



- Electronic controller for normal and low 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!!!

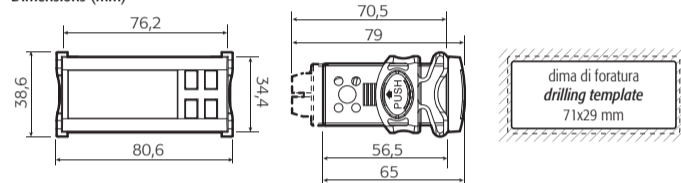
With reference to the label on the rear of the instrument and the required application

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".

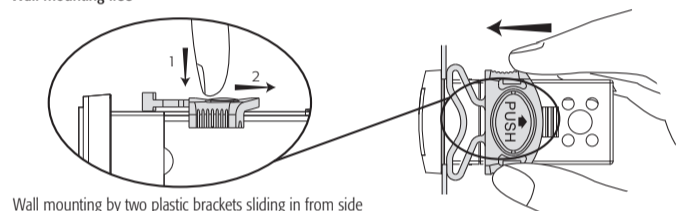


IMPORTANT: separate the probe and digital input cables from the cables to inductive loads and power cables to avoid electromagnetic disturbance. Never run power cables (including electrical panel cables) and signal cables in the same conduits.

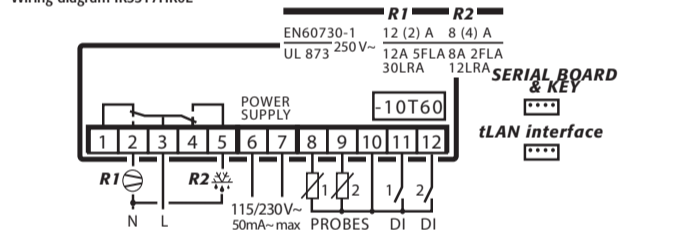
Dimensions (mm)



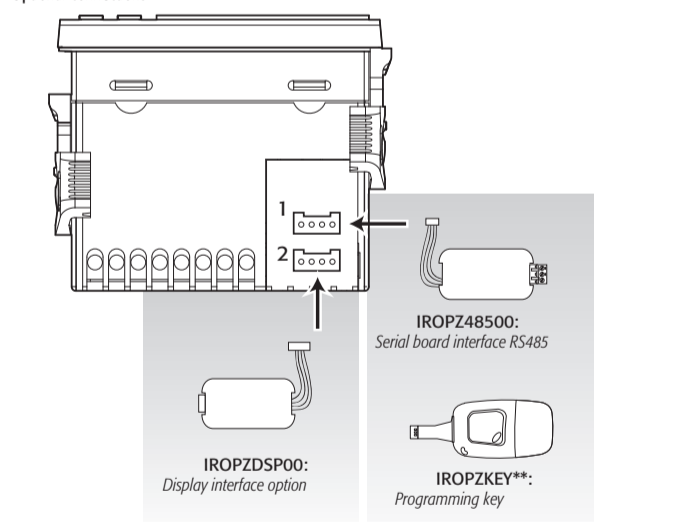
Wall mounting ir33



Wiring diagram IR33Y7HR0E



Optional connections



How to select and load a user configuration

Step	Action	Effect	Meaning
1	Switch the instrument on while holding Prgr	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' e 'bn4'	Select the required configuration (refer to the following 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

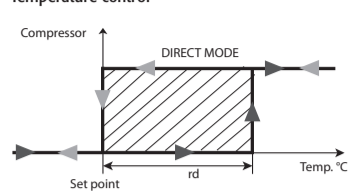
ir33 SMART is loaded with 4 default configurations (sets of parameters). Each configuration identifies a specific refrigeration application, and can be identified simply by the index (bn*) when switching the instrument on.

Index	Application	Op. T range	Inputs	Relay outputs
bn1	Normal temp. static refrigeration units with heater defrost (timed)	2T10 °C	NTC room	Compressor Defrost
bn2	Low temperature static refrigeration units with heater defrost (by temp.)	-10T-2 °C	NTC room NTC evaporator	Compressor Defrost
bn3	Low temperature static refrigeration units with heater defrost (by temperature) and external alarm	-10T-2 °C	NTC room NTC evaporator Digital input External alarm	Compressor Defrost
bn4	Standard CAREL (default configuration)	-50T90 °C	configurable	configurable

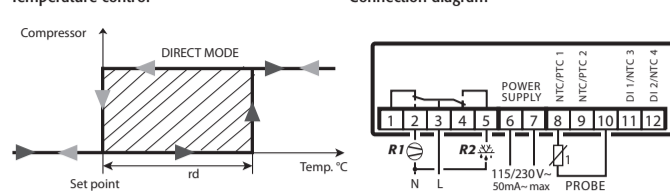
bn1: normal temperature (+2T+10 °C) static refrigeration units with heater defrost (timed)

Temperature range: 2T10 °C

Temperature control



Connection diagram



Inputs	Room probe	NTC 1
Compressor	R1: 16 A relay	
Defrost heater	R2: 8 A relay	

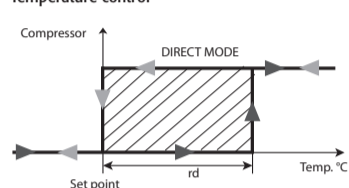
Main parameters (type F)	Name	Type	Description	Default value
	St	ctl	Set point	2 °C
	rd	ctl	Control differential (hysteresis)	2 °C
	dl		Interval between defrosts	8 hours
	dP1	dEF	Maximum evaporator defrost duration	30 min
	dd	dEF	Dripping time	0 min
	AL (*)	ALM	Minimum temperature alarm	-30 °C
	AH (*)	ALM	Maximum temperature alarm	30 °C
	Ad	ALM	Temperature alarm delay	30 min

(*) absolute alarm thresholds

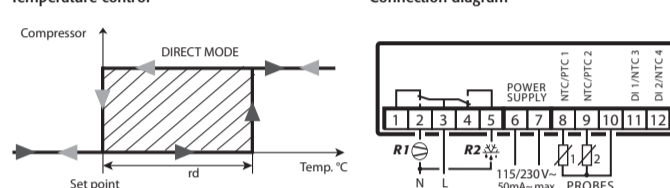
bn2: low temperature (-10T-2 °C) static refrigeration units with heater defrost (by temperature)

Temperature range: -10T-2 °C

Temperature control



Connection diagram



Inputs	Room probe	NTC 1
Defrost probe	NTC 2	
Compressor	R1: 16 A relay	
Defrost heater	R2: 8 A relay	

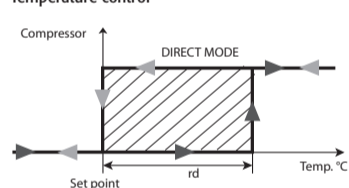
Main parameters (type F)	Name	Type	Description	Default value
	St	ctl	Set point	-4 °C
	rd	ctl	Control differential (hysteresis)	2 °C
	dl		Interval between defrosts	6 hours
	dt1	dEF	Evaporator end defrost temperature	4 °C
	dd	dEF	Dripping time	2 min
	d/1		Defrost probe 1 reading	-
	AL (*)	ALM	Minimum temperature alarm	-50 °C
	AH (*)	ALM	Maximum temperature alarm	10 °C
	Ad	ALM	Temperature alarm delay	30 min

(*) absolute alarm thresholds

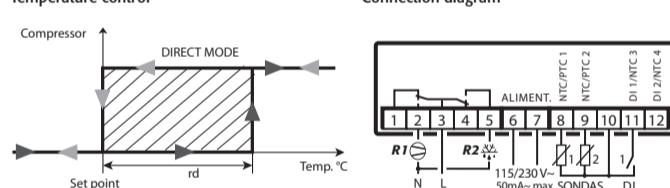
bn3: low temperature (-10T-2 °C) static refrigeration units with heater defrost (by temperature) and external alarm

Temperature range: -10T-2 °C

Temperature control



Connection diagram



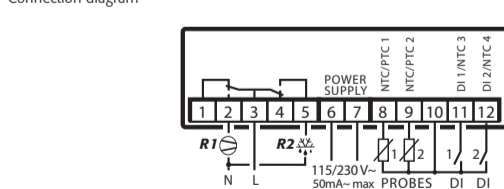
Inputs	Room probe	NTC 1
Defrost probe	NTC 2	
External alarm	Digital in. DI 1	
Compressor	R1: 16 A relay	
Defrost heater	R2: 8 A relay	

Main parameters (type F)	Name	Type	Description	Default value
	St	ctl	Set point	-4 °C
	rd	ctl	Control differential (hysteresis)	2 °C
	dl		Interval between defrosts	6 hours
	dt1	dEF	Evaporator end defrost temperature	4 °C
	dd	dEF	Dripping time	2 min
	d/1		Defrost probe 1 reading	-
	AL (*)	ALM	Minimum temperature alarm	-50 °C
	AH (*)	ALM	Maximum temperature alarm	10 °C
	Ad	ALM	Temperature alarm delay	30 min
	A7		External alarm detection delay	5 min

(*) absolute alarm thresholds

bn4: standard CAREL (default configuration)

Connection diagram



Main parameters (type F)	Name	Type	Description	Default value
	St	ctl	Set point	0 °C
	rd	ctl	Control delta	2 °C
	rt		Temperature monitoring interval	-
	rH		Maximum temperature read	-
	rL		Minimum temperature read	-
	dl		Interval between defrosts	8 hours
	dt1	dEF	Evaporator end defrost temperature	4 °C
	dt2	dEF	Evaporator end defrost temperature AUX	4 °C
	dP1	dEF	Maximum evaporator defrost duration	30 min
	dP2	dEF	Maximum evaporator defrost duration	30 min
	dd	dEF	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	ALM	Maximum temperature alarm	0 °C
	Ad	ALM	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

But-ton	Pressing the button alone	Pressing together with other buttons		
Prgr 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 5s, accesses the menu for setting the type C parameters (configuration) or downloading the parameters	if pressed with UP/AUX for more than 5s resets any alarms with manual reset	Start-up: if pressed for more than 5 s at start-up activates the RESET procedure Automatic address assignment: if pressed for more than 1 s enters the automatic serial address assignment procedure
aux		if pressed together with DOWN/DEF for more than 5s, activates/deactivates the continuous cycle	if pressed with SET for more than 5s starts the report printing procedure (function available but to be implemented)	if pressed together with PRG/MUTE for more than 5s, resets any alarms with manual reset
def	if pressed for more than 5 s, activates /deactivates a manual defrost	if pressed together with UP/AUX for more than 5s activates/deactivates the continuous cycle		
Set	if pressed for more than 1 s, displays and/or sets the set point	if pressed together with PRG/MUTE for more than 5s, accesses the menu for setting type C parameters (configuration) or downloading the parameters	if pressed with UP/AUX for more than 5s 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 Prgr 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 Prgr 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 Prgr & Set together for 5 seconds	After 5 seconds the display shows "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 Prgr 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 Prgr	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 Prgr	The display will show the name of the first parameter in the functional block selected	Example "dl" for 'dEF'

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			
	D11	voltage-free contact, contact resistance <10 Ω, closing current 6 mA			
	S3 (probe 3)	NTC & PTC			
	D12	voltage-free contact, contact resistance <10 Ω, closing current 6 mA			
S4 (probe 4)	NTC & PTC				
Type of probe	Std. CAREL NTC	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.			
	High temperature NTC	10 kΩ at 25 °C, range -50T90 °C meas. error 1 °C in range -50T150 °C 3 °C in range 50T90 °C			
	Std. CAREL PTC	50 kΩ at 25 °C, range -40T150 °C meas. error 1.5 °C in range -20T115 °C 4 °C in range outside of -20T115 °C			
Outputs	EN60730-1		UL873		
	relay	250 V~	operating cycles	250 V~	operating cycles
	R2	8 (4) A N.O.	100,000	8 A resistive 2 FLA 12 LRA C300	30,000
	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 mm ² max current 12 A				
Case	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.				
Assembly	plastic 34.4 x 76.2 x 79 mm (mounting depth 70.5 mm)				
Display	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			
	digits	3 digit LED			
Keypad	display	from -99 to 999			
	operating status	indicated by graphic icons on the display			
Infrared receiver	4 silicone rubber buttons				
Buzzer	available				
Operating conditions	-10T60 °C, <90% rH non-condensing				
Storage conditions	-20T70 °C, <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 II				
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 be 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				
Repeater display interface	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
IROPZ48550	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 "Prog" & "▲" 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 "▲" for 5 s.

Continuous cycle

To activate the continuous cycle function press "▲" & "▼" 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 'cs' (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:

- Using the remote application, start the "Network definition" procedure; the application begins to send a special message (<IADR>) across the CAREL network, containing the network address;
- Press the PRG/Mute button 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;
- 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 '<IADR>';
- 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
/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
/tE	Display on external terminal	Probe displayed on remote term. 0: remote term. not installed; 1: virtual probe; 2: probe 1; 3: probe 2; 4: probe 3; 5: probe 4; 6: probe 5	0	0	0	0
/P	Select type of probe	0: NTC -50T90 °C 1: NTC -40T150 °C 2: PTC -50T150 °C	0	0	0	0
/A2	Probe 2 configuration	0: no probe 1: product probe 2: defrost probe 3: condenser probe 4: antifreeze probe	0	2	2	2
/A3	Probe 3 configuration	As for probe 2 (only if A4=0)	0	0	0	0
/A4	Probe 4 configuration	As for probe 2 (only if A5=0)	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
/c4	Probe 4 calibration or offset	Correction to reading of probe 4 (-20T20 °C)	0	0	0	0
St	Set point	r1Tr2 °C	2	-4	-4	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 (-50T2 °C)	-30	-50	-50	-50
r2	Maximum set point	Maximum value settable for the set point (r1T200 °C)	30	10	10	60
r3	Operating mode	0: direct thermostat with defrost control (cool) 1: direct thermostat (cool) 2: reverse thermostat (heat)	0	0	0	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: disabled; 1: 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	-	-	-	-	-
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	15	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 temperature alarm bypass time after continuous cycle	0 to 250 hours	2	2	2	2
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	2	0	0	0
d1	Maximum interval between consecutive defrosts	0 to 250 hours	8	6	6	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 = During defrost the display shows "dEF" and the actual temperature, alternating 1 = During defrost the display shows the last temperature displayed before starting 2 = During defrost the display shows "dEF" on steady	1	1	1	1
dEF	dDripping time after defrosting	Waiting time before reactivating compressor and fans at the end of a defrost (0 to 15 min)	0	2	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: 'd1' in hours, 'dP1' and 'dP2' in min 1: 'd1' in minutes, 'dP1' and 'dP2' in sec	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 d1 disabled 1: skip defrost disabled and automatic variation in d1 enabled 2: skip defrost enabled and automatic variation in d1 disabled 3: skip defrost and automatic variation in d1 enabled	0	0	0	0
dn	Nominal defrost duration	1 to 100%	65	65	65	65
dH	Proportional factor for variation in 'd1'	0 to 100%	50	50	50	50
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 temperature alarm threshold	-50T200 °C	-30	-50	-50	0
AH	High temperature alarm threshold	-50T200 °C	+30	+10	+10	0
Ad	Delay time for high and low temperature alarms	0 to 250 min	30	30	30	120

Cd.	Parameter	Description	Configuration					
			bn1	bn2	bn3	bn4		
ALM	Function of digital input D11	0: input not active 1: immediate external alarm 2: delayed ext. 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 only 10: 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	2	0		
		A5	Config. digital input 2	as for A4	0	0	0	0
		A6	Config. 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, A5=2 or A9=2 (0 to 250 min)	0	0	5	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	0:1200 °C	70	70	70	70
		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, /A3, /A4 or /A5 = 4 (-50T200 °C)	-5	-5	-5	-5
		AdF	Antifreeze alarm delay	0 to 15 min	1	1	1	1
		H0	Serial address	0 to 207	1	1	1	1
		AUX	Terminal keypad lock configuration	0: setting of type F parameters and set point disabled 1: all settings are possible 2: setting type F parameters, settings from remote and set point disabled 3: settings from remote disabled 4: continuous cycle, defrost, setting type F par. and ON/OFF disabled 5: continuous cycle, defrost, setting type F par., set point and ON/OFF disabled 6: continuous cycle, defrost, setting type F par. and set point disabled	1	1	1	1
				H3	Remote control enable code	Attributes an access code to the controller (0 to 255)	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 cont. 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 light output 1 = Time band linked to AUX output (See par. 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			The AUX output configured as light or aux (H1=2,3,8 or 9) remains deactivated until the control temp. is less than "St"+"Hdh" when switching the instrument on for the first time or when resetting alarms (-50T200 °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
E2-3	Probe S3-4 fault	☹	OFF	AUTO
" "	Probe not enabled	-	OFF	AUTO
LO	low temperature alarm	▲	ON	AUTO
HI	high temperature alarm	▲	ON	AUTO
AFr	antifreeze alarm	▲	ON	MAN
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
AIS	autostart in pump down	☹	ON	AUTO/MAN
cht	high condenser temperature pre-alarm	-	OFF	AUTO/MAN
CHT	high condenser temperature alarm	▲	ON	MAN
dor	door open for too long alarm	▲	ON	AUTO
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				