ENGINEERING TOMORROW

Data Sheet

Programmable controller, 8 relays
Type **MCX08M2**

Electronic controller suitable for all HVAC/R software application needs.

MCX08M2 is an electronic controller that holds all the typical functionalities of MCX controllers in the compact size of 8 DIN modules:

- Programmability
- Connection to the CANbus local network
- Modbus RS485 opto-insulated serial interface

It is available in the version with or without graphic LCD display, and 110 / 230 V AC or 24 V AC power supply.

Features:

- 8 analog and 8 digital inputs
- 4 analog and 8 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
- Modbus RS485 opto-insulated serial interface
- Dimensions 8 DIN modules
- Available with graphic LCD display and without display for showing the desired information

Portfolio overview

Table 1: Portfolio overview

MCX family	MCX06C	MCX06D	MCX061V	MCX08M2	MCX152V	MCX15B2	MCX20B2
Product image							
Power supply	24 V	24 V	24 V or 110/230 V	24 V or 110/230 V	24 V or 110/230 V	24/110/230 V	24/110/230 V
Built-in display (optional)	LED	LCD	LCD	LCD	LCD	LCD	LCD
Analog Inputs	4	4	7	8	14	10	16
Digital Inputs	6	8	8	8	18	22	22
Analog Outputs	2	3	3	4	6	6	6
Digital Outputs	6	6	6	8	15	15	20
EXV driver embedded			1		2		
RS485	1	1	1	1	2	1	2
CANbus	•	•	•	•	•	•	•
Ethernet / Web server			optional		optional	•	•
USB/Memory Card			•		•	•	•
Dimensions (1 DIN module = 17,5 mm)	33 x 75 mm	4 DIN	8 DIN	8 DIN	16 DIN	16 DIN	16 DIN

Product specification

General features

Table 2: General features

Features	Description
Power supply	85 – 265 V AC, 50/60 Hz. Maximum power consumption: 20 V A Insulation between power supply and the extra-low voltage: reinforced
	20 – 60 V DC and 24 V AC ± 15% 50/60 Hz SELV Maximum power consumption: 10 W, 17 V A 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 II
Software class and structure	Class A

Input/Output

Table 3: Analog inputs

Type	Num	Specifications
NTC 0 / 1 V 0 / 10 V PT1000	4	**AI5, AI6, AI7, AI8** Analog inputs selectable via software between: • 0 / 1 V, 0 / 5 V, 0 / 10 V : impedance is greater than 1 MΩ • NTC (10 kΩ at 25 °C) • Pt1000
Universal	4	**AI1, AI2, AI3, AI4** Universal analog inputs selectable via software between: • ON/OFF (current: 20 mA) • 0 / 1 V, 0 / 5 V, 0 / 10 V : impedance is greater than 1 MΩ • 0 / 20 mA, 4 / 20 mA • NTC (10 kΩ at 25 °C) • Pt1000 12 V+ power supply 12 V DC, 50 mA max for 4 / 20 mA transmitter (total on all outputs) 5 V+ power supply 5 V DC, 80 mA max for 0 / 5 V transmitter (total on all outputs)

Table 4: Digital inputs

Type	Num	Specifications
Voltage free contacts	8	**DI1, DI2, DI3, DI4, DI5, DI6, DI7, DI8** Current consumption: 5 mA

Table 5: Analog outputs

Type	Num	Specifications
0 / 10 V DC optoins	2	**AO3, AO4** Analog outputs optoinsulated 0 / 10 V DC minimum load 1 kΩ (10 mA) for each output
PWM PPM 0 / 10 V DC	2	**AO1, AO2** Analog outputs selectable via software between: • 0 / 10 V DC minimum load 1 kΩ (10 mA) for each output • pulsing output, synchronous with the line, at modulation of impulse position (PPM) or modulation of impulse width (PWM) • pulsing output, at modulation of impulse width (PWM) with range 20 Hz to 1 KHz: open circuit voltage: 6.8 V

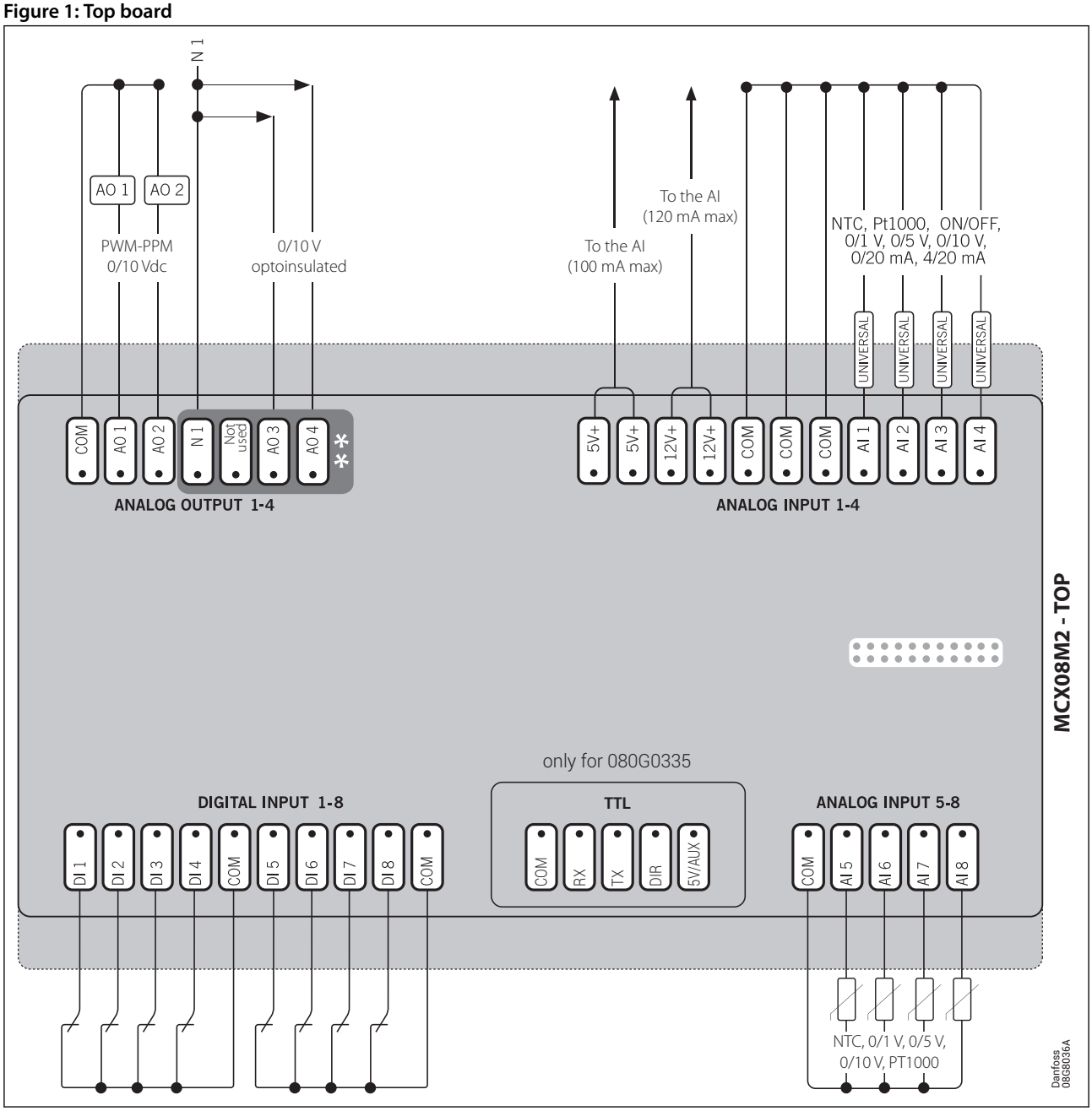
Table 6: Digital outputs

Type	Num	Specifications
Relay	8	Insulation between relay: functional Insulation between relays and the extra-low voltage parts: reinforced Total current load limit: 32 A **C1-NO1, C2-NO2** High inrush current (80 A - 20 ms) normally open contact relays 16 A Characteristics of each relay: • 10 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 **C5-NO5, C6-NO6** 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 inductive loads - 100.000 cycles with cos(phi) = 0.6 Option for code 080G0314: • SPST SSR type • 0.5 A 250 V AC resistive load (115 W) **C3-NO3-NC3, C4-NO4-NC4, C7-NO7-NC7, C8-NO8-NC8** 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

Connection diagram

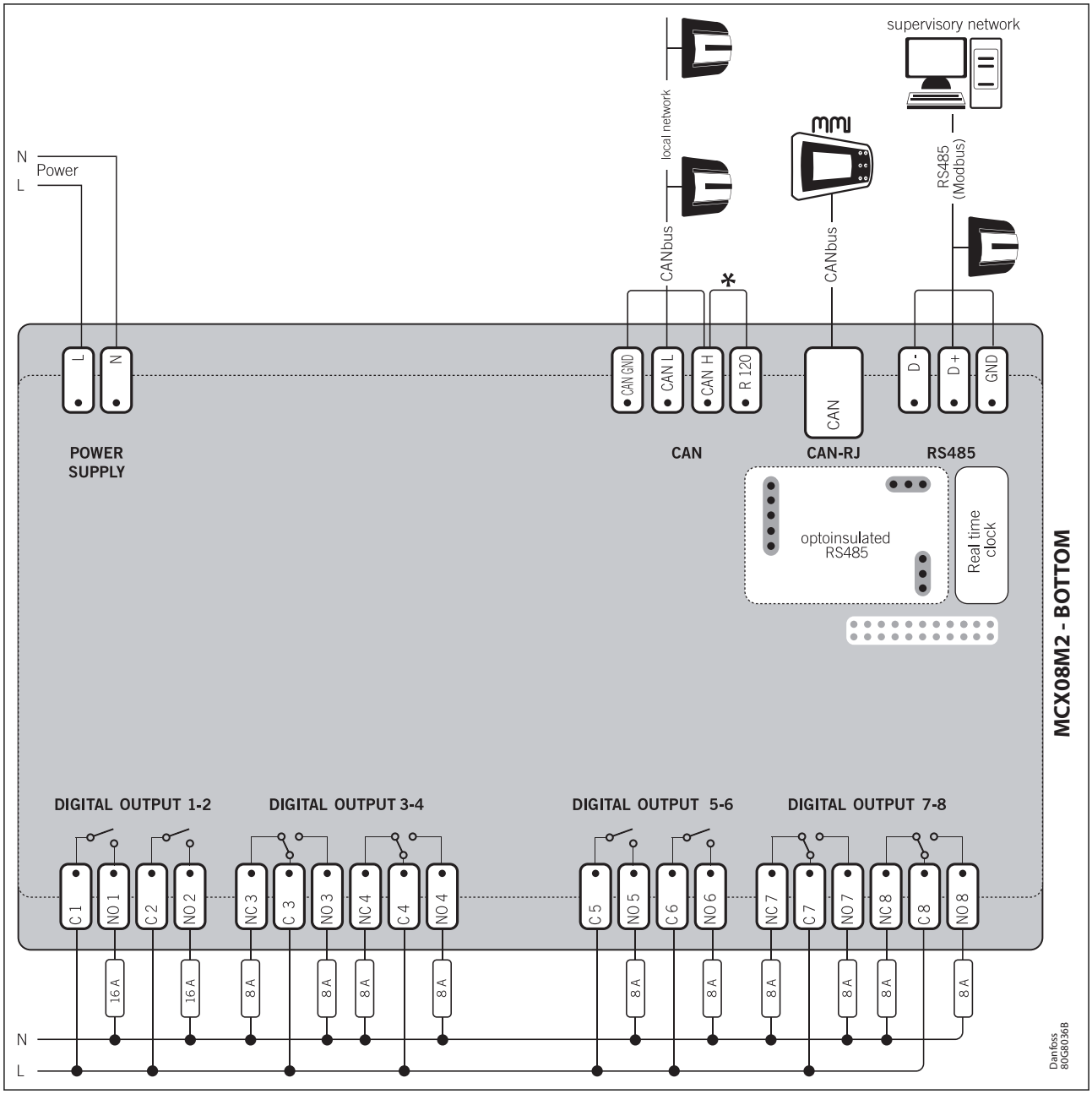
Top board

Figure 1: Top board



Bottom board

Figure 2: Bottom board



NOTE:

*Connection has to be made on the first and last local network units, make the connection as close as possible to the connector.

**Optoinsulated analog outputs voltages are referenced to contact N1.

Connection

Table 7: Top board

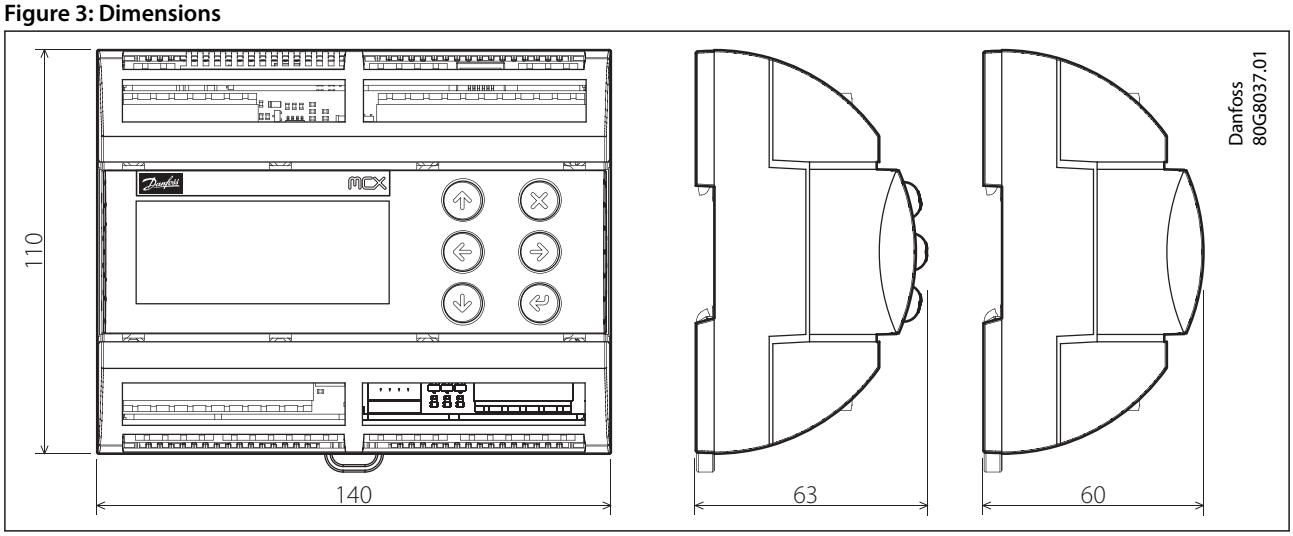
Connectors	Type	Dimensions
Analog output 1-4 connector	7 way screw plug-in connector type	• pitch 5 mm • section cable 0.2 – 2.5 mm²
Analog input 1-4 connector	11 way screw plug-in connector type	• pitch 5 mm • section cable 0.2 – 2.5 mm²
Digital input 1-8 connector	10 way screw plug-in connector type	• pitch 5 mm • section cable 0.2 – 2.5 mm²
Analog input 5-8 connector	5 way screw plug-in connector type	• pitch 5 mm • section cable 0.2 – 2.5 mm²
TTL connector (only for 080G0335)	5 way spring plug-in connector type	• pitch 2.5 mm • section cable 0.2 – 0.5 mm²

Table 8: Bottom board

Connectors	Type	Dimensions
Power supply connector	2 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 connector	6/6 way telephone RJ12 plug type	
RS485 connector	3 way screw plug-in connector type	• pitch 5 mm • section cable 0.2 – 2.5 mm²
Digital output 1-2 connector	4 way screw plug-in connector type	• pitch 5 mm • section cable 0.2 – 2.5 mm²
Digital output 3-4 connector	6 way screw plug-in connector type	• pitch 5 mm • section cable 0.2 – 2.5 mm²
Digital output 5-6 connector	4 way screw plug-in connector type	• pitch 5 mm • section cable 0.2 – 2.5 mm²
Digital output 7-8 connector	6 way spring-cage plug-in connector type	• pitch 5 mm • section cable 0.2 – 2.5 mm²

Dimensions

Figure 3: Dimensions



Ordering

Product part numbers

Table 9: Product part numbers

Description	Code No.
MCX08M2, 24 V, RS485, RTC, Single Pack	080G0293
MCX08M2, 230 V, LCD, RS485, RTC, Single Pack	080G0307
MCX08M2, 24 V, LCD, RS485, RTC, Single Pack	080G0310
MCX08M2, 24 V, RS485, RTC, Industrial Pack (24 pieces)	080G0303
MCX08M2, 230 V, RS485, RTC, 2SSR, Industrial Pack (24 pieces)[1]	080G0314
MCX08M2, 24 V, LCD, RS485, RTC, Industrial Pack (24 pieces)	080G0315
MCX08M2, 230 V, RS485, RTC, Industrial Pack (24 pieces)	080G0316
MCX08M2, 230 V, LCD, RS485, TTL, Single Pack	080G0335

[1] 080G0314 is available in Industrial Pack only. The corresponding Single Pack version is 080G0317 but cannot be ordered singularly.

Accessories part numbers

Table 10: Accessories part numbers

Description	Code No.
MCX08M Connectors Kit	080G0180

NOTE:
Single Pack codes include standard connectors kit, Industrial Pack code don't include standard connectors kit.

Certificates, declarations, and approvals

The list contains all certificates, declarations, and approvals for this product type. Individual code number may have some or all of these approvals, and certain local approvals may not appear on the list.

Some approvals may change over time. You can check the most current status at danfoss.com or contact your local Danfoss representative if you have any questions.

Table 11: Certificates, declarations, and approvals

File name	Document type	Document topic	Approval authority
080R2086.02	EU Declaration of conformity	**EMC directive 2014/30/EU:** EN61000-6-3: 2007 +A1:2011 EN61000-6-2: 2005 **LVD directive 2014/35/EU:** EN60730-1: 2011 EN60730-2-9: 2010 **RoHS directive 2011/65/EU and 2015/863/EU:** EN 50581: 2012	Danfoss
UL E31024	Electrical - Safety Certificate	–	UL

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