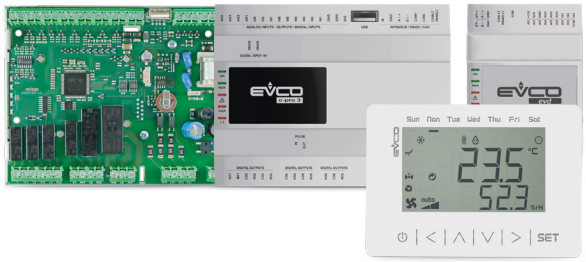


Applications

Dehumidifier for radiating systems

c-pro 3 OEM DH

Application Manual:

Controller for dehumidifiers with heat recovery

- Dehumidification management
- Rotary or cross-flow exchanger management
- Pre- and post-cooling coil management
- Auxiliary water condenser management
- Free-cooling and free-heating management
- ON-OFF or BLDC compressor management
- Remote user interface with built-in T/RH sensors
- Modulating fan management

IMPORTANT
Read this document carefully before installation and take all precautions before using the device.
Keep this document with the device for future reference.
Only use the device in the ways described in this document.

CONSIDER THE ENVIRONMENT
Please read this document carefully and save it.

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

Index

Introduction

c-pro 3 OEM DH is the ideal controller to manage high energy-efficient thermodynamic dehumidifiers in residential heating systems. It is able to manage cross-flow or rotary heat exchangers, pre- and post-cooling coils and an auxiliary water condenser.

The controller is designed to optimise electric consumption by independently managing EC supply and extractor fans and controlling ON-OFF or brushless DC compressors. It ensures an optimal level of heat comfort in the rooms by integrating the heating and cooling functions of the radiating system, controlling two solenoid valves which manage the post-cooling coil and the auxiliary water condenser. The controller also manages the free-cooling/ free-heating function by bypassing

the heat recovery exchanger (ON-OFF or modulating) and increasing the air capacity to the compressor through the recirculation damper.

With 8 DIN modules, c-pro 3 OEM DH is available with either an open frame board or plastic housing and can be connected with remote wall-mounted user interfaces with built-in temperature/humidity sensors.

Purchasing codes

c-pro 3 OEM DH

The table below shows the main features of the c-pro3 OEM DH models and the purchasing codes.

Features	Models	
	EPB9ORE1DE	EPB9BRE1DE
Power supply		
115... 230 VAC	•	•
Analogue inputs		
Configurable	7	7
Digital inputs		
Configurable	4	4
Analogue outputs		
Configurable	4	4
Digital outputs		
Configurable	6	6
User interface		
Blind	•	•
Format		
8 DIN modules, open frame	•	
8 DIN modules with plastic housing		•
Installation		
On a DIN rail	•	•
Connections		
Fixed screw terminal blocks		
Plug-in screw terminal blocks	•	•
Communications ports		
INTRABUS	1	1
RS-485 MODBUS MASTER/SLAVE	1	1
CAN	1	1
USB	1	1
Further features		
Clock	•	•

For more information see the section "Technical specifications"

Description of purchasing codes

Features	Code
115... 230 VAC - Blind version - 8 DIN modules, open frame - DIN rail - INTRABUS - RS-485 - CAN - USB - Clock	**EPB9ORE1DE**
115...230 VAC - Blind version - 8 DIN modules, housing - DIN rail - INTRABUS - RS-485 - CAN - USB - Clock	**EPB9BRE1DE**

EVJ LCD

The table below shows the main features of the EVJ LCD models and the purchasing codes.

Features	12 VAC/DC models, wall installation		115...230 VAC models, wall installation	
	EVJD900N2VW	EVJD920N2VW	EVJD902N9VP	EVJD922N9VP
Power supply				
12 VAC/DC	•	•		
115... 230 VAC			•	•
Analogue/digital inputs				
NTC/DI	1	1	2	2
Digital outputs (electro-mechanical relays)				
Relay 1			1A	1A
Relay 2			1A	1A
User interface				
Static LCD display	•	•	•	•
Installation				
Wall-mounted	•	•	•	•
Connections				
Fixed screw terminal blocks	•	•	•	•
Communications ports				
INTRABUS	1	1	1	1
Further features				
Alarm buzzer	•	•		•
Built-in temperature and humidity sensor		•		•

For more information see the section "Technical specifications"

Description of purchasing codes

Features	Code
12 VAC/DC - Static LCD display - Wall installation - NTC/DI - INTRABUS - Alarm buzzer	EVJD900N2VW
12 VAC/DC - Static LCD display - Wall installation - NTC/DI - INTRABUS - Alarm buzzer Built-in temperature and humidity sensor	EVJD920N2VW
115... 230 VAC - Static LCD display - Wall installation - 2 NTC/DI - 2 relays - INTRABUS - Alarm buzzer	EVJD902N9VP
115... 230 VAC - Static LCD display - Wall installation - 2 NTC/DI - 2 relays - INTRABUS - Alarm buzzer - Built-in temperature and humidity sensor	EVJD922N9VP

EPJ LCD

The table below shows the main features of the EPJ LCD models and the purchasing codes.

Features	12 VAC/DC models, wall installation		115...230 VAC models, wall installation	
	EPJD900N3VW	EPJD920N3VW	EPJD902N9VP	EPJD922N9VP
Power supply				
12 VAC/DC	•	•		
115... 230 VAC			•	•
Analogue/digital inputs				
NTC/DI	1	1	2	2
Digital outputs (electro-mechanical relays)				
Relay 1			1A	1A
Relay 2			1A	1A
User interface				
Static LCD display	•	•	•	•
Installation				
Wall-mounted	•	•	•	•
Connections				
Fixed screw terminal blocks	•	•	•	•
Communications ports				
CAN	1	1	1	1
Further features				
Alarm buzzer	•	•	•	•
Built-in temperature and humidity sensor		•		•

For more information see the section "Technical specifications"

Description of purchasing codes

Features	Code
12 VAC/DC - Static LCD display - Wall installation - NTC/DI - CAN - Alarm buzzer	EPJD900N3VW
12 VAC/DC - Static LCD display - Wall installation - NTC/DI - CAN - Alarm buzzer Built-in temperature and humidity sensor	EPJD920N3VW
115... 230 VAC - Static LCD display - Wall installation - 2 NTC/DI - 2 relays - CAN - Alarm buzzer	EPJD902N9VP
115... 230 VAC - Static LCD display - Wall installation - 2 NTC/DI - 2 relays - CAN - Alarm buzzer Built-in temperature and humidity sensor	EPJD922N9VP

EVD EXP

The table below shows the main features of the EVD EXP models and the purchasing codes.

Features	Model
	EVD094EM9
Power supply	
115...230 VAC	•
Analogue inputs	
Configurable	4
Digital inputs	
Configurable	6
Analogue outputs	
Configurable	2
Digital outputs	
Configurable	4
User interface	
Blind	•
Format	
8 DIN modules with plastic housing	•
Installation	
On a DIN rail	•
Connections	
Plug-in screw terminal blocks	•
Communications ports	
INTRABUS	1

For more information see the section "Technical specifications"

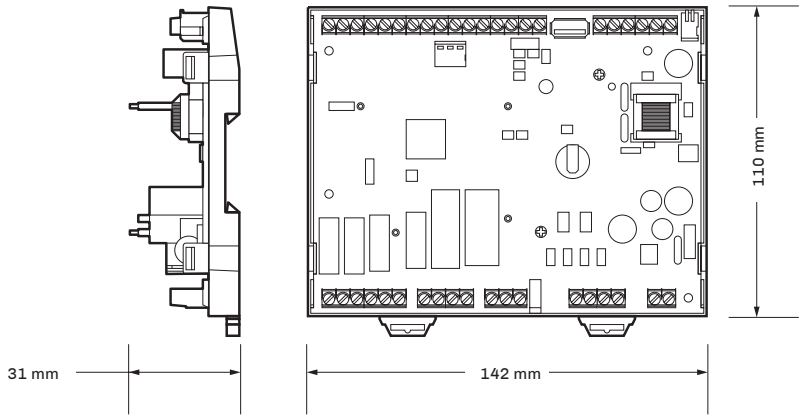
Description of purchasing codes

Features	Code
115...230 VAC - Blind version - 8 DIN modules, housing - DIN rail - INTRABUS	**EVD094EM9**

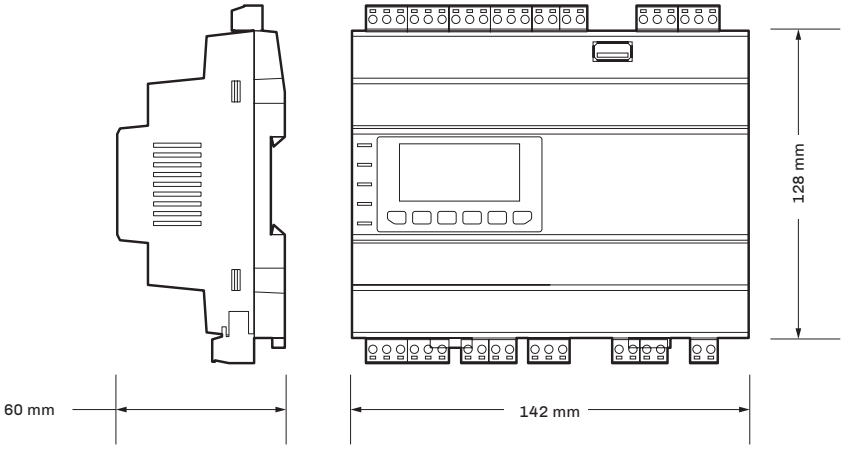
Measurements

c-pro 3 OEM DH

Open frame board

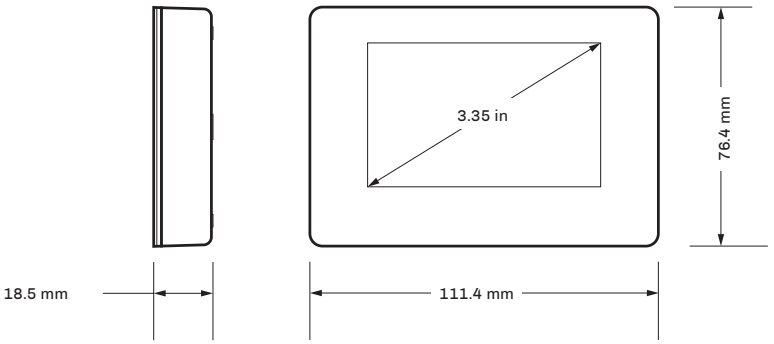


With plastic housing

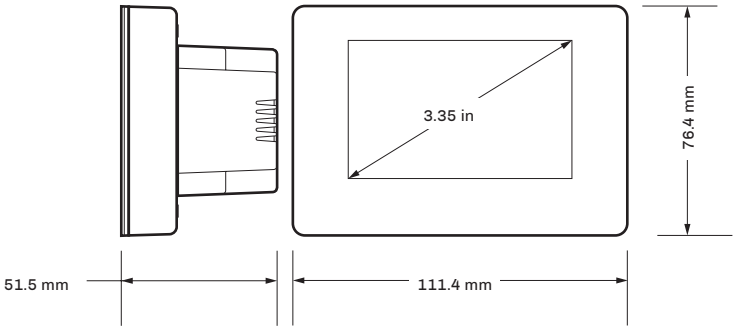


EVJ LCD

12 VAC/DC models for wall installation

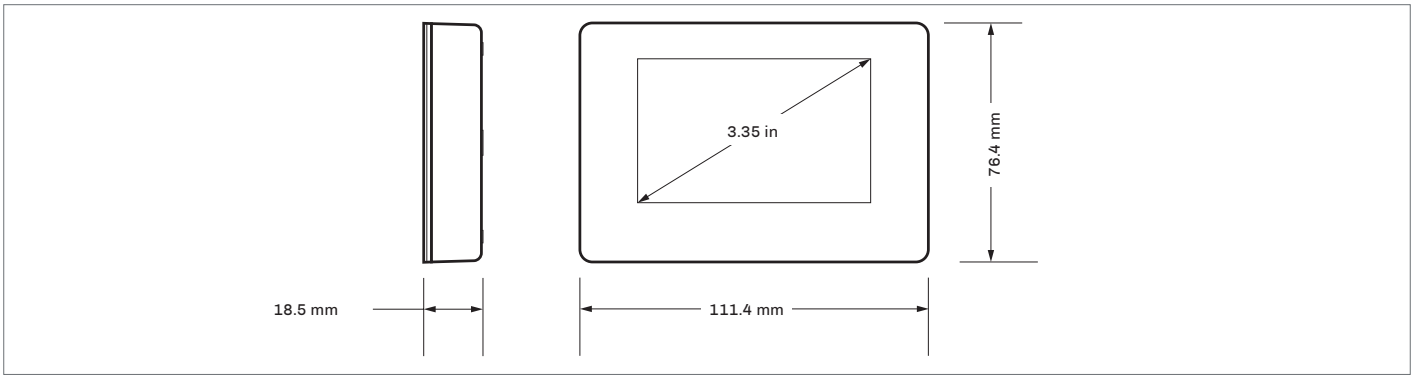


115...230 VAC models, for wall installation

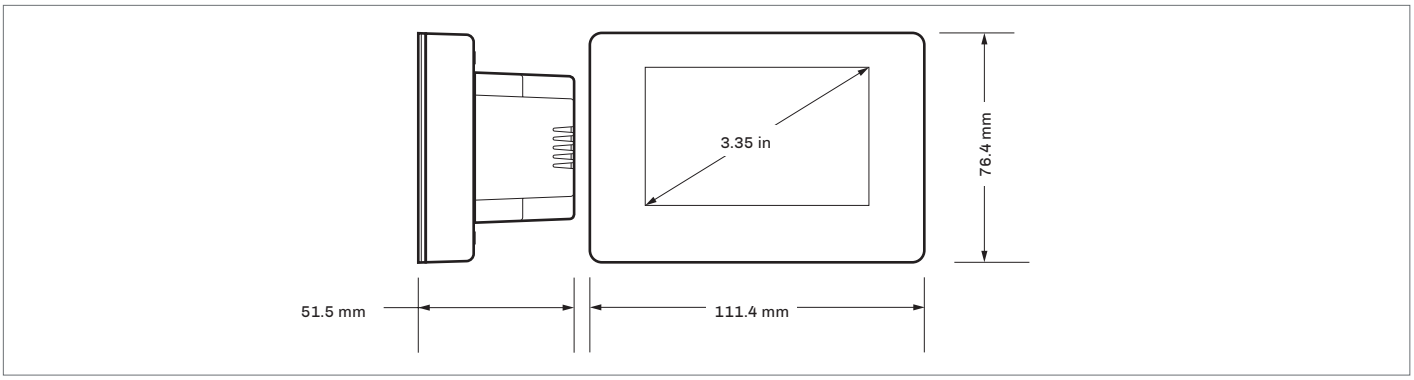


EPJ LCD

12 VAC/DC models for wall installation

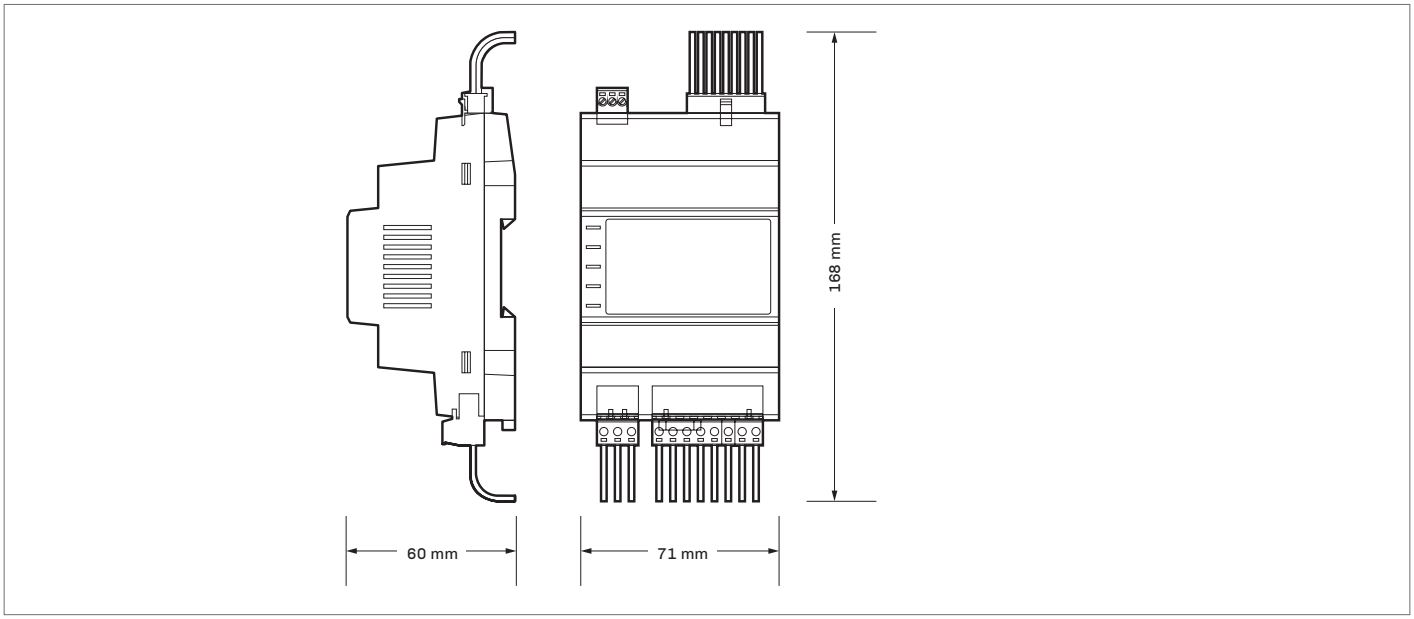


115...230 VAC models, for wall installation



EVD EXP

With plastic housing

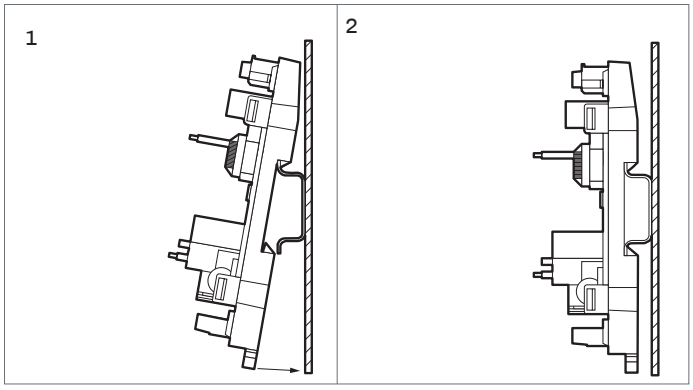


Installation

c-pro 3 OEM DH

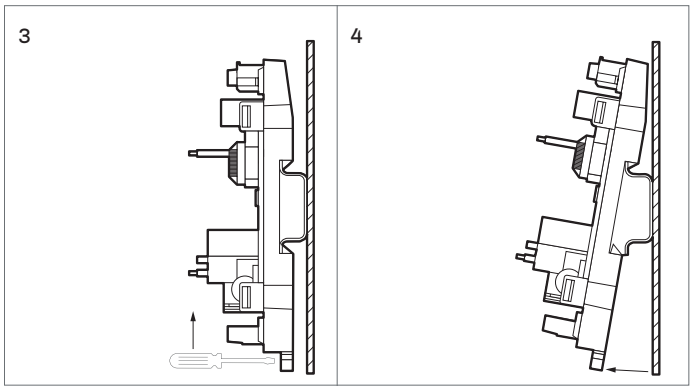
Open frame board

1. To install the device:
– proceed as shown in figures 1 and 2



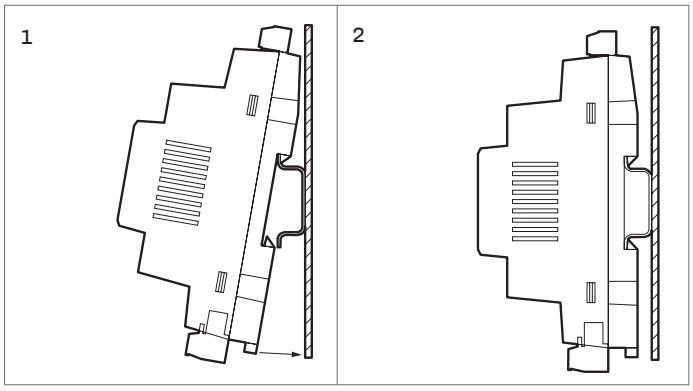
1. To uninstall the device:
– proceed as shown in figures 3 and 4

2. To install the device again:
– first press the clip fully in



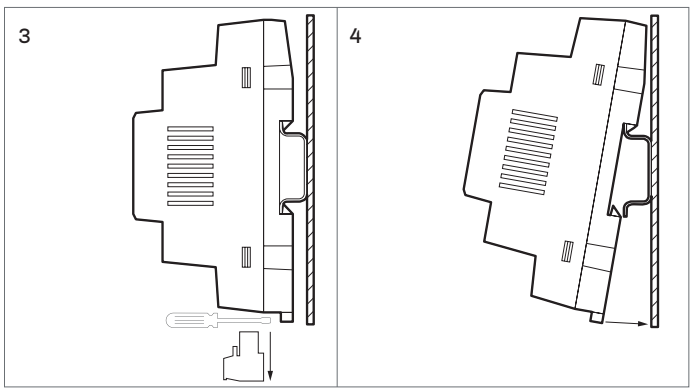
With plastic housing

1. To install the device:
– proceed as shown in figures 1 and 2



1. To uninstall the device:
– to uninstall the device, first remove any plug-in screw terminal blocks at the bottom then proceed as shown in figures 3 and 4

2. To install the device again:
– first press the clip fully in



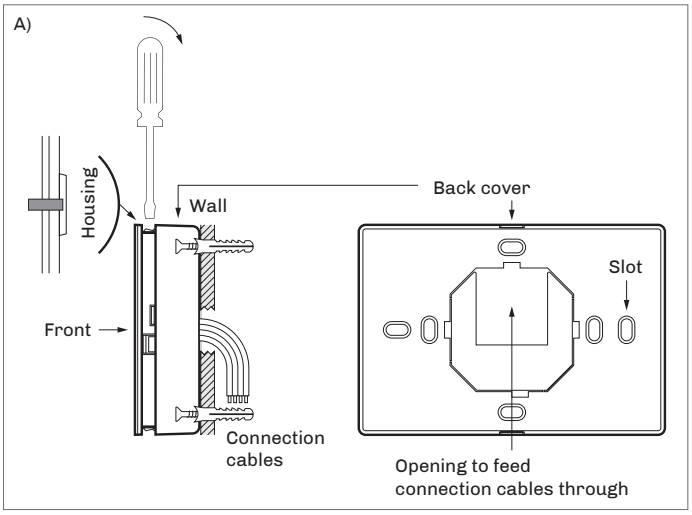
INSTALLATION PRECAUTIONS (EVJ LCD - EPJ LCD)
– **Ensure that the working conditions are within the limits stated in the "***Technical specifications***" section.**
– Do not install the device close to heat sources, equipment with a strong magnetic field, in places subject to direct sunlight, rain, damp, 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.

EVJ LCD

12 VAC/DC models for wall installation

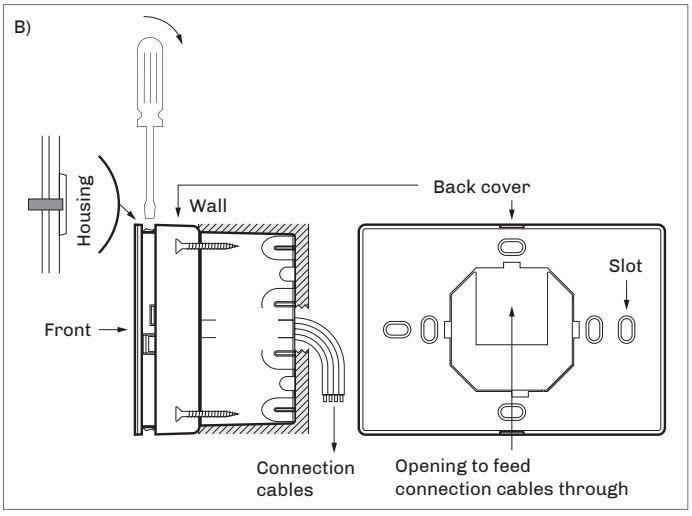
A) Wall installation

1. Disengage the back cover from the front using a screwdriver
2. Rest the back cover on the wall in a place suitable for allowing the connection cables to feed through the opening
3. Use the slots in the back cover as a guide for drilling the 4 holes with a diameter suitable for the plug
   We recommend using 5 mm diameter plugs
4. Insert the plugs into the holes drilled in the wall
5. Fit the back cover to the wall with 4 screws
   We recommend using flat countersunk screws
6. Make the electrical connection without powering up the device
7. Fit the front of the device to the back cover



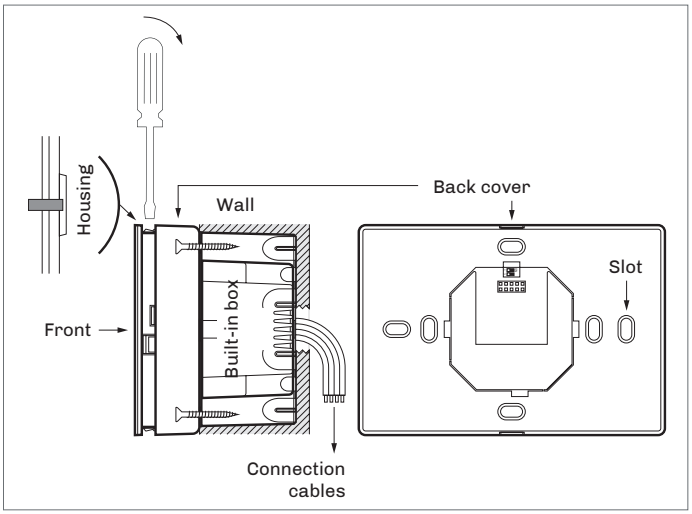
B) Installation in a built-in box

1. Disengage the back cover from the front using a screwdriver
2. Fit the back cover to the box with 4 screws
   We recommend using flat countersunk screws
3. Make the electrical connection without powering up the device
4. Fit the front of the device to the back cover



115...230 VAC models, for wall installation
Wall installation in built-in box with rear housing of power supply

1. Disengage the back cover from the front using a screwdriver.
2. Fit the back cover to the box with 4 screws. We recommend using flat countersunk screws.
3. Make the electrical connection without powering up the device.
4. Fit the front of the device to the back cover.

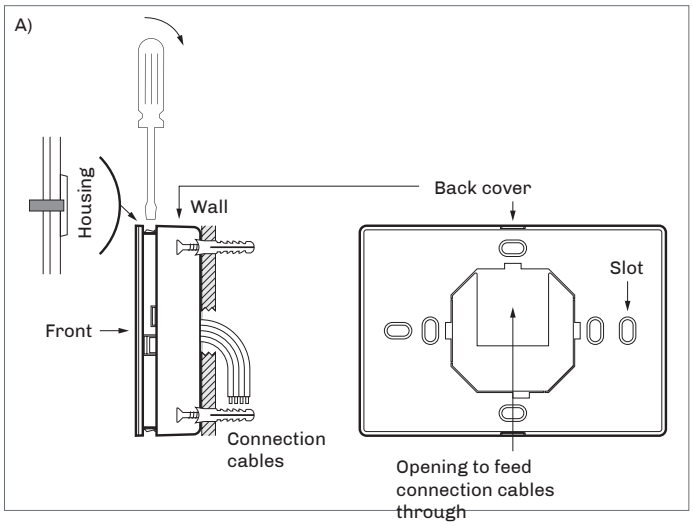


EPJ LCD

12 VAC/DC models for wall installation

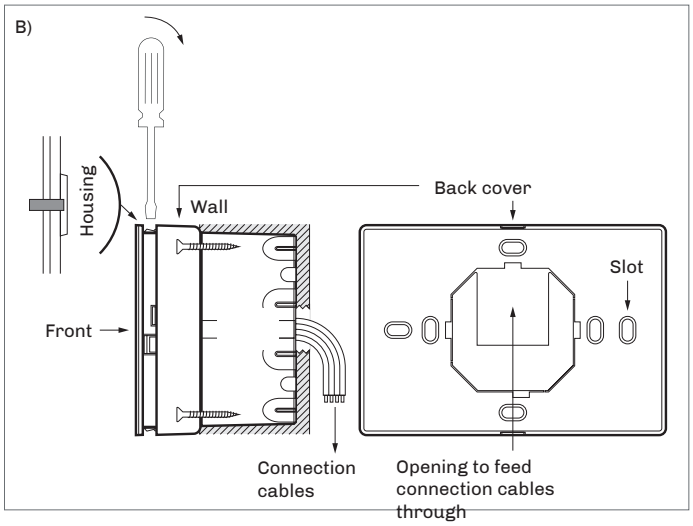
A) Wall installation

1. Disengage the back cover from the front using a screwdriver.
2. Rest the back cover on the wall in a place suitable for allowing the connection cables to feed through the opening.
3. Use the slots in the back cover as a guide for drilling the 4 holes with a diameter suitable for the plug. We recommend using 5 mm diameter plugs.
4. Insert the plugs into the holes drilled in the wall.
5. Fit the back cover to the wall with 4 screws. We recommend using flat countersunk screws.
6. Make the electrical connection without powering up the device.
7. Fit the front of the device to the back cover.



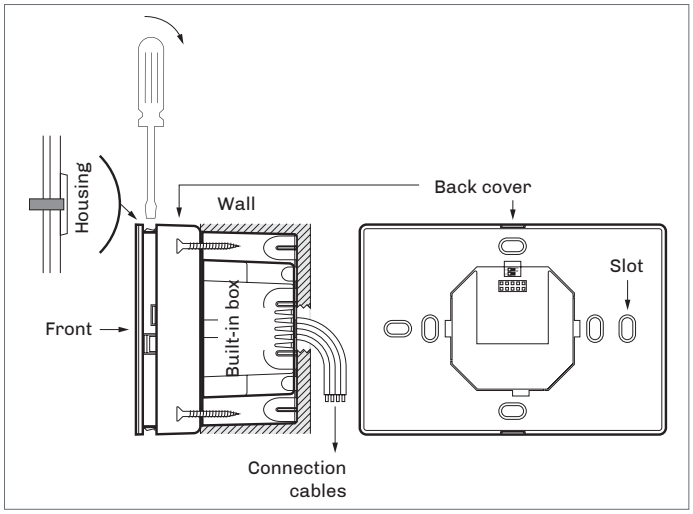
B) Installation in a built-in box

1. Disengage the back cover from the front using a screwdriver.
2. Fit the back cover to the box with 4 screws. We recommend using flat countersunk screws.
3. Make the electrical connection without powering up the device.
4. Fit the front of the device to the back cover.



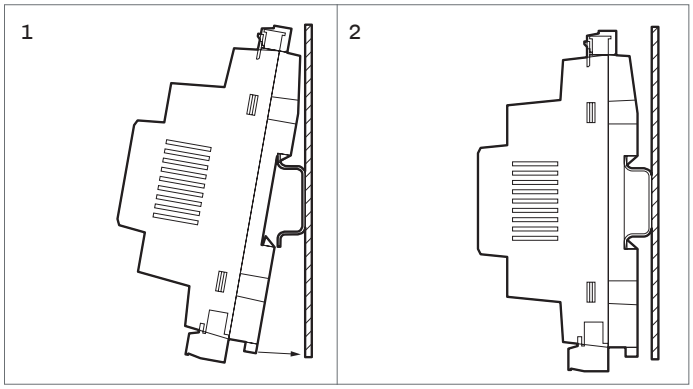
115...230 VAC models, for wall installation
Wall installation in a built-in box with rear housing of power supply

1. Disengage the back cover from the front using a screwdriver
2. Fit the back cover to the box with 4 screws We recommend using flat countersunk screws
3. Make the electrical connection without powering up the device
4. Fit the front of the device to the back cover



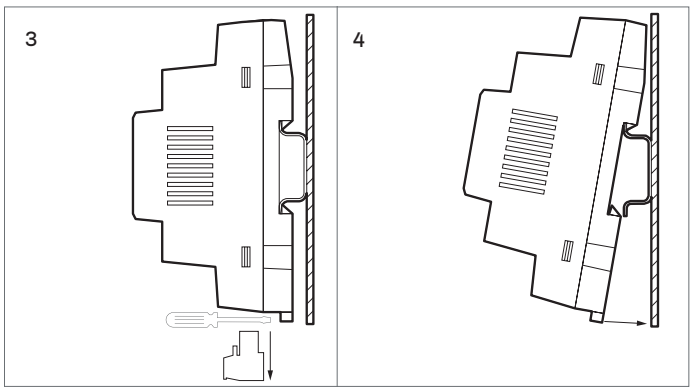
EVD EXP

1. To install the device:
– proceed as shown in figures 1 and 2



1. To uninstall the device:
– to uninstall the device, first remove any plug-in screw terminal blocks at the bottom then proceed as shown in figures 3 and 4

2. To install the device again:
– first press the clip fully in

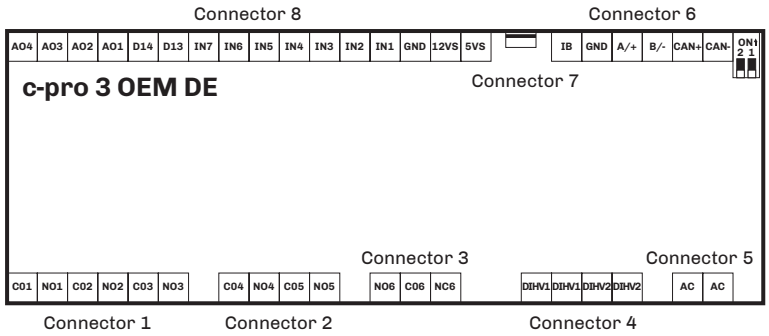


Electrical connections

PRECAUTIONS FOR ELECTRICAL CONNECTIONS
- Use cables of an adequate section for the current running through them
- To reduce any electromagnetic interference, connect the power cables as far away as possible from the signal cables and connect to a CAN, RS-485 MODBUS and INTRABUS network using a twisted pair
- If using an electrical or pneumatic screwdriver, adjust the tightening torque
- If the device is moved from a cold to a warm place, humidity may cause condensation to form inside; wait for about an hour before switching on the power
- Make sure that the supply voltage, electrical frequency and power are within the set limits
- Disconnect the power supply before carrying out any type of maintenance
- Do not use the device as a safety device
- For repairs and further information, contact the EVCO sales network; returned goods without the data label will not be accepted

c-pro 3 OEM DH

Description of connectors - Model with plastic housing



N.B.: the information in brackets in the "Number" columns refers to the model with the open frame board

Connector 1

Number		Description
CO1	(C1)	K1 digital output common contact
NO1	(NO1)	K1 digital output normally open contact (5 A res. at 250 VAC)
CO2	(C2)	K2 digital output common contact
NO2	(NO2)	K2 digital output normally open contact (5 A res. at 250 VAC)
CO3	(C3)	K3 digital output common contact
NO3	(NO3)	K3 digital output normally open contact (5 A res. at 250 VAC)

Connector 2

Number		Description
CO4	(C4)	K4 digital output common contact
NO4	(NO4)	K4 digital output normally open contact (5 A res. at 250 VAC)
CO5	(C5)	K5 digital output common contact
NO5	(NO5)	K5 digital output normally open contact (5 A res. at 250 VAC)

Connector 3

Number		Description
NO6	(NO6)	K6 digital output normally open contact (16 A res. at 250 VAC)
CO6	(C6)	K6 digital output common contact
NC6	(NC6)	K6 digital output normally closed contact

Connector 4

Number		Description
DIHV1	(HV1)	DI1 high voltage digital input
DIHV1	(HV1)	DI1 high voltage digital input
DIHV2	(HV2)	DI2 high voltage digital input
DIHV2	(HV2)	DI2 high voltage digital input

N.B.: the information in brackets in the "Number" columns refers to the model with the open frame board

Connector 5

Number		Description
AC	(PS)	Device power supply (115... 230 VAC)
AC	(PS)	Device power supply (115... 230 VAC)

Connector 6

Number		Description
IB	(ITB)	INTRABUS port data
GND	(GND)	Reference (GND)
A/+	(A)	If installed, + signal RS-485 MODBUS master/slave port
B/-	(B)	If installed, - signal RS-485 MODBUS master/slave port
CAN+	(C+)	+ signal CAN port
CAN-	(C-)	- signal CAN port

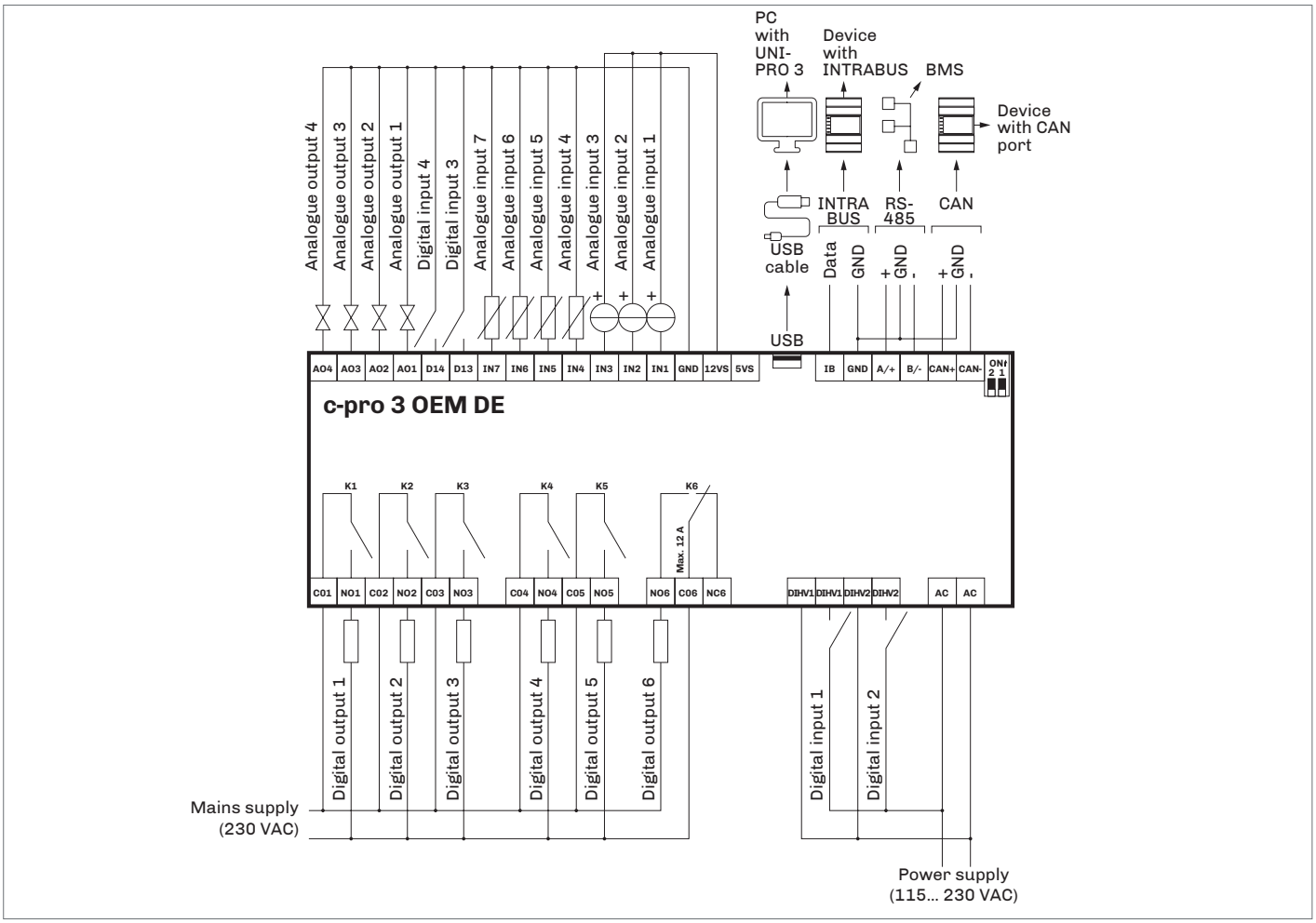
Connector 7

Number		Description
USB	(USB)	USB port to programme the device

Connector 8

Number		Description
AO4	(AO4)	AO4 analogue output (for 0-10 V or PWM signal)
AO3	(AO3)	AO3 analogue output (for 0-10 V or PWM signal)
AO2	(AO2)	AO2 analogue output (for 0-10 V or PWM signal)
AO1	(AO1)	AO1 analogue output (for 0-10 V or PWM signal)
DI4	(M9)	DI4 digital input (dry contact and for pulse trains up to 2 KHz)
DI3	(M8)	DI3 digital input (dry contact and for pulse trains up to 2 KHz)
IN7	(M7)	AI7 analogue input (for PTC, NTC or Pt 1000 probes); can also be configured for DI11 dry contact digital input
IN6	(M6)	AI6 analogue input (for PTC, NTC or Pt 1000 probes); can also be configured for DI10 dry contact digital input
IN5	(M5)	AI5 analogue input (for PTC, NTC or Pt 1000 probes); can also be configured for DI9 dry contact digital input
IN4	(M4)	AI4 analogue input (for PTC, NTC or Pt 1000 probes); can also be configured for DI8 dry contact digital input
IN3	(M3)	AI3 analogue input (for NTC probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transd.); can also be configured for DI7 dry contact digital input
IN2	(M2)	AI2 analogue input (for NTC probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transd.); can also be configured for DI6 dry contact digital input
IN1	(M1)	AI1 analogue input (for NTC probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transd.); can also be configured for DI5 dry contact digital input
GND	(GND)	Reference (GND)
12VS	(12V)	Auxiliary power supply (12 VDC)
5VS	(5V)	0-5 V ratiometric transducers power supply (5 VDC)

Electrical connection - Model with plastic housing

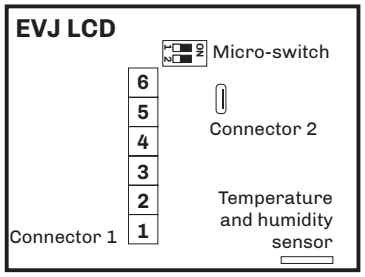


EVJ LCD - 12 VAC/DC models for wall installation

Description of connectors

Connector 1

Number	Description
1	INTRABUS port reference (GND) or signal B (-) RS-485 port (according to the model)
2	INTRABUS port data (IB) or signal A (+) RS-485 port (according to the model)
3	Device power supply (12 VAC/DC); if the device is powered by direct current, connect the negative terminal
4	Device power supply (12 VAC/DC); if the device is powered by direct current, connect the positive terminal
5	Analogue/digital input AI4 (NTC/DI)
6	Analogue/digital input reference A14 (GND)



Connector 2

Number	Description
	For EVCO use only

Micro-switch

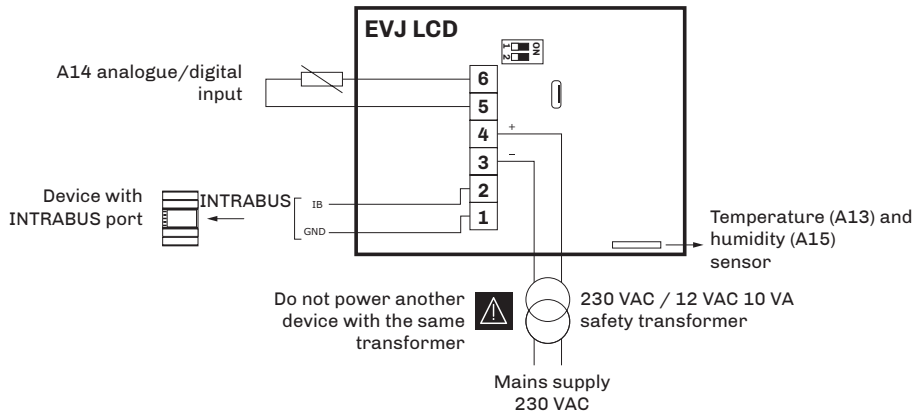
Number	Description
2	To terminate the RS-485 MODBUS network
1	For EVCO use only

Temperature (AI3) and humidity (AI5) sensor

Number	Description
	According to the model

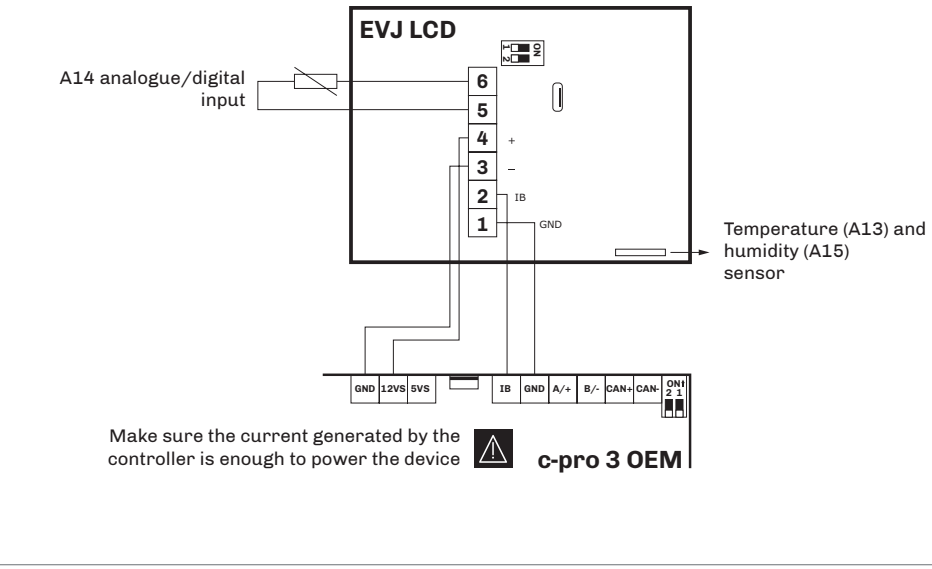
Electrical connection with independent power source

N.B.
- Do not power another device with the same transformer
- The maximum permitted length for connection cables of the INTRABUS port is 30 m, 1000 m in models with an RS-485 port with the INTRABUS communication protocol



Electrical connection with device powered by a controller
e.g.: c-pro 3 OEM

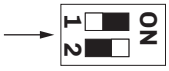
N.B.
- Make sure the current generated by the controller is within the limits stated in the TECHNICAL SPECIFICATIONS section
- The maximum permitted length for connection cables of the INTRABUS port is 10 m



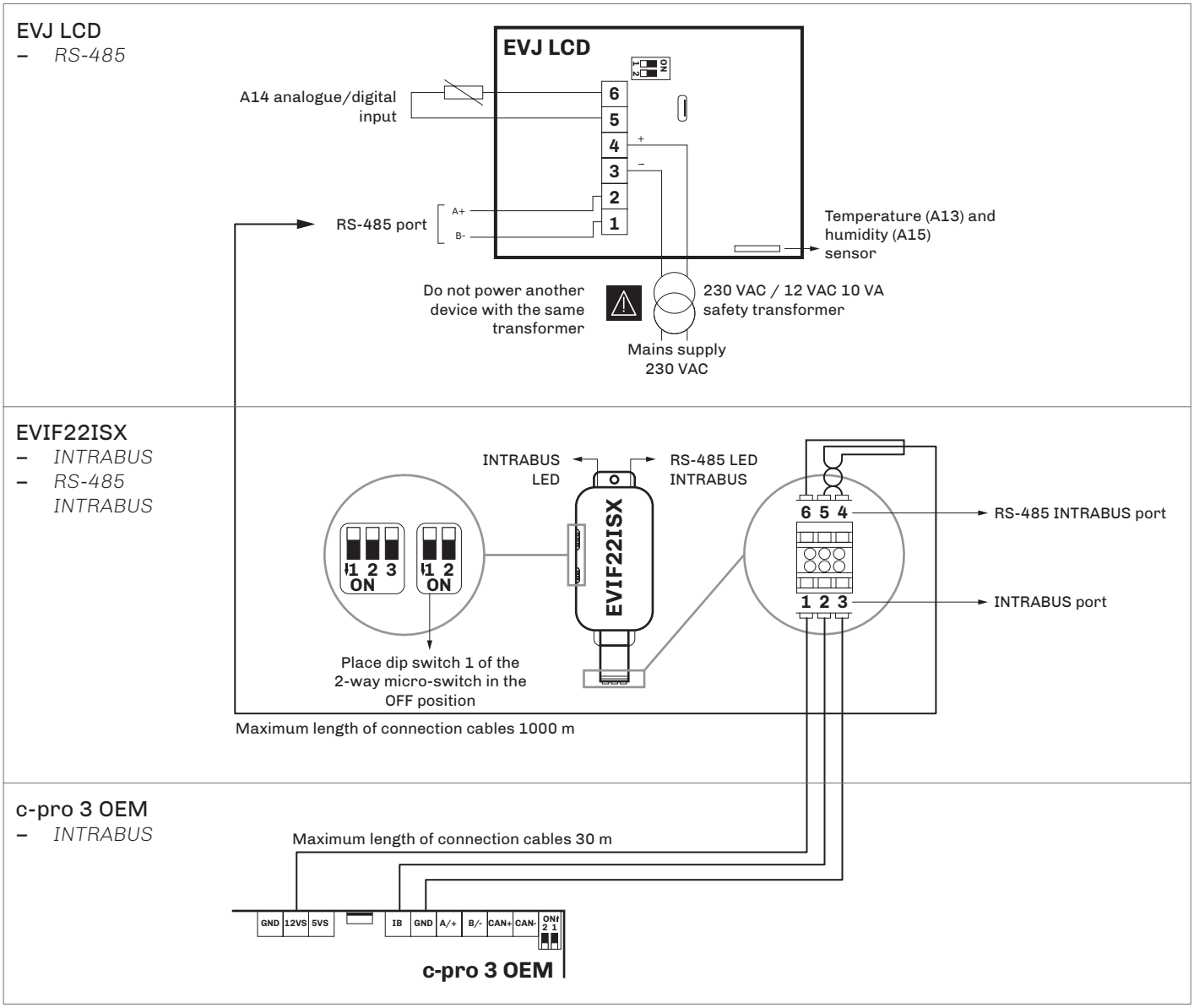
Termination of the RS-485 network

To terminate the RS-485 network:
- Place **micro-switch 2 in the ON position**
- Leave micro-**switch 1 in the OFF position** (for EVCO use only)

The micro-switch is on the back of the device (first remove the back cover from the front)



Electrical connection for models with an RS-485 port



Description of connectors

Port	Terminal	Description
INTRABUS	1	12 V
	2	INTRABUS port data
	3	INTRABUS port reference (GND)
RS-485	4	RS-485 port reference (GND)
	5	Negative signal RS-485 port
	6	Positive signal RS-485 port

EVIF22ISX micro-switch

– Place **dip switch 1 of the 2-way micro-switch in the OFF position**

The micro-switch is on the side of the EVIF22ISX device

EVJ LCD - 115...230 VAC models for wall installation

Description of connectors

Connector 1

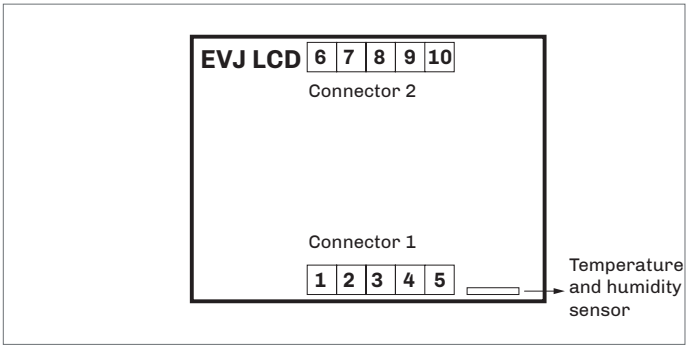
Number	Description
1	Device power supply (115... 230 VAC)
2	Device power supply (115... 230 VAC)
3	DO2 digital output normally open contact (1 A res. at 250 VAC)
4	DO1 digital output normally open contact (1 A res. at 250 VAC)
5	DO1 and DO2 digital outputs common contact (max. 2 A)

Connector 2

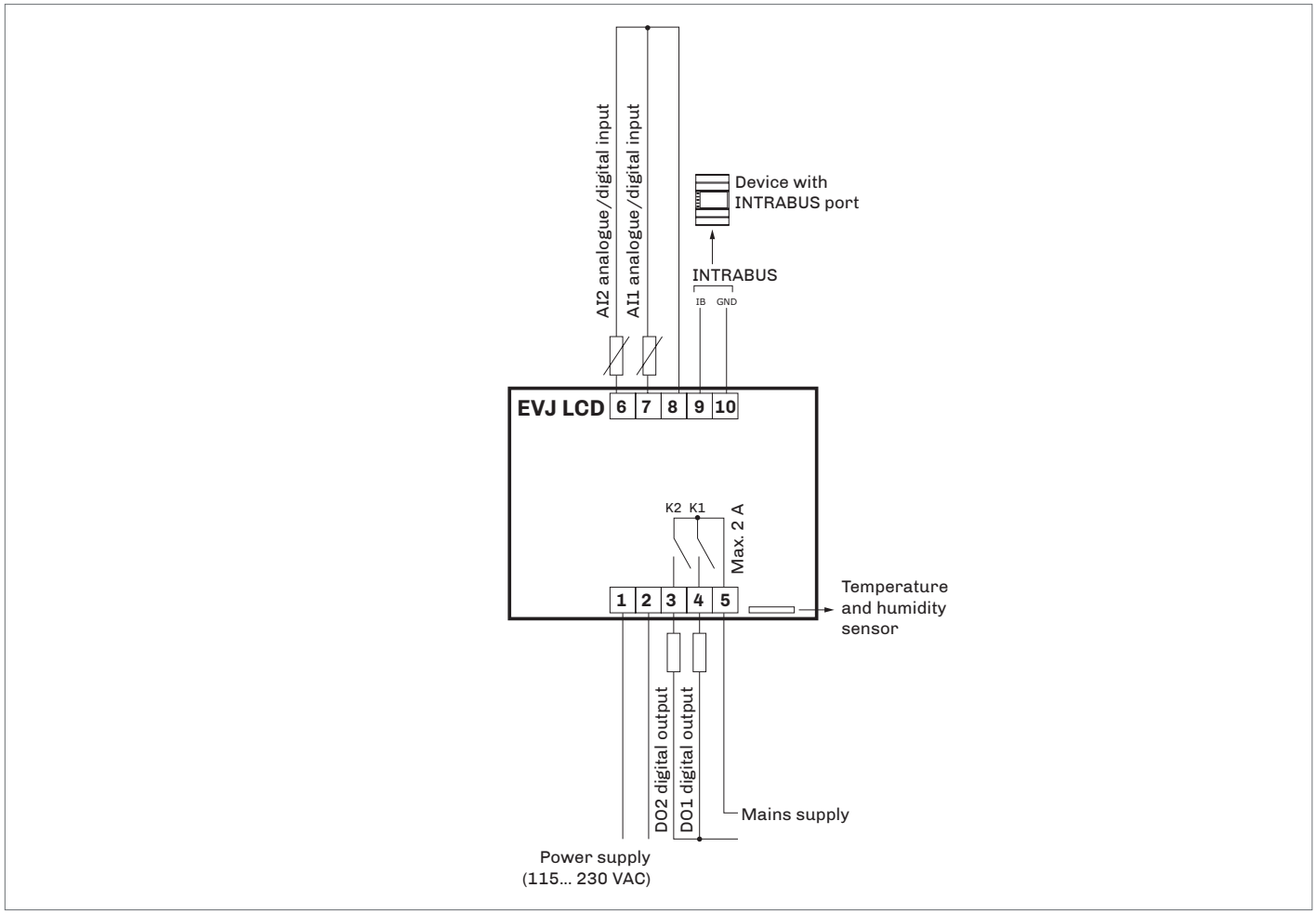
Number	Description
6	AI2 analogue/digital input (NTC/DI)
7	AI1 analogue/digital input (NTC/DI)
8	AI1 and AI2 analogue/digital input reference (GND)
9	INTRABUS port data (IB)
10	INTRABUS port reference (GND)

Temperature (AI3) and humidity (AI5) sensor

Number	Description
	According to the model



Electrical connection with independent power source



EPJ LCD - 12 VAC/DC models for wall installation

Description of connectors

Connector 1

Number	Description
1	- CAN port reference
2	+ CAN port reference
3	Device power supply (12 VAC/DC); if the device is powered by direct current, connect the negative terminal
4	Device power supply (12 VAC/12) if the device is powered by direct current, connect the positive terminal
5	AI4 analogue/digital input (NTC/DI)
6	A14 analogue/digital input reference (GND)

Connector 2

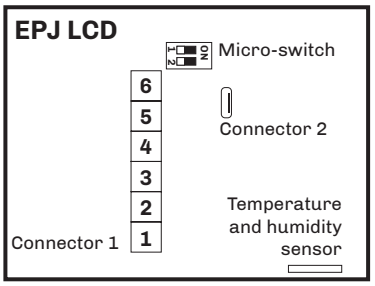
Number	Description
	For EVCO use only

Micro-switch

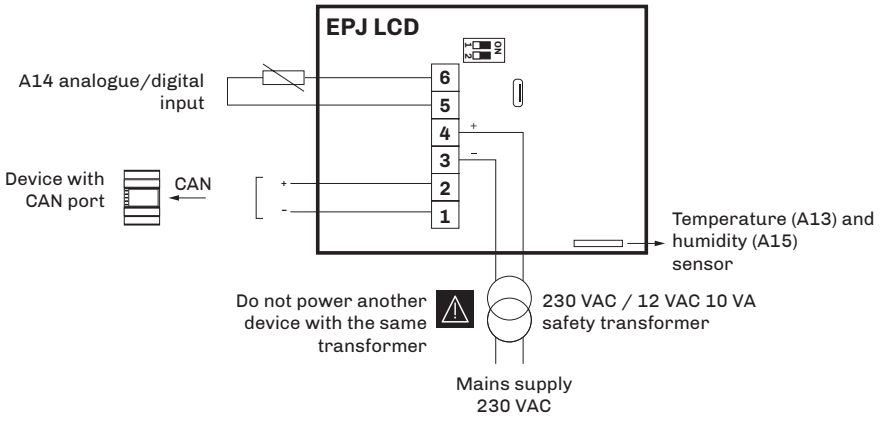
Number	Description
2	To terminate the CAN network
1	For EVCO use only

Temperature (AI3) and humidity (AI5) sensor

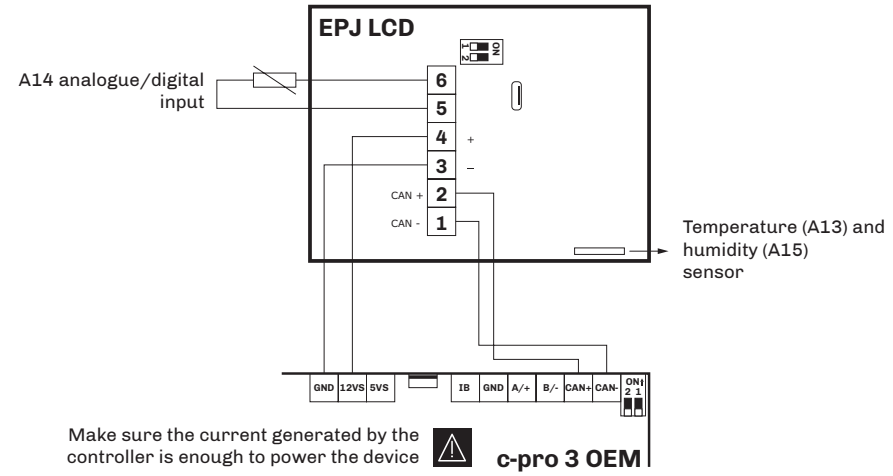
Number	Description
	According to the model



Electrical connection with independent power source



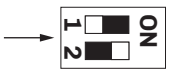
Electrical connection with device powered by a controller
e.g.: **c-pro 3 OEM**



Termination of the CAN network

To terminate the CAN network:
- Place **micro-switch 2 in the ON position**
- Leave micro-**switch 1 in the OFF position** **(for EVCO use only)**

The micro-switch is on the back of the device (first remove the back cover from the front)



EPJ LCD - 115...230 VAC models for wall installation

Description of connectors

Connector 1

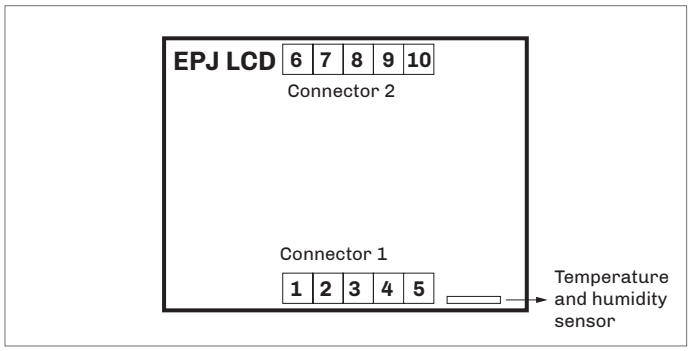
Number	Description
1	Device power supply (115... 230 VAC)
2	Device power supply (115... 230 VAC)
3	DO2 digital output normally open contact (1 A res. at 250 VAC)
4	DO1 digital output normally open contact (1 A res. at 250 VAC)
5	DO1 and DO2 digital outputs common contact (max. 2 A)

Connector 2

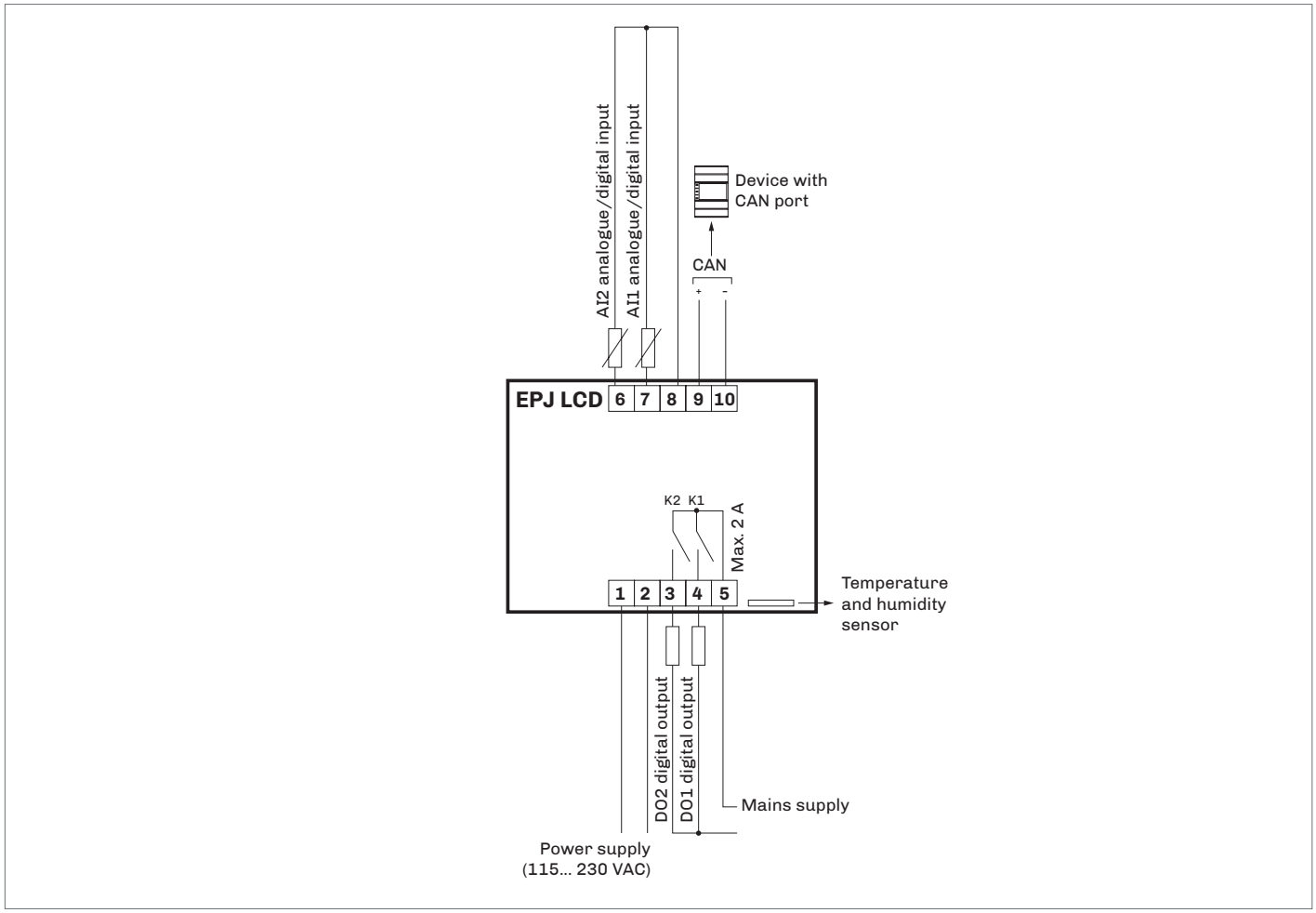
Number	Description
6	AI2 analogue/digital input (NTC/DI)
7	AI1 analogue/digital input (NTC/DI)
8	AI1 and AI2 analogue/digital input reference (GND)
9	+ CAN port reference
10	- CAN port reference

Temperature (AI3) and humidity (AI5) sensor

Number	Description
	According to the model



Electrical connection with independent power source



EVD EXP

Description of connectors

Connector 1

Number	Description
1	DO1 digital output normally open contact (3 A res. at 250 VAC)
2	DO2 digital output normally open contact (3 A res. at 250 VAC)
3	DO1 and DO2 digital outputs common contact

Connector 2

Number	Description
1	DO3 digital output normally open contact (12 A res. at 250 VAC)
2	DO3 and DO4 digital outputs common contact
3	DO3 and DO4 digital outputs common contact
4	DO4 digital output normally open contact (8 A res. at 250 VAC)
5	DO4 digital output normally closed contact (8 A res. at 250 VAC)

Connector 3

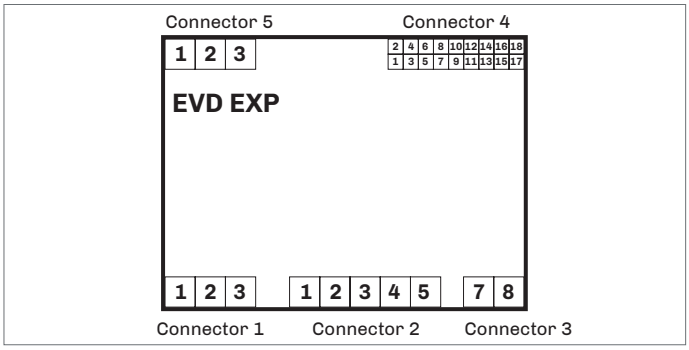
Number	Description
7	Device power supply (115... 230 VAC)
8	Device power supply (115... 230 VAC)

Connector 4

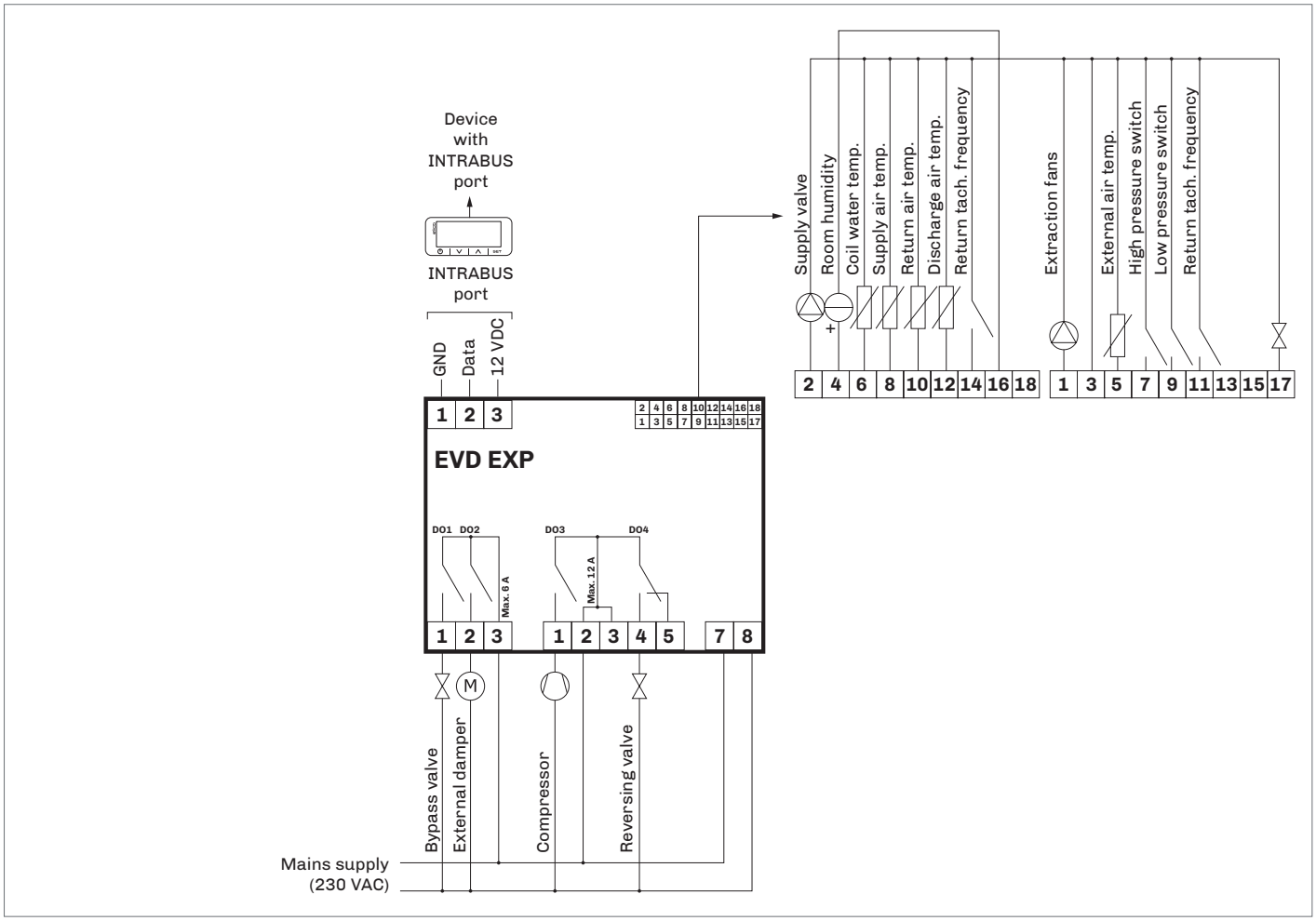
Number	Description
1	AO2 analogue output
2	AO1 analogue output
3	Reference (GND)
4	IN1 analogue input
5	IN10 digital input (dry contact)
6	IN2 analogue input
7	IN9 digital input (dry contact and for pulse trains)
8	IN3 analogue input
9	IN8 digital input (dry contact and for pulse trains)
10	IN4 analogue input
11	IN7 analogue input
12	IN5 analogue input
13	Reference (GND)
14	IN6 analogue input
15	Unused
16	Auxiliary power supply (12 VDC, 40 mA)
17	Open collector output OC1 (12 V, max. 40 mA)
18	Reference (GND)

Connector 5

Number	Description
1	Reference (GND)
2	INTRABUS port data
3	EV3K11 or EVJ LCD (12 VDC) power supply



Electrical connection with independent power source

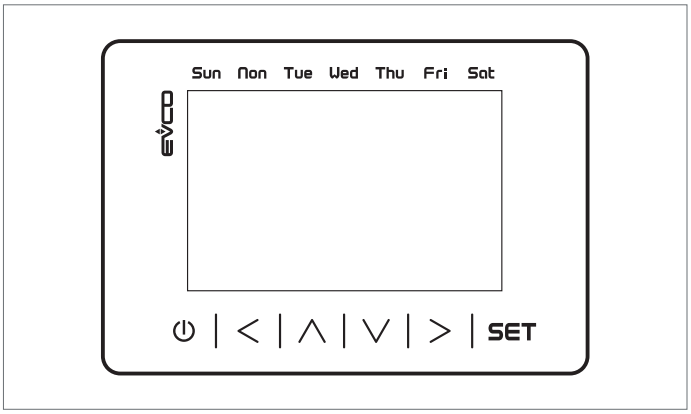


User interface

Keypad

Description of keys

Keys		Instructions
⏻		ON/STAND-BY
<	>	LEFT AND RIGHT
∧	∨	UP AND DOWN
SET		SET

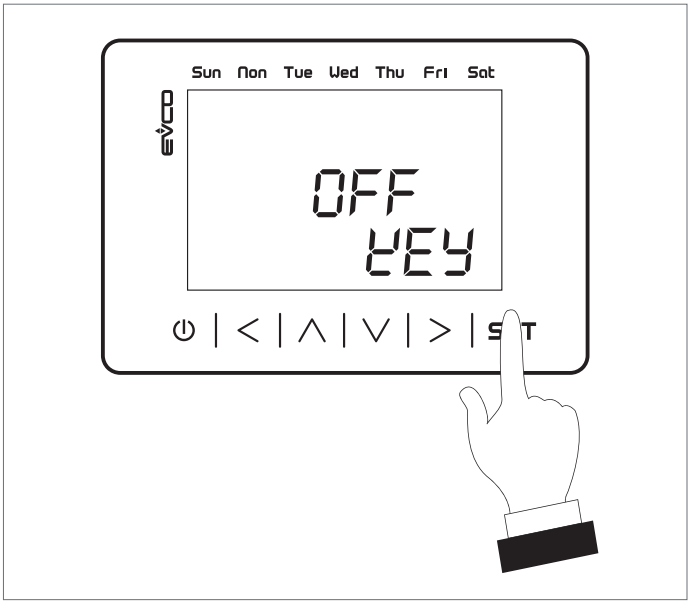


Switching the device on/off

Steps	Description
1	Connect to the power supply: an internal test will start up which will take a couple of seconds
2	Hold the **SET** key down for 2 seconds: the display will show the main screen
3	To switch off the device, disconnect it from the power supply

Access to procedure

Keys		Instructions
SET		Hold the **SET** key down for 2 seconds: the display will show "*Mnu*" and "*USEr*"
⏻		Touch the **ON/STAND-BY** key a few times to return to the previous displays



Access to menus

Keys		Instructions
SET		Hold the **SET** key down for 2 seconds: the display will show "*Mnu*" and "*USEr*"
∧	∨	Touch the **UP** or **DOWN** key to display the menus
SET		Touch the **SET** key to select the menu
⏻		Touch the **ON/STAND-BY** key a few times to return to the previous displays

Parameter configuration

Keys		Instructions
SET		Hold the **SET** key down for 2 seconds: the display will show "*Mnu*" and "*USEr*"
∧	∨	Touch the **UP** or **DOWN** key to display the menus
SET		Touch the **SET** key to access the parameter
SET		Touch the **SET** key to access the value
∧	∨	Touch the **UP** or **DOWN** key to set the value
SET		Touch the **SET** key to confirm the value
⏻		Touch the **ON/STAND-BY** key a few times to return to the previous displays

Password

Keys		Instructions
SET		Hold the **SET** key down for 2 seconds: the display will show "*Mnu*" and "*USEr*"
∨		Touch the **DOWN key** the display will show "*COnS*"
SET		Touch the **SET**key: the display will show "*PU4*"- Password
SET		Touch the **SET** key: the display will show "*0*"
∧	∨	Touch the **UP** or **DOWN** key to set the password
SET		Touch the **SET** key to confirm

Menu

Structure

Level 0		
Menu	Parameter	Value
Info menu - InFO	nUM	000
	VAr	00
	VEr	00
	rEV	00
	SUb	0
	dAy	00
	MOn	00
	yEA	00
Reset menu - rESt	KEy	rESt
	MEM	rESt
	StS	00
	USb	----
Save menu - SAvE	KEy	SAvE
	MEM	SAvE
	StS	00
	USb	----
History menu - HISt	A30	mEHt
Alarm menu - ALAr	ALm	AL30
RTC menu - rtc	SEt	rtc
	dAy	00
	MOn	00
	yEA	00
	H	00
	MIn	00

Level 1		
Menu	Parameter	Value
User menu - USEr	MOd	OOOO
	StC	00.0
	StH	00.0
	U01	00
	SCC	00.0
	SCH	00.0
	OEC	0.0
	OEH	-0.0
	OnC	0.0
	OnH	-0.0
	SdC	00.0
	SdH	00.0
	FSC	00
	FSE	00
	FSn	00
	FrC	00
	FrE	00
	Frn	00
	byM	0
	byU	00
	byt	00
	PSI	0
Time bands - tb	Enb	OO
	tb	SEt
	tb	HOLI
	Enb	YES - no

Level 2		
Menu	Parameter	Value
Servicer menu - MAIn	**MAn**	Cntr
		MAnU
		CAL
		I-O
		PSd

Level 3		
Menu	Parameter	Value
Installer menu	**InS**	rEG
		FAnS
		CMP
		VALV
		HUM
		dAMP
		rECO
		SECU
		MbUS
		OtHr
		dEFt
		PSd

Level 4		
Menu	Parameter	Value
Manufacturer menu - COnS	**COS**	COnF
		HArd
		PSd

Passwords

Access levels

Each menu level sets the accessibility to the various functions and is assigned an accredited password.
Once the correct password has been entered, users can:
- access protected functions
- unlock the level in question
- unlock the various sublevels

Level passwords can be changed by the same or higher levels. For example, from the Manufacturer level it is possible to change the passwords of all the levels.

The range of possible values to set a password goes from -999/9999.
The password setting time frame expires every 4 minutes, after which a new password must be set.

Main page

Display

The main page is displayed in different ways according to the machine status and it can vary in on or off mode.
If the machine is off, "*OFF*" will appear on the top line and the reason for the switch-off on the bottom line:
- Relative key (*KEY*)
- Lack of authorisation from digital input (*dI*)
- Supervisor (*SUP*)
- Programme (*SCHE*)

If the machine is on, "*ON*" will appear.
If heat integration is enabled (*parameter PG02*), the temperature and humidity values will be displayed.
If heat integration is not enabled, the value of the humidity probe will be displayed on the top line and the humidity setpoint (parameter *PU01*) on the bottom line.
If the probe is faulty or disconnected, the display will show "---".

By pressing the RIGHT ⊳ or LEFT ⊲ keys on the main page, information regarding the status of the configured devices and the value of the configured probes will also be displayed.
If there is an error with the probe or if it is not configured, "---" will appear in the field for that value.

EVJ LCD - EPJ LCD display

Description of icons

Icons	Description
	– Off, the machine is in winter operation – Flashing, the machine is in automatic summer operation – On, the machine is in manual summer operation
	– Off, the machine is in summer operation – Flashing, the machine is in automatic winter operation – On, the machine is in manual winter operation
	– Off, there are no active alarms – Flashing, there are new alarms but they are not yet displayed – On, at least one alarm is active
	– Off, in main display – On, entered the settings menus
	– Off, the time bands are active – On, the machine is in manual operation
	– Off, the machine is in manual operation – On, the time bands are active

Description of icons

Icons	Description
	– Off, there is no dehumidification request – On, there is a dehumidification request
	– Off, the fans are switched off – Flashing, the supply or return fan is awaiting switch-on or switch-off according to safety timings – On, at least one fan is active
	– Off, the compressor is off – Flashing slowly, the compressor is awaiting switch-on or switch-off according to safety timings – Flashing quickly, the compressor is in manual operation - If on, the compressor is active
	– Off, the recovery heat exchanger is off – On, the recovery heat exchanger is active
	– Off, the dampers are closed – On, at least one damper is open (external air or recirculation)
	– Off, the water valve is closed – On, the water valve is open
	– Off, defrost is not active – Flashing, dripping is active – On, defrost is active
	– Flashing, indicates which day the time bands are being changed – On, indicates the day of the week
	– On, the comfort setting is active
	– Flashing, the economy digital input is active – On, the economy setting is active
	– On, the night setting is active
	– On, the holiday setting is active
	– Off, there is no heat integration request – On, there is a heat integration request
	Current speed of the supply fan – no step on, fan speed is below 33% – first step on, fan speed is above 33% – second step on, fan speed is above 67% – third step on, fan speed is 100%
°C	– Unit of measurement of the room temperature if parameter *PH05* is set for degrees Celsius (*PH05 = 0*) – If the probe is not configured or is in error mode, the LED is not visible – Only visible if the heat integration function is enabled (parameter *PG02*)
°F	– Unit of measurement of the room temperature if parameter *PH05* is set for degrees Fahrenheit *PH05 = 1*) – If the probe is not configured or is in error mode, the LED is not visible – Only visible if the heat integration function is enabled (parameter *PG02*)
%rH 1st line	– Unit of measurement of humidity – If the probe is not configured or is in error mode, the LED is not visible – Only visible if the heat integration function is not enabled (parameter *PG02*)
%rH 2nd line	– Unit of measurement of humidity if heat integration is enabled or unit of measurement of the humidity setpoint – If the probe is not configured or is in error mode, the LED is not visible

Status pages

Once the controller is switched on, from the remote user interface the "ON" screen will appear.
The screen changes according to whether the heat integration function is enabled or not (parameter *PG02*).

- If the function is enabled
  the room temperature is displayed on the top line
  the room humidity is displayed on the bottom line
- If the function is disabled
  the room humidity is displayed on the top line
  the humidity setpoint is displayed on the bottom line

Pressing the ON/STAND-BY ⏻ key on this screen will take you back to the "ALARM/HISTORY" page.

Press the LEFT ⧏ and RIGHT ⧐ keys together for 3 seconds on the main page of the built-in display to change the "summer/winter" status of the machine. This procedure does not work from the EVJ LCD/EPJ LCD displays.

Press the LEFT ⧏ and RIGHT ⧐ keys on the "ON" screen to display the individual status pages of the configured loads only (except for the pages of the settings and the fans and probes which are always present).

Press the *UP* ⧍ and *DOWN* ⧎ keys on each status page to view the information available.

Heat integration screen

Line	Screen		Description
1st	23.5	°C	Main page with heat integration function enabled
2nd	55	% rh	
1st	55	% rh	Main page with heat integration function disabled
2nd	50	% rh	

Settings screen

Menu	Parameter	Value	Description
Mnu tb	Etb yES	F2 ECO	From this screen it is possible to: – regulate the time bands through "*Etb*" – view the time band currently set through "*tb*": – "---" = no band active – "*OFF*" = OFF band active – "*COMF*" = comfort setting active – "*ECO*" = economy setting active or economy digital input active – "*nIGH*" = night setting active – "*H*" = holiday setting active – view and change the setpoint currently in use through "*SEt*" When regulating time bands, any change to the current setpoint will only be valid for the time band in progress.

Fan screen
There are two different fan pages depending on the type of machine configured (parameter *PG01*):
- dehumidifier only
  the fan page will only give information about the supply fan
- with air recirculation
  information about both the supply and return fans will be given

Fan screen - Dehumidifier only

Menu	Parameter	Value	Description
FAn	StS on	AO 50	These screens display the following information: – status "*StS*": – "---" = fan disabled – "*OFF*" = fan off – "*tOn*" = fan awaiting switch-on – "*On*" = fan on – "*tOFF*" = fan awaiting switch-off – "*ALrM*" = fan in alarm mode – speed "*AO*" of the supply fan

Fan screen - With air recirculation

Menu	Parameter	Value	Description
FAns	SUP on	SUP 50	These screens display the following information: – status: – "---" = fan disabled – "OFF" = fan off – "tOn" = fan awaiting switch-on – "On" = fan on – "tOFF" = fan awaiting switch-off – "ALrM" = fan in alarm mode – fan speed: – of supply fan indicated with "*SUP*" – status (same wordings and meaning as the supply fan) and the speed of the return fan indicated with "*rEt*"

Compressor screen

Menu	Parameter	Value	Description
CMP	dEH yES	SEt 55	These screens display the following information: – if there is a dehumidification request "*dEH*" – humidity setpoint "*SEt*" – compressor status "*StS*": – "----" = compressor disabled – "*ALrM*" = compressor in alarm mode – "*MAnU*" = compressor in manual mode – "*tOn*" = compressor awaiting switch-on – "*On*" = compressor on – "*tOFF*" = compressor awaiting switch-off – "*OFF*" = compressor off – percentage of the modulating compressor "*AO*" – status of the ON/OFF compressor digital output – enable status of the modulating compressor "*dO*" – status of the air condensation valve "*AIr*" – status of the water condensation valve "*H2O*"

Water valve screen

Menu	Parameter	Value	Description
H2O	dO On		These screens display the following information: – status of the water valve: – "----" = valve disabled – "OFF" = valve closed – "On" = valve open

Dampers screen

Menu	Parameter	Value	Description

dAMP	rEC
	OFF
		StS
		On
			These screens display the following information:
			– status of the recirculation damper "*rEC*"
			– status of the external air damper "*StS*":
			  – "---" = damper disabled
			  – "*OFF*" = damper shut
			  – "*tOFF*" = damper closing
			  – "*On*" = damper open
			– percentage of the opening of the modulating external air damper "*AO*"
			– status of the external air damper digital output "*ON/OFF*"
			– enable status of the modulating external air damper "*dO*"

Recovery heat exchanger screen

Menu	Parameter	Value	Description

rECO	EFC
	67
		StS
		On
			These screens display the following information:
			– efficiency value "*EFC*"
			– status of the recovery heat exchanger "*StS*"
			  – "---" = recovery heat exchanger disabled
			  – "*OFF*" = recovery heat exchanger off
			  – "*OFFd*" = recovery heat exchanger off for defrost
			  – "*OFCH*" = recovery heat exchanger off for free-cooling/free-heating
			  – "*On*" = recovery heat exchanger activated
			– status of the digital output "*dO*"

Sensor status screen

Menu	Parameter	Value	Description

PrOb	trE
	21.3
		tOd
		25.7
			These screens display the following information:
			– status of the sensors indicated with the following words:
			  – "*trE*" = Room/return temperature
			  – "*tOd*" = External temperature
			  – "*tUA*" = Water temperature
			  – "*tEH*" = Expulsion temperature
			  – "*tdC*" = Compressor discharge gas temperature
			  – "*tdF*" = Compressor defrost temperature
			  – "*HUM*" = Room humidity
			  – "*AIr*" = Air quality
			  – "*SFA*" = Supply fan remote potentiometer
			  – "*rFA*" = Return fan remote potentiometer
			  – "*PrE*" = Compressor pressure

Main menu

The main menu has no level and is the access point for all the other system menus.

Menu	Abbreviation
User	USEr
Time bands	tb
Servicer	MAIn
Installer	InSt
Manufacturer	COnS
RTC	rtc
Alarms	ALAr
History	HISt
Save parameters	SAvE
Reset parameters	rESt
Info	InFO

This menu can be viewed from every part of the user interface by pressing SET SET for about 2 seconds.
Users can choose the menu they wish to see from this menu by pressing the UP ⧋ and DOWN ⧊ keys, followed by the SET SET key to confirm.

User menu

The User menu is level 1 and it is therefore necessary to enter the User level password, or that of a higher level, to view or change the parameters in this menu.
Password = 1

This section contains the following parameters:
- summer/winter/automatic operation
- summer operation setpoint
- winter operation setpoint
- room humidity setpoint
- comfort setting cold mode setpoint
- comfort setting hot mode setpoint
- economy setting cold mode offset
- economy setting hot mode offset
- night setting cold mode offset
- night setting hot mode offset
- cold mode setpoint forced by DI
- hot mode setpoint forced by DI
- comfort setting supply fan setpoint
- economy setting supply fan setpoint
- night setting supply fan setpoint
- comfort setting return fan setpoint
- economy setting return fan setpoint
- night setting return fan setpoint
- backlight mode
- backlight display percentage
- backlight display timeout
- user password

If the EVJ LCD/EPJ LCD display has a temperature/humidity sensor installed inside, both the intensity and the timeout of the backlight cannot be set by the user. They will be forced at an intensity of 15% and a timeout of 30 seconds.

Servicer menu
The Servicer menu is level 2 and it is therefore necessary to enter the Servicer level password, or that of a higher level, to view or change the parameters in this section.
Password = 2

This section contains the following parameters:
- counters (*Cntr*)
- manual (*MAnU*)
- calibration (*CAL*)
- status of inputs/outputs (*I-O*)
- servicer menu password(*PSd*)

It is possible to view the status of the various devices and the inputs/outputs used by the application in the Servicer menu.
Description of the parameters:
- COUNTERS
  View and enable features regarding fan and compressor operation, for example operating hours and the maximum acceptable time threshold. Through "*SEt datE*" in this menu it is also possible to view and update the latest maintenance date for the machine

- MANUAL
  Set the manual regulation value of the fans and force the compressor into manual mode

- CALIBRATION
  Set the corrections to be applied to the analogue inputs to compensate for the offsets due to the cabling and position of the probes

- INPUT/OUTPUT STATUS
  View the board inputs and outputs directly

Installer menu
The Installer menu is level 3 and it is therefore necessary to enter the Installer level password, or that of a higher level, to view or change the parameters in this section.
Password = 3

This section contains the following parameters:
- regulation (*rEG*)
- fans (*FAnS*)
- compressor (*CMP*)
- water valve (*VALU*)
- humidity (HUM)
- dampers (*dAMP*)
- recovery heat exchanger (*rECO*)
- security (*SECU*)
- MODBUS (*MbUS*)
- other (*OtHr*)
- default (*dEFt*)
- installer menu password (PSd)

The Installer menu contains all the parameters for configuring the functions, alarms, regulations, logics and features used by this device.
Description of the parameters:
- REGULATION
  Set/view the parameters for some particular types of regulation:
  - anti-stagnation cycles for room temperature acquisition
  - manual/automatic operating mode changeover
  - changeover probe and thresholds for automatic summer/winter switching

- FANS, COMPRESSOR, WATER VALVE, HUMIDITY, DAMPERS and RECOVERY HEAT EXCHANGER
  Set the parameters to manage the devices:
  - regulation parameters
  - timings
  - functions

- SECURITY
  Contains all the parameters for the alarms and manages the security of the devices which protect the dehumidifier:
  - enabling
  - signalling delays
  - type of re-arm
  - type of alarm signal

- MODBUS
  Contains all the parameters for configuring the network

- OTHER
  Contains other general parameters:
  - setting the minimum and maximum threshold values
  - setting CAN communication parameters
  - enabling extra functions
  - deleting history
  - setting unit of measurement

- DEFAULT
  Reset the default values of all the application parameters

Manufacturer menu
The Manufacturer menu is level 4 and it is therefore necessary to enter the Manufacturer level password, or that of a higher level, to view or change the parameters in this section.
Password = 4

This section contains the following parameters:
- configuration (*COnF*)
- hardware (*HArd*)
- manufacturer menu password(*PSd*)

The Manufacturer menu contains all the parameters for configuring the main features and inputs/outputs of the controller. This menu can only be accessed when the machine is switched off.
Description of the parameters:
- CONFIGURATION
  Set/view the parameters of the machine features

- HARDWARE
  Contains the parameters for using the controller inputs/ outputs.
  In the sub-menu it is possible to browse the different pages for setting the parameters of the analogue inputs/outputs and the digital inputs/outputs

RTC menu
The RTC menu contains the functions of the RTC (Real Time Clock) system.

Alarm menu
The Alarm menu enables alarms to be displayed and confirmed.
Every time the SET SET key is pressed, the next active alarm is displayed. If there are no alarms, "*no ALAr*" will appear.

Press the SET SET key for about 2 seconds to confirm the alarm if the error conditions are no longer active.

Press the ON/STAND-BY ⏻ key or wait 60 seconds without pressing any key to return to the main page.

Alarm history menu

The Alarm history menu displays the alarm history. This page shows the last alarm.
Press the SET SET key to view the previous alarms. Repeat this action to scroll through all the events in the history down to the first alarm. The history display is circular.

Press the ON/STAND-BY ⏻ key or wait 60 seconds without pressing any key to return to the main page.

Save/Reset menu

The Save/Reset menu is level 3 and it is therefore necessary to enter the Installer level password, or that of a higher level, to view or change the parameters in this section.
Password = 3

This section contains the following parameters:
- save parameters (*SAvE*)
- reset parameters *(rESt)*

Description of the parameters:
- SAVE PARAMETERS
  Save the map of the parameters on the device:
  - in the internal memory of the controller or
  - on a FAT32 formatted USB flash drive

It is possible to see if the USB flash drive has been successfully connected and recognised.

- RESET PARAMETERS
  Reset a map of the parameters which has previously been saved
  - in the internal memory of the controller or
  - on a FAT32 formatted USB flash drive

It is possible to see if the USB flash drive has been successfully connected and recognised.

Info menu

Press the UP ⏶ and DOWN ⏷ *keys* in the Info menu to view information about the versions of the project and the controller firmware in sequence:
- project number
- variation number
- project version
- project revision
- project date
- firmware number
- firmware version
- firmware revision

List of parameters

Description of parameters

Below is the list of parameters managed by the application.
The following are given for each parameter:
- a brief description
- the range of admissible values
- the unit of measurement
- the suggested default value
- the menu containing the parameter

Menu structure

Menu	Description	Parameters
OR	Clock menu	
UT	User menu	
TB	Time bands	
MA	Servicer menu	
MA-C		Counters
MA-M		Manual
MA-CA		Calibration
IS	Installer menu	
IS-R		Regulation
IS-F		Fans
IS-C		Compressor
IS-VA		Water valve
IS-U		Humidity
IS-SE		Dampers
IS-RH		Heat recovery exchanger
IS-S		Security
IS-M		MODBUS
IS-V		Other
IS-D		Default
CO	Manufacturer menu	
CO-C		Configuration
CO-AI		AI hardware parameters
CO-DI		DI hardware parameters
CO-AO		AO hardware parameters
CO-DO		DO hardware parameters

Table of configuration parameters

When the machine parameters are configured or changes made to the configuration parameters, it is advisable to switch the machine off and restart the system to allow the board to configure itself correctly.

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
	TIME BAND MENU					TB	
	Monday band type 1 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Monday time band 1	06:00:00	00:00:00	23:59:59		TB	
	Monday band type 2 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	3	0	4		TB	
	Monday time band 2	07:30:00	00:00:00	23:59:59		TB	
	Monday band type 3 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Monday time band 3	17:00:00	00:00:00	23:59:59		TB	
	Monday band type 4 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	4	0	4		TB	
	Monday time band 4	21:00:00	00:00:00	23:59:59		TB	
	Tuesday band type 1 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Tuesday time band 1	06:00:00	00:00:00	23:59:59		TB	
	Tuesday band type 2 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	3	0	4		TB	
	Tuesday time band 2	07:30:00	00:00:00	23:59:59		TB	
	Tuesday band type 3 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Tuesday time band 3	17:00:00	00:00:00	23:59:59		TB	

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
	Tuesday band type 4 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	4	0	4		TB	
	Tuesday time band 4	21:00:00	00:00:00	23:59:59		TB	
	Wednesday band type 1 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Wednesday time band 1	06:00:00	00:00:00	23:59:59		TB	
	Wednesday band type 2 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	3	0	4		TB	
	Wednesday time band 2	07:30:00	00:00:00	23:59:59		TB	
	Wednesday band type 3 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Wednesday time band 3	17:00:00	00:00:00	23:59:59		TB	
	Wednesday band type 4 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	4	0	4		TB	
	Wednesday time band 4	21:00:00	00:00:00	23:59:59		TB	
	Thursday band type 1 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Thursday time band 1	06:00:00	00:00:00	23:59:59		TB	
	Thursday band type 2 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	3	0	4		TB	
	Thursday time band 2	07:30:00	00:00:00	23:59:59		TB	
	Thursday band type 3 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Thursday time band 3	17:00:00	00:00:00	23:59:59		TB	

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
	Thursday band type 4 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	4	0	4		TB	
	Thursday time band 4	21:00:00	00:00:00	23:59:59		TB	
	Friday band type 1 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Friday time band 1	06:00:00	00:00:00	23:59:59		TB	
	Friday band type 2 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	3	0	4		TB	
	Friday time band 2	07:30:00	00:00:00	23:59:59		TB	
	Friday band type 3 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Friday time band 3	17:00:00	00:00:00	23:59:59		TB	
	Friday band type 4 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	4	0	4		TB	
	Friday time band 4	21:00:00	00:00:00	23:59:59		TB	
	Saturday band type 1 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Saturday time band 1	06:00:00	00:00:00	23:59:59		TB	
	Saturday band type 2 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	3	0	4		TB	
	Saturday time band 2	07:30:00	00:00:00	23:59:59		TB	
	Saturday band type 3 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Saturday time band 3	12:00:00	00:00:00	23:59:59		TB	

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
	Saturday band type 4 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	4	0	4		TB	
	Saturday time band 4	21:00:00	00:00:00	23:59:59		TB	
	Sunday band type 1 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	3	0	4		TB	
	Sunday time band 1	04:00:00	00:00:00	23:59:59		TB	
	Sunday band type 2 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	2	0	4		TB	
	Sunday time band 2	06:00:00	00:00:00	23:59:59		TB	
	Sunday band type 3 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	3	0	4		TB	
	Sunday time band 3	20:00:00	00:00:00	23:59:59		TB	
	Sunday band type 4 0: Disabled 1: OFF 2: Comfort 3: Economy 4: Night	4	0	4		TB	
	Sunday time band 4	21:00:00	00:00:00	23:59:59		TB	
	Holiday setting in days	7	0	255		TB	
	Holiday setting in hours	0	0	23		TB	
	Unit status in holiday setting: 0: Unit off 1: Unit on	1	0	1		TB	
Level 1	**USER MENU**						Built-in and EVJ LCD/EPJ LCD
MOdE	Operating mode: 0: Summer (Cooling) 1: Winter (Heating) 2: Automatic	0	0	2		UT	MOd
SEtC	Summer setpoint	24.0	PH07	PH08	°C	UT	StC
SEtH	Winter setpoint	20.0	PH09	PH10	°C	UT	StH
PU01	Humidity setpoint	55	0	100	%	UT	u01
SCC	Comfort setting cold mode setpoint	24.0	PH07	PH08	°C	UT	SCC
SCH	Comfort setting hot mode setpoint	21.0	PH09	PH10	°C	UT	SCH
OEC	Economy setting cold mode offset	1.0	-20.0	20.0	°C	UT	OEC
OEH	Economy setting hot mode offset	-1.0	-20.0	20.0	°C	UT	OEH
ONC	Night setting cold mode offset	2.0	-20.0	20.0	°C	UT	OnC

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
ONH	Night setting hot mode offset	-2.0	-20.0	20.0	°C	UT	OnH
SDC	Summer setpoint forced by DI	26.0	PH07	PH08	°C	UT	SdC
SDH	Winter setpoint forced by DI	19.0	PH09	PH10	°C	UT	SdH
FSC	Comfort setting supply fan setpoint	80	PF07	PF08	%	UT	FSC
FSE	Economy setting supply fan setpoint	60	PF07	PF08	%	UT	FSE
FSN	Night setting supply fan setpoint	40	PF07	PF08	%	UT	FSn
FRC	Comfort setting return fan setpoint	80	PF29	PF30	%	UT	FrC
FRE	Economy setting return fan setpoint	60	PF29	PF30	%	UT	FrE
FRN	Night setting return fan setpoint	40	PF29	PF30	%	UT	Frn
BKM	Backlight display mode EVJ LCD/EPJ LCD	2	0	3		UT	bkM
BKU	Backlight display percentage EVJ LCD/EPJ LCD	15	0	100	%	UT	bkU If there are TH probes, forced to 15%
BKT	Backlight display timeout EVJ LCD/EPJ LCD	30	0	241	Sec	UT	bkt If there are TH probes, forced to 30 sec
PSd1	User level password (1)	0	-999	9999		UT	PS1
Level 2	SERVICER MENU						
	COUNTERS						
PM00	Maximum fan operating hours. The relative alarm will sound past this limit	2000.0	0.0	9999.0	Hours x10	MA-C	M00
PM01	Supply fan operating hours	0.0	0.0	9999.0	Hours x10	MA-C	M01
PM02	Return fan operating hours	0.0	0.0	9999.0	Hours x10	MA-C	M02
PM03	Maximum compressor operating hours. The relative alarm will sound past this limit	2000.0	0.0	9999.0	Hours x10	MA-C	M03
PM04	Compressor operating hours	0.0	0.0	9999.0	Hours x10	MA-C	M04
PM90	Last maintenance date					MA-C	PM90
	MANUAL						
PM20	Supply fan speed in manual regulation	0	0	100	%	MA-M	M20
PM21	Enable manual compressor regulation	NO (0)	NO (0)	YES (1)		MA-M	M21
PM22	Return fan speed in manual regulation	0	PF29	PF30	%	MA-M	M22
	CALIBRATIONS						
PM80	Calibration of room air temperature probe	0.0	-10.0	10.0	°C	MA-CA	M80
PM81	Calibration of external air temperature probe	0.0	-10.0	10.0	°C	MA-CA	M81

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
PM82	Calibration of water temperature probe	0.0	-10.0	10.0	°C	MA-CA	M82
PM83	Calibration of expelled air temperature probe	0.0	-10.0	10.0	°C	MA-CA	M83
PM84	Calibration of compressor discharge gas temperature probe	0.0	-10.0	10.0	°C	MA-CA	M84
PM85	Calibration of compressor defrost temperature probe	0.0	-10.0	10.0	°C	MA-CA	M85
PM86	Calibration of room humidity probe	0	-10	10	%	MA-CA	M86
PM87	Calibration of air quality probe (CO_2/VOC)	0	-100	100	ppm	MA-CA	M87
PM88	Calibration of fan remote potentiometer	0	-10	10	%	MA-CA	M88
PM89	Calibration of compressor pressure probe	0.0	-20.0	20.0	Bar	MA-CA	M89
PSd2	Servicer level password (2)	1	-999	9999		MA	PS2
Level 3	INSTALLER MENU						
	REGULATIONS						
PC01	Enable anti-stagnation cycles for room temperature	NO (0)	NO (0)	YES (1)		IS-R	C01
PC02	Anti-stagnation cycle waiting time	6	1	99	Min	IS-R	C02
PC03	Anti-stagnation cycle activation time	2	1	30	Min	IS-R	C03
PC04	Activate both fans for anti-stagnation cycle 0: NO – Activate only the return fan 1: YES – Activate both fans	YES (1)	NO (0)	YES (1)		IS-R	C04
PC05	Change “summer/winter” mode: 0: Manual 1: Manual + Automatic 2: Automatic	0	0	2		IS-R	C05
PC06	Probe active for automatic conversion: 0: Water probe 1: Room probe	0	0	1		IS-R	C06
PC07	Water temperature summer switching setpoint	20.0	0.0	PC08	°C	IS-R	C07
PC08	Water temperature winter switching setpoint	30.0	PC07	70.0	°C	IS-R	C08
PC09	Room temperature summer switching setpoint	20.0	PC10	70.0	°C	IS-R	C09
PC10	Room temperature winter switching setpoint	10.0	0.0	PC09	°C	IS-R	C10
	FANS						
PF01	Minimum fan switch-on time	60	0	999	Sec	IS-F	F01
PF02	Minimum time lapse between switch-on of both fans	5	0	999	Sec	IS-F	F02
PF03	Time for fans in post-ventilation	30	0	999	Sec	IS-F	F03
PF04	Stop supply fan during compressor defrost	NO (0)	NO (0)	YES (1)		IS-F	F04

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
PF05	Supply fan speed when air quality probe is in error mode	30	PF07	PF08	%	IS-F	F05
PF07	Minimum supply fan speed during recirculation	40	0	PF08	%	IS-F	F07
PF08	Maximum supply fan speed during recirculation	100	PF07	100	%	IS-F	F08
PF09	Maximum supply fan speed during heat integration	100	PF27	100	%	IS-F	F09
PF10	Maximum supply fan speed during dehumidification	100	PF28	100	%	IS-F	F10
PF11	Percentage increase/decrease of fan speed during integration, CO_2 or manual regulation	5	1	100	%	IS-F	F11
PF12	Heat integration neutral zone	2.0	0.0	20.0	°C	IS-F	F12
PF13	Time increase/decrease of fan speed during heat integration	5	1	100	Sec	IS-F	F13
PF15	Minimum air quality setpoint value	1	1	PF16	ppm	IS-F	F15
PF16	Maximum air quality setpoint value	9999	PF15	9999	ppm	IS-F	F16
PF17	Air quality setpoint	800	PF15	PF16	ppm	IS-F	F17
PF18	Air quality neutral zone	200	0	1000	ppm	IS-F	F18
PF19	Time increase/decrease of fan speed during air quality regulation	5	1	100	Sec	IS-F	F19
PF20	Percentage increase/decrease of fan speed during recovery defrost	5	0	100	%	IS-F	F20
PF21	Time increase/decrease of fan speed during recovery defrost	5	1	100	Sec	IS-F	F21
PF22	Return fan percentage delta during recovery defrost	10	0	100	%	IS-F	F22
PF23	Supply fan speed with ventilation forced by DI active	70	0	100	%	IS-F	F23
PF26	Supply fan post-ventilation speed	50	PF07	PF08	%	IS-F	F26
PF27	Minimum supply fan speed during heat integration	40	0	PF09	%	IS-F	F27
PF28	Minimum supply fan speed during dehumidification	40	0	PF10	%	IS-F	F28
PF29	Minimum return fan speed	40	0	PF30	%	IS-F	F29
PF30	Maximum return fan speed	100	PF29	100	%	IS-F	F30
PF31	Type of heat integration: 0: Temperature only 1: Greater between manual and potentiometer 2: Greater between temperature, manual and potentiometer	0	0	2		IS-F	F31
PF32	Return fan speed with ventilation forced by DI active	70	PF29	PF30	%	IS-F	F32
PF33	Return fan speed when air quality probe is in error mode	30	PF29	PF30	%	IS-F	F33
PF34	Return fan post-ventilation speed	50	PF29	PF30	%	IS-F	F34

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
	COMPRESSOR						
PE01	Minimum compressor switch-off time	120	0	999	Sec	IS-C	E01
PE02	Minimum compressor switch-on time	20	0	999	Sec	IS-C	E02
PE03	Minimum time between two compressor switch-ons	360	0	999	Sec	IS-C	E03
PE04	Minimum time between fan switch-on during dehumidification and compressor switch-on	60	0	999	Sec	IS-C	E04
PE05	Enable compressor bypass safety times	NO (0)	NO (0)	YES (1)		IS-C	E05
PE06	Minimum percentage modulating compressor	0	0	PE07	%	IS-C	E06
PE07	Maximum percentage modulating compressor	100	PE06	100	%	IS-C	E07
PE08	Percentage increase/decrease of modulating compressor during dehumidification	5	1	100	%	IS-C	E08
PE09	Time percentage increase/decrease of modulating compressor during dehumidification	5	1	100	Sec	IS-C	E09
PE10	Defrost interval	8	1	99	Hours	IS-C	E10
PE11	Defrost end setpoint	10.0	PE15	20.0	°C	IS-C	E11
PE12	Maximum defrost time	30	1	99	Min	IS-C	E12
PE13	Drip duration	2	0	15	Min	IS-C	E13
PE14	Type of defrost interval count: 0: Unit ON 1: Compressor ON 2: T.defrost < setpoint PE15	2	0	2		IS-C	E14
PE15	Defrost temperature setpoint to start count	8.0	0.0	PE11	°C	IS-C	E15
PE16	Change time water/air condensation valves	10	0	999	msec	IS-C	E16
PE17	High pressure pre-alarm setpoint	37.0	16.0	PA33	Bar	IS-C	E17
PE18	High pressure pre-alarm differential	5.0	0.1	10.0	Bar	IS-C	E18
PE19	Percentage increase/decrease of compressor in high pressure pre-alarm mode	5	0	100	%	IS-C	E19
PE20	Time percentage increase/decrease of compressor in high pressure pre-alarm mode	10	1	999	Sec	IS-C	E20
PE21	Percentage forced dehumidification in cooling mode	50	PE06	PE07	%	IS-C	E21
	WATER VALVE						
Pb01	Close water valve delay from OFF request	30	0	999	Sec	IS-VA	b01
Pb02	Sniffing valve activation time after high/low temperature alarm	60	1	999	Sec	IS-VA	b02
Pb03	Sniffing valve waiting time after high/low temperature alarm	2	1	99	Min	IS-VA	b03
Pb04	Pre-heating function setpoint	10.0	0.0	30.0	°C	IS-VA	b04
Pb05	Pre-heating function differential	10.0	0.1	20.0	°C	IS-VA	b05

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
Pb06	Maximum duration pre-heating function	0	0	60	Min	IS-VA	b06
Pb07	Sniffing valve activation time	60	1	999	Sec	IS-VA	b07
Pb08	Sniffing valve waiting time	60	1	99	Min	IS-VA	b08
	DEHUMIDIFICATION						
PU02	Enable dehumidification in winter: 0: No 1: With water 2: Without water	0	0	2		IS-U	U02
PU03	Enable dehumidification with high temperature alarm	NO (0)	NO (0)	YES (1)		IS-U	U03
PU04	Enable dehumidification with water flow switch alarm	NO (0)	NO (0)	YES (1)		IS-U	U04
PU05	Force dehumidification with cooling request	NO (0)	NO (0)	YES (1)		IS-U	U05
PU06	Dehumidification neutral zone	5	0	100	%	IS-U	U06
PU07	Dehumidification differential	10	0	100	%	IS-U	U07
PU08	Water temperature setpoint for dehumidification without compressor	10.0	0.0	30.0	°C	IS-U	U08
PU09	Enable compressor as second dehumidification step	NO (0)	NO (0)	YES (1)		IS-U	U09
PU10	Time off-band for dehumidification without compressor	30	0	240	Min	IS-U	U10
	DAMPERS						
PS01	Recirculation damper pre-start time	45	0	9999	Sec	IS-SE	S01
PS02	External air damper pre-start time	45	0	9999	Sec	IS-SE	S02
PS03	Close external air damper delay from fan switch-off	15	0	9999	Sec	IS-SE	S03
PS04	Minimum opening modulating external air damper in high humidity warning	20	0	PS05	%	IS-SE	S04
PS05	Maximum opening modulating external air damper	100	PS04	100	%	IS-SE	S05
PS06	Enable free-cooling/ free-heating setpoint	4.0	0.0	20.0	°C	IS-SE	S06
PS07	Enable free-cooling/ free-heating differential	2.0	0.0	20.0	°C	IS-SE	S07
PS08	Percentage increase/decrease of modulating external air damper in high humidity warning	5	1	100	%	IS-SE	S08
PS09	Time percentage increase/decrease of modulating external air damper in high humidity warning	5	1	100	Sec	IS-SE	S09
	HEAT RECOVERY EXCHANGER						
Pr01	Differential setpoint for rotary recovery heat exchanger regulation	5.0	0.0	20.0	°C	IS-RH	r01
Pr02	Regulation differential for rotary recovery heat exchanger	3.0	0.0	20.0	°C	IS-RH	r02
Pr03	Recovery heat exchanger defrost setpoint	4.0	-15.0	70.0	°C	IS-RH	r03
Pr04	Recovery heat exchanger defrost neutral zone	2.0	0.0	20.0	°C	IS-RH	r04

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
Pr05	Bypass cycle time for cross-flow recovery heat exchanger during defrost	5	1	99	Min	IS-RH	r05
Pr06	Recovery heat exchanger stopped setpoint during defrost	2.0	-15.0	70.0	°C	IS-RH	r06
Pr07	Recovery heat exchanger stopped differential during defrost	3.0	0.0	20.0	°C	IS-RH	r07
Pr08	Percentage increase/decrease of rotary recovery heat exchanger speed during defrost	5	0	100	%	IS-RH	r08
Pr09	Time increase/decrease of rotary recovery heat exchanger speed during defrost	5	1	100	Sec	IS-RH	r09
Pr10	PWM frequency of rotary recovery heat exchanger during defrost	10	1	2000	Hz	IS-RH	r10
	SECURITY						
PA01	Enable fan operating hours alarm	YES (1)	NO (0)	YES (1)		IS-S	A01
PA02	Enable compressor operating hours alarm	YES (1)	NO (0)	YES (1)		IS-S	A02
PA03	Type of operating hours alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	1	0	2		IS-S	A03
PA04	Probe alarm delay	10	0	240	Sec	IS-S	A04
PA05	Type of probe alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	1	0	2		IS-S	A05
PA06	Air flow switch alarm delay from reset	30	0	999	Sec	IS-S	A06
PA07	Air flow switch alarm delay	5	0	999	Sec	IS-S	A07
PA08	Type of air flow switch alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	2	0	2		IS-S	A08
PA09	Water flow switch alarm delay from reset	30	0	999	Sec	IS-S	A09
PA10	Water flow switch alarm delay	5	0	999	Sec	IS-S	A10
PA11	Number of water flow switch alarms/ hour for manual re-arm	3	0	5		IS-S	A11
PA12	Type of water flow switch alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	2	0	2		IS-S	A12
PA13	Air filter pressure switch alarm delay	2	0	999	Sec	IS-S	A13
PA14	Type of re-arm for air filter pressure switch alarm: 0: Automatic 1: Manual	Manu (1)	Auto (0)	Manu (1)		IS-S	A14

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
PA15	Type of air filter pressure switch alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	1	0	2		IS-S	A15
PA16	High/low temperature alarm delay	30	1	999	Sec	IS-S	A16
PA17	High/low temperature alarm differential	2.0	0.1	10.0	°C	IS-S	A17
PA18	Type of high/low temperature alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	1	0	2		IS-S	A18
PA19	High humidity warning setpoint	70	PU01	100	%	IS-S	A19
PA20	High humidity warning differential	10	0	100	%	IS-S	A20
PA21	Time off-band for high humidity alarm	5	0	60	Min	IS-S	A21
PA22	Number of high humidity warnings/hour for manual re-arm	3	0	5		IS-S	A22
PA23	Fan tachometer alarm delay from reset	30	0	999	Sec	IS-S	A23
PA24	Fan tachometer alarm delay	5	0	999	Sec	IS-S	A24
PA25	Maximum fan RPM for tachometer alarm	1400	0	9999	RPM	IS-S	A25
PA26	Type of fan alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	2	0	2		IS-S	A26
PA27	Compressor thermal switch alarm delay	2	0	999	Sec	IS-S	A27
PA28	Type of compressor thermal switch alarm re-arm: 0: Automatic 1: Manual	Manu (1)	Auto (0)	Manu (1)		IS-S	A28
PA29	Type of compressor thermal switch alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	2	0	2		IS-S	A29
PA30	Low pressure alarm bypass time	120	0	999	Sec	IS-S	A30
PA31	Low pressure alarm delay	10	0	999	Sec	IS-S	A31
PA32	Number of low pressure alarms/hour for manual re-arm	3	0	5		IS-S	A32
PA33	High pressure alarm setpoint	42.0	PE17	45.0	Bar	IS-S	A33
PA34	High pressure alarm differential	7.0	0.1	10.0	Bar	IS-S	A34
PA35	Number of high pressure alarms/hour for manual re-arm	3	0	5		IS-S	A35
PA36	Type of high/low pressure alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	2	0	2		IS-S	A36
PA37	High discharge gas temperature alarm delay	30	0	999	Sec	IS-S	A37

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
PA38	High discharge gas temperature alarm setpoint	90.0	70.0	140.0	°C	IS-S	A38
PA39	High discharge gas temperature alarm differential	20.0	10.0	30.0	°C	IS-S	A39
PA40	Number of high discharge gas temperature alarms/hour for manual re-arm	3	0	5		IS-S	A40
PA41	Type of high discharge gas temperature alarm: 0: No relay 1: Minor alarm 2: Serious alarm	2	0	2		IS-S	A41
PA42	Antifreeze alarm delay	5	0	999	Sec	IS-S	A42
PA43	Water temperature antifreeze alarm setpoint	3.0	0.0	20.0	°C	IS-S	A43
PA44	Water temperature antifreeze alarm differential	2.0	0.1	10.0	°C	IS-S	A44
PA45	Type of antifreeze alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	2	0	2		IS-S	A45
PA46	Type of fire/smoke alarm: 0: Put out fire 1: Smoke evacuation	1	0	1		IS-S	A46
PA47	Type of fire/smoke alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	2	0	2		IS-S	A47
PA48	Generic warning delay	30	0	999	Sec	IS-S	A48
PA49	Type of generic re-arm warning: 0: Automatic 1: Manual	Auto (0)	Auto (0)	Manu (1)		IS-S	A49
PA50	Generic alarm delay	30	0	999	Sec	IS-S	A50
PA51	Type of generic re-arm alarm: 0: Automatic 1: Manual	Manu (1)	Auto (0)	Manu (1)		IS-S	A51
PA52	Enable RTC alarm	NO (0)	NO (0)	YES (1)		IS-S	A52
PA53	Type of RTC alarm re-arm: 0: Automatic 1: Manual	Auto (0)	Auto (0)	Manu (1)		IS-S	A53
PA54	Type of RTC alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	1	0	2		IS-S	A54
PA55	Type of phase sequence alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	2	0	2		IS-S	A55
PA56	Type of expansion alarm signal: 0: No relay 1: Minor alarm 2: Serious alarm	1	0	2		IS-S	A56
	MODBUS						
PH11	MODBUS address	1	1	247		IS-M	H11

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
PH12	Baud rate of MODBUS communication: 0: 1200 1: 2400 2: 4800 3: 9600 4: 19200 5: 28800 6: 38400 7: 57600	3	0	7	Kbit	IS-M	H12
PH13	MODBUS parity: 0: None 1: Odd 2: Even	2	0	2		IS-M	H13
PH14	MODBUS stop bit: 0: 1 stop bit 1: 2 stop bits	0	0	1		IS-M	H14
	OTHER PARAMETERS						
PH01	Enable machine switch on/switch off by pressing ESC key	YES (1)	NO (0)	YES (1)		IS-V	H01
PH02	Enable supervisor machine switch on/ switch off	NO (0)	NO (0)	YES (1)		IS-V	H02
PH03	Enable programme	NO (0)	NO (0)	YES (1)		IS-V	H03
PH04	Unit status in holiday setting: 0: Unit off 1: Unit on	1	0	1		IS-V	H04
PH05	Unit of measurement of temperature: 0: °C 1: °F	0 (°C)	0 (°C)	1 (°F)		IS-V	H05
PH06	Unit of measurement of pressure: 0: Bar 1: psi	0 (Bar)	0 (Bar)	1 (psi)		IS-V	H06
PH07	Minimum summer setpoint value	20.0	-15.0	PH08	°C	IS-V	H07
PH08	Maximum summer setpoint value	28.0	PH07	70.0	°C	IS-V	H08
PH09	Minimum winter setpoint value	14.0	-15.0	PH10	°C	IS-V	H09
PH10	Maximum winter setpoint value	26.0	PH09	70.0	°C	IS-V	H10
PH16	CAN baud rate: 1: 20 KB 2: 50 KB 3: 125 KB 4: 500 KB	3	1	4	Kb	IS-V	H16
PH17	CAN network local node	1	1	127		IS-V	H17
PH18	Delete alarm history	NO (0)	NO (0)	YES (1)		IS-V	Set YES (1) and wait for the NO value (0) H18
PH19	Minimum CO_2/VOC transducer PPM value	0	0	PH20	PPM	IS-V	H19
PH20	Maximum CO_2/VOC transducer PPM value	2000	PH19	9999	PPM	IS-V	H20
PH21	Minimum compressor pressure transducer value	5.0	5.0	PH22	Bar	IS-V	H21
PH22	Maximum compressor pressure transducer value	50.0	PH21	60.0	Bar	IS-V	H22

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
PH23	Enable EVCO LED	YES (1)	NO (0)	YES (1)		IS-V	H23
	DEFAULT						
PH15	Reset manufacturer's default parameters	NO (0)	NO (0)	YES (1)		IS-D	Wait for the NO (0) value on reset completion H15
PSd3	Installer level password (3)	2	-999	9999		IS	PS3
Level 4	MANUFACTURER MENU						
	CONFIGURATION PARAMETERS						
PG01	Machine type: 0: Dehumidifier 1: Dehumidifier + air recirculation	0	0	1		CO-C	G01
PG02	Enable heat integration	YES (1)	NO (0)	YES (1)		CO-C	G02
PG03	Enable free-cooling/free-heating	NO (0)	NO (0)	YES (0)		CO-C	G03
PG04	Type of heat recovery exchanger: 0: Disabled 1: Cross-flow 2: Rotary	0	0	2		CO-C	G04
PG05	Enable expansion	NO (0)	NO (0)	YES (1)		CO-C	G05
PSd4	Manufacturer level password (4)	3	-999	9999		CO	PS4
	AI HARDWARE PARAMETERS						
HA00	Use of room temperature and humidity probes: 0: None 1: Evj T 2: Evj TH 3: Epj T 4: Epj TH	0	0	4		CO-AI	A00
HA01	AI1 allocation	0	0	60		CO-AI	A01
HA02	AI2 allocation	0	0	60		CO-AI	A02
HA03	AI3 allocation	0	0	60		CO-AI	A03
HA04	AI4 allocation	0	0	52		CO-AI	A04
HA05	AI5 allocation	0	0	52		CO-AI	A05
HA06	AI6 allocation	0	0	52		CO-AI	A06
HA07	AI7 allocation	0	0	52		CO-AI	A07
HA08	AI1 Epj allocation	0	0	52		CO-AI	A08
HA09	AI2 Epj allocation	0	0	52		CO-AI	A09
HA10	AI1 expansion allocation	0	0	60		CO-AI	A10
HA11	AI2 expansion allocation	0	0	60		CO-AI	A11
HA12	AI3 expansion allocation	0	0	52		CO-AI	A12
HA13	AI4 expansion allocation	0	0	52		CO-AI	A13
HA14	AI5 expansion allocation	0	0	52		CO-AI	A14
HA15	AI6 expansion allocation	0	0	52		CO-AI	A15
HA16	AI7 expansion allocation	0	0	52		CO-AI	A16
HA17	AI1 Evj allocation	0	0	52		CO-AI	A17
HA18	AI2 Evj allocation	0	0	52		CO-AI	A18
	DI HARDWARE PARAMETERS						
HB01	DI1 allocation	0	0	46		CO-DI	b01

Code	Description of parameter	Default	Min	Max	U.M.	Menu	Notes
HB02	DI2 allocation	0	0	46		CO-DI	b02
HB03	DI3 allocation	0	0	46		CO-DI	b03
HB04	DI4 allocation	0	0	46		CO-DI	b04
HB05	DI1 expansion allocation	0	0	46		CO-DI	b05
HB06	DI2 expansion allocation	0	0	46		CO-DI	b06
HB07	DI3 expansion allocation	0	0	46		CO-DI	b07
	AO HARDWARE PARAMETERS						
HC01	AO1 allocation	0	0	7		CO-AO	C01
HC02	AO2 allocation	0	0	7		CO-AO	C02
HC03	AO3 allocation	0	0	7		CO-AO	C03
HC04	AO4 allocation	0	0	7		CO-AO	C04
HC05	AO1 expansion allocation	0	0	7		CO-AO	C05
HC06	AO2 expansion allocation	0	0	7		CO-AO	C06
HCF1	Supply fan PWM frequency	10	10	2000	Hz	CO-AO	CF1
HCF2	Return fan PWM frequency	10	10	2000	Hz	CO-AO	CF2
HCF3	Compressor PWM frequency	10	10	2000	Hz	CO-AO	CF3
	DO HARDWARE PARAMETERS						
HD01	DO1 allocation	0	0	30		CO-DO	d01
HD02	DO2 allocation	0	0	30		CO-DO	d02
HD03	DO3 allocation	0	0	30		CO-DO	d03
HD04	DO4 allocation	0	0	30		CO-DO	d04
HD05	DO5 allocation	0	0	30		CO-DO	d05
HD06	DO6 allocation	0	0	30		CO-DO	d06
HD07	DO1 expansion allocation	0	0	30		CO-DO	d07
HD08	DO2 expansion allocation	0	0	30		CO-DO	d08
HD09	DO3 expansion allocation	0	0	30		CO-DO	d09
HD10	DO4 expansion allocation	0	0	30		CO-DO	d10
HD11	Open Collector expansion allocation	0	0	30		CO-DO	d11

N.B. - When the machine parameters are configured or changes made to the configuration parameters, it is advisable to switch the machine off and restart the system to allow the board to configure itself correctly.

- When two PWM sensors are connected to the expansion analogue outputs, make sure they have the same frequency because the parameter to set the frequency is shared by both the outputs.

Table of inputs/outputs

Parameters of analogue inputs - AI

Code	Description	Notes
AI1-2-3 OEM - AI1-2 Expansion		
0	Disabled	
1	Remote ON/OFF NC	
2	Remote ON/OFF NO	
3	Summer/Winter NC	
4	Summer/Winter NO	
5	Dehumidification request NC	
6	Dehumidification request NO	
7	Heat regulation request NC	
8	Heat regulation request NO	
9	Water flow switch NC	
10	Water flow switch NO	
11	Supply air flow switch NC	
12	Supply air flow switch NO	
13	Return air flow switch NC	
14	Return air flow switch NO	
15	Supply filters differential pressure switch NC	
16	Supply filters differential pressure switch NO	
17	Return filters differential pressure switch NC	
18	Return filters differential pressure switch NO	
19	Fans forced by DI NC	
20	Fans forced by DI NO	
21	Supply fan thermal switch NC	
22	Supply fan thermal switch NO	
23	Return fan thermal switch NC	
24	Return fan thermal switch NO	
25	Supply fan tachometer NC	
26	Supply fan tachometer NO	
27	Return fan tachometer NC	
28	Return fan tachometer NO	
29	Low pressure NC	
30	Low pressure NO	
31	High pressure NC	
32	High pressure NO	
33	Compressor thermal switch NC	
34	Compressor thermal switch NO	
35	Fire/smoke NC	
36	Fire/smoke NO	
37	Phase sequence NC	
38	Phase sequence NO	
39	Antifreeze NC	
40	Antifreeze NO	
41	Generic alarm NC	
42	Generic alarm NO	
43	Generic warning NC	
44	Generic warning NO	
45	Economy NC	
46	Economy NO	
47	Return/room temperature	
48	External temperature	
49	Water temperature	
50	Expulsion temperature	
51	Compressor discharge gas temperature	
52	Compressor defrost temperature	
53	Room humidity 4-20mA	
54	Room humidity 0-10V	
55	Air quality 4-20mA	
56	Air quality 0-10V	
57	Fan potentiometer 4-20mA	
58	Fan potentiometer 0-10V	
59	High pressure 4-20mA	
60	High pressure 0-5V	
AI4-5-6-7 OEM - AI3-4-5-6-7 Expansion - AI1-2 EVJ- AI1-2 EPJ		
0	Disabled	
1	Remote ON-OFF NC	
2	Remote ON/OFF NO	
3	Summer/Winter NC	
4	Summer/Winter NO	
5	Dehumidification request NC	
6	Dehumidification request NO	
7	Heat regulation request NC	
8	Heat regulation request NO	
9	Water flow switch NC	
10	Water flow switch NO	
11	Supply air flow switch NC	
12	Supply air flow switch NO	
13	Return air flow switch NC	

Code	Description	Notes
14	Return air flow switch NO	
15	Supply filters differential pressure switch NC	
16	Supply filters differential pressure switch NO	
17	Return filters differential pressure switch NC	
18	Return filters differential pressure switch NO	
19	Fans forced by DI NC	
20	Fans forced by DI NO	
21	Supply fan thermal switch NC	
22	Supply fan thermal switch NO	
23	Return fan thermal switch NC	
24	Return fan thermal switch NO	
25	Supply fan tachometer NC	
26	Supply fan tachometer NO	
27	Return fan tachometer NC	
28	Return fan tachometer NO	
29	Low pressure NC	
30	Low pressure NO	
31	High pressure NC	
32	High pressure NO	
33	Compressor thermal switch NC	
34	Compressor thermal switch NO	
35	Fire/smoke NC	
36	Fire/smoke NO	
37	Phase sequence NC	
38	Phase sequence NO	
39	Antifreeze NC	
40	Antifreeze NO	
41	Generic alarm NC	
42	Generic alarm NO	
43	Generic warning NC	
44	Generic warning NO	
45	Economy NC	
46	Economy NO	
47	Return/room temperature	
48	External temperature	
49	Water temperature	
50	Extraction temperature	
51	Compressor discharge gas temperature	
52	Compressor defrost temperature	

Parameters for digital inputs - DI

Code	Description	Notes
0	Disabled	
1	Remote NC ON-OFF	
2	Remote NO ON/OFF	
3	Summer/Winter NC	
4	Summer/Winter NO	
5	Dehumidifier request NC	
6	Dehumidifier request NO	
7	Heat regulation request NC	
8	Heat regulation request NO	
9	Water flow switch NC	
10	Water flow switch NO	
11	Supply air flow switch NC	
12	Supply air flow switch NO	
13	Return air flow switch NC	
14	Return air flow switch NO	
15	Supply filters differential pressure switch NC	
16	Supply filters differential pressure switch NO	
17	Return filters differential pressure switch NC	
18	Return filters differential pressure switch NO	
19	Fans forced by DI NC	
20	Fans forced by DI NO	
21	Supply fan thermal switch NC	
22	Supply fan thermal switch NO	
23	Return fan thermal switch NC	
24	Return fan thermal switch NO	
25	Supply fan tachometer NC	
26	Supply fan tachometer NO	
27	Return fan tachometer NC	
28	Return fan tachometer NO	
29	Low pressure NC	
30	Low pressure NO	
31	High pressure NC	
32	High pressure NO	
33	Compressor thermal switch NC	
34	Compressor thermal switch NO	
35	Fire/smoke NC	
36	Fire/smoke NO	
37	Phase sequence NC	
38	Phase sequence NO	
39	Antifreeze NC	
40	Antifreeze NO	
41	Generic alarm NC	
42	Generic alarm NO	
43	Generic warning NC	
44	Generic warning NO	
45	Economy NC	
46	Economy NO	

Parameters for digital outputs - DO

Code	Description	Notes
0	Disabled	
1	Supply fan NC	
2	Supply fan NO	
3	Return fan NC	
4	Return fan NO	
5	Compressor NC	
6	Compressor NO	
7	External air damper NC	
8	External air damper NO	
9	Recirculation damper NC	
10	Recirculation damper NO	
11	Water valve NC	
12	Water valve NO	
13	Water condensation valve NC	
14	Water condensation valve NO	
15	Air condensation valve NC	
16	Air condensation valve NO	
17	Heat recovery exchanger NC	
18	Heat recovery exchanger NO	
19	Bypass Free-Cooling/Free-Heating NC	
20	Bypass Free-Cooling/Free-Heating NO	
21	ON/OFF NC	
22	ON/OFF NO	
23	Summer/Winter NC	
24	Summer/Winter NO	
25	Serious alarm NC	
26	Serious alarm NO	
27	Minor alarm NC	
28	Minor alarm NO	
29	High humidity NC	
30	High humidity NO	

Parameters of analogue outputs - AO

Code	Description	Notes
0	Disabled	
1	0 - 10 V supply fan	
2	PWM supply fan	
3	0 - 10 V return fan	
4	PWM return fan	
5	0 - 10 V compressor	
6	PWM compressor	
7	External air damper	

N.B. For the analogue outputs of the supply fan, return fan and compressor, it is possible to choose the type of sensor, either 0 - 10 V or PWM, using the configurations of the inputs. If a PWM sensor has been chosen, the frequency must also be set by the HCF parameters. For the analogue output of the external air damper, the only possible sensor is the 0 - 10 V sensor.

Regulations

Machine status

Switching the unit on and off:

1. Using the ON/STAND-BY ⏻ key (this function is enabled by parameter *PH01*)
   - To switch on - press the appropriate key for about 2 seconds.
     If all the other functions are enabled, the machine will switch on by itself.
   - To switch off - press the appropriate key for about 2 seconds.
     The machine will switch off by itself. The status "*OFF KEY*" will appear.

2. Using the "ON/OFF" command from the digital input if the relative DI is configured
   - To switch on - close the remote "ON/OFF" contact.
     If all the other functions are enabled, the machine will switch on by itself.
   - To switch off - open the remote "ON/OFF" contact.
     The machine will switch off by itself. The status "*OFF dI*" will appear.

3. Using the supervision protocol (this function is enabled by parameter *PH02*)
   - To switch on - activate the switch-on status from the protocol.
     If all the other functions are enabled, the machine will switch on by itself.
   - To switch off - deactivate the switch-on status from the protocol.
     The machine will switch off by itself. The status "*OFF SUP*" will appear.

4. Using the programme (this function is enabled by parameter *PH03*)
   - To switch on - if the RTC date and time indicate the switch-on status and if all the other functions are enabled.
     The machine will switch on by itself.
   - To switch off - if the RTC date and time indicate the switch-off status.
     The machine will switch off by itself. The status "*OFF SCHE*" will appear.

"ON/OFF" status using the digital input, supervision protocol or programme can only be achieved when the machine is switched on with a key.

Regulating the operating modes

Values of the operating modes

"MODE" parameter	Description
0=COOL – SUMMER	Summer operation
1=HEAT – WINTER	Winter operation
2=AUTOMATIC	Operation based on switching probe

On the user interface the mode:
- "summer" will be indicated by the "*SUN*" LED ☀
- "winter" by the "*SNOWFLAKE*" LED❄

They will flash if in automatic changeover mode.

Follow these procedures to set the unit's operating mode:

1. Using parameter *MOdE* in the user menu (this function is enabled by parameter *PC05=0* or *PC05=1*).
   - To set - go to parameter *MOdE*using the SET SET key and change the value using the UP △ and DOWN ▽ keys. Press the SET key to confirm SET
   - If an EVJ LCD/EPJ LCD display is connected to the controller, this mode will have priority over both the digital input and automatic changeover

2. Using the "summer/winter" command from the digital input if the relative DI is configured.
   This mode has priority over changeover, manual or automatic mode if there is no EVJ LCD/EPJ LCD display

   - "Winter mode"
     Close the remote "summer/winter" contact
   - "Summer mode"

Open the remote "summer/winter" contact

3. Using a combination of keys on the main page of the application in the built-in display
   (hold LEFT ⊲ and RIGHT ⊳ down for 3 seconds). This mode does NOT work with EVJ LCD/EPJ LCD displays.

4. Using the automatic changeover mode
   (this function is enabled by parameter *PC05=1* and *MOdE=2* or *PC05=2*).

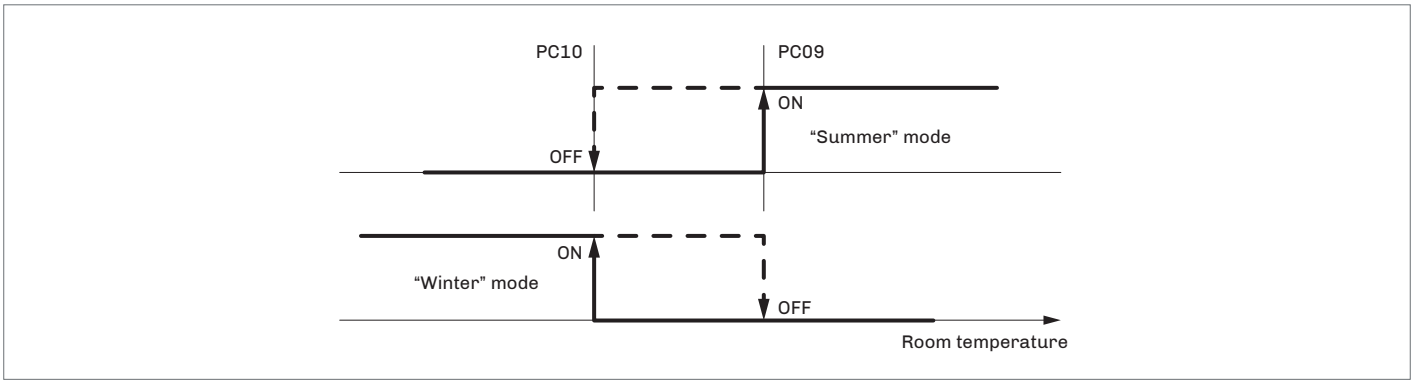
Changing the season using the switching probe

Follow these steps to enable the season change mode:
- set the season change mode (parameter *PC05*) to manual + automatic
  in this way it will still be possible to manually change the mode using parameter *MOdE*
- set the parameter *MOdE* or the parameter *PC05* to Automatic
  in this way the mode will only be changed on the switching probe and changes to the parameter *MOdE* will have no effect

The switching probe chosen must be configured and not in error mode:
- if manual + automatic mode (parameter *PC05 = 1*) has been configured, it will return to manual operation
- if automatic mode only (parameter *PC05 = 2*) has been configured, the last mode used will be valid

For automatic changeover, the temperature of the room probe (parameter *PC06=1*) or the temperature of the system water (parameter *PC06=0*) can be used. Their operation and parameters will be different, according to which are chosen.

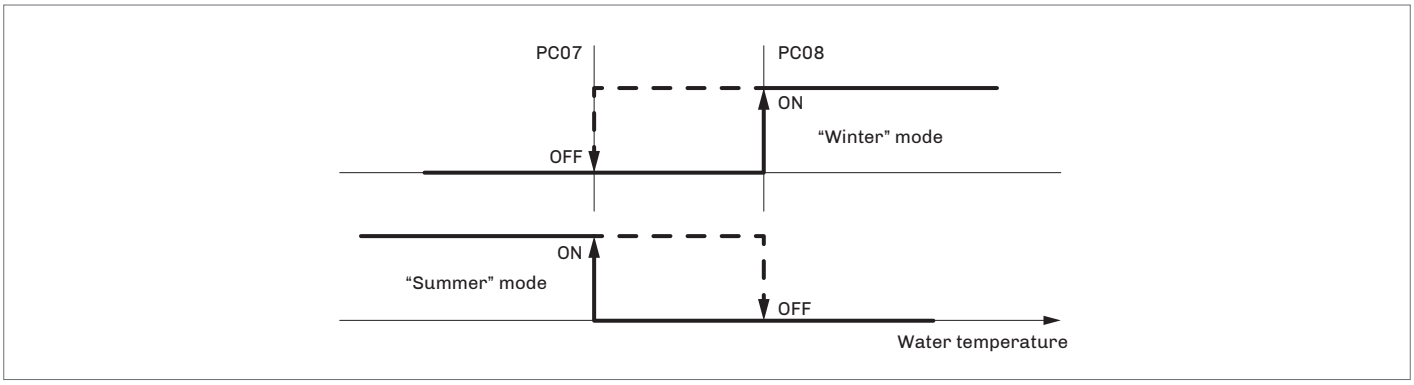
Automatic changeover based on the room probe (parameter *PC06=1*)
To use automatic changeover mode based on the room probe, the room temperature probe must be configured and not in error mode:
- when the temperature is above the summer switching setpoint based on the room probe (parameter *PC09*), the unit switches to summer operation mode
- when the value of the air temperature falls below the setpoint for the winter switching based on the room probe (parameter *PC10*),
  the unit switches to winter operation mode.



Automatic changeover based on the water probe (parameter *PC06=0*)
To use the automatic changeover mode based on the water probe, the water temperature probe must be configured and not in error mode. In this case, water must be made to circulate to determine the operating mode, so the water valve must be activated as well.

The temperature and the switching setpoints will be compared only at the end of a water valve anti-stagnation cycle or if there is a request for integration or dehumidification.
If there is a request for integration or dehumidification, the water valve will be activated for an anti-stagnation cycle which will last the duration of parameter *Pb07* and when that is complete, the operating mode will be checked:
- if the temperature is below the summer switching setpoint based on the water probe (parameter *PC07*) the unit switches to summer operation mode
- if the temperature is above the winter switching setpoint based on the water probe (parameter *PC08*) the unit switches to winter operation mode
- if the temperature is between these two setpoints, the last mode used will remain valid

The fans, compressor and other devices can now be activated to meet the active request.
If the water flow switch alarm is triggered (*AL17*), it will not be possible to determine the water temperature, so the last mode used will remain valid.



Setting the RTC (Real time clock)

When the controller has been without power for a few days, the RTC (Real Time Clock) system loses the active time.
When the controller is started up again, the right date and time must be set.
When the machine is switched on, the following screens will be displayed for the settings:

RTC screens

1st	2nd	3rd	4th	5th	6th	7th
SEt rtc	dAy 30	MOn 1	yEA 19	H 10	Min 00	SAVE

Pressing the SET key to "SAVE" when the clock has been configured will:
- update the RTC
- show the main page of the application
- resolve the alarm situation (*AL26*)

If the alarm is not deleted, disconnect and reconnect the controller to the electric power and reset the alarm manually.

Fans

For units where the air recirculation function is enabled (parameter *PG01*), the application can manage two modulating fans - one supply and one return.
It is also possible to configure a digital output to enable each fan.

In units with the dehumidification function only, the one fan fitted has two possible regulations:
- Heat integration - (this function is enabled by parameter *PG02*)
  A special set of parameters will be uploaded to work as a fan coil based on the differential from the temperature setpoint and the dehumidification setpoint, which will have priority over heat integration. The fan will adjust its speed according to the greater request between manual regulation and the remote potentiometer;
  they will have uploaded the minimum and maximum limits for dehumidification (parameters *PF28* and *PF10*).
  In these units, the fan is not always on and is only activated when there is a request for integration or dehumidification.
  When there is a request for heat integration, there will be a command (digital output) to enable it:
  - when switching on
    The fan will remain off until the request is higher than the minimum speed (parameter *PF27*) and then it will take on the requested value
  - when switching off
    The fan will take on the requested value until it is higher than the minimum speed and then it will maintain the minimum speed until the request is 0.

- Air recirculation regulations - air quality, manual, time bands and remote potentiometer.
  The extractor fan adjusts its speed between dedicated minimum and maximum values (parameters *PF29* and *PF30*) according to the greater request for air recirculation regulations (air quality, manual, time bands and remote potentiometer). Neither heat integration nor dehumidification affect its speed.
  The supply fan, on the other hand, affects all six regulations.
  Dehumidification will always have priority, otherwise the fan adjusts its speed according to the greater request of the other regulations (heat integration, air quality, manual, time bands and remote potentiometer).

Supply fan speed during heat integration can be regulated in three different ways through the configuration parameter *PF31*:
- *PF31 = 0* - the speed is regulated according to the differential from the setpoint only
- *PF31 = 1* - the fan will be at maximum speed between manual regulation and remote potentiometer regulation which are linearised
  according to the minimum and maximum parameters of the heat integration (parameters *PF27* and *PF09*)
- *PF31 = 2* - the fan will be at maximum speed between regulation of the differential from the setpoint, manual regulation and remote
  potentiometer regulation which are linearised according to the minimum and maximum parameters.

The minimum and maximum speeds of the supply fan will be different depending on the regulation that is active.
They will be set by parameters:
- *PF07* and *PF08* - for a unit with air recirculation and no active request for integration or dehumidification
- *PF27* and *PF09* - for heat integration
- *PF28* and *PF10* - for dehumidification

The minimum and maximum speeds of the return fan, irrespective of the active regulation,
are set by parameters *PF29* and *PF30*.
If the digital input to force ventilation has been configured and activated, the speed will be set by parameter:
- *PF23* - for the supply fan
- *PF32* - for the return fan

It is possible to set a minimum fan activation time (parameter *PF01*).
- If during this time there is a request to switch the fan off, the fan will remain on until the time PF01 elapses.
- parameter *PF02* sets a delay between the switch-on and switch-off of the supply and return fans
- parameter *PF03* configures the fan post-ventilation time when the machine is switched off or the request expires. During this time, the fans will operate at a speed set by parameter *PF26* for the supply fan and *PF34* for the return fan.
  To disable this function, just set parameter *PF03* to zero.

Regulating dehumidification

Regulating dehumidification has priority over all the other regulations and affects the supply fan only.
If there is a dehumidification request, first the fan waits for the recirculation damper to open completely (parameter *PS01*) and then it adjusts its speed according to the greater request between manual regulation and remote potentiometer regulation.
These regulations are linearised in accordance with the minimum and maximum speed parameters for dehumidification (parameters *PF28* and *PF10*).

Regulating heat integration

When regulating heat integration, which can be enabled by parameter *PG02*, the fan has to upload a set of specific parameters and work as a fan coil based on the differential from the temperature setpoint.
This regulation affects the speed of the supply fan only.
Regulation will be inhibited in the following cases:
- the room probe is disabled or in error mode and the "Request for heat regulation" digital input is not configured
- high temperature alarm in the summer
- low temperature alarm in the winter
- water flow switch alarm
- blocking alarm for the unit

If the unit has automatic changeover based on the water probe, regulation will be inhibited until the mode to use has been checked.
To control the room temperature, it is possible to use the sensors which are built into the EVJ LCD/EPJ LCD displays (parameter *HA00*) or configure a probe directly on the controller inputs.

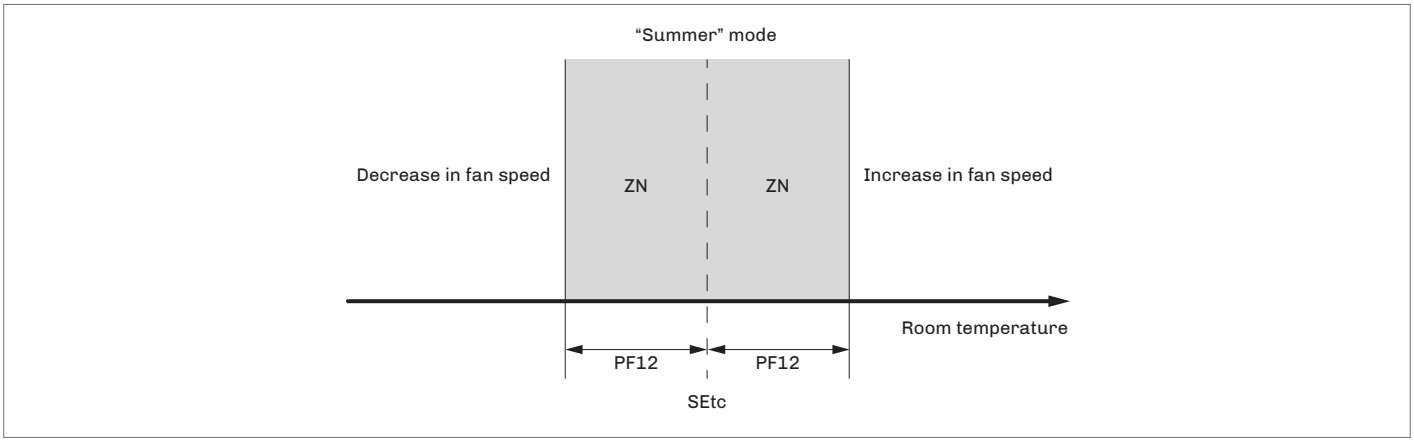
A request for integration in "summer" mode may activate dehumidification and the compressor at the same time if forced dehumidification in cooling mode (parameter *PU05*) is enabled.
The supply fan adjusts its speed according to the request for integration only:
- if this regulation is greater than the others, excluding dehumidification which always has priority
- after it has waited for the recirculation damper to open completely (parameter *PS01*)

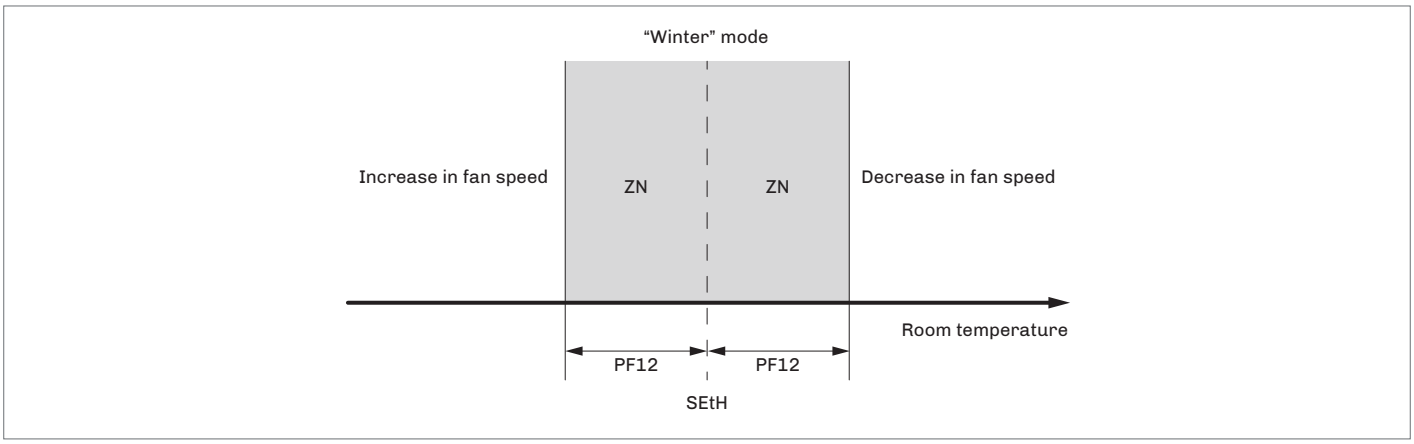
A request for heat integration is made if:
- SUMMER
  The "Request for heat regulation" digital input is active or the room temperature is above setpoint *SEtC* plus the neutral zone *PF12*
- WINTER
  The "Request for heat regulation" digital input is active or the room temperature is below setpoint *SEtC* minus the neutral zone *PF12*

The request will be met if:
- SUMMER
  The "Request for heat regulation" digital input is not active and the room temperature is below setpoint *SEtC* minus the neutral zone *PF12*
- WINTER
  The "Request for heat regulation" digital input is not active and the room temperature is above setpoint *SEtH* plus the neutral zone *PF12*

Depending on the configuration of parameter *PF31* it is possible to adjust the speed of the supply fan in three different ways, using incremental neutral zone regulation of the integration, manual regulation and remote potentiometer regulation:
- *PF31 = 0*
  The speed is adjusted using incremental neutral zone regulation only
- *PF31 = 1*
  The speed is adjusted according to the greater request between manual regulation and remote potentiometer regulation which are linearised according to the minimum and maximum speeds of the heat integration (parameters *PF27* and *PF09*).
- *PF31 = 2*
  The speed is adjusted according to the greater request between incremental neutral zone regulation and manual regulation and remote potentiometer regulation which are linearised according to the minimum and maximum speeds.

The regulation used is incremental neutral zone regulation set by the following parameters:
- *PG02* - enable heat integration
- *SEtC* - summer setpoint
- *SEtH* - winter setpoint
- *PF27* - minimum supply fan speed during heat integration
- *PF09* - maximum supply fan speed during heat integration
- *PF11* - percentage increase/decrease of fan speed during heat integration, CO_2 or manual regulation
- *PF12* - heat integration neutral zone
- *PF13* - time increase/decrease of fan speed during heat integration



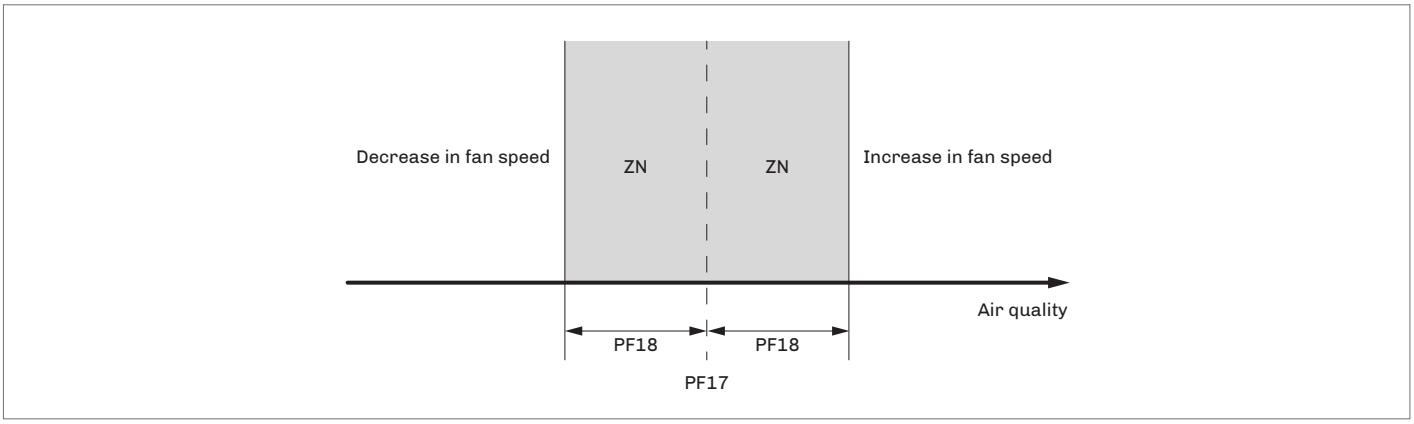


Regulating air quality

Regulating air quality in units with air recirculation (parameter *PG01*) is based on the air quality probe which must be configured and not in error mode.
If a blocking alarm for the unit is triggered, regulation will be inhibited.
The fans adjust their own speed according to the air quality request only when this regulation is greater than the others, excluding dehumidification which always has priority.

The regulations of the supply and return fans are independent and have different minimum and maximum speeds which are set by the following parameters:
- *PF07* and *PF08* - for the supply fan
- *PF29* and *PF30* - for the return fan

The regulation used is incremental neutral zone regulation set by the following parameters:
- *PF07* - minimum supply fan speed during recirculation
- *PF08* - maximum supply fan speed during recirculation
- *PF11* - percentage increase/decrease of fan speed during heat integration, CO_2or manual regulation
- *PF15* - minimum air quality setpoint value
- *PF16* - maximum air quality setpoint value
- *PF17* - air quality setpoint
- *PF18* - air quality neutral zone
- *PF19* - time increase/decrease of fan speed during air quality regulation
- *PF29* - minimum return fan speed
- *PF30* - maximum return fan speed



Regulating time bands

Time band regulation is only available in units with air recirculation (parameter *PG01*) and is only active if the time bands are enabled (parameter *PH03*).
If a blocking alarm for the unit is triggered, regulation will be inhibited.
The fans adjust their own speed according to the time band request only when this regulation is greater than the others, excluding dehumidification which always has priority.

The supply fan speed is set by parameters *FSC*,*FSE* and *FSN*, the return fan speed is set by parameters *FRC*,*FRE* and *FRN* depending on which time band is active.
- *FSC* - supply fan comfort setting setpoint
- *FSE* - supply fan economy setting setpoint
- *FSN* - supply fan night setting setpoint
- *FRC* - return fan comfort setting setpoint
- *FRE* - return fan economy setting setpoint
- *FRN* - return fan night setting setpoint
-

If holiday mode is active, the speed of the fans will take on the manual regulation value, set by parameter *PM20* for the supply fan and by parameter *PM22* for the return fan respectively.

Manual regulation

Manual regulation of the supply fan is available both in units with air recirculation and units with dehumidification only. Manual regulation of the return fan is only available in units with air recirculation (parameter *PG01*). Both regulations are active if the time bands are not enabled (parameter *PH03*).
If a blocking alarm for the unit is triggered, regulation will be inhibited.

Manual regulation of the supply fan is linearised according to the maximum and minimum limits which are different according to the active regulation if there is a request for:
- dehumidification
- cooling which forces the compressor on (parameter *PU05*).
  Regulation is linearised according to the minimum and maximum speed of dehumidification (parameters *PF28* and *PF10*).
  If there is a request for integration and regulation depends on manual regulation (parameter *PF31* other than 0), manual regulation will be linearised according to the minimum and maximum speed
  of the integration (parameters *PF27* and *PF09*).
  In units with air recirculation, regulation is linearised according to the minimum and maximum speed of the air recirculation
  (parameters *PF07* and *PF08*).
  Manual regulation of the return fan is always linearised according to the minimum and maximum speeds set by parameters *PF29* and *PF30*.

The fans adjust their own speed according to the manual request when this regulation is greater than the others, excluding dehumidification which always has priority.
By pressing the UP ⍓ and DOWN ⍒ keys, it is possible to increase or decrease the speed of the fans by one step equal to parameter *PF11*. The buzzer on the keypad will sound to tell the user if the
speed has been correctly increased or decreased.
Another way of changing the speeds is directly through parameter *PM20* for the supply fan and parameter *PM22* for the return fan.

Remote potentiometer regulation

Remote potentiometer regulation of the supply fan is available both in units with air recirculation and units with dehumidification only. Remote potentiometer regulation of the return fan is only available in units with air recirculation (parameter *PG01*).
To use this regulation, the remote potentiometer must be configured and not in error mode.

If a blocking alarm for the unit is triggered, regulation will be inhibited.
Remote regulation of the supply fan is linearised according to the maximum and minimum limits which are different according to the active regulation if there is a request for:
- dehumidification or a request for cooling which forces the compressor to switch on (parameter *PU05*)
  regulation will be linearised according to the minimum and maximum speeds of the dehumidification (parameters *PF28* and *PF10*)
- integration and regulation depends on remote regulation (parameter *PF31* other than 0)
  remote regulation will be linearised according to the minimum and maximum speeds of the integration (parameters *PF27* and
  PF09). Otherwise in units with air recirculation, regulation will be linearised according to the minimum and maximum speed of the
  air recirculation (parameters *PF07* and *PF08*).

Remote regulation of the return fan is always linearised according to the minimum and maximum speeds set by parameters *PF29* and *PF30*.
The fans adjust their own speed according to the value of the remote potentiometer only if this regulation is greater than the others, excluding dehumidification which always has priority.

Anti-stagnation cycles to detect the temperature of the system

If the machine is a dehumidifier with air recirculation (parameter *PG01*), the return fan will be configured but the fans will not always be active. It is therefore a good idea to switch on the return fan on a regular basis to measure room temperature (enable with parameter *PC01*).

The anti-stagnation cycle consists of:
- waiting time - (parameter *PC02*) during which the fan is off
- activation time - (parameter *PC03*) during which the fans are switched on

The cycle starts, always with a pause period, as soon as the fan is switched off by the room regulation (conditions met).
The cycle ends if any kind of regulation request is made during the activation phase.

When evaluating the room conditions, parameter *PC04* allows the user to decide whether to:
- activate the return fan only (*PC04=0*)
- activate both the supply and return fans (*PC04=1*)

The fan activation time during the cycle (parameter *PC03*) must be long enough in relation to the protection time when both fans are switched on (parameter *PF02*) to ensure both fans are able to switch on when the room temperature measurement phase starts up.

Fan status

Both the fans may be in the following operating status:
1. Disabled - the fan has not been configured for the system.
   When in this status, the user interface displays the symbol "---".
2. Alarm - the fan is in alarm mode because of heat or the tachometer.
   When in this status, the user interface displays the message "*ALrM*"
3. Off - the fan is switched off.
   When in this status, the user interface displays the message "*OFF*"
4. On - the fan is switched on.
   When in this status, the user interface displays the message "*On*"
5. Awaiting switch-on - the fan is ready for switch on but is momentarily in a queue.
   When in this status, the user interface displays the message "*tON*"
6. Awaiting switch-off - the fan is in post-ventilation and is ready for switch-off.
   When in this status, the user interface displays the message "*tOFF*"

Fan alarms

It is possible to configure a thermal switch alarm and a tachometer alarm for both fans through the dedicated digital input. These alarms are grouped into a single alarm called "Supply/return fan alarm" (parameters *AL05/AL06*) which is a blocking alarm for all the loads.
- The thermal switch alarm is triggered after a set delay of 2 seconds after activation of the "Supply/return fan thermal switch" digital input which is automatically re-armed.
- As regards the tachometer alarm, the maximum RPM of the fan must be defined (parameter *PA25*).
  After bypass time from fan switch-on (parameter *PA23*), if the speed detected by the digital input is lower than the calculated RPM of the minimum speed.
  After the delay (parameter *PA24*) the alarm, which is automatically re-armed, will be triggered.

Over-modulation probe in error mode

If there is an error on the configured air quality probe, a predetermined speed can be set by parameter *PF05* for the supply fan and parameter *PF33* for the return fan.
The fans will use this speed only if it is greater than the request of the other regulations.

Dehumidification

This unit has been designed primarily for dehumidification.
A digital or modulating compressor is used to dehumidify the room and it will have a dedicated set of parameters and type of regulation.
If a blocking alarm for the unit is triggered, if the "Dehumidifier request" digital input is not configured and the room humidity probe is in error mode, regulation will be inhibited.

By configuring parameters *PU02*, *PU03* and *PU04* it is possible to inhibit or enable dehumidification when certain conditions occur:

- *PU02 = Enable dehumidification in winter*
  Through this parameter it is possible to:
  - disable dehumidification in winter (*PU02=0*)
  - enable dehumidification in winter with water and therefore activate the water valve (*PU02=1*)
  - enable dehumidification in winter without water

- *PU03 = Enable dehumidification with high water temperature*
  Through this parameter it is possible to:
  - inhibit dehumidification when a high water temperature alarm in summer occurs
  - leave dehumidification enabled when a high water temperature alarm in summer occurs

- *PU04 = Enable dehumidification with water flow switch alarm*
  Through this parameter it is possible to:
  - inhibit dehumidification when a flow switch alarm of the water valve occurs.
    With dehumidification in winter without water, the flow switch alarm does not inhibit dehumidification
  - leave dehumidification enabled when a flow switch alarm of the water valve occurs.
    With dehumidification in winter without water, the flow switch alarm does not inhibit dehumidification

If the unit has automatic changeover based on the water probe, regulation will be inhibited until the mode to use has been checked.

The type of compressor used is only defined by the configuration of the inputs:
- the ON/OFF compressor will be used when only the digital output is configured
- a modulating compressor will be used when an analogue output is configured

When a modulating compressor is used, it is possible to configure the digital output which, in this case, will enable the compressor.

To control room humidity, it is possible:
- to use the sensors which are built into the EVJ LCD/EPJ LCD displays (parameter *HA00*)
- to configure a probe directly on the controller's inputs

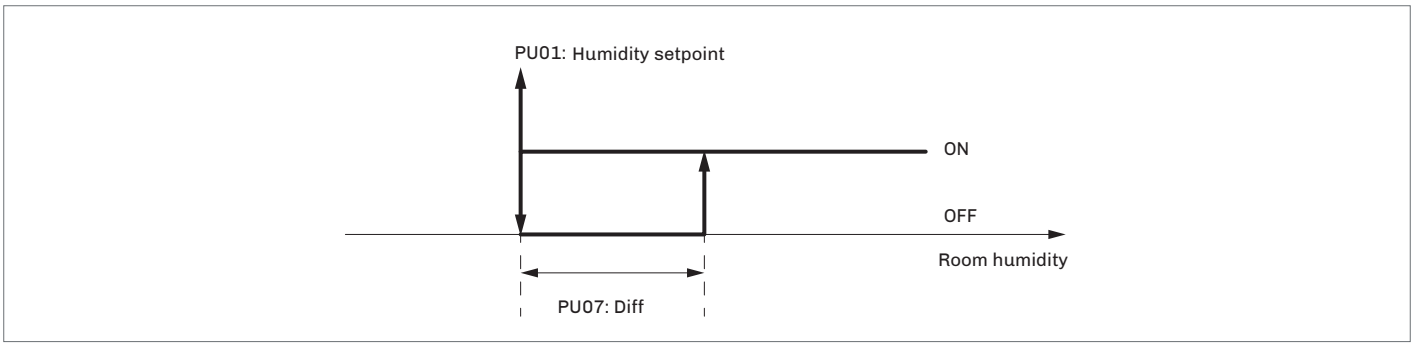
ON/OFF compressor

To use an ON/OFF compressor, it is necessary to configure a digital output as the "Compressor".

The dehumidification request is active and compressor switch-on will be requested if at least one of the following conditions is met:
- there is a request for integration, the unit is in summer mode and forced dehumidification in cooling mode (parameter *PU05*) is enabled
- the "Dehumidifier request" digital input is active
- room humidity is higher than setpoint *PU01* plus the differential *PU07*

The dehumidification request is considered satisfied, and the compressor will be switched off, if all the following conditions are met:
- the request for integration has been met with forced dehumidification in cooling mode enabled (parameter *PU05*)
- the "Dehumidifier request" digital input is no longer active
- room humidity is lower than setpoint *PU01*

The compressor does not come on immediately as there will be a delay between the change of speed/switch-on of the fan in dehumidification regulation and the compressor switch-on (parameter *PE04*).



Modulating compressor

To use a modulating compressor, it is necessary to configure an analogue output as the "Compressor".
It is also possible to configure a digital output to enable the compressor.

If there is a request for heat integration, the unit is in "summer" mode and forced dehumidification in cool mode will be enabled (parameter *PU05*). It will be possible to specify the percentage of compressor operation through parameter *PE21* which will be compared with the percentage of any dehumidification request in progress. The higher percentage between the dehumidification request and percentage of forced dehumidification will be used.

A dehumidification request is active and so the compressor percentage will increase if at least one of the following conditions is met:
- the "Dehumidifier request" digital input is active
- room humidity is higher than setpoint *PU01* plus the neutral zone of the dehumidification (parameter *PU06*)

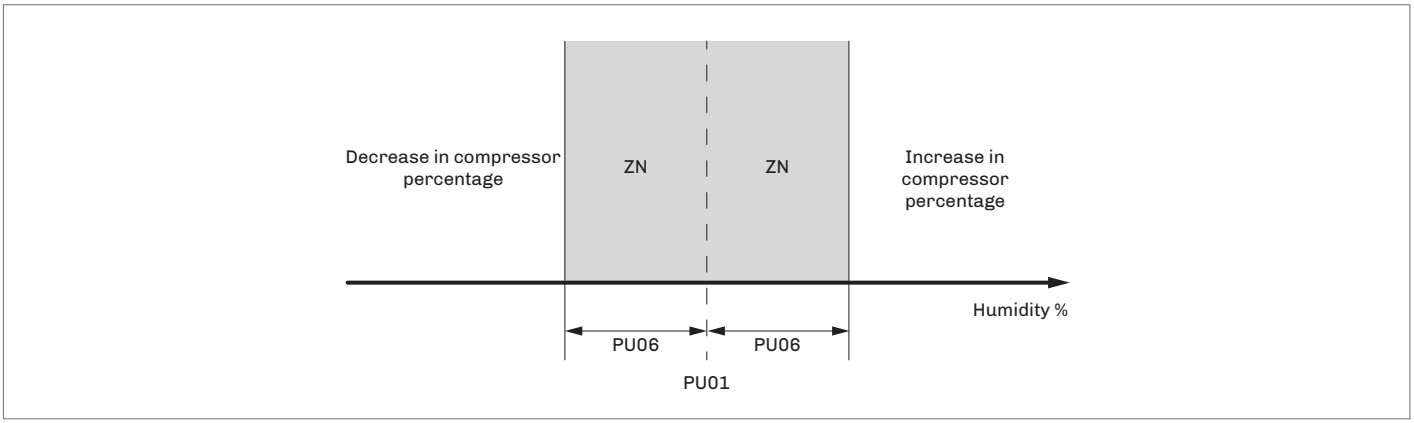
The dehumidification request is considered satisfied and the compressor percentage can be decreased only if both the following conditions are met:
- the "Dehumidifier request" digital input is no longer active
- room humidity is lower than setpoint *PU01* minus the neutral zone of the dehumidification (parameter *PU06*)

The type of regulation of the modulating compressor is an incremental neutral zone set by the following parameters:
- *PU01* - humidity setpoint
- *PU06* - dehumidification neutral zone
- *PE07* - maximum percentage of modulating compressor
- *PE08* - percentage increase/decrease of modulating compressor during dehumidification
- *PE09* - time increase/decrease of modulating compressor during dehumidification

It is also possible to configure a command to enable the request by setting the minimum percentage of the modulating compressor (parameter *PE06*).

- When increasing, the output remains at 0% until the dehumidification request becomes greater than parameter *PE06*, it will then take on the value of the request
- When decreasing, the output takes on the value of the request until it is higher than parameter *PE06*, it will then be maintained at the value of *PE06* until the request reaches 0%.

The compressor does not come on immediately as there will be a delay between the change of speed/switch-on of the fan in dehumidification regulation and the compressor switch-on (parameter PE04).



Dehumidification with cold water

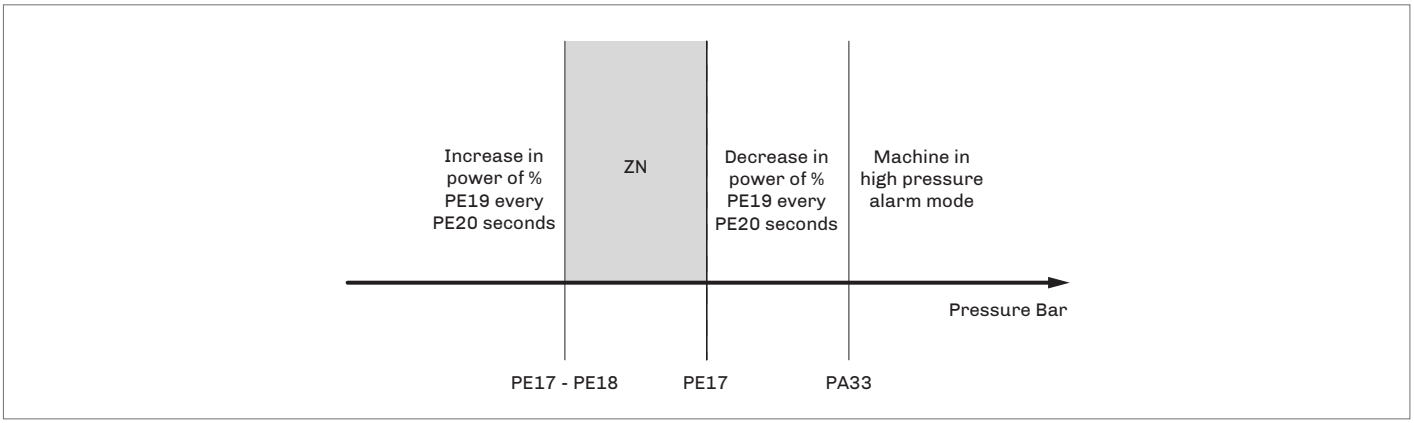
When in "summer" *mode*, if there is a request for dehumidification or cooling (if this involves activating the compressor) and the water temperature is below parameter *PU08*, it will not be necessary to activate the refrigeration circuit as the low water temperature will guarantee the capacity needed for dehumidification.
There will, however, be a parameter to enable the compressor as a second dehumidification step (parameter *PU09*) if the dehumidification request is still active after the off-band time (parameter *PU10*).
This second dehumidification step will be deactivated, keeping the flow of cold water active if the dehumidification request is met.
The request will only be considered definitively satisfied if it is met for the off-band time (parameter *PU10*) after the compressor has been switched off.

High pressure pre-alarm

When the high pressure pre-alarm, which is enabled in the modulating compressor only, is configured and the compressor pressure probe is not in error mode, it can be used to prevent boundary conditions and stop triggering the compressor alarm by trying to restrict its power.

This involves regulation in the neutral zone and is set by the following parameters:
- *PE17* - high pressure pre-alarm setpoint
- *PE18* - high pressure pre-alarm differential
- *PE19* - percentage increase/decrease of compressor in high pressure pre-alarm mode
- *PE20* - time percentage increase/decrease of compressor in high pressure pre-alarm mode

Compressor power is:
- decreased by the percentage *PE19* after time *PE20*, if the value of the pressure goes above setpoint *PE17*.
- deceased until it reaches the minimum speed of the modulating compressor (parameter *PE06*).
- re-increased by parameter *PE19* after time *PE20* until it reaches the requested power, if the value of the pressure is below setpoint *PE17* minus the differential *PE18*.



Compressor defrost

Defrost is always timed and takes place after an operating time set by parameter *PE10*.
This interval can be configured on 3 types of events by setting parameter *PE14*:
- *PE14=0* - unit ON.
  In this case the counter begins when the machine is switched on
  The counter stops when the unit is switched off

- *PE14=1* - compressor ON.
  In this case the counter begins when the compressor is switched on
  The counter stops when the compressor is switched off

- *PE14=2* - compressor defrost temperature < Setpoint *PE15*.
  The compressor defrost probe must be configured for this option.
  The counter begins when the temperature detected by the probe is lower than setpoint *PE15*.
  If the temperature exceeds the setpoint, the counter stops.

Defrost is carried out to stop the compressor, which is then switched off during the active defrost phase.
When this phase is finished, dripping begins.

The active defrost phase ends when the defrost temperature exceeds the end of defrost setpoint (parameter *PE11*). If this temperature is not reached within the maximum defrost time (parameter *PE12*), the active defrost phase ends and dripping begins. This phase lasts for the time set by parameter *PE13*.

During the active defrost phase, the return fan is always switched off, while the supply fan will be switched off or will remain active according to the setting of parameter *PF04*.
- *PE10* - defrost interval
- *PE11* - end of defrost setpoint
- *PE12* - maximum defrost time
- *PE13* - drip duration
- *PE14* - type of defrost interval count
- *PE15* - start defrost count setpoint
- *PF04* - stop supply fan during compressor defrost

Compressor safety times

The aim of compressor safety times is to protect mechanical units from the different start-up voltages they are exposed to. The following safety times are set by these parameters:
- *PE01* - minimum compressor OFF time.
  This is the minimum time interval that must elapse from the last switch-off before the compressor can be switched on again

- *PE02* - minimum compressor ON time.
  Once the compressor has been activated, it must stay on for this time interval before it can be switched off

- *PE03* - minimum time between two compressor switch-ons.
  This defines the minimum time that must elapse between two compressor switch-ons

Compressor status

The compressor can have the following operating status:
1. Disabled - the compressor is not configured.
   When in this status, the user interface displays "---".

2. Alarm - the compressor is switched off due to an alarm:
   - low pressure
   - high pressure
   - thermal switch
   - discharge gas high temperature

   When in this status, the user interface displays the message "*ALrM*"

3. Manual - the compressor is forced into manual regulation.
   When in this status, the user interface displays the message "*MAnU*"

4. Off - the compressor is off.
   When in this status, the user interface displays the message "*OFF*"

5. Awaiting switch-on - the compressor is ready to switch on, it is waiting for the protection time.
   When in this status, the user interface displays the message "*tOn*"

6. Awaiting switch-off - the compressor is ready to switch off, it is waiting for the protection time.
   When in this status, the user interface displays the message "*tOFF*"

7. On - the compressor is switched on.
   When in this status, the user interface displays the message "*On*"

Water/air condensation valves

Depending on the active request, a valve must be enabled for:
- air condensation with heat introduced into the room
- water condensation to get rid of the heat without introducing it back into the room.

The valves are enabled by simply configuring two digital outputs as the "Water condensation valve" and the "Air condensation valve".
The activation modes are as follows:
- if the compressor is off, both the valves will be off
- if the compressor is active for dehumidification only, the air condensation valve will be active, while the water condensation valve will not
- if the compressor is active for dehumidification and there is also an active request for cooling or if only the cooling request is active but this involves activating the compressor (parameter *PU05*), the water valve will be active while the air condensation valve will not.

If it passes from one condition to the other during operation, the compressor will stay on and there will be a time in tenths of a second (parameter *PE16*) when both the valves will be active in order to prevent water hammers.

Water valve

The water valve enables water flow in the machine when there is a request for integration or dehumidification.
During winter dehumidification without water (parameter *PU02=2*) and when there is no request for heat integration, the valve will remain closed. If there is then a request for integration, the water valve will be opened to meet the heating request.

If there is a flow switch alarm or a blocking alarm for the unit, the valve will immediately be closed and regulation inhibited.
Once all the active requests have been met, the water valve will remain open for a period of time set by parameter *Pb01*.

If there are high/low temperature alarms, it is necessary to activate an anti-stagnation cycle with dedicated waiting and activation times in order to verify the status of the alarm.
A sniffing cycle is always enabled when the machine is switched on if there are no requests for integration or dehumidification for a defined period of time or if the unit is set in automatic changeover mode based on the water probe and there is a request.
In this last case, at both switch-on and during the sniffing cycle, the operating mode will be checked even if not requested.

Anti-stagnation cycle due to temperature alarm

If there is a high temperature alarm in the summer (*AL03*) or a low temperature alarm in the winter (*AL04*), it is a good idea to open the water valve on a regular basis to check alarm conditions.

The cycle consists of:
- waiting time - (parameter *Pb03*) during which the valve stays closed
- activation time - (parameter *Pb02*) during which the valve will be opened

The cycle starts, always with a pause period, as soon as there is a water probe temperature alarm.
The cycle ends if, during the activation phase, the active alarm resets.

Anti-stagnation cycle of the water valve

The anti-stagnation cycle of the valve is always enabled. If automatic changeover mode based on the water probe is configured, it is useful for checking the mode to use.

The cycle consists of:
- waiting time - (parameter *Pb08*) during which the valve stays closed
- activation time - (parameter *Pb07*) during which the valve will be opened

The cycle starts, always with a pause period, as soon as the valve is switched off because the requests have been met.

When the unit is switched on, an anti-stagnation cycle of the valve is activated which lasts the duration of parameter *Pb07*.
If automatic changeover mode based on the water probe is configured, when a request is made, an anti-stagnation cycle is first carried out to check the water temperature.
This check is carried out at the end of every sniffing cycle, namely at the end of sniffing when the unit is switched on and at the end of sniffing when there are no requests.

Pre-heating function

In winter mode, it is possible to open the water valve before switching on the fans and open the external air damper to prevent too much cold air entering the room.
To activate this function, the external temperature probe must be configured and a maximum pre-heating time set (parameter *Pb06*) which is greater than 0 (this function is disabled by default).

When the machine is switched on, this function opens the water valve for a period of time that depends on the external temperature: it can go from 0 minutes when the temperature goes above the pre-heating setpoint (parameter *Pb04*), to a maximum (parameter *Pb06*) when it goes below the setpoint *Pb04* minus the pre-heating differential (parameter *Pb05*).
During this time, the fans remain off and the external air damper closed.

Recirculation damper

The programme controls a recirculation damper which is opened when there is a request for heat integration or dehumidification.
The purpose is to increase the air capacity to the coil, also introducing air from the room.
There is a pre-start time (parameter *PS01*) to allow the damper to open completely before the fans can reach the speed of the request for integration or dehumidification.

If a blocking alarm for the unit sounds, the damper will be immediately closed.
The damper is closed when the requests have been met and the compressor switched off. This is useful when the compressor is in protection time and remains on for a couple of seconds.

External air damper

The programme controls a digital or modulating damper to introduce external air.
To configure the "ON/OFF" damper, just configure a digital output as the "External air damper".
To configure the modulating damper, just configure an analogue output as the "External air damper". In the second case, it is however possible to configure a digital output to enable it.

If there is a request to switch the fans on, first the damper will be activated for a pre-start time (parameter *PS02*) to allow it to open completely. Only afterwards will the fans be activated at the requested speed.
The modulating damper, if configured, will be opened the maximum percentage set by parameter *PS05*.

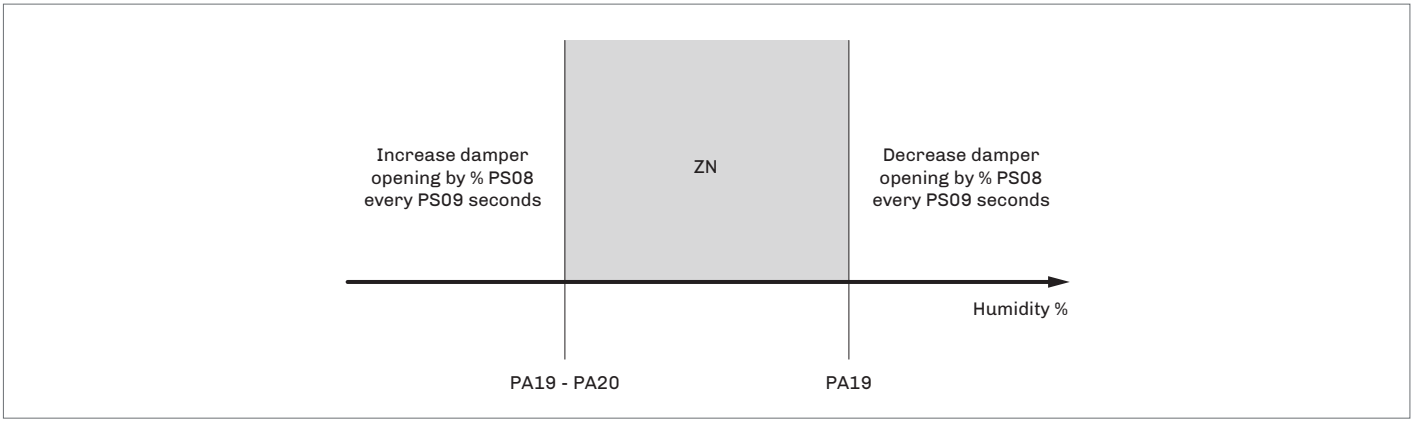
If there is a request to switch the fans off, first they will be switched off and after a delay set by parameter *PS03* the external air damper will also be closed.

If there is a fire/smoke alarm, the damper can be controlled in two different ways according to the mode selected (parameter *PA46*):
- *PA46=0* - put out fire.
  The damper will be closed to prevent air from outside fanning the flames
- *PA46=1* - smoke evacuation.
  The damper will open or will remain open to allow the smoke to escape from the building.

If a blocking alarm for the unit sounds, the damper will be immediately closed.
If an "ON/OFF" damper has been configured and a high humidity warning has occurred (*AL01*), the damper will be immediately closed and the return fan will immediately be switched off.
If a modulating damper has been configured, on the other hand, the external air will gradually be reduced until the damper is at its minimum opening (parameter *PS04*).

Reduction of the external air is a neutral zone regulation. The opening percentage of the modulating damper will decrease by a percentage (parameter *PS08*) after a time period (parameter *PS09*) if the room humidity goes above setpoint *PA19* until it gets to the minimum opening of the damper (parameter *PS04*).

The opening percentage is re-increased by parameter *PS08* after the time *PS09* until it gets to maximum opening (parameter *PS05*) if the value of the room humidity is below the setpoint *PA19* minus the differential *PA20*. If, during the gradual reduction of the damper, the speed of the return fan is higher than the opening percentage of the damper, it will be decreased in parallel by the percentage *PS08* after the time *PS09* until it reaches the minimum speed (parameter *PF29*).



External air damper status

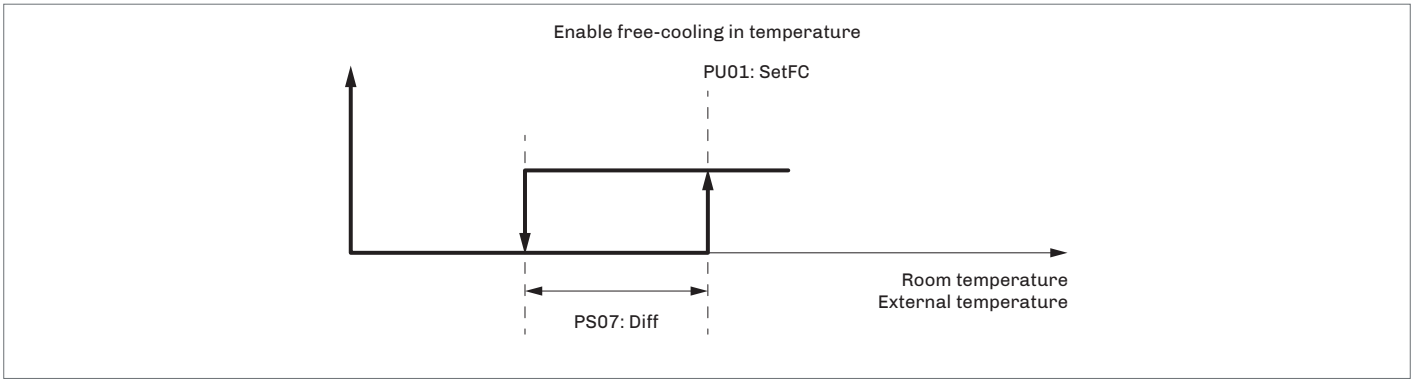
The external air damper can be in one of the following status:
1. Disabled - the damper is not managed by the controller
   When in this status, the user interface displays the symbol "---"
2. Open - the damper is open.
   When in this status, the user interface displays the message "*On*"
3. Closed - the damper is closed.
   When in this status, the user interface displays the message "*OFF*"
4. Awaiting closure - the damper is waiting for the delay from fan switch-off.
   When in this status, the user interface displays the message "*tOFF*"

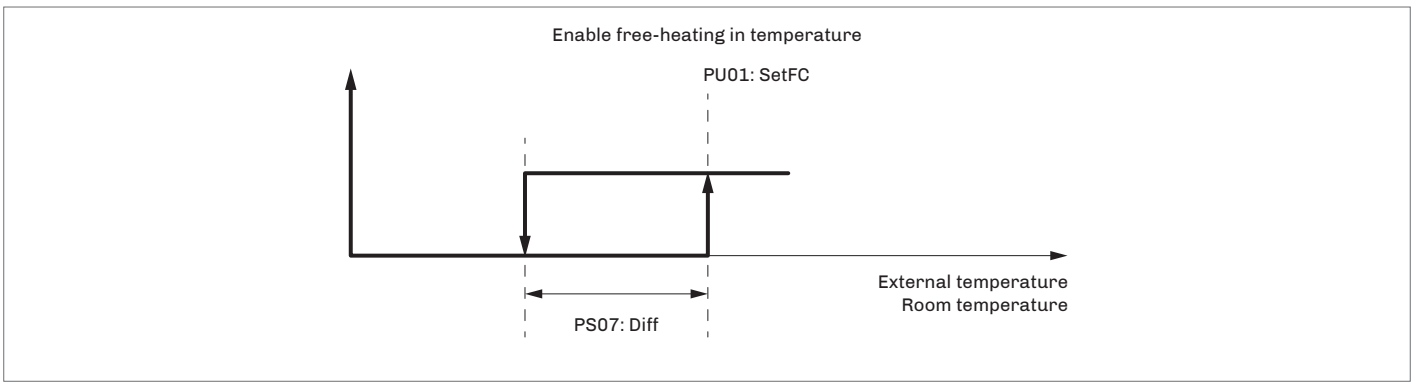
Free-cooling and free-heating

To enable free-cooling in summer and free-heating in winter, parameter *PG03* must be set and the room temperature and external air temperature probes must be configured and not in error mode.

- Free-cooling in temperature is activated when the difference between the room air temperature and the external air temperature reaches the setpoint (parameter *PS06*) and the associated differential (parameter *PS07*)
- Free-heating in temperature is activated when the difference between the external air temperature and the room air temperature reaches the setpoint (parameter *PS06*) and the associated differential (parameter *PS07*).

If there is a request for integration and free-cooling or free-heating is active, the cross-flow recovery heat exchanger will be diverted or the rotary recovery heat exchanger switched off.





Cross-flow recovery heat exchanger

The parameter *PG04=1*must be set to use the cross-flow recovery heat exchanger.
The recovery heat exchanger has a bypass damper used to block the passage of external air through the recovery heat exchanger air ducts.

The recovery heat exchanger is normally active and is diverted during free-cooling/free-heating phases or during a defrost cycle when the external temperatures are too low.
Recovery heat exchanger regulation is inhibited if there is a blocking alarm for the unit.

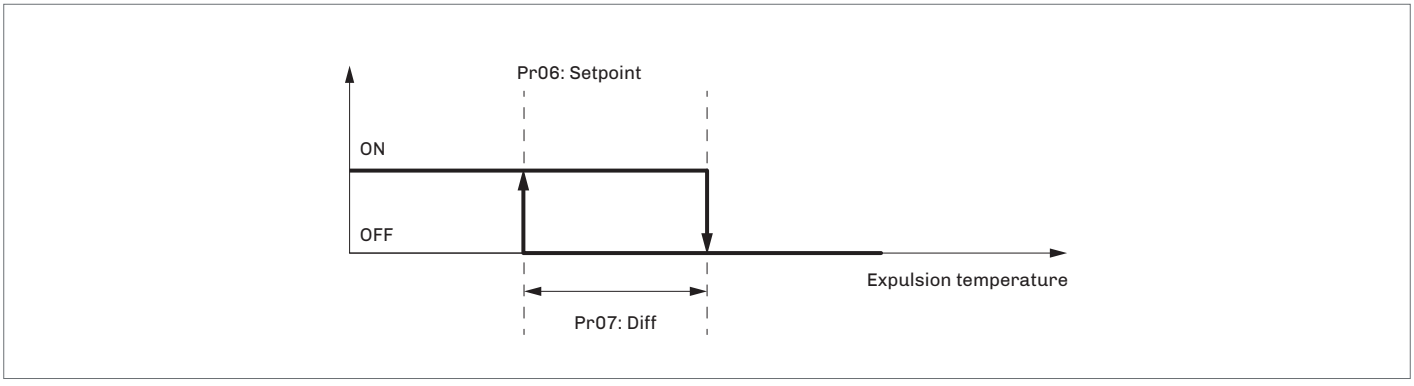
During the winter cycle, the recovery heat exchanger exchanges heat between the flow of expelled air (hot and humid) and the input air (cold and dry).
If the external air is particularly cold, the expelled air flow temperature may fall as low as freezing point, risking obstruction of the exchanger and impeding normal air flow.
To prevent this happening, the expelled air flow temperature should be prevented from falling too much by constantly monitoring it and, if necessary, first slowing down just the supply fan and then both fans.

Regulation is in the neutral zone with:
- setpoint *Pr03*
- band *Pr04*
- incremental step *PF20*
- time *PF21* based on the temperature of the expulsion probe.

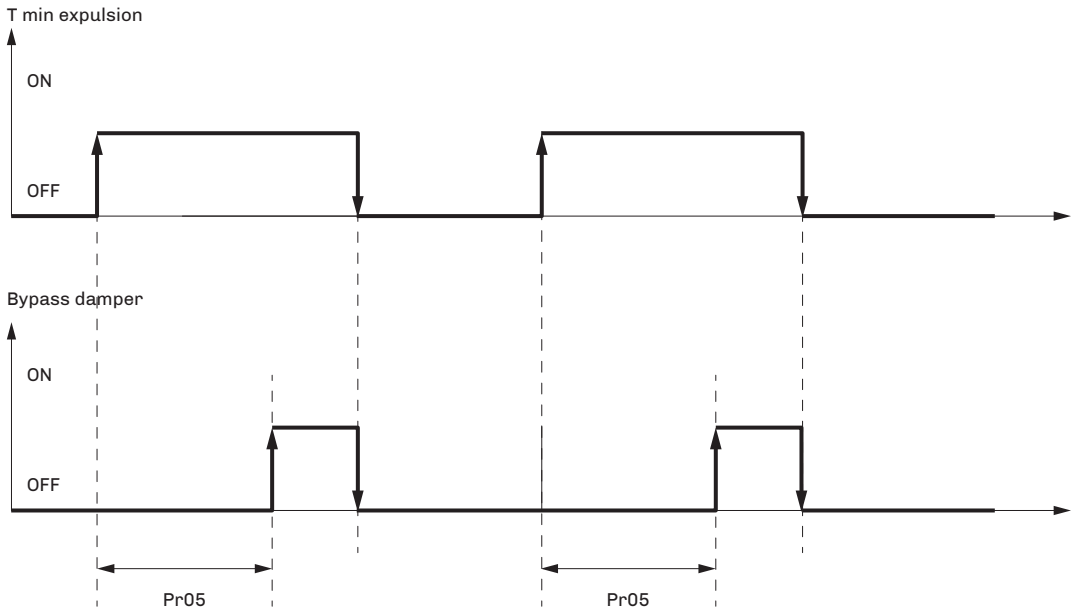
Possible actions:
- if the temperature is too low (lower than setpoint *Pr03* minus the band *Pr04/2*), the speed of the supply fan will be slower than that of the return fan up to a maximum differential (parameter *PF22*)
- if the request for defrosting remains, the speed of both fans will be reduced in parallel up to the minimum permitted value (parameter *PF07* for the supply fan and parameter *PF29* for the return fan)
- if the temperature goes below the critical value (parameter *Pr06*), the bypass damper will open

Regardless of the fan speed regulation settings, these are suspended while defrosting is in progress.
When defrosting is finished, fan speed regulation returns to the normal settings.
In the event of manual regulation, it is always possible to set a different value for the fan speeds, but this value will only be valid when defrosting is finished:
- *Pr03* - recovery heat exchanger defrost setpoint
- *Pr04* - recovery heat exchanger defrost neutral zone
- *PF07* - minimum supply fan speed during recirculation
- *PF20* - percentage increase/decrease of fan speed during recovery defrost
- *PF21* - time increase/decrease of fan speed during recovery defrost
- *PF22* - return fan percentage delta during recovery defrost
- *PF29* - minimum return fan speed

The setpoint (parameter *Pr06*) and the associated differential (parameter *Pr07*) must be set to activate the bypass damper due to defrost.
An expulsion probe must be configured to use this function.

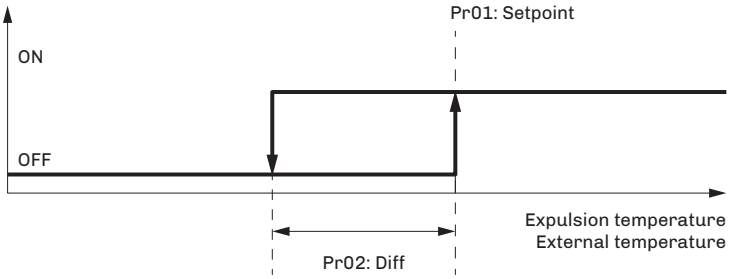


When the minimum expulsion air temperature is reached, as shown in the diagram, a cyclical bypass sequence of the recovery heat exchanger is activated to allow the hot expelled room air to defrost the exchanger air ducts.
After the delay *Pr05* the bypass damper is activated to allow defrosting.
When the temperature rises to above the permitted value, the damper is deactivated and the recovery heat exchanger restarts.



Rotary recovery heat exchanger

To configure the rotary recovery heat exchanger, parameter *PG04=2* must be configured.
The recovery heat exchanger is deactivated during free-cooling/free-heating.



During the winter cycle, the recovery heat exchanger exchanges heat between the flow of expelled air (hot and humid) and the input air (cold and dry).
If the external air is particularly cold, the expelled air flow temperature may fall as low as freezing point, risking obstruction of the exchanger and impeding normal air flow.
To prevent this happening, the expelled air flow temperature should be prevented from falling excessively by constantly monitoring it and, if necessary, first slowing down just the supply fan and then both fans.

Regulation is in the neutral zone with:
- setpoint *Pr03*
- band *Pr04*
- incremental step *PF20*
- time *PF21* on the temperature of the expulsion probe

If the temperature is too low (lower than setpoint *Pr03* minus the band *Pr04/2*), the speed of the supply fan will be slower than that of the return fan up to a maximum differential (parameter *PF22*).
If the request for defrosting remains, the speed of both fans will be reduced in parallel up to the minimum permitted value (parameter *PF07* for the supply fan and parameter *PF29* for the return fan).

Regardless of the fan speed regulation setting, this is suspended while defrosting is in progress.
When defrosting is finished, the fan speed regulation returns to the normal settings.
In the event of manual regulation, it is possible to set a different value for the fan speeds, but this value will only be valid when defrosting is finished.
- *Pr03* - recovery heat exchanger defrost setpoint
- *Pr04* - recovery heat exchanger defrost neutral zone
- *PF07* - minimum supply fan speed during recirculation
- *PF20* - percentage increase/decrease of fan speed during recovery defrost
- *PF21* - time increase/decrease of fan speed during recovery defrost
- *PF22* - return fan percentage delta during recovery defrost
- *PF29* - minimum return fan speed

If the temperature of the expelled air goes below the critical setpoint (parameter *Pr06*), try to reduce recovery activation by using a slow PWM regulation.
A slow PWM period (parameter *Pr10*) must be set.

Regulation is in the neutral zone with:
- setpoint *Pr06*
- band *Pr07*
- incremental step *Pr08*
- time *Pr09*

Regardless of the recovery heat exchanger speed regulation setting, this is suspended for the whole duration of regulation in the neutral zone.
- *Pr06* - recovery heat exchanger stopped setpoint during defrost
- *Pr07* - recovery heat exchanger stopped differential during defrost
- *Pr08* - percentage increase/decrease of rotary recovery heat exchanger speed during defrost
- *Pr09* - time increase/decrease of rotary recovery heat exchanger speed during defrost
- *Pr10* - PWM period of rotary recovery heat exchanger during defrost

Calculating recovery efficiency

The programme is able to calculate current efficiency which is displayed on the status page of the heat recovery exchanger. The formula used is as follows: *((Treturn - Texpulsion) / (Treturn - Texternal))*.
If there is an error in any of the probes used in the calculation, the calculation of the efficiency will be disabled and the user interface will display the symbol "---".

Recovery heat exchanger status

The recovery heat exchanger can have the following operating status:
1. Disabled - the recovery heat exchanger is not managed.
   When in this status, the user interface displays the symbol "---".
2. Off - the recovery heat exchanger is off.
   When in this status, the user interface displays the message "*OFF*"
3. During defrost - the recovery heat exchanger is off and defrost is active (only for the cross-flow recovery heat exchanger PG04=1).
   When in this status, the user interface displays the message "*OFFD*"
4. Off for free-cooling/free-heating - the recovery heat exchanger is off due to a request for free-cooling/free-heating.
   When in this status, the user interface displays the message "*OFCH*".
5. On - the recovery heat exchanger is on.
   When in this status, the user interface displays the message "*ON*"

Other management: last maintenance date

The "Servicer" -> "Counters" menu contains a page where it is possible to save the last date on which maintenance work was performed on the system.
Pressing "UPDATE" automatically substitutes the previous date with the current date, thus updating parameter *PM90*.

Diagnostics

The application is able to manage a set of alarms regarding the:
- fans
- compressor
- probes
- other machine functions

Depending on the type of alarm it is possible to configure:
- re-arm (manual or automatic)
- any signalling delays
- actions to be taken in specific situations

When the alarm LED flashes, it means there are alarms that have not yet been displayed.
When the alarm LED is fixed, it means there are active alarms but they have already been displayed.

When an alarm occurs, the configurable LED on the OEM controller (the last of the 5 LEDs) starts flashing to enable the units that have no display to understand which alarm has been triggered:
- the tens are indicated by slow flashes - Example *AL27 = 2 slow flashes*
- the units are indicated by rapid flashes - Example *AL27= 7 rapid flashes*

If two or more alarms have been triggered, only the alarm with the lowest index will be signalled.
There is a waiting time of 5 seconds between the two signals to ensure the correct alarm code is identified.

Active alarms can be reset from either the display or by disconnecting the controller from the power and then reconnecting it.
To view the alarms:
1. select the "Alarm" menu from the main page
2. press the ON/STAND-BY ⏻ key
3. press SET SET

To return to the main page of the application from an alarm page, press the ON/STAND-BY ⏻ key or wait for the 60 second timeout.
To scroll through the various active alarms, press the SET SET key again. The alarms will be displayed in order of priority, as listed in the table of alarms.

Manual and automatic alarms

There are two types of alarm:
- manual re-arm
- automatic re-arm

These alarms allow the final user to set the most suitable type of re-arm for his needs through a parameter.

Manual alarms

Example of a manual re-arm alarm:
- the alarm icon will start flashing
- press the SET SET key on the "Alarm" menu to view the code of the first active alarm
- once the situation that triggered the alarm has been resolved, the alarm can be re-armed manually.
  The procedure is as follows:
  - go to the page of the alarm to be reset
  - Hold down the SET SET key for about 2 seconds

At this point, if there are no other alarms, the page with the message "*no ALAr*" will appear, the alarm icon will go off and the machine will return to normal operating mode. If there are new alarms, the page showing the next active alarm will be displayed.
The consequences of an active manual alarm will remain valid until the user cancels the alarm message.

Automatic alarms
Example of an automatic re-arm alarm:
– the alarm icon will start flashing
– press the SET SET key on the "Alarm" menu to view the code of the first active alarm
– Once the situation that triggered the alarm has been resolved, re-arm and cancellation of the alarm message will happen automatically without the user having to take any action.

At this point, if there are no other alarms, the page with the message "*no ALAr*" will appear, the alarm icon will go off and the machine will return to normal operating mode. If there are new alarms, the page showing the next active alarm will be displayed.
The consequences of an active manual alarm will remain valid until the user cancels the alarm message.

Table of alarms

The table below lists all the alarms managed by the application.
The alarms are presented in the order in which the alarms are shown when active.
The alarms can all be seen even when the machine is switched off.

Code	Alarm description	Re-arm	Consequence	Delay
AL01	High humidity warning	Automatic Manual after *PA22* events/ time	– If digital external air damper, damper is closed and return fan stopped – If analogue external air damper, damper gradually closed and return fan stopped	-
AL02	High humidity alarm **)	Manual	– Switches off all devices	Can be set
AL03	High temperature in summer	Automatic	– Inhibition of heat integration – Inhibition of dehumidification if *PU03=0*	Can be set
AL04	Low temperature in winter	Automatic	– Inhibition of heat integration	Can be set
AL05	Supply fan alarm (thermal switch or tachometer) **)	Automatic	– Switches off all devices	Fixed 2 sec. thermal switch Can be set for tachometer
AL06	Return fan alarm (thermal switch or tachometer) **)	Automatic	– Switches off all devices	Fixed 2 sec. thermal switch Can be set for tachometer
AL07	Supply fan flow switch **)	Manual	– Switches off all devices	Can be set
AL08	Return fan flow switch **)	Manual	– Switches off all devices	Can be set
AL09	Supply filters pressure switch	Auto/Manu	– Signal only	Can be set
AL10	Return filters pressure switch	Auto/Manu	– Signal only	Can be set
AL11	Compressor low pressure	Automatic Manual after *PA32* events/ hour	– Stops the compressor	Can be set
AL12	Compressor high pressure switch	Automatic Manual after *PA35* events/ hour	– Stops the compressor	-
AL13	Compressor high pressure from transducer	Automatic Manual after *PA35* events/ hour	– Stops the compressor	-

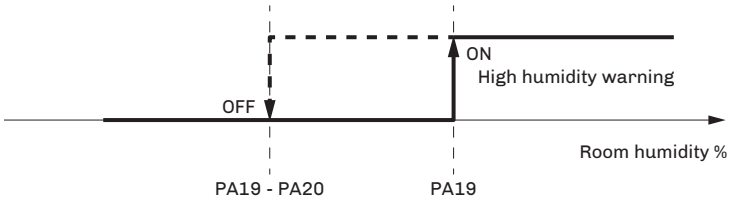
Code	Alarm description	Re-arm	Consequence	Delay
AL14	Compressor thermal switch	Auto/Manu	– Stops the compressor	Can be set
AL15	Compressor discharge gas high temperature	Automatic Manual after *PA40* events/ hour	– Automatic – Manual after *PA40* events/hour	Can be set
AL16	Antifreeze	Automatic	– Stops the fans	Stops the fans
AL17	Water flow switch	Automatic Manual after *PA11* events/ hour	– Inhibition of changeover from water probe – Inhibition of heat integration – Inhibition of dehumidification if *PU04=0* – Closes water valve	Can be set
AL18	Generic alarm **)	Auto/Manu	– Switches off all devices	Can be set
AL19	Generic warning	Auto/Manu	– Signal only	Can be set
AL20	Fire/smoke **)	Automatic	– Forces the fans to maximum and opens the external air damper if *PA46=1* – Stops the fans and closes the external air damper if *PA46=0* – Switches off all devices	-
AL21	Phase sequence **)	Manual	– Switches off all devices	-
AL22	Supply fan operating hours	Manual *)	– Signal only	-
AL23	Return fan operating hours	Manual *)	– Signal only	-
AL24	Compressor operating hours	Manual *)	– Signal only	-
AL25	Configuration error inputs/outputs **)	Automatic	– Switches off all devices	-
AL26	RTC clock faulty or disconnected	Auto/Manu	– Inhibition of time band management	-
AL27	Communication error with EVD EXP INTRABUS expansion	Automatic	– Signal only	Fixed 30 seconds
AL28	Room/return temperature probe faulty or disconnected	Automatic	– Inhibition of regulations dependent on it	Can be set
AL29	External temperature probe faulty or disconnected	Automatic	– Inhibition of regulations dependent on it	Can be set
AL30	Water temperature probe faulty or disconnected	Automatic	– Inhibition of regulations dependent on it	Can be set
AL31	Expulsion temperature probe faulty or disconnected	Automatic	– Inhibition of regulations dependent on it	Can be set
AL32	Discharge gas temperature probe faulty or disconnected	Automatic	– Inhibition of regulations dependent on it	Can be set
AL33	Compressor defrost temperature probe faulty or disconnected	Automatic	– Inhibition of regulations dependent on it	Can be set
AL34	Room/return humidity probe faulty or disconnected	Automatic	– Inhibition of regulations dependent on it	Can be set
AL35	Air quality probe faulty or disconnected	Automatic	– Inhibition of regulations dependent on it	Can be set
AL37	Compressor pressure probe faulty or disconnected	Automatic	– Inhibition of regulations dependent on it	Can be set

Auto/Manu: automatic or manual alarm (can be set by parameter)
**) To re-arm alarms linked to operating hours, zero the device hours*
***) These alarms switch all the devices off, creating a blocking alarm for the unit*

High humidity warning and alarm

If room humidity goes above setpoint *PA19*, the high humidity warning will be triggered (*AL01*).
The consequences of the warning are:
– the return fan stops
– the external air damper closes completely if it is digital,
if the external air damper is modulating, the air introduced will gradually be reduced up to the minimum opening of the damper and the return fan speed will be reduced

The warning is automatically re-armed, it will be reset when the value of the room humidity is lower than setpoint *PA19* minus the differential *PA20*.
The warning becomes manually re-armed if the number of events/hour set by parameter *PA22***occurs.**
If the warning condition persists for longer than parameter *PA21*, it will turn into a high humidity alarm (*AL02*) which will be manually re-armed and will immediately stop all the devices.



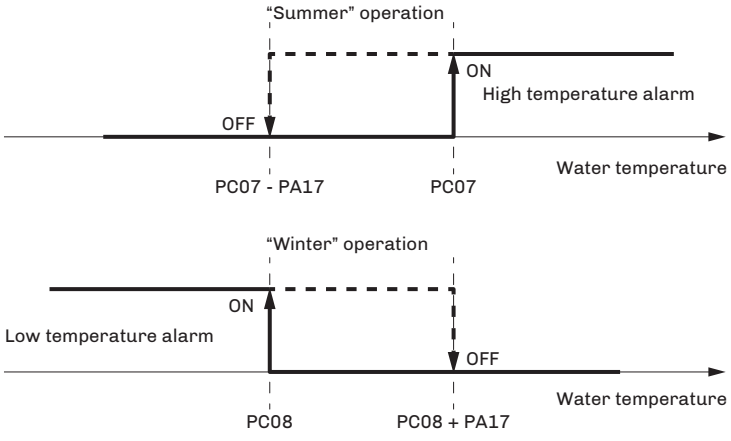
High/low temperature alarm

When in "summer" mode, the high temperature in summer alarm is triggered (*AL03*) if:
– the water valve is active and the operating mode to use has already been controlled. The temperature of the water goes above the summer switching setpoint *PC07* after a delay set by parameter *PA16*
Regulation of heat integration and dehumidification is inhibited if:
– the parameter which enables dehumidification with the high temperature alarm *PU03* is disabled

A water valve sniffing cycle is activated with specific parameters to control the inhibition conditions. The alarm is automatically re-armed and resets if the water temperature is below the switching setpoint *PC07* minus the differential *PA17*.

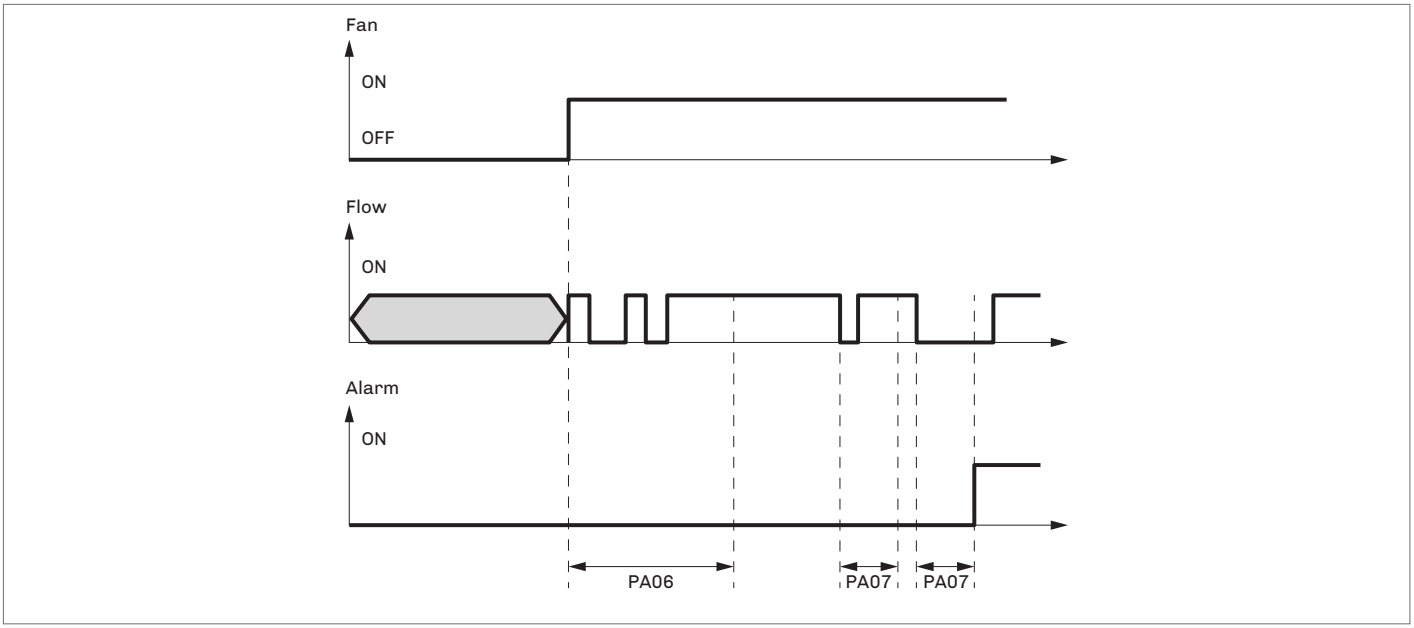
When in "winter" mode, the low temperature in winter alarm is triggered (*AL04*) if:
– the water valve is active and the operating mode to use has already been controlled
– the temperature of the water is below the winter switching setpoint *PC08* after a delay set by parameter *PA16*

Regulation of heat integration is inhibited and a water valve sniffing cycle is activated with specific parameters to control the inhibition conditions.
The alarm is automatically re-armed and resets if the water temperature is above the switching setpoint *PC08* minus the differential *PA17*.



Air flow switch alarm

The flow switch is controlled after the initial switch-on phase of the fan and after delay from reset (parameter *PA06*). Once this time has elapsed, if the contact signals a lack of flow, the alarm is triggered.
It is possible to configure two separate flow switches, one for the supply fan and one for the return fan.



During normal operation the flow sensor is constantly monitored: if the contact signals a lack of flow for a period of time longer than parameter *PA07* the alarm is triggered.
The flow switch alarm is reset manually. When it is activated, it generates a blocking alarm for the unit and all devices are switched off.

Low pressure switch alarm

The low pressure switch alarm is enabled by configuring a digital input as “Low compressor pressure”.
If the digital input is activated and stays active for the delay set by parameter *PA31*, the compressor low pressure alarm will be triggered (*AL11*) which will immediately stop the compressor which is initially automatically re-armed.
The alarm becomes manually re-armed if it is triggered for the number of events/hour set by parameter *PA32*.
When the compressor is switched on, the low pressure alarm is inhibited for the bypass time set by parameter *PA30* during which time activation of the pressure switch will have no effect.
If the digital input is active when the compressor is switched off and a request is received to switch it on, alarm *AL11* will be triggered and the compressor will not be start up.

High pressure alarm

If the digital input of the high pressure switch is activated, the high pressure switch alarm will instantly be triggered (*AL12*) and will immediately stop the compressor which is automatically re-armed.
The alarm becomes manually re-armed if it is triggered for the number of events/hour set by parameter *PA35*.
If the compressor pressure probe is configured and the value is above the setpoint set by parameter *PA33*, the high pressure transducer alarm will instantly be triggered (*AL13*) and will immediately stop the compressor which is automatically re-armed.
The alarm situation is cancelled and the alarm can be reset if the value of the pressure is below setpoint *PA33* minus the differential *PA34*.
The alarm becomes manually re-armed if it is triggered for the number of events/hour set by parameter *PA35*.

High discharge gas temperature alarm

The programme controls the discharge temperature of the compressor with the associated alarm.
To enable this function, an analogue input must be configured as the “Discharge gas temperature”.

If the temperature of the hot gas exceeds setpoint *PA38* for the delay set by parameter *PA37*, the discharge gas high temperature alarm will be triggered (*AL15*) and will immediately stop the compressor which is initially automatically re-armed.
The alarm situation is cancelled and the alarm can be reset if the value of the temperature is below setpoint *PA38* minus the differential *PA39*.
The alarm becomes manually re-armed if it is triggered for the number of events/hour set by parameter *PA40*.

Antifreeze alarm

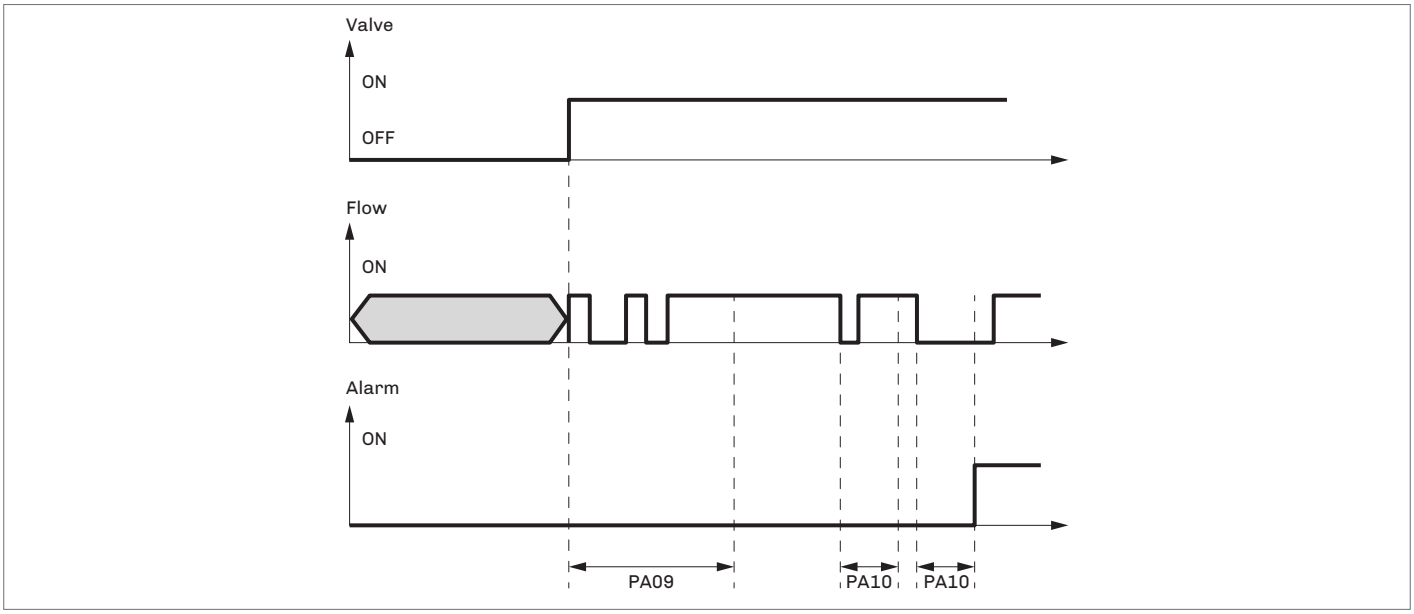
The antifreeze alarm can be triggered by either a dedicated digital input or by the control of the water temperature.
The antifreeze alarm (*AL16*) is triggered after a delay set by parameter *PA42* if:
- the digital input is active
- the water temperature is below setpoint *PA43*

The alarm is automatically re-armed and is set to zero if:
- the digital input is no longer active
- the water temperature is above setpoint *PA43* plus the differential *PA44*

The alarm will switch off the supply and return fans.

Water flow switch alarm

The flow switch is managed after the initial opening of the water valve and after delay from reset (parameter *PA09*). Once this time has elapsed, if the contact signals a lack of flow, the alarm is triggered (*AL17*).



During normal operation the flow sensor is constantly monitored: if the contact signals a lack of flow for a period of time longer than parameter *PA10* the alarm is triggered.
The flow switch alarm is initially automatically reset if the number of events/hour set by parameter *PA11* does not occur. In this case it is manually reset.

The flow switch alarm inhibits control of the operating mode in the event of automatic changeover based on the water probe. Heat integration and dehumidification, if the parameter to enable dehumidification with the water flow switch alarm (parameter *PU04*) is disabled, will immediately close the water valve.

Fire/smoke alarm

There are two distinct operating modes for the fire/smoke alarm which can be set by parameter *PA46*.
The following parameters are available

- "Put out fire" (*PA46=0*).
  This will attempt to smother the fire, preventing oxygen from getting into the room.
  The fans and any other functions will therefore be stopped and the external air damper closed in order to isolate the room from the outside.

- "Smoke evacuation" (*PA46=1*)
  Statistically, the main cause of death in fires is smoke inhalation, so the parameter "Smoke evacuation" is set by default even though it may fan the flames.
  To let the most smoke possible escape, the external air damper will be opened to its maximum setting and both the fans will be forced at maximum speed.
  Any extra functions will be stopped in this case.

Alarm relay

The programme makes it possible to manage two configurable alarm relays:
- one for minor alarms
- one for serious alarms

Every type of alarm has a parameter which allows the user to choose if that alarm should be triggered and on which alarm relay.
Additional alarms may be linked to the relays.
Using the appropriate configuration, it is possible to set the polarity (NO or NC) of the alarm digital outputs.

Technical specifications

c-pro 3 OEM DH

Models with open frame board and with plastic housing

Type	Description	
Purpose of the control device	Function controller	
Construction of the control device	Built-in electronic device	
Housing	Grey, self-extinguishing	
Category of heat and fire resistance	D	
Measurements	Models with open frame board	– 142 x 110 x 31 mm
	Models with plastic housing	– 142 x 128 x 60 mm
Mounting methods for the control device	On a DIN rail in a control panel	
Degree of protection provided by the casing	Models with open frame board	IP00
	Models with plastic housing	IP20
Connection method	Models with open frame board	– Fixed screw terminal blocks for wires up to 2.5 mm^2 – Type A female USB connector
	Models with plastic housing	– Plug-in screw terminal blocks for wires up to 2.5 mm^2 – Type A female USB connector
Maximum permitted length for connection cables	Power supply: 10 m	
	Analogue inputs: 10 m	
	Auxiliary power supply and 0 - 5 V ratiometric transducer power supply: 10 m	
	Digital inputs: 10 m	
	Analogue outputs 0 - 10 V: 10 m	
	PWM analogue outputs: 1 m	
	Digital outputs: 100 m	
	INTRABUS port: 10 m	
	RS-485 MODBUS port: 1,000 m	
	USB port: 1 m	
	CAN port: – 1,000 m with 20,000 baud rate – 500 m with 50,000 baud rate – 250 m with 125,000 baud rate – 50 m with 500,000 baud rate	
Operating temperature	Models with open frame board	-20 – 60 °C
	Models with plastic housing	-20 – 55 °C
Storage temperature	Models with open frame board	-20 – 70 °C
	Models with plastic housing	-20 – 70 °C
Operating humidity	Relative humidity without condensate from 5 to 95%	
Pollution status of the control device	2	
Compliance	– RoHS 2011/65/EC	
	– WEEE 2012/19/EU	
	– REACH (EC) Regulation no. 1907/2006	
	– EMC 2014/30/EU	
	– LVD 2014/35/EU	
Power supply	115... 230 VAC (+10% -15%) 50/60 Hz (±3 Hz) max. 10 VA	
Earthing methods for the control device	None	
Rated impulse-withstand voltage	4 KV	
Over-voltage category	III	
Software class and structure	A	

Type	Description	
Clock	According to the model (with secondary lithium battery)	
Clock drift	≤ 60 s/month at 25 °C	
Clock battery autonomy in the absence of a power supply	> 6 months at 25 °C	
Clock battery charging time	24 h (the battery is charged by the power supply of the device)	
Analogue inputs	4 for PTC, NTC or Pt 1000 probes (can be configured also for dry contact digital input)	
	3 for NTC probes, 0-5 V, 0-10 V, 0-20 mA or 4-20 mA transducers (can also be configured for dry contact digital input)	
PTC probes	Sensor type	KTY 81 – 121 (990 Ω @ 25 °C)
	Measurement field	-50 – 150 °C
	Resolution	0.1 °C
NTC probes	Sensor type	β3435 (10 KΩ @ 25 °C)
	Measurement field	-50 – 120 °C
	Resolution	0.1 °C
Pt 1000 probes	Sensor type	1 KΩ – 0 °C
	Measurement field	-100 – 400 °C
	Resolution	0.1 °C
0-5 V transducers	Input heating element	≥ 10 KΩ
	Resolution	0.01 V
0-10 V transducers	Input heating element	≤ 200 Ω
	Resolution	0.01 mA
4-20 mA transducers	Input heating element	≤ 200 Ω
	Resolution	0.01 mA
Auxiliary power supply	Models with open frame board	12 VDC +10 % -15 % 160 mA max
	Models with plastic housing	12 VDC +10 % -15 % 100 mA max
Ratiometric transducer power supply	Models with open frame board	5 VDC +10 % -15 % 10 mA max
	Models with plastic housing	5 VDC +10 % -15 % 10 mA max
Digital inputs	2 dry contact and for pulse trains up to 2 KHz	
	2 high voltage	
Dry contact	Contact type	3,3 VDC, 1 mA
	Power supply	none
High voltage contact	Power supply	115... 230 VAC
Analogue outputs	4 for 0-10 V or PWM signal	
0-10 V signal	Minimum applicable impedance	1 KΩ
	Resolution	0.01 V
PWM signal	Power supply	0... 10 VDC (+16 % -25 %) 10 mA max
	Frequency	10 Hz... 2 KHz
	Duty	0... 100 %
Digital outputs	4 with SPST electro-mechanical relay, 5 A res. at 250 VAC	
	1 with SPST electro-mechanical relay, 8 A res. at 250 VAC	
	1 with SPDT electro-mechanical relay, 16 A res. at 250 VAC	
The device guarantees reinforced insulation between each digital output connector and the rest of the components of the device.		
Type 1 or Type 2 actions	Type 1	

Type	Description	
Additional features of Type 1 or Type 2 actions	C	
Displays	Models with open frame board	None
	Models with plastic housing	None
Communications ports	– 1 CAN port	
	– 1 USB port	
	– 1 INTRABUS port	
	– 1 RS-485 MODBUS MASTER SLAVE port (according to the model)	

EVJ LCD

Type	Description	
Purpose of the control device	Function controller	
Construction of the control device	Built-in electronic device	
Housing	Black or white, self-extinguishing	
Category of heat and fire resistance	D	
	12 VAC/DC models for wall installation	– 111.4 x 76.4 x 18.5 mm
	115...230 VAC models for wall installation	– 111.4 x 76.4 x 51.5 mm
Mounting methods for the control device	According to the model: – Wall-mounted – In regular built-in boxes	
Degree of protection provided by the casing	IP30	
Connection method	12 VAC/DC or 115...230 VAC models for wall installation	Fixed screw terminal blocks for wires up to 1 mm^2
Maximum permitted length for connection cables	Power supply: 10 m	
	Analogue/digital inputs: 10 m	
	Digital outputs: 10 m	
	INTRABUS port: – 10 m if the device is controller-powered – 30 m with independent power source	
	RS-485 MODBUS port: – 1,000 m	
Operating temperature	0 – 40 °C	
Storage temperature	-20 – 70 °C	
Operating humidity	Relative humidity without condensate from 5 to 95%	
Pollution status of the control device	2	
Compliance	– RoHS 2011/65/EC	
	– WEEE 2012/19/EU	
	– REACH (EC) Regulation no. 1907/2006	
	– EMC 2014/30/EU	
	– RED 2014/53/EU	
Power supply	12 VAC/DC models for wall installation	12 VAC (±15%), 50/60 Hz (±3 Hz), max. 2 VA not insulated or 12 VDC (±15%), max. 1 W not insulated (independent power source or controller-powered)
	115...230 VAC models for wall installation	115... 230 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 3 VA insulated
Earthing methods for the control device	None	
Rated impulse-withstand voltage	12 VAC/DC models for wall installation	330 V
	115...230 VAC models, models for wall installation	2.5 KV
Over-voltage category	12 VAC/DC models for wall installation	I
	115...230 VAC models, models for wall installation	II
Software class and structure	A	

Type	Description	
Analogue/digital inputs	12 VAC/DC models for wall installation	1 for NTC/ID probes
	115...230 VAC models for wall installation	2 for NTC/ID probes
NTC probes	Measurement field	-40 – 110 °C
	Resolution	0.1 °C
Digital outputs	12 VAC/DC models for wall installation	None
	115...230 VAC models for wall installation	2 with electromechanical relays (K1 relay and K2 relay)
K1 relay	SPST, 1 A res. @ 250 VAC	
K2 relay	SPST, 1 A res. @ 250 VAC	
Type 1 or Type 2 actions	Type 1	
Additional features of Type 1 or Type 2 actions	C	
Displays	Two-line LCD display and function icons	
Alarm buzzer	Built-in	
Built-in sensors	Temperature and humidity (according to the model)	
Temperature sensor measurement field	0... 40 °C	
Built-in humidity sensor measurement field	10... 70% relative humidity	
Communications ports	1 INTRABUS or RS-485 with INTRABUS communication protocol (according to the model)	

EPJ LCD

Type	Description	
Purpose of the control device	Function controller	
Construction of the control device	Built-in electronic device	
Housing	White, self-extinguishing	
Category of heat and fire resistance	D	
Measurements	12 VAC/DC models for wall installation	– 111.4 x 76.4 x 18.5 mm
	115...230 VAC models for wall installation	– 111.4 x 76.4 x 51.5 mm
Mounting methods for the control device	According to the model: – Wall-mounted – In regular built-in boxes	
Degree of protection provided by the casing	IP30	
Connection method	Fixed screw terminal blocks for wires up to 1 mm^2	
Maximum permitted length for connection cables	Power supply: 10 m	
	Analogue inputs: 10 m	
	Digital outputs: 10 m	
	CAN port: – 1,000 m with 20,000 baud rate – 500 m with 50,000 baud rate – 250 m with 125,000 baud rate – 50 m with 500,000 baud rate – Over 10 m use a screened cable	
Operating temperature	0 – 40 °C	
Storage temperature	-20 – 70 °C	
Operating humidity	Relative humidity without condensate from 5 to 95%	
Pollution status of the control device	2	
Compliance	– RoHS 2011/65/EC	
	– WEEE 2012/19/EU	
	– REACH (EC) Regulation no. 1907/2006	
	– EMC 2014/30/EU	
	– RED 2014/53/EU	
Power supply	12 VAC/DC models for wall installation	12 VAC (±15%), 50/60 Hz (±3 Hz), max. 2 VA not insulated or 12 VDC (±15%), max. 1 W not insulated (independent power source or controller-powered)
	115...230 VAC models for wall installation	115... 230 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 3 VA insulated
Earthing methods for the control device	None	
Rated impulse-withstand voltage	12 VAC/DC models for wall installation	330 V
	115...230 VAC models for wall installation	2.5 KV
Over-voltage category	12 VAC/DC models for wall installation	I
	115...230 VAC models for wall installation	II
Software class and structure	A	

Type	Description	
Analogue/digital inputs	12 VAC/DC models for wall installation	1 for NTC/ID probes
	115...230 VAC models for wall installation	2 for NTC/ID probes
NTC probes	Measurement field	-40 – 110 °C
	Resolution	0.1 °C
Digital outputs	12 VAC/DC models for wall installation	None
	115...230 VAC models for wall installation	2 with electromechanical relays (K1 relay and K2 relay)
K1 relay	SPST, 1 A res. @ 250 VAC	
K2 relay	SPST, 1 A res. @ 250 VAC	
Type 1 or Type 2 actions	Type 1	
Additional features of Type 1 or Type 2 actions	C	
Displays	Two-line LCD display and function icons	
Alarm buzzer	Built-in	
Built-in sensors	Temperature and humidity (according to the model)	
Temperature sensor measurement field	0... 40 °C	
Humidity sensor measurement field	10... 70% relative humidity	
Communications ports	1 CAN port	

EVD EXP

Type	Description	
Purpose of the control device	Function controller	
Construction of the control device	Built-in electronic device	
Housing	Grey, self-extinguishing	
Category of heat and fire resistance	D	
Measurements	71.0 x 168.0 x 60.0 mm 4 DIN modules	
Mounting methods for the control device	Installation on a DIN rail in a control panel The dimensions of the DIN rail must be 35 x 7.5 mm or 35 x 15 mm	
Degree of protection provided by the casing	IP40 (front)	
Connection method	Micro-Fit connectors	
	Plug-in screw terminal blocks	
Maximum permitted length for connection cables	Power supply: 10 m	
	Analogue inputs: 10 m	
	Digital outputs: 10 m	
	Auxiliary power supply: 10 m	
	Digital inputs: 10 m	
	0 - 10 V and phase cutting analogue outputs: 10 m	
	PWM analogue outputs: 1 m	
	Digital outputs: 10 m	
	INTRABUS port: 10 m	
	We recommend using the CJAV38 connection kit to cable the device (to be ordered separately).	
Operating temperature	-10 – 55 °C	
Storage temperature	-20 – 70 °C	
Operating humidity	Relative humidity without condensate from 5 to 95%	
Pollution status of the control device	2	
Compliance	– RoHS 2011/65/EC	
	– WEEE 2012/19/EU	
	– REACH (EC) Regulation no. 1907/2006	
	– EMC 2014/30/EU	
Power supply	115... 230 VAC (+10% -15%) 50/60 Hz (±3 Hz) max. 6 VA insulated	
	Protect the power supply with a 2 A-T 250 VAC fuse	
Earthing methods for the control device	None	
Rated impulse-withstand voltage	4 KV	
Over-voltage category	II	
Software class and structure	A	
Analogue inputs	5 for NTC probes (can also be configured for dry contact digital input)	
	2 for NTC probes 0-10 V 4-20 mA transducers (can also be configured for dry contact digital input)	
NTC probes	Sensor type	β3435 (10 KΩ @ 25 °C)
	Measurement field	-50 – 120 °C
	Resolution	0.1 °C
0 - 10 V transducers	Input heating element	> 10 KΩ
	Resolution	0.1 V
4 - 20 mA transducers	Input heating element	≤ 200 Ω
	Resolution	0.01 mA

Type	Description	
Auxiliary power supply	12 VDC 40 mA max	
Digital inputs	2 dry contact and for pulse trains	
	1 dry contact	
Dry contact	Contact type	3.3 VDC 1 mA
	Power supply	None
Analogue outputs	2 for 0-10 V signal PWM or phase cutting	
0 - 10 V signal	Minimum applicable impedance	1 KΩ
	Resolution	0.01 V
PWM signal	Power supply	0... 10 VDC (+16% -2 %) 10 mA max
	Frequency	10 Hz... 2 KHz
	Duty	0... 100%
Digital outputs	4 electro-mechanical relays: – 2 SPST, 3 A res. at 250 VAC – 1 SPST, 12 A res. at 250 VAC – 1 SPDT, 8 A res. at 250 VAC	
Type 1 or Type 2 actions	Type 1	
Additional features of Type 1 or Type 2 actions	C	
Displays	Signalling LED	
Communications ports	1 INTRABUS port	

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