ir33 smart - IR33S7HR0E Electronic controller for normal and high temperature static refrigeration units

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READ AND SAVE THESE INSTRUCTIONS

CAREL



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

- Electronic controller for normal and high temperature static refrigeration units
- 115/230 Vac switching power supply
- 16 A compressor relay
- Management of NTC (-50 to +90°C) and PTC (-50 to +150°C) sensors
- Simple and intuitive installation and configuration
- 4 pre-loaded configurations for the most common refrigeration applications

READ ME NOW!!!

With reference to the label on the rear of the instrument and the required application

1. Check that power supply, probes and loads (compressor, heaters, etc.) are suitable for the instrument.
2. Fasten the instrument to the panel as shown in the following figure.
3. Make all the required electrical connections.
4. Power up the unit.
5. After around 2 seconds, if the instrument displays the temperature read by the probes connected to the device, go directly to point 7. If nothing is displayed or an alarm is signalled (alarm codes on the display), power down, check the connections and the power supply and go to point 6.
6. Power the unit up again. If the instrument now correctly displays the temperature, go to point 7. If, on the other hand, the problem described in point 5 is repeated, see the table "Alarms and signals: display, buzzer and relay" to identify the cause of the problem.
7. ir33 smart is now ready to be configured. For correct configuration based on the required application, see the section "How to select and load a configuration".

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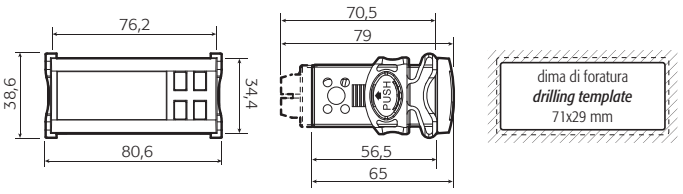
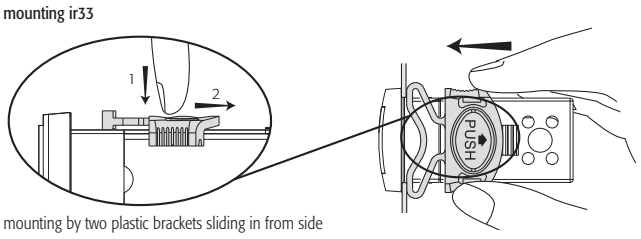
IMPORTANT: separate the probe and digital input cables from the cables to inductive loads and power cables to avoid electromagnetic disturbance. Never run power cables (including electrical panel cables) and signal cables in the same conduits.

Dimensions (mm)

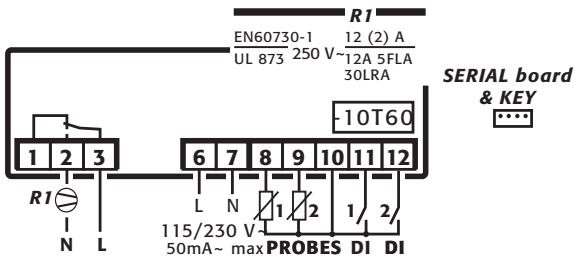


Wall mounting ir33

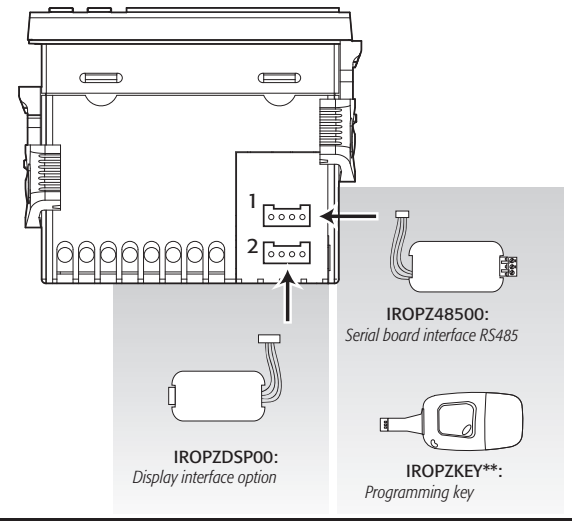


Wall mounting by two plastic brackets sliding in from side

Wiring diagram IR33S7HR0E



Optional connections



How to select and load a user configuration

Step	Action	Effect	Meaning
1	Switch the instrument on while holding Prg/mute	After 2 seconds the display shows the message **'bn0'**	**'bn0'** is the current configuration. (Standard Carel when first switched on or other user configuration, if loaded)
2	Press ▲ aux or def ▼	The display shows the messages **'bn1'**, **'bn2'**, **'bn3'**, **'bn4'**	Select the required configuration (refer to the previous table)
3	Press **Set**	The display shows **"Std"** for 1 sec	The user configuration selected in point 2 will be loaded

This procedure can only be performed once: the most suitable configuration for the application, once loaded, will remain active the next time the instrument is started.
When switching on the first time, bn0 corresponds to the Carel standard (default configuration). The procedure for loading one of the user configurations involves copying one of the sets of parameters (bn1,...,bn4) to bn0. bn0 therefore always corresponds to the last configuration loaded.

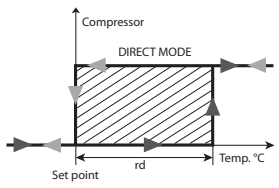
Configurations

ir33 SMART is loaded with 4 default configurations (sets of parameters). Each configuration identifies a specific refrigeration application, and can be identified simply by the index (bn*) when switching the instrument on.

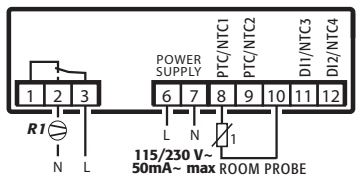
Ind.	Application	Op. temp. range	Inputs	Relay output
bn1	Normal temperature static refrigeration units (no defrost)	**2T10°C**	NTC room	Compressor
bn2	Normal temperature static refrigeration units with defrost (timed) by stopping the compressor	**2T10°C**	NTC room	Compressor
bn3	High temperature thermostat	**20T150°C**	PTC room	Heater / Alarm
bn4	Standard CAREL (default configuration)	**-50T90°C**	Configurable	Configurable

bn1: normal temperature (2T10 °C) static refrigeration units (no defrost)

Temperature range: 2T10 °C
Temperature control



Connection diagram

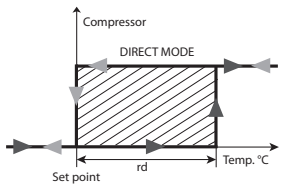


Inputs	Room probe		NTC 1	
Outputs	Compressor		R1: 16 A relay	
Main parameters (type F)	Name	Type	Description	Default value
	St	CtL ❄	Set point	4 °C
	rd		Control differential (hysteresis)	2 °C
	AL (*)	ALM ⚠	Minimum temperature alarm	-30 °C
	AH (*)		Maximum temperature alarm	30 °C
	Ad		Temperature alarm delay	30 min

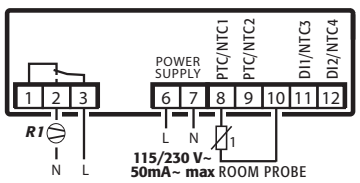
(*) absolute alarm thresholds

bn2: normal temperature (2T10 °C) static refrigeration units with defrost (timed) by stopping the compressor

Temperature range: 2T10 °C
Temperature control



Connection diagram

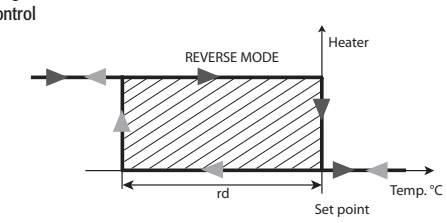


Inputs	Room probe		NTC 1	
Outputs	Compressor		R1: 16 A relay	
Main parameters (type F)	Name	Type	Description	Default value
	St	CtL ❄	Set point	2 °C
	rd		Control differential (hysteresis)	2 °C
	dI	dEF ❄	Interval between defrosts	8 hours
	dP1		Max evaporator defrost duration	30 min
	AL (*)	ALM ⚠	Minimum temperature alarm	-30 °C
	AH (*)		Maximum temperature alarm	30 °C
	Ad		Temperature alarm delay	30 min

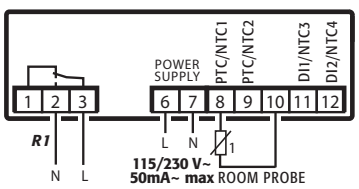
(*) absolute alarm thresholds

bn3: high temperature (20T150 °C) thermostat (reverse mode)

Temperature range: 20T150 °C
Temperature control



Connection diagram

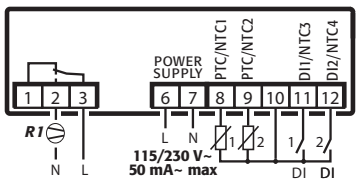


Inputs	Room probe		PTC 1	
Outputs	Heater/Alarm		R1: 16 A relay	
Main parameters (type F)	Name	Type	Description	Default value
	St	CtL ❄	Set point	40 °C
	rd		Control differential (hysteresis)	2 °C
	AL (*)	ALM ⚠	Minimum temperature alarm	0 °C
	AH (*)		Maximum temperature alarm	150 °C
	Ad		Temperature alarm delay	30 min

(*) absolute alarm thresholds

bn4: standard CAREL (default configuration)

Connection diagram



	Name	Type	Description	Default value
Main parameters (type F)	**St**	CtL ❄	Set point	0 °C
	rd		Control differential (hysteresis)	2 °C
	rt		Temperature monitoring interval	-
	rH		Maximum temperature read	-
	rL		Minimum temperature read	-
	dI	dEF ❄	Interval between defrosts	8 hours
	dt1		Evaporator end defrost temperature	4 °C
	dt2		AUX evaporator end defrost temp.	4 °C
	dP1		Maximum evaporator defrost duration	30 min
	dP2		Maximum AUX evaporator defrost duration	30 min
	dd		Dripping time	2 min
	d8		Alarm bypass time after defrost and/or door open	1 hour
	d/1		Defrost probe 1 reading	-
	d/2		Defrost probe 2 reading	-
	AL	ALM ⚠	Minimum temperature alarm	0 °C
	AH		Maximum temperature alarm	0 °C
	Ad		Temperature alarm delay	120 min

Indications on the display

When flashing, the signals on the display indicate a request that cannot be implemented until the delay timers have expired.

Icon	Function	Normal operation		
		ON	OFF	Flashing
	COMPRESS.	compressor on	compress. off	compress. call
	DEFROST	defrost in progress	no defrost call	defrost call
	ALARM	delayed external alarm (before the time "A7"has elapsed)	no alarm present	alarms in norm. operation (e.g. high/low temp.) or immediate or delayed external alarm from digital input
	SERVICE		no malfunction	malfunction(e.g. EEPROM error or faulty probes)
	CONT. CYCLE	function activated	function not activated	function called

Buttons on the keypad

Button	Pressing the button alone	Pressing together with other buttons		
Prg/mute	• if pressed for more than 5 s, accesses the menu for setting the type F parameters (frequent) • in the event of alarms: mutes the audible alarm (buzzer) and deactivates the alarm relay	• if pressed with SET for more than 5 s, accesses the menu for setting type C parameters (configuration) or downloading parameters • if pressed for more than 5 s with UP/AUX resets any alarms with manual reset	Start-up: if pressed for more than 5 s at start-up activates the procedure for setting the default parameters	Automatic address assignment: if pressed for more than 1 s enters the automatic serial address assignment procedure
▲ aux		• if pressed for more than 5 s together with DOWN/DEF, activates/deactivates the continuous cycle • if pressed for more than 5 s together with SET starts the report printing procedure (function available but to be implemented) • if pressed for more than 5 s together with PRG/MUTE, resets any alarms with manual reset		
def ▼	if pressed for more than 5 s, activates /deactivates a manual defrost	if pressed for more than 5 s together with UP/AUX activates/deactivates the continuous cycle		
Set	if pressed for more than 1 s, displays and/or sets the set point	• if pressed for more than 5 s together with PRG/MUTE, accesses the menu for setting the type C parameters (configuration) or downloading the parameters • if pressed for more than 5 s with UP/AUX starts the report printing procedure (function available but to be implemented)		

How to set the set point

Step	Action	Effect	Meaning
1	Press **Set** for 2 seconds	After 2 seconds the display shows the current set point	This the currently active control set point
2	Press ▲ aux or def ▼	The value on the display will increase or decrease	Set the desired value
3	Press **Set**	The controller will display the temperature read by the probes again	The set point is modified and saved

Another way of changing the set point is to set parameter "St" (see the tables below)

How to access and set type "F" parameters (FREQUENT, not protected by password)

Step	Action	Effect	Meaning
1	Press Prg/mute for 5 seconds	After 5 seconds the display will show the first parameter, "St" (set point)	Access to type "F" parameters is direct
2	Press ▲ aux or def ▼	The display will scroll the list of type "F" parameters (FREQUENT) (depends on the configuration loaded)	Select the desired parameter
3	Press **Set**	The display will show the value of the selected parameter	This is the current value of the parameter
4	Press ▲ aux or def ▼	The value on the display will increase or decrease	Set the desired value
5	Press **Set**	The display will show the parameter name again	IMPORTANT: parameters not yet saved
6	Repeat steps 2, 3, 4 & 5 for all parameters required		
7	Press Prg/mute for 5 seconds	The controller will display the temperature read by the probes again	IMPORTANT: only now have all the parameters been updated

How to access and set type "C" parameters (CONFIGURATION, password protected)

Step	Action	Effect	Meaning
1	Press Prg/mute & **Set** for 5 seconds	After 5 seconds the display will show "0"	Access to type "C" parameters requires the password
2	Press ▲ aux or def ▼	The value on the display will increase or decrease	Enter the password "22"
3	Press **Set**	The display will show the first parameter in the list (depends on the configuration loaded)	The type "C" parameters also include type "F"
4	Press ▲ aux or def ▼	The display will scroll the list of type "C" parameters (CONFIGURATION)	Select the desired parameter
5	Press **Set**	The display will show the value of the selected parameter	This is the current value of the parameter
6	Press ▲ aux or def ▼	The value on the display will increase or decrease	Set the desired value
7	Press **Set**	The display will show the parameter name again	IMPORTANT: parameters not yet saved
8	Repeat steps 4, 5, 6 & 7 for all parameters required		
9	Press Prg/mute for 5 seconds	The controller will display the temperature read by the probes again	IMPORTANT: only now have all the parameters been updated

For both types of access (type "F" and type "C") there is a timeout (no button on the keypad pressed for 1 min), the procedure is ended without saving the parameters.

Accessing the parameters divided by functional blocks (allows the user to scroll the list of parameters in blocks)

Once having accessed the type "F" or "C" parameters (see tables above)

Step	Action	Effect	Meaning
1	Press Prg/mute	The display will show the name of the functional block that the parameter belongs to	Example "CMP" for the compressor parameters, "dEF" for the defrost parameters
2	Press ▲ aux or def ▼	The display will show the name of the other functional blocks	Example "dEF" for the defrost parameters
3	Press Prg/mute	The display will show the name of the first parameter in the functional block selected	Example "dI" for "dEF"

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Technical specifications

	Voltage	Power			
Power supply	115-230 V~, 50/60 Hz	6 VA, 50 mA ~ max.			
Insulation guaranteed by the power supply	insulation from very low voltage parts	reinforced 6 mm in air, 8 mm on surface, 3750 V insulation			
	insulation from relay outputs	basic 3 mm in air, 4 mm on surface, 1250 V insulation			
Inputs	S1 (probe 1)	NTC & PTC			
	S2 (probe 2)	NTC & PTC			
	DI1	voltage-free contact, contact resistance <10 Ohm, closing current 6 mA			
	S3	NTC or NTC & PTC			
	Maximum distance of probes and digital inputs less than 10 m Note: in the installation keep power supply and load connections separate from probe, digital input, repeater display and supervisor cables.				
Type of probe	Std. CAREL NTC	10 kOhm at 25 °C, range -50T90 °C			
		meas. error	1 °C in range -50T50 °C		
			3 °C in range 50T90 °C		
	High temperature NTC	50 kOhm at 25 °C, range -40T150 °C			
		meas. error	1.5 °C in range -20T115 °C		
			4 °C in range outside of -20T115 °C		
	Std. CAREL PTC	985 Ohm at 25 °C, range -50T150 °C			
		meas. error	2 °C in range -50T50 °C		
			4 °C in range 50T150 °C		
Relay outputs	EN60730-1			UL873	
	relay	250 V~	operating cycles	250 V~	operating cycles
	R1 (*)	12 (2) A N.O./N.C.	100,000	12 A resistive 5 FLA 30 LRA C300	30,000
	insulation from very low voltage parts			reinforced: 6 mm in air, 8 mm on surface, 3750 V insulation	
	insulation between independent relay outputs			basic: 3 mm in air, 4 mm on surface, 1250 V insulation	

(*) Relays not suitable for fluorescent loads (neon lights, etc.) that use starters (ballasts) with phase shifting capacitors. Fluorescent lamps with electronic controllers or without phase shifting capacitors can be used, depending on the operating limits specified for each type of relay.

Connections	screw terminals for cables from 0.5 to 2.5 mm² max current 12 A

The correct sizing of the power and connection cables between the instrument and the loads is the installer's responsibility. In max. load and max. operating temp. conditions, the cables used must be suitable for operation at least up to 105 °C.

Case	plastic 34.4 x 76.2 x 79 mm (mounting depth 70,5 mm)
Assembly	smooth, hard and indeformable panel using side fastening brackets to press in fully drilling template 28.8±0.2 x 76.2±0.2 mm
Display	digits 3 digit LED
	display from -99 to 999
	operating status indicated by graphic icons on the display
Keypad	4 silicone rubber buttons
Infrared receiver	available
Buzzer	available
Operating temperature	-10T60 °C
Operating humidity	<90% rH non-condensing
Storage temperature	-20T70 °C
Storage humidity	<90% rH non-condensing
Front panel index of protection	assembly on smooth and indeformable panel with IP65 gasket
Environmental pollution	2 (normal situation)
PTI of insulating materials	printed circuits 250, plastic and insulating materials 175
Period of electrical stress across the insulating parts	long
Category of resistance to heat and fire	category D and category B (UL 94-V0)
Class of protection against voltage surges	category 1I
Type of action/disconnection	1B relay contacts (microswitching)
Construction of the control device	built-in, electronic
Classification according to protection against electric shock	Class 2 when appropriately integrated
Device designed to he hand-held or integrated into equipment designed to be hand-held	no
Software class and structure	class A
Cleaning the front panel of the instrument	only use neutral detergents and water
Serial interface for CAREL network	external
Maximum distance between interface and display	10 m
Programming key	available

The IR33 range fitted with the standard CAREL NTC sensor is compliant with standard EN 13485 on thermometers for measuring the air and product temperature for the transport, storage and distribution of chilled, frozen, deep-frozen/quick-frozen food and ice cream. Designation of the instrument: EN13485, air, S, A, 1, -50T90°C. The standard CAREL NTC sensor 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 relevant European standards.

Installation warnings:

- the connection cables must guarantee insulation up to 90 °C; and, if necessary, up to 105 °C
- adequately secure the connection cables to the outputs so as to avoid contact with very low voltage components.

Option codes

IRTRRES000 small infrared remote control
IROPZKEY00 parameter programming key, extended memory with 12 V batteries
IROPZ485S0 RS485 serial card with automatic polarity recognition (+/-)
PSOPZPRG00 programming key kit
PSOPZKEY00 parameter programming key with 12 V batteries
PSOPZKEYA0 parameter programming key, extended memory, with external 230 Vac power supply

Display

ir33 smart comes with a three digit LED display for the temperature and icons to indicate operating status. It can also be connected, via a special interface, to a further display, used for example to read the third probe.

Reset alarms with manual reset

The alarms with manual reset can be reset by pressing " Prg/mute " & " ▲/aux " for more than 5 s.

Manual defrost

As well as automatic defrost, a manual defrost can be activated, if the temperature conditions are right, by pressing " def/▼ " for 5 s.

Continuous cycle

To activate the continuous cycle function press" ▲/aux " & " def/▼ " for more than 5 s. During operation in continuous cycle, the compressor will continue running and will stop at the timeout of the cycle or when reaching the minimum temperature (AL = minimum temperature alarm threshold).
Continuous cycle setting: parameter '**cc**' (continuous cycle duration**): 'cc'**= 0 never active; parameter 'c6' (alarm bypass after continuous cycle): excludes or delays the low temperature alarm at the end of the continuous cycle.

Automatic serial address assignment

This is a special procedure that, by using an application installed on a PC, sets and manages the addresses of all the instruments (that include this feature) connected to the CAREL network in a simple way.
The procedure is very simple:
1: Using the remote application, start the "Network definition" procedure; the application begins to send a special message ('<!ADR>') across the CAREL network, containing the network address;
2: Press the button Prg/mute on the instrument connected to the network, the instrument recognises the message sent by the remote application, automatically setting the address to the required value and sending 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 displays the message 'Add' for 1 second, 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 resumes sending the message '<!ADR>'.
4: The procedure can be repeated starting from point 2 on another unit connected to the network, until all network addresses are defined.

Note: when the operation for assigning an address to an instrument has finished, for reasons of safety, the operation is inhibited for 1 minute on that instrument. Consequently, a different address cannot be re-assigned to the instrument during that time.

Operating parameters

Complete list of parameters for each configuration

☐ frequent parameters 'F' ▒ psw protected parameters 'P' ■ masked parameters (hidden)

	Cd.	Parameter	Description	Configuration bn1	bn2	bn3	bn4
Pro	/2	Measurement stability	1 to 15	4	4	4	4
	/3	Probe display response	Temperature display refresh speed (0 to 15)	0	0	0	0
	/4	Virtual probe	Weight % of temp. control probe 2 (0 to 100%)	0	0	0	0
	/5	Select °C or °F	0: °C, 1: °F	0	0	0	0
	/6	Decimal point	0: enabled, 1: disabled	0	0	0	0
	/tl	Reading on remote display	Probe reading displayed 1: virtual probe 2: probe 1 3: probe 2 4: probe 3 5: probe 4 6: probe 5 7: set point	2	2	2	1
	/P	Select type of probe	0: NTC –50T90 °C 1: NTC –40T150 °C 2: PTC –50T150 °C	0	0	2	0
	/A2	Probe 2 configuration	0: no probe 1: product probe 2: defrost probe 3: condenser probe 4: antifreeze probe	0	0	0	0
	/A3	Probe 3 configuration	As for probe 2	0	0	0	0
	/c1	Probe 1 calibration or offset	Correction to reading of probe 1 (-20T20 °C)	0	0	0	0
	/c2	Probe 2 calibration or offset	Correction to reading of probe 2 (-20T20 °C)	0	0	0	0
	/c3	Probe 3 calibration or offset	Correction to reading of probe 3 (-20T20 °C)	0	0	0	0
ctl	St	Set point	**r1Tr2** °C	4	2	40	0
	rd	Control delta	Value of the temperature control differential or hysteresis (0.1T20 °C)	2	2	2	2
	r1	Minimum set point	Minimum value settable for the set point (-50Tr2 °C)	-30	-30	0	-50
	r2	Maximum set point	Maximum value settable for the set point (r1T200 °C)	30	30	150	60
	r3	Operating mode	0: direct thermostat with defrost control (cool) 1: direct thermostat (cool) 2: reverse thermostat (heat)	1	0	2	0
	r4	Automatic night-time set point variation	Value added to the set point in night-time operation (see 'A4') (-20T20 °C)	3.0	3.0	3.0	3.0
	r5	Temperature monitoring probe	0: monitoring disabled 1: monitoring enabled	0	0	0	0
	rt	Temperature monitoring interval	temperature recording hours (0 to 999)	-	-	-	-
	rH	Maximum temperature acquired in the session		-	-	-	-
	rL	Minimum temperature acquired in the session		-	-	-	-
cmp	c0	Fan start delay (if relay fitted) on power-up	0 to 15 min	0	0	0	0
	c1	Minimum time between consecutive starts of the compressor	0 to 15 min	0	0	0	0
	c2	Minimum compressor off time	0 to 15 min	0	0	0	0
	c3	Minimum compressor on time	0 to 15 min	0	0	0	0
	c4	Duty setting or safety relay	Compressor operating time in the event of control probe fault (fixed off time 15 min) (0 to 100 min)	15	15	0	0
	cc	Running time in continuous cycle	Compressor operating time even when the temperature is below the set point (0 to 15 hours)	0	0	0	0
	c6	Low temp. alarm bypass time after continuous cycle	0 to 250 hours	2	2	2	2
dEF	d0	Type of defrost	0: heater by temperature; 1: hot gas by temperature; 2: heater by time; 3: hot gas by time; 4: heater by time with temperature control	0	2	0	0
	dI	Maximum interval between consecutive defrosts	0 to 250 hours	8	8	8	8
	dt1	Evaporator end defrost temperature	-50T200 °C	4	4	4	4
	dt2	AUX evaporator end defrost temperature	-50T200 °C	4	4	4	4
	dP1	Maximum evaporator defrost duration	1 to 250 min	30	30	30	30
	dP2	Maximum AUX evaporator defrost duration	1 to 250 min	30	30	30	30
	d3	Defrost activation delay	interval between defrost call and effective activation of the relay	0	0	0	0
	d4	Defrost on start-up	0: disabled; 1: enabled	0	0	0	0
	d5	Defrost delay on start-up or multifunction input	0 to 250 min	0	0	0	0
	d6	Display during defrost	0: temperature alternating with 'dEF' 1: display frozen on last temperature before defrost 2: 'dEF'	1	1	1	1
	dd	Dripping time after defrosting	Waiting time before reactivating compressor and fans at the end of a defrost (0 to 15 min)	2	0	2	2
	d8	Alarm bypass time after defrost and/or door open	See 'A4' (0 to 250 hours)	1	1	1	1
	d8d	Door open alarm delay	See 'A4' (0 to 250 hours)	0	0	0	0
	d9	Defrost priority over compressor protection times	0: protection times respected; 1: protection times not respected; the defrost has higher priority.	0	0	0	0
	d/1	Display defrost probe 1		-	-	-	-
	d/2	Display defrost probe 2		-	-	-	-
	dC	Time base for defrost	0: 'dI' in hours, 'dP1' and 'dP2' in minutes 1: 'dI' in minutes ,'dP1'and 'dP2' in seconds	0	0	0	0
	d10	Defrost time in "Running time" mode	Compressor operating time with evaporator temperature less than 'd11', after which a defrost is called (0 to 250 hours)	0	0	0	0
	d11	Defrost temperature threshold in "Running time" mode	Evaporation temperature below which the compressor must continue operating for the time 'd10' to generate a defrost call (-20T20 °C)	1	1	1	1
	d12	Advanced defrosts	0: skip defrost and automatic variation in dI disabled 1: skip defrost disabled and automatic variation in dI enabled 2: skip defrost enabled and automatic variation in dI disabled 3: skip defrost and automatic variation in dI enabled	0	0	0	0
	dn	Nominal defrost duration	1 to 100%	65	65	65	65
	dH	Proportional factor for variation in 'dI'	0 to 100%	50	50	50	50
ALM ⚠	A0	Alarm and fan differential	0.1T20 °C	2.0	2.0	2.0	2.0
	A1	Alarm thresholds (AL, AH) relative to the set point (St) or absolute	0: relative; 1: absolute	1	1	1	0
	AL	Low temp. alarm threshold	-50T200 °C	-30	-30	0	0
	AH	High temp. alarm threshold	-50T200 °C	+30	+30	150	0
	Ad	Delay time for high and low temperature alarms	0 to 250 min	30	30	30	120
	A4	Function of digital input DI1	0: input not active 1: immediate external alarm 2: delayed external alarm (delay time A7) 3: enable defrost 4: start defrost from external contact 5: door switch with compressor and evaporator fans OFF 6: remote on/off 7: curtain switch 8: low pressure switch input for pump down 9: door switch with fans OFF only 0: direct/reverse operation 11: light sensor 12: AUX output activation 13: door switch with compressor and fans OFF (light not managed) 14: door switch with fans OFF (light not managed)	0	0	0	0
	A6	Stop compressor from external alarm	forced compressor operating time in the event of external alarms (0 to 100 min)	0	0	0	0
	A7	Delay time for delayed external alarm	If 'A4'= 2 (0 to 250 min)	0	0	0	0
	A8	Enable alarms Ed1 and Ed2	0: signal 'Ed1' and 'Ed2' on the display (end defrost due to maximum duration dP1/dP2) disabled 1: signal 'Ed1' and 'Ed2' enabled	0	0	0	0
	Ac	High condenser temperature alarm	0T200 °C	70	70	70	70
ALM ⚠	AE	High condenser temperature alarm differential	Differential or hysteresis for the activation/deactivation of the high condenser temperature pre-alarm (0.1T20 °C)	10	10	10	10
	Acd	High condenser temperature alarm delay	0 to 250 min	0	0	0	0
	AF	Off time with light sensor	0: sensor in the door jamb (the inside light is switched on when the sensor detects light and off when it detects darkness) >0: internal sensor (the inside light is switched on when the sensor detects light. After the time AF in seconds the light is switched off for 3 sec. In the event of darkness the inside light remains off, while in the event of light it is switched on again and a cycle starts with a minimum time of 3 sec. (0 to 250 sec.)	0	0	0	0
	ALF	Antifreeze alarm threshold	Active if '/A2' or '/A3'= 4 (-50T200 °C)	-5	-5	-5	-5
	AdF	Antifreeze alarm delay	0 to 15 min	1	1	1	1
CmF AUX	H0	Serial address	0 to 207	1	1	1	1
	H2	Lock keypad and/or remote control	0: setting of type F parameters and set point disabled 1: all settings are possible 2: setting of type F parameters, settings from remote control and set point disabled 3: settings from remote control disabled 4: continuous cycle, defrost, setting of type F parameters and ON/OFF disabled 5: continuous cycle, defrost, setting of type F parameters, set point and ON/OFF disabled 6: continuous cycle, defrost, setting of type F parameters and set point disabled	1	1	1	1
	H3	Remote control enable code	0 to 255	0	0	0	0
	H4	Terminal buzzer	0: enabled; 1: disabled	0	0	0	0
	H6	Terminal keypad lock configuration	1 (bit 0): enable/disable print report 2 (bit 1): enable/disable defrost 4 (bit 2): enable/disable continuous cycle 8 (bit 3): enable/disable mute 16 (bit 4): not associated 32 (bit 5): not associated 64 (bit 6): enable/disable ON/OFF	0	0	0	0
	H8	Select output activated by time band	0: time band linked to the light output 1: time band linked to the AUX output (see 'H1' or 'H5')	0	0	0	0
	H9	Enable set point variation with time bands	0: set point variation with time band disabled 1: set point variation with time band enabled	0	0	0	0
	Hdh	Anti-sweat heater offset	AUX output configured as light or AUX ('H1'= 2, 3, 8 or 9) remains deactivated until the control temperature is less than 'St'+'Hd' when switching the instrument on for the first time or when resetting alarms. (-0T200 °C)	0	0	0	0

IMPORTANT WARNING: for the set times to become immediately operational, the instrument needs to be turned off and on again. If this operation is not carried out, timing resumes operation the next time it is used, when the internal timers are reset.

Alarms and signals: display, buzzer and relay

Below is a table that describes the alarms and control signals, with the corresponding description, status of the buzzer, alarm relay and type of reset.

Code	Description	Icon flashing	Buzzer	Reset
rE	Virtual control probe fault	🔧	ON	AUTO
E0	Room probe S1 fault	🔧	OFF	AUTO
E1	Defrost probe S2 fault	🔧	OFF	AUTO
E2	Probe S3 fault	🔧	OFF	AUTO
" "	Probe not enabled	-	OFF	AUTO
LO	low temperature alarm	⚠	ON	AUTO
HI	high temperature alarm	⚠	ON	AUTO
IA	immediate alarm from external contact	⚠	ON	AUTO
dA	delayed alarm from external contact	⚠	ON	AUTO
dEF	defrost running	✲ always on	OFF	AUTO
Ed1	defrost on evaporator 1 ended by timeout	-	OFF	AUTO
Ed2	defrost on evaporator 2 ended by timeout	-	OFF	AUTO
Pd	maximum pump down time alarm	🔧	ON	AUTO/MAN
LP	low pressure alarm	🔧	ON	AUTO/MAN
AtS	autostart in pump down	🔧	ON	AUTO/MAN
cht	high condenser temperature pre-alarm	-	OFF	AUTO/MAN
CHT	high condenser temperature alarm	⚠	ON	MAN
EE	Unit parameter EEPROM error	🔧	OFF	AUTO
EF	Operating parameter EEPROM error	🔧	OFF	AUTO
rct	Connection with IR remote control active	-	-	-
Add	Automatic address assignment procedure in progress	-	-	-
Prt	Report printing in progress	-	-	-
LrH	Low relative humidity procedure activation	-	-	-
HrH	High relative humidity procedure activation	-	-	-
ccb	Start continuous cycle call			
ccE	End continuous cycle call	-	-	-
dFb	Start defrost call	-	-	-
dFE	End defrost call	-	-	-
On	Switched ON	-	-	-
OFF	Switched OFF	-	-	-
rES	Reset alarms with MAN reset, reset temperature monitoring	-	-	-
n1-n6	Alarm on unit 1-6 in the network	⚠	ON	AUTO
dnL	Download procedure in progress	-		-
d1-d6	Download procedure with errors on unit 1-6	⚠	OFF	-

Note:the buzzer is activated if enabled by parameter 'H4'. It can be disabled from the CAREL supervisory system. Manual reset on pressing PRG/MUTE

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. The 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 final 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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