EV3 DuoControl Split

Controller for refrigerated units with one or two compartments

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EN ENGLISH

- low, normal, static or fan-driven temperature regulation of refrigerated units with one or two compartments and common or separate compressors
- hot or cold mode regulation
- power supply 115... 230 Vac
- 4 analogue inputs for PTC/NTC probes, one of which can be set as digital
- door switch digital input
- multi-purpose digital input
- remote on-off digital input
- 2 analogue outputs 0-10 V configurable as on-off
- 6 configurable digital outputs (sealed electro-mechanical relays in compliance with the EN 60079-15 standard), one of which is 30 A res. @ 250 Vac
- alarm buzzer
- TTL MODBUS slave port for one of the following optional modules:
  - EVlinking Wi-Fi (EVIF25TWX) for the EPoCA cloud system
  - EVlinking BLE (EVIF25TBX) for the EVconnect app
  - EVlinking RS-485 (EVIF23TSX) for real-time functions
- RS-485 port for MODBUS RTU serial communication or Ethernet connectivity using the EV3 Web or the EVD Web gateway for the EPoCA cloud system

Models available

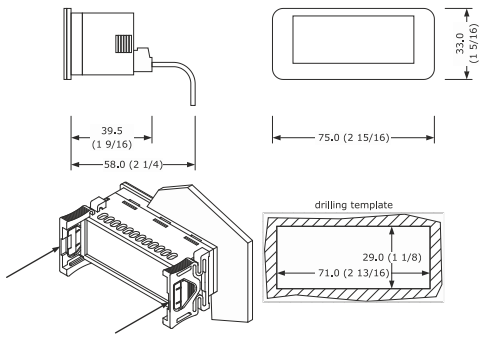
No.	Purchasing code
1	EV3S236N9P

1 MEASUREMENTS AND INSTALLATION

1.1 User interface

To be fitted to a panel, snap-in brackets provided.

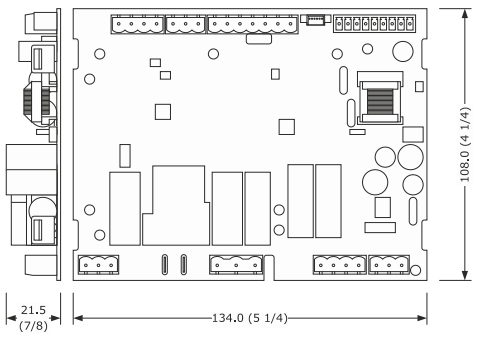
N.B.
- the thickness of the panel must be between 0.8 and 2.0 mm (1/32 and 1/16 in)
- make sure the product used to clean the user interface is not rated as aggressive



1.1 Control module

To be installed on an electrical panel with plastic spacers (not provided).

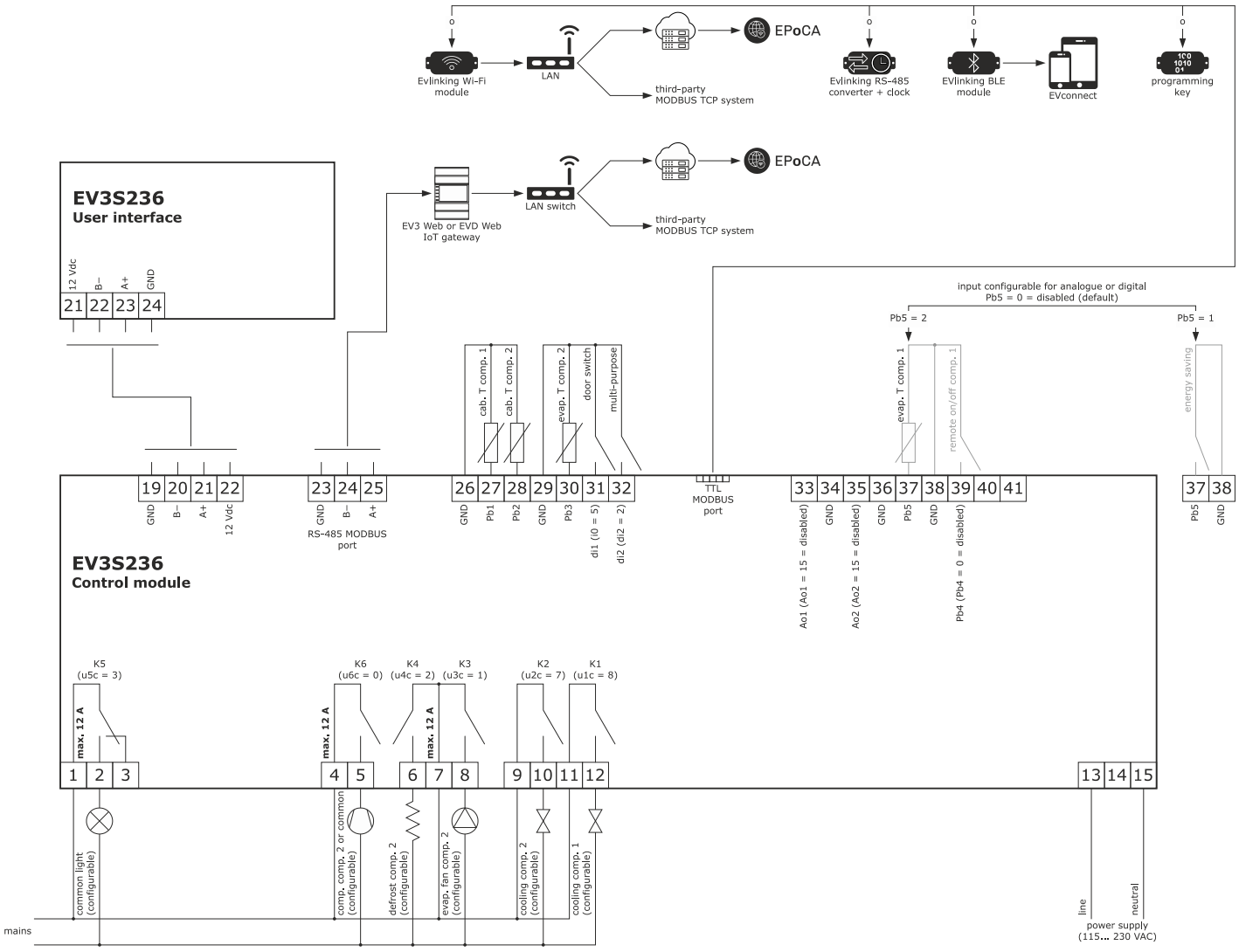
N.B.
All metal parts must be placed at a distance that complies with safety regulations.



INSTALLATION PRECAUTIONS
- 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.

2 ELECTRICAL CONNECTION

N.B.
- use cables of an adequate section for the current running through them
- to reduce any electromagnetic interference, locate the power cables as far away as possible from the signal cables



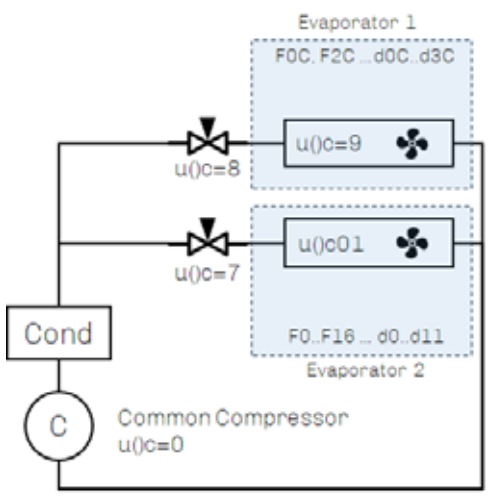
PRECAUTIONS FOR ELECTRICAL CONNECTION
- if using an electrical or pneumatic screwdriver, adjust the tightening torque
- if the device is moved from a cold to a warm place, humidity may cause condensation to form inside. Wait for about an hour before switching on the power
- make sure that the supply voltage, electrical frequency and power are within the set limits. See the section *TECHNICAL SPECIFICATIONS*
- 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

3 FIRST-TIME USE

1. Carry out the installation as shown in the section *MEASUREMENTS AND INSTALLATION*.
2. Power up the device.
3. Configure the device as shown in the section *Setting configuration parameters*.
   When using for the first time, we recommend setting parameter P7 according to the type of application as follows:

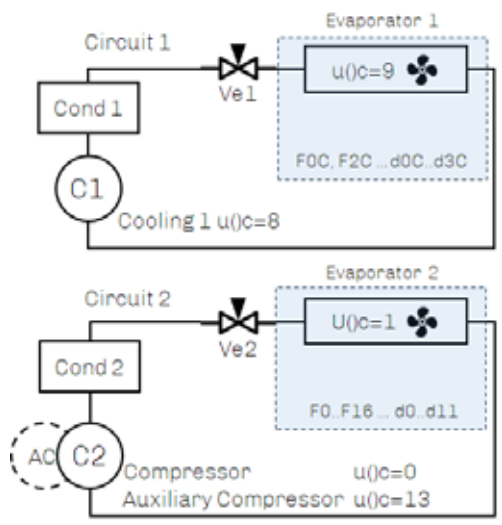
Unit with 2 compartments and a common compressor (P7 = 0 or 1)

When P7 = 0, the request for cooling activates the common compressor and the cooling valve of the compartment the request originated from.
When P7 = 1, the request for cooling activates the common compressor and, if the request comes from both compartments, reaching compartment 2 setpoint has priority over compartment 1 setpoint.



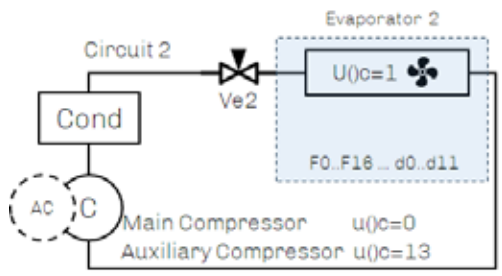
Unit with 2 compartments and separate compressors (P7 = 2)

Each compartment activates its own cooling request which, in turn, activates the compressor and the cooling valve of the compartment the request originated from (NB: the auxiliary compressor, which is enabled with u1c = 13, always refers to compartment 2).



Unit with a single compartment (P7 = 3)

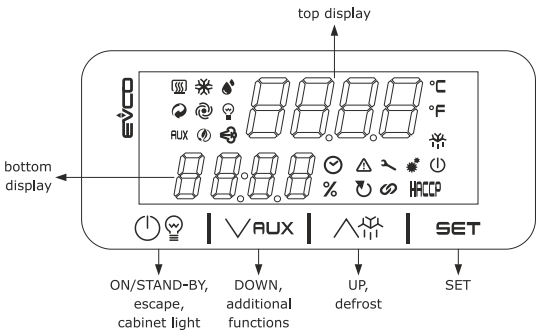
Regulation is active for compartment 2 only and is disabled for compartment 1.



Next check that the remaining settings are appropriate; see the section *CONFIGURATION PARAMETERS*.

4. Disconnect the device from the mains.
5. Make the electrical connection as shown in the section *ELECTRICAL CONNECTION*, without powering up the device.
6. Connect one of the following optional accessories as required:
   To activate real-time functions, connect the EVlinking RS-485 EVIF23TSX clock module.
   To control the device using the EVconnect app, connect the EVlinking BLE EVIF25TBX module to the TTL port then synchronise it with the app.
   To control the device using the EPoCA monitoring system or a third-party MODBUS TCP system, choose one of the following options:
   - connect the EVlinking Wi-Fi EVIF25TWX module to the TTL port and then to a local Wi-Fi network
   - connect an IoT EV3 Web or EVD Web gateway to the RS-485 port, then connect the gateway to an Ethernet port of a router or to an Ethernet port of an Ethernet hub connected to a local network.
7. Power up the device again.

4 USER INTERFACE



LED	ON	FLASHING
	heating active (compartment 1 or 2, according to P9)	-
	common compressor on (if P7 = 0 or 1); compressor compartment 2 on (if P7 = 2 or 3)	protection in progress (see parameters C0... C7)
	not in use	
	evaporator fans compartment 1 on	evaporator fans off compartment 1 active
	evaporator fans compartment 2 on	evaporator fans off compartment 2 active
	cabinet light on	cabinet light on from door switch digital input
AUX	auxiliary compressor on	
	energy saving active	-
	not in use	
°C °F	temperature measurement unit	-
	defrost active	dripping active
	not in use	
	alarm active	-
	not in use	
	parameters being set	-
	device off	-
%	not in use	
	not in use	
	remote connection active	
HACCP	saved HACCP alarms not yet displayed (if bLE ≠ 0)	

5 FUNCTIONS

N.B.
- to activate a function or view a value, make sure the controller is switched on, the keypad is not locked and that all the conditions needed to proceed are met (see the precautions for each function)
- when the keypad is locked, functions other than silencing the buzzer and switching the light on/off are unavailable. It must be unlocked to access other functions (see section 5.1)
- if d6=2, the dEF label will be displayed during defrost

5.1 Locking/unlocking the keypad

If enabled with parameter Loc = 1, the keypad will lock 30 seconds after no keys have been pressed. After 30 s have elapsed, the Loc label will appear for a couple of seconds; this label is displayed every time any key other than the light key is pressed.
To unlock the keypad, hold down any key for 3 s until the UnL label appears.
N.B.: the keypad is never locked when regulation of both compartments is off.

5.2 Switching the device on/off

If POF = 0, the device can be switched on/off remotely by setting parameter di2 for compartment 2 and Pb4 for compartment 1.
If POF = 1, the device can be switched on/off using the keypad, as long as the value on the top line (which is set using P5) and the value on the bottom line (which is set using P6) do not both refer to the same compartment.
Each compartment can be switched on/off separately using the following procedure:

1.		Hold down the ON/STAND-BY/LIGHT key for 3 s until the ON (regulation on) or OFF (regulation off) label starts flashing on the top display
2a.	SET	Press the SET key to go directly to the bottom line if the status of the top line remains the same
2b.	AUX	Press the UP or DOWN key to change the status
3.	SET	Press the SET key to confirm: the top line will stop flashing and the bottom one will start
4.	Repeat steps 2 and 3 for the bottom line when it is flashing	

N.B.: the device will not exit the procedure and the line will not stop flashing until the SET key has been pressed to confirm the choice.

When regulation of one compartment is off, the line on the display corresponding to that compartment shows the OFF label. During normal operation, the top line on the display shows the value selected with parameter P5 (cabinet temperature compartment 1, setpoint compartment 1 or cabinet temperature compartment 2). The bottom line shows the value selected with parameter P6 (cabinet temperature compartment 2, setpoint compartment 2, cabinet temperature compartment 1 or clock if the controller is connected to the optional EVlinking modules or EVCO gateways).
During defrost, both lines on the display show the information set with parameter d6.

5.3 Activating defrost

If defrost is activated manually using the key, it will be requested in both compartments. It will, however, only be carried out if the compartment meets the temperature conditions which have been set and if the cabinet probe of that compartment is not in error mode. This does not apply to compartment 1 if it is disabled with P7 = 3.

1.		Hold down the UP/DEFROST key for 3 s: the LED will come on and the information set with d6 will be displayed.

5.4 Switching the cabinet light on/off (if u1c... Ao2 = 3)

The light can always be switched on/off when the controller is on, even if the keypad is locked. When the device is off (in stand-by), the light can only be switched on/off if U2 = 1.

1.		Press the ON/STAND-BY/LIGHT key: the LED will come on/go off.

If the device is connected to the EPoCA or MODBUS TCP management systems, the light can also be switched on/off remotely.
If i0 = 3, 4 or 5, the light will come on automatically if the door switch input is activated: in this case, the LED will flash.

5.5 Silencing the buzzer (if u9 = 1, default)

Press any key.
If **u4 = 1** (default), silencing the buzzer will also deactivate the alarm output.

5.6 Viewing temperatures detected by the analogue inputs

1.	AUX	Hold down the DOWN/AUX key for 3 s to view the first available label.
2.	AUX	Press the UP or DOWN key until the desired label from the list below appears on the bottom line and the corresponding value on the top line.

LABEL	CORRESPONDING VALUE
Pb1	cabinet temperature compartment 1
Pb2	cabinet temperature compartment 2
Pb3	evaporator temperature compartment 2
Pb5	evaporator temperature compartment 1 (present only if Pb5 = 2)

5.		Press the ON/STAND-BY key to exit the procedure

5.7 Viewing and deleting main compressor operation days

Proceed as follows to view:

1.	AUX	Hold down the DOWN key for 3 s: the first available label will appear on the bottom line
2.	AUX	Press the UP or DOWN key until the Cd (compressor days) label appears on the bottom line and the number indicating the compressor operation days on the top line

Proceed as follows to delete:

1.	AUX	Hold down the DOWN key for 3 s: the first available label will appear on the bottom line, namely rCd (reset compressor days)
2.	SET	Press the SET key: the number 0 will appear on the top line
3.	AUX	Press the UP or DOWN key within 15 s to increase the value to 149 (access password)
4.	SET	Press the SET key to confirm deletion of the compressor operation days: the - - - - label will flash for a couple of seconds and the controller will automatically exit the procedure

5.8 Setting the setpoint

1.	SET	Press the SET key: the top line on the display will start flashing
2.	AUX	Press the UP or DOWN key within 15 s to set the value within the limits r1 and r2 if the value displayed refers to compartment 1; within the limits r3 and r4 if the value displayed refers to compartment 2
3.	SET	Press the SET key to confirm the set value: the top line will stop flashing and the bottom one will start (if the SET key is not pressed to confirm, after 15 s the device exits the procedure and the value is confirmed)
4.	Repeat steps 2 and 3 for the bottom line when it is flashing	

5.9 Viewing and setting the date, time and day of the week (available by connecting the controller to the optional EVlinking modules or the EV3 Web or EVD Web gateway)

N.B.
- do not disconnect the device from the mains in the two minutes after setting the date, time and day of the week
- if the device communicates with the EVconnect app or the EPoCA remote monitoring system, it is possible to force synchronisation of the date, time and day of the week with those of the smartphone/tablet/PC used

1.	AUX	Hold down the DOWN key for 3 s to view the first available label
2.	AUX	Press the UP or DOWN key until the rtc label appears
3.	SET	Press the SET key: the display will show the first available label. By pressing the SET key again, others will be displayed in the order given below

LAB.	DESCRIPTION
y+2 figures	year (00...99)
n+2 figures	month (01... 12)
d+2 figures	day (01... 31)
h+2 figures	hour (00... 23)
n+2 figures	minutes (00... 59)
Mon	Monday
tuE	Tuesday
UEd	Wednesday
thu	Thursday
Fri	Friday
Sat	Saturday
Sun	Sunday

4.	AUX	Press the UP or DOWN key within 15 s of the desired label being displayed to set the value
5.	SET	Press the SET key to confirm any changes and to view the next label; press the SET key after viewing/changing the last label (day of the week) to exit the procedure
6.		Press the ON/STAND-BY key to exit the procedure beforehand

6 SETTINGS

6.1 Setting the configuration parameters

N.B.
Check the settings made are appropriate; see the section *CONFIGURATION PARAMETERS*.
Regulation of one compartment (P7 = 3) is based on the parameters for compartment 2, which are more numerous than the parameters for compartment 1. When P7 = 3, regulation of compartment 1 is completely disabled and setting parameters for that compartment will have no effect.

1.	SET	Hold down the SET key for 3 s: the PA label will appear on the bottom line of the display
2.	SET	Press the SET key: the value 0 will appear on the top line of the display
3.	AUX	Press the DOWN key within 15 s to decrease the value to -19 (access password)
4.	SET	Press the SET key (or take no action for 15 s): the label of the first available parameter (St1) will appear on the bottom line
5.	AUX	Press the UP or DOWN key to view the label of the parameter to be changed
6.	SET	Press the SET key to access the value of this parameter
7.	AUX	Press the UP or DOWN key to increase/decrease the value
8.	SET	Press the SET key (or take no action for 15 s) to confirm the set value
9.		Press the ON/STAND-BY key (or take no action for 60 s) to exit the procedure

6.2 Restoring factory settings

1.	SET	Hold down the SET key for 3 s: the PA label will appear on the bottom line of the display
2.	SET	Press the SET key: the value 0 will appear on the top line of the display
3.	AUX	Press the UP or DOWN key within 15 s to increase the value to 149 (access password)
4.	SET	Press the SET key (or take no action for 15 s): the dEF label will appear on the top line of the display
6.	SET	Press the SET key: the value 0 will be displayed
7a.	SET	Hold down the SET key to exit the procedure without restoring the settings
7b.	AUX	Press the UP or DOWN key to increase the value to 1 and restore the settings
8.	SET	Press the SET key (or take no action for 15 s): the dEF label will flash for 4 s, after which the device will exit the procedure
9.	Disconnect the device from the power supply	

7 CONFIGURATION PARAMETERS

NO.	PAR.	DEF.	SETPOINT	MIN... MAX.
1	St1	**4.0**	temperature setpoint compartment 1	r1... r2 °C/°F
2	St2	**-18.0**	temperature setpoint compartment 2	r3... r4 °C/°F

NO.	PAR.	DEF.	ANALOGUE INPUTS	MIN... MAX.
3	CA1	**0.0**	cabinet probe offset compartment 1	-25.0... 25.0 °C/°F
4	CA2	**0.0**	cabinet probe offset compartment 2	-25.0... 25.0 °C/°F
5	CA3	**0.0**	evaporator probe offset compartment 2	-25.0... 25.0 °C/°F
6	P0	**0**	type of temperature probe	0 = PTC 1 = NTC
7	P1	**1**	enable decimal point °C	0 = no 1 = yes
8	P2	**0**	temperature measurement unit	0 = °C 1 = °F
9	P3	**1**	evaporator probe configuration compartment 2	0 = disabled 1 = defrost regulation + fans 2 = fan regulation
10	P5	**0**	value – top display	0 = cabinet temperature compartment 1 1 = setpoint compartment 1 2 = cabinet temperature compartment 2
11	P6	**0**	value – bottom display	0 = cabinet temperature compartment 2 1 = setpoint compartment 2 2 = cabinet temperature compartment 1 3 = clock (hh:mm) only if connected to optional EVlinking modules or EVCO gateways
12	P7	**0**	type of regulation	0 = 2 compartments with common compressor 1 = like 0 with priority for compartment 2 2 = 2 compartments with separate compressors 3 = 1 compartment (only on compartment 2)
13	P8	**5**	display refresh time	0... 250 s: 10
14	P9	**2**	probe position for heat regulation	1 = compartment 1 2 = compartment 2

NO.	PAR.	DEF.	MAIN REGULATOR	MIN... MAX.
15	r0	**2.0**	setpoint St1 differential (asymmetrical)	0.1... 15.0 °C/°F
16	r1	**0.0**	minimum setpoint St1	-40.0 °C/°F... r2
17	r2	**25.0**	maximum setpoint St1	r1... 50.0 °C/°F
18	r3	**-30.0**	minimum setpoint St2	-40.0 °C/°F... r4
19	r4	**-10.0**	maximum setpoint St2	R3... 50.0 °C/°F
20	r5	**2.0**	setpoint St2 differential (asymmetrical)	0.1... 15.0 °C/°F
21	r6	**2.0**	setpoint differential for hot mode (St1 if P9 = 0; St2 if P9 = 1)	0.1... 15.0 °C/°F
22	r7	**0.0**	energy saving offset compartment 1	0.0... 25.0 °C/°F
23	r8	**0.0**	energy saving offset compartment 2	0.0... 25.0 °C/°F
24	r9	**0**	maximum duration energy saving after interval u1>0 with door always closed	0... 24 h

NO.	PAR.	DEF.	COMPRESSOR	MIN... MAX.
25	C0	**1**	compressor-on delay from power-on (common compressor if P7=0 or 1, compressor compartment 2 if P7=2 or 3)	0... 240 min
26	C1	**3**	delay between two compressor switch-ons (common compressor if P7=0 or 1, compressor compartment 2 if P7=2 or 3)	0... 240 min
27	C4	**5**	compressors-off time during cabinet probe error Pr1 or Pr2	0... 240 min
28	C5	**15**	compressors-on time during cabinet probe error Pr1 or Pr2	0... 240 min
29	C6	**0**	minimum compressor-off time compartment 1	0... 240 s
30	C7	**99.0**	threshold at which the auxiliary compressor contributes to regulation (active if cabinet setpoint of compartment 2 <C7)	-50.0... 99.0 °C/°F

NO.	PAR.	DEF.	DEFROST	MIN... MAX.
31	d0	**8**	automatic defrost interval compartment 2	0... 99 h 0 = manual only
32	d1	**0**	type of defrost compartment 2	0 = electric 1 = compressor off 2 = hot gas
33	d2	**8.0**	temperature threshold to end defrosting compartment 2 (referred to evaporator probe if P3=1)	-99.0... 99.0 °C/°F
34	d3	**30**	defrost duration compartment 2	0... 99 min if P3 = 1, maximum duration
35	d4	**0**	enable defrost at power-on	0 = no 1 = yes
36	d5	**0**	defrost delay from power-on	0... 99 min
37	d6	**2**	value displayed when defrosting	0 = like during normal operation 1 = limited to St1+r0 and St2+r5 2 = dEF label
38	d7	**2**	dripping duration compartment 2	0... 15 min
39	d11	**0**	enable defrost timeout alarm compartment 2	0 = no 1 = yes
40	d0C	**8**	automatic defrost interval compartment 1	0... 99 h 0 = manual only
41	d2C	**8.0**	temperature threshold to end defrosting compartment 1 (referred to evaporator probe if Pb5 = 2)	-99.0... 99.0 °C/°F
42	d3C	**30**	defrost duration compartment 1	0... 99 min

NO.	PAR.	DEF.	TEMPERATURE ALARMS	MIN... MAX.
43	A1	**0.0**	high temperature alarm threshold compartment 2 (AH2)	-99.0... 99.0 °C/°F
44	A2	**0**	type of high temperature alarm compartment 2 (AH2)	0 = disabled 1 = relative to setpoint (i.e. St2 + A1) 2 = absolute (i.e. A1)
45	A4	**0.0**	high temperature alarm threshold compartment 1 (AH1)	-99.0... 99.0 °C/°F
46	A5	**0**	type of high temperature alarm compartment 1 (AH1)	0 = disabled 1 = relative to setpoint (i.e. St1 + A4) 2 = absolute (i.e. A4)
47	A6	**240**	high temperature alarms AH1 and AH2 delay from power-on	0... 240 min
48	A7	**15**	high temperature alarms AH1 and AH2 delay during normal operation	0... 240 min
49	A8	**15**	high temperature alarm AH2 delay after defrost	0... 240 min
50	A10	**10**	duration of power failure for saving alarm PF	0... 240 min 0 = disabled
51	A11	**2.0**	high temperature alarms AH1 and AH2 threshold differential	0.1... 15.0 °C/°F

NO.	PAR.	DEF.	FANS	MIN... MAX.
52	F0	**1**	evaporator fan mode compartment 2 in normal operation	0 = off 1 = on 2 = on if compressor is on, in sequence F15 and F16 if compressor is off 3 = thermostat controlled (with cabinet temperature compartment 2 + F1) 4 = thermostat controlled (with cabinet temperature compartment 2 + F1) if compressor is on

	53	F1	**0.0**	evaporator fan regulation threshold compartment 2 (referred to evaporator probe temperature if P3= 1 or 2)	-99.0... 99.0 °C/°F fixed differential 1°C/2°F
	54	F2	**0**	evaporator fan mode compartment 2 during defrost and dripping	0 = off 1 = on 2 = function of F0
	55	F3	**2**	maximum time evaporator fans off compartment 2 after defrost	0... 15 min
	56	F9	**10**	evaporator fans off delay compartment 2 from compressor off	0... 240 s
	57	F15	**15**	time evaporator fans off compartment 2	0... 240 s
	58	F16	**5**	time evaporator fans on compartment 2	0... 240 s
	59	F0C	**1**	fan regulation compartment 1	0 = off 1 = on 2 = on if regulation is on
	60	F2C	**1**	fan status during defrost compartment 1	0 = off 1 = on
	NO.	PAR.	DEF.	DIGITAL INPUTS	MIN... MAX.
	61	i0	**5**	door switch input function in compartment 2	0 = disabled 1 = compressor + evaporator fans 2 off 2 = evaporator fans 2 off 3 = cabinet light on 4 = compressor + evaporator fans 2 off, cabinet light on 5 = evaporator fans 2 off, cabinet light on **NB.:** in values 1 and 4, compressor means the common compressor + cooling valve 2
	62	i1	**0**	door switch input activation	0 = with contact closed 1 = with contact open
	63	i2	**30**	door open alarm delay in compartment 2	-1... 120 min -1 = disabled
	64	i3	**15**	maximum compressor and evaporator fan off time with door open	-1... 120 min -1 = until closed
	65	i4	**0**	door switch input function in compartment 1	0 = disabled 1 = evaporator fans 1 off 2 = cooling valve 1 + evaporator fans 1 off
	66	di2	**0**	multi-purpose input function in compartment 2	0 = disabled 1 = remote switch-off compartment 2 with contact closed 2 = remote switch-off compartment 2 with contact open 3 = common compressor locked alarm with contact closed 4 = common compressor locked alarm with contact open
	67	Pb4	**0**	remote on-off input function in compartment 1	0 = disabled 1 = remote switch-off with contact closed 2 = remote switch-off with contact open
	68	Pb5	**0**	configurable input function for analogue or digital	0 = disabled 1 = energy saving 2 = evaporator probe compartment 1
	NO.	PAR.	DEF.	DIGITAL OUTPUTS	MIN... MAX.
	69	u1c	**8**	k1 relay configuration	0 = compressor compartment 2 or common 1 = evaporator fans compartment 2 2 = defrost compartment 2 3 = common light 4 = common alarm 5 = on/stand-by 6 = heat compartment 1 (if P9 = 0) or compartment 2 (if P9 = 1) 7 = cooling compartment 2 8 = cooling compartment 1 9 = evaporator fans compartment 1 10= door heater 11= common condenser fan 12= reserved 13= auxiliary compressor compartment 2 14= defrost compartment 1 15= disabled
	70	u2c	**7**	k2 relay configuration	like u1C
	71	u3c	**1**	k3 relay configuration	like u1C
	72	u4c	**2**	k4 relay configuration	like u1C
	73	u5c	**3**	k5 relay configuration	like u1C
	74	u6c	**0**	k6 relay configuration	like u1C
	75	Ao1	**15**	analogue output 0-10 V configuration (0 = off, 10 = on)	like u1C
	76	Ao2	**15**	analogue output 0-10 V configuration (0 = off, 10 = on)	like u1C
	77	u0	**0**	maximum time light on from door open	0... 240 s 0 = function disabled >0 switches the light off after set time, even with door open
	78	u1	**0**	door closed consecutive time for energy saving on and light off (see also r9)	0... 24 h 0 = disabled
	79	u2	**0**	enable cabinet light (if one of the outputs from u1c to Ao2 = 3) using key during stand-by	0 = no 1 = yes
	80	u3	**0**	alarm output activation	0 = with contact open 1 = with contact closed
	81	u4	**0**	enable deactivation alarm output with silencing buzzer	0 = no 1 = yes
	82	u9	**1**	enable alarm buzzer	0 = no 1 = yes
	83	u10	**0.0**	door heaters on threshold	-99.0... 99.0 °C/°F
	NO.	PAR.	DEF.	CLOCK	MIN... MAX.
	84	Hr0	0	enable clock	0 = no 1 = yes
	NO.	PAR.	DEF.	SECURITY	MIN... MAX.
	85	POF	**1**	enable on/stand-by key	0 = no 1 = yes
	86	Loc	**1**	enable keypad lock	0 = no 1 = yes (after 30 s)
	87	PAS	**-19**	password to access settings from keypad	-99... 999
	88	PA1	**426**	level 1 password to access settings from EVconnect and EPoCA	-99... 999
	89	PA2	**824**	level 2 password to access settings from EVconnect and EPoCA	-99... 999
	NO.	PAR.	DEF.	SERIAL COMMUNICATION	MIN... MAX.
	90	bLE	**1**	configuration MODBUS serial port	0 = free for real-time functions (through the EVIF23TSX clock) or for MODBUS RTU communication via the RS-485 port 1... 99 = device address for EVconnect, EPoCA and MODBUS TCP connectivity N.B.: - for the EVconnect app (via the EVlinking BLE module) and the EPoCA system and/or MODBUS TCP communication via Wi-Fi (via the EVlinking Wi-Fi EVIF25TWX module), set to 1 - for the EPoCA system and/or for MODBUS TCP communication via Ethernet (via the IoT EV3 Web or EVD Web gateway), follow the procedure to set the address in the relative manuals - communication works with MODBUS baud rate 19,200 and even MODBUS parity, irrespective of the value set with parameters Lb and LP
	91	rE0	**15**	EVlinking Wi-Fi/EV3 Web/EVD Web data logger sampling interval	0... 240 min
	92	rE1	**4**	select temperature for sampling	0 = none 1 = cabinet compartment 1 2 = cabinet compartment 2 3 = cabinet evaporator compartment 2 4 = cabinet compartment 1 and compartment 2 5 = all
	93	LA	**247**	MODBUS address	1... 247
	94	Lb	**3**	MODBUS baud rate the parameter is relevant only if bLE = 0	0 = 2,400 baud 1 = 4,800 baud 2 = 9,600 baud 3 = 19,200 baud
	95	LP	**2**	MODBUS parity the parameter is relevant only if bLE = 0	0 = none 1 = odd 2 = even
	96	Sb	**2**	number of stop bits	1 = 1 stop bit 2 = 2 stop bits

8 ERRORS AND ALARMS

Alarm messages are displayed on the bottom line and alternate with the displayed value according to P6. When a high temperature, door open or power failure alarm occurs, the HACCP LED also comes on, but only if bLE ≠ 0. Messages disappear when the conditions which caused the alarm return to normal. Some alarm messages disappear automatically and others have to be reset on the keypad.

CODE	DESCRIPTION	RESET	TO CORRECT
ErrC	control module-user interface communication error.	automatic	- check connections between the control module and the user interface
Pr1	cabinet probe error compartment 1	automatic	- check P0 - check sensor integrity - check electrical connection
Pr2	cabinet probe error compartment 2	automatic	
Pr3	evaporator probe error compartment 2	automatic	
Pr5	evaporator probe error compartment 1 (only with Pb5 = 2)	automatic	
rtc	clock error*	manual	- check Hr0 - set date, time and day of the week - check the integrity of the external module
AH1	high temperature alarm compartment 1	automatic	- check A1, A2 and A11
AH2	high temperature alarm compartment 2	automatic	- check A4, A5 and A11
door	door open alarm for compartment 2 only	automatic	- check i0, i1 and i2
PF	power failure alarm*	manual	- press a key - check electrical connection
ALrM	multi-purpose input alarm (regulation off, common compressor locked)	automatic	- check di2
dFd	defrost timeout alarm (for compartment 2 only)	automatic	- check d11

*Clock error and the power failure alarm can only occur when the controller is connected to an external EVlinking module or an EVCO gateway (bLE ≠ 0) and when the clock is enabled (Hr0 = 1).

9 TECHNICAL SPECIFICATIONS

Purpose of the control device:	function controller
Construction of the control device:	built-in electronic device
Housing:	
user interface: black, self-extinguishing	control module: open frame board
Category of heat and fire resistance:	D
Measurements:	
user interface: 75.0 x 33.0 x 39.5 mm (2 15/16 x 1 5/16 x 1 9/16 in)	control module: 134.0 x 108.0 x 21.5 mm (5 1/4 x 4 1/4 x 7/8 in)
Mounting method for the control device:	
user interface: to be fitted to a panel, snap-in brackets provided	control module: to be installed on an electrical panel, on plastic spacers (not provided)
Degree of protection provided by the casing:	
user interface: IP65 (front)	control module: IP00.
Connection method:	
user interface: plug-in screw terminal blocks for wires up to 1.5 mm²	control module: - plug-in screw terminal blocks for wires up to 1.5 mm² - Pico-Blade connector - 6.35 mm faston connectors
Maximum permitted length for connection cables:	
user interface-control module: 10 m (32.8 ft)	power supply: 10 m (32.8 ft)
analogue inputs: 10 m (32.8 ft)	digital inputs: 10 m (32.8 ft)
analogue outputs: 3 m (9.84 ft)	digital outputs: 10 m (32.8 ft).
Use cables of an adequate section for the current running through them. When the device is used at its maximum operating temperature and at full load, use cables with a maximum operating temperature of ³ 90 °C (194 °F)	
Operating temperature:	from 0 to 55 °C (from 32 to 131 °F).
Storage temperature:	from -25 to 70 °C (from -13 to 158 °F)
Operating humidity:	relative humidity without condensate from 10 to 90 %
Pollution status of the control device:	2
Compliance:	
RoHS 2011/65/EC	WEEE 2012/19/EU
REACH (EC) Regulation no. 1907/2006	EMC 2014/30/EU
LVD 2014/35/EU	
EMC compliance	
EN 60730-1	EN 60730-2-9
Power supply:	
user interface: powered by the control module	control module: 115... 230 Vac (+10 % -15 %), 50... 60 Hz, 6 VA maximum
Earthing methods for the control device:	none
Rated impulse withstand voltage:	4 kV
Overvoltage category:	I

Software class and structure:		A
Analogue inputs:		3 for PTC or NTC probes (cabinet probe compartment 1, evaporator probe compartment 2, cabinet probe compartment 2)
PTC probes:	Type of sensor:	KTY 81-121 (990 W@ 25 °C, 77 °F)
	Measurement field:	from -50 to 150 °C (from -58 to 302 °F)
	Resolution:	0.1 °C (1 °F)
NTC probes:	Type of sensor:	ß3435 (10 kW@ 25 °C, 77 °F)
	Measurement field:	from -40 to 105 °C (from -40 to 221 °F)
	Resolution:	0.1 °C (1 °F)
Digital inputs:		3 voltage-free (door switch, multi-purpose and remote on-off)
Voltage-free:	Type of contact:	5 Vdc, 0.5 mA
	Power supply:	none
	Protection:	none
Other inputs:		1 input which can be configured for an analogue input (evaporator probe compartment 1) or a digital input (energy saving)
Digital outputs:		6 configurable outputs with sealed electro-mechanical relays in compliance with the EN 60079-15 standard
K1 relay:		SPST, 8 A res. @ 250 Vac
K2 relay:		SPST, 8 A res. @ 250 Vac
K3 relay:		SPST, 8 A res. @ 250 Vac
K4 relay:		SPST, 16 A res. @ 250 Vac
K5 relay:		SPST, 16 A res. @ 250 Vac
K6 relay:		SPDT, 30 A res. @ 250 Vac
The device guarantees reinforced insulation between the digital outputs (electro-mechanical relays) and the SELV (Safety Extra Low Voltage) circuits		
Type 1 or Type 2 actions:		type 1
Additional features of Type 1 or Type 2 actions:		C
Displays:		double custom display, 4 + 4 digit, with function icons
Alarm buzzer:		built-in
Communications ports:		
1 TTL MODBUS slave port for EVlinking RS-485 (clock), BLE (for the EVconnect app) or Wi-Fi (for the EPoCA cloud system or MODBUS TCP) modules		1 RS-485 MODBUS slave port for MODBUS RTU serial communication or Ethernet connectivity using the EV3 Web or the EVD Web gateway (for the EPoCA cloud system)
Wi-Fi output power (EIRP)		11b: 67.5 mW and 11g: 71.1 mW, 11n (HT20) 56.5 mW
Wi-Fi frequency range		412... 2,472 MHz
Safety protocols		open, WEP, WPA/WPA2 Personal or PSK
Encryption methods		TKIP, CCMP
Unsupported modes		mixed WPA/WPA2 PSK using TKIP + CCMP WPA/WPA2 Enterprise or EAP

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

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