



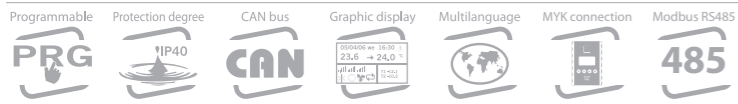
Danfoss Electronics spa



MCX06D electronic controller

MCX06D is fitted with LED display, graphic LCD display, or without display. It is an electronic controller that holds all the typical functionalities of MCX controllers in the compact size of 4 DIN modules: programmability, connection to the CANbus local network, Modbus RS485 serial communication interface

REFRIGERATION & AIR CONDITIONING DIVISION



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GENERAL FEATURES

	MCX06D
ANALOG INPUTS	
NTC, 0/1V, 0/5V	2
Universal (NTC, Pt1000, 0/1V, 0/5V, 0/10V, ON/OFF, 0/20mA, 4/20mA) selectable via software	2
Total number	4
DIGITAL INPUTS	
Voltage-free contact	8
Total number	8
ANALOG OUTPUTS	
0/10Vdc, PWM, PPM selectable via software	2
PWM, PPM selectable via software	1
Total number	3
DIGITAL OUTPUTS	
SPST relay 5A (normally open contacts)	5
SPST relay 8A (changeover contacts)	1
Total number	6
OTHERS	
Insulated power supply 20/60Vdc - 24Vac	•
Connection for programming key	•
Connection for remote display and keyboard	•
Buzzer	•
CANbus	•
RTC clock	•
Modbus RS485 serial interface	•
Dimensions (DIN modules)	4
Mounting	DIN bar

GENERAL FEATURES AND WARNINGS

PLASTIC HOUSING FEATURES

- DIN rail mounting complying with EN 60715
- 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: ≥ 250V according to IEC 60112

OTHER FEATURES

- Operating conditions CE: -20T60 / UL: 0T55, 90% RH non-condensing
- Storage conditions: -30T80, 90% RH non-condensing
- To be integrated in Class I and/or II appliances
- Index of protection: IP40 only on the front cover
- Period of electric stress across insulating parts: long
- Suitable for using in a normal pollution environment
- Category of resistance to heat and fire: D
- Immunity against voltage surges: category I
- Software class and structure: class A

CE COMPLIANCE

- This product is designed to comply with the following EU standards:
- Low voltage guideline: 73/23/EEC
 - Electromagnetic compatibility EMC: 89/336/EEC and with the following norms:
 - EN61000-6-1, EN61000-6-3 (immunity for residential, commercial and ligh-industrial environments)
 - EN61000-6-2, EN61000-6-4 (immunity and emission standard for industrial environments)
 - EN60730 (Automatic electrical controls for household and similar use)

UL APPROVAL

UL file: E31024

GENERAL WARNINGS

- Every use that is not described in this manual is considered incorrect and is not authorised by the manufacturer
- Verify that the installation and operating conditions of the device respect the ones specified in the manual, specially concerning the supply voltage and environmental conditions
- This device contains live electrical components therefore all the service and maintenance operations must be performed by qualified personnel
- The device can't be used as a safety device
- Liability for injury or damage caused by the incorrect use of the device lies solely with the user

INSTALLATION WARNINGS

- Mounting position recommended: vertical
- The installation must be executed according the local standards and legislations of the country
- Always operate on the electrical connections with the device disconnected from the main power supply
- Before carrying out any maintenance operations on the device, disconnect all the electrical connections
- For safety reasons the appliance must be fitted inside an electrical panel with no live parts accessible
- Don't expose the device to continuous water sprays or to relative humidity greater than 90%. Avoid exposure to corrosive or pollutant gases, natural elements, environments where explosives or mixes of flammable gases are present, dust, strong vibrations or chock, large and rapid fluctuations in ambient temperature that in combination with high humidity can condensate, strong magnetic and/or radio interference (e.g. transmitting antennae)
- When connecting loads beware of the maximum current for each relay and connector
- Use cable ends suitable for the corresponding connectors. After tightening the screws of connectors, slightly tug the cables to check their tightness
- Use appropriate data communication cables. Refer to the Fieldbus Installation Guide for the kind of cable to be used and setup recommendations
- Reduce the path of the probe and digital inputs cables as much as possible, and avoid spiral paths enclosing power devices. Separate from inductive loads and power cables to avoid possible electromagnetic noises
- Avoid touching or nearly touching the electronic components fitted on the board to avoid electrostatic discharges

TECHNICAL SPECIFICATIONS

POWER SUPPLY

- 20/60Vdc and 24Vac ±15% 50/60Hz. Maximum power consumption: 6W, 9VA
- Insulation between power supply and the extra-low voltage: functional

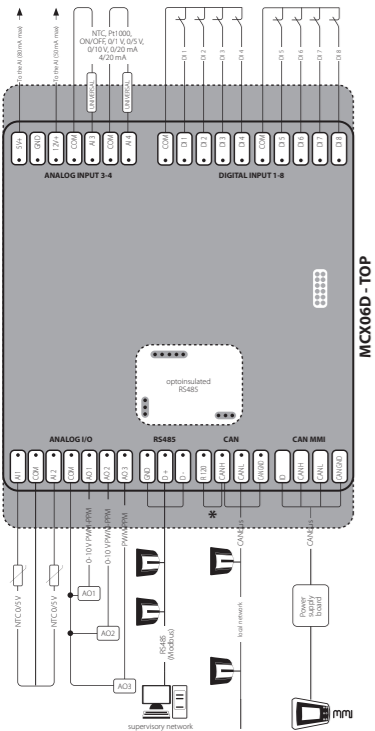
I/O	TYPE	NUMBER	SPECIFICATIONS
Digital outputs	Relay	6	Insulation between relays 1 to 5: functional Insulation between relay 6 and the other relays: reinforced Insulation between relays and the extra-low voltage parts: reinforced Total current load limit: 33A C1-NO1, C2-NO2, C3-NO3, C4-NO4, C5-NO5 Normally open contact relays 5A: - characteristics of each relay: <i>5A 30Vdc / 250Vac for resistive loads - 100.000 cycles</i> <i>0,7A 250Vac for inductive load - 100.000 cycles with cos(phi) = 0,5</i> <i>UL: 250Vac - 3A resistive - 1.5FLA - 9.0LRA - 144VA pilot duty 30.000 cycles</i> NC6-C6-NO6 Changeover contacts relay 8A: - characteristics of each relay: <i>8A 250Vac for resistive loads - 100.000 cycles</i> <i>4A 250Vac for inductive loads - 100.000 cycles with cos(phi) = 0,6</i> <i>UL: 240Vac - 6A resistive - 4.9FLA - 29.4LRA - 470VA pilot duty 30.000 cycles</i>
Digital inputs	Voltage free contact	8	DI1, DI2, DI3, DI4, DI5, DI6, DI7, DI8 Current consumption: 5mA

I/O	TYPE	NUMBER	SPECIFICATIONS
Analog outputs	0/10V, PWM, PPM	2	AO1, AO2 Analog outputs selectable via software between: - pulsing output, synchronous with the line, at modulation of impulse position (PPM) or modulation of impulse width (PWM): <i>open circuit voltage: 6.8V</i> <i>minimum load: 1kΩ</i> - pulsing output, at modulation of impulse position (PPM) with range 100Hz to 500Hz: <i>open circuit voltage: 6.8V</i> <i>minimum load: 1kΩ</i> - 0/10Vdc non optoinsulated output, referred to the ground: <i>10mA maximum loads</i>
	PWM, PPM	1	AO3 Analog outputs selectable via software between: - pulsing output, synchronous with the line, at modulation of impulse position (PPM) or modulation of impulse width (PWM): <i>open circuit voltage: 6.8V</i> <i>minimum load: 1kΩ</i> - pulsing output, at modulation of impulse position (PPM) with range 100Hz to 500Hz: <i>open circuit voltage: 6.8V</i> <i>minimum load: 1kΩ</i>
Analog inputs	NTC, 0/1V, 0/5V	2	A11, A12 Analog inputs selectable via software between: - NTC temperature probes, default: 10kΩ at 25°C - pressure transducers with 0/5V output
	Universal	2	A13, A14 Universal analog inputs selectable via software between: - ON/OFF (current: 20mA) - 0/1V, 0/5V, 0/10V - 0/20mA, 4/20mA - NTC (10kΩ at 25°C) - Pt1000 12V+ power supply 12Vdc, 50mA max for 4/20mA transmitter (total on all outputs) 5V+ power supply 5Vdc, 80mA max for 0/5V transmitter (total on all outputs)

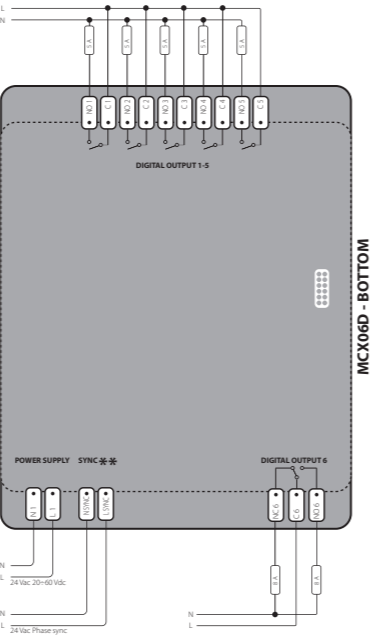
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CONNECTION DIAGRAM

TOP BOARD



BOTTOM BOARD



CONNECTIONS

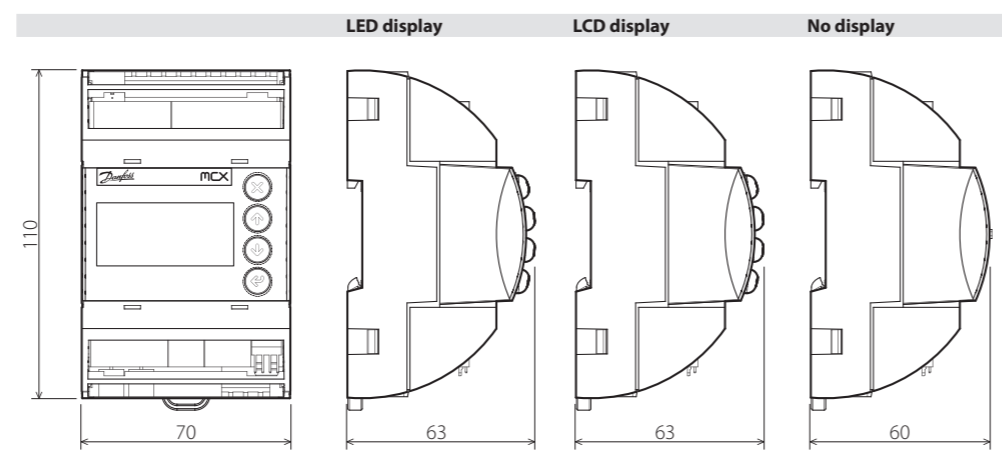
- TOP BOARD**
- Analog input 3-4 connector
 - 7 way screw plug-in connector type pitch 3.5mm: section cable 0.08-1.5mm²
 - Digital input 1-8 connector
 - 10 way screw plug-in connector type pitch 3.5mm: section cable 0.08-1.5mm²
 - Analog I/O connector
 - 7 way screw plug-in connector type pitch 3.5mm: section cable 0.08-1.5mm²
 - RS485 connector
 - 3 way screw plug-in connector type pitch 3.5mm: section cable 0.08-1.5mm²
 - CAN connector
 - 4 way screw plug-in connector type pitch 3.5mm: section cable 0.08-1.5mm²
 - CAN MMI connector
 - 4 way Conexcon 2515 Series type (2515-2041) crimping contact type: Conexcon (2500-2001) section cable AWG22-28 (0.32-0.08mm²) instrument for the crimp type 1190-1298
- BOTTOM BOARD**
- Digital output 1-5 connector
 - 10 way screw plug-in connector type pitch 5mm: section cable 0.2-2.5mm²
 - Power supply connector
 - 2 way screw plug-in connector type pitch 3.5mm: section cable 0.08-1.5mm²
 - Sync connector
 - 2 way screw plug-in connector type pitch 3.5mm: section cable 0.08-1.5mm²
 - Digital output 6 connector
 - 3 way screw plug-in connector type pitch 5mm: section cable 0.2-2.5mm²

*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: when AO is used as synchronised output, the sync input must be in phase with the load on AO



MCX06D electronic controller

DIMENSIONS



USER INTERFACE

- LED DISPLAY**
- type: LED display with two groups of digits and 18 icons
 - colour of digits: green
 - colour of the alarm/warning icons: red
 - color of the other icons: yellow/amber
 - the meaning of the icons and digits is settled by the application software
 - dimensions: 45x17mm
- LCD DISPLAY**
- display mode: STN blue transmissive
 - backlight: white LED backlight adjustable via software
 - display format: 98x64dots
 - active visible area : 29.4x19.2mm
 - contrast: adjustable via software
- KEYBOARD**
- number of keys: 4
 - keys function is settled by the application software

PRODUCT PART NUMBERS

CODE	DESCRIPTION
080G0108	MCX06D, 24V, LED, S
080G0109	MCX06D, 24V, LED, RS485, RTC, S
080G0111	MCX06D, 24V, LCD, S
080G0112	MCX06D, 24V, LCD, RS485, RTC, S
080G0114	MCX06D, 24V, S
080G0115	MCX06D, 24V, RS485, RTC, S

REFRIGERATION & AIR CONDITIONING DIVISION

Programmable PRG | Protection degree IP40 | CAN bus | Graphic display 23.0 → 24.0 °C | Multilanguage | MYK connection | Modbus RS485 485