PB00**S* - powercompact small Models PB00(S, Y, F, C)(0,6)S(N,R,C,B,A,M,L,T)(0,1,2,3,4,5,A,B,C,D,E,F)0

LEGGI E CONSERVA QUESTE ISTRUZIONI
READ AND SAVE THESE INSTRUCTIONS

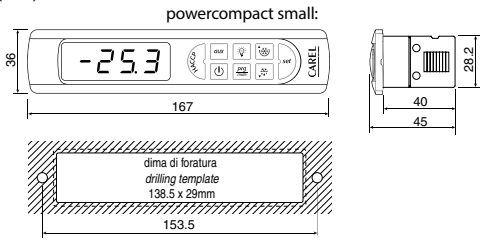
CAREL

NO POWER & SIGNAL CABLES TOGETHER
READ CAREFULLY IN THE TEXT!

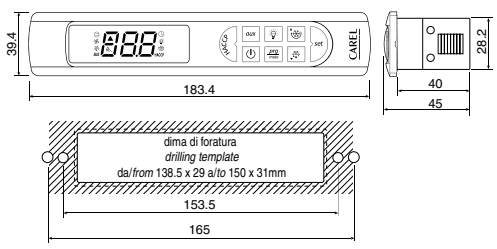
WARNING: separate as much as possible the probe and digital input signal cables from the cables carrying inductive loads and power cables to avoid possible electromagnetic disturbance. Never run power cables (including the electrical panel wiring) and signal cables in the same conduits.

Dimensions (mm)

powercompact small:



powercompact small PB wide:



PST00VR100: repeater display interface

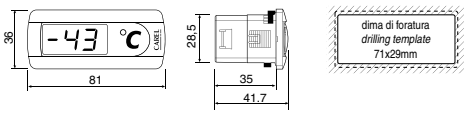
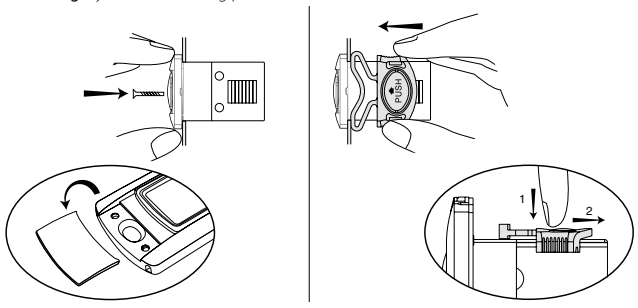


Fig. 1

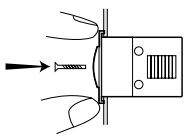
Panel mounting

powercompact:

Panel mounting: by two lateral sliding plastic brackets.



powercompact small PB wide:



PST00VR100: repeater display interface

Panel mounting: by two countersunk screws, max. diameter 3.9 mm.

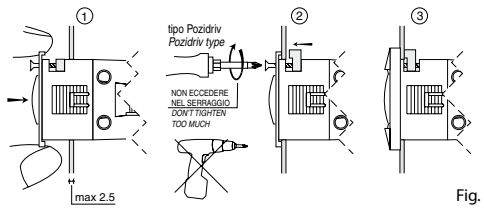


Fig. 2

Wiring diagrams

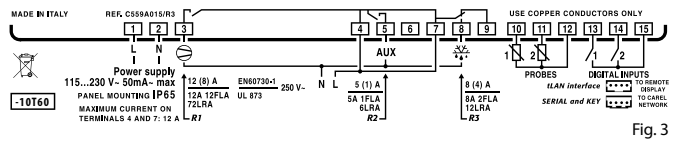


Fig. 3

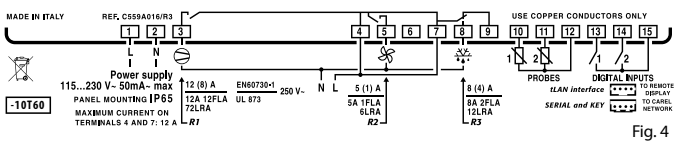


Fig. 4

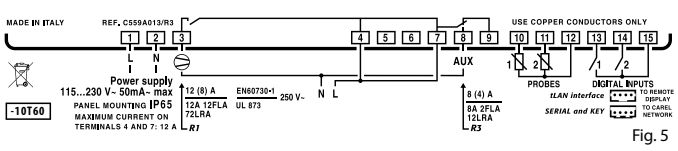


Fig. 5

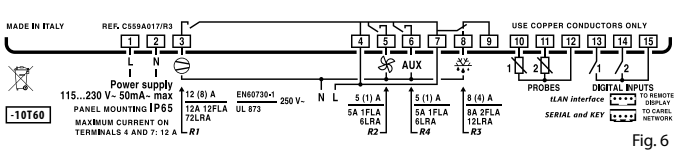


Fig. 6

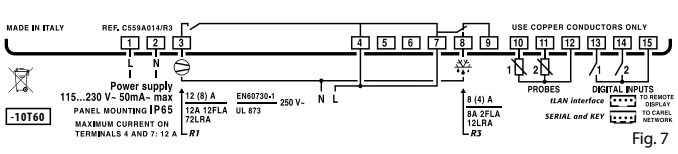


Fig. 7

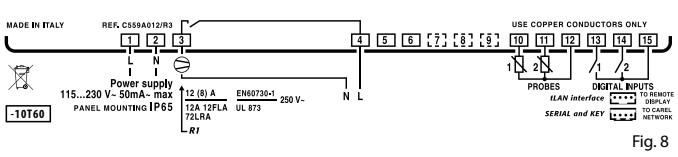


Fig. 8

Option codes

CODE	DESCRIPTION
IRTRRES000	small remote control
IROPZ48500	RS485 serial inteface
IROPZ485S0	RS485 serial board interface with automatic recognition of the polarity +/-
IROPZDSP00	remote display interface
PST00VR100	remote repeater display
IR00RG0000	remote repeater display ir33 range green display
IR00RR0000	remote repeater display ir33 range red display
PSTCON01B0	repeater display connection cables 1,5 m
PSTCON03B0	repeater display connection cables 3 m
PSTCON05B0	repeater display connection cables 5 m
PSOPZKEY00	parameter programming key with extended memory and 12 V batteries included
PSOPZKEYA0	parameter programming key with 230 Vac power supply
IROPZKEY00	parameter programming key with 12 V battery included
IROPZKEYA0	parameter programming key with extended memory and external 230 Vac power supply
VPMSTDKY*0	key programming kit

Tab. 1

Display

powercompact uses a built-in display terminal with three LED digits and icon, to display the operating status. An additional display can be connected to the powercompact controller, via a suitable interface for example to display the reading of a third probe.

Signals on the display

Icon	Function	Normal operation			Start up
		ON	OFF	blink	
	COMPRESS.	compressor ON	compressor OFF	compressor request	
	FAN	fan ON	fan OFF	fan request	
	DEFROST	defrost ON	defrost OFF	defrost request	
AUX	AUX	auxiliary output AUX active	auxiliary output AUX not active	anti-sweat heater function active	
	ALARM	delayed external alarm (before the expiry of the time 'A7')	no alarm present	alarms in normal operation (e.g. high/low temperature) or alarm from external digital input, immediate or delayed	
	CLOCK	if at least 1 timed defrost has been set	no timed defrost is	clock alarm present	ON if real-time clock present
	LIGHT	auxiliary output LIGHT active	auxiliary output LIGHT not active	anti-sweat heater function active	
	SERVICE		no malfunction	malfunction (e.g. EEPROM error or probe fault)	
HACCP	HACCP	HACCP function enabled	HACCP function not enabled	HACCP alarm (HA and/or HF)	
	CONTINUOUS CYCLE	CONTINUOUS CYCLE enabled	CONTINUOUS CYCLE not enabled	CONTINUOUS CYCLE request	

Tab. 2

The blinking status indicates a request for activation that cannot be implemented until the end of the corresponding delay times.

Buttons on the keypad

Icon	Button	Normal operation		Start-up	Request automatic assignment
		Pressing the button alone other	Pressing together with buttons address		
HACCP	HACCP	enters the menu to display and delete the HACCP alarms			
	ON/OFF	if pressed for more than 5 s, switches the unit on/off			
prg mute	PRG/ MUTE	if pressed for more than 5 s, accesses the menu for setting type "F" (frequent) parameters in the event of alarm: silences the audible alarm (buzzer) and disables the alarm relay	• SET: if pressed for more than 5 s together with the SET button accesses the menu for setting the type "C" (configuration) or downloading the parameters • UP/CC: if pressed for more than 5 s together with the UP/CC button, resets any active alarms with manual reset	if pressed for more than 5 s at start-up, enables the procedure for setting the default values	if pressed for more than 1 s, enters the automatic serial address assignment procedure
	UP/CC	if pressed for more than 5 s, enables/disables continuous cycle operation	• SET: if pressed for more than 5 s together with the SET button, starts the procedure for printing the reports (function available, with management to be implemented) • PRG/MUTE: if pressed for more than 5 s together with the PRG/MUTE button, resets any active alarms with manual reset		
	LUCE	if pressed for more than 1 s, enables/disables auxiliary AUX2			
aux	AUX	if pressed for more than 1 s, enables/disables auxiliary AUX1			
	DOWN/ DEF	if pressed for more than 5 s, enables/disables a manual defrost			
set	SET	if pressed for more than 1 s, displays and/or sets the set point	• PRG/MUTE: if pressed for more than 5 s together with the PRG/MUTE button accesses the menu for setting the type "C" (configuration) or downloading the parameters • UP/CC: if pressed for more than 5 s together with the UP/CC button, starts the procedure for printing the reports (function available, with management to be implemented)		

Tab. 3

Setting the set point (desired temperature value)

To display or set the set point, proceed as follows:

1. press the "set" button for more than 1 second to display the set point;
2. increase or decrease the value of the set point, using the ▲ and ▼ buttons respectively, until reaching the desired value;
3. press the "set" button again to confirm the new value.

Alarms with manual reset

The alarms with manual reset can be reset by pressing the prg/mute and ▲ buttons together for more than 5 s.

Manual defrost

As well as the automatic defrost function, a manual defrost can be enabled, if the temperature conditions allow, by pressing ▼ for 5 seconds.

ON/OFF button

Pressing this button for 5 s switches the unit on/off. When the controller is turned off, it actually goes into standby, and therefore, when carrying out maintenance on the device, it must be disconnected from the power supply.

HACCP function

powercompact is compliant with the HACCP standards in force since it allows the monitoring of the temperature of the stored food. "HA" alarm = exceeded maximum threshold: up to three HA events are saved (HA, HA1, HA2) respectively from the more recent (HA) to the oldest (HA2) and a HAn signal that displays the number of occurred HA events. "HF" alarm = power failure lasting over a minute and exceeded AH maximum threshold: up to three HF events are saved (HF, HF1, HF2) respectively from the more recent (HF) to the oldest (HF2) and a HFn signal that displays the number of occurred HF events. HA/HF alarm setting: AH parameter (high temperature threshold); Ad and Htd (Ad+Htd = HACCP alarm activation delay). Display of the details: access to HA or HF parameters pressing the "HACCP" button and use ▲ or ▼. buttons to glance over. HACCP alarm erasing: press the "HACCP" button for more than 5 s, the message 'res' indicates that the alarm have been deleted.To cancel the saved alarms press the "HACCP" and ▲ buttons for more than 5 s.

Continuous cycle

Pressing the button ▲ for more than 5 seconds enables the continuous cycle function. During operation in continuous cycle, the compressor continues to operate for the time 'cc' and it stops when reaches the 'cc' time out or the minimum temperature envisaged (AL = minimum temperature alarm threshold). Continuous cycle setting: "cc" parameter (continuous cycle duration): "cc" = 0 never active; "c6" parameter (bypassing the alarm after the continuous cycle): it avoids or delays the low temperature alarm after the continuous cycle.

Procedure for setting the default parameter values

To set the default parameter values on the controller, proceed as follows:

- If "Hdn" = 0: 1: switch the instrument off; 2: switch the instrument back on, holding the prg/mute button until the message "Std" is shown on the display.

Note: the default values are only set for the visible parameters (C and F). For further details see table "Summary of operating parameters".

- If "Hdn" < > 0: 1: switch the instrument off; 2: switch the instrument back on, holding the prg/mute button until the value 0 is shown on the display; 3: select the set of default parameters, between 0 and "Hdn", using the ▲ and ▼ buttons;
4. press the prg/mute button until the message "Std" is shown on the display

Automatic assignment of the serial address

This is a special procedure that, using an application installed on a PC, allows setting and managing simply the addresses of all instruments (featuring this function) connected to the CAREL network. The procedure is very simple:

1. Using the remote application. The "Network definition" procedure started; the application sends a special message ('<!ADR>') across the CAREL network, containing the network address.
2. Pressing the prg/mute on an instrument connected to the network recognises the message sent by the remote application, automatically sets the address to the desired value and sends a confirmation message to the application, containing the unit code and firmware revision (message 'V'). When the message sent by the remote application is recognised, the instrument shows the message 'Add' on the display for 5 seconds, followed by the value of the serial address assigned;
3. The application, on receiving the confirmation message from the units connected to the network, saves the information received in its database, increases the serial address and sends the message '<!ADR>' again;
4. At this point, the procedure starting from point 2 can be repeated on another unit connected to the network, until defining all the network addresses.

Note: once the address has been assigned to an instrument, the operation, for safety reasons, is disabled on the same instrument for 1 minute, preventing a different address from being assigned to the instrument.

Accessing the configuration parameters (type C)

1. Press the prg/mute and "set" buttons at the same time for more than 5 seconds; the display will show the number "00" (password prompt).
2. Press the ▲ or ▼ button until displaying the number "22" (parameter access password)
3. Confirm by pressing the "set" button.
4. The display shows the code of the first modifiable "C" parameter.

Accessing the configuration parameters (type F)

1. Hold the prg/mute button for more than 5 s (if there are active alarms, first mute the buzzer), the display will show the first modifiable "F" parameter.

Modifying the parameters

After having displayed the parameter, either type "C" or type "F", proceed as follows:

1. Press the ▲ or ▼ button to scroll the parameters, until reaching the parameter to be modified; when scrolling, an icon appears on the display representing the category the parameter belongs to.
2. Alternatively, press the prg/mute button to display a menu that is used to quickly access the category of parameters to be modified.
3. Scroll the menu with the ▲ and ▼ buttons; the display shows the codes of the various categories of parameters (see the Summary of operating parameters), accompanied by the display of the corresponding icon (if present).
4. Once having reached the desired category, press "set" to go directly to the first parameter in the chosen category (if no parameter is visible, pressing the "set" button will have no effect).
5. At this stage, modify the parameters or return to the "Categories" menu, using the prg/mute button.
6. Press "set" to display the value associated with the parameter.
7. Increase or decrease the value using the ▲ or ▼ buttons respectively.
8. Press "set" to temporarily save the new value and return to the display of the parameter.
9. Repeat the operations from point 1 or point 2.
10. If the parameter has sub-parameters, press "set" to display the first sub-parameter.
11. Press the ▲ or ▼ button to display all the sub-parameters.
12. Press " set" to display the associated value.
13. Increase or decrease the value using the ▲ or ▼ button respectively.
14. Press "set" to temporarily save the new value and return to the display of the sub-parameter code.
15. Press prg/mute to return to the display of the parent parameter.

Saving the new values assigned to the parameters

To definitively save the new values of the modified parameters, press the prg/mute button for more than 5 seconds, thus exiting the parameter setting procedure.
All the modifications made to the parameters, temporarily saved in the RAM, can be cancelled and "normal operation" resumed by not pressing any button for 60 seconds, thus allowing the parameter setting session to expire due to timeout. If the instrument is switched off before pressing the prg/mute button, all the modifications made to the parameters and temporarily saved will be lost.

Directly accessing the parameters by selecting the category

The configuration parameters can also be accessed, in addition to the mode described above, via the category (see the icons and abbreviations in the table below), according to the list on the display with the corresponding name and icon. To directly access the list of parameters grouped by category, press the prg/mute button for at least 1 second, ▲ ▼, and to modify the parameter press "set", ▲ ▼

Category	Parameters	Message	Icon
Probe parameters	/	'Pro'	
Control parameters	r	'CtL'	
Compressor parameters	c	'CMP'	
Defrost parameters	d	'dEF'	
Alarm parameters	A	'ALM'	
Fan parameters	F	'FAn'	
Configuration parameters	H	configuration 'CnF'	AUX
HACCP parameters	H HACCP	'HcP'	HACCP
RTC parameters	rtc	'rtc'	

Tab. 4

Probe configuration (/A2.../A5)

In the powercompact series, these parameters are used to configure the operating mode of the probes:
0 = probe absent; 1 = product probe (used for display only); 2 = defrost probe; 3 = condenser probe; 4 = antifreeze probe.

Configuration of the digital inputs (A4, A5, A9)

In the powercompact series, this parameter and the model of controller used define the meaning of the digital input:

0 =	input not active;
1 =	immediate external alarm, normally closed: open = alarm;
2 =	delayed external alarm, normally closed;
3 =	enable defrost from external contact: open= disabled (an external contact can be connected to the multifunction input to enable or disable the defrost);
4 =	start defrost from external contact;
5 =	door switch with stopping of compressor and fans: open = open door;
6 =	remote ON/OFF: CLOSED=ON;
7 =	curtain switch: close = lowered curtain;
8 =	low pressure switch input for pump-down: open = low pressure;
9 =	door switch with stopping of fans only: open = open door;
10 =	direct/reverse cycle operation: open = direct;
11 =	light sensor;
12 =	AUX output enabling (if configured with H1 o H5 parameters): opening = enabling;
13 =	door switch with compress. and fans OFF, with light not managed;
14 =	door switch with fans OFF and light not managed.

Configuration of the relay outputs AUX1 (H1) and AUX2 (H5)

Establishes whether relays AUX1 and AUX2 (present only if envisaged by the model) are used as auxiliary outputs (e.g. demister fan or other ON/OFF actuator), an alarm output, a light output, a defrost actuator for the auxiliary evaporator, pump-down valve control or output for the condenser fan.

0 =	alarm output: normally energised; the relay is de-energised when an alarm occurs;
1 =	alarm output: normally de-energised; the relay is energised when an alarm occurs;
2 =	auxiliary output;
3 =	light output;
4 =	auxiliary evaporator defrost output;
5 =	pump-down valve output;
6 =	condenser fan output;
7 =	delayed compressor output;
8 =	auxiliary output with OFF shutdown;
9 =	light output with OFF shutdown;
10 =	disabled output;
11 =	reverse output in dead zone control;
12 =	second compressor step output;
13 =	second compressor step output with rotation.

Warning: the mode H1/H5=0 is useful for signalling the alarm status even in case of power failure.

Note: in the models fitted with only one auxiliary output, to associate the button "☼" to this output, set H1= 10 and H5= 3. It is necessary to associate the relay assigned to aux 1 to the auxiliary output 2. The operation can be performed using the programming kit PSOPZPRG00 and the programming key PSOPZKEY00/A0.

Optional connections:

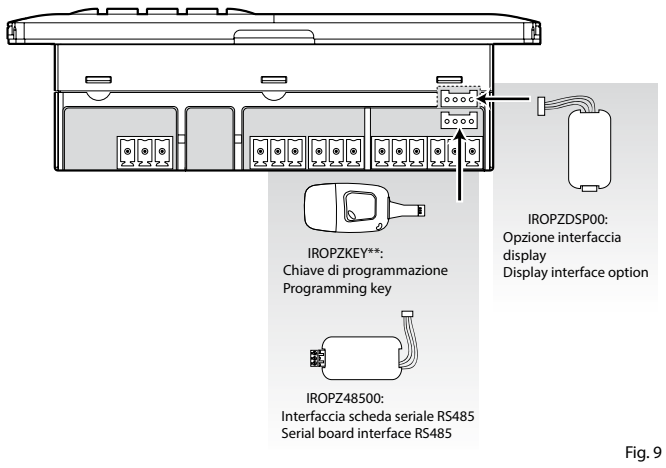


Fig. 9

Technical specification

Power supply	Model	Voltage	Power
	S	115...230 V~ (switching) (+10%, -15%), 50/60 HZ	6 VA, 50 mA~ max
Insulation guaranteed by the power supply	insulation in reference to very low voltage parts		reinforced 6 mm in air, 8 mm on surface 3750 V insulation
	insulation from relay outputs		primary 3 mm in air, 4 mm on surface 1250 V insulation
Inputs	S1	NTC or PTC, depending on the model	
	S2	NTC or PTC, depending on the model	
	DI1/S3	free contact, contact resistance < 10 Ω, closing current 6 mA NTC or PTC, depending on the model	
	DI2 / S4	free contact, contact resistance < 10 Ω, closing current 6 mA NTC or PTC, depending on the model	
	Maximum distance of probes and digital inputs less than 10 m **Note:** During installation keep the power and load connections separate probe cables, digital inputs, repeater display and supervisory system.		
Probe type	NTC high temperature	50 kΩ at 25 °C, range from –40T150 °C	measurement error 1.5 °C in the –40T150 °C range 4 °C in the external range at -20T115 °C
	Std. CAREL NTC	10 kΩ at 25 °C, range from –50T90 °C	measurement error 1 °C in the –50T50 °C range 3 °C in the –50T90 °C range
	Std. CAREL PTC (specific model)	985 Ω at 25 °C, range from -50T150 °C	measurement error: 2 °C in the –50T50 °C range 4 °C in the –50T150 °C range

Relay outputs	depending on the model				
		EN60730-1		UL 873	
		250 V~	operating cycles	250 V~	operating cycles
	5 A *	5 (1) A	100000	5 A resistive 1 FLA 6 LRA C 300	30000
	8 A *	8 (4) A on N.O. 6 (4) A on N.C. 2 (2) A if the N.C. and N.O. contacts are connected con-temporaneously	100000	8 A resistive 2 FLA 12 LRA C300	30000 Uscite relè
	30 A	12 (10) A su N.O.	100000	12 A res. 12FLA 72LRA	30000
	insulation from very low voltage parts		reinforced 6 mm in air, 8 mm on surface 3750 V insulation		

* relay not suitable for fluorescent loads (neon lights, ...) that use starters (ballasts) with phase-shift capacitors. Fluorescent lamps with electronic control devices or without phase-shift capacitors can be used, within the operating limits specified for each type of relay.

Connections	Type of connection	Cross-section / Maximum current
	fixed screw-on removable for screw blocks faston with crimped contacts	for wires from 0.5 to 2.5 mm² / 12 A
	The installer has to provide the correct dimensioning of the power supply and cable connection between the instrument and the loads. In max load and max operating temp. conditions, cables rated for operation at up to 105 °C are required.	
Case	plastic	dimensions 36x167x45 mm mount-in depth 40 mm
Mounting	panel drilling template	using screws from front panel dimensions 29x138.5 mm distance between fastening screws 153.5 mm
	fastening screws	countersunk with tread diameter 3.9 mm maximum
Case (wide version)	plastic	dimensions 39.4x183x45 mm mounting depth 40 mm
Installation (wide version)	on smooth, hard and indeformable panel	using screws from the front or brackets
	drilling template	dimensions from 138.5x29 to 150x31 spacing between fastening screws 165 mm or 153.5 mm
	fastening screws	countersunk with maximum thread diameter 3.9 mm for 165 mm spacing; for 153 spacing, flat head with max. thread diameter 3 mm
Display	digits	3 digit LED
	display range	from –99 to 999
	operating status	indicated by graphic icons on the display
Keypad	8 rubber silicon buttons	
Infrared receiver	available depending on the model	
Clock with backup battery	available depending on the model	
Buzzer	available on all models	
Clock	error at 25 °C	±10 ppm (±5,3 min/year)
	error in the temperature range -10T60 °C	-50 ppm (-27 min/year)
	ageing	< ±5 ppm (±2,7 min/year)
	discharge time	6 months (max. 8 months)
	recharge time	typical 5 hours (<8 hours max.)

Operating temperature	-10T60 °C
Operating humidity	<90% r.H. non-condensing
Storage temperature	-20T70 °C
Storage humidity	<90% r.H. non-condensing
Front panel index of protection	smooth and stiff panel installation with gasket IP65
Environmental pollution	normal
PTI of the insulating material	> 250 V
Period of electric stress across insulating parts	long
Category of resistance to fire	category D (UL 94-V0)
Class of protection against voltage surges	category II
Tipo di azione e disconnessione	relè contacts 1c (microdisconnection)
Construction of control	incorporated control, electronically
Classification according to protection against electric shock	Class II, by appropriate incorporation
Software class and structure	class A
Front panel cleaning	only use neutral detergents and water
Serial interface for CAREL network	external, available on all models
Interface for repeater display	external, available on models with H and 0 power supply
Max. distance between interface and display	10 mt
Programming key	available for all models

The powercompact small range fitted with the standard CAREL NTC probe is compliant with standard EN 13485 on thermometers for measuring the air temperature in applications on units for the conservation and sale of refrigerated, frozen and deep-frozen food and ice cream. Designation of the instrument: EN13485, air, S, A, 1, - 50T90 °C. The standard CAREL NTC probe is identifiable by the printed laser code on "WP" models, or the code "103AT-11" on "HP" models, both visible on the sensor part.

Safety standards: compliant with the European reference standards.
Precautions for installation:
- the connection cables must guarantee insulation at up to 90 °C;
- adequately secure the connection cables to the outputs so as to avoid contact with very low voltage components.

Date and day for defrost event (parameters td1...td8)

0= no event; 1...7= Monday...Sunday; 8= from Monday to Friday; 9= from Monday to Saturday; 10= from Saturday to Sunday; 1= every day.

Summary of operating parameters

UOM = Unit of measure; Def. = Default value.

Symb.	Code	Parameter	Models	UOM	Type	Min	Max	Def.
	Pw	Password	MSYF	-	C	0	200	22
	/2	Measurement stability	MSYF	-	C	1	15	4
	/3	Probe display response	MSYF	-	C	0	15	0
	/4	Virtual probe	MSYF	-	C	0	100	0
	/5	Select °C or °F	MSYF	flag	C	0	1	0
	/6	Display decimal point 0: with tenths of a degree | 1: without tenths of a degree	MSYF	flag	C	0	1	0
	/tI	Display decimal point 1: virtual probe | 2: probe 1 3: probe 2 | 4: probe 3 5: probe 4 | 6: probe 5 7: set point	MSYF	-	C	1	7	1
	/tE	Display on external terminal 0: remote terminal not present 1: virtual probe | 2: probe 1 3: probe 2 | 4: probe 3 5: probe 4 | 6: probe 5	MSYF	-	C	0	6	0
	/P	Select type of probe 0: NTC standard with range -50T90 °C 1: NTC enhanced with range -40T150 °C 2: PTC standard with range -50T150 °C	MSYF	-	C	0	2	0
	/A2	Configuration of probe 2 (S2) 0: Probe absent 1: Product probe (display only) 2: Defrost probe 3: Condenser probe 4: Antifreeze probe	YF MS	- -	C C	0 0	4 4	2 0
	/A3	Configuration of probe 3 (S3, DI1) As for /A2	MSYF	-	C	0	3	0
	/A4	Configuration of probe 4 (S4, DI2) As for /A2	MSYF	-	C	0	3	0
	/A5	Configuration of probe 5 (S5, DI3) As for /A2	MSYF	-	C	0	3	0
	/c1	Calibration of probe 1	MSYF	°C/°F	C	-20	20	0.0
	/c2	Calibration of probe 2	MSYF	°C/°F	C	-20	20	0.0
	/c3	Calibration of probe 3	MSYF	°C/°F	C	-20	20	0.0
	/c4	Calibration of probe 4	MSYF	°C/°F	C	-20	20	0.0
	St	Temperature set point	MSYF	°C/°F	F	r1	r2	0.0
	rd	Control delta	SYF	°C/°F	F	0.1	20	2.0
	rn	Dead band	SYF	°C/°F	C	0.0	60	4.0
	rr	Reverse differential for control with dead band	SYF	°C/°F	C	0.1	20	2.0
	r1	Minimum set point allowed	MSYF	°C/°F	C	-50	r2	-50
	r2	Maximum set point allowed	MSYF	°C/°F	C	r1	200	60
	r3	Operating mode 0: Direct (cooling) with defrost control 1: Direct (cooling) 2: Reverse-cycle (heating)	SYF	flag	C	0	2	0
	r4	Automatic night-time set point variation	MSYF	°C/°F	C	-20	20	3.0
	r5	Enable temperature monitoring 0: Disabled | 1: Enabled	MSYF	flag	C	0	1	0
	rt	Temperature monitoring interval	MSYF	ore	F	0	999	-
	rH	Maximum temperature read	MSYF	°C/°F	F	-	-	-
	rL	Minimum temperature read	MSYF	°C/°F	F	-	-	-
	c0	Comp., fan and AUX delay on start-up in	SYF	min	C	0	15	0
	c1	Minimum time between successive starts	SYF	min	C	0	15	0
	c2	Minimum compressor OFF time	SYF	min	C	0	15	0
	c3	Minimum compressor ON time	SYF	min	C	0	15	0
	c4	Duty setting	SYF	min	C	0	100	0
	cc	Continuous cycle duration	SYF	ore	C	0	15	0
	c6	Alarm bypass after continuous cycle	SYF	ore	C	0	250	2
	c7	Maximum pump down time	SYF	s	C	0	900	0
	c8	Comp. start delay after open PD valve (factory default= 0, not visible from display)	SYF	s	C	0	60	5
	c9	Enable autostart function in PD	SYF	flag	C	0	1	0
	c10	Select Pump down by time or pressure 0: Pump down by pressure 1: Pump down by time	SYF	flag	C	0	1	0
	c11	Second compressor delay	SYF	s	C	0	250	4
	d0	Type of defrost SYF 0: Electric heater defrost by temperature 1: Hot gas defrost by temperature 2: Electric heater defrost by time 3: Hot gas defrost by time 4: Electric heater defrost thermostat by time	SYF	flag	C	0	4	0
	dI	Interval between defrosts	SYF	ore	F	0	250	8
	dt1	End defrost temperature, evaporator	SYF	°C/°F	F	-50	200	4.0
	dt2	End defrost temperature, aux evap.	SYF	°C/°F	F	-50	200	4.0
	dP1	Maximum defrost duration, evaporator	SYF	min	F	1	250	30
	dP2	Maximum defrost duration, aux evap	SYF	min	F	1	250	30
	d3	Defrost start delay	SYF	min	C	0	250	0
	d4	Enable defrost on start-up 0: No defrost is performed when the instrument is switched on 1: A defrost is performed when the instrument is switched on	SYF	flag	C	0	1	0
	d5	Defrost delay on start-up	SYF	min	C	0	250	0
	d6	Display on hold during defrost 0: Alternating display of dEF and probe value 1: Display of the last temp. shown 2: Display of dEF steady	SYF	-	C	0	2	1
	dd	Dripping time after defrost	SYF	min	F	0	15	2
	d8	Alarm bypass after defrost	SYF	ore	F	0	250	1
	d8d	Alarm bypass after door open	SYF	min	C	0	250	0
	d9	Defrost priority over compressor protectors 0: The protection times c1, c2 and c3 are observed 1: The protection times c1, c2 and c3 are not observed	SYF	flag	C	0	1	0
	d/1	Display of defrost probe 1	MSYF	°C/°F	F	-	-	-
	d/2	Display of defrost probe 2	MSYF	°C/°F	F	-	-	-
	dC	Time base for defrost 0: dI in hours, dP1 and dP2 in minutes 1: dI in minutes, dP1 and dP2 in seconds	SYF	flag	C	0	1	0
	d10	Compressor running time	SYF	ore	C	0	250	0
	d11	Running time temperature threshold	SYF	°C/°F	C	-20	20	1.0
	d12	Advanced defrost	SYF	-	C	0	3	0
	dn	Nominal defrost duration	SYF	-	C	1	100	65
	dH	Proportional factor, variation in dI	SYF	-	C	0	100	50
	A0	Alarm and fan differential	MSYF	°C/°F	C	0.1	20	2.0
	A1	Type of threshold 'AL' and 'AH 0: AL and AH are relative thresholds to the set point 1: AL and AH are absolute thresholds	MSYF	flag	C	0	1	0
	AL	Low temperature alarm threshold	MSYF	°C/°F	F	-50	200	0.0
	AH	High temperature alarm threshold	MSYF	°C/°F	F	-50	200	0.0
	Ad	Low and high temperature signal delay	MSYF	min	F	0	250	120
	A4	Digital input 1 configuration 0: Input not active | 1: Immediate external alarm 2: Delayed external alarm | 3: Enable defrost (model M probe selection) 4: Start defrost | 5: Door switch with compressor and fan stop 6: Remote on/off | 7: Curtain switch 8: Low pressure switch | 9: Door switch with fan stop only 10: Direct/reverse | 11: Light sensor 12: Activation of the AUX output | 13: Door switch with compressor and fans off and light not managed 14: Door switch with fans only off and light not managed	SYF M	- -	C C	0 0	14 14	0 3
	A5	Digital input 2 configuration (DI2) - As for A4	MSYF	-	C	0	14	0
	A6	Stop compressor from external alarm	SYF	min	C	0	100	0
	A7	External alarm detection delay	SYF	min	C	0	250	0
	A8	Enable alarms 'Ed1' and 'Ed2' 0: Alarm signals Ed1 and Ed2 enabled 1: Alarm signals Ed1 and Ed2 disabled	SYF	flag	C	0	1	0 0 1
	Ado	Light management mode with door switch	MSYF	flag	C	0	1	0
	Ac	High condenser temperature alarm	SYF	°C/°F	C	0.0	200	70.0
	AE	High condenser temperature alarm differential	SYF	°C/°F	C	0.1	20	10
	Acd	High condenser temperature alarm delay	SYF	min	C	0	250	0
	AF	Light sensor OFF time	SYF	s	C	0	250	0
	ALF	Antifreeze alarm threshold	MSYF	°C/°F	C	-50	200	-5.0
	AdF	Antifreeze alarm delay	MSYF	min	C	0	15	1
	F0	Fan management 0: Fans always on 1: Fans controlled according to the temperature difference between the virtual control probe and the evaporator temperature 2: Fans controlled according to the evaporator temperature	F	flag	C	0	2	0
	F1	Fan start temperature	F	°C/°F	F	-50	200	5.0
	F2	Fan OFF with compressor OFF 0: Fans always on 1: Fans off with compressor off	F	flag	C	0	1	1
	F3	Fans in defrost 0: Fans operate during defrosts 1: Fans do not operate during defrosts	F	flag	C	0	1	1
	Fd	Fan OFF after dripping	F	min	F	0	15	1
	F4	Condenser fan stop temperature	MSYF	°C/°F	C	-50	200	40
	F5	Condenser fan start differential	MSYF	°C/°F	C	0.1	20	5.0
AUX	H0	Serial address	MSYF	-	C	0	207	1
	H1	Function of AUX1 0: Alarm output usually energised 1: Alarm output usually de-energised 2: Auxiliary output 3: Light output 4: Auxiliary evaporator defrost output 5: Pump down valve output 6: Condenser fan output 7: Delayed compressor output 8: Auxiliary output with deactivation when OFF 9: Light output with deactivation when OFF 10: No function associated with the output 11: Reverse output in control with dead band 12. Second compressor step output 13: Second compressor step output with rotation	MSYF	flag	C	0	13	1 3
	H2	Disable keypad/IR Parameter "H2" | LIGHT | ON/OFF | AUX | HACCP | PRG/MUTE (mute) | UP/CC | DOWN/DEF | SET | Parameter F modification | Set point modification | Remote control modif. 0 | | | | | | | | | • | • | 1 | | | | | | | | | | | • 2 | | | | | | | | | • | • | • 3 | | | | | | | | | | | • 4 | • | | | | • | • | • | | | 5 | • | | | | • | • | • | • | | 6 | | | | | • | • | • | • | | Keypad function "•" = Disabled	MSYF	flag	C	0	6	1
	H3	Remote control enabling code	MSYF	-	C	0	255	0
	H4	Disable buzzer 0: Buzzer enabled | 1: Buzzer disabled	MSYF	flag	C	0	1	0
	H6	Lock keypad	MSYF	-	C	0	255	0
	H8	Select activation of output with time band 0: Time band linked to output config. for light 1: Time band linked to output con for aux	MSYF	flag	C	0	1	0
	H9	Enable set point variation with time band 0: Set point variation with time band disabled 1: Set point variation with time band enabled	MSYF	flag	C	0	1	0
	Hdh	Anti-sweat heater offset	MSYF	°C/°F	C	-50	200	0.0
HACCP	HAn	Number of HA events recorded	MSYF	-	C	0	15	0
	HA	Date/time of last HA event	MSYF	-	C	-	-	0
	y__	Year		years		0	99	0
	M__	Month		months		1	12	0
	d__	Day		days		1	7	0
	h__	Hour		hours		0	23	0
	n__	Minute		min.		0	59	0
	t__	Duration		ore		0	99	
	HA1	Date/time of penultimate HA event	MSYF	-	C	-	-	-
	HA2	Date/time of third-to-last HA event	MSYF	-	C	-	-	-
	HFn	Number of HF events recorded	MSYF	-	C	0	15	0
	HF	Date/time of last HF event	MSYF	-	C	-	-	-
	y__	Year		years		0	99	0
	M__	Month		months		1	12	0
	d__	Day		days		1	7	0
	h__	Hour		hours		0	23	0
	n__	Minute		min.		0	59	0
	t__	Duration		ore		0	99	0
	HF1	Date/time of penultimate HF event	MSYF	-	C	-	-	-
	HF2	Date/time of third-to-last HF event	MSYF	-	C	0	-	-
	Htd	HACCP alarm delay	MSYF	min	C	0	250	0
	td1	Defrost time band 1	SYF	-	C	-	-	-
	d__	Day		days		0	11	0
	h__	Hour		hours		0	23	0
	n__	Minute		min.		0	59	0
	td2 .. td8	Defrost time band 2...8	SYF	-	C	-	-	-
	ton	Light/aux on time band / set point varance	SYF	-	C	-	-	-
	d__	Day		days		0	11	0
	h__	Hour		hours		0	23	0
	n__	Minute		min.		0	59	0
	toF	Light/aux off time band / set point varance	SYF	-	C	-	-	-
	d__	Day		days		0	11	0
	h__	Hour		hours		0	23	0
	n__	Minute		min.		0	59	0
	tc	RTC date/time setting	MSYF	-	C	-	-	-
	y__	Year		years		0	99	0
	M__	Mese		months		1	12	1
	d__	Day of the month		days		1	31	1
	u__	Day of the week		days		1	7	6
	h__	Hour		hours		0	23	0
	n__	Minute		min.		0	59	0

Tab. 5

Important: for the set times to become immediately operational, the instrument must be turned off and on again, otherwise the timers will become operational when the instrument is next started, during the setting of the internal timers.

Table of alarms and signals: display, buzzer and relay

The following table describes the alarms and the signals on the controller, with the corresponding description, status of the buzzer, the alarm relay and the reset mode.

Code	Icon on the display	Alarm relay	Buzzer	Reset	Description
'rE'		flashing	active	automatic	virtual control probe fault
'E0'		flashing	OFF	OFF	automatic	room probe S1 fault
'E1'		flashing	OFF	OFF	automatic	defrost probe S2 fault
'E2'-3-4		flashing	OFF	OFF	automatic	probes S3-4-5 fault
' '		no	OFF	OFF	automatic	probe not enabled
'LO'	▲	flashing	active	active	automatic	low temperature alarm
'HI'	▲	flashing	active	active	automatic	high temperature alarm
'AFr'	▲	flashing	active	active	manual	antifreeze alarm
'IA'	▲	flashing	active	active	automatic	immediate alarm from external contact
'dA'	▲	flashing	active	active	automatic	delayed alarm from external contact
'dEF'	❄	acceso	OFF	OFF	automatic	defrost running
'Ed1'-2		no	OFF	OFF	autom./man.	defrost on evaporator 1 and 2 ended by timeout
'Pd'		flashing	active	active	autom./man.	maximum time pump-down alarm
'LP'		flashing	active	active	autom./man.	low pressure alarm
'AtS'		flashing	active	active	autom./man.	autostart in pump-down
'cht'		nessuna	OFF	OFF	autom./man.	high condenser temperature pre-alarm
'CHT'		flashing	active	active	manual	high condenser temperature alarm
'dor'	▲	flashing	active	active	automatic	door open for too long alarm
'Etc'	🕒	flashing	OFF	OFF	autom./man.	real time clock fault
'EE'		flashing	OFF	OFF	automatic	EEPROM error, unit parameters
'EF'		flashing	OFF	OFF	automatic	EEPROM error, operating parameters
'HA'	HACCP	flashing	OFF	OFF	manual	HACCP alarm, type 'HA'
'HF'	HACCP	flashing	OFF	OFF	manual	HACCP alarm, type 'HF'
'rCt'		Signal				Instrument enabled for programming from the remote control
'Add'		Signal				Automatic address assignment procedure in progress
'Prt'		Signal				Printing report
'LrH'		Signal				Activation of the of low relative humidity procedure
'HrH'		Signal				Activation of the of high relative humidity procedure
'ccb'		Signal				Request to start continuous cycle
'ccE'		Signal				Request to end continuous cycle
'dFb'		Signal				Request to start defrost
'dFE'		Signal				Request to end defrost
'On'		Signal				Switch ON
'OFF'		Signal				Switch OFF
'rES'		Signal				Reset alarms with manual reset Reset HACCP alarms Reset temperature monitoring
'n1'..'n6'	▲	flashing	active	active	automatic	Indicates an alarm on unit 1 to 6 present in the network
'dnL'		Signal				signals download in progress
'd1'..'d6'	▲	flashing	OFF	OFF		Signals download with errors on unit 1 to 6

Tab. 6

The buzzer is enabled if enabled by the parameter 'H4'. The alarm relay is enabled if one of the auxiliary outputs, AUX1 (H1) or AUX2 (H5) has been assigned the alarm relay function (normally energised or normally di-energised). Note: the buzzer can be disabled by the CAREL Supervision System.

Disposal of the product

The appliance (or the product) must be disposed of separately in compliance with the local standards in force on waste disposal.

IMPORTANT WARNINGS: The CAREL product is a state-of-the-art device, whose operation is specified in the technical documentation supplied with the product or can be downloaded, even prior to purchase, from the website www.carel.com.
he customer (manufacturer, developer or installer of the final equipment) accepts all liability and risk relating to the configuration of the product in order to reach the expected results in relation to the specific installation and/or equipment. The failure to complete such phase, which is required/indicated in the user manual, may cause the final product to malfunction; CAREL accepts no liability in such cases. The customer must use the product only in the manner described in the documentation relating to the product. The liability of CAREL in relation to its products is specified in the CAREL general contract conditions, available on the website www.carel.com and/or by specific agreements with customers.

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