

## Data Sheet

# Programmable controller, 6 relays

## Type **MCX06C**

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



MCX06C is an electronic controller that holds all the typical functionalities of MCX controllers in the 32 x 74 mm standard size:

- programmability
- connection to the CANbus local network
- Modbus RS485 serial interface

**Features:**

- 4 analog and 6 digital inputs
- 2 analog and 6 digital outputs
- Insulated power supply 20 / 60 V DC - 24 V AC
- Easy upload of application software through CANbus connection for programming key
- 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 serial interface
- Display LED with 2 groups of digits for showing the desired information in one screen
- Dimensions 33 x 75 mm
- Panel mounting

**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	20 / 60 V DC and 24 V AC $\pm$ 15% 50/60 Hz SELV Maximum power consumption: 6 W, 9 VA Insulation between power supply and the extra-low voltage: functional
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: $\geq$ 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	IP64 ~ NEMA3R 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 / 5 V	2	<b>AI1, AI2</b> Analog inputs selectable via software between: <ul style="list-style-type: none"> <li>• NTC temperature probes, default: 10 k<math>\Omega</math> at 25 °C</li> <li>• Pressure transducers with 0/5 V output</li> <li>• 0/5V type: impedance is 18 k<math>\Omega</math></li> </ul>
Universal	2	<b>AI3, AI4</b> Universal analog inputs selectable via software between: <ul style="list-style-type: none"> <li>• ON/OFF (current: 20 mA)</li> <li>• 0 / 1 V, 0 / 5 V, 0 / 10 V</li> <li>• 0 / 20 mA, 4 / 20 mA</li> <li>• NTC (10 k<math>\Omega</math> at 25 °C)</li> <li>• Pt1000</li> </ul> 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) 0/5V type: impedance is 18 k $\Omega$ 0/10V type: impedance is 2 k $\Omega$

Table 4: Digital inputs

Type	Num	Specifications
Voltage free contact	6	<b>DI1, DI2, DI3, DI4, DI5, DI6</b> Current consumption: 5 mA

Table 5: Analog outputs

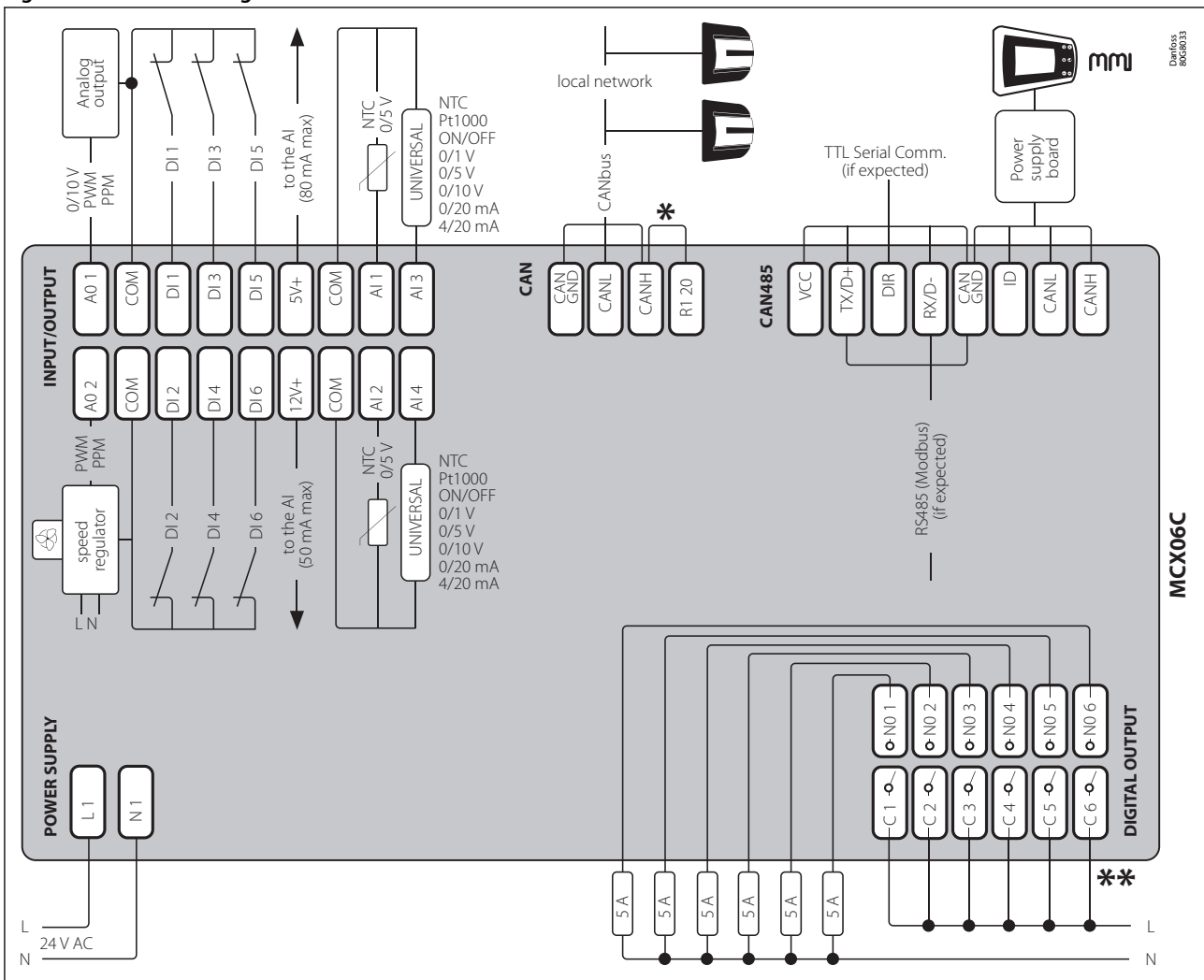
Type	Num	Specifications
0 / 10 V PWM PPM	1	<b>AO1</b> Analog output selectable via software between: <ul style="list-style-type: none"> <li>• pulsing output, synchronous with the line, at modulation of impulse position (PPM) or modulation of impulse width (PWM):               <ul style="list-style-type: none"> <li>◦ open circuit voltage: 6.8 V</li> <li>◦ minimum load: 1 k<math>\Omega</math></li> </ul> </li> <li>• pulsing output, at modulation of impulse width (PWM) with range 100 – 500 Hz:               <ul style="list-style-type: none"> <li>◦ open circuit voltage: 6.8 V</li> <li>◦ minimum load: 1 k<math>\Omega</math></li> </ul> </li> <li>• 0 / 10 V DC non optoinsulated output, referred to the ground               <ul style="list-style-type: none"> <li>◦ minimum load 1 k<math>\Omega</math> (10 mA)</li> </ul> </li> </ul>
PWM PPM	1	<b>AO2</b> Analog output selectable via software between: <ul style="list-style-type: none"> <li>• pulsing output, synchronous with the line, at modulation of impulse position (PPM) or modulation of impulse width (PWM):               <ul style="list-style-type: none"> <li>◦ open circuit voltage: 6.8 V</li> <li>◦ minimum load 1 k<math>\Omega</math> (10 mA)</li> </ul> </li> <li>• pulsing output, at modulation of impulse width (PWM) with range 100 – 500 Hz:               <ul style="list-style-type: none"> <li>◦ open circuit voltage: 6.8 V</li> <li>◦ minimum load 1 k<math>\Omega</math> (10 mA)</li> </ul> </li> </ul>

Table 6: Digital outputs

Type	Num	Specifications
Relay	6	Insulation between relays: functional (common lines internally connected) Insulation between relays and the extra-low voltage parts: reinforced Total current load limit: 6 A <b>C1-NO1, C2-NO2, C3-NO3, C4-NO4, C5-NO5, C6-NO6</b> Normally open contact relays Characteristics of each relay: <ul style="list-style-type: none"> <li>• 4 A 30 V DC / 250 V AC for resistive load - 100.000 cycles</li> <li>• 0.7 A 250 V AC for inductive load - 100.000 cycles with <math>\cos(\phi) = 0.5</math></li> <li>• UL: 240 V AC - 1 A resistive - 1.0 FLA - 6.0 LRA - 96 V A pilot duty 30.000 cycles</li> </ul>

## Connection diagram

Figure 1: 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.

\*\* C1, C2, C3, C4, C5, C6 internally connected between themselves.

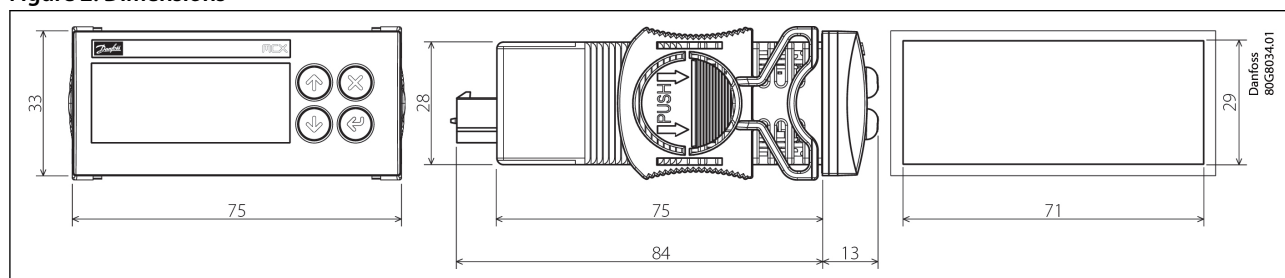
## Connection

Table 7: Connection

Connectors	Type	Dimensions
Input and output connector	18 way Molex Microfit type (43025-1800) crimping contact type	<ul style="list-style-type: none"> <li>Molex: (43030-0001) section cable AWG20-24 (0.52 – 0.20 mm<sup>2</sup>)</li> <li>Molex: (43030-0004) section cable AWG26-30 (0.13 – 0.05 mm<sup>2</sup>)</li> <li>Instrument for the Molex crimp code 69008-0982 (20-24 AWG)</li> <li>Instrument for the Molex crimp code 69008-0983 (26-30 AWG)</li> </ul>
CAN connector	4 way Molex Wire-to-board type (87369-0400) crimping contact type	<ul style="list-style-type: none"> <li>Molex: (50212-8000) section cable AWG24-30 (0.20 – 0.05 mm<sup>2</sup>)</li> <li>Instrument for the Molex crimp code 63811-1200</li> </ul>
CAN / 485 connector	8 way Molex Wire-to-board type (87369-0800) crimping contact type	<ul style="list-style-type: none"> <li>Molex: (50212-8000) section cable AWG24-30 (0.20 – 0.05 mm<sup>2</sup>)</li> <li>Instrument for the Molex crimp code 63811-1200</li> </ul>
Power supply connector	2 way Molex KK type (09-50-8021) crimping contact type	<ul style="list-style-type: none"> <li>Molex: (08-50-0105) section cable AWG18-24 (0.82 – 0.20 mm<sup>2</sup>)</li> <li>Molex: (08-50-0107) section cable AWG22-26 (0.32 – 0.13 mm<sup>2</sup>)</li> <li>Instrument for the Molex crimp code 69008-0953</li> </ul>
Digital output 1-6 connector	12 way Molex Minifit Jr. type (39-01-2125) crimping contact type	<ul style="list-style-type: none"> <li>Molex: (39-00-0077) section cable AWG16 (1.30 mm<sup>2</sup>)</li> <li>Molex: (39-00-0038) section cable AWG18-24 (0.82 – 0.20 mm<sup>2</sup>)</li> <li>Molex: (39-00-0046) section cable AWG22-28 (0.32 – 0.08 mm<sup>2</sup>)</li> <li>Instrument for the Molex crimp code 69008-0724</li> </ul>

## Dimensions

Figure 2: Dimensions



## User interface

Figure 3: Display

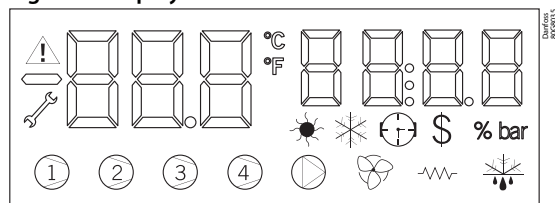


Table 8: User interface

Type	Features	Description
LCD display	Digits	Green colour
	Alarm/warning icons	Red colour
	Other icons	Yellow / amber colour
	Meaning of the icons and digits	Settled by the application software
	Dimensions	45 x 17 mm
Keyboard	Number of keys	4
	Keys function	Set by the application software

## Ordering

### Product part numbers

Table 9: Product part numbers

Description	Code No.
MCX06C, 24 V, LED, RS485, RTC, S	080G0066
MCX06C, 24 V, LED, RS485, RTC, I (36 pieces)	080G0107

**i NOTE:**

Single pack codes (S) don't include standard kit connectors, industrial pack codes (I) don't include standard kit connectors.

### Accessories part number

Table 10: Accessories part number

Description	Code No.
MCX06C Connectors Kit	080G0175
ACCCNX, Wired Connectors Kit for MCX06C, 1 m Cable	080G0081
ACCCNX, Wired Connectors Kit for MCX06C, 2 m Cable	080G0082

## 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
080R2097.01	EU Declaration of conformity	<b>EMC directive 2014/30/EU:</b> EN61000-6-3: 2007 +A1:2011 EN61000-6-2: 2005 <b>LVD directive 2014/35/EU:</b> EN60730-1: 2011 EN60730-2-9: 2010 <b>RoHS directive 2011/65/EU and 2015/863/EU:</b> EN 50581: 2012	Danfoss
UL E31024	Electrical - Safety Certificate	-	UL

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