eliwell

by Schneider Electric

IDPlus

961/974 SMPS

EN

Electronic controllers for refrigeration units

USER INTERFACE

IDPlus 961 SMPS

IDPlus 974 SMPS

KEYS

UP
Press and release
Scroll menu items
Increases values
Press for at least 5 sec
Activates the Manual Defrost function

DOWN
Press and release
Scroll menu items
Decrease values
Press for at least 5 sec
Function can be configured by the user (par. H32)

STANDBY (ESC)
Press and release
Returns to the previous menu level
Confirms parameter value
Press for at least 5 sec
Activates the Standby function
(when outside the menus)

SET (ENTER)
Press and release
Displays alarms (if active)
Opens Machine Status menu
Press for at least 5 sec
Opens Programming menu
Confirm commands

ICONS

REDUCED SET / ECONOMY

Flashing:	economy Setpoint active
Quick flashing:	access to level2 parameters
Off:	otherwise

ALARM

Permanently on:	alarm active
Flashing:	alarm acknowledged
Off:	otherwise

COMPRESSOR

Permanently on:	compressor active
Flashing:	a delay, a protection or a locked start-up
Off:	otherwise

DEFROST

Permanently on:	defrost active
Flashing:	manual or D.I. activation
Off:	otherwise

°C

Permanently on:	°C setting (dro = 0)
Off:	otherwise

°F

Permanently on:	°F setting (dro = 1)
Off:	otherwise

HEAT STATUS (IDPlus 961 SMPS)

Permanently on:	compressor in HEAT
Off:	otherwise

(IDPlus 961 SMPS)

NOT USED

FANS (IDPlus 974 SMPS)

Permanently on	Fans active
Off:	otherwise

AUX (IDPlus 974 SMPS)

Permanently on:	Aux output active
Flashing:	manual or D.I. activation of Deep Cooling

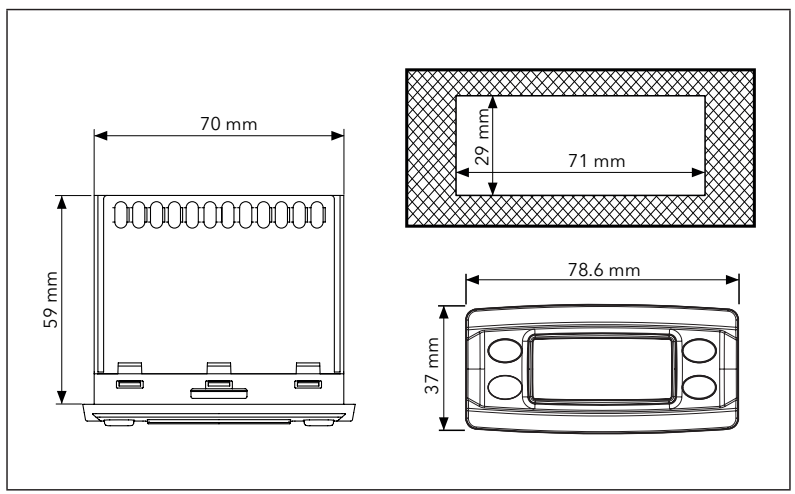
* **To activate the LOC function:**
  - enter the "Basic Commands" menu by pressing the key **set**.
  - press keys ⏻ and ⌃ **within 2 seconds**.

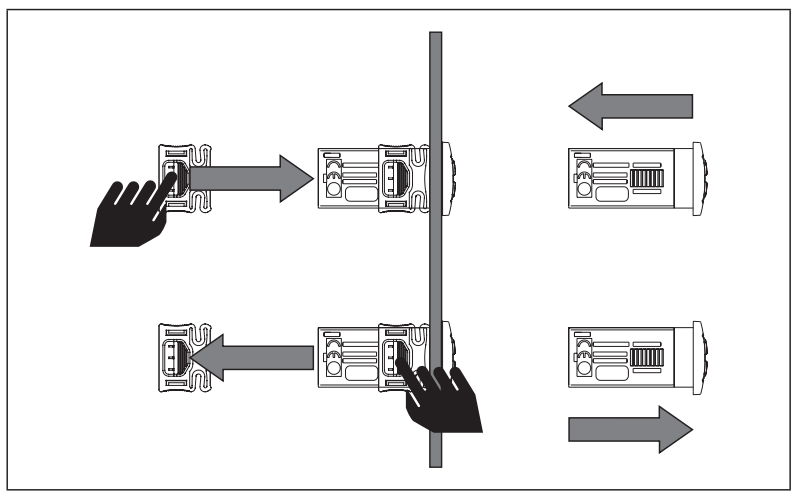
If the LOC function is **Active** and you try to enter the "Programming" menu, the text LOC appears. If this happens, the parameters are still displayed but cannot be edited. To disable the keypad lock, repeat the aforementioned procedure.

* When switched on, the device performs a Lamp Test; the display and LEDs will flash for several seconds to check that they all function correctly.

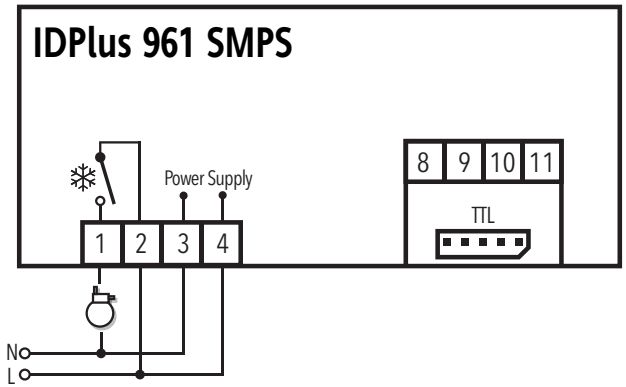
MOUNTING - DIMENSIONS

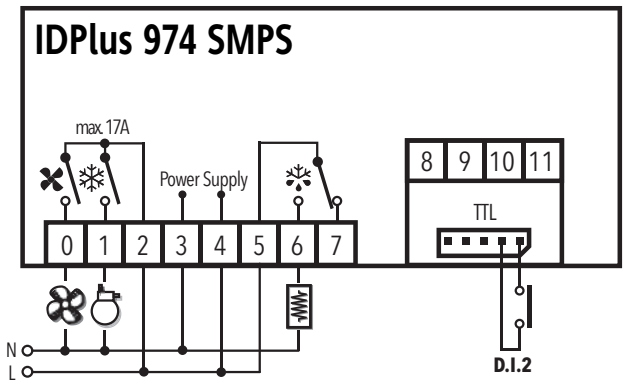
The device is designed for panel mounting. Drill a 29x71 mm hole and insert the instrument; secure it with the special brackets provided. Do not install the instrument in damp and/or dirty places; in fact, it is suitable for use in places with ordinary or normal levels of pollution. Keep the area around the instrument cooling slots adequately ventilated.



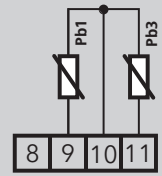


CONNECTIONS

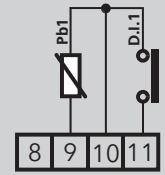




Probe connections IDPlus 961 SMPS

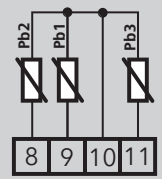


version with Pb3
(H11=0 and H43=y)

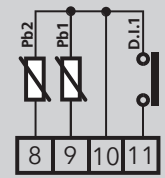


version with D.I.1
(H11≠0 and H43=n)

Probe connections IDPlus 974 SMPS



version with Pb3
(H11=0 and H43=y)



version with D.I.1
(H11≠0 and H43=n)

TERMINALS

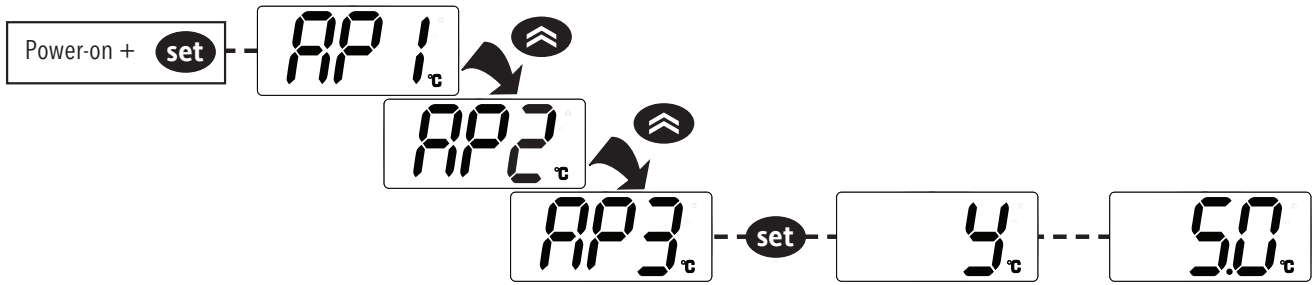
0-2	Fans relay	✻ (H23=3) (only **IDPlus 974 SMPS**)	
1-2	Compressor relay	❄ (H21=1)	
5-6-7	Defrost relay	❄ (H22=2) (only **IDPlus 974 SMPS**)	
N-L	Power supply 100 ... 240 Vac		

10-9	Probe Pb1
10-8	Probe Pb2 (only **IDPlus 974 SMPS**)
10-11	Digital Input 1/ Pb3 probe
TTL	TTL Input o Digital Input 2 (only **IDPlus 974 SMPS**)

LOADING DEFAULT APPLICATIONS

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

- when the instrument switches on, press and hold the **set** key: the label '**AP1**' will appear;
- scroll through the various applications (**AP1-AP2-AP3-AP4**) using the ⌃ and ⌄ keys;
- select the desired application using the key **set** ('**AP3**' in the example) or cancel the procedure by pressing the key ⏻; alternatively wait for the timeout;
- if the operation is successful, the display will show '**y**', otherwise '**n**' will appear;
- after a few seconds the instrument will return to the main display.



DESCRIPTION OF FAMILY

IDPlus 961/974 SMPS are controllers with

- 1 or many relay output
- 1 or many temperature regulation sensor
- 1 or many multifunctional Digital/Temperature input.

Relay outputs 2 and 3 can be used to control:

- Compressor
- Defrost heating elements
- Evaporator fans
- AUX output
- Alarm
- Stand-by

The Digital input (D.I.) can be used for:

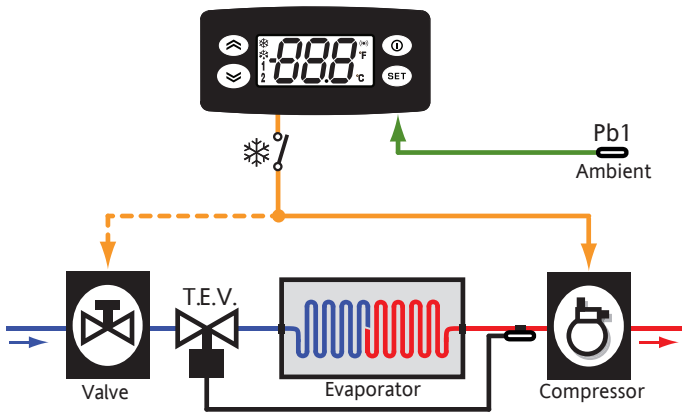
- Energy saving
- Defrost activation
- External alarm
- Standby
- Pressure switch
- Deep-cooling
- HACCP alarms
- AUX management (only 974)
- Door switch

APPLICATIONS SETTINGS

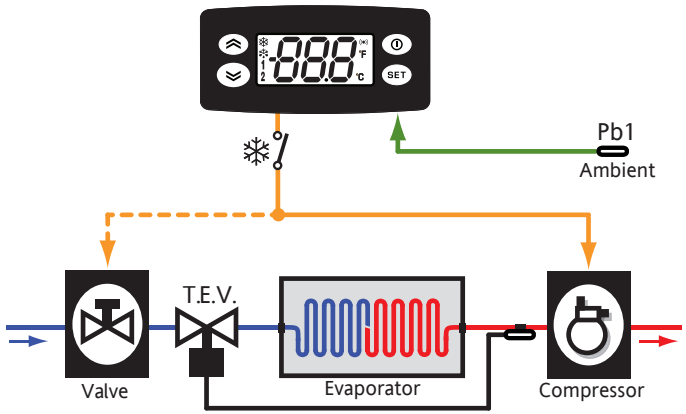
F = Functions H = Inputs and Outputs R = Relay Output	IDPlus 961 SMPS				IDPlus 974 SMPS			
	AP1	AP2	AP3	AP4	AP1	AP2	AP3	AP4
Cold application	X	X		X	X	X	X	X
Hot application			X					
F - Timed defrost	X			X				
F - End defrost by temperature					X	X	X	X
F - Alarm on Pb1	X	X	X	X	X	X	X	X
F - Overheating				X				
F - HACCP						X		
H - Pb1 present	X	X	X	X	X	X	X	X
H - Pb2 present					X	X	X	X
H - Pb3 / D.I.1 enabled	D.I.	D.I.		Pb3	D.I.	Pb3	D.I.	D.I.
H - Buzzer					X	X	X	X
R - Compressor/Filling	X	X		X	X	X	X	X
R - Heating elements			X		X	X		
R - Fans					X	X	X	X
R - Auxiliary							X	
R - Reversing valve								X

IDPlus 961 SMPS APPLICATIONS

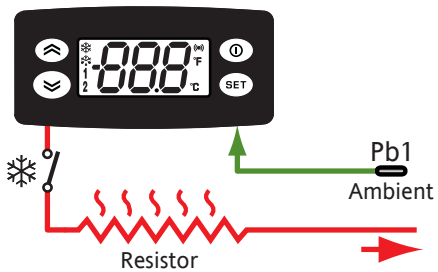
AP1



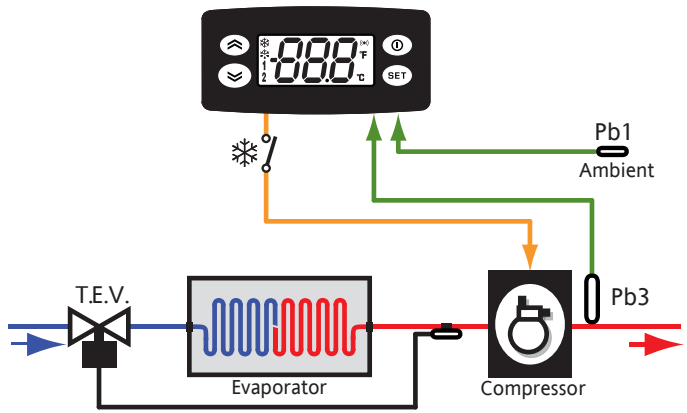
AP2



AP3



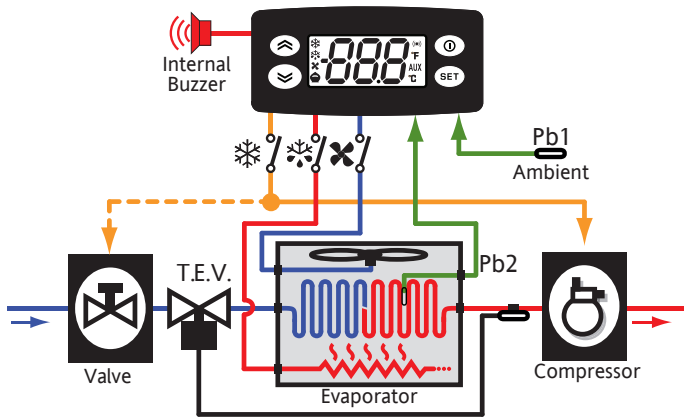
AP4



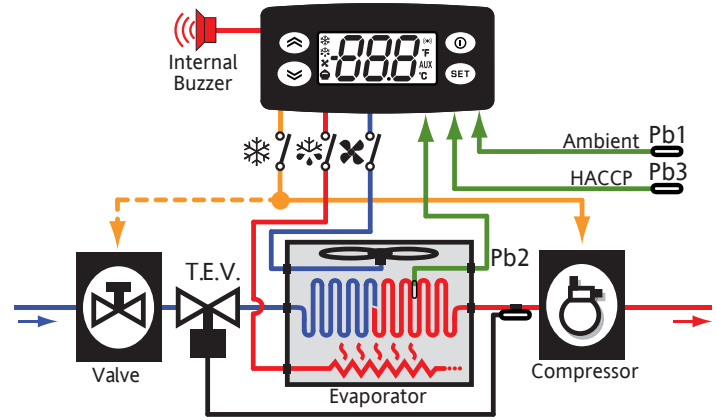
Ambient	= Ambient	**Valve**	= Valve
Evaporator	= Evaporator	**Compressor**	= Compressor
Resistor	= Resistor	**T.E.V.**	= Thermostatic Expansion Valve

IDPlus 974 SMPS APPLICATIONS

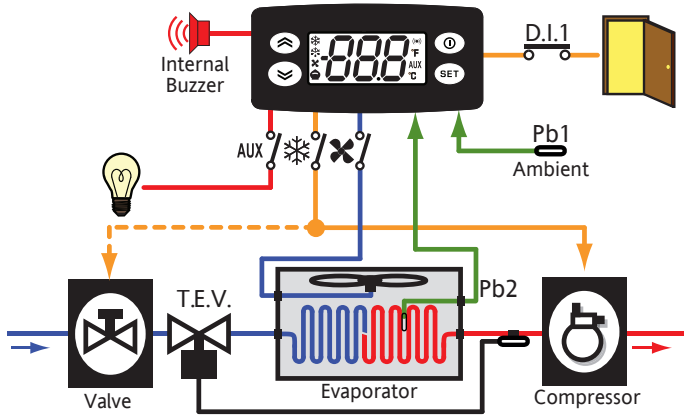
AP1



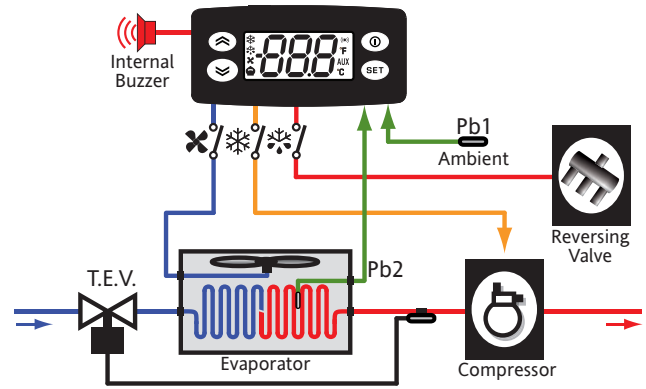
AP2



AP3



AP4



Ambient	= Ambient	**Valve**	= Valve
Evaporator	= Evaporator	**T.E.V.**	= Thermostatic Expansion Valve
Compressor	= Compressor	**AUX**	= AUX
Reversing valve	= Reversing valve	**Internal Buzzer**	= Internal Buzzer

TECHNICAL DATA (EN 60730-2-9)

Classification:	Electronic automatic control (not safety) device for incorporation
Mounting:	panel mounting with 71x29 mm (+0.2/-0.1 mm) drilling template
Type of action:	1.B
Pollution class:	2
Insulation material class:	IIIa
Overvoltage category:	II
Rated impulse voltage:	2500 V
Temperature:	Use: -5 ... 55 °C - Storage: -30 ... 85 °C
Power supply:	SMPS 100 ... 240 Vac (±10 %) 50/60 Hz
Consumption:	4.5 W max
Digital outputs (relay):	refer to the label on the device
Fire resistance category:	D
Software class:	A

NOTE: Check the power supply specified on the instrument label; contact our Sales Office for power supply and relay ratings.

FURTHER INFORMATION

Input Characteristics

Display range:	**NTC**: -50.0 ... 110 °C; **PTC**: -55.0 ... 140 °C; **PT1000**: -55.0 ... 150 °C (on display with 3 digits + sign)
Accuracy:	**NTC, PTC, PT1000** (-55.0 ... 70 °C)**:** Better than 0.5% of full scale +1 digit **PT1000** (70.0 ... 150 °C): Better than 0.6 % of full scale +1 digit
Resolution:	0.1 °C
Buzzer:	YES (depending on model)
Analogue inputs:	**IDPlus 961 SMPS**: 1 NTC (default)/PTC/PT1000 (See parameter **H00**) **IDPlus 974 SMPS**: 2 NTC (default)/PTC/PT1000 (See parameter **H00**)
Digital inputs:	**IDPlus 961 SMPS**: 1 voltage-free digital input; **IDPlus 974 SMPS**: 2 voltage-free digital inputs **N.B.**: - D.I.1 can also be configured as a probe input (**H11**=0 and **H43**=y) - D.I.2, if activated, should be connected to terminals 1-2 of the TTL (**IDPlus 974 SMPS**)

Output Characteristics

Digital outputs:	**IDPlus 961 SMPS:**	1 Compressor relay:	UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac
			UL60730 (A) 1 Hp (16FLA - 96LRA) max 120 Vac
	IDPlus 974 SMPS:	1 Defrost relay:	NO 8(4) A - NC 6(3) A max 250 Vac
		1 Compressor relay:	UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac
			UL60730 (A) 1 Hp (16FLA - 96LRA) max 120 Vac
		1 Fans relay:	5(2) A max 250 Vac

Mechanical Characteristics

Casing:	PC+ABS UL94 V-0 resin casing, polycarbonate window, thermoplastic resin keys
Dimensions:	front panel 74x32 mm, depth 59 mm (without terminals)
Terminals:	screw/disconnectable terminals for cables with a diameter of 2.5mm2
Connectors:	TTL for connection of Copy Card + D.I.2 (**IDPlus 974 SMPS** only)
Humidity:	Use / Storage: 10…90% RH (non-condensing)

Regulations

Food Safety: The device complies with standard EN 13485 as follows:

- suitable for storage
- application: air
- climate range A
- measurement class 1 in the range -25 ... 15 °C (*)

(*** exclusively using Eliwell probes)**

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

LOCK SETPOINT MODIFICATION

The keypad can be locked by entering the 'Basic Commands' menu using set and pressing ⏻ and ⌃⌃ within 2 seconds, or by programming the 'LOC' parameter (see 'diS' folder). If the keypad is locked, the 'Basic Commands' menu can be accessed and the Setpoint displayed, but the value cannot be modified.

MANUAL DEFROST CYCLE ACTIVATION

Hold down the ⌃⌃ key for longer than 5 seconds. It is only activates if the temperature conditions are fulfilled.
Otherwise, the display will flash three times to indicate that the operation will not be performed.

INSTRUMENT ON/OFF

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

PASSWORD

Password 'PA1': used to access **User** parameters. The password is not enabled by default (**PA1**=0).
To enable it (**PA1**≠0): press and hold set for longer than 5 seconds, scroll through the parameters using ⌃⌃ and ⌄⌄ until you see the label **PS1**, press set to display the value, modify it using ⌃⌃ and ⌄⌄ then save it by pressing set or ⏻. If enabled, it will be required in order to access the User parameters.

Password 'PA2': used to access **Installer** parameters. The password is enabled by default (**PA2**=15).
To modify it (**PA2**≠15): press set and hold for longer than 5 seconds, scroll through the parameters using ⌃⌃ and ⌄⌄ until you see the label **PA2**, press set, set the value to '15' using ⌃⌃ and ⌄⌄, then confirm using set. Scroll through the folders until you find the label **diS** and press set to enter. Scroll through the parameters using ⌃⌃ and ⌄⌄ until you see the label **PS2**, press set to display the value, modify it using ⌃⌃ and ⌄⌄, then save it by pressing set or ⏻.

The visibility of 'PA2' is as follows:

1) **PA1** and **PA2 ≠ 0**: Press and hold set for longer than 5 seconds to display 'PA1' and 'PA2'. It will then be possible to decide whether to access the User (PA1) or the Installer (PA2) parameters.
2) **Otherwise**: The password 'PA2' is amongst the level1 parameters. If enabled, it will be required when accessing the Installer parameters; to enter it, proceed as instructed for password "PA1".

If the password entered is incorrect, the label PA1/PA2 will be displayed again and the procedure will need to be repeated.

ACCESSING AND USING THE MENUS

Resources are organised into menus. Press and release the set key to access the 'Machine Status' menu.
To access the 'Programming' menu, press the set key for more than 5 seconds. If no keys are pressed for over 15 seconds (Timeout), or if the ⏻ key is pressed, the last value to appear on the display is confirmed.

USING THE COPY CARD

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

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

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

PROGRAMMING MENU

To access the 'Programming' menu, press the set key for more than 5 seconds. If specified, an access PASSWORD will be requested: '**PA1**' for User parameters and '**PA2**' for Installer parameters (see 'PASSWORD' paragraph).

User parameters: When accessed, the display will show the first parameter (e.g. '**diF**'). Press ⌃ and ⌄ to scroll through all the parameters on the current level. Select the desired parameter by pressing set. Press ⌃ and ⌄ to modify it and set to save the changes.

Installer parameters: When accessed, the display will show the first folder (e.g. '**CP**'). Press ⌃ and ⌄ to scroll through the folders on the current level. Select the desired folder using set. Press ⌃ and ⌄ to scroll through the parameters in the current folder and select the parameter using set. Press ⌃ and ⌄ to modify it and set to save the changes.

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

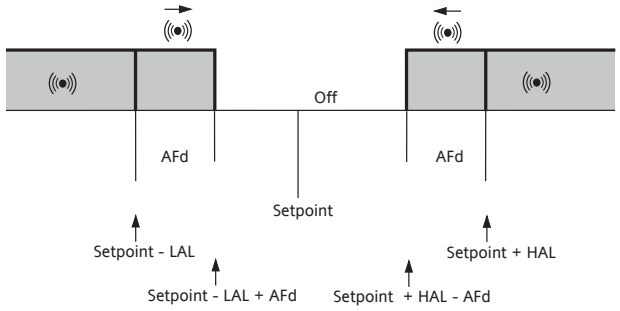
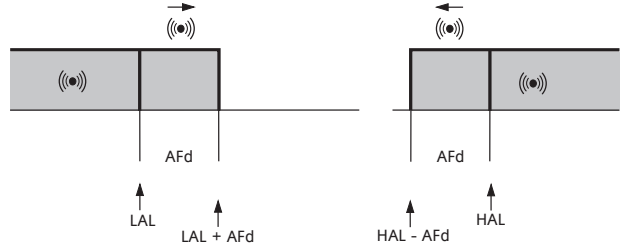
ALARMS

Label	Description	Cause	Effects	Remedy
E1	Probe1 in error (Cold room)	• measured values are outside operating range • Probe inoperable/short-circuited/open	• Display label **E1** • Alarm icon permanently on • Disable max/min alarm controller • Compressor operation based on parameters '**Ont**' and '**OFt**'.	• check probe type (par. **H00**) • check probe wiring • replace probe
E2	Probe2 in error (Defrost) **only on IDPlus 974 SMPS**	• measured values are outside operating range • Probe inoperable/short-circuited/open	• Display label **E2** • Alarm icon permanently on • The Defrost will end due to Timeout (**dEt**) • The evaporator fans will be: ON if the compressor is ON, in accordance with the **FCO** parameter if the compressor is OFF	• check probe type (par. **H00**) • check probe wiring • replace probe
E3	Probe3 in error	• measured values are outside operating range • Probe inoperable/short-circuited/open	• Display label **E3** • Alarm icon permanently on	• check probe type (par. **H00**) • check probe wiring • replace probe
AH1	Alarm for HIGH Pb1 temperature	Value read by Pb1 > HAL after time of **tAO** (see "MAX/MIN TEMP. ALARMS)	• Recording of label **AH1** in folder AL • No effect on regulation	Wait until value read by Pb1 returns below **HAL**
AL1	Alarm for LOW Pb1 temperature	Value read by Pb1 < LAL after time of **tAO** (see "MAX/MIN TEMP. ALARMS)	• Recording of label **AL1** in folder AL • No effect on regulation	Wait until value read by Pb1 returns above **LAL**
EA	External alarm	Digital input activated (H11 = ±5)	• Recording of label **EA** in folder AL • Alarm icon permanently on • Regulation locked if **rLO** = y	Check and remove the external cause which triggered the alarm on the D.I.
OPd	Door open alarm	Digital input activation (H11 = ±4) (for longer than **tdO**)	• Recording of label **Opd** in folder AL • Alarm icon permanently on • Controller locked	• close the door • delay function defined by **OAO**
Ad2	Defrost due to timeout	End of defrost cycle due to timeout rather than due to defrost end temperature being recorded by Pb2	• Recording of label **Ad2** in folder AL • Alarm icon permanently on	Wait for the next defrost cycle for automatic return

Label	Description	Cause	Effects	Remedy
COH	Over Heating alarm	Pb3 value set by parameter **SA3** exceeded	• Recording of label **COH** in folder **AL** • Alarm icon permanently on • Regulation locked (Compressor)	Wait for the temperature to return to a value of (**SA3-dA3**).
nPA	General pressure switch alarm	Activation of pressure alarm by general pressure switch	If the number **N** of pressure switch activations is: **N** < **PEn**: • Recording of folder **nPA** in folder AL, with the number of pressure switch activations • Regulation locked (Compressor and Fans)	Check and remove the cause which triggered the alarm on the D.I. (Automatic Reset)
PAL	General pressure switch alarm	Activation of pressure alarm by general pressure switch	If the number **N** of pressure switch activations is: **N** = **PEn**: • Display label **PAL** • Recording of label **PA** in folder AL • Alarm LED steady • Regulation locked (Compressor and Fans)	• Switch the device off and back on again • Reset alarms by entering the functions folder and selecting the **rAP** function (Manual Reset)
HC **n**	Max/Min Pb3 value when out of range (SLH...SHH)	Logs the Max/Min value recorded by Pb3 when it exceeds range SLH...SHH. **n** represents the sequential number of times the range is exceeded.	• Recording of folder 'HC **n**' in folder AL • Alarm LED steady • No effect on regulation	**NB**: **n** can assume the values 1 to 8. If **n**>8, folder HC8 will flash and the system will overwrite folders where **n**=1
tC **n**	Pb3 out-of-range dwell time (SLH...SHH)	Stores the dwell time of the Pb3 value outside range SLH...SHH. **n** represents the sequential number of times the range is exceeded.	• Recording of folder 'tC **n**' in folder AL • Alarm LED steady • No effect on regulation	**NB**: **n** can assume the values 1 to 8. If **n**>8, folder HC8 will flash and the system will overwrite folders where **n**=1
bC **n**	Value recorded by Pb3 on return from **bOt**	Logs the value recorded by Pb3 on return from a blackout. **n** represents the sequential number of blackouts that have occurred.	• Recording of folder 'bC **n**' in folder AL • No effect on regulation	**NB**: **n** can assume the values 1 to 8. If **n**>8, folder bC8 will flash and the system will overwrite folders where **n**=1
bt **n**	Pb3 out-of-range dwell time during **bOt**	Stores the out-of-range dwell time of the Pb3 value during a blackout. **n** represents the sequential number of blackouts that have occurred.	• Recording of folder 'bt **n**' in folder AL. The value contained will be **0** if the value of Pb3 has remained within the range, **≠ 0** if the value has gone outside of the range • No effect on regulation	**N.B.**: **n** can assume the values 1 to 8. If **n**>8, folder bC8 will flash and the system will overwrite folders where **n**=1.

NOTE: to delete folders "HC **n**", "tC **n**", "bC **n**" and "bt **n**" from folder AL, start function **rES** in folder FnC.

MAX/MIN TEMPERATURE ALARMS

	Temperature as a value relative to Setpoint (Att=1)	**Temperature as an Absolute value (Att=0)**
		
Minimum alarm	Temp. ≤ **Set + LAL ***	Temp. ≤ **LAL** (**LAL** with sign)
Maximum alarm	Temp. ≥ **Set + HAL ****	Temp. ≥ **HAL** (**HAL** with sign)
Returning from minimum temperature alarm	Temp. ≥ **Set + LAL + AFd** or ≥ **Set -** |**LAL**| **+ AFd** (LAL < 0)	Temp. ≥ **LAL + AFd**
Returning from maximum temperature alarm	Temp. ≤ **Set + HAL - AFd** (HAL > 0)	Temp. ≤ **HAL - AFd**
	*** if LAL is negative, Set + LAL < Set** **** if HAL is negative, Set + HAL < Set**	

DIAGNOSTICS

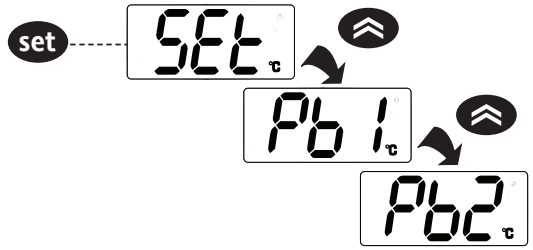
Alarms are always indicated by the buzzer (if present) and the alarm icon (•).
To switch off the buzzer, press and release any key; the corresponding icon will continue to flash.

N.B.: If alarm exclusion times have been set (see 'AL' folder) the alarm will not be signalled.

In the event of an alarm caused by the ambient probe (Pb1) in error, the indication '**E1**' will appear on the display.
For the evaporator probe (Pb2) in error, the indication '**E2**' will appear (**IDPlus 974 SMPS** only).
Finally, for a Pb3 probe in error, the indication '**E3**' will appear on the display.

MACHINE STATUS MENU

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



- AL: alarms folder (**only visible if an alarm is active**);
- SEt: Setpoint setting folder;
- Pb1: probe 1 - Pb1 folder;
- Pb2: probe 2 - Pb2***** folder (**Only IDPlus 974 SMPS**);
- Pb3: probe 3 - Pb3****** folder;

*** folder displayed if Pb2 present (H42 = y)**
**** folder displayed if Pb3 present (H11 = 0 and H43 = y)**

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

Displaying the probes: When labels Pb1, Pb2 or Pb3 are present, press the set key to view the value measured by the corresponding probe (**NOTE**: the value cannot be modified).

LIABILITY AND RESIDUAL RISKS

ELIWELL CONTROLS SRL declines any liability for damage due to:

- installation/uses different from those specified and, in particular, not complying with the safety regulations and/or instructions given in this document;
- use on panels that do not provide adequate protection against electric shocks, water or dust when assembled;
- use on panels allowing access to dangerous parts without the use of tools;
- tampering with and/or modifying the product;
- installation/use on panels not complying with current standards and regulations.

PARAMETERS TABLE OF IDPLUS 961 SMPS

PAR.	DESCRIPTION	RANGE	AP1	AP2	AP3	AP4	M.U.	LEV.
SEt	Temperature control SEtpoint.	LSE ... HSE	0,0	0,0	0,0	-2,0	°C/°F	1/2
	COMPRESSOR ('CP' folder)							
diF	diFferential. Compressor relay activation differential.	0,1...30,0	2,0	2,0	2,0	0,1	°C/°F	1/2
HSE	Higher SEt. Maximum value that can be assigned to the Setpoint.	LSE...302	99,0	140	140	5,0	°C/°F	1/2
LSE	Lower SEt. Minimum value that can be assigned to the Setpoint.	-58.0...HSE	-50,0	-55,0	-55,0	-10,0	°C/°F	1/2
OSP	Temperature value to be added to **SEt** if reduced set enabled (Economy function).	-30,0...30,0	3,0	3,0	0,0	0,0	°C/°F	2
Hc	Control mode. **C** (0) = Cold; **H** (1) = Hot.	C/H	C	C	H	C	flag	2
Ont	Controller on time for faulty probe. if **Ont** = 1 and **OFt** = 0, the compressor remains on; if **Ont** =1 and **OFt**>0 it runs in duty cycle mode.	0 ... 250	0	0	0	0	min	2
OFt	Controller off time for faulty probe. if **OFt** = 1 and **Ont** = 0, the controller remains off; if **OFt** = 1 and **Ont** > 0, it operates in duty cycle mode.	0 ... 250	1	1	1	1	min	2
dOn	Compressor relay activation delay after request.	0 ... 250	0	0	0	0	s	2
dOF	Delay after switching off and subsequent activation.	0 ... 250	0	0	0	0	min	2
dbi	Delay between two consecutive compressor activations.	0 ... 250	0	0	0	0	min	2
OdO	Delay in activating outputs after the instrument is switched on or after a power failure. **0** = not active.	0 ... 250	0	0	0	0	min	2
dcS	Deep Cooling cycle Setpoint.	-58,0...302	0,0	0,0	0,0	0,0	°C/°F	2
tdc	Deep Cooling cycle duration.	0 ... 255	0	0	0	0	min*10	2
dcc	Defrost activation delay after a Deep Cooling cycle.	0 ... 255	0	0	0	0	min	2
	DEFROST ('dEF' folder)							
dit	Interval between the start of two consecutive defrost cycles.	0 ... 250	6	0	0	8	hours	1/2
dCt	Selection of count mode for the defrost interval. **0** = compressor running time; **1** = appliance running time; **2** = A defrost cycle is run at each compressor stop.	0/1/2	1	1	1	1	num	2
dOH	Delay for start of first defrost after request.	0 ... 59	0	0	0	0	min	2
dEt	Defrost timeout; determines the maximum defrost duration.	1 ... 250	30	1	1	30	min	1/2

PAR.	DESCRIPTION	RANGE	AP1	AP2	AP3	AP4	M.U.	LEV.
dPO	Determines whether the instrument must enter defrost mode at start-up.	n/y	n	n	n	n	flag	2
	ALARMS ('AL' folder)							
Att	Can be used to select absolute (**Att=0**) or relative (**Att=1**) values for HAL and LAL parameters.	0/1	0	0	0	0	num	2
Afd	Alarm differential.	1,0 ... 50,0	2,0	2,0	2,0	2,0	°C/°F	2
HAL	Maximum temperature alarm.	LAL...302	50,0	150	150	50,0	°C/°F	1/2
LAL	Minimum temperature alarm.	-58.0...HAL	-50,0	-50,0	-50,0	-50,0	°C/°F	1/2
PAO	Alarm exclusion time after re-activation following a power failure.	0 ... 10	0	0	0	0	hours	2
dAO	Temperature alarm exclusion time after defrost.	0 ... 999	0	0	0	0	min	2
OAO	Alarm signalling delay after disabling of digital input.	0 ... 10	0	0	0	0	hours	2
tdO	Delay in door open alarm activation.	0 ... 250	0	0	0	0	min	2
tAO	Time delay for temperature alarm indication.	0 ... 250	0	0	0	0	min	2
rLO	An external alarm locks the controllers. **n** (0) = does not lock; **y** (1)= locks.	n/y	n	n	n	n	flag	2
SA3	Probe 3 alarm Setpoint.	-58,0...302	0,0	0,0	0,0	70,0	°C/°F	1/2
dA3	Probe 3 alarm differential.	1,0 ... 50,0	1,0	1,0	1,0	10,0	°C/°F	2
	LIGHTS & DIGITAL INPUTS ('Lit' folder)							
dOd	Digital input for switching off utilities. **0** = disabled; **1** = disables fans; **2** = disables the compressor; **3** = disables fans and compressor.	0/1/2/3	0	0	0	0	num	2
dAd	Activation delay for digital input.	0 ... 255	0	0	0	0	min	2
dCO	Compressor deactivation delay after door opened.	0 ... 255	1	1	1	1	min	2
	PRESSURE SWITCH ('PrE' folder)							
Pen	Number of errors allowed per maximum/minimum pressure switch input.	0 ... 15	0	0	0	0	num	2
PEI	Minimum/maximum pressure switch error count interval.	1 ... 99	1	1	1	1	min	2
PEt	Delay in activating compressor after pressure switch deactivation.	0 ... 255	0	0	0	0	min	2
	COMMUNICATION ('Add' folder)							
PtS	Communication protocol selection. **t** (0) = Televis; **d** (1) = Modbus.	t/d	t	t	t	t	flag	2
dEA	Index of the device inside the family (valid values from 0 to 14).	0 ... 14	0	0	0	0	num	2
FAA	Device family - valid values from 0 to 14.	0 ... 14	0	0	0	0	num	2

PAR.	DESCRIPTION	RANGE	AP1	AP2	AP3	AP4	M.U.	LEV.
Pty	Modbus parity bit. **n** (0) = none; **E** (1) = even; **o** (2) = odd.	n/E/o	n	n	n	n	num	2
StP	Modbus stop bit. **1b** (0)= 1 bit ; **2b** (1)=2 bit.	1b/2b	1b	1b	1b	1b	flag	2
	DISPLAY ('diS' folder)							
LOC	Basic commands modification lock. It is still possible to enter parameter programming mode and modify them. **n** (0) = no; **y** (1) = yes.	n/y	n	n	n	n	flag	1/2
PS1	PAssword1: if **PS1≠0** is the access key to '**User**' parameters.	0 ... 250	0	0	0	0	num	1/2
PS2	PAssword2: if **PS2≠0** is the access key to '**Installer**' parameters.	0 ... 250	15	15	15	15	num	2
ndt	Display with decimal point. **n** (0) = no. **y** (1) = yes.	n/y	y	y	y	y	flag	2
CA1	Calibration 1. Temperature value to be added to the Pb1 value.	-12,0...12,0	0,0	0,0	0,0	0,0	°C/°F	1/2
CA3	Calibration 3. Temperature value to be added to the Pb3 value.	-12,0...12,0	0,0	0,0	0,0	0,0	°C/°F	1/2
ddL	Display mode during defrost. **0**= display temperature recorded by Pb1; **1**= lock recorded Pb1 value at the start of the defrost cycle; **2**= display the 'dEF' label.	0/1/2	0	0	0	0	num	1/2
Ldd	Timeout value for display unlock - dEF label.	0 ... 255	30	30	30	30	min	1/2
dro	Select the measurement unit used when displaying the temperature. (**0**=°C, **1**=°F). **NOTE**: switching between °C and °F or vice-versa DOES NOT modify the SEt, diF values, etc. (e.g. Setpoint=10°C becomes 10°F).	0/1	0	0	0	0	flag	2
ddd	Selects type of value to display. **0** = Setpoint; **1** = probe Pb1; **2** = probe Pb2; **3** = probe Pb3.	0/1/2/3	1	1	1	1	num	2
	HACCP ('HCP' folder)							
SHH	Maximum HACCP alarm signals threshold.	-55,0...150	0,0	0,0	0,0	0,0	°C/°F	2
SLH	Minimum HACCP alarm signals threshold.	-55,0...150	0,0	0,0	0,0	0,0	°C/°F	2
drA	Minimum time spent in critical range for the event to be recorded. After this a HACCP alarm will be triggered and logged.	0 ... 99	0	0	0	0	min	2
drH	HACCP alarm reset time after last reset.	0 ... 250	0	0	0	0	hours	2
H50	Enable HACCP and alarm relay functions. **0** = HACCP alarms NOT enabled; **1** = HACCP alarms enabled and alarm relay NOT enabled; **2** = HACCP alarms enabled and alarm relay enabled.	0/1/2	0	0	0	0	num	2
H51	HACCP alarm exclusion time.	0 ... 250	0	0	0	0	min	2

PAR.	DESCRIPTION	RANGE	AP1	AP2	AP3	AP4	M.U.	LEV.
	CONFIGURATION ('CnF' folder) ➡ If one or more parameters in this forder are changed, the controller MUST be turn off and back on.							
H00	Probe type selection. **0** = PTC; **1** = NTC; **2** = PT1000.	0/1/2	1	1	1	1	num	2
H11	Configuration of digital input 1/polarity. **0** = disabled; **±1** = defrost; **±2** = economy Setpoint; **±3**= AUX; **±4**= door switch; **±5** = external alarm; **±6**= Standby; **±7**= pressure switch; **±8**= Deep Cooling; **±9**= disable HACCP alarm logging. **NOTE**: • the "+" sign indicates that the input is active if the contact is closed. • the "-" sign indicates that the input is active if the contact is open.	-9 ... +9	0	0	0	0	num	2
H21	Configurability of digital output 1 (❄). **0**= disabled; **1**= compressor; **2**= defrost; **3**= fans; **4**= alarm; **5**= AUX; **6**= stand-by.	0 ... 6	1	1	1	1	num	2
H31	Configurability of UP key. **0**= disabled; **1**= defrost; **2**= not used; **3**= economy Setpoint; **4**= stand-by; **5**= reset HACCP alarms; **6**= disable HACCP alarms; **7**= deep Cooling.	0 ... 7	1	0	0	1	num	2
H32	Configurability of DOWN key. Same as H31.	0 ... 7	0	0	0	0	num	2
H43	Probe Pb3 present. **n** (0) = not present; **y** (1) = present.	n/y	n	n	n	y	flag	1/2
reL	Device version. Read-only parameter.	/	/	/	/	/	/	1/2
tAb	tAble of parameters. Reserved: read-only parameter.	/	/	/	/	/	/	1/2
	COPY CARD ('FPr' folder)							
UL	Programming parameter transfer from instrument to Copy Card.	/	/	/	/	/	/	2
Fr	Format Copy Card. Erase all data contained in the Copy Card. **NOTE: if parameter "Fr" is used, the data entered will be permanently lost. This operation cannot be cancelled.**	/	/	/	/	/	/	2
	FUNCTIONS ('FnC' folder)							
rAP	Reset pressure switch alarms.	/	/	/	/	/	/	2
rES	Reset HACCP alarms.	/	/	/	/	/	/	2

PARAMETERS TABLE OF IDPLUS 974 SMPS

PAR.	DESCRIPTION	RANGE	AP1	AP2	AP3	AP4	M.U.	LEV.
SEt	Temperature control SEtpoint.	LSE ... HSE	0,0	0,0	0,0	0,0	°C/°F	1/2
	COMPRESSOR ('CP' folder)							
diF	diFferential. Compressor relay activation differential.	0,1...30,0	2,0	2,0	2,0	2,0	°C/°F	1/2
HSE	Higher SEt. Maximum value that can be assigned to the Setpoint.	LSE...302	99,0	99,0	99,0	99,0	°C/°F	1/2
LSE	Lower SEt. Minimum value that can be assigned to the Setpoint.	-58,0...HSE	-50,0	-50,0	-50,0	-50,0	°C/°F	1/2
OSP	Temperature value to be added to **SEt** if reduced set enabled (Economy function).	-30,0...30,0	3,0	0,0	0,0	3,0	°C/°F	2
Hc	Control mode. **C** (0) = Cold; **H** (1) = Hot.	C/H	C	C	C	C	flag	2
Ont	Controller on time for faulty probe. If **Ont = 1** and **OFt = 0**, the compressor remains on; if **Ont=1** and **OFt>0** it runs in duty cycle mode	0 ... 250	0	0	0	0	min	2
OFt	Controller off time for faulty probe. If **OFt = 1** and **Ont = 0**, the controller remains off; if **OFt = 1** and **Ont>0**, it operates in duty cycle mode	0 ... 250	1	1	1	1	min	2
dOn	Compressor relay activation delay after request	0 ... 250	0	0	0	0	s	2
dOF	Delay after switching off and subsequent activation	0 ... 250	0	0	0	0	min	2
dbi	Delay between two consecutive compressor activations	0 ... 250	0	0	0	0	min	2
OdO	Delay in activating outputs after the instrument is switched on or after a power failure. **0** = not active.	0 ... 250	0	0	0	0	min	2
dcS	Deep Cooling cycle Setpoint.	-58,0...302	0,0	0,0	0,0	0,0	°C/°F	2
tdc	Deep Cooling cycle duration.	0 ... 255	0	0	0	0	min*10	2
dcc	Defrost activation delay after a Deep Cooling cycle.	0 ... 255	0	0	0	0	min	2
	DEFROST ('dEF' folder)							
dtY	Type of defrost. **0** = electrical defrost; **1** = reverse cycle defrost; **2** = defrost independent of compressor.	0/1/2	0	0	0	1	num	1/2
dit	Interval between the start of two consecutive defrost cycles.	0 ... 250	6	6	6	6	hours	1/2
dCt	Selection of count mode for the defrost interval. **0** = compressor running time; **1** = appliance running time; **2** = A defrost cycle is run at each compressor stop.	0/1/2	1	1	1	1	num	2

PAR.	DESCRIPTION	RANGE	AP1	AP2	AP3	AP4	M.U.	LEV.
dOH	Delay for start of first defrost after request.	0 ... 59	0	0	0	0	min	2
dEt	Defrost timeout; determines the maximum defrost duration.	1 ... 250	30	30	30	30	min	1/2
dSt	Defrost end temperature - determined by probe Pb2.	-50,0...150	8,0	8,0	8,0	50,0	°C/°F	1/2
dPO	Determines whether the instrument must enter defrost mode at start-up.	n/y	n	n	n	n	flag	2
	FANS ('FAn' folder)							
FSt	Fans stop temperature.	-58,0...302	50,0	50,0	50,0	50,0	°C/°F	1/2
FAd	Fan activation differential.	1,0 ... 50,0	2,0	2,0	2,0	2,0	°C/°F	2
Fdt	Fan activation delay after a defrost cycle.	0 ... 250	0	0	0	0	min	1/2
dt	Coil drainage time.	0 ... 250	0	0	0	0	min	1/2
dFd	Allows evaporator fan exclusion to be selected or not selected during defrosting. **n** (0) = no (it depends on FCO parameter); **y** (1) = yes (fans excluded).	n/y	y	y	y	y	flag	1/2
FCO	Selects or deselects fan deactivation at compressor OFF. **0** = fans off; **1** = fans active; **2** = duty cycle.	0/1/2	0	0	0	0	num	2
FOn	Fans ON time in day duty cycle.	0 ... 99	0	0	0	0	min	2
FOF	Fans OFF time in day duty cycle.	0 ... 99	0	0	0	0	min	2
Fnn	Fans ON time in night duty cycle.	0 ... 99	0	0	0	0	min	2
FnF	Fans OFF time in night duty cycle.	0 ... 99	0	0	0	0	min	2
ESF	Night mode activation. **n** (0) = no; **y** (1) = yes.	n/y	n	n	n	n	flag	2
	ALARMS ('AL' folder)							
Att	Can be used to select absolute (**Att=0**) or relative (**Att=1**) values for HAL and LAL parameters.	0/1	0	0	0	0	num	2
Afd	Alarm differential.	1,0 ... 50,0	2,0	2,0	2,0	2,0	°C/°F	2
HAL	Maximum temperature alarm.	LAL...302	50,0	50,0	50,0	50,0	°C/°F	1/2
LAL	Minimum temperature alarm.	-58,0...HAL	-50,0	-50,0	-50,0	-50,0	°C/°F	1/2
PAO	Alarm exclusion time after re-activation following a power failure.	0 ... 10	0	0	0	0	hours	2
dAO	Temperature alarm exclusion time after defrost.	0 ... 999	0	0	0	0	min	2
OAO	Alarm signalling delay after disabling of digital input.	0 ... 10	0	0	0	0	hours	2
tdO	Delay in door open alarm activation.	0 ... 250	0	0	0	0	min	2

PAR.	DESCRIPTION	RANGE	AP1	AP2	AP3	AP4	M.U.	LEV.
tAO	Time delay for temperature alarm indication.	0 ... 250	0	0	0	0	min	2
dAt	Alarm signalling end of defrost due to timeout. **n** (0) = no; **y** (1) = yes.	n/y	n	n	n	n	flag	2
rLO	External alarm locks controllers. **n** (0) = does not lock; **y** (1) = locks.	n/y	n	n	n	n	flag	2
SA3	Probe 3 alarm Setpoint.	-58,0...302	0,0	0,0	0,0	0,0	°C/°F	2
dA3	Probe 3 alarm differential.	1,0 ... 50,0	1,0	1,0	1,0	1,0	°C/°F	2
	LIGHTS & DIGITAL INPUTS ('Lit' folder)							
dOd	Digital input for switching off utilities. **0**=disabled; **1**=disables fans; **2**=disables the compressor; **3**=disables fans and compressor.	0/1/2/3	0	0	0	0	num	2
dAd	Activation delay for digital input.	0 ... 255	0	0	0	0	min	2
dCO	Compressor deactivation delay after door opened.	0 ... 255	1	1	1	1	min	2
AuP	Aux output activation when door opened. **n** (0) = not linked; **y** (1) = linked.	n/y	n	n	y	n	flag	2
	PRESSURE SWITCH ('PrE' folder)							
Pen	Number of errors allowed per maximum/minimum pressure switch input.	0 ... 15	0	0	0	0	num	2
PEI	Minimum/maximum pressure switch error count interval.	1 ... 99	1	1	1	1	min	2
PEt	Delay in activating compressor after pressure switch deactivation.	0 ... 255	0	0	0	0	min	2
	COMMUNICATION ('Add' folder)							
PtS	Communication protocol selection. **t** (0) = Televis; **d** (1) = Modbus.	t/d	t	t	t	t	flag	2
dEA	Index of the device inside the family (valid values from 0 to 14).	0 ... 14	0	0	0	0	num	2
FAA	Device family - valid values from 0 to 14.	0 ... 14	0	0	0	0	num	2
Pty	Modbus parity bit. **n** (0) = none; **E** (1) = even; **o** (2) = odd.	n/E/o	n	n	n	n	num	2
StP	Modbus stop bit. **1b** (0) = 1 bit ; **2b** (1) =2 bit.	1b/2b	1b	1b	1b	1b	flag	2
	DISPLAY ('diS' folder)							
LOC	Basic commands modification lock. It is still possible to enter parameter programming mode and modify them. **n** (0) = no; **y** (1) = yes.	n/y	n	n	n	n	flag	1/2
PS1	PAssword1: if **PS1≠0** is the access key to **User** parameters.	0 ... 250	0	0	0	0	num	1/2
PS2	PAssword2: if **PS2≠0** is the access key to **Installer** parameters.	0 ... 250	15	15	15	15	num	2
ndt	Display with decimal point. **n** (0) = no; **y** (1) = yes.	n/y	y	y	y	y	flag	2
CA1	Calibration 1. Temperature value to be added to the Pb1 value.	-12,0...12,0	0,0	0,0	0,0	0,0	°C/°F	1/2

PAR.	DESCRIPTION	RANGE	AP1	AP2	AP3	AP4	M.U.	LEV.
CA2	Calibration 2. Temperature value to be added to the Pb2 value	-12,0...12,0	0,0	0,0	0,0	0,0	°C/°F	1/2
CA3	Calibration 3. Temperature value to be added to the Pb3 value	-12,0...12,0	0,0	0,0	0,0	0,0	°C/°F	1/2
ddL	Display mode during defrost. **0** = display the temperature recorded by Pb1; **1** = lock recorded value of Pb1 at defrost start; **2** = display the "dEF" label	0/1/2	0	0	0	0	num	1/2
Ldd	Timeout value for display unlock - dEF label	0 ... 255	30	30	30	30	min	1/2
dro	Select the measurement unit used when displaying the temperature. (**0**=°C, **1**=°F). **NOTE**: switching between °C and °F or vice-versa DOES NOT modify the SEt, diF values, etc. (e.g. Setpoint=10°C becomes 10°F).	0/1	0	0	0	0	flag	2
ddd	Selects the type of value to display. **0** = Setpoint; **1** = probe Pb1; **2** = probe Pb2; **3** = probe Pb3.	0/1/2/3	1	1	1	1	num	2
	HACCP ('HCP' folder)							
SHH	Maximum HACCP alarm signals threshold.	-55,0...150	0	10	0	0	°C/°F	1/2
SLH	Minimum HACCP alarm signals threshold.	-55,0...150	0	-10	0	0	°C/°F	1/2
drA	Minimum time spent in critical range for the event to be recorded. After this a HACCP alarm will be triggered and logged.	0 ... 99	0	10	0	0	min	1/2
drH	HACCP alarm reset time after last reset.	0 ... 250	0	24	0	0	hours	1/2
H50	Enable HACCP and alarm relay functions. **0**= HACCP alarms NOT enabled; **1** = HACCP alarms enabled and alarm relay NOT enabled; **2** = HACCP alarms enabled and alarm relay enabled.	0/1/2	0	1	0	0	num	1/2
H51	HACCP alarm exclusion time.	0 ... 250	0	0	0	0	min	1/2
	CONFIGURATION ('CnF' folder) ➡ If one or more parameters in this forder are changed, the controller MUST be turn off and back on.							
H00	Probe type selection. **0** = PTC; **1** = NTC; **2** = PT1000.	0/1/2	1	1	1	1	num	2
H11	Configuration of digital input 1/polarity. **0** = disabled; **±1** = defrost; **±2** = economy Setpoint; **±3**= AUX; **±4**= door switch; **±5** = external alarm; **±6**= Standby; **±7**= pressure switch; **±8**= Deep Cooling; **±9**= disable HACCP alarm logging. **NOTE**: • the "+" sign indicates that the input is active if the contact is closed. • the "-" sign indicates that the input is active if the contact is open.	-9 ... +9	0	0	4	0	num	2

PAR.	DESCRIPTION	RANGE	AP1	AP2	AP3	AP4	M.U.	LEV.
H12	Configuration of digital input 2/polarity. Same as H11.	-9 ... +9	0	0	0	0	num	2
H21	Configurability of digital output 1 (❄). **0** = disabled; **1** = compressor; **2** = defrost; **3** = fans; **4** = alarm; **5** = AUX; **6** = Standby.	0 ... 6	1	1	1	1	num	2
H22	Configurability of digital output 2 (❄). Same as H21.	0 ... 6	2	2	5	2	num	2
H23	Configurability of digital output 3 (✱). Same as H21.	0 ... 6	3	3	3	3	num	2
H25	Enable/Disable buzzer. **0** = Disabled; **4** = Enabled; **1-2-3-5-6-7-8** = not used.	0 ... 8	0	0	0	0	num	2
H31	Configurability of UP key. **0** = disabled; **1** = defrost; **2** = AUX; **3** = economy Setpoint; **4** = Standby; **5** = reset HACCP alarms; **6** = disable HACCP alarms; **7** = Deep Cooling.	0 ... 7	1	1	1	1	num	2
H32	Configurability of DOWN key. Same as H31	0 ... 7	0	0	0	0	num	2
H42	Evaporator probe present. **n** (0) = not present; **y** (1) = present.	n/y	y	y	y	y	flag	1/2
H43	Probe 3 present. **n** (0) = not present; **y** (1) = present.	n/y	n	y	n	n	flag	1/2
rEL	Device version. Read-only parameter.	/	/	/	/	/	/	1/2
tAb	tAble of parameters. Reserved: read-only parameter.	/	/	/	/	/	/	1/2
	COPY CARD ('FPr' folder)							
UL	Programming parameter transfer from instrument to Copy Card .	/	/	/	/	/	/	2
Fr	Format Copy Card. Erase all data contained in the Copy Card. **NOTE: If parameter "Fr" is used, the data entered will be permanently lost. This operation cannot be cancelled.**	/	/	/	/	/	/	2
	FUNCTIONS ('FnC' folder)							
rAP	Reset pressure switch alarms.	/	/	/	/	/	/	2
rES	Reset HACCP alarms.	/	/	/	/	/	/	2

DISCLAIMER

ELECTRICAL CONNECTIONS

Attention! Make sure the machine is switched off before working on the electrical connections.

The instrument is equipped with screw or disconnectable terminal blocks for connecting electrical cables with a max. diameter of 2.5 mm^2 (one wire per terminal for power connections): for the terminal ratings, see the label on the instrument. Do not exceed the maximum permissible current; in case of higher loads, use a suitably rated contactor. Make sure the power supply voltage complies with that required by the instrument. Probes have no connection polarity and can be extended using a normal bipolar cable (note that the extension of the probes influences the electromagnetic compatibility - EMC - of the instrument: take great care with the wiring).
Probe cables, power supply cables and the TTL serial cable should be routed separately from power cables.

CONDITIONS OF USE

Permitted use

For safety reasons, the instrument must be installed and used according to the instructions supplied and, in particular, parts under dangerous voltages must not be accessible in normal conditions. The device must be adequately protected from water and dust with regard to its application, and must only be accessible using tools (except for the front panel). The device is suitable for use in household refrigeration appliances and/or similar equipment and has been tested for safety aspects in accordance with the harmonised European reference standards.

Improper use

Any use other than that expressly permitted is prohibited. The relay contacts provided are of a functional type and subject to failure: any protection devices required by product standards, or suggested by common sense for obvious safety requirements, must be installed externally to the instrument.

DISPOSAL

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

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