

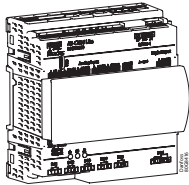
Installation Guide

Programmable controller Type AS-CX06

080R6005

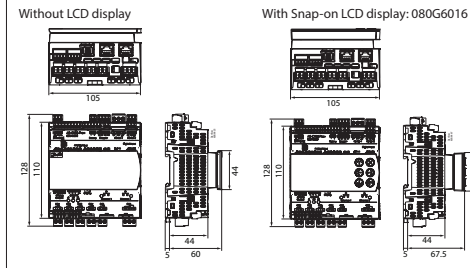
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1. Identification



AS-CX06 Lite	080G6008
AS-CX06 Mid	080G6006
AS-CX06 Mid SSR	080G6040
AS-CX06 Mid+	080G6004
AS-CX06 Mid+ SSR	080G6038
AS-CX06 Pro	080G6002
AS-CX06 Pro+	080G6000

2. Dimensions

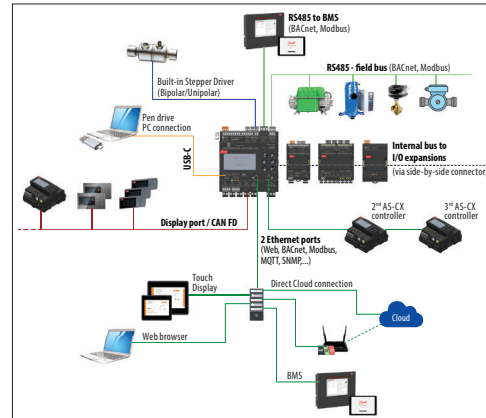


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AN431124439347en-001001 | 1

3. Connections

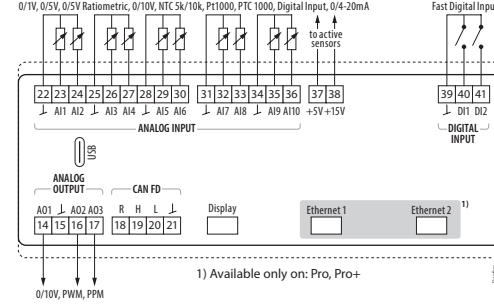
System connections



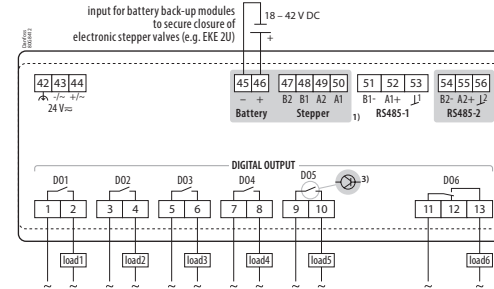
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Top Board

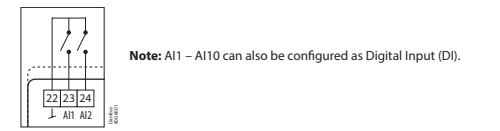


Bottom Board



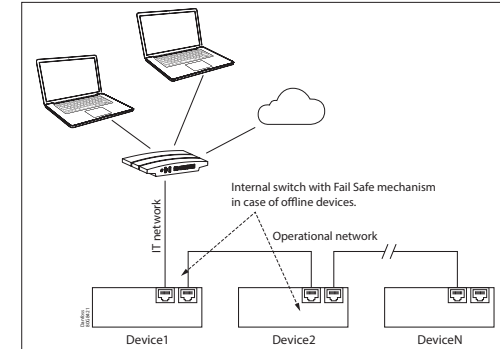
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AN431124439347en-001001 | 3



4. Data communication

Ethernet (only for Pro and Pro+ versions)



Point to point star topology with network hubs/switches. Each AS-CX device incorporates a switch with fail-safe technology.

- Ethernet type: 10/100TX auto MDI-X
- Cable type: CAT5 cable, 100 m max.
- Cable type connector: RJ45

First access information

To access the web front-end interface of the device, enter the assigned IP address into the address bar of a standard web browser.

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AN431124439347en-001001 | 4

The IP address allocation depends on the connection method:

- Ethernet Connection:** By default, the device obtains its IP address automatically via DHCP. To determine the assigned IP address, press ENTER on the device keypad to access the Default Settings Menu, then navigate to Ethernet Settings.
- USB Connection (RNDIS CDC ECM - Ethernet-over-USB service, enabled by default):** When the device is connected via USB, a network interface is automatically established between the PC and the device, requiring no additional configuration. The device can be accessed using the static IP address 169.254.255.253 or the hostname AS-CX06.local.

Upon connection, the browser will redirect to the login interface. Use the following factory-default credentials:

- Username: *Admin*, Password: *Administrator*
- Numeric Password (LCD interface only): 12345

After the initial successful login, the system will enforce a password change procedure.

Important: Forgotten passwords cannot be retrieved.

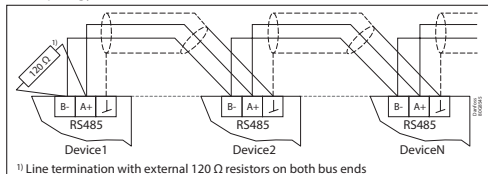
RS485: Modbus, BACnet

RS485 ports are isolated and can be configured as client or server. They are used for fieldbus and BMS systems communication.

Cable type recommendations:

- Twisted pair with ground: short leads (i.e. <10 m), no power lines in proximity (min. 10 cm).
- Twisted pair + ground and shield: long leads (i.e. >10 m), EMC-disturbed environment.

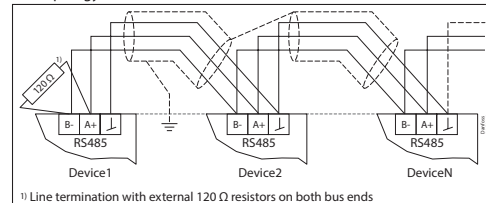
Bus topology: Two wires + shield



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Bus topology: Three wires + shield



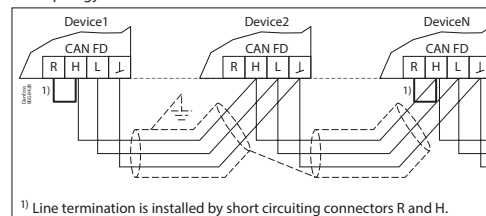
Max. number of nodes: up to 100

Wire length (m)	Max. baudrate	Min. wire size
1000	125 kbit/s	0.33 mm ² - 22 AWG

CAN FD

CAN FD communication is used for device-to-device communication. It is also used to connect Alsmat® remote HMI via display port.

Bus topology



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AN431124439347en-001001 | 6

Cable type recommendations:

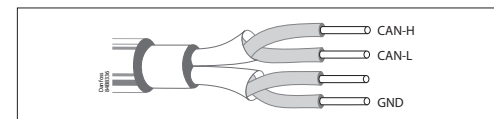
- Twisted pair with ground: short leads (i.e. <10 m), no power lines in proximity (min. 10 cm).
- Twisted pair + ground and shield: long leads (i.e. >10 m), EMC-disturbed environment

Max. number of nodes: up to 100

Wire length (m)	Max. baudrate CAN	Min. wire size
1000	50 kbit/s	0.83 mm ² - 18 AWG
500	125 kbit/s	0.33 mm ² - 22 AWG
250	250 kbit/s	0.21 mm ² - 24 AWG
80	500 kbit/s	0.13 mm ² - 26 AWG
30	1 Mbit/s	0.13 mm ² - 26 AWG

Installation of RS485 and CAN FD

- Both fieldbuses are of two wire differential type, and it is fundamental for reliable communication to connect all the units in a network also with a ground wire.
- It is recommended to use one twisted pair of wires for connecting the differential signals and use another wire (for example a second twisted pair) for connecting the ground. For example:



- The line termination must be present on both bus ends to ensure proper communication.

The line termination can be installed in two different ways:

- Make a short circuit on CAN-FD H and R terminals (only for CANbus);
- Connect a 120 Ω resistor between CAN-FD H and L terminals for the CANbus or A+ and B- for RS485.

- The installation of the data communication cable must be performed correctly with sufficient distance to high voltage cables.

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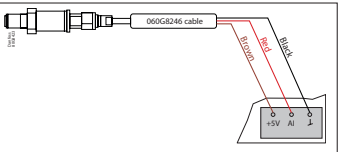
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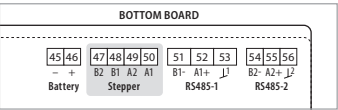
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Pressure transmitter info

Example: DST P110 with ratio-metric output



ETS Stepper Valve info



Valve cable connection

Maximum cable length: 30 m

CCMT / ETS Colibri® / KVS Colibri® / ETS / KVS

Valve model			
		ETS 5M, ETS 8M, ETS 6	ETS, KVS, Colibri®, CCMT
AS-CX terminals	A1	Orange	White
	A2	Yellow	Black
	B1	Red	Red
	B2	Black	Green
		Valve cable	Danfoss M12 cable

5. Technical data

Electrical specifications

Electrical data	Value
Supply voltage AC/DC [V]	24 V AC/DC, 50/60 Hz ⁽¹⁾⁽²⁾
Power supply [W]	30 W, min. 60 V A if transformer used ⁽³⁾
Electrical cable dimensioning [mm²]	0.2 – 2.5 mm² for 5 mm pitch connectors 0.14 – 1.5 mm² for 3.5 mm pitch connectors

⁽¹⁾ A higher DC voltage can be applied if the control is installed in an application where the manufacturer declares a reference standard and a voltage level for accessible SELV/PELV circuits to be considered non-hazardous by the application standard. That voltage level can be used as power supply input though 60 V DC must not be exceeded.

⁽²⁾ US: Class 2 < 100 VA

⁽³⁾ In short circuit condition DC power supply must be capable of supplying 7 A min. and 50 A max.

Input/Output specifications

Maximum cable length: 30m

Analog input: A11, A12, A13, A14, A15, A16, A17, A18, A19, A110

Type	Feature	Data
0/4-20 mA	Accuracy	± 0.5% FS
	Resolution	1 µA
0/5 V Ratiometric		Relative to 5 V DC internal supply (10 – 90 %)
	Accuracy	±0.4% FS
	Resolution	1 mV
0 – 1 V 0 – 5 V 0 – 10 V	Accuracy	±0.5% FS (FS intended specifically for each type)
	Resolution	1 mV
	Input resistance	>100 kΩ
Pt1000	Meas. range	-60 to +180 °C
	Accuracy ⁽⁴⁾	±0.7 K [-20 to +60 °C], ±1 K otherwise
	Resolution	0.1 K

PTC1000 (PTC 990 Ω at 25 °C, e.g. EKS 111)	Meas. range	-60 to +80 °C
	Accuracy ⁽⁶⁾	±0.7 K [-20 to +60 °C], ±1 K otherwise
	Resolution	0.1 K
NTC10k (beta 3435 at 25/85 °C, e.g. EKS 221)	Meas. range	-50 to +160 °C
	Accuracy	± 1 K [-30 to +160 °C]
	Resolution	0.1 K
NTC5k (beta 3980 at 25/100 °C, e.g. EKS 211)	Meas. range	-50 to +120 °C
	Accuracy	± 1 K [-35 to +120 °C]
	Resolution	0.1 K
Digital Input	Stimulation	Voltage free contact
	Contact cleaning	20 mA
	Other feature	Pulse counting function 150 ms debounce time

⁽⁴⁾ For controller ambient temperature [-20 to +60 °C].

Digital input: DI1, DI2

Type	Feature	Data
Voltage free	Stimulation	Voltage free contact
	Contact cleaning	20 mA
	Other feature	Pulse counting function max. 2 kHz

Analog output: AO1, AO2, AO3

Type	Feature	Data
Voltage free	Max. load per each output	15 mA
0 – 10 V	Accuracy	Source: 0.5% FS Sink 0.5% FS for Vout > 0.5 V 2% FS whole range (I<=1mA)
	Resolution	0.1% FS
Async PWM	Voltage output	Vout_Lo Max = 0.5 V Vout_Hi Min = 9 – 15 V
	Frequency range	15 Hz – 2 kHz
	Accuracy	1% FS
	Resolution	0.1% FS

Sync PWM/PPM	Voltage output	Vout_Lo Max = 0.5 V Vout_Hi Min = 9 – 15 V
	Frequency	Mains frequency x 2
	Resolution	0.1% FS

Digital output

Type	Data
DO1, DO2, DO3, DO4, DO5	
Relay	SPST 3 A, 250 V AC, 50k cycles, resistive load 2 A, 250 V AC, 30k cycles, inductive load (φ 0.4)
DO5 for Mid SSR and Mid+ SSR	
Solid State Relay	SPST 230 V AC / 110 V AC / 24 V AC, max 0.5 A
DO6	
Relay	SPDT 3 A, 250 V AC, 50k cycles, resistive load 2 A, 250 V AC, 30k cycles, inductive load (φ 0.4)
Isolation between relay in the DO1-DO5 group is functional. Isolation between DO1-DO5 group and DO6 is reinforced.	
Stepper motor output (A1, A2, B1, B2)	
Bipolar/ Unipolar	Danfoss valves: • ETS / KVS / ETS C / KVS C / CCMT 2–CCMT 42 / CTR • ETS6 / CCMT 0 / CCMT 1 Other valves: • Speed 10 – 300 pps • Drive mode full step - 1/32 microstep • Max. peak phase current: 1 A (0.7 A RMS) • Output power: 10 W peak, 5 W average
Battery backup	V battery: 18 – 24 V DC ⁽²⁾ , max. power 11 W, min. capacity 0.1 Wh

Aux power output

Type	Feature	Data
+5 V	+5 V DC	Sensor supply: 5 V DC / 80 mA
+15 V	+15 V DC	Sensor supply: 15 V DC / 120 mA

Function data

Function data	Value
Display	LCD 128 x 64 pixel (080G6016)
LED	Green, Orange, Red LED controlled by software application.
External display connection	RJ12
Data communication built-in	MODBUS, BACnet for fieldbus and communication to BMS systems. SMNP for communication to BMS systems. HTTP(S), MQTT(S) for communication to web browsers and cloud.
Clock accuracy	+/- 15 ppm @ 25 °C, 60 ppm @ (-20 to +85 °C)
Clock battery backup power reserve	3 days @ 25 °C
USB-C	USB Version 1.1/2.0 high speed, DRP and DRD support. Max. current 150 mA for connection to pen drive and laptop. The controller in addition can be powered via USB to program software or configure parameters. In case the output capability of the USB port is not sufficient, then power it also with the 24 V input.
Mounting	DIN rail, vertical position
Plastic housing	Self extinguishing V0 and glowing/hot wire test at 960 °C. Ball test: 125 °C Leakage current: ≥ 225 V according to IEC 60112
Type of control	To be integrated in Class I and/or II appliances
Type of action	1C; 1Y for version with SSR
Period of electric stress across insulating	Long
Pollution	Suitable for use in environments with degree of pollution 2

Immunity against voltage surges	Category II
Software class and structure	class A

Environmental condition

Environmental condition	Value
Ambient temperature range, operating [°C]	-40 to +70 °C for Lite, Mid, Pro version.
	-40 to +70 °C for Mid+, Pro+ version without I/O expansions attached (-40 to +65 °C otherwise).
	UL: -40 to +65 °C -40 to +60 °C when Snap-on display (080G6016) is mounted
Ambient temperature range, transport [°C]	-40 to +80 °C
Enclosure rating IP	IP20 IP40 on the front when plate or display are mounted
Relative humidity range [%]	5 – 90%, non-condensing
Max. installation height	2000 m

Electric noise

Cables for sensors, low voltage DI inputs and data communication must be kept separate from other electric cables:

- Use separate cable trays
- Keep a distance between cables of at least 10 cm
- Keep I/O cables as short as possible

Installation considerations

- Controller should only be installed, serviced and inspected by qualified personnel and in compliance with national and local regulations.
- Before servicing the equipment, the controller must be disconnected from the power mains by moving the system main switch to OFF.
- Using a supply voltage other than specified can seriously damage the system.
- All the safety extra low voltage connections (analogue and digital inputs, analogue outputs, serial bus connections, power supplies) must have proper insulation from the power mains.
- Avoid touching or nearly touching the electronic components mounted on the boards to avoid electrostatic discharges from the operator to the components, which may cause considerable damage.
- Do not press the screwdriver on the connectors with excessive force, to avoid damaging the controller.
- In order to ensure sufficient convection cooling we recommend not to obstruct ventilation openings.
- Accidental damage, poor installation, or site conditions can give rise to malfunctions of the control system, and ultimately lead to a plant breakdown.
- Every possible safeguard is incorporated into our products to prevent this. However, a wrong installation could still present problems. Electronic controls are no substitute for normal, good engineering practice.
- During installation ensure that proper method is made to prevent a wire to get loose and create a potential risk in regards to shock or fire.
- Danfoss will not be responsible for any goods, or plant components, damaged as a result of the above defects. It is the installer's responsibility to check the installation thoroughly, and to fit the necessary safety devices.
- Your local Danfoss agent will be pleased to assist with further advice.

Certificates, declarations, and approvals

Mark ⁽⁵⁾	Country
CE	EU
cURus (UL file E31024)	NAM (US and Canada)

⁽⁵⁾ The list contains the main possible 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 be still in progress and others may change over time. You can check the most current status at the links indicated below.



EU declaration of conformity can be found in the QR code.



Information about usage with flammable refrigerants and others can be found in Manufacturer Declaration in the QR code.

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