



Technical brochure

# Programmable controller MCX061V



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

MCX061V is a standard MCX electronic controller with integrated superheat algorithm and one electronic expansion valve driver. It is available in the version with or without graphic LCD display, and 110-230 Vac or 24 Vac power supply. It 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 moreover fitted with a slot for memory card and Ethernet connection.

## Features MCX061V

- 7 analog and 8 digital inputs
- 3 analog and 6 digital outputs
- Power supply 24 Vac and 110 V/230 Vac
- Drives bipolar and unipolar electronic expansion valves
- MMC card slot for easy software upload and datalogging
- Remote access to data through CANbus connection for additional display and keyboard
- RTC clock for managing weekly time programs and data logging information
- Ethernet / WebServer option
- Modbus RS485 opto-insulated serial interface
- Available with graphic LCD display and without display for showing the desired information
- Dimensions 8 DIN modules



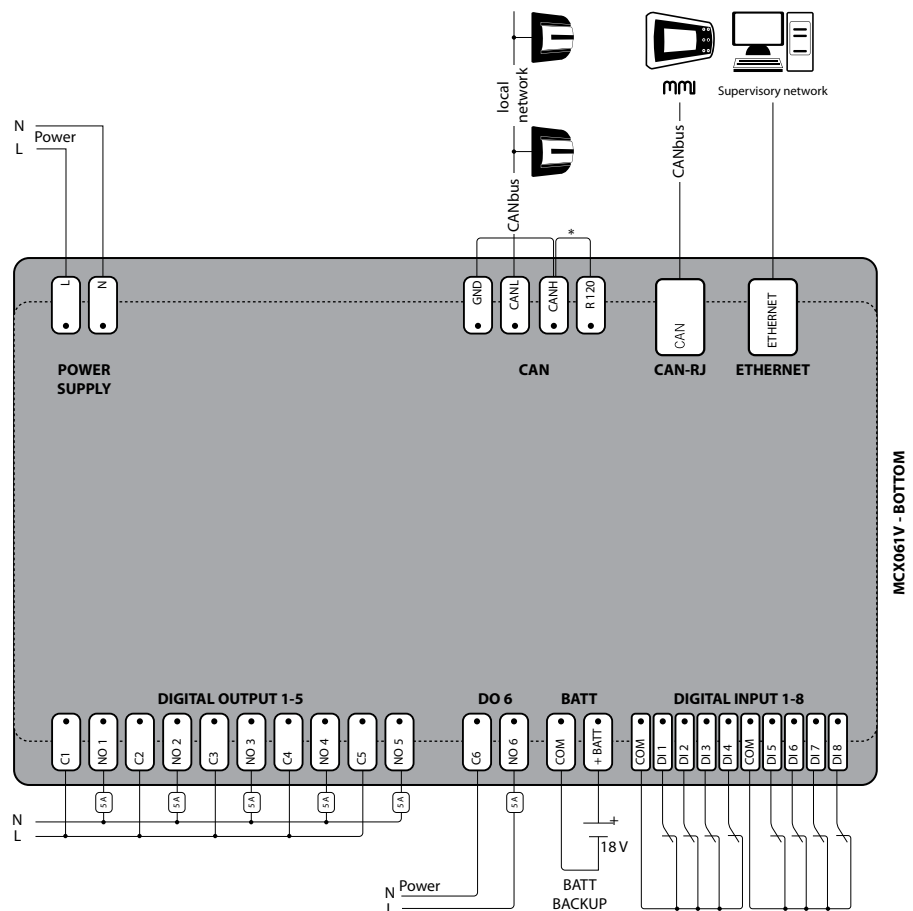
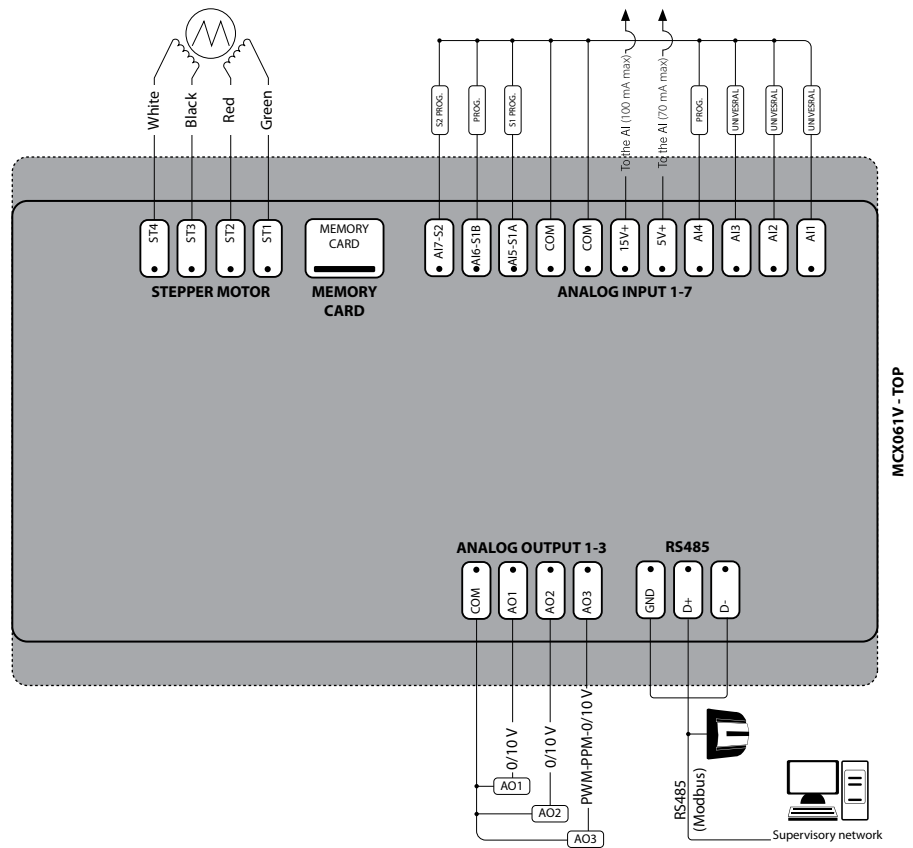
**General features**

FEATURES	DESCRIPTION
Power supply	85 Vac to 265 Vac, 50-60 Hz. Maximum power consumption: 18 W, 27 VA. Insulation between power supply and the extra-low voltage: reinforced
	24 Vac $\pm$ 15% 50/60 Hz. Maximum power consumption: 18 W, 22 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: $\geq$ 250 V according to IEC 60112
Operating conditions	CE: -20T55, 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 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: <ul style="list-style-type: none"> <li>• EN61000-6-1, EN61000-6-3 (immunity for residential, commercial and light-industrial environments)</li> <li>• EN61000-6-2, EN61000-6-4 (immunity and emission standard for industrial environments)</li> <li>• EN60730 (Automatic electrical controls for household and similar use)</li> </ul>

**Inputs/outputs**

I/O	TYPE	NUM	SPECIFICATIONS
Analog inputs			Max 15 V input voltage Do not connect voltage sources without current limitation (overall 80 mA) to analog inputs while unit is not powered. Open circuit HW diagnostics available for voltage input on : ANIN1,2,3,4,6
	0/1 V, 0/5 V, 0/10 V	7	AI1, AI2, AI3, AI4, AI5, AI6, AI7 0/1 V, 0/5 V, 0/10 V
	NTC	5	AI1, AI2, AI3, AI4, AI6, NTC temperature probes, default: 10 kΩ at 25 °C
	0/20 mA; 4/20 mA	6	AI1, AI2, AI3, AI4, AI5, AI6, 0/20 mA; 4/20 mA
	Pt1000	4	AI1, AI2, AI3, AI7 Pt1000
	Differential input	1	AI5(-),AI6(+) Differential input, DM Voltage 0..300 mV; CM voltage max 14 V
Auxiliary Supplies	2	15 V+ and 5 V+ 5 V+ max: 70 mA 15 V+ max: 100 mA	
Digital input	Voltage free contacts	8	DI1 (Frequency input) min. pulse time 2.5 ms DI2, DI3, DI4, DI5, DI6, DI7, DI8 Min pulse time 64 ms
Analog outputs	0/10 Vdc	2	AO1, AO2 Current max: 10 mA
	0/10 V, PWM, PPM	1	AO3 Current max: 10 mA - pulse output, synchronous with mains, at modulation of impulse position (PPM) or modulation of impulse width (PWM): 6.8 V open circuit - pulse output, PWM with range from 1 Hz to 1000 Hz: 6.8 V open circuit
Digital output	Relay	6	C1-NO1, C2-NO2, C3-NO3, C4-NO4, C5-NO5 Functional Isolation Normally open contact relays 5 A - characteristics of each relay: <ul style="list-style-type: none"> <li>• 5 A 30 Vdc / 250 Vac for resistive loads - 100.000 cycles</li> <li>• 0.7 A 250 Vac for inductive load - 100.000 cycles with cos(phi) = 0.5</li> </ul> C6-NO6 Functional Isolation Normally open contact relays 5 A - characteristics of each relay: <ul style="list-style-type: none"> <li>• 5 A 30 Vdc / 250 Vac for resistive loads - 100.000 cycles</li> <li>• 0.7 A 250 Vac for inductive load - 100.000 cycles with cos(phi) = 0.5</li> </ul> Reinforced isolation (with respect to DO1..DO5)
Stepper motor		1	ST1, ST2, ST3, ST4 Bipolar and unipolar stepper motor output: - Danfoss ETS Valves - Saginomyia UKV/SKV/VKV/PKV - other Valves: <ul style="list-style-type: none"> <li>• drive mode 1/8 microstep</li> <li>• peak phase current: 500 mA</li> <li>• max drive voltage 30 V</li> <li>• max. output power 4.6 W</li> </ul>
Battery backup		1	BATT 18-24 Vdc: - leakage current max. 12 μA - max. battery current: 0.5 A @18 V
Mem. card		1	MMC Max 2 GB: - for data logging make sure that the memory card is firm in place - avoid installations with vibrations

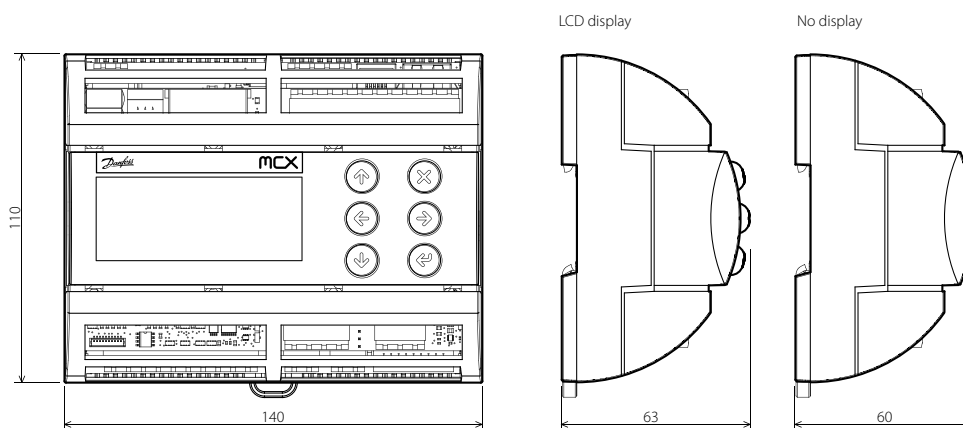
**Connection diagram:  
top and bottom board**



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

**Connection**

CONNECTORS	TYPE	DIMENSIONS
<b>TOP BOARD</b>		
Stepper motor connector	4 screw plug-in connector type	- pitch 2.5 mm - section cable 0.2-1.5 mm <sup>2</sup>
Memory card connector	MMC card slot	
Analog input 1-7 connector	11 way screw plug-in connector type	- pitch 5 mm - section cable 0.2-2.5 mm <sup>2</sup>
Analog output 1-3 connector	4 way screw plug-in connector type	- pitch 5 mm - section cable 0.2-2.5 mm <sup>2</sup>
RS485 connector	3 way screw plug-in connector type	- pitch 5 mm - section cable 0.2-2.5 mm <sup>2</sup>
<b>BOTTOM BOARD</b>		
Power supply connector	2 way screw plug-in connector type	- pitch 5 mm - section cable 0.2-2.5 mm <sup>2</sup>
CAN connector	4 way screw plug-in connector type	- pitch 5 mm - section cable 0.2-2.5 mm <sup>2</sup>
CAN-RJ connector	6/6 way telephone RJ11 plug type	
Ethernet connector	8/8 way RJ45 plug type	
Digital output 1-5 connector	10 way screw plug-in connector type	- pitch 5 mm - section cable 0.2-2.5 mm <sup>2</sup>
Digital output 6 connector	2 way screw plug-in connector type	- pitch 5 mm - section cable 0.2-2.5 mm <sup>2</sup>
Batt connector	2 way screw plug-in connector type	- pitch 5 mm - section cable 0.2-2.5 mm <sup>2</sup>
Digital output 1-8 connector	10 way screw plug-in connector type	- pitch 2.5 mm - section cable 0.2-1.5 mm <sup>2</sup>

**Dimensions**


## MCX061V

### User interface

TYPE	FEATURES	DESCRIPTION
LCD display	Display	STN blue transmissive
	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	Settled by the application software

### Ordering

DESCRIPTION	CODE NR.
MCX061V, 230V, LCD, RTC, S	080G0248
MCX061V, 24V, LCD, RTC, S	080G0249
MCX061V, 230V, LCD, RS485, RTC, S	080G0250
MCX061V, 24V, LCD, RS485, RTC, S	080G0251
MCX061V, 230V, LCD, RS485, RTC, ETH, S	080G0254
MCX061V, 24V, LCD, RS485, RTC, ETH, S	080G0255

MCX061V, 230V, RTC, S	080G0244
MCX061V, 24V, RTC, S	080G0245
MCX061V, 230V, RS485, RTC, S	080G0246
MCX061V, 24V, RS485, RTC, S	080G0247
MCX061V, 230V, RS485, RTC, ETH, S	080G0252
MCX061V, 24V, RS485, RTC, ETH, S	080G0253

*(S): Single Pack*

*Note: Single pack include standard kit connectors*

*Industrial pack codes are available on request (these do not include standard kit connectors)*

### Accessory

DESCRIPTION	CODE NR.
MCX061V CONNECTORS KIT	080G0268