



1 ENGLISH

- power supply 115... 230 VAC
- cabinet temperature probe (PTC/NTC/EVHTP500/EVHTP520) and cabinet humidity probe (EVHTP500/EVHTP520)
- door switch input
- compressor relay 16 A res. @ 250 VAC
- sealed relays compliant with the standard EN 60079-15
- management of Embraco and Secop variable capacity compressors
- management of 0-10 V compressors and fans
- output 12 VDC, max. 30 mA
- alarm buzzer
- TTL MODBUS slave port for EVJKEY programming key, EVconnect app, EPoCA remote monitoring system or for BMS
- cold and hot mode and neutral zone regulation.

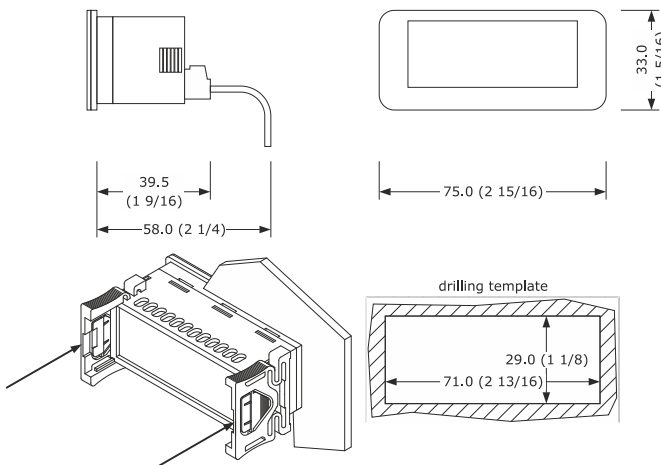
Purchasing code	Power supply
EV3S554N9	115... 230 VAC

1 MEASUREMENTS AND INSTALLATION | Measurements in mm (inches)

1.1 User interface

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

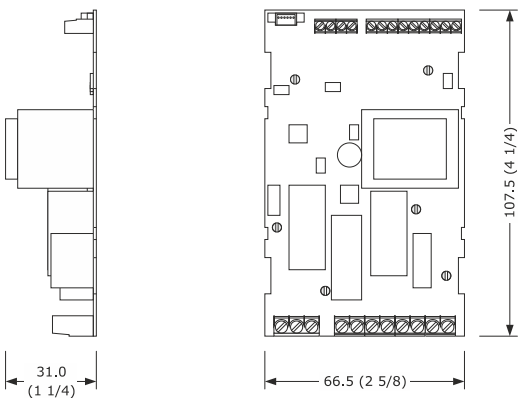
N.B. The thickness of the panel must be between 0.8 and 2.0 mm (1/32 and 1/16 in).



1.2 Control module

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

N.B. Any metal parts must be far enough away so as not to compromise safety distances.

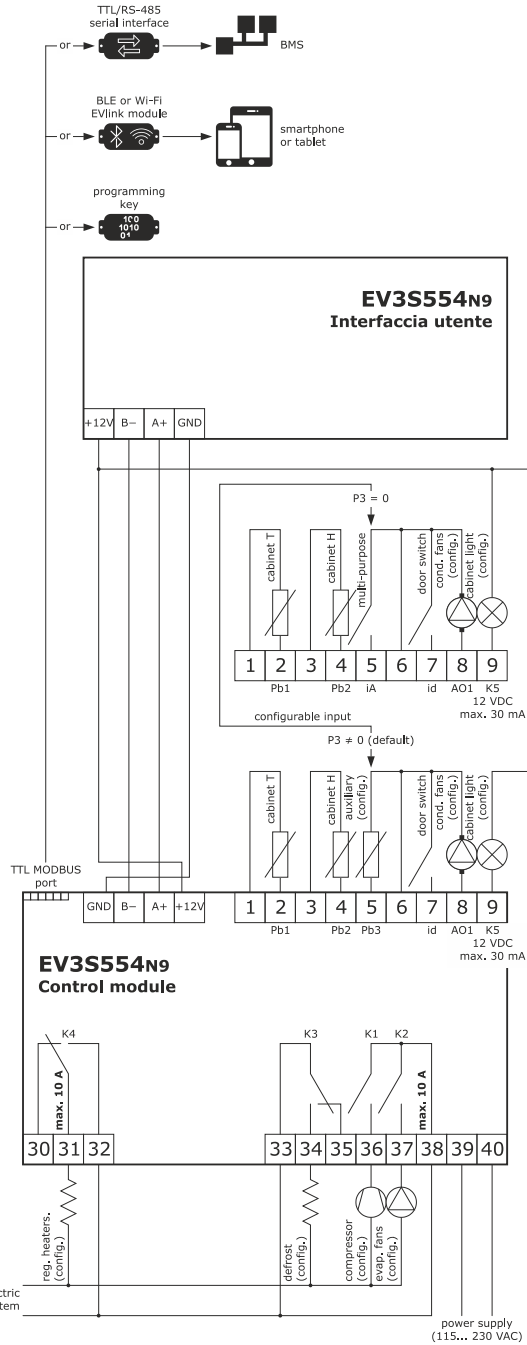


INSTALLATION PRECAUTIONS

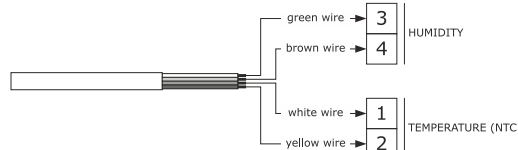
- ensure that the working conditions are within the limits stated in the *TECHNICAL SPECIFICATIONS* section
- do not install the device close to heat sources, equipment with a strong magnetic field, in places subject to direct sunlight, rain, damp, excessive dust, mechanical vibrations or shocks
- in 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.



Electrical connection of humidity and temperature transducer EVHTP500/EVHTP520.



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 for further information, contact the EVCO sales network.

3 FIRST-TIME USE

1. Carry out the installation following the instructions given in the section *MEASUREMENTS AND INSTALLATION*.
2. Power up the device as set out in the section *ELECTRICAL CONNECTION*: an internal test will start up.
3. The test normally takes a few seconds; when it is finished the display will switch off.

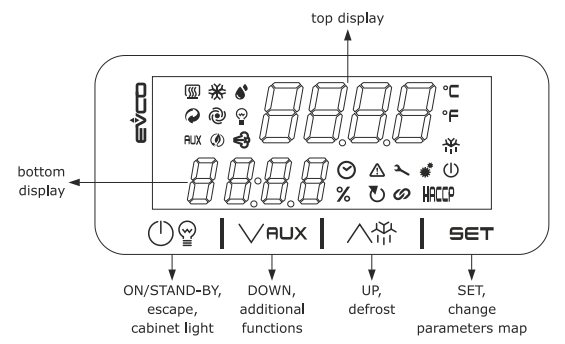
Configure the device as shown in the section *Setting configuration parameters*. Recommended configuration parameters for first-time use:

PAR.	DEF.	PARAMETER	MIN... MAX.
SPT	2.0	temperature setpoint	r1... r2
SPH	50	humidity setpoint	h1... h2
P0	3	type of temperature probe	0 = PTC or EVHTP500 1 = NTC or EVHTP500 2 = PTC or EVHTP520 3 = NTC or EVHTP520
P2	0	temperature measurement unit	0 = °C 1 = °F
Pr2	1	enable cabinet humidity probe	0 = no 1 = yes
d1	0	type of defrost	0 = electric 1 = hot gas 2 = compressor stopped

Then 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. To use the device with the EVconnect app, connect the EVIF25TBX module. To use the device with the EPoCA remote monitoring system, connect the EVIF25TWX module. When connecting to an RS-485 network, connect the EVIF22TSX interface. To activate real-time functions, connect the EVIF23TSX module.
7. **If using EVIF22TSX or EVIF23TSX, set the BLE parameter to 0.** Power up the device again.

4 USER INTERFACE AND MAIN FUNCTIONS



4.1 Switching the device on/off

1. If POF = 1 (default), touch the ON/STAND-BY key for 2 s. If the device is switched on, the top display will show the P5 value ("cabinet temperature" default) and the bottom display the P6 value ("cabinet humidity" default); if the top display shows an alarm code, see the section *ALARMS*.

LED	ON	OFF	FLASHING
regulation switched on	heaters	-	-
AUX	- auxiliary output on - electric door lock active	- auxiliary output off - electric door lock not active	- auxiliary output on from digital input - electric door lock opening
compressor on	compressor on	compressor off	compressor protection active
evaporator fans on	evaporator fans on	evaporator fans off	- evaporator fan stop in progress - setting evaporator fan speed in progress
energy saving active	energy saving active	-	-
dehumidification active	dehumidification active	-	dehumidification delay in progress
cabinet light on	cabinet light on	cabinet light off	cabinet light on from digital input
humidification active	humidification active	-	-
time displayed	time displayed	-	real time switching on/off and defrost programmed
% humidity displayed	percentage relative humidity displayed	-	humidity setpoint being set
alarm active	alarm active	-	manual alarm reset
compressor maintenance request	compressor maintenance request	-	-
BLE connection with EVconnect app active	BLE connection with EVconnect app active	-	-
setting configuration parameters in progress	setting configuration parameters in progress	-	-
HACCP	HACCP alarm saved in EVIF25TBX or EVIF25TWX module	-	new HACCP alarm saved in EVIF25TBX or EVIF25TWX module
°C/°F	temperature displayed	-	temperature setpoint being set
defrost or pre-drip active	defrost or pre-drip active	-	- defrosting delay in progress - dripping active
device switched off	device switched off	device switched on	-

When 30 s have elapsed without the keys being pressed, the display will show the "Loc" label and the keypad will automatically lock.

4.2 Unlocking the keypad

Touch a key for 1 s: the display will show the label "UnL".

4.3 Setting the temperature setpoint, humidity setpoint and evaporator fan speed (percentage of maximum capacity; available if Ao1 = 3 and F30 = 0)

Check that the keypad is not locked.

1. Touch the SET key.
2. Touch the UP or DOWN key within 15 s to select a label on the bottom display.

LAB.	DESCRIPTION
Spt	temperature setpoint
SPH	humidity setpoint
F33	evaporator fan speed (percentage of maximum capacity)

3. Touch the SET key.
4. Touch the UP or DOWN keys within 15 s to set the value on the top display within the established limits.

LAB.	ESTABLISHED LIMITS (DEFAULT)
Spt	r1 and r2 (default "0... 50 °C/°F")
SPH	h1 and h2 (default "10... 95 %RH")
F33	F31 and F32 (default "50... 100 %")

5. Touch the SET key (or take no action for 15 s).
6. Touch the ON/STAND-BY key (or take no action for 60 s) to exit the procedure.

4.4 Activating manual defrost (if r5 = 0 or 2, default)

Check that the keypad is not locked and that overcooling is not active.

1. Touch the UP key for 4 s.

If P3 = 3 (default), defrost is activated provided that the evaporator temperature is lower than the d2 threshold.

4.5 Switching the cabinet light on/off (if u1c... u5c = 4)

1. Touch the ON/STAND-BY key.

4.6 Manual switching on/off of the auxiliary output (if u1c... u5c = 9 and r8 = 2)

1. Touch the DOWN key.

If u1c... u5c = 5 and r8 = 3, the **demisting output** switches on for the u6 time.

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

Touch a key.

If u1c... u5c = 10 and u4 = 1, the alarm output is deactivated.

NO.	PAR.	DEF.	FANS	MIN... MAX.
98	F0	1	evaporator fan mode in normal function	0 = on if r5 = 0, on if compressor or regulation heaters on if r5 = 1, with F38 and F39 if r5 = 2, on if regulation heaters on 1 = on 2 = on if compressor or regulation heaters on, with rd2 and rd3 otherwise 3 = with cabinet temperature + F1, on if regulation heaters on 4 = with cabinet temperature + F1 if compressor or regulation heaters on, on if regulation heaters on, with rd2 and rd3 if compressor or regulation heaters off
99	F1	0.0	evaporator fans regulation threshold	-99... 99 °C/°F
100	F2	0	evaporator fan mode in defrost and drip mode	0 = off 1 = on 2 = function of F0
101	F3	2	maximum time evaporator fans off	0... 15 min
102	F4	30	time evaporator fans off in energy saving	0... 240 s x 10 if compressor off
103	F5	30	time evaporator fans on in energy saving	0... 240 s x 10 if compressor off
104	F7	5.0	evaporator fans on threshold from dripping (relative to setpoint)	-99... 99 °C/°F
105	F8	2.0	evaporator fans regulation threshold differential	1... 15 °C/°F
106	F9	10	evaporator fans off delay from compressor off	0... 240 s if F0 = 2 or 5
107	F11	15.0	condenser fans on threshold	0... 99 °C/°F
108	F12	30	condenser fans off delay from compressor off	0... 240 s if P3 ≠ 1
109	F13	2.0	condenser fans regulation threshold differential	1... 25 °C/°F 0-10 V condenser fans proportional band if Ao1 = 2 (relative to F11, F11 + F13)
110	F14	10	100 % start-up time for 0-10 V condenser fans	0... 240 s
111	F15	100	maximum percentage 0-10 V condenser fans in energy saving	0... 100 %
112	F30	0	setting percentage 0-10 V evaporator fans in normal function mode	0 = touch SET key twice 1 = with F33 2 = automatic with F1, F31, F32 and F36
113	F31	50	percentage 0-10 V output for evaporator fans with minimum capacity	0... 100 % if F31>F32, F32 is relevant
114	F32	100	percentage 0-10 V output for evaporator fans with maximum capacity	0... 100 % if F32<F31, F31 is relevant
115	F33	100	percentage 0-10 V evaporator fans in normal function	F31... F32
116	F34	10	F35 start up time 0-10 V evaporator fans	0... 240 s
117	F35	100	percentage 0-10 V evaporator fans from power-on	0... 100 %
118	F36	10	0-10 V evaporator fans proportional band (relative to F1)	1... 50 °C/°F F1-F36
119	F37	0	maximum percentage 0-10 V evaporator fans in energy saving	0... 100 %
120	F38	60	time evaporator fans on with compressor off	0... 240 s if F0 = 0
121	F39	0	time evaporator fans off with compressor off	0... 240 s if F0 = 0
NO.	PAR.	DEF.	DIGITAL INPUTS	MIN... MAX.
122	i0	5	door switch input function	0 = disabled 1 = compressor or regulation heaters + evaporator fans off 2 = evaporator fans off 3 = cabinet light on 4 = compressor or regulation heaters + evaporator fans off, cabinet light on 5 = evaporator fans off, cabinet light on
123	i1	0	door switch input activation	0 = with contact closed 1 = with contact open
124	i2	30	door open alarm delay	-1... 120 min -1 = disabled
125	i3	15	maximum time for inhibiting regulation with door open	-1... 120 min -1 = until closed
126	i5	0	multi-purpose input function	0 = disabled 1 = energy saving 2 = alarm iA 3 = alarm iSd 4 = auxiliary output on 5 = map 1 if deactivated map 2 if active 6 = switches device on/off 7 = alarm LP 8 = alarm C1t
127	i6	0	multi-purpose input activation	0 = with contact closed 1 = with contact open
128	i7	0	multi-purpose input alarm delay	0... 120 min if i5 = 3 or 7, compressor on delay from alarm reset
129	i8	0	number of multi-purpose input activations for high pressure alarm	0... 15 0 = disabled if i5 = 3
130	i9	240	counter reset time for high pressure alarm	1... 999 min
131	i10	0	door closed consecutive time for energy saving	0... 999 min after cabinet temperature < SPt 0 = disabled
132	i13	180	number of door openings for defrost	0... 240 0 = disabled
133	i14	32	door open consecutive time for defrost	0... 240 min 0 = disabled

NO.	PAR.	DEF.	DIGITAL OUTPUTS	MIN... MAX.
134	u1c	0	K1 relay configuration	0 = compressor 1 = evaporator fans 2 = condenser fans 3 = defrosting 4 = cabinet light 5 = demisting 6 = door heaters 7 = regulation heaters 8 = dripping heaters 9 = auxiliary 10 = alarm 11 = on/stand-by 12 = humidifier 13 = electric door lock
135	u2c	1	K2 relay configuration	like u1c
136	u3c	3	K3 relay configuration	like u1c
137	u4c	7	K4 relay configuration	like u1c
138	u5c	4	K5 relay configuration	0 = PWM compressor 1... 11 like u1c
139	u2	0	enable cabinet light and auxiliary output in stand-by	0 = no 1 = yes in manual mode
140	u3	0	alarm relay activation	0 = with alarm not active 1 = with alarm active
141	u4	1	enable silencing alarm output	0 = no 1 = yes
142	u5	-1.0	door heaters on threshold	-99... 99 °C/°F
143	u5d	2.0	door heaters on threshold differential	1... 25 °C/°F
144	u6	5	duration demisting on	1... 120 min
145	u7	3	electric door lock opening duration	1... 120 s
146	u9	1	enable alarm buzzer	0 = no 1 = yes
147	u10	0	hot or cold mode regulation auxiliary output	0 = cold mode 1 = hot mode if P3 = 2
148	u11	0.0	auxiliary temperature setpoint	-99... 99 °C/°F
149	u12	1.0	auxiliary temperature setpoint differential	1... 15 °C/°F
NO.	PAR.	DEF.	ANALOGUE OUTPUTS	MIN... MAX.
150	Ao1	2	analogue output configuration	0 = PWM compressor (r15) 1 = 0-10 V compressor 2 = 0-10 V condenser fans 3 = 0-10 V evaporator fans
NO.	PAR.	DEF.	CLOCK	MIN... MAX.
151	Hr0	0	enable clock	0 = no 1 = yes
NO.	PAR.	DEF.	ENERGY SAVING (if r5 = 0)	MIN... MAX.
152	HE2	0	maximum duration energy saving	0... 999 min 0 = until door opened
NO.	PAR.	DEF.	ENERGY SAVING IN REAL TIME (if r5 = 0; visible if Hr0=1)	MIN... MAX.
153	H01	0	energy saving time	0... 23 h
154	H02	0	maximum duration energy saving	0... 24 h
NO.	PAR.	DEF.	SWITCHING ON/OFF IN REAL TIME (visible if Hr0=1)	MIN... MAX.
155	Hon	h-	time device switch-on	0... h- h- = disabled
156	HoF	h-	time device switch-off	0... h- h- = disabled
NO.	PAR.	DEF.	DEFROSTING IN REAL TIME (if d8 = 4; visible if Hr0=1)	MIN... MAX.
157	Hd1	h-	1st daily defrosting time	0... h- h- = disabled
158	Hd2	h-	2nd daily defrosting time	0... h- h- = disabled
159	Hd3	h-	3rd daily defrosting time	0... h- h- = disabled
160	Hd4	h-	4th daily defrosting time	0... h- h- = disabled
161	Hd5	h-	5th daily defrosting time	0... h- h- = disabled
162	Hd6	h-	6th daily defrosting time	0... h- h- = disabled
NO.	PAR.	DEF.	SECURITY	MIN... MAX.
163	POF	1	enable ON/STAND-BY key	0 = no 1 = yes
164	Loc	1	enable keypad lock	0 = no 1 = yes
165	PAS	-19	password	-99... 999
166	PA1	426	1st level password	-99... 999
167	PA2	824	2nd level password	-99... 999
168	PAU	000	electric door lock opening password	-99... 999 000 = disabled
169	PnP	1	enable map 1 or map 2	1 = map 1 2 = map 2
NO.	PAR.	DEF.	EVLINK DATA-LOGGING (visible if Hr0=1)	MIN... MAX.
170	rE0	15	data logger sampling interval	0... 240 min
171	rE1	4	select temperature for data logger	0 = none 1 = cabinet temperature probe 2 = cabinet humidity probe 3 = probe 3 4 = cabinet temperature probe and cabinet humidity probe 5 = all
NO.	PAR.	DEF.	MODBUS	MIN... MAX.
172	LA	247	MODBUS address	1... 247
173	Lb	2	MODBUS baud rate	0 = 2,400 baud 1 = 4,800 baud 2 = 9,600 baud 3 = 19,200 baud
174	LP	2	MODBUS parity	0 = none 1 = odd 2 = even
NO.	PAR.	DEF.	EVLINK	MIN... MAX.
175	bLE	1	serial port configuration for connectivity	0 = free 1 = forced for EVconnect or EPoCA 2-99 = EPoCA local network address

8 ALARMS

CODE	DESCRIPTION	RESET	TO CORRECT
Pr1	cabinet probe alarm	automatic	- check P0
Pr2	humidity probe alarm	automatic	- check integrity of the probe
Pr3	probe 3 alarm	automatic	- check electrical connection
rtc	clock alarm	manual	set date, time and day of the week
AL	low temperature alarm	automatic	check A0, A1 and A2
AH	high temperature alarm	automatic	check A0, A4 and A5
AL2	low humidity alarm	automatic	check AH1
AH2	high humidity alarm	automatic	check AH4
id	door open alarm	automatic	check i0 and i1
PF	power failure alarm	manual	- touch a key - check electrical connection
COH	high condensation signal	automatic	check C6
CSd	high condensation alarm	manual	- switch the device off and on - check C7
iA	multi-purpose input alarm	automatic	check i5 and i6
iSd	high pressure alarm	manual	- switch the device off and on - check i5, i6, i8, i9
LP	low pressure alarm	automatic	check i5 and i6

C1t	compressor thermal switch alarm	automatic	check i5 and i6
dFd	defrost timeout alarm	manual	- touch a key - check d2, d3 and d11

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: 66.5 x 107.5 x 31.0 mm (2 5/8 x 4 1/4 x 1 1/4 in).	
Mounting methods 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 2.5 mm²	control module: - fixed screw terminal blocks for wires up to 2.5 mm² - Pico-Blade connector.	
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).	
Operating temperature:		
Storage temperature:		
Operating humidity:		
Pollution status of the control device:		
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:		
user interface: powered by the control module	control module: 115... 230 VAC (+10% -15%), 50/60 Hz (±3 Hz), max. 3.2 VA insulated.	
Earthing methods for the control device:		
Rated impulse-withstand voltage:		
Over-voltage category:		
Software class and structure:		
Analogue inputs:		
PTC probes:		
Type of sensor:	KTY 81-121 (990 Ω @ 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:	B3435 (10 KΩ @ 25 °C, 77 °F)	
Measurement field:	from -40 to 105 °C (from -40 to 221 °F)	
Resolution:	0.1 °C (1 °F).	
Humidity and temperature transducer EVHTP500/EVHTP520:		
Digital inputs:		
Other inputs:		
Contact dry:	Type of contact:	5 VDC, 1.5 mA
	Power supply:	none
	Protection:	none.
Analogue outputs:		
Other outputs:		
PWM signal:	Power supply:	12 VDC (+16% -25%), 20 mA max.
	Frequency:	0... 150 Hz
	Protection:	none.
0-10 V signal:	Minimum applicable impedance:	1 KΩ
	Resolution:	0.01 V.
Digital outputs:		
K1 relay:	SPST, 16 A res. @ 250 VAC.	
K2 relay:	SPST, 5 A res. @ 250 VAC.	
K3 relay:	SPDT, 8 A res. @ 250 VAC.	
K4 relay:	SPDT, 16 A res. @ 250 VAC.	
Type 1 or Type 2 actions:		
Additional features of Type 1 or Type 2 actions:		
Displays:		
Alarm buzzer:		
Communications ports:		
N.B. The device must be disposed of according to local regulations governing the collection of electrical and electronic equipment.		