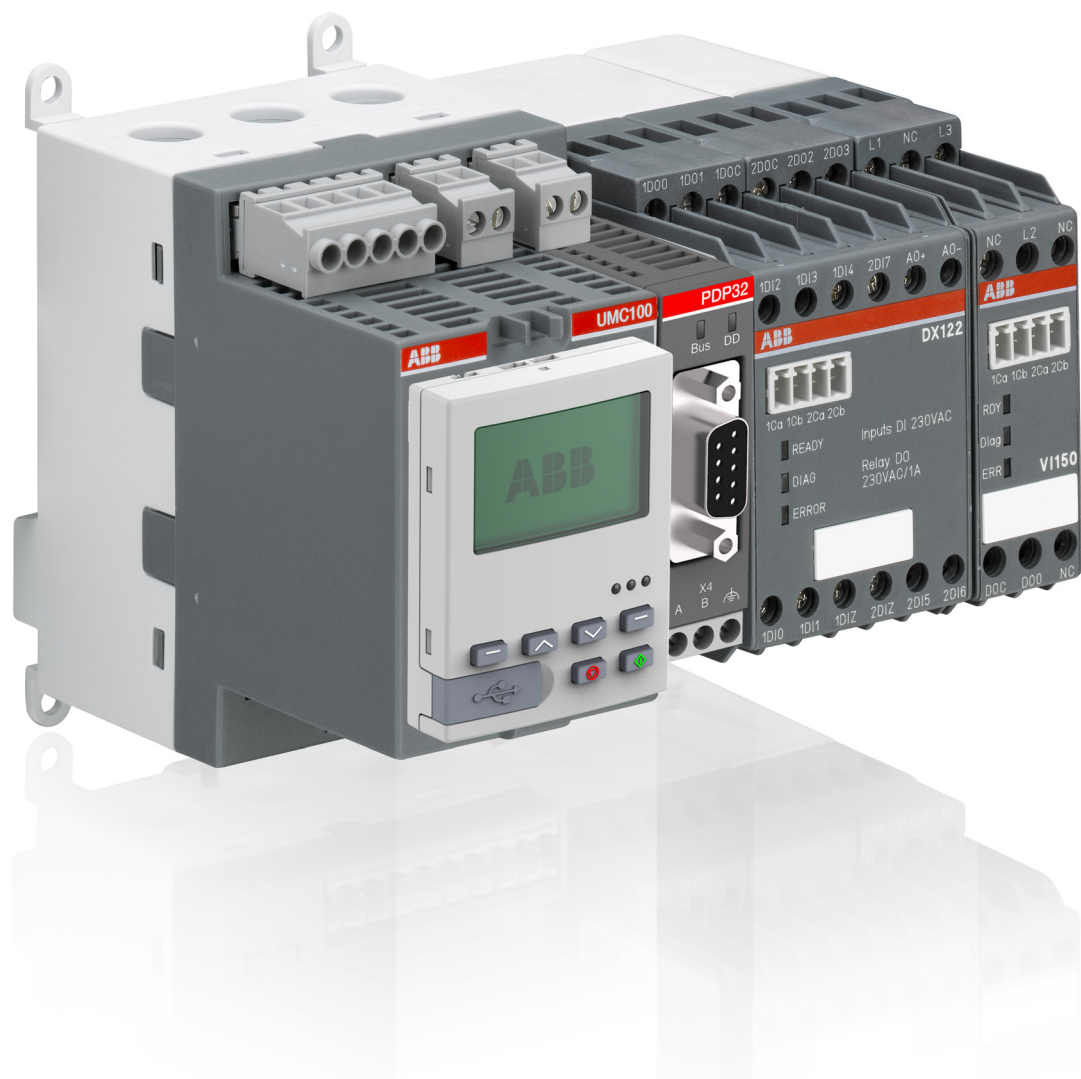
Motor management system and accessories

Power and productivity
for a better world™



Universal Motor Controller UMC100.3

Product group picture



Universal Motor Controller UMC100.3

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UMC100.3

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Keeping the motors running 24 hours a day

Secure uptime of your application

ABB's control products protect, control and automate critical business processes to make any application more productive. Rely on us as partner, providing you flexible and universal products. Especially ABB's Universal Motor Controller solution provides an easy to use device that keeps your application running.



Continuous operation

The installation of ABB products can help keep the wheels in motion 24 hours a day. We are focused on ensuring that our products can be easily maintained, whether that is through designing the product so it can be replaced while the system remains operational, providing built-in monitoring functions and efficient service solutions.

The UMC100.3 provides comprehensive, electronic motor protection. It ensures that the motor is protected at all times, even if the control system or fieldbus breaks down.

The precise electronic measurement system enables optimal utilization of the motors. Constant trip behaviour is ensured by the high long-term stability of the tripping characteristics. A comprehensive diagnostic system facilitates fault localization and rectification in the event of a fault to help keeping the system running and reduce downtime.



Improve installation efficiency

In everything we do, we think of the customer and the application first. Our engineers constantly look for ways to simplify the installation process by developing innovative product designs which facilitate the product assembly and avoid mounting errors.

The universal and modular structure of the UMC100.3 is impressive even during planning, design and maintenance stage. The amount of wiring required is significantly reduced, as all the necessary protection, monitoring and control functions are integrated into a single device.

There is just one single version for all current ranges and for any kind of communication, fieldbuses as well as ethernet. This simplifies planning, inventory and servicing.



Speed up your business

We provide simplified code management for more efficient purchasing processes through a common coding system which allows customers to order the same product all over the world. We simplify design (and assembly) process by providing customers online access to drawings and coordination tables.

The system's modular expandability enables optimal adaptation to the application. Even the basic UMC100.3 device fulfills the requirements of most applications. All of the control functions required in the field are integrated and are simple to configure via parameters. Application-specific control functions can be realized with the programmable logic system.

The basic UMC100.3 device can easily be expanded by different types of expansion modules that provide more I/Os, analog and temperature measurement. Furthermore the UMC100.3 can be expanded to measure the three motor phase voltages enabling functions like under-/overvoltage, underload, powerfactor as well as measurement of power and energy.

ABB's intelligent motor management for continuous operation

Keeping the motors running with UMC



Any unplanned or sudden motor stops can lead to faults in the process sequence, which can be very costly. ABB's Motor Controllers stand for motor protection, motor control, fieldbus and ethernet communication and fault diagnosis. The UMC is used in many segments with several thousand motor controllers installed worldwide.

ABB's new UMC100.3 offers you the optimal solution for your motor control center (MCC) applications

UMC100.3 is a flexible, modular and expandable motor management system for constant-speed, low-voltage range motors. Its most important tasks include motor protection, preventing plant standstills and reducing down time. Early information relating to potential motor problems and swift diagnosis ensure continuous operation of any application such as:

- The oil and gas industry
- The cement plants
- The steel industry
- Mining
- The chemicals industry
- Water supply and distribution
- Power plant engineering
- The food and beverage industry
- Pulp and paper plants

Due to the benefits it provides, the UMC100.3 is used worldwide in many segments and in projects with several thousand motor controllers.

High plant availability

The UMC100.3 continuously transmits comprehensive operational, service and diagnostic data from the motor to the control system. This means that faults can be detected early on and can be avoided by suitable measures, or their effects can be limited. This increases the plant's availability.

Open communication

The UMC100.3 is equipped with an interface for mounting a communication adapter. Selecting the relevant adapter enables the motor controller to communicate using the widespread fieldbuses Profibus DP, DeviceNet or Modbus RTU. Even communication via ethernet networks is possible using the Modbus TCP or Profinet protocol.

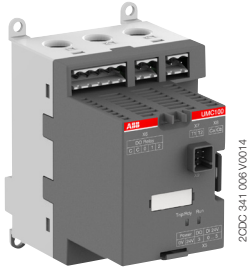
UMC100.3 can also be used without communication as a stand-alone motor controller, e.g. in simple pumpstations.

Made in Germany approved worldwide

The Universal Motor Controller is developed and produced in the federal republic of Germany. Approvals and certificates ensure the worldwide use of the product which has been proven in a lot of applications and in huge projects with thousands of motor controllers all around the world. With our long time experience of project management ABB gives you the best possible support.

Motor management system - UMC100.3

Ordering details - Universal Motor Controller UMC100.3



UMC100.3 DC



UMC100.3 UC

Description

Intelligent motor management system for single and three-phase motors with $I_n = 0.24 - 63$ A in one single device. Compact housing with integrated current transformer for cable cross section up to 25 mm² (max. Ø with Insulation 11 mm). Higher currents with additional external current transformer. Thermal overload protection according to EN/IEC 60947-4-1, selectable trip classes 5E, 10E, 20E, 30E, 40E. Some functions require an additional expansion module.

- Motor protection functions:
Over-/underload, over-/undercurrent, over-/undervoltage, rotor blocking, phase failure / imbalance / sequence
Earth fault detection integrated or with external sensor CEM11
Hot motor protection with thermistor or temperature measurement
- Motor control functions:
Easily configurable motor control functions: direct, reverse, star-delta starter, pole-changing, overload relay, actuator mode, softstarter mode. Additionally free programmable application specific logic with function blocks
- Service and diagnostic data:
Operating hours, number of motor starts and overload trips, energy, standstill and operation hours supervision, motor status, faults and warnings, fault history (16 events)
Motor current, phase voltages, thermal load, power factor ($\cos \phi$), active power, apparent power, energy, total harmonic distortion (THD).
- Integrated I/Os:
6 digital inputs, 1 PTC input, 4 digital outputs. Maximum number of I/Os with expansion modules:
14 digital inputs, 1 PTC input, 9 digital outputs, 6 analogue inputs, 1 analogue output
- Communication interfaces for fieldbuses and ethernet networks, Interface for operator panel UMC100-PAN, bus interface for connection of expansion modules
- Versions for supply voltage 24 V DC and 110 – 240 V AC/DC and with ATEX approval

Ordering details

Designation	Supply voltage	Type	Order code	Price: Weight (1 pce)
				1 pce: kg (lb)
Universal Motor Controller	24 V DC	UMC100.3 DC	1SAJ530000R0100	0.275 (0.606)
Universal Motor Controller	110-240 V AC/DC	UMC100.3 UC	1SAJ530000R1100	0.315 (0.694)
Universal Motor Controller, ATEX	24 V DC	UMC100.3 DC EX	1SAJ530000R0200	0.275 (0.606)
Universal Motor Controller, ATEX	110-240 V AC/DC	UMC100.3 UC EX	1SAJ530000R1200	0.315 (0.694)

Motor management system - UMC100.3

Ordering details - Operating panel UMC100-PAN



UMC100-PAN

Description

Operator panel for Universal Motor Controller UMC100. Backlit graphical and multilingual full-text display, LEDs for status. Assembly directly on UMC100 or on the control cabinet door via extension cable and door mounting set.

Functions:

- Monitoring: Shows motor status and diagnostics
- Operate: Start, stop, fault reset
- Parametrize: Setting and changing of motor and fieldbus parameters (password protection possible)
- Copy settings
- USB port for up/download of parameters and logic

Supports 8 languages: English, French, German, Italian, Spanish, Polish, Portuguese, Russian

Replaces all former UMC100 operator panels

Ordering details

Designation	Type	Order code	Price	Weight
			1 pce	(1 pce)
				kg (lb)
Operating panel	UMC100-PAN	1SAJ590000R0103		0.047 (1.036)
0.7 m ext. cable with door mounting set	UMCPAN-CAB.070	1SAJ510003R0002		0.070 (0.154)
1.5 m ext. cable with door mounting set	UMCPAN-CAB.150	1SAJ510004R0002		0.088 (0.194)
3 m ext. cable with door mounting set	UMCPAN-CAB.300	1SAJ510002R0002		0.176 (0.388)

Motor management system - UMC100.3

Ordering details - Expansion modules



DX111-FBP



DX122-FBP



VI150-FBP



VI155-FBP

Description

Up to 4 expansion-modules can be connected to one UMC100.3

- 1 digital expansion module DX111 or DX122
- 1 voltage expansion module VI150 or VI155
- 2 analog/temperature expansion modules AI111

Supply voltage is 24 V DC; the 110-240 V AC/DC version of the UMC100.3 provides the 24 V DC supply for expansion modules

DX111

I/O-expansion module with 8 digital inputs 24 V DC, 4 relay outputs, 1 analog output 0/4-20 mA or 0...10 V

DX122

I/O-expansion module with 8 digital inputs 110 / 230 V AC, 4 relay outputs, 1 analog output 0/4-0 mA or 0-10 V

VI15x

Voltage modules for the determination of phase voltages, power factor ($\cos \varphi$), apparent power, energy, total harmonic distortion (THD).

For use in grounded networks (VI150) or in all networks (VI155), 150-690 V AC

AI111

Analog / temperature expansion module, 3 inputs PT100, PT1000, KTY83, KTY84, NTC, 0-10 V, 0/4-20 mA

1 or 2 modules AI111 can be connected to an UMC100.3.

Ordering details

Designation	Type	Order code	Price	Weight (1 pce)
			1 pce	kg (lb)
I/O module for UMC100, 24 V DC digital input	DX111	1SAJ611000R0101		0.220 (0.485)
I/O module for UMC100, 110 – 230 V AC digital input	DX122	1SAJ622000R0101		0.220 (0.485)
3 phase voltage module for grounded networks	VI150	1SAJ650000R0100		0.110 (0.243)
3 phase voltage module for all networks	VI155	1SAJ655000R0100		0.110 (0.243)
Analog/temperature module 3 analogue inputs	AI111	1SAJ613000R0101		
Connection cable UMC100 - I/O module, length 0.30 m	UMCIO-CAB.030	1SAJ691000R0001		0.011 (0.024)
Connection cable IO-module - IO-module, length 0.30 m	IOIO-CAB.030	1SAJ692000R0001		0.011 (0.024)
Terminal set for UMC100.3 DC (spare parts)	UMCTB	1SAJ929160R0001		0.043 (0.095)
Terminal set for UMC100.3 UC (spare parts)	UMCTB	1SAJ929160R0002		0.045 (0.099)

Motor management system - UMC100.3

Ordering details - Fieldbus communication interfaces

Description

Fieldbus communication interfaces enable the UMC100.3 to communicate via fieldbus. The interfaces can be used in 2 ways

- Mounted directly on a UMC100.3: in this case the interface is supplied from the UMC100.3, no further accessory is required
 - Mounted separately on a SMK3.0 adapter in the cable chamber of an MCC: in this case the interface plugged on SMK3.0 needs to be supplied with 24 V DC
- Ready made cables for the application in withdrawable systems are available as well as terminal blocks for making own cables
- CDP18: Cable for use inside the drawer
- CDP24: Cable from SMK3.0 to drawer outside



2CDC 341 015 S0014

PDP32.0



2CDC 341 016 S0014

MRP31.0



2CDC 341 017 S0014

DNP31.0



2CDC 341 018 S0014

PDR31.0

PDP32

- Communication interface for PROFIBUS DP; supports the protocols PROFIBUS DP/V0 and V1
- PNO certified PROFIBUS slave
- Data transfer rate up to 12 Mbit/s
- Diagnostic LEDs
- Fieldbus connection via 9-pole Sub-D connector or terminal blocks
- GSD download from UMC100.3 webpage

MRP31

- Communication interface for Modbus RTU
- Data transfer rate up to 57,6 kbit/s
- Diagnostic LEDs
- Fieldbus connection via terminal blocks

DNP31

- Communication interface for DeviceNet
- ODVA certified DeviceNet slave
- Data transfer rate up to 500 kbit/s
- Diagnostic LEDs
- Fieldbus connection via terminal blocks
- EDS download from UMC100.3 webpage

PDR31.0

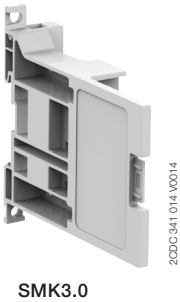
- External active fieldbus termination for Profibus DP; the PDR31.0 needs to be mounted on a SMK3.0 adapter and supplied by 24 V DC

Ordering details

Designation	Type	Order code	Price: Weight (1 pce)
			1 pce: kg (lb)
Profibus DP communication interface	PDP32.0	1SAJ242000R0001	0.050 (0.110)
Modbus RTU communication interface; terminal block for fieldbus connection included	MRP31.0	1SAJ251000R0001	0.039 (0.086)
DeviceNet communication interface; terminal block for fieldbus connection included	DNP31.0	1SAJ231000R0001	
Profibus DP active bus termination	PDR31.0	1SAJ243000R0001	0.030 (0.066)

Motor management system - UMC100.3

Ordering details - Fieldbus communication interfaces - Accessories

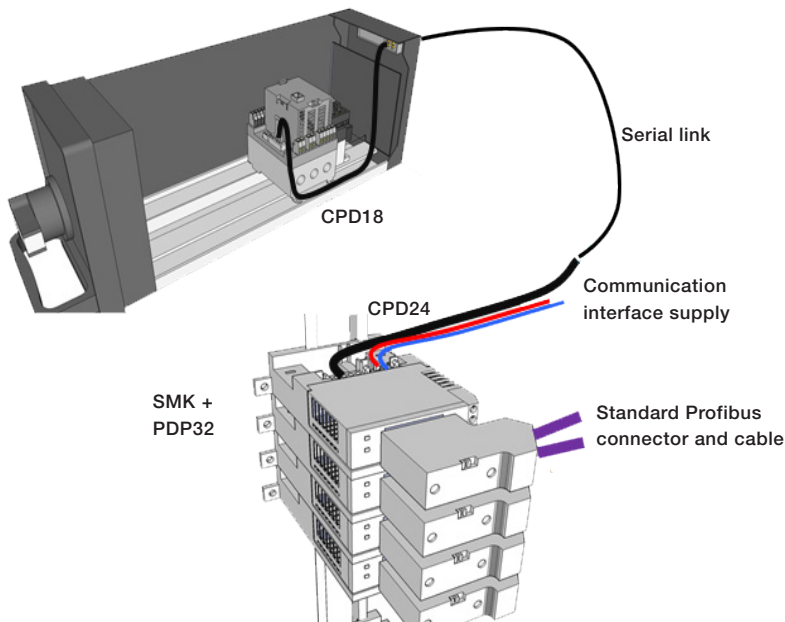


Adapter and ready-made cables

Adapter SMK3.0 for external mounting of a fieldbus communication interface outside a drawer. SMK3.0 can be mounted on a DIN-rail or fixed by screws. 24 V DC supply required. Ready-made cables for inside and outside the drawer, including terminal block on one side and open end on the other. Terminal blocks are also separate available for making own cables.

Ordering details

Designation	Type	Order code	Price	Weight
			1 pce	(1 pce)
			kg	(lb)
Adapter for separate mounting of a communication interface; terminal block for 24 V DC supply included	SMK3.0	1SAJ929600R0001		0.038 (0.084)
Cable for drawer inside, length 1.5 m	CDP18.150	1SAJ929180R0015		0.060 (0.132)
Cable from SMK3.0 to drawer outside, length 1.5 m	CDP24.150	1SAJ929240R0015		0.060 (0.132)
Terminal block 2-pol for SMK3.0 supply / 10 pcs per pck. (spare parts)	SMK3-X2.10	1SAJ929610R0001		0.017 (0.037)
Terminal block 5-pol for SMK3.0 comm. / 10 pcs per pck. (spare parts)	SMK3-X1.10	1SAJ929620R0001		0.041 (0.090)



Motor management system - UMC100.3

Ordering details - Ethernet communication interfaces



MTQ22



PNQ22

Description

Ethernet communication interfaces enable the UMC100.3 to communicate via an ethernet network

- Up to 4 motor controllers UMC100.3 can be connected to one interface
- Supports all network topologies
- Ring topology with redundancy (MRP protocol)
- No special ethernet connectors required in MCCs
- Easy to use in withdrawable applications
- Integrated ethernet switch
- 24 V DC supply voltage
- DIN-rail mounting

MTQ22

- Ethernet communication interface with protocol Modbus TCP
- Supports multimaster mode
- Master supervision with timeout control
- Micro USB port for configuration via PC

PNQ22

- Ethernet communication interface with protocol Profinet IO
- Integrated into AC800xA
- Time stamped events (with AC800)
- GSDML download from UMC100.3 webpage

Ordering details

Designation	Type	Order code	Price	Weight
			1 pce	(1 pce)
				kg (lb)
Ethernet Modbus TCP interface	MTQ22.0	1SAJ260000R0100		0.172 (0.379)
Ethernet Profinet IO interface	PNQ22.0	1SAJ261000R0100		0.172 (0.379)

Motor management system - UMC100.3

Ordering details - Ethernet communication interfaces - Accessories

Ready-made cables

Ready made cables are available for the application in withdrawable systems as well as for fixed installations.

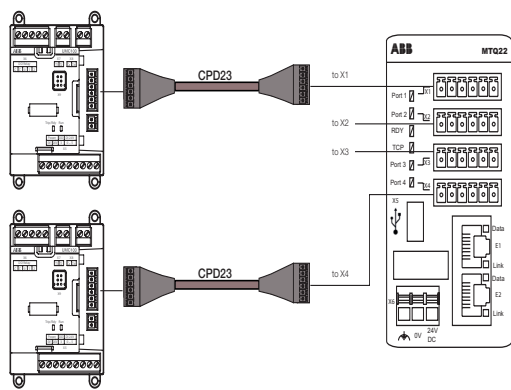
Cables are including terminal blocks. Terminal blocks for making own cables are also available:

- CDP18 cable for use inside and outside a drawer
- CDP23 cable from ethernet interface to UMC100.3

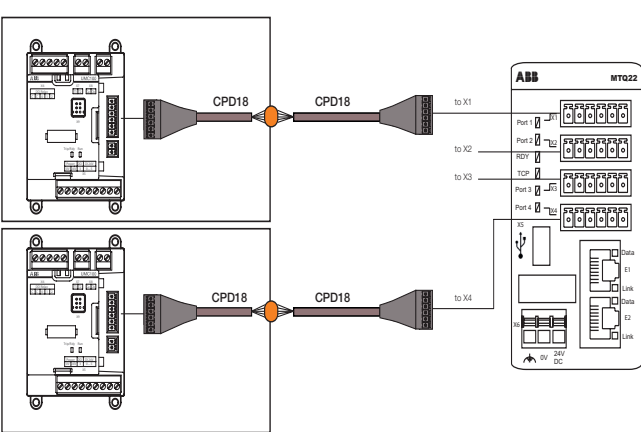
Ordering details

Designation	Type	Order code	Price	Weight
			1 pce	kg (lb)
Cable for drawer in- and outside, length 1.5 m	CDP18.150	1SAJ929180R0015		0.060 (0.132)
Cable ethernet interface - UMC100.3, length 1.5 m	CDP23.150	1SAJ929230R0015		0.100 (0.220)
Cable ethernet interface – UMC100.3, length 3 m	CDP23.300	1SAJ929230R0030		0.160 (0.353)
Terminal bloc for MTQ22/PNQ22 X1...X4, 4 pcs	ETHTB-FBP.4	1SAJ929200R0001		0.015 (0.033)
Terminal bloc for MTQ22/PNQ22 X1...X4, 50 pcs	ETHTB-FBP.50	1SAJ929200R0002		0.015 (0.033)

UMC100.3, fix mounted application with solution MTQ22 / PNQ22

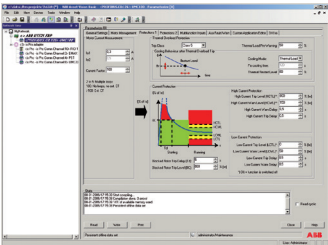


UMC100.3, withdrawable application with MTQ22 / PNQ22



Universal Motor Controller

Ordering details - Configuration software overview



Configuration software for the UMC100-FBP motor management system

The software screwdriver for your application

Asset Vision Basic is an FDT frame application with a modern and simple graphical user interface. It provides effective basic functionality for configuration, diagnosis and maintenance of intelligent low voltage switching devices from ABB. Furthermore, due to the open FDT interface, other ABB and 3rd party DTMs can also be used.

Asset Vision Basic is the optimal tool for configuring FBP devices during commissioning, in the workshop or as second master in a PROFIBUS network of a process control system.

System requirements: Windows XP / Windows 7

Overview of features:

- Online/offline configuration and parameterization of devices
- Reading parameterization and configuration information from the device
- Online display of measuring and status data
- Online operation and error acknowledgement
- Creation of customer-specific logics
- Archiving

Connection to the device can either be via PROFIBUS or as point to point connection directly to the device.

Connection to a Profibus DP network

UTP22-FBP

Connection to an UMC100.3

With micro-USB cable via operator panel

Connection to an UMC100-FBP

With interface UTF21-FBP



UTP22-FBP



UTF21-FBP

Ordering details

Designation	Type	Order code	Price:Weight (1 pce)
			1 pce:kg (lb)
USB interface for PROFIBUS networks	UTP22-FBP	1SAJ924013R0001	0.261 (0.575)
PDP22/PDQ22 Device Type Manager (DTM) incl. FDT/DTM frame application	PBDTM-FBP	1SAJ924012R0006	0.062 (0.137)
USB to FBP-interface cable	UTF21-FBP.0	1SAJ929400R0002	0.100 (0.220)

Universal Motor Controller

Ordering details - Devices for extension of protection functions

Earth fault monitors CEM11-FBP for use with Universal Motor Controller UMC100-FBP

Ordering details

Earth fault currents [mA]	Through-hole diameter	Type	Order code	Price	Weight (1 pce)
				1 pce	kg (lb)
80 ¹⁾ , 300, 550, 750, 1000, 1200, 1500, 1700	20 mm	CEM11-FBP.20	1SAJ929200R0020		0.130 (0.287)
100 ¹⁾ , 500, 1000, 1400, 2000, 2400, 3000, 3400	35 mm	CEM11-FBP.35	1SAJ929200R0035		0.200 (0.441)
120 ¹⁾ , 1000, 2000, 2800, 4000, 4800, 6000, 6800	60 mm	CEM11-FBP.60	1SAJ929200R0060		0.330 (0.728)
300 ¹⁾ , 2000, 4000, 5600, 8000, 9600, 12000, 13600	120 mm	CEM11-FBP.120	1SAJ929200R0120		0.940 (2.072)

¹⁾ lower values have higher inaccuracy



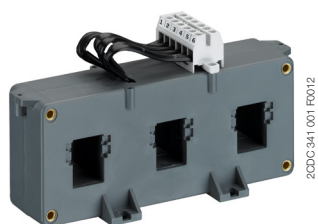
CEM11-FBP

Current transformers for use with Universal Motor Controller UMC100-FBP

Linear type transformers, 3-phase, with terminal block, for conductors Cu 2.5 mm². For use with UMC100 and nominal motor currents >63 A

Ordering details

Designation	Recommended current range	Type	Order code	Price	Weight (1 pce)
				1 pce	kg (lb)
Current transformer	60...185 A AC	CT4L185R/4	1SAJ929500R0185		1.600 (3.527)
Current transformer	180...310 A AC	CT4L310R/4	1SAJ929500R0310		1.500 (3.307)
Current transformer	300...500 A AC	CT5L500R/4	1SAJ929501R0500		1.700 (3.748)
Current transformer	500...850 A AC	CT5L850R/4	1SAJ929501R0850		1.900 (4.189)



CT4L185R/4, CT4L310R/4



CT5L500R/4, CT5L850R/4

Motor management system - UMC100.3

Technical data - UMC100.3

	UMC100.3	
Control voltage circuit	1SAJ530000R0***	1SAJ530000R1***
Supply voltage	24 V DC (+30 % ... -20 %) (19.2 ... 31.2 V DC) including ripple	110V - 240V AC/DC -15% / +10%
Total power dissipation Conditions: all digital inputs high, all relay outputs activated Please refer to the product manual for more detailed information.	min. 3 W	min P: 3.5 W / S: 8 W
Reverse polarity protection	yes	not relevant
Controller Unit		
LEDs: Red / green / yellow	Red: Motor has been tripped due to a thermal overload condition or another fault. Yellow: Motor is running Green: Ready for operation	
Digital inputs		
Number of digital inputs	6 (DI0 ... DI5) Type 1 accord. to EN 61131-2	
Supply for digital inputs	24 V DC	
Isolation	No	
Input signal bounce suppression	Typ. 2 ms	
Signal 0 range including ripple	-31.2 ... +5 V	
Signal 1 range including ripple	+15 ... +31.2 V	
Input current per channel (24 V DC)	Typ. 6.0 mA	
Input resistor to 0 V	3.9 k Ω	
Cable length	unshielded max. 600 m shielded max. 1000 m	
Relay Outputs		
Number of relay outputs	3 x monostable with one common root	
Voltage range of contacts	12-250 V AC/DC	
Lowest switched power for correct signals	1 W or 1 VA	
Switching capacity per relay contact acc. to EN 60947-5-1 (electromagnetic load)	AC-15 240 V AC: max. 1.5 A AC-15 120 V AC: max. 3 A DC-13 250 V DC max. 0.11 A DC-13 125 V DC max. 0.22 A DC-13 24 V DC max. 1 A	
Short-circuit protection U _{imp}	6 A gG 4 kV	
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 service life	Mechanical 500 000 switching cycles Electrical (250 V AC): 0.5 A: 100 000 cycles 1.5 A 50 000 switching	
Internal clearance and creepage distances relay contacts to 24 V circuits	> 5.5 mm (safety insulation up to 250 V AC) (EN 60947-1, Pollution degree 2)	
Pollution degree terminals	3	
Supply power down/up, behaviour: Valid for all motor control functions, except transparent and overload relay.	Whenever the supply voltage of the UMC is switched off and on, the starting of the motor needs a new RUN signal.	
Transistor output	1SAJ530000R0***	1SAJ530000R1***
Max. output current	200 mA	50 mA
Short circuit protected	Yes	Yes
Output voltage if high	UMC100 supply voltage, nominal 24 V DC	nominal 24V DC
Isolation	No	3.4 - 3.8 kΩ
Thermistor Motor Protection (PTC - binary) Type A		
Broken wire resistance Voltage at broken wires between terminals T1/T2	> 4.8 kΩ 12 V DC (typ.)	
Response resistance	3.4-3.8 kΩ	
Reset resistance	1.5-1.65 kΩ	
Short circuit resistance	< 21 Ω	
Current at short circuit conditions	1.5 mA (typ.)	
Response time	800 ms	
Max. cold resistance of PTC sensor chain	< 1.5 kΩ	
Line length	2.5 mm²: 2 x 250 m 1.5 mm²: 2 x 150 m 0.5 mm²: 2 x 50 m	
Isolation	No	

Motor management system - UMC100.3

Technical data - UMC100.3

Environmental and mechanical data	1SAJ530000R0***	1SAJ530000R1***
Mounting	On DIN rail (EN 50022-35) or with 4 screws M4	
Mounting position	Any	
Dimensions (W x H x D)	70 x 105 x 106 mm	
Net weight	0.3 kg	0.35 kg
Tightening torque	ø 3,5 mm / 0.138 in : 0.5 Nm, 4.5 in.lb	
Wire size with wire end ferrule	1 x 0.2-2.5mm ² (1 x 28 ... 12 AWG)	
Wire size with rigid	1 x 0.2-2.5mm ² (1 x 28 ... 12 AWG)	
Tightening torque for screw mounting	0.8 Nm	
Degree of protection	UMC: IP20	
Temperature range storage	-25 ... +70 °C	
Temperature range operation	0 ... +60 °C with two output relays activated	0 ... +60°C with two relay outputs activated and 24V DC supply output loaded with 200 mA 0 ... +50°C with two relay outputs activated and 24V DC supply output loaded with 400 mA
Performance Data	1SAJ530000R0***	1SAJ530000R1***
Reaction time UMC100 DI to UMC100 Relay Output (incl.hardware delays)	typ. 10 ms (Transparent Control Function)	
Reaction time UMC100 DI to DX111 Relay Output (incl.hardware delays)	typ. 10 ms (Transparent Control Function)	
Reaction time from DX111 DI to UMC100 Relay Output (incl.hardware delays)	typ. 14 ms (Transparent Control Function)	
Number of supported function blocks:	See 2CDC 135 014 D02xx	

Motor management system - UMC100.3

Technical data - VI150, VI155

I/O expansion modules for Universal Motor Controller UMC100

The I/O expansion modules are exclusively intended to supplement the UMC100 with additional inputs and outputs. Customer-specific adaptations are possible by means of logical interconnection of the I/O channels. The information is available for local functions and via the fieldbus. The PBTDM tool is required for configuration.

	VI150	VI155
Application	only in grounded networks	in grounded and ungrounded networks
Electrical data		
Supply voltage	24 V DC (+ 30 % – 20 %) (19.2 ... 31.2 V DC including ripple)	
Current consumption relay energized	max. 40 mA	max. 55 mA
Voltage input	L1, L2, L3	
Overvoltage category	III in grounded networks	II in ungrounded networks
Nominal voltage input range (phase to phase)	150 - 690 V AC	
U _{imp}	8 kV	
Accuracy voltage	+/- 2% in nominal input range	
Accuracy power factor	+/- 3.5 % in range 0.4 ... 0.95, I > 0.75 A	
Accuracy real power kW	+/- 5 % typ.	
Accuracy energy kWh	+/- 5 % typ.	
Total Harmonic Distortion THD	in %	
Rated operational voltage U _e	690 V AC	
Voltage supply cables	connection cables for voltage measurement may require additional cable protection	
Digital output		
Number	1 relay output	
Voltage switching capacity	12 ... 250 V AC/DC	
Current switching capacity	EN 60947-5-1	
	240 V AC (AC-15)	max. 1.5 A
	120 V AC (AC-15)	max. 3 A
	250 V DC (DC-13)	max. 0.11 A
	125 V DC (DC-13)	max. 0.22 A
	24 V DC (DC-13)	max. 1 A
Minimum load for proper switching	1 W or 1 VA	
Contact wiring for inductive load	free-wheeling diode for DC, Varistors/VDRs for AC	
Relay contact lifetime	> 500.000 switching cycles – mechanical > 100.000 switching cycles – at 250 V AC, 0,5 A > 50.000 switching cycles – at 250 V AC, 1,5 A	
Interfaces		
Interface for I/O expansion	1 for connection to UMC100 and/or other expansion modules	
Integrated diagnostic functions		
	Green LED: Device ready Yellow LED: Diagnostics Red LED: Fault	
General data		
Conductor cross section	2 x 0.75 - 2.5 mm² max.	
Mounting	snap-on mounting on DIN-rail, any mounting position Min. 10 mm distance left and right to the L1 and L3 terminals required for voltages > 230 / 400 V	
Dimensions (W x H x D)	22.5 x 77 x 100 mm (excl. communication connector)	
Weight	0.110 kg	
Degree of protection	IP20	
Temperature range	storage: - 25 ... + 70 °C, operation:: 0 ... + 60 °C"	
Operation altitude above sea level	max. 2000 m	max. 4000 m without derating
Approvals	ATEX, CCC, CE, cUL, GL, GOST (other approvals on request)	

Motor management system - UMC100.3

Technical data - DX111, DX122

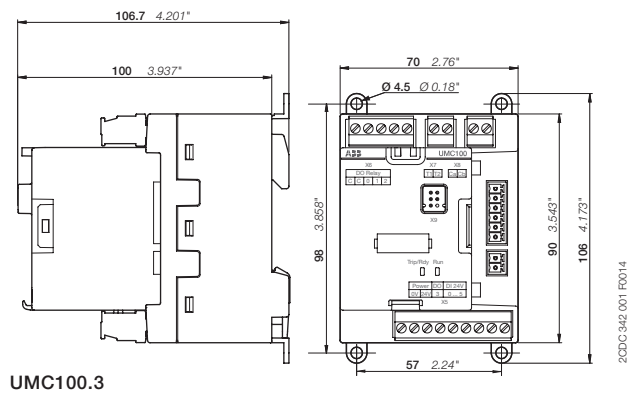
I/O expansion modules for Universal Motor Controller UMC100

The I/O expansion modules are exclusively intended to supplement the UMC100 with additional inputs and outputs. Customer-specific adaptations are possible by means of logical interconnection of the I/O channels. The information is available for local functions and via the fieldbus. The PBTDM tool is required for configuration.

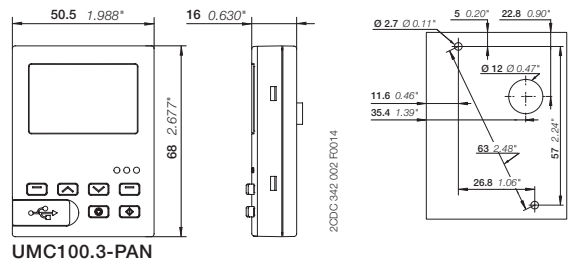
		DX111	DX122
Electrical data			
Supply voltage		24 V DC (+ 30 %, – 20 %) (19.2 ... 31.2 V DC incl. residual ripple)	
Current consumption incl. inputs, relays energized		90 mA max.	
Digital inputs			
Number of inputs		8 inputs in 2 groups of common reference potential (1 group with 5 inputs, 1 group with 3 inputs) Insulation: Type 1 acc. to EN 61131-1	8 inputs in 2 groups of common reference potential (1 group with 5 inputs, 1 group with 3 inputs) Insulation: Type 2 acc. to EN 61131-1
Input voltage		24 V DC	110 V AC ... 240 V AC
Input delay		6 ms typ.	20 ms typ.
Signal levels		0 state – 31.2 ... + 5 V 1 state + 15 ... + 31.2 V	0 ... 40 V AC 74 ... 265 V AC
ON current per channel		6.0 mA typ. (24 V DC)	10.0 mA typ. (230 V AC)
Input resistance against 0 V		3.9 kΩ	
Frequency range			45 ... 65 Hz
Digital outputs			
Number of digital outputs		4 relay outputs with 2 common supplies (1DO0 & 1DO1 by 1DOC; 2DO2 & 2DO3 by 2DOC)	
Voltage switching capacity		12 ... 250 V AC/DC	
Load current via common		I _{max} = 6 A gL / gG per common supply (1DOC, 2DOC)	
Minimum load for proper switching		1 W or 1 VA	
Contact wiring for inductive load		Free-wheeling diode for direct current, varistors/VDRs for alternating current	
Current switching capacity per relay		EN 60947-5-1	
		240 V AC (AC-15)	1.5 A max.
		120 V AC (AC-15)	3 A max.
		250 V DC (DC-13)	0.11 A max.
		125 V DC (DC-13)	0.22 A max.
		24 V DC (DC-13)	1 A max.
Relay contact lifetime		> 500.000 switching cycles – mechanical > 100.000 switching cycles – at 250 V AC, 0.5 A > 50.000 switching cycles – at 250 V AC, 1.5 A	
Analog output			
Number of analog outputs		1	
Connection type		2-wire, for motor current indication on an external analog instrument	
Output ranges		Configurable: 0/4 ... 20 mA or 0 ... 10 V	
Cable specification		< 30 m outside the control cabinet; > 30 m if shielded	
Max. output voltage		10 V	
Accuracy		< 5 %	
Output load		500 Ω max. if configured for 0/4 ... 20 mA output; 1 kΩ min. if configured for 0 ... 10 V output	
Resolution		8 bits	
Short-circuit detection		Yes, if configured for 0 ... 10 V output	
Wire break detection		Yes, if configured for 0/4 ... 20 mA output	
Insulation		none	
Interfaces			
Interface for I/O expansion		1 for connection to UMC100 and/or other expansion modules	
Integrated diagnostic functions			
		Green LED: Device ready for operation	
		Yellow LED: Wire break or short circuit indication	
		Red LED: Error (loss of communication, failure, ...)	
General data			
Conductor cross section		2 x 0.75 - 2.5 mm² max.	
Mounting		Snap-on mounting on DIN rail, any mounting position	
Dimensions		45 x 77 x 100 mm (without communication plug)	
Weight		0.220 kg	
Degree of protection		IP20	
Temperature range		Storage: – 25 ... + 70 °C Operation: 0 ... + 60 °C	Storage: – 25 ... + 70 °C Operation: 0 ... + 55 °C
Approvals		ATEX, CCC, CE, cUL, GL, GOST (other approvals on request)	

Motor management system - UMC100.3

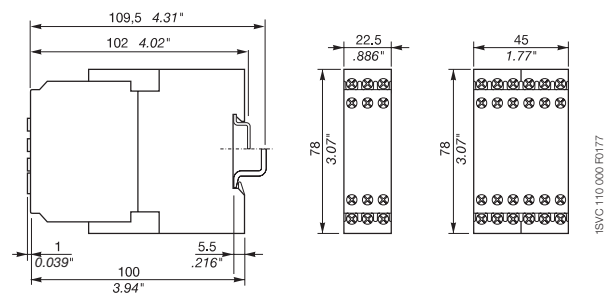
Dimensions



UMC100.3



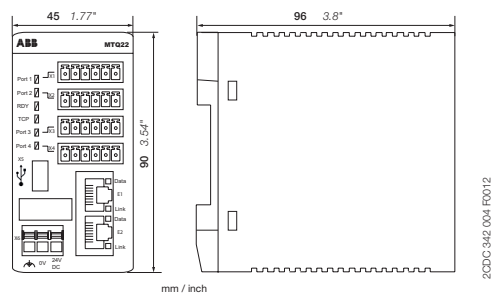
UMC100.3-PAN



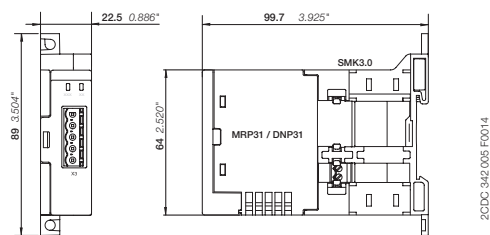
DX111-FBP, DX122-FBP
AI111
VI150-FBP, VI155-FBP

VI150-FBP,
VI155-FBP
AI111

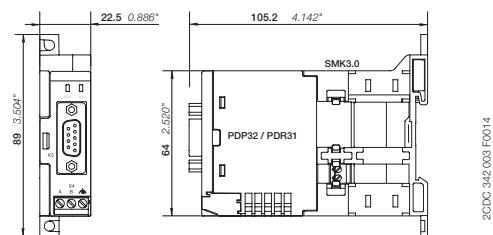
DX111-FBP,
DX122-FBP



PNQ22, MTQ22



DNP31, MRP31.0, SMK3.0



PDP32, PDR31

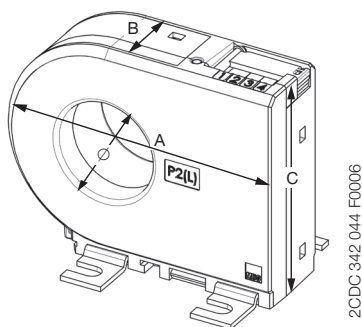
Motor management system - UMC100.3

Dimensions

Accessories

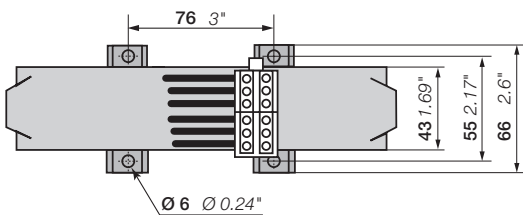
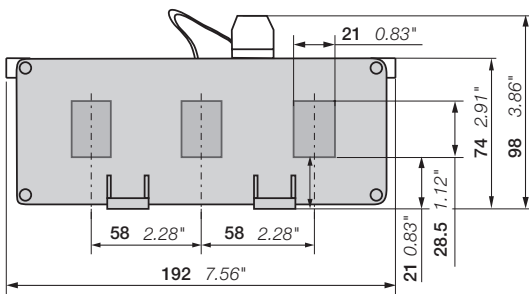
Dimensions in mm

Earth fault monitor for use with all Universal Motor Controller versions

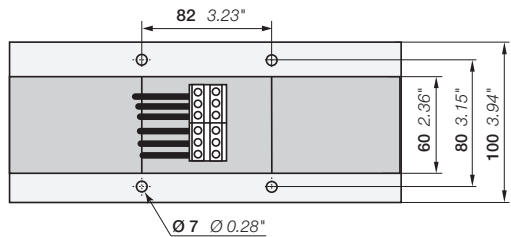
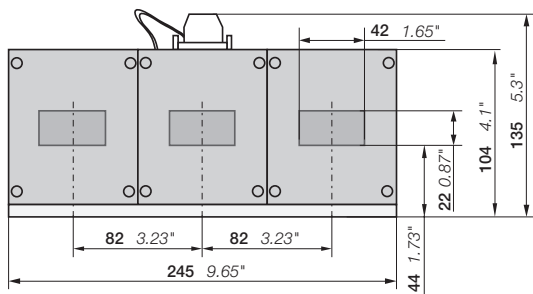


Type	W(A)	D (B)	H (C)	Ø
CEM11-FBP.20	76.4 (3.01)	30 (1.18)	56 (2.20)	20 (0.79)
CEM11-FBP.35	99.5 (1.38)	30 (1.18)	79 (3.11)	35 (1.38)
CEM11-FBP.60	135 (5.31)	38 (1.46)	116 (4.57)	60 (2.36)
CEM11-FBP.120	210 (8.27)	38 (1.46)	190 (7.48)	120 (4.72)

Current transformer for use with Universal Motor Controller UMC100



CT4L185R/4, CT4L310R/4

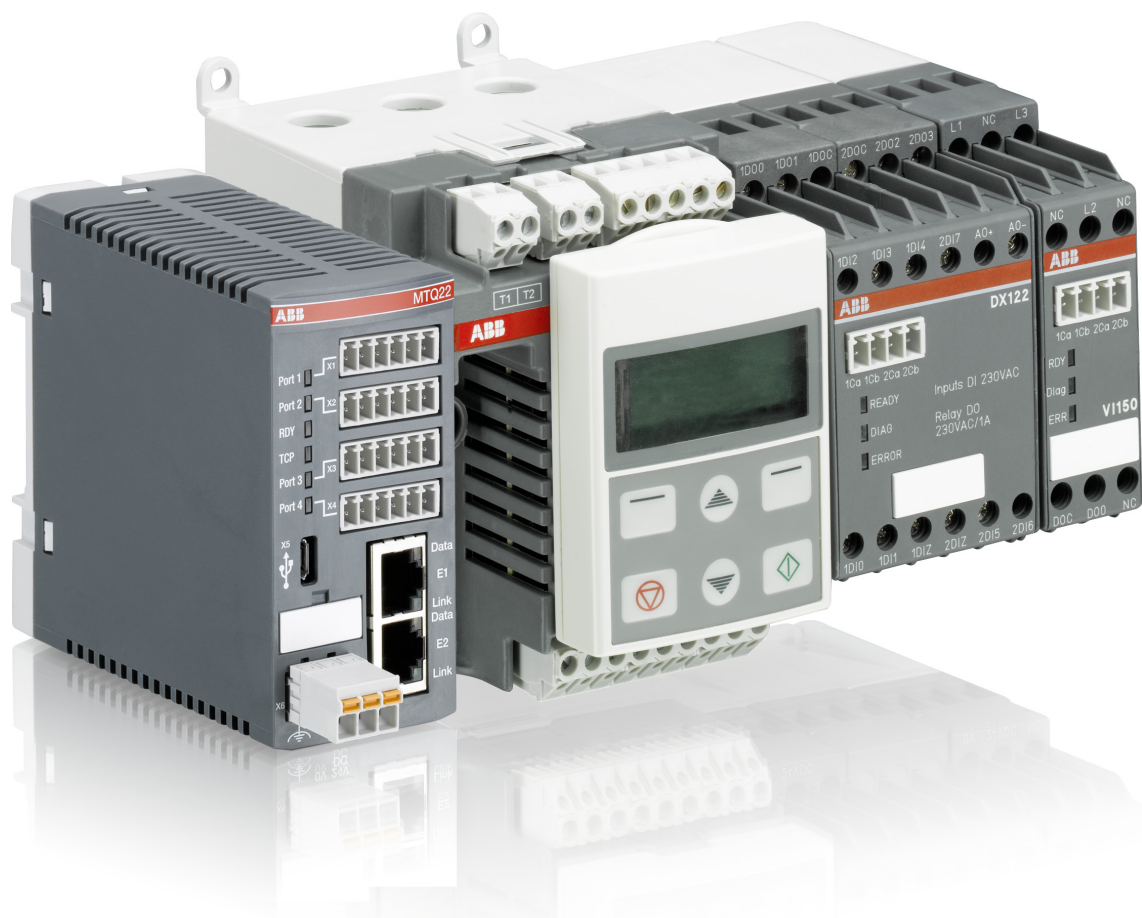


CT5L500R/4, CT5L850R/4

Motor management system - UMC100.3

Notes

Universal Motor Controller
Product group picture



Universal Motor Controller

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Universal Motor Controller - Ordering details

UMC100-FBP & Accessories



UMC100-FBP

Ordering details -UMC100-FBP

Designation	Nominal motor current	Type	Order code	Price	Weight (1 pce)
				1 pce	kg (lb)
Universal Motor Controller	0.24 – 63 A	UMC100-FBP.0	1SAJ520000R0101		0.282 (0.622)
Universal Motor Controller, ATEX	0.24 – 63 A	UMC100-FBP.0	1SAJ520000R0201		0.282 (0.622)



UMC100-PAN

Ordering details - UMC100-PAN

Designation	Type	Order code	Price	Weight (1 pce)
			1 pce	kg (lb)
Operating panel - Replaced all former UMC100 operator panels, fully compatible USB port for use with UMC100.3 only	UMC100-PAN	1SAJ590000R0103		0.047 (1.036)
3 m ext. cable with door mounting set	UMCPAN-CAB.300	1SAJ510002R0002		0.176 (0.388)
0.7 m ext. cable with door mounting set	UMCPAN-CAB.070	1SAJ510003R0002		0.700 (0.154)
1.5 m ext. cable with door mounting set	UMCPAN-CAB.150	1SAJ510004R0002		0.088 (0.194)



PDP22-FBP

Ordering details - Profibus DP FieldBusPlug

Designation	Cable length	Type	Order code	Price	Weight (1 pce)
				1 pce	kg (lb)
Profibus DP FBP	0.25 m	PDP22-FBP.025	1SAJ240100R1003		0.090 (0.198)
Profibus DP FBP	0.50 m	PDP22-FBP.050	1SAJ240100R1005		0.100 (0.220)
Profibus DP FBP	1.00 m	PDP22-FBP.100	1SAJ240100R1010		0.130 (0.287)
Profibus DP FBP	2.00 m	PDP22-FBP.200	1SAJ240100R1020		0.200 (0.441)
Profibus DP FBP	5.00 m	PDP22-FBP.500	1SAJ240100R1050		0.360 (0.794)



PDQ22-FBP

Ordering details - PROFIBUS DP FieldBusPlug for 4 devices

Designation	Type	Order code	Price	Weight (1 pce)
			1 pce	kg (lb)
Quadruple bus connector	PDQ22-FBP	1SAJ240200R0050		0.200 (0.441)



PDF11-FBP.050

PDM11-FBP.050

Ordering details - Round cables for bus junctions

PROFIBUS DP round cable for bus junctions	Cable length	Type	Order code	Price	Weight (1 pce)
				1 pce	kg (lb)
Round cable with female connector	0.50 m	PDF11-FBP.050	1SAJ924002R0005		0.040 (0.088)
Round cable with male connector	0.50 m	PDM11-FBP.050	1SAJ924003R0005		0.040 (0.088)

Universal Motor Controller - Ordering details

Fieldbus devices

Ordering details - Several Universal Motor Controllers on a PROFIBUS DP node

Description	Type	Order code	Price: Weight (1 pce)	
			1 pce	kg (lb)
PROFIBUS DP extension cable (0.50 m...5.00 m)	PDX11-FBP.050	1SAJ924001R0005		0.100 (1.102)
	PDX11-FBP.100	1SAJ924001R0010		0.130 (0.287)
	PDX11-FBP.300	1SAJ924001R0030		0.271 (0.597)
	PDX11-FBP.500	1SAJ924001R0050		0.442 (0.974)
Connection cable (0.30 m...1.50 m)	CDP15-FBP.030	1SAJ929140R0003		1.180 (2.601)
	CDP15-FBP.060	1SAJ929140R0006		0.100 (0.220)
	CDP15-FBP.150	1SAJ929140R0015		0.099 (0.218)
Fixing bracket for passive plug	CDP11-FBP.0	1SAJ929100R0001		0.010 (0.220)



PDX11-FBP



PDM11-FBP.0

PDF11-FBP.0



PDV11-FBP.0

PDV12-FBP.0



PDR11-FBP.150



PDA11-FBP.050



PDA12-FBP.050

Ordering details - Round cables for bus extension

PROFIBUS DP extension cable	Cable length	Type	Order code	Price: Weight (1 pce)	
				1 pce	kg (lb)
Ready-made cable	0.50 m	PDX11-FBP.050	1SAJ924001R0005		0.040 (0.088)
Ready-made cable	1.00 m	PDX11-FBP.100	1SAJ924001R0010		0.080 (0.176)
Ready-made cable	3.00 m	PDX11-FBP.300	1SAJ924001R0030		0.200 (0.441)
Ready-made cable	5.00 m	PDX11-FBP.500	1SAJ924001R0050		0.310 (0.683)
Coil	100 m	PDC11-FBP.999	1SAJ924004R1000		5.600 (12.346)

Ordering details - Accessories for bus extension

PROFIBUS DP cable connector	Type	Order code	Price: Weight (1 pce)	
			1 pce	kg (lb)
Male plug for round cables	PDM11-FBP.0	1SAJ924005R0001		0.030 (0.066)
Female plug for round cables	PDF11-FBP.0	1SAJ924006R0001		0.030 (0.066)

Ordering details - Line termination, feeding connectors, adapters

Designation	Type	Order code	Price: Weight (1 pce)	
			1 pce	kg (lb)
Line termination 150 ohms	PDR11-FBP.150	1SAJ924007R0001		0.030 (0.066)
Feeding connector 24 V DC, code B-A	PDV11-FBP.0	1SAJ924008R0001		0.040 (0.088)
Feeding connector 24 V DC, code A-A	PDV12-FBP.0	1SAJ924011R0001		0.040 (0.088)
Adapter Dsub9-M12, cable length 0.50 m	PDA11-FBP.050	1SAJ924009R0005		0.040 (0.088)
Adapter M12-Dsub9-M12, cable length 2 x 0.50 m	PDA12-FBP.050	1SAJ924010R0005		0.040 (0.088)

Universal Motor Controller

Fieldbus devices



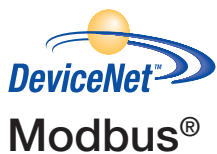
CDP15-FBP

ST04801



CDP16-FBP

2CD0341103P0006



DNP21-FBP
MRP21-FBP

B10_3282_RET

Ordering details - Several Universal Motor Controllers on a PROFIBUS DP node

Designation	Accessory type	Type	Order code	Price	Weight (1 pce)
				1 pce	kg (lb)
DIN rail adapter for PDQ22-FBP	Mounting material	CDA11-FBP.0	1SAJ929300R0001		0.110 (0.242)
Fixing bracket for passive plug of connection cable	Mounting material	CDP11-FBP.0	1SAJ929100R0001		0.500 (1.102)
Connection cable (female/male), shielded, length 0.3 m	Connection cables	CDP15-FBP.030	1SAJ929140R0003		0.100 (0.220)
Connection cable (female/male), shielded, length 0.6 m	Connection cables	CDP15-FBP.060	1SAJ929140R0006		0.150 (0.331)
Connection cable (female/male), shielded, length 1.5 m	Connection cables	CDP15-FBP.150	1SAJ929140R0015		0.200 (0.441)
Connection cable (male/open end), shielded, length 1.5 m	Connection cables	CDP16-FBP.150	1SAJ929150R0015		0.200 (0.441)

Ordering details - DeviceNet FieldBusPlug

Designation	Cable length	Type	Order code	Price	Weight (1 pce)
				1 pce	kg (lb)
DeviceNet FBP	0.25 m	DNP21-FBP.025	1SAJ230000R1003		0.090 (0.198)
DeviceNet FBP	0.5 m	DNP21-FBP.050	1SAJ230000R1005		0.100 (0.220)
DeviceNet FBP	1.00 m	DNP21-FBP.100	1SAJ230000R1010		0.130 (0.287)
DeviceNet FBP	5.00 m	DNP21-FBP.500	1SAJ230000R1050		0.360 (0.794)

Ordering details - Modbus-RTU FieldBusPlug

Designation	Cable length	Type	Order code	Price	Weight (1 pce)
				1 pce	kg (lb)
Modbus-RTU FBP	0.25 m	MRP21-FBP.025	1SAJ250000R0003		0.090 (0.198)
Modbus-RTU FBP	0.5 m	MRP21-FBP.050	1SAJ250000R0005		0.100 (0.220)
Modbus-RTU FBP	1.00 m	MRP21-FBP.100	1SAJ250000R0010		0.130 (0.287)
Modbus-RTU FBP	5.00 m	MRP21-FBP.500	1SAJ250000R0050		0.360 (0.794)

Universal Motor Controller

Fieldbus devices



DNF11-FBP.050

ST05301



DNM11-FBP.050

ST05301



DNX11-FBP

ST04801



DNF11-FBP.0

DNM11-FBP.0

ST05701

ST05401



DNR11-FBP.120

ST05501

Ordering details - Accessories for DeviceNet, Modbus-RTU bus connection

Round cables for bus junctions

Round cables for bus junctions	Cable length	Type	Order code	Price: Weight (1 pce)
				1 pce: kg (lb)
Round cable with female plug	0.50 m	DNF11-FBP.050	1SAJ923002R0005	0.400 (0.882)
Round cable with male plug	0.50 m	DNM11-FBP.050	1SAJ923003R0005	0.400 (0.882)

Ordering details - Round cables for bus extension

Extension cable	Cable length	Type	Order code	Price: Weight (1 pce)
				1 pce: kg (lb)
Ready-made cable	1.00 m	DNX11-FBP.100	1SAJ923001R0010	0.080 (0.176)
Ready-made cable	3.00 m	DNX11-FBP.300	1SAJ923001R0030	0.200 (0.441)
Ready-made cable	5.00 m	DNX11-FBP.500	1SAJ923001R0050	0.310 (0.683)
Cable on coil	100.00 m	DNC11-FBP.999	1SAJ923004R1000	5.600 (12.346)

Ordering details - Accessories for bus extension

Cable connector	Type	Order code	Price: Weight (1 pce)
			1 pce: kg (lb)
Male plug for round cable	DNM11-FBP.0	1SAJ923005R0001	0.030 (0.066)
Female plug for round cable	DNF11-FBP.0	1SAJ923006R0001	0.030 (0.066)

Ordering details - Termination resistor

Bus accessories	Type	Order code	Price: Weight (1 pce)
			1 pce: kg (lb)
Termination resistor 120 ohms	DNR11-FBP.120	1SAJ923007R0001	0.200 (0.441)

Universal Motor Controller

Ordering details - System accessories and documentation

Ordering details - Miscellaneous accessories

Designation	Type	Order code	Price	Weight
			1 pce	(1 pce)
Addressing labels for FieldBusPlugs / 40 pcs	CAL11-FBP.0	1SAJ929005R0001		0.189 (0.417)
M12 covering caps for FieldBusPlugs / 10 pcs	CCC11-FBP.0	1SAJ929006R0001		0.010 (0.022)

FieldBusPlug power supply unit

Supply voltage: 90...260 V AC, 47...63 Hz.

Adjustable output voltage: 23...28 V DC, 5 A.

Ordering details - FieldBusPlug power supply unit

Designation	Type	Order code	Price	Weight
			1 pce	(1 pce)
Power supply unit 24 V / 2.5 A	CP-E 24/2.5	1SVR427032R0000		0.360 (0.882)
Power supply unit 24 V / 5 A	CP-S 24/5.0	1SVR427014R0000		0.960 (0.882)

For larger power supplies please refer to www.abb.com

> Low Voltage Products and Systems > Control Products > Electronic Relays and Controls > Power Supplies

Accessories for installation in control cabinet drawer systems

Fixing brackets for passive plug and FBP passive cables for installation of FBP terminal devices in drawer systems.

Ordering details

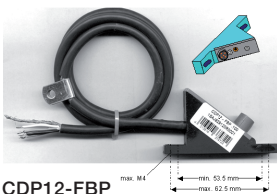
Designation	Cable length	Type	Order code	Price	Weight
				1 pce	(1 pce)
Passive plug fixing bracket for drawer systems / 50 pcs		CDP11-FBP.0	1SAJ929100R0001		0.500 (1.102)
Passive plug fixing bracket for drawer systems / 4 pcs		CDP11-FBP.4	1SAJ929100R0004		0.400 (0.882)
Passive cable for drawer systems (outside)	1.00 m	CDP12-FBP.100	1SAJ929120R0001		0.200 (0.441)
Passive cable for drawer systems (inside)	1.00 m	CDP13-FBP.100	1SAJ929110R0001		0.310 (0.683)



CP-E 24/2.5



CP-S 24/5.0



CDP12-FBP



CDP13-FBP

Communicative motor starters with control functions

Technical data - UMC100-FBP

		UMC100-FBP
Main circuit		
Voltage (3-phase system)		1000 V AC (see manual), 45 ... 65 Hz, 3-phase system
Nominal motor current		0.24 ... 63 A with integrated current transformers, up to 850 A with external current transformers
Overload protection for 3-phase motors		According to EN/IEC 60947-4-1
Trip categories (adjustable)		5, 10, 20, 30, 40
Extended motor model		Cooling time definition by calculat. or configurat.
Feed-through holes of internal current transformer		25 mm ² max. (11 mm max. wire diameter incl. insulation)
Short-circuit protection		By fuse on line side
Control voltage circuit		
Supply voltage		24 V DC (+ 30 %, – 20 %, incl. residual ripple)
Current consumption incl. inputs, relays energized		360 mA
Total power dissipation		9 W max.
Reverse polarity protection		yes
Inputs/outputs		
Digital inputs		6 inputs 24 V DC
PTC input		1
Digital outputs		3 relay outputs with common supply 1 transistor output 24 V DC, 0.2 A
Voltage switching capacity		24 V AC/DC ... 250 V AC/DC
Current switching capacity per relay	240 V AC (AC-15)	1.5 A max.
	120 V AC (AC-15)	3 A max.
	250 V DC (DC-13)	0.11 A max.
	125 V DC (DC-13)	0.22 A max.
	24 V DC (DC-13)	1 A max.
Load current via common		$I_{\max} = 6 \text{ A gL} / \text{gG}$ (thermal limit)
Relay contact lifetime		> 500.000 switching cycles – mechanical > 100.000 switching cycles – at 250 V AC, 0,5 A > 50.000 switching cycles – at 250 V AC, 1,5 A
Contact wiring for inductive load		Free-wheeling diode for direct current, varistors/VDRs for alternating current
Interfaces		
Bus interface		1 (for connection of ABB FieldBusPlug)
Operating panel interface		1 (for connection of UMC100-PAN operating panel)
Interface for I/O expansion		1 (for connection of I/O expansion modules)
Integrated diagnostic functions		Green LED: Device ready for operation Yellow LED: Motor running (motor current > 20 % of nominal current adjusted) Red LED: Error (tripping, failure, ...)
Further diagnostic functions		Operating hours, contactor switching cycles count, tripping events due to overload count Time period since last tripping event Error history Selectable warning & tripping limits
Integrated control functions		Direct starting, reverse starting, star-delta starting, pole-changing starting, actuator/servo-drive, transparent mode, emergency start function, stand alone operation (even without bus connection) Time-controlled load shedding in case of voltage dips / configurable starting delay
Integrated motor protection functions		Overload monitoring, phase failure detection, motor blocking detection, thermal overload monitoring (PTC), earth fault monitoring with sensor CEM11-FBP Configurable checkback time, phase imbalance detection, fast blocking protection during starting
Parameter setting / configuration		Operating panel, fieldbus (FieldBusPlug), DTM (DeviceTypeManager)
Customer-specific applications		Configurable logic
General data		
Conductor cross section		1 x 0.2 - 2.5 mm ² max.
Mounting		On DIN rail or with screws (4 screws M4)
Dimensions		70 x 105 x 87,5 mm (110 mm incl. operating panel and FBP)
Weight		0.282 kg (0.622 lb)
Degree of protection		IP20
Temperature range		Storage: – 25 ... + 70 °C Operation: 0 ... + 60 °C
Approvals		ATEX, CCC, CE, cUL, GL, GOST (other approvals on request)
Operating panel (optional)		Adjustment and visualization of motor & device data and bus parameters, status indication of digital inputs & outputs, contactor switching cycles and operating hours counting, local operation on site
I/O expansion modules (optional)		Graphical multilingual user interface 2 I/O expansion modules

Universal Motor Controller - UMC

Notes

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Notes

Contact us

ABB STOTZ-KONTAKT GmbH

<http://new.abb.com/low-voltage/products/motor-controllers>

www.abb.com/contacts

Note:

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