EWPlus 961

Electronic controllers for refrigeration units

by Schneider Electric

USER INTERFACE



EWPlus 961

NOTE:
When switched on, the device performs a Lamp Test; the display and LEDS will flash for several seconds to check that they all function correctly. After the lamp test, the label **CuS** and its value will be shown for 2 secs.

	Reduced SET / Economy LED Permanently on: Energy Saving active Flashing: Reduced set active Quick flashing: Access to level 2 parameters Off: Otherwise			**Compressor LED** Permanently on: Compressor active Flashing: Delay, protection or Blocked start-up Off: Otherwise	
	Defrost LED Permanently on: Defrost active Flashing: Manual or D.I. activation Off: Otherwise			**Alarm LED** Permanently on: Alarm on Flashing: Alarm acknowledged Off: Otherwise	
°C	**°C LED** Permanently on: °C setting (**dro** = 0) Off: Otherwise		°F	**°F LED** Permanently on: °F setting (**dro** = 1) Off: Otherwise	
1	**HEAT MODE LED** Permanently on: Compressor in HEAT mode Off: Otherwise		2	**NOT USED**	

KEYS

UP **Press and release** • Scroll menu items • Increases values **Press for time H02** • Function can be configured by the user (see parameter **H31**)	**DOWN** **Press and release** • Scroll menu items • Decrease values **Press for time H02** • Function can be configured by the user (see parameter **H32**)	**STAND-BY (ESC)** **Press and release** • Returns to the previous menu level • Confirms parameter value **Press for time H02** • Function can be configured by the user (see parameter **H33**)	**SET (ENTER)** **Press and release** • Displays alarms (if active) • Opens Machine Status menu **Press for time H02** • Opens Programming menu • Confirm commands

ELECTRICAL CONNECTIONS

⚠⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power from all equipment including connected devices, prior to removing any covers or doors, or installing or removing any accessories, hardware, cables, or wires.
- Always use a properly rated voltage sensing device to confirm the power is off where and when indicated.
- Replace and secure all covers, accessories, hardware, cables and wires.
- For all the devices where this is provided, confirm that a proper ground connection exists before applying power to the unit.
- Use only the specified voltage when operating this device and any associated products.

Failure to follow these instructions will result in death or serious injury.

⚠⚠ DANGER

LOOSE OR UN-INSULATED, EXPOSED WIRING CAUSES ELECTRIC SHOCK

- Insulate electrical connections with suitable Faston covers.
- Make sure the cables are properly connected to the female Fastons before continuing with the wiring process.

Failure to follow these instructions will result in death or serious injury.

⚠ DANGER

POTENTIAL OF OVERHEATING AND FIRE

- Do not use with loads other than those indicated in the technical specification.
- Do not exceed the maximum permitted current; for higher loads, use a contactor with sufficient power capacity.

Failure to follow these instructions will result in death or serious injury.

This device has been designed to operate outside of any hazardous location.
Only install this device in zones known to be free of hazardous atmosphere.

⚠ DANGER

POTENTIAL FOR EXPLOSION

Install and use this equipment in non-hazardous locations only.

Failure to follow these instructions will result in death or serious injury.

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel.
No responsibility is assumed by Eliwell for any consequences arising out of the use of this material.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- Install and operate this equipment in an enclosure appropriately rated for its intended environment.
- Power line and output circuits must be wired and fused in compliance with local and national regulatory requirements for the rated current and voltage of the particular equipment.
- Do not use this equipment in safety-critical machine functions.
- Do not disassemble, repair, or modify this equipment.
- Do not mount devices in extremely damp and/or dirt-laden areas.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION DUE TO CONNECTION

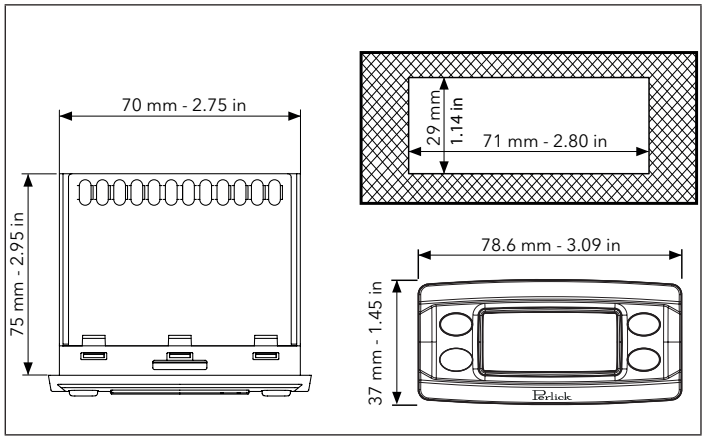
Signal leads (probes, digital inputs, communication and the signal electronic supply) must be routed separately from power and supply cables

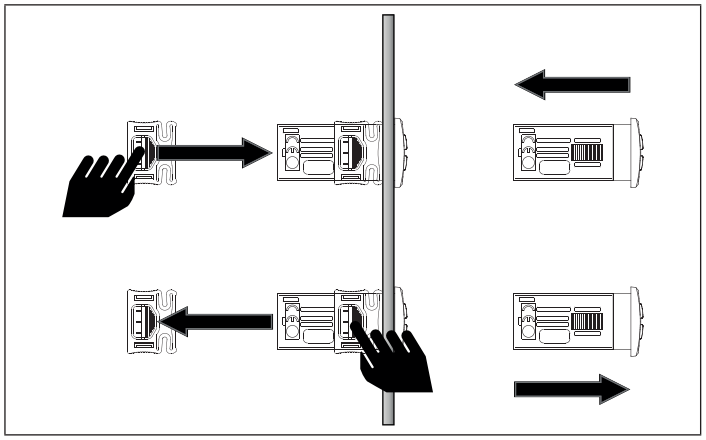
Failure to follow these instructions can result in death, serious injury, or equipment damage.

Probes (NTC) have no connection polarity and can be extended using a regular bipolar cable (note that the extension of the probes affects the EMC electromagnetic compatibility of the instrument: pay extreme attention to wiring).

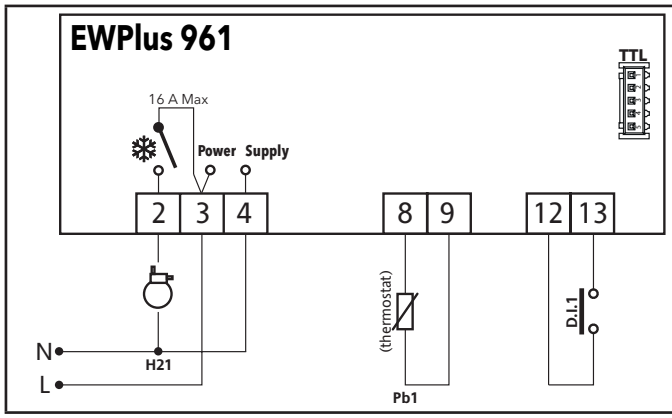
MOUNTING - DIMENSIONS

The device is designed for panel mounting. Drill a 71x29 mm (2.80x1.14 in.) hole and insert the instrument; secure it with the special brackets provided.
Do not install the instrument in damp and/or dirty places; in fact, it is suitable for use in places with ordinary or normal levels of pollution.
Keep the area around the instrument cooling slots adequately ventilated.





CONNECTION



TERMINALS	
2-3	Compressor relay - ❄
3-4	Power Supply input (115 Vac or 230 Vac)
N-L	Power Supply (115 Vac or 230 Vac)
8-9	Pb1 Probe
12-13	Digital Input D.I.1
TTL	TTL input

TECHNICAL DATA (EN 60730-2-9)

Classification:	Operating (Not safety) controls for incorporation
Mounting:	Panel mounting with 71x29 mm (2.80x1.14 in) drilling template
Control type:	1.B
Pollution rating:	2
Insulation material class:	IIIa
Overvoltage category class:	II
Nominal impulsive voltage:	2500 V
Temperature:	Operating: -20 ... 60 °C (-4 ... 140 °F) - Storage: -30 ... 85 °C (-22 ... 185 °F)
Power Supply:	115 Vac or 230 Vac (±10 %) 50/60 Hz
Consumption:	4.5 VA max
Fire resistance class:	D
Software class:	A

NOTE: Check the power supply specified on the instrument label; for relay and power supply capacities, contact Sales office.

FURHTER INFORMATION

Input Characteristics

Display Range:	**NTC**: -50.0 ... 110 °C (-58.0 ... 230 °F) (on display with 3 digits + sign)
Accuracy:	Better than 0.5 % of full-scale + 1 digit
Resolution:	0.1 °C / °F
Buzzer:	YES (it depends on the model)
Analogue Inputs:	1 NTC input (Pb1)
Digital Inputs:	1 digital input (**D.I.1**) voltage free

Output Characteristics

Digital Outputs:

Model	Relay	EN60730 - 240 Vac	UL60730 - 115 Vac	UL60730 - 230 Vac	Cycles
EWPlus 961:	Compressor	12(8) A	16 FLA / 96 LRA	12 FLA / 72 LRA	100k

Mechanical Characteristics

Container:	PC or PC+ABS plastic casing, polycarbonate window, thermoplastic rubber keys
Dimensions:	Front 78.6x37 mm (3.09x1.45 in), depth 75 mm (2.95 in) (excluding terminals)
Terminals:	Faston terminals 6.3 mm (0.25 in) with pitch **5.08** mm (0.2 in.). Operating temperature of female connectors: 125 °C (257 °F) minimum, for cables with a 2.5 mm^2 (13 AWG) section
Connectors:	-TTL (JST 05JQ-ST) for connection to UNICARD, DMI, Copycard and MFK (maximum length = 3 m - 9.84 ft) -JST 2 ways with a diameter 0.05 to 0.32 mm^2 (30 to 22 AWG)
Humidity:	Operating / Storage: 10 ... 90 % RH (non-condensing)

Regulations

Food safety: This device complies with standard EN 13485 as follows:
- suitable for storage;
- application: air;
- climate range A;
- measurement class 1 in the range from -25 ... 15 °C (-13 ... 59 °F) (*****)

(*** exclusively using Eliwell NTC probes**)

Approvals

UL: UL60730: file E233482

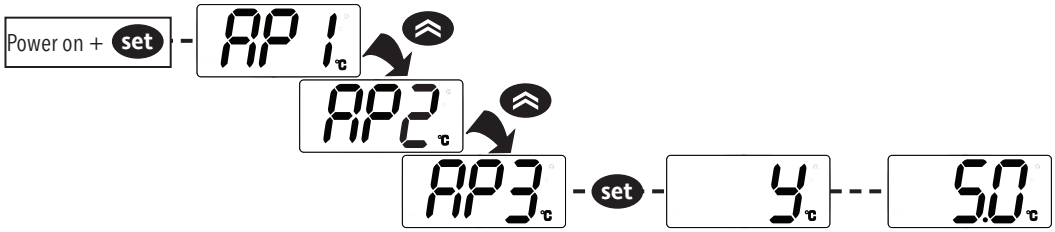
Relays tested according to Annex BB of EN 60335-2-89

NOTE: The technical characteristics provided in this document concerning the measurement (range, accuracy, resolution, etc.) refer to the instrument itself only and not to any provided accessories, such as the probes.

LOADING DEFAULT APPLICATIONS

The procedure used to load one of the default applications is:

- when the instrument switches on, press and hold the **set** key: the label **AP1** will appear;
- scroll through the various applications (**AP1**-**AP2**-**AP3**) using the ∧ and ∨ keys;
- select the desired application using the **set** key (**AP3** in the example) or cancel the procedure by pressing the ⏻ key or alternatively wait for the timeout;
- if the operation is successful, the display will show **y**, otherwise **n** will appear;
- after a few seconds the instrument will return to the main display.

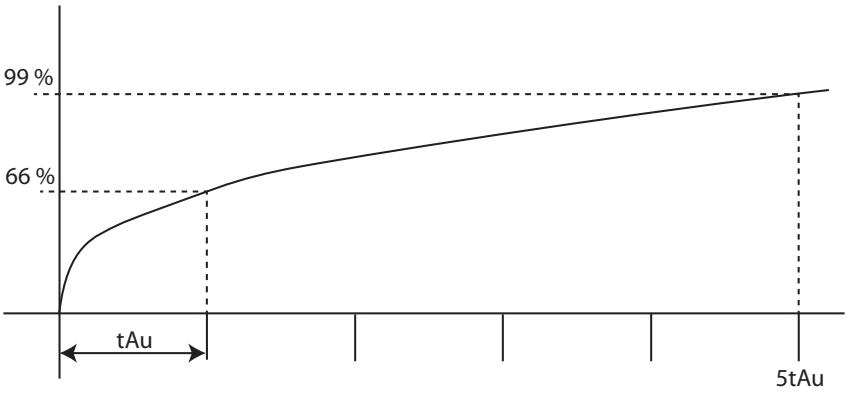


LOADING APPLICATIONS WHEN EXITING STAND-BY MODE

The procedure for loading one of the preset applications when exiting stand-by mode is:

- set the instrument in stand-by mode by pressing the ⏻ button for time **H02**;
- exit stand-by mode by pressing the ⏻ button for time H02;
- within 10 seconds of exiting stand-by mode, press the ⏻ button for time **H02**: the **AP1** label will appear;
- scroll through the various applications (**AP1**-**AP2**-**AP3**) using the ∧ and ∨ keys;
- select the desired application using the **set** key (**AP3** in the example) or cancel the procedure by pressing the ⏻ key or alternatively wait for the timeout;
- if the operation is successful, the display will show **y**, otherwise **n** will appear;
- after a few seconds the instrument will return to the main display.

DISPLAY FILTER



- **FiS** = 0 The filter is disable;
- **FiS** = 1 the filter is set in function of **tAu** and **5tAu**.
  With the **Fit** parameter, the filter can be applied only when the temperature rise or both when the temperature rise (**Fit**=n(0)) or rise/fall (**Fit**=y(1)).
  tAu it's the time that the display temperature takes to reach the 66 % of the final value, **5tAu** it's the time that the display temperature takes to reach the 99 % of the final value;
- **FiS** = 2, The temperature display change 1 °C / °F every **tAu** value.

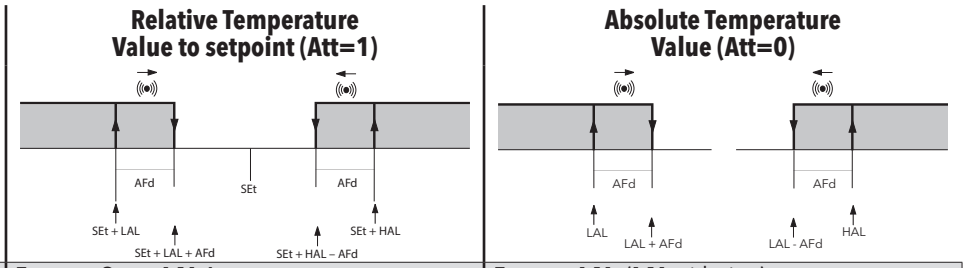
DIAGNOSTIC

Alarms are always indicated by the buzzer (if present) and the alarm icon (((•))). To switch off the buzzer, press and release any key, the relative icon will continue to flash.
NOTES: If alarm exclusion times have been set (see **AL** folder in the parameters table) the alarm will not be signalled.

ALARMS

Label	Description	Cause	Effects	Remedy
E1	Pb1 probe error (cold room)	• Reading of out of range operating values • Probe inoperable / short-circuited / open	• Display label **E1** • Alarm icon permanently ON • Min/max alarm regulator disabled • Compressor operation according to **Ont** and **OFt** parameters	• Check probe type (NTC) • Check the probe wiring • Replace probe
AH1	Pb1 probe HIGH Temperature alarm	Value read by Pb1 > **HAL** after time of **tAO**. (see 'MAX/MIN TEMP. ALARMS')	• Registration **AH1** label in the AL folder • No effect on regulation • Label **AH1** displayed alternately with the actual value read by the probe Pb1	Wait until temperature value read by probe1 returns below **HAL**
AL1	Pb1 probe LOW Temperature alarm	Value read by Pb1 < **LAL** after time of **tAO**. (see 'MAX/MIN TEMP. ALARMS')	• Registration **AL1** label in the AL folder • No effect on regulation • Label **AH1** displayed alternately with the actual value read by the probe Pb1	Wait until temperature value read by probe1 to come back obove **LAL**
EA	External alarm	Digital input activated (**H11** = ±5)	• Registration **EA** label in the AL folder • Alarm icon permanently ON • Regulation blocked if **rLO** = y	Check and remove the external cause which generate alarm on D.I.
OPd	Door Open alarm	Digital input activated (**H11** = ±4) (for a longer time than **tdO**)	• Registration **OPd** label in the AL folder • Alarm icon permanently ON • Regulator blocked if **dOd**≠0	• Close the door • Delay function defined by **OAO**

MAX/MIN TEMPERATURE ALARMS



Minimum temperature alarm	Temp. ≤ **Set + LAL ***	Temp. ≤ **LAL** (**LAL** with sign)
Maximum temperature alarm	Temp. ≥ **Set + HAL ****	Temp. ≥ **HAL** (**HAL** with sign)
Returning from minimum temperature alarm	Temp. ≥ **Set + LAL + AFd** or ≥ **Set - |LAL| + AFd** (LAL < 0)	Temp. ≥ **LAL + AFd**
Returning from maximum temperature alarm	Temp. ≤ **Set + HAL - AFd** (HAL > 0)	Temp. ≤ **HAL - AFd**
	*** if LAL is negative, Set + LAL < Set** **** if HAL is negative, Set + HAL < Set**	

MANUAL ACTIVATION OF THE DEFROSTING CYCLE

To manually activate the defrost cycle, hold down the ⌃⌃ key for 5 seconds. If the defrost conditions are not satisfied (the parameter **OdO** ≠ 0):
The display will flash 3 times, to indicate that the operation will not be carried out.

ACCESSING AND USING THE MENU

Resources are organized into 2 menus which are accessed as explained below:

- **Machine Status** menu: press and release the **set** key.
- **Programming** menu: press for at least 5 secs the **set** key.

Either do not press any keys for 15 seconds (time-out) or press the ⏻ key once, to confirm the last value displayed and return to the previous screen.

USING THE UNICARD

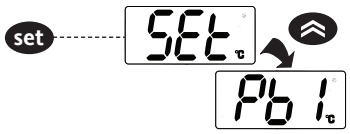
The UNICARD is connected to the serial port (TTL) and allows rapid programming of the instrument parameters.
Access '**Installer**' parameters by entering **PA2**, scroll through the folders using ⌃⌃ and ⌄⌄ until folder **FPr** appears.
Select it using **set**, scroll through the parameters using ⌃⌃ and ⌄⌄, then select the function using **set** (**UL**).

- **Upload** (**UL**): Select **UL** and press **set**. This function uploads the programming parameters from the instrument to the card.
  If the procedure is a success **y**, will appear on the display, otherwise **n** will appear.
- **Format** (**Fr**): This command is used to format the UNICARD, (recommended when using the card for the first time).
  NOTE: the **Fr** parameter deletes all data present. This operation cannot be cancelled.
- **Download**: Connect the UNICARD when the instrument is switched off. At power-on, data is downloaded from the UNICARD to the instrument automatically. At the end of the lamp test, the display will show **dLy** if the operation was successful and **dLn** if not.

NOTE: After downloading, the instrument works with the settings of the new map just downloaded.

'MACHINE STATUS' MENU

Access the **Machine Status** menu by pressing set and releasing the key. If no alarms are active, the **SEt** label appears.
Use the ⌃ and ⌄ keys to scroll through all the folders in the menu:



- **AL**: alarms folder (**only visible if an alarm is active**);
- **SEt**: setpoint setting folder;
- **Pb1**: probe 1 value folder - Pb1.
- **APP**: **H60** parameter value folder.

SETPOINT SETTING: To display the Setpoint value press the set key when the **SEt** label is displayed. The Setpoint value appears on the display. To change the Setpoint value, press the ⌃ and ⌄ keys within 15 seconds.
Press set to confirm the modification.



LOCK SETPOINT MODIFICATION: The keypad can be locked by programming the **LOC** parameter.
With the keypad locked you can still access the **Machine Status** menu by pressing set to display the Setpoint, but you cannot edit them. To disable the keypad lock, repeat the locking procedure.

DISPLAYING THE PROBES: When labels Pb1 are present, press the set key to view the value measured by the corresponding probe.

'PROGRAMMING' MENU

To access the **Programming** menu press for at least 5 secs the set key. If specified, the **PA1** for the **User** parameters and the **PA2** for the **Installer** parameters access PASSWORD will be requested (see Par. **PASSWORD**)

'**User**' parameters: At the access, the display will show the first parameter (**dF1**). By pressing the ⌃ and ⌄ keys you can scroll all parameters in the current level. Select the desired parameter using the set key. Press ⌃ and ⌄ keys to change the value of the selected parameter and then press set to save it.

'**Installer**' parameters: At the access, the display will show the first folder (**CP**). By pressing the ⌃ and ⌄ keys you can scroll all folders in the current level. Select the desired folder using the set keys. By pressing the ⌃ and ⌄ keys you can scroll through the parameters in the current folder and select the parameter using set. Press ⌃ and ⌄ to change the value and then press set to save it.

NOTE: Switch the device off and on again each time the parameter configuration is changed.

PASSWORD

PA1 Password: It allows access to the **User** parameters. In the standard configuration the password is enabled (**PA1=11**).
To change it (**PA1≠11**): press and hold set for longer than 5 seconds, you see the label **PA1**, press set, set the value '11' using ⌃ and ⌄, then confirm using set. Scroll through the folders until you see the label **diS** and press set to enter. Scroll through the parameters with ⌃ and ⌄ until you see the label **PS1**, press set to display the value, change it using ⌃ and ⌄, then save it by pressing set key. If enabled, it will be required in order to access the **User** parameters.

PA2 Password: allows access to **Installer** parameters. In the standard configuration the password is enabled (**PA2=22**).
To change it (**PA2≠22**): press and hold set for longer than 5 seconds, scroll using ⌃ and ⌄ until you see the label **PA2**, press set, set the value '22' using ⌃ and ⌄, then confirm using set. Scroll through the folders until you see the label **diS** and press set to enter. Scroll through the parameters with ⌃ and ⌄ until you see the label **PS2**, press set to display the value, change it using ⌃ and ⌄, then save it by pressing set key.

The visibility of the **PA2** label will be:

1) If PA1 ≠0 and PA2 ≠0: By pressing the set key for more than 5 seconds, **PA1** and **PA2** labels will be displayed at the same level and it will be possible to access either the **User** parameters (**PA1**) or the **Installer** parameters (**PA2**).

2) Otherwise: The **PA2** password is present between the **User** parameters. If **PA2** is enabled, you will be required to enter it to access the **Installer** parameters. To enter it follow the steps described for the **PA1** password.

NOTE: If the password is incorrect, the instruments display the PA1/PA2 label. Repeat the procedure.

INSTRUMENT ON/OFF

The instrument can be switched off by pressing the key ⏻ for longer than 5 seconds.
In this condition, the adjustment algorithms and defrost cycles are disabled and the text **OFF** will appear on the display.

PARAMETERS TABLE

PAR.	LIV.	DESCRIPTION	M.U.	RANGE	AP1	AP2	AP3
SEt	/	Temperature SEtpoint.	°C/°F	LSE ... HSE	36.0	45.0	60.0
		COMPRESSOR ('CP' folder)					
dF1	User/Inst	Relay compressor tripping differential. The compressor stops on reaching the Setpoint value (as indicated by the adjustment probe), and restarts at temperature value equal to the Setpoint plus the value of the differential. **Note: dF1 ≠ 0.**	°C/°F	0.1 ... 30.0	7.0	6.0	6.0
HSE	User/Inst	Maximum value that can be assigned to the setpoint.	°C/°F	LSE ... HdL	46.0	65.0	65.0
LSE	User/Inst	Minimum value that can be assigned to the setpoint.	°C/°F	LdL ... HSE	33.0	40.0	40.0
HC	Inst	Operating mode **C**(0) = Cooling; **H**(1) = Heating.	flag	C/H	C	C	C
Cit	Inst	Minimum compressor output activation time.	min	0 ... 250	0	0	0
CAt	Inst	Maximum compressor output activation time.	min	0 ... 250	0	0	0
Ont	Inst	Compressor activation time in the event of inoperable probe. • If **OFt**=1 and **Ont**=0, the compressor is always off. • If **OFt**=1 and **Ont**>0 it operated in duty cycle mode.	min	0 ... 250	15	15	15
OFt	Inst	Compressor deactivation time if probe is inoperable. • If **Ont**=1 and **OFt**=0, the compressor is always on. • If **Ont**=1 and **OFt**>0 it operated in duty cycle mode.	min	0 ... 250	30	30	30
dOn	Inst	Delay time in activating the compressor relay after switch-on of instrument.	s	0 ... 250	0	0	0
dOF	Inst	Delay after switch off; the indicated time must elapse between switch-off of the compressor relay and the subsequent switch-on.	min	0 ... 250	0	0	0
dbi	Inst	Delay between switch-on; the indicated time must elapse between two subsequent switch-on of the compressor.	min	0 ... 250	5	5	5
OdO	Inst	Delay time in activating the outputs after switch-on of the instrument or after a power outage.	min	0 ... 250	0	0	0
		DEFROST ('dEF' folder)					
dty	User/Inst	Type of defrosting. **0** = Electric defrost - compressor off (OFF) during defrosting; **1** = Reverse cycle defrost (hot gas); compressor on (ON) during defrosting; **2** = Free defrost mode; defrosting independently of compressor; **3** = Modulated- compressor off (OFF) during defrosting.	num	0 ... 3	0	0	0
dit	User/Inst	defrost interval time. Interval between the start of two subsequent defrosting operations.	hours	0 ... 250	6	6	6
dt1	Inst	Unit of measure for defrosting intervals (**dit** parameter). **0** = Hours; **1** = Minutes; **2** = Seconds.	num	0 ... 2	0	0	0
dt2	Inst	Unit of measure for defrosting duration (**dEt** parameter). **0** = Hours; **1** = Minutes; **2** = Seconds.	num	0 ... 2	1	1	1
dCt	Inst	Selection of count mode for the defrosting interval. **0** = Compressor operating hours (DIGIFROST® method); Defrosting active only if compressor is on; **1** = Real Time - equipment operating hours; defrost counting is always active when the machine is on and start every time the instrument switch on; **2** = Compressor stop. Each time the compressor stops a defrosting cycle is performed according to parameter **dtY**; **3** = Temperature. Defrost is active when the evaporator temperature it remain below the thereshold of **dSE** parameters for **dtt** time; **4** = Smart. Defrost is active when the evaporator temperature it remain below the thereshold of **dSE** parameters for **dtt** time and the compressor is on; **5** = Demand. Defrost is active when the difference between evaporator temperature and regulation temperature is higher than **dSE** parameter for **dtt** time.	num	0 ... 5	1	1	1
dOH	Inst	Start-of-defrosting delay time from the call.	min	0 ... 59	0	0	0
dEt	User/Inst	Defrosting time-out; determines duration of defrosting.	min	1 ... 250	20	20	20
dS1	User/Inst	End of defrosting temperature.	°C/°F	-67.0 ... 320	46.0	46.0	46.0
dPO	Inst	Determines if at the start-up the instrument must enter defrosting (if the temperature measured by the evaporator allows this operation). **n**(0) = No; **y**(1) = Yes (defrosts when switching on).	flag	n/y	n	n	n

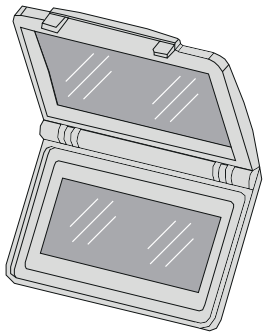
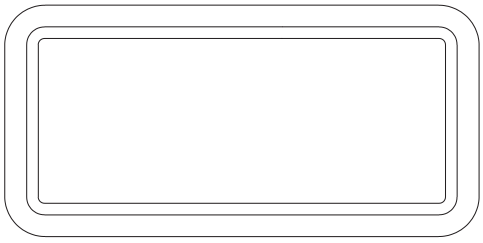
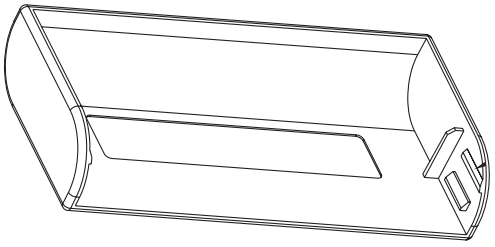
<table>
<tr><th>PAR.</th><th>LIV.</th><th>DESCRIPTION</th><th>M.U.</th><th>RANGE</th><th>AP1</th><th>AP2</th><th>AP3</th></tr>
<tr><td>tCd</td><td>Inst</td><td>Compressor output activation/deactivation time before defrosting.</td><td>min</td><td>-31 ... 31</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>Cod</td><td>Inst</td><td>OFF compressor time before defrosting.</td><td>min</td><td>0 ... 60</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>dSE</td><td>Inst</td><td>Temperature threshold for starting defrosting.</td><td>°C/°F</td><td>-67.0 ... 320</td><td>-67.0</td><td>-67.0</td><td>-67.0</td></tr>
<tr><td>dtt</td><td>Inst</td><td>Time the evaporator temperature must remain below the threshold.</td><td>min</td><td>0 ... 255</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td colspan="8">FANS ('FAn' folder)</td></tr>
<tr><td>FPt</td><td>Inst</td><td>Characterizes the FSt parameter that can be expressed or as an absolute temperature value or as a value related to Setpoint. 0 = Absolute; 1 = Relative.</td><td>flag</td><td>0/1</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>FSt</td><td>User/Inst</td><td>Fan lock temperature; if the value, read by the evaporator probe, is higher than the set value, fans stop.</td><td>°C/°F</td><td>-67.0 ... 320</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>FAd</td><td>Inst</td><td>Fan starting differential (see par. FSt).</td><td>°C/°F</td><td>1.0 ... 50.0</td><td>0.0</td><td>0.0</td><td>0.0</td></tr>
<tr><td>Fdt</td><td>User/Inst</td><td>Delay time in activating fans after a defrost operation.</td><td>min</td><td>0 ... 250</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>dt</td><td>User/Inst</td><td>Dripping time.</td><td>min</td><td>0 ... 250</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>dFd</td><td>User/Inst</td><td>Operating mode of evaporator fans during defrost.
n (0) = no (it depends on FCO parameter); y (1) = yes (fans excluded).</td><td>flag</td><td>n/y</td><td>n</td><td>n</td><td>n</td></tr>
<tr><td>FCO</td><td>Inst</td><td>Allows to select compressor fans lock OFF (switched off).
<table>
<tr><th></th><th></th><th colspan="2">DAY</th><th colspan="2">NIGHT</th></tr>
<tr><th>H42</th><th>FCO</th><th>COMPR. ON</th><th>COMPR. OFF</th><th>COMPR. ON</th><th>COMPR. OFF</th></tr>
<tr><td rowspan="7">H42 = y</td><td>0</td><td>Thermostat controlled</td><td>OFF</td><td>Thermostat controlled</td><td>OFF</td></tr>
<tr><td>1</td><td>Thermostat controlled</td><td>Thermostat controlled</td><td>Thermostat controlled</td><td>Thermostat controlled</td></tr>
<tr><td>2</td><td>Thermostat controlled</td><td>Dutycycle day</td><td>Thermostat controlled</td><td>Dutycycle night</td></tr>
<tr><td>3</td><td>Dutycycle day</td><td>Dutycycle day</td><td>Dutycycle night</td><td>Dutycycle night</td></tr>
<tr><td>4</td><td>Thermostat controlled</td><td>OFF</td><td>Thermostat controlled</td><td>OFF</td></tr>
<tr><td>5</td><td>Thermostat controlled</td><td>Thermostat controlled</td><td>Thermostat controlled</td><td>Thermostat controlled</td></tr>
<tr><td>6</td><td>Thermostat controlled</td><td>Thermostat controlled</td><td>Thermostat controlled</td><td>Thermostat controlled</td></tr>
<tr><td rowspan="7">H42 = n</td><td>0</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>1</td><td>ON</td><td>Dutycycle day</td><td>ON</td><td>Dutycycle night</td></tr>
<tr><td>2</td><td>ON</td><td>Dutycycle day</td><td>ON</td><td>Dutycycle night</td></tr>
<tr><td>3</td><td>Dutycycle day</td><td>Dutycycle day</td><td>Dutycycle night</td><td>Dutycycle night</td></tr>
<tr><td>4</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>5</td><td>ON</td><td>OFF</td><td>ON</td><td>OFF</td></tr>
<tr><td>6</td><td>Dutycycle day</td><td>Dutycycle day</td><td>Dutycycle night</td><td>Dutycycle Notte</td></tr>
</table></td><td>num</td><td>0 ... 6</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>Fon</td><td>Inst</td><td>Evaporator fan On time in duty cycle mode.</td><td>s x 10</td><td>0 ... 250</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>FoF</td><td>Inst</td><td>Evaporator fan Off time in duty cycle mode.</td><td>s x 10</td><td>0 ... 250</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td colspan="8">ALARMS ('AL' folder)</td></tr>
<tr><td>Att</td><td>Inst</td><td>Allow you to select if the parameters HAL and LAL will have absolute (Att=0) or relative (Att=1) value.</td><td>flag</td><td>0/1</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>AFd</td><td>Inst</td><td>Alarm differential.</td><td>°C/°F</td><td>1.0 ... 50.0</td><td>2.0</td><td>2.0</td><td>2.0</td></tr>
<tr><td>HAL</td><td>User/Inst</td><td>Temperature value (in relative value) which if exceeded in an upward direction triggers the activation of the alarm signal.</td><td>°C/°F</td><td>LAL ... 320</td><td>50.0</td><td>70.0</td><td>70.0</td></tr>
<tr><td>LAL</td><td>User/Inst</td><td>Temperature value (in relative value) which if exceeded in a downward direction, triggers the activation of the alarm signal.</td><td>°C/°F</td><td>-67.0 ... HAL</td><td>28.0</td><td>34.0</td><td>34.0</td></tr>
<tr><td>PAO</td><td>Inst</td><td>Alarm exclusion time after instrument switch on, after a power outage.</td><td>hours</td><td>0 ... 10</td><td>2</td><td>2</td><td>2</td></tr>
<tr><td>dAO</td><td>Inst</td><td>Temperature alarm exclusion time after defrost.</td><td>min</td><td>0 ... 999</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>OAO</td><td>Inst</td><td>Alarm signaling delay after digital input disabling (door close).
Alarm is only for high-low temperature alarms.</td><td>hours</td><td>0 ... 10</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>tdO</td><td>Inst</td><td>Alarm activation delay time open door.</td><td>min</td><td>0 ... 250</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>tAO</td><td>User/Inst</td><td>Temperature alarm signal delay time.</td><td>min</td><td>0 ... 250</td><td>30</td><td>30</td><td>30</td></tr>
<tr><td>dAt</td><td>Inst</td><td>Defrost alarm signal silenced due to timeout.
n(0) = alarm deactivated; y(1) = alarm activated.</td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>rLO</td><td>Inst</td><td>External alarm locks the regulators n(0) = Don't lock regulators; y(1) = Lock regulators.</td><td>flag</td><td>n/y</td><td>n</td><td>n</td><td>n</td></tr>
<tr><td>AOP</td><td>Inst</td><td>Alarm output polarity
n(0) = Alarm activated and output disabled; y(1) = Alarm activated and output enabled.</td><td>flag</td><td>n/y</td><td>y</td><td>y</td><td>y</td></tr>
<tr><td colspan="8">COOL PROTECTION ('CPr' folder)</td></tr>
<tr><td>CPS</td><td>Inst</td><td>Cool protection set point.</td><td>°C/°F</td><td>-67.0 ... 320</td><td>-10.0</td><td>-10.0</td><td>-10.0</td></tr>
<tr><td>CPd</td><td>Inst</td><td>Cool protection differential.</td><td>°C/°F</td><td>0.1 ... 30.0</td><td>1.0</td><td>1.0</td><td>1.0</td></tr>
</table>

PAR.	LIV.	DESCRIPTION	M.U.	RANGE	AP1	AP2	AP3
CPt	Inst	Temperature stay time below the cool protection set point (See **CPS** parameter).	min	0 ... 255	0	0	0
		DOOR SWITCH ('Lit' folder)					
dOd	Inst	Enable utility switch-off on activation of door switch. **0** = Disabled; **1** = Disables fans; **2** = Disables the compressor; **3** = Disables fans and compressor.	num	0 ... 3	0	0	0
dAd	Inst	Activation delay for digital input.	min	0 ... 255	0	0	0
dCO	Inst	Compressor deactivation delay after door opened.	min	0 ... 255	0	0	0
dCd	Inst	Fans activation delay after door closed.	s	0 ... 250	0	0	0
		PRESSURE SWITCH ('PrE' folder)					
PEn	Inst	Number of errors allowed for general pressure switch input. **0** = Disabled.	num	0 ... 15	0	0	0
PEI	Inst	Minimum/maximum pressure switch error count interval.	min	1 ... 99	1	1	1
PEt	Inst	Delay in activating compressor after pressure switch deactivation.	min	0 ... 255	0	0	0
		DEEP COOLING ('dEC' folder)					
dCA	Inst	Enable deep cooling. **0** = Disabled; **1** = Manual; **2** = Automatic.	num	0 ... 2	0	0	0
dCS	User/Inst	Deep cooling setpoint.	°C/°F	-67.0 ... 320	-2.0	-2.0	-2.0
tdC	User/Inst	Deep cooling duration.	min	0 ... 255	0	0	0
dcc	Inst	Defrost delay after deep cooling.	min	0 ... 255	0	0	0
Sid	Inst	Deep cooling start threshold.	°C/°F	-67.0 ... 320	50.0	50.0	50.0
toS	Inst	Over-threshold time for deep cooling start.	min	0 ... 255	5	5	5
		ENERGY SAVING ('EnS' folder)					
ESt	Inst	Energy Saving mode: **0** = Disabled; **1** = Offset on setpoint; **2** = Offset on differential; **3** = Offset on setpoint and differential; **4** = 'Bottle cooler open front' algorithm; **5** = 'Bottle cooler glass door' algorithm.	num	0 ... 5	0	0	0
ESA	Inst	AUX output status in energy saving mode: **0** = Disabled (no effect on AUX); **1** = AUX off; **2** = AUX on.	num	0 ... 2	0	0	0
ESF	Inst	Night mode activation (Energy saving) for fans. **n**(0) = Disabled; **y**(1) = Enabled if energy saving mode is active (**ESt**≠ 0).	flag	n/y	n	n	n
Cdt	Inst	Door close time.	min x 10	0 ... 255	6	6	6
OSP	Inst	Temperature value to be added algebraically to the setpoint in the case of an enabled reduced set (Economy function).	°C/°F	-30.0 ... 30.0	3.0	3.0	3.0
OdF	Inst	Intervention differential correction.	°C/°F	0.0 ...30.0	4.0	4.0	4.0
dnt	Inst	Duration of night mode.	hours	0 ... 24	11	11	11
dFt	Inst	Duration of fast cooling mode.	hours	0 ... 24	1	1	1
SPn	Inst	Night mode setpoint.	°C/°F	LSE ... HSE	38.0	65.0	65.0
dn1	Inst	Night mode offset.	°C/°F	0.1 ... 30.0	4.0	4.0	4.0
SPF	Inst	Fast cooling setpoint.	°C/°F	LSE ... HSE	33.0	40.0	40.0
dFF	Inst	Fast cooling offset.	°C/°F	0.1 .... 30.0	1.0	1.0	1.0
ESP	Inst	Virtual door regulator's sensitivity.	num	0 ... 5	0	0	0
dOt	Inst	Maximun Time Door Open with virtual door switch.	s	0 ... 255	0	0	0
		COMMUNICATION ('Add' folder)					
PtS	Inst	Protocol selection. **t**(0) = Televis; **d**(1) = ModBus.	flag	t/d	d	d	d
dEA	Inst	Device address in family (valid values from 0 to 14).	num	0 ... 14	1	1	1
FAA	Inst	Device family (valid values from 0 to 14). The **FAA** and **dEA** values represent the network address of the equipment and are indicated in the following format 'FF.DD' (where FF=**FAA** and DD=**dEA**).	num	0 ... 14	0	0	0
PtY	Inst	MODBUS parity bit. **n**(0) = None; **E**(1) = Even; **o**(2) = Odd.	num	n/E/o	n	n	n

PAR.	LIV.	DESCRIPTION	M.U.	RANGE	AP1	AP2	AP3
StP	Inst	MODBUS stop bit. **1b**(0) = 1 bit; **2b**(1) = 2 bit.	flag	1b/2b	1b	1b	1b
		DISPLAY ('diS' folder)					
LOC	User/Inst	LOCK. Setpoint change shutdown. There is still the possibility to enter into parameters programming and modify these, including the status of this parameter to permit keyboard shutdown. **n**(0) = No; **y**(1) = Yes.	flag	n/y	n	n	n
PS1	User/Inst	PAssword 1. When enabled (**PS1** ≠ 0) it constitutes the access key for level 1 parameters.	num	0 ... 250	11	11	11
PS2	Inst	PAssword 2. When enabled (**PS2** ≠ 0) it constitutes the access key for level 2 parameters.	num	0 ... 250	22	22	22
ndt	Inst	View with decimal point. **n**(0) = No; **y**(1) = Yes (display with decimal).	flag	n/y	n	n	n
CA1	User/Inst	CAlibration 1. Positive or negative temperature value added to the value read by probe 1.	°C/°F	-12.0 ... 12.0	5.0	5.0	5.0
CAi	Inst	Calibration activation. **0** = Only the temperature shown is modified; **1** = Only the temperature used by the regulators is modified; the display remains unchanged; **2** = Temperature displayed is modified, which is also the one used by the regulators.	num	0 ... 2	2	2	2
LdL	Inst	Minimum visible value.	°C/°F	-67.0 ... HdL	-55.0	-55.0	-55.0
HdL	Inst	Maximum visible value.	°C/°F	LdL ... 320	230	230	230
ddL	User/Inst	Viewing mode during defrosting. **0** = Shows the temperature read by the room probe; **1** = Locks the reading on the temperature value read by room probe when defrosting starts, and until the next time the Setpoint value is reached; **2** = Displays the label **dEF** during defrosting, and until the next time the Setpoint value is reached.	num	0 ... 2	1	1	1
Ldd	User/Inst	Display lock time out from end of defrosting.	min	0 ... 255	30	30	30
dro	Inst	Select °C or °F for displaying the temperature read by the thermostat probe. (**0** = °C, **1** = °F). **NOTE**: the switch between °C and °F DO NOT modify setpoint, differential, etc. (for example set=10 °C become 10 °F).	flag	0/1	1	1	1
ddd	Inst	Selection of type of value to be displayed. **0** = Setpoint; **1** = Pb1 probe; **2-3** = Not used.	num	0 ... 3	1	1	1
FiS	Inst	Filter selection. (See "DISPLAY FILTER" a pagina 4) **0** = Filter disable; **1** = Filter use **tAu** and **5tAu**; **2** = Filter use only **tAu**.	num	0 ... 2	2 (*)		
Fit	Inst	Filter mode. **n**(0) = Active only when the temp. rise; **y**(1) = Always active (rise and fall).	flag	n/y	n (*)		
tAu	Inst	Filter time constant.	min	0 ... 250	20 (*)		
(*) Parameter not present in vectors.							
		CONFIGURATION ('CnF' folder) **NOTE: Switch the device off and on again each time the parameter configuration is changed.**					
H02	Inst	Functions activation time from keypad.	s	0 ... 15	3	3	3
H06	Inst	Instrument off active light/auxiliary digital input or key. **n**(0) = Deactivated; **y**(1) = Activated.	flag	n/y	y	y	y
H08	Inst	Stand-by operating mode. **0** = Display switch off; **1** = Display switch off, loads and alarms stopped; **2** = display with OFF label, loads and alarms stopped.	num	0 ... 2	2	2	2
H11	Inst	Configuration of digital inputs 1/polarity D.I.1. **0** = Disabled; **±1** = Defrosting; **±2** = Reduced set; **±3** = AUX; **±4** = Door switch; **±5** = External alarm; **±6** = Stand-by (ON-OFF); **±7** = Pressure switch; **±8** = Deep cooling; **±9** = Energy saving; **±10** = Door switch + Energy saving. **NOTE**: -the '**+**' sign indicates that the input is activated when the contact is closed. -The '**-**' sign indicates that the input is activated when the contact is open.	num	-10 ... 10	0	0	0

PAR.	LIV.	DESCRIPTION	M.U.	RANGE	AP1	AP2	AP3
H21	Inst	Digital output 1 configurability. **0** = Disabled; **1** = Compressor; **2** = Defrost; **3** = Fan; **4** = Alarm; **5** = AUX; **6** = Stand-by; **7** = Not used; **8** = Condenser fan change rotation; **9** = Retain valve; **10** = Evaporator 2 defrost; **11** = Compressor 2; **12** = Drip pan Heaters.	num	0 ... 12	1	1	1
H22	Inst	Digital output 2 configurability.	num	0 ... 12	0	0	0
H23	Inst	Digital output 3 configurability.	num	0 ... 12	0	0	0
H31	Inst	UP key configurability. **0** = Disabled; **1** = Defrost; **2** = AUX; **3** = Reduced set; **4** = Stand-by; **5** = Deep cooling; **6** = Energy saving.	num	0 ... 6	1	1	1
H32	Inst	DOWN key configurability. Same as **H31**.	num	0 ... 6	0	0	0
H33	Inst	ESC key configurability. Same as **H31**.	num	0 ... 6	4	4	4
H41	Inst	Pb1 present. **n**(0) = Not present; **y**(1) = Present.	flag	n/y	y	y	y
H42	Inst	Pb2 present. **n**(0) = Not present; **y**(1) = Present.	flag	n/y		n	n
H45	Inst	Defrosting input mode for applications with dual evaporator. **0** = Only first evaporator; **1** = If at least one of the evaporators is below its end of defrost temperature; **2** = Only if both evaporators are below the respective end defrost temperature; **3** = 1st evaporator and 2nd evaporator activated alternately.	num	0 ... 3	0	0	0
H60	Inst	Parameter vector selector: read only parameter.	num	0 ... 3	1 (*)		
CuS	User/Inst	Customer model code.	num	0 ... 999	0 (*)		
(*) Parameter not present in vectors.							
		COPY CARD ('FPr' folder)					
UL	Inst	Upload. Programming parameter transfer from instrument to UNICARD.	/	/	/	/	/
Fr	Inst	Format UNICARD. Erase all data contained in the UNICARD.	/	/	/	/	/

ACCESSORIES

	Plexiglas protection for controllers: • Protects the facade in external areas or those that are particularly dirty.
	Silicon gasket to protect against humidity: • Increases the protection of the controller against humidity and dirty.
	Ant-drip protection at the back: • Protects electric connectors against dripping liquids.

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ELIWELL CONTROLS SRL is not liable for damage caused by:

- installation/use other than what is intended and, in particular, in deviation from the safety regulations set forth by the standards and/or included in this document;
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- use on panels that permit access to hazardous parts without the use of tools;
- product tampering and/or alteration;
- installation/use in panels that do not comply with standards and the provisions of current law.

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CONDITIONS OF USE

Permitted use

For purposes of instrument safety, it must be installed and used in accordance with the provided instructions and in particular, in normal conditions, dangerous energized parts must not be accessible. The device must be suitably protected against water and dust based on the application and must also be accessible only with the use a tool (with the exception of the front panel). The device is suited for being integrated in equipment for domestic use and/or similar for refrigeration purposes and has been checked in relation to aspects regarding safety on the basis of the harmonized European standards of reference.

Prohibited use

Any use other than what is permitted is in fact prohibited. Please note that the relay contacts provided are a functional type and are subject to faults: any protective devices indicated by product regulations or suggested as a result of common sense with regard to obvious safety needs must be implemented outside of the instrument.

DISPOSAL

The equipment (or product) must be collected separately in compliance with current regulations on disposal.

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