



Data sheet

MCX20B Programmable controller



MCX20B is fitted with or without graphic LCD display. It is an electronic controller that stands on the top of the MCX range, thanks to the large number of its inputs and outputs. It holds all the typical functionalities of MCX controllers:

- programmability
- connection to the CANbus local network
- up to two Modbus RS485 opto-insulated serial interface

Furthermore it is available in two models, powered at 110 / 230 V AC or 24 V AC.

Features MCX20B

- 16 analog and 22 digital inputs
- 6 analog and 20 digital outputs
- Power supply 24 V AC / 20/60 V DC and 110 V / 230 V AC
- Remote access to data through CANbus connection for additional display (LCD available) and keyboard
- RTC clock for managing weekly time programs and data logging information
- Up to two Modbus RS485 opto-insulated serial interface
- Available with graphic LCD display and without display for showing the desired information
- Dimensions 16 DIN modules



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General features

| FEATURES | DESCRIPTION | |
|--|--|--|
| | 85 – 265 V AC, 50/60 Hz Maximum power consumption: 31 V A Insulation between power supply and the extra-low voltage: reinforced | |
| Power supply | 20 – 60 V DC or 24 V AC ± 15%, 50/60 Hz | |
| | Maximum power consumption: 17 W, 25 V A | |
| | Insulation between power supply and the extra-low voltage: functional | |
| | Note: check the product number to determine the power supply type | |
| | DIN rail mounting complying with EN 60715 | |
| Plastic housing | Self extinguishing V0 according to IEC 60695-11-10 and glowing / hot wire test at 960 °C according to IEC 60695-2-12 | |
| Ball test | 125 °C according to IEC 60730-1 Leakage current: ≥ 250 V according to IEC 60112 | |
| Operating conditions | conditions CE: -20T60 / UL: 0T55, 90% RH non-condensing | |
| Storage conditions | -30T80, 90% RH non-condensing | |
| Integration | In Class I and / or II appliances | |
| Index of protection | IP40 only on the front cover | |
| Period of electric stress across insulating parts | Long | |
| Resistance to heat and fire | Category D | |
| Immunity against voltage surges | Category II | |
| Software class and structure | Class A | |
| Approvals | CE mark This product is designed to comply with the following EU standards: Low voltage directive LVD 2014/35/EU: EN60730-1: 2011 (Automatic electrical control for household and similar use. General requirements) EN60730-2-9: 2010 (Particular requirements for temperature sensing controls) Electromagnetic compatibility EMC directive 2014/30/EU: EN 61000-6-3: 2007 +A1: 2011 (Emission standard for residential, commercial and light-industrial environments) EN 61000-6-2: 2005 (Immunity for industrial environments) RoHS directive 2011/65/EU: EN50581: 2012 | |
| | • UL file E31024 | |



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Input/output

| Analog inputs NTC 6 0/1V 0/5V AI7, AI8, AI9, AI10, AI15, AI16 Inputs selectable via software between: • NTC temperature probes, default: 10 kΩ at 25 °C • pressure transducers with 0/5V output Universal 10 AI1, AI2, AI3, AI4, AI5, AI6, AI11, AI12, AI13, AI14 Universal analog inputs selectable via software between: • ON/OFF (current: 20 mA) • 0/1V, 0/5V, 0/10V | utputs) |
|---|-----------|
| inputs 0 / 1 V 0 / 5 V Inputs selectable via software between: • NTC temperature probes, default: 10 kΩ at 25 °C • pressure transducers with 0 / 5 V output Universal 10 Al1, Al2, Al3, Al4, Al5, Al6, Al11, Al12, Al13, Al14 Universal 10 Al1, Al2, Current: 20 mA) • 0 / 1 V, 0 / 5 V, 0 / 10 V • 0 / 1 V, 0 / 5 V, 0 / 10 V | utputs) |
| 0 / 5 V • NTC temperature probes, default: 10 kΩ at 25 °C • pressure transducers with 0 / 5 V output Universal 10 AI1, AI2, AI3, AI4, AI5, AI6, AI11, AI12, AI13, AI14 Universal analog inputs selectable via software between: • ON/OFF (current: 20 mA) • 0 / 1 V, 0 / 5 V, 0 / 10 V | utputs) |
| Universal 10 Al1, Al2, Al3, Al4, Al5, Al6, Al11, Al12, Al13, Al14 Universal analog inputs selectable via software between: • ON/OFF (current: 20 mA) • 0 / 1 V, 0 / 5 V, 0 / 10 V | utputs) |
| Universal 10 Al1, Al2, Al3, Al4, Al5, Al6, Al11, Al12, Al13, Al14 Universal analog inputs selectable via software between: • ON/OFF (current: 20 mA) • 0 / 1 V, 0 / 5 V, 0 / 10 V | utputs) |
| ON/OFF (current: 20 mA) 0 / 1 V, 0 / 5 V, 0 / 10 V | utputs) |
| • 0/1V,0/5V,0/10V | utputs) |
| | utputs) |
| • 0/20 mA 4/20 mA | utputs) |
| • NTC (10 kQ at 25 °C) | utputs) |
| • Pt1000 | utputs) |
| 12 V+ power supply 12 V DC, 400 mA max for 4 / 20 mA transmitter | utputs) |
| (total on all outputs) | utputs) |
| 5 V+ power supply 5 V DC, 410 mA max for 0 / 5 V transmitter (total on all c | |
| Digital 24V 22 DI1, DI2, DI3, DI4, DI5, DI6, DI7, DI8, DI9, DI10, DI11, DI12, DI13, DI14, DI | 15, DI16, |
| Inputs optoins. DI17, D18, D19, D120, D121, D122 | |
| Rated current: 5 mA | |
| 230 V AC 4 DIH1, DIH2, DIH3, DIH4 | |
| optoins. Inputs optoinsulated, 230 V AC / 50/60 Hz | |
| Basic insulation | |
| Rated current: 2 mA at 230 V AC; 1 mA at 110 V AC | |
| not available anymore; the same for the couple of inputs DIH2 and DI2, DIH3 and | |
| DI3, DIH4 and DI4 | |
| Analog 0/10V 6 AO1, AO2, AO3, AO4, AO5, AO6 | |
| Analog outputs optionsulated 07 To V DC To mA max for each output: | |
| External power supply 24 V AC / V DC | |
| Digital Relay 20 Concerning the insulation distance there are three groups of relays: | |
| output • group 1: relays 1 to 8 | |
| • group 2: relays 9 to 13 | |
| • group 3: relays 14 to 20 | |
| Insulation between relays of the same group: functional | |
| Insulation between relays of different groups: reinforced | |
| Insulation between relays and the extra-low voltage parts: reinforced | |
| C1-NO1, C2-NO2, C3-NO3, C4-NO4, C5-NO5, C6-NO6, C7-NO7, C8-NO8, C | 9-NO9, |
| C17-N017, C18-N018, C19-N019, C20-N020 | |
| Normally open contact relays 8 A | |
| characteristics of each relay: | |
| – 6 A 250 V AC for resistive loads - 100.000 cycles 4 A 250 V AC for industive loads - 100.000 cycles with coc(obi) - 0.6 | |
| - 4 A 250 V AC IOF Inductive Iodus - 100.000 Cycles with Cos(pii) = 0.0 | 10 cycles |
| C10-NO10-NC10, C11-NO11-NC11, C12-NO12-NC12, C13-NO13-NC13 | 0 cycles |
| Changeover contacts relay 8 A | |
| characteristics of each relay: | |
| - 6 A 250 V AC for resistive loads - 100.000 cycles | |
| -4 A 250 V AC for inductive loads -100.000 cycles with cos(phi) = 0.6 | |
| C15-N015, C16-N016 | 0 Cycles |
| High inrush current (80 A - 20 ms) normally open contact relays 16 A | |
| characteristics of each relay: | |
| - 7 A 250 V AC for resistive loads - 100.000 cycles | |
| -3.5 A 230 V AC for inductive loads - 230.000 cycles with cos(phi) = 0.5 - 100 V A cosistive - 4.9 EL A - 29.4 I PA - 470 V A cosistive - 4.9 EL A - 29.4 I PA - 470 V A cosistive - 4.9 EL A - 29.4 I PA - 470 V A cosistive - 4.9 EL A - 29.4 I PA - 470 V A cosistive - 4.9 EL A - 29.4 I PA - 470 V A cosistive - 4.9 EL A - 29.4 I PA - 470 V A cosistive - 4.9 EL A - 29.4 I PA - 470 V A cosistive - 4.9 EL A - 29.4 I PA - 470 V A cosistive - 4.9 EL A - 29.4 I PA - 470 V A cosistive - 4.9 EL A - 29.4 I PA - 470 V A cosistive - 4.9 EL A - 29.4 I PA - 470 V A cosistive - 4.9 EL A - 29.4 I PA - 4.0 EL A - 2.0 E | |
| C14-NO14-NC14 | U CYCICS |
| High inrush current (80 A - 20 ms) changeover contacts relay 16 A | |
| characteristics of each relay: | |
| - 7 A 250 V AC for resistive loads - 100.000 cycles | |
| - 3.5 A 230 V AC TOT INDUCTIVE IOADS - 230,000 Cycles with cos(phi) = 0.5 - UI: 240 V AC - 6 A resistive - 4 9 FLA - 29 4 LRA - 470 V A pilot duty 30.00 | 10 cvcles |
| | |
| Using of device in case of Tamb = 70 °C has to be according to following | |
| requirements: | |
| maximum load admitted for 16 A relay: 5 A 250 V AC maximum load admitted for 16 A relay: 5 A 250 V AC | |



Connection diagram



*NOTE: connection has to be made on the first and last local network units, make the connection as close as possible to the connector **NOTE: optoinsulated analog outputs voltages are referenced to contact N1

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Connection

| CONNECTORS | ТҮРЕ | DIMENSIONS | | | |
|-----------------------------------|-------------------------------------|--|--|--|--|
| TOP BOARD | | | | | |
| Digital input 1 connector | 3 way screw plug-in connector type | pitch 5 mm section cable 0 2-2 5 mm² | | | |
| Digital output 14-16 connector | 7 way screw plug-in connector type | pitch 5 mm section cable 0.2-2.5 mm² | | | |
| Digital output | 8 way screw plug-in connector type | pitch 5 mm iii 14, 02, 25, m² | | | |
| Analog output | 4 way screw plug-in connector type | section cable 0.2-2.5 mm ⁻ pitch 5 mm | | | |
| 5-6 connector | | section cable 0.2-2.5 mm ² | | | |
| Analog input 11-14 connector | 7 way screw plug-in connector type | pitch 5 mm section cable 0.2-2.5 mm² | | | |
| Analog input 15-16 connector | 4 way screw plug-in connector type | pitch 5 mm section cable 0.2-2.5 mm² | | | |
| Digital input 2 connector | 3 way screw plug-in connector type | pitch 5 mm section cable 0.2-2 5 mm² | | | |
| Digital input 3 | 3 way screw plug-in connector type | pitch 5 mm pitch 5 mm | | | |
| | | section cable 0.2-2.5 mm ⁻ | | | |
| Digital input 4 | 3 way screw plug-in connector type | • pitch 5 mm | | | |
| Digital input | 5 way screw plug-in connector type | section cable 0.2-2.5 mm | | | |
| 5-8 connector | s way screw plug-in connector type | section cable 0.2-2.5 mm² | | | |
| Digital input | 5 way screw plug-in connector type | pitch 5 mm | | | |
| 9-12 connector | | section cable 0.2-2.5 mm² | | | |
| Digital input | 5 way screw plug-in connector type | • pitch 5 mm | | | |
| 13-16 connector | | section cable 0.2-2.5 mm² | | | |
| Digital input 17-20 connector | 5 way screw plug-in connector type | pitch 5 mm section cable 0.2-2.5 mm² | | | |
| Digital input 21-22 connector | 4 way screw plug-in connector type | pitch 5 mm section cable 0.2-2.5 mm² | | | |
| BOTTOM BOARD | | | | | |
| Digital output | 10 way screw plug-in connector type | • pitch 5 mm | | | |
| 1-5 connector | | section cable 0.2-2.5 mm² | | | |
| Digital output | 6 way screw plug-in connector type | • pitch 5 mm | | | |
| 6-8 connector | | section cable 0.2-2.5 mm ² | | | |
| Analog input 1-6 connector | 11 way screw plug-in connector type | pitch 5 mm section cable 0.2-2.5 mm² | | | |
| Analog input | 6 way screw plug-in connector type | pitch 5 mm | | | |
| 7-10 connector | | • section cable 0.2-2.5 mm ² | | | |
| Power supply connector | 2 way screw plug-in connector type | pitch 5 mm section cable 0.2-2.5 mm² | | | |
| Digital output | 11 way screw plug-in connector type | pitch 5 mm | | | |
| 9-12 connector | | section cable 0.2-2.5 mm² | | | |
| Digital output 13 connector | 3 way screw plug-in connector type | pitch 5 mm section cable 0.2-2.5 mm² | | | |
| Analog output | 6 way screw plug-in connector type | • pitch 5 mm | | | |
| 1-4 connector | | section cable 0.2-2.5 mm ² | | | |
| RS485 -2 connector | 3 way screw plug-in connector type | pitch 5 mm section cable 0.2-2.5 mm² | | | |
| RS485-1 connector | 3 way screw plug-in connector type | pitch 5 mm section cable 0.2-2.5 mm² | | | |
| CAN connector | 4 way screw plug-in connector type | pitch 5 mm section cable 0.2-2.5 mm² | | | |
| CAN-RJ | 6/6 way telephone RJ11 plug type | | | | |
| connector | | | | | |



Dimensions





User interface

| TYPE | FEATURES | DESCRIPTION |
|----------|---------------------|---|
| LCD | Display | STN blue transmissive |
| display | Backlight | White LED backlight adjustable via software |
| | Contrast | Adjustable via software |
| | Format | 128x64 dots |
| | Active visible area | 58x29 mm |
| Keyboard | Number of keys | 6 |
| | Keys function | Set by the application software |

ENGINEERING TOMORROW

Product part numbers

| DESCRIPTION | |
|-----------------------------------|--|
| MCX20B, 230V, LCD, RS485, RTC, S | |
| MCX20B, 24V, LCD, 2XRS485, RTC, S | |
| MCX20B, 24V, 2XRS485, RTC, S | |
| MCX20B, 230V, LCD, RS485, RTC, I | |
| MCX20B, 24V, RTC, I | |
| MCX20B, 230V, RS485, RTC, I | |
| MCX20B, 24V, 2XRS485, RTC, I | |

Note: single pack codes (S) include standard kit connectors, industrial pack codes (I) don't include standard kit connectors

Accessories part numbers

| DESCRIPTION | |
|-----------------------|--|
| MCX20B CONNECTORS KIT | |

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