

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

Step	Action	Effect	Meaning
1	Press Prg <i>mute</i> for 5 seconds	After 5 seconds the display will show the 1st parameter, “St” (set point)	Access to type “F” parameters is direct
2	Press  <i>aux</i> or  <i>def</i>	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  <i>aux</i> or  <i>def</i>	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 for 5 seconds Prg <i>mute</i>	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 <i>mute</i> & Set for 5 seconds	After 5 seconds the display shows “0”	Access to type “C” parameters requires the password
2	Press  <i>aux</i> or  <i>def</i>	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  <i>aux</i> or  <i>def</i>	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  <i>aux</i> or  <i>def</i>	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 <i>mute</i> 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 parameter.

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 <i>mute</i>	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  <i>aux</i> or  <i>def</i>	The display will show the name of the other functional blocks	Example ‘Fan’ for the fan parameters
3	Press Prg <i>mute</i>	The display will show the name of the first parameter in the functional block selected	Example “F0” for ‘Fan’

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
Inputs	insulation from relay outputs	basic 3 - mm in air, 4 mm on surface, 1250 V insulation
	S1 (probe 1)	NTC & PTC
	S2 (probe 2)	NTC & PTC
	DI1	voltage-free contact, contact resistance <10 Ω, closing current 6 mA
	S3 (probe 3)	NTC & PTC
	DI1	voltage-free contact, contact resistance <10 Ω, closing current 6 mA
	S3 (probe 4)	NTC & PTC
Type of probe	Std. CAREL NTC	10 kΩ at 25 °C, range -50/90 °C meas. error 1 °C in range -50/50 °C 3 °C in range 50/90 °C
	High temperature NTC	50 kΩ at 25 °C, range -40/150 °C meas. error 1.5 °C in range -20/115 °C 4 °C in range outside of -20/115 °C
	Std. CAREL PTC	985 Ω at 25 °C, range -50/150 °C meas. error 2 °C in range -50/50 °C 4 °C in range 50/150 °C
Relay outputs	according to the model	
	EN60730-1	UL873
	250 V~ R2, R3, R4	operating cycles 100,000 250 V~ 8 A resistive 2 FLA 12 LRA C500
	R1	100,000 12 A resistive 5 FLA 20 LRA C300
	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
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 display operating status	3 digit LED from -99 to 999 indicated by graphic icons on the display 4 silicone rubber buttons
Keypad		available
Infrared receiver		available
Clock with backup battery		available
Auxiliary alarm relay		available
Buzzer		available
Clock	error at 25°C error in the temperature range ageing discharge time charge time	±10 ppm (±5.3 min/year) -50 ppm (-2.7 min/year) ≤4.5 ppm (±2.7 min/year) typically 6 months (8 months max) typically 5 hours (<8 hours max)
Operating conditions		-10/60 °C, <90% rH non-condensing -20/70 °C, <90% rH non-condensing
Storage conditions		assembly on smooth and indeformable panel with IP65 gasket
Front panel index of protection		2 (normal situation) printed circuits 250, plastic and insulating materials 175
Environmental pollution		long
PtI of insulating materials		category D and category B (UL 94-V0)
Period of electrical stress across the insulating parts		category II
Category of resistance to heat and fire		1B relay contacts (microswitching)
Class of protection against voltage surges		built-in, electronic
Type of action/disconnection		Class 2 when appropriately integrated no
Construction of the control device		class A
Classification according to protection against electric shock		only use neutral detergents and water
Device designed to be hand-held or integrated into equipment designed to be hand-held		external
Software class and structure		external
Cleaning the front panel of the instrument		10 m
Serial interface for CAREL network		available
Repeater display interface		
Maximum distance between interface and display		
Programming key		

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, -50/90°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

Manual defrost

As well as automatic defrost, a manual defrost can be activated, if the temperature conditions are right, by pressing “DEF/DOWN” for 5 s.

HACCP functions

ir33 is compliant with the HACCP standards, as it monitors the temperature of the food stored. Alarm “HA”= max. threshold exceeded: up to three HA events are saved (HA, HA1, HA2), from the most recent (HA) to the oldest (HA2), with a signal HAn that displays the number of HA events saved. Alarm “HF”= power failure for more than 1 min. and max. threshold AH exceeded: up to three HF events are saved (HF, HF1, HF2), from the most recent (HF) to the oldest (HF2), with a signal HFn that displays the number of HF events saved. Setting the HA/HF alarm: parameter AH (high temp. threshold); Ad and Htd (Ad + Htd = HACCP alarm delay). Displaying the details: press “SET” to access parameters HA or HF and scroll using “UP/AUX” or “DEF/DOWN”. **Deleting the HACCP alarms:** press “DEF/DOWN” and “SET” for 5 sec. inside the menu, “res” will be shown to indicate the alarm has been deleted. To delete the saved alarms, press “DEF/DOWN” + “SET” + “UP/AUX” together for 5 seconds.

Defrost event date and day (parameters td1 to td8)

0 = no event; 1 to 7 = Monday to Sunday; 8 = Monday to Friday; 9 = Monday to Saturday; 10 = Saturday and Sunday; 11 = every day.

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	bn5	bn6
Pro	/2	Measurement stability	1 to 15	4	4	4	4	4	4
	/3	Probe display response	Temperature display refresh speed (0 to 15)	0	0	0	0	0	0
	/4	Virtual probe	Weight % of temp. control probe 2 (0 to 10%)	0	0	0	0	0	0
	/5	Select °C or °F	0: °C; 1: °F	0	0	0	0	0	0
	/6	Decimal point	0: yes (-20 to 20 °C); 1: no	0	0	0	0	0	0
	/tl	Display on internal terminal	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	2	2	1
	/tE	Display on external terminal	Probe displayed on remote term. 0: no remote term.; 1: virtual probe; 2: probe 1; 3: probe 2; 4: probe 3; 5: probe 4; 6: probe 5	0	0	0	0	0	0
	/P	Select type of probe	0 NTC -50/90 °C; 1 NTC -40/150 °C; 2 PTC -50/150 °C	0	0	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	2	2
	/A3	Probe 3 configuration	As for probe 2 (only if A4=0)	0	0	0	2	2	0
ctl	/A4	Probe 4 configuration	As for probe 2 (only if A5=0)	0	0	0	0	0	0
	/c1	Probe 1 calibration or offset	Corr. to probe 1 reading (-20/20 °C)	0	0	0	0	0	0
	/c2	Probe 2 calibration or offset	Corr. to probe 2 reading (-20/20 °C)	0	0	0	0	0	0
	/c3	Probe 3 calibration or offset	Corr. to probe 3 reading (-20/20 °C)	0	0	0	0	0	0
	/c4	Probe 4 calibration or offset	Corr. to probe 4 reading (-20/20 °C)	0	0	0	0	0	0
	St	Set point	r1/r2 °C	4	2	-14	2	-14	0
	rd	Control delta	Temp. control diff. or hysteresis (0.1/20 °C)	2	2	2	2	2	2
	m	Dead zone	0.01/0 °C	4	4	4	4	4	4
	rr	Reverse control differential	+0.1/20 °C	2,0	2,0	2,0	2,0	2,0	2,0
	r1	Minimum set point	Min. value settable for the set point (-50/72 °C)	-30	-30	-50	-30	-50	-50
r2	Maximum set point	Max. value settable for the set point (r1/200 °C)	30	30	30	30	30	30	
r3	Operating mode	0: direct thermostat with defrost control (cool) 1: direct therm. (cool); 2: reverse therm. (heat)	0	0	0	0	0	0	
r4	Automatic set point variation in night-time	Value added to the set point in night-time operation (see A4, A5 and A9) (-20/20 °C)	3,0	3,0	3,0	3,0	3,0	3,0	
r5	Enable temp. monitoring	0: disabled; 1: enabled	0	0	0	0	0	0	
rt	Temp. monitoring interval	temp. recording hours. (0 to 999)	-	-	-	-	-	-	
rH	Maximum temperature read		-	-	-	-	-	-	
rL	Minimum temperature read		-	-	-	-	-	-	
omp	c0	Fan start delay (if relay fitted) on power-up	0 to 15 min	0	0	0	0	0	0
	c1	Minimum time between consecutive starts of compressor	0 to 15 min	0	0	0	0	0	0
	c2	Min. compressor off time	0 to 15 min	0	0	0	0	0	0
	c3	Min. compressor on time	0 to 15 min	0	0	0	0	0	0
	c4	Duty setting or safety relay	Comp. operating time for control probe fault (Fixed off time 15 min) (0 to 100 min)	15	15	15	15	15	0
	cc	Continuous cycle duration	Compressor operating time even when the temp. is below the set point (0 to 15 hours)	0	0	0	0	0	0
	c6	Alarm bypass after continuous cycle	0 to 250 hours	2	2	2	2	2	2
	c7	Max pump down time	0 to 900 s	0	0	0	0	0	0
	c9	Enable autostart with pump down operation	0 = Pump down cycle when closing the valve 1 = Pump down cycle whenever closing the valve and on each following request from low pressure switch (no cooling request)	0	0	0	0	0	0
	c10	Select pump down by time or pressure	0 = End pump down by low press. switch activation; 1 = End when reaching low pressure or after maximum time C7	0	0	0	0	0	0
c11	Second compressor delay	Second compressor delay, after the first, in start-up (H1=7 or H5=7) (0 to 250 sec)	4	4	4	4	4	4	
d0	Type of defrost	0 = heater by temp.; 1 = hot gas by temp.; 2 = heater by time; 3 = hot gas by time; 4 = heater by time with temp. control	2	0	0	0	0	0	
dl	Interval between defrosts	0 to 250 hours	8	6	6	6	6	8	
dh1	Evaporator end defrost temp.	-50/200 °C	4	4	4	4	4	4	
dh2	AUX evap. end defrost temp.	-50/200 °C	4	4	4	4	4	4	
dP1	Maximum evaporator defrost duration	1 to 250 min	30	30	30	30	30	30	
dP2	Maximum AUX evaporator defrost duration	1 to 250 min	30	30	30	30	30	30	
d3	Defrost activation delay	Interval between defrost call and effective activation of the relay	0	0	0	0	0	0	
d4	Defrost on start-up	0: disabled; 1: enabled	0	0	0	0	0	0	
d5	Defrost delay on start-up or from multifunction input	0 to 250 min	0	0	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	1	1	
dd	Dripping time after defrost	Waiting time before reactivating compressor and fans at the end of a defrost (0 to 15 min)	0	2	2	2	2	2	
d8	Alarm bypass time after defrost and/or door open	See A4, A5 and A9 (0 to 250 hours)	1	1	1	1	1	1	
dh8d	Door open alarm delay	See ‘A4’, ‘A5’ and ‘A9’ (0 to 250 hours)	0	0	0	0	0	0	
d9	Defrost priority over compressor protectors	0 = protection times respected at start of defrost; 1 = protection times not respected; the defrost has higher priority	0	0	0	0	0	0	
d/1	Display defrost probe 1	°C/°F	-	-	-	-	-	-	
d/2	Display defrost probe 2	°C/°F	-	-	-	-	-	-	
dC	Time base	0: ‘dl’ in hours, ‘dP1’ and ‘dP2’ in min.; 1: ‘dl’ in minutes ‘dP1’ and ‘dP2’ in seconds	0	0	0	0	0	0	
d10	Compressor running time	Compressor operating time with evaporator temp. less than d11, after which a defrost is called (0 to 250 hours)	0	0	0	0	0	0	
d11	Temp. threshold in running time	Evaporation temp. below which the compressor must continue operating for the time d10 to generate a defrost call (-20 to 20 °C)	1	1	1	1	1	1	
d12	Advanced defrost	0 = Skip defrost and automatic variation in “dl” disabled; 1 = Skip defrost disabled, auto variation in “dl” enabled; 2 = Skip defrost enabled, auto variation in dl disabled; 3 = Skip defrost and automatic variation in “dl” enabled	0	0	0	0	0	0	
dn	Nominal defrost duration	1 to 100%	65	65	65	65	65	65	
dh1	Prop. factor for variation in “dl”	0 to 100%	50	50	50	50	50	50	
A0	Alarm and fan differential	0.1/20 °C	2,0	2,0	2,0	2,0	2,0	2,0	
A1	Type of threshold AL and AH	0: relative; 1: absolute	1	1	1	1	1	0	
AL	Min. temperature alarm	-50/200 °C	-30	-30	-50	-30	-50	0	
AH	Max. temperature alarm	-50/200 °C	+30	+30	+30	+30	+30	0	
Ad	Temperature alarm delay	0 to 250 min	30	30	30	30	30	120	
A4	Digital 1 input configuration	0 = input not active; 1 = Immediate ext. alarm; 2 = delayed external alarm (time A7); 3 = Enable defrost; 4 = Start defrost from ext. contact; 5 = Door switch with comp. and fans OFF; 6 = remote ON/OFF; 7 = Curtain switch; 8 = Low press. switch input for pump down; 9 = Door switch with fans OFF; 10 = Direct / reverse operation; 11 = Light sensor; 12 = AUX output activation; 13 = Door switch with comp. and fans OFF (light not managed); 14 = Door switch with fans OFF (light not managed)	0	5	5	0	0	0	
A5	Digital 2 input configuration	as for A4	0	0	0	0	0	0	
A6	Stop compressor from external alarm	Forced compressor operating time for external alarms (0 to 100 min)	0	0	0	0	0	0	
A7	External alarm delay	If A4= 2, A5= 2 or A9= 2 (0 to 250 min)	0	0	0	0	0	0	
A8	Enable alarms Ed1 and Ed2	0 = signal “Ed1” and “Ed2” on display (end defrost due to maximum duration dP1/dP2) disabled; 1 = Sign. “Ed1” and “Ed2” enabled	0	0	0	0	0	0	
Ac	High condenser temp. alarm	0/20 °C	70	70	70	70	70	70	
AE	High condenser temperature alarm differential	Differential or hysteresis for activation/deactivation of high cond. temp. pre-alarm (0.1/20 °C)	10	10	10	10	10	10	
Ac0	High condenser temp. alarm delay.	0 to 250 min	0	0	0	0	0	0	
AF	Off time with light sensor	Light sensor management 0 = sensor in the door jamb (the inside light is switched on when the sensor detects light and off when it detects darkness > 0 = sensor inside cold room or cabinet; 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 to see if the door has been closed. In the event of darkness the inside light remains off, the inside light it is switched on again after a minimum time of 3 sec and the cycle restarts (0 to 250)	0	0	0	0	0	0	
ALF	Antifreeze alarm threshold	Active if /A2, /A3, /A4 or /A5= 4 (-50/200 °C)	-5	-5	-5	-5	-5	-5	
AdF	Antifreeze alarm delay	0 to 15 min	1	1	1	1	1	1	
F0	Fan management	0 = Fans always on 1 = Fans on based on difference between control probe and evaporator temp. 2 = Fans on based on evaporator temp.	0	0	0	0	0	0	
F1	Fan start temperature	F0 = 1 - F1 indicates the min. difference between room and evap. temp. to activate the fans F0 = 2 - F1 indicates the absolute fan activation temp. -50/200 °C	5	5	5	5	5	5	
F2	Fan off with compressor off	0 = Fans always active (F0=0) or upon request (F0=1,2) even when comp. off 1 = Fans off when compressor off	1	1	1	1	1	1	
F3	Fan in defrost	0 = Fans active during defrost 1 = Fans not active during defrost	0	0	1	0	1	1	
Fd	Fans off after dripping	Fan off time after defrost and after dd (0 to 15 min)	0	2	2	2	2	1	
F4	Condenser fan stop temperature	-50/200 °C	40	40	40	40	40	40	
F5	Condenser fan start differential	Differential or hysteresis used for condenser fan control (0.1/20 °C)	5	5	5	5	5	5	