

EVD CHIL Controller for single-circuit chillers

I ENGLISH

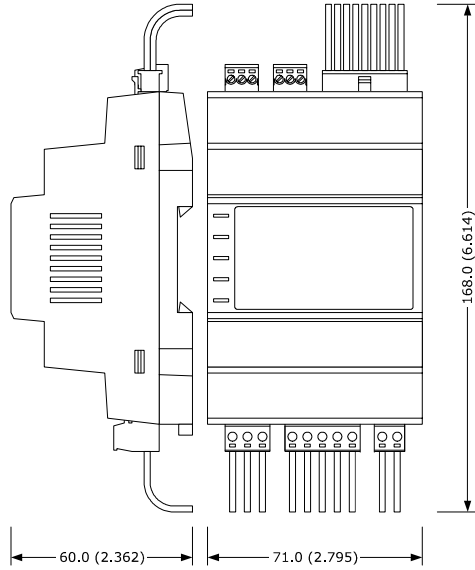
IMPORTANT
 Read this document carefully before installation and before using the device and take all the prescribed precautions. Keep this document with the device for future consultation.
 Only use the device in the ways described in this document. Do not use the device as safety device.
 For more information see the installer manual.

The device must be disposed of according to local regulations governing the collection of electrical and electronic waste.

1 MEASUREMENTS AND INSTALLATION

1.1 Measurements

4 DIN modules; measurements are expressed in mm (inches).

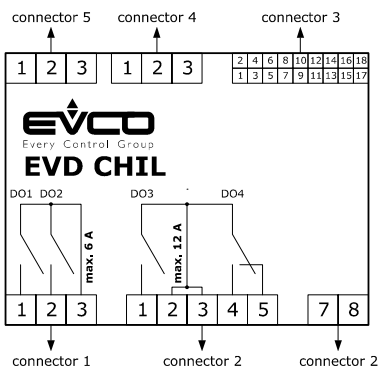


2 ELECTRICAL CONNECTION

2.1 I/O configuration

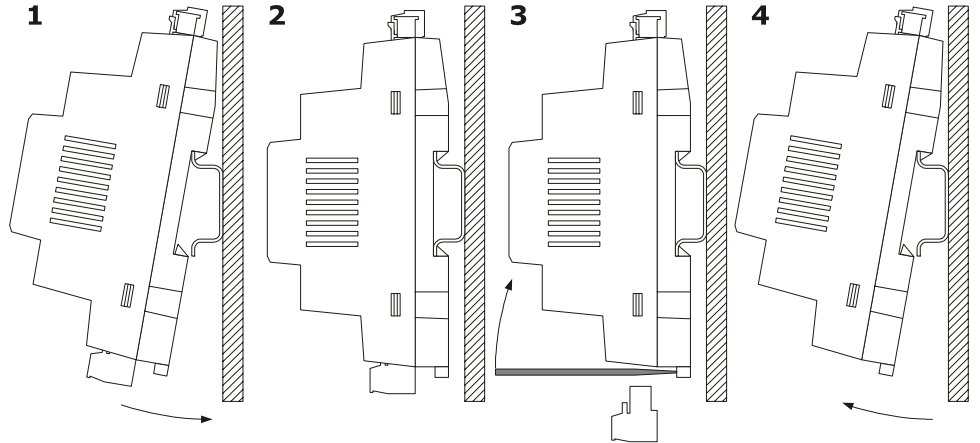
ANALOGUE INPUTS	
IN1	Condensation temperature/pressure (NTC/4-20 mA)
IN2	System return temperature (NTC)
IN3	System delivery temperature (NTC)
IN4	Compressor discharge temperature (NTC)
DIGITAL INPUTS	
IN5	System flow switch
IN10	On/Off
IN9	Fan thermal protection
IN8	Compressor 1 thermal protection
IN7	Maximum pressure switch
IN6	Minimum pressure switch
ANALOGUE OUTPUTS	
AO1	Compressor 1 (0-10V/phase cutting/PWM)
AO2	Fan (0-10V/phase cutting/PWM)
DIGITAL OUTPUTS	
DO1	Alarm
DO2	Enable fan
DO3	Circulation pump
DO4	Enable compressor 1
OC1	Compressor 2

2.2 Description of connectors



1.2 Measurements

Installation is on a DIN rail 35.0 x 7.5mm (1.377 x 0.295 in) or 35.0 x 15.0mm (1.377 x 0.590 in), in a control panel.
 Pictures 1 and 2 show how to install the EVD CHIL. To remove the EVD CHIL, first remove any plug-in screw terminal blocks fitted in the lower part, then, using a screwdriver, loosen the DIN rail clip, as shown in pictures 3 and 4 below.



To re-install the EVD CHIL first press the DIN rail clip fully in.

INSTALLATION PRECAUTIONS

- Ensure that the working conditions for the device (operating temperatures, humidity, etc.) are within the set limits. See the section TECHNICAL SPECIFICATIONS.
- Do not install the device close to heat sources (heating elements, hot air ducts, etc.), equipment with a strong magnetic field (large diffusers, etc.), in places subject to direct sunlight, rain, damp, excessive dust, mechanical vibrations or shocks.
- In compliance with safety regulations, the device must be installed properly to ensure adequate protection from contact with electrical parts. All protective parts must be fixed in such a way as to need the aid of a tool to remove them.

Connector 1

PART	DESCRIPTION
1	Electro-mechanical relay digital output DO1 (3A SPST): normally open
2	Electro-mechanical relay digital output DO2 (3A SPST): normally open
3	Electro-mechanical relay digital outputs DO1 and DO2 (max. 6A): common

Connector 2

PART	DESCRIPTION
1	Electro-mechanical relay digital output DO3 (12A SPST): normally open
2	Electro-mechanical relay digital outputs DO3 and DO4 (max. 6A): common
3	Electro-mechanical relay digital outputs DO3 and DO4 (max. 6A): common
4	Electro-mechanical relay digital output DO4 (8A SPDT): normally open
5	Electro-mechanical relay digital output DO4 (8A SPDT): normally closed
7	EVD CHIL power supply (115... 230 VAC insulated)
8	EVD CHIL power supply (115... 230 VAC insulated)

Connector 3

PART	DESCRIPTION
1	Analogue output AO2 (0-10V/phase cutting/PWM)
2	Analogue output AO1 (0-10V/phase cutting/PWM)
3	EV3K01 power supply GND, analogue input GND, digital input GND, analogue output GND and GND for powered INTRABUS port
4	Analogue input IN1 (NTC/4-20 mA)
5	Dry contact digital input IN10
6	Analogue input IN2 (NTC)
7	Dry contact digital input IN9
8	Analogue input IN3 (NTC)
9	Dry contact digital input IN8
10	Analogue input IN4 (NTC)
11	Dry contact digital input IN7
12	Analogue input IN5 (NTC)
13	EV3K01 power supply GND, analogue input GND, digital input GND, analogue output GND and GND for powered INTRABUS port
14	Dry contact digital input IN6
15	Not used

16	EV3K01 power supply and power supply for transducer analogue inputs 4-20mA (12 VDC, max. 120mA)
17	Open collector digital output OC1 (12V, max. 40mA)
18	EV3K01 power supply GND, analogue input GND, digital input GND, analogue output GND and GND for powered INTRABUS port

Connector 4 (if installed)

PART	DESCRIPTION
1	RS-485 MODBUS slave port: shield
2	RS-485 MODBUS slave port: --
3	RS-485 MODBUS slave port: +

Connector 5

PART	DESCRIPTION
1	EV3K01 power supply GND and GND for powered INTRABUS port
2	INTRABUS port powered up signal
3	EV3K01 power supply

2.3 Example of electrical connection

See next page.

PRECAUTIONS FOR ELECTRICAL CONNECTION

- Do not use electric or pneumatic screwdrivers on the terminal blocks of the device.
- If the device has been moved from a cold to a warm place, the humidity may cause condensation to form inside. Wait about an hour before switching on the power.
- Make sure that the supply voltage, electrical frequency and power are within the set limits. See the section TECHNICAL SPECIFICATIONS.
- Disconnect the device from the power supply before doing any type of maintenance.
- The devices must be fed by power of the same phase as that feeding any module with a phase-cutting command signal.
- Connect the device to an RS-485 network using a screened twisted pair. We recommend using a BELDEN 3106A cable.
- Connect the power cables as far away as possible from those for the signal.
- For repairs and for further information on the device, contact the EVCO sales network.

3 SIGNALS AND ALARMS

3.1 Signals

LED	DESCRIPTION
ON	LED power supply
RUN	LED RUN
	LED alarm
INB	LED INTRABUS
RS485	LED RS-485

3.2 Signals (visible in EV3K01)

LED	DESCRIPTION
	Function mode LED
	Compressor 1 LED
	Compressor 2 LED
	Circulation pump LED
	Fan LED
	Temperature LED
	Pressure LED
	Alarm LED
	Set-up LED
	On/stand-by LED

3.3 Alarms

CODE	DESCRIPTION
EA01	Condensation temperature probe alarm/condensation pressure probe alarm
EA02	System return temperature probe alarm
EA03	System delivery temperature probe alarm
EA04	Compressor discharge temperature probe alarm
EA05	Battery temperature probe alarm
AFLo	Flow switch alarm
AHtr	Maximum temperature alarm
AFr1	Antifreeze alarm
AHP1	Maximum pressure switch alarm
ALP1	Minimum pressure switch alarm
AtC1	Compressor 1 thermal protection alarm
AtF1	Fan thermal protection alarm

4 TECHNICAL SPECIFICATIONS

Purpose of the control device	Function controller.
Construction of the control device	Built-in electronic device.
Container	Grey, self-extinguishing.
Category of heat and fire resistance	D.
Measurements	71.0 x 110.0 x 60.0mm (2.795 x 4.330 x 2.362 in; L x H x D); 4 DIN modules.

Mounting methods for the control device	On a DIN rail 35.0 x 7.5mm (1.377 x 0.295 in) or 35.0 x 15.0mm (1.377 x 0.590 in), in a control panel.
Degree of front protection	IP40.
Connections	<ul style="list-style-type: none"> - Micro-Fit connector (analogue inputs, digital inputs, analogue outputs and open collector digital output) - Plug-in screw terminal blocks (power supply, electro-mechanical relay digital outputs and communications ports).

The maximum length of the connection cables are as follows:

- power supply: 10m (32.8 ft)
- Analogue inputs: 10m (32.8 ft)
- Power supply for transducer analogue inputs 4-20mA: 10m (32.8 ft)
- Digital inputs: 10m (32.8 ft)
- PWM analogue outputs: 1m (3.2 ft)
- Phase cutting analogue outputs: 10m (32.8 ft)
- Electro-mechanical relay digital outputs: 10m (32.8 ft)
- Open collector digital outputs: 10m (32.8 ft)
- INTRABUS powered ports: 10m (32.8 ft)
- RS-485 MODBUS master/slave ports: 1,000m (3,280 ft); see also the MODBUS manual, specifications and implementation guides available on www.modbus.org/specs.php.

Use cables of an adequate section for the current running through them.
We recommend using the CJAV38 connection kit (to be ordered separately).

Operating temperature	From -10 to 55°C (from 14 to 131°F).
Storage temperature	From -25 to 70 °C (from -13 to 158 °F).
Operating humidity	Relative humidity without condensate from 10 to 90%.
Pollution status of the control device	2.
Operating altitude	From 0 to 2,000m (from 0 to 6,591 ft)
Transport altitude	From 0 to 3,048m (from 0 to 10,000 ft)
Environmental compliance	<ul style="list-style-type: none"> - RoHS 2011/65/EC - WEEE 2012/19/EU - REACH (EC) Regulation 1907/2006.
EMC compliance	<ul style="list-style-type: none"> - EN 60730-1 - IEC 60730-1.
Power supply:	115... 230VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 6VA insulated.
Protect the power supply	with a 2 A-T 250V fuse.
Rated impulse-withstand voltage	4 KV.
Over-voltage category	II.
Software class and structure	A.
Clock	On request (with secondary lithium battery).
Battery autonomy in the absence of a power supply:	> 6 months at 25°C (77°F).
Battery charging time:	24h (the battery is charged by the power supply of the device).
Drift:	≤ 60s/month at 25°C (77°F).

Analogue inputs	4 inputs: <ul style="list-style-type: none"> - 3 for NTC probes - 1 can be set up using the configuration parameter for NTC probes or 4-20mA
Digital inputs	6 dry contact inputs.
Analogue outputs	2 outputs that can be set up using the configuration parameter for 0-10V, phase cutting or PWM.
Digital outputs	Up to 5 outputs: <ul style="list-style-type: none"> - 2 with SPST electro-mechanical relay, 3A res. @ 250VAC - 1 with SPDT electro-mechanical relay, 8A res. @ 250VAC - 1 with SPST electro-mechanical relay, 12A res. @ 250VAC - 1 with open collector, 12VDC, max. 40 mA.
Type 1 or Type 2 Actions	Type 1.
Additional features of Type 1 or Type 2 actions	C.

Displays	Signalling LED.
Communications ports	Up to 2 ports: <ul style="list-style-type: none"> - 1 powered INTRABUS port - 1 RS-485 MODBUS slave port
Alarm buzzer	Not available.

2 ELECTRICAL CONNECTION
2.3 Example of electrical connection

