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Data sheet

Programmable controller Type MCX06D

Danfoss' range of universal MCX programmable controllers offers the functionality and reliability you need to get the best out of your heating, ventilation, air-conditioning and refrigeration (HVAC/R) equipment. With the MCX range, Danfoss is widening the concept of programmability and applying it to as many environments as possible

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 opto-insulated serial interface

Features MCX06D

- 4 analog and 8 digital inputs
- 3 analog and 6 digital outputs
- Power supply 20/60 V DC - 24 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
- Modbus RS485 opto-insulated serial interface
- Available with LED display, graphic LCD display and without display for showing the desired information
- Dimensions 4 DIN modules

General features

FEATURES	DESCRIPTION
Power supply	20/60 V DC and 24 V AC ± 15% 50/60 Hz. Maximum power consumption: 6 W, 9 VA
	Insulation between power supply and the extra-low voltage: functional
Plastic housing	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: ≥ 250 V according to IEC 60112
Operating 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 I
Software class and structure	Class A
Approvals	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 light-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

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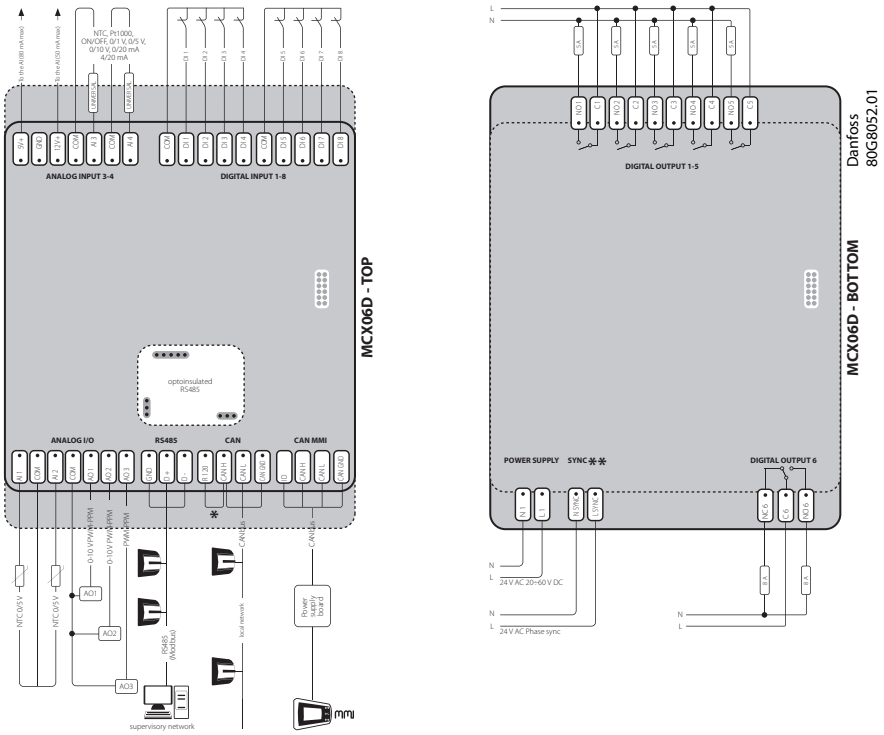
Inputs/outputs

I/O	TYPE	NUM	SPECIFICATIONS
Analog inputs	NTC, 0/1 V, 0/5 V	2	AI1, AI2 Analog inputs selectable via software between: - NTC temperature probes, default: 10 kΩ at 25 °C - pressure transducers with 0/5 V output
	Universal	2	AI3, AI4 Universal analog inputs selectable via software between: - ON/OFF (current: 20 mA) - 0/1 V, 0/5 V, 0/10 V - 0/20 mA, 4/20 mA - NTC (10 kΩ at 25 °C) - Pt1000 12 V+ power supply 12 Vdc, 50 mA max for 4/20 mA transmitter (total on all outputs) 5 V+ power supply 5 Vdc, 80 mA max for 0/5 V transmitter (total on all outputs)
Digital input	Voltage free contact	8	DI1, DI2, DI3, DI4, DI5, DI6, DI7, DI8 Current consumption: 5 mA
Analog outputs	0/10 V, 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): • open circuit voltage: 6.8 V • minimum load: 1 kΩ - pulsing output, at modulation of impulse width (PWM) with range 100 – 500 Hz: • open circuit voltage: 6.8 V • minimum load: 1 kΩ - 0/10 V DC non optoinsulated output, referred to the ground • 10 mA maximum loads
	PWM, PPM	1	AO3 Analog output selectable via software between: - pulsing output, synchronous with the line, at modulation of impulse position (PPM) or modulation of impulse width (PWM): • open circuit voltage: 6.8 V • minimum load: 1 kΩ - pulsing output, at modulation of impulse width (PWM) with range 100 – 500 Hz: • open circuit voltage: 6.8 V • minimum load: 1 kΩ
Digital output	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: 33 A C1-NO1, C2-NO2, C3-NO3, C4-NO4, C5-NO5 Normally open contact relays 5 A - characteristics of each relay: • 5 A 30 V DC / 250 V AC for resistive loads - 100.000 cycles • 0.7 A 250 V AC for inductive load - 100.000 cycles with cos(phi) = 0.5 • UL: 250 V AC - 3 A resistive - 1.5 FLA - 9.0 LRA - 144 VA pilot duty 30.000 cycles NC6-C6-NO6 Changeover contacts relay 8 A - characteristics of each relay: • 8 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 • UL: 240 V AC - 6 A resistive - 4.9 FLA - 29.4 LRA - 470 VA pilot duty 30.000 cycles

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

Connection

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

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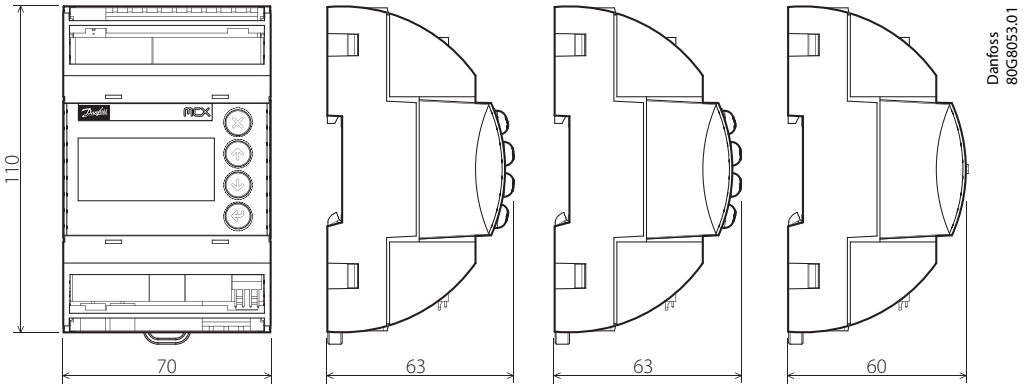
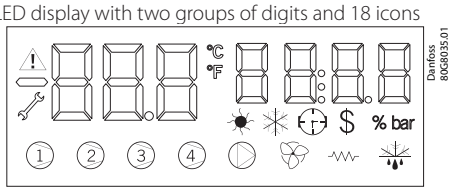
Dimensions



User interface

TYPE	FEATURES	DESCRIPTION
LED display	Display	LED display with two groups of digits and 18 icons 
	Digits	Green colour
	Allarm/warning icons	Red colour
	Other icons	Yellow/amber colour
	Meaning of the icons and digits	Settled by the application software
	Dimensions	45x17 mm
LCD display	Display	STN blue transmissive
	Backlight	White LED backlight adjustable via software
	Contrast	Adjustable via software
	Format	98x64 dots
	Active visible area	29.4x19.2 mm
Keyboard	Number of keys	4
	Keys function	Set by the application software

Ordering

DESCRIPTION	CODE NO.
MCX06D, 24V, LCD, Single Pack	080G0111
MCX06D, 24V, LCD, RS485, RTC, Single Pack	080G0112
MCX06D, 24V, RS485, RTC, Single Pack	080G0115

MCX06D, 24V, LED, RS485, RTC, Industrial Pack (32 pieces)	080G0165
MCX06D, 24V, LCD, Industrial Pack (32 pieces)	080G0166
MCX06D, 24V, LCD, RS485, RTC, Industrial Pack (32 pieces)	080G0167
MCX06D, 24V, Industrial Pack (32 pieces)	080G0168
MCX06D, 24V, RS485, RTC, Industrial Pack (32 pieces)	080G0169

Note: Industrial pack do not include standard kit connectors

Accessory

DESCRIPTION	CODE NO.
MCX06D/EXC06D CONNECTORS KIT	080G0179

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Product	Code	Reference	Product link
MCX06D Elect.Control 24V LCD RS485 I/32	080G0167		Buy on EAN
MCX06D Elect.Control 24V LCD RS485 S	080G0112		Buy on EAN
MCX06D Elect.Control 24V LCD S	080G0111		Buy on EAN
MCX06D Elect.Control 24V RS485 S	080G0115		Buy on EAN
MCX06D Elect.Control 24V RS485 I/32	080G0169		Buy on EAN
MCX06D Elect.Control 24V I/32	080G0168		Buy on EAN
MCX06D Elect.Control 24V LCD I/32	080G0166		Buy on EAN
MCX06D Elect.Control 24V LED RS485 I/32	080G0165		Buy on EAN
ACCCNX Connectors MCX/EXC06D	080G0179		Buy on EAN