eliwell
by Schneider Electric

IDPLUS

The complete range of electronic controllers for refrigeration installers.

Flexibility, ease of use and the large display are just some of the features that make IDPlus the optimal solution for your applications on static or ventilated refrigerated units.

USER MANUAL

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The **NEW** ID Plus family of devices consists of electronic microprocessor controllers developed for the management of chiller cabinets, display windows and refrigeration units.
They offer 4 preloaded and easily selectable parameter maps to respond to the most widespread applications, as well as enabling a significant reduction in installation times and the number of parameters to modify.

MAIN FEATURES

The following table lists the main features of models in the IDPlus family.

Feature	Model				
	IDPlus 902	IDPlus 961/961 SMPS	IDPlus 971	IDPlus 974/974 SMPS	IDPlus 978
4-key keypad	✓	✓	✓	✓	✓
Setpoint edit lock to prevent tampering	✓	✓	✓	✓	✓
Password controlled access to configuration parameters	✓	✓	✓	✓	✓
Display range	NTC: -50.0°C ... +110°C; PTC: -55.0°C ... +140°C; PT1000: -50.0°C ...+150°C				
Configurable decimal point	✓	✓	✓	✓	✓
Configurable °C/°F display	✓	✓	✓	✓	✓
LEDs present on display	❄ ❄ ◓ (•) 1 2 °C °F		❄ ❄ ✕ ◓ AUX (•) °C °F		
Defrost: (*) end defrost by timeout	✓(*)	✓(*)	✓	✓	✓
end defrost by temperature	×	×	✓	✓	✓
Number of analogue inputs for NTC/PTC/PT1000 probes	1	1	2	2	2
Analogue inputs Pb3 / Digital input D.I.1 (*)	1	1	1	1	1
Digital input D.I.2	0	0	1	1	1
Display probe 3	✓	✓	✓	✓	✓
Relay outputs (*)	**OUT1**	❄	❄ ❄	❄ ❄ ✕	❄ ❄ ✕ ⚠
Relay ratings	8A changeover	1 - 2Hp	2Hp + 8A	1 - 2Hp + 8A + 5A	1.5Hp+8A+5A+5A
TTL for connection to Copy Card	✓	✓	✓	✓	✓
Buzzer	×	×	Optional (*)	✓	✓
Quick fitting to panel using brackets	✓	✓	✓	✓	✓
Quick selection of the 4 preloaded applications	✓	✓	✓	✓	✓

(*) refer to the label on the device

⚠ **IMPORTANT**: each feature must always be verified with the model available.

MODELS

The 5 models in the IDPlus family differ in terms of the number of inputs and outputs and, more particularly:

- **IDPlus 902**: 1 analogue input, 1 digital/analogue input and 1 changeover relay output (8A)
- **IDPlus 961**: 1 analogue input, 1 digital/analogue input and 1 relay output (2 Hp)
- **IDPlus 961 SMPS**: 1 analogue input, 1 digital/analogue input and 1 relay output (1 - 2 Hp)
- **IDPlus 971**: 2 analogue inputs, 1 digital/analogue input, 1 digital input and 2 relay outputs (2 Hp+8A)
- **IDPlus 974**: 2 analogue inputs, 1 digital/analogue input, 1 digital input and 3 relay outputs (2 Hp+8A+5A)
- **IDPlus 974 SMPS**: 2 analogue inputs, 1 digital/analogue input, 1 digital input and 3 relay outputs (1 - 2 Hp+8A+5A)
- **IDPlus 978**: 2 analogue inputs, 1 digital/analogue input, 1 digital input and 4 relay outputs (2 Hp+8A+5A+5A)

IDPLUS 902/961/961 SMPS

These are new-generation devices with one activation point, capable of operation in conjunction with both heated applications and static cold storage units at normal temperatures (over 0°C).
IDPlus 902/961/961 SMPS devices have one relay output (8A changeover for IDPlus 902 and 1 - 2Hp for IDPlus 961/961 SMPS), one temperature regulation sensor and one multifunctional Digital/Temperature input.
They also allow for temperature control and compressor start/stop, plus natural defrost on compressor stop.
They can also be used as a simple ON/OFF thermostat for heating applications.

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

- energy saving
- defrost activation
- door switch
- standby
- external alarm
- deep cooling
- pressure switch
- HACCP alarms

IDPLUS 971

These are new-generation devices with two activation points suitable for static cold storage units at normal and low temperatures.
IDPlus 971 devices have two relay outputs (2Hp+8A), two temperature sensors (regulation and evaporator), a multifunctional Digital/Temperature input and a digital input.

Relay output 2 can be used to control:

- compressor
- defrosting elements
- evaporator fans
- AUX output
- alarm
- standby

The second probe can be used to control the defrost cycle and the evaporator fans.

The Digital inputs (D.I.1 and D.I.2) can be used for:

- energy saving
- defrost activation
- AUX management
- door switch
- standby
- external alarm
- deep cooling
- pressure switch
- HACCP alarms

IDPLUS 974/974 SMPS

These are new-generation devices with two activation points suitable for static and ventilated cold storage units at low temperatures. IDPlus 974/974 SMPS devices have three relay outputs (1 - 2Hp+8A+5A), two temperature sensors (regulation and evaporator), a multifunctional Digital/Temperature input and a digital input.

Relay outputs 2 and 3 can be used to control:

- compressor
- defrosting elements
- evaporator fans
- AUX output
- alarm
- standby

The second probe can be used to control the defrost cycle and the evaporator fans.

The Digital inputs (D.I.1 and D.I.2) can be used for:

- energy saving
- defrost activation
- AUX management
- door switch
- standby
- external alarm
- deep cooling
- pressure switch
- HACCP alarms

IDPLUS 978

These are new-generation devices with two activation points suitable for small and medium-sized packaged (monoblock) refrigeration units. IDPlus 978 devices have four relay outputs (2Hp+8A+5A+5A), two temperature sensors (regulation and evaporator), a multifunctional Digital/Temperature input and a digital input.

Relay outputs 2, 3 and 4 can be used to control:

- compressor
- defrosting elements
- evaporator fans
- AUX output
- alarm
- standby

The second probe can be used to control the defrost cycle and the evaporator fans.

The Digital inputs (D.I.1 and D.I.2) can be used for:

- energy saving
- defrost activation
- AUX management
- door switch
- standby
- external alarm
- deep cooling
- pressure switch
- HACCP alarms

TECHNICAL SPECIFICATIONS (EN 60730-2-9)

Classification:	operating (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
Nominal pulse voltage:	2500 V
Temperature:	Use: –5.0 ... 55.0 °C - Storage: -30.0 ... 85.0 °C
Power supply:	• 12 Vac/dc (±10%) 50/60 Hz • 230 Vac (±10%) 50/60 Hz • 100...240 Vac (±10%) 50/60 Hz (**IDPlus 961/974 SMPS**)
Power 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 rating on the device's label; contact our Sales Office for power and relay ratings.

FURTHER INFORMATION

INPUT CHARACTERISTICS

Display range:	**NTC**: -50.0...110 °C; **PTC**: -55.0...140 °C; **PT1000**: -55.0...50°C (on 3-digit display with +/- 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 (depends on model)	
Analogue Inputs:	ID Plus 902/961/961 SMPS:	**1 NTC** (default)/**PTC**/**PT1000** (see parameter **H00**)
	ID Plus 971/974/974 SMPS/978:	**2 NTC** (default)/**PTC**/**PT1000** (see parameter **H00**)
Digital Inputs:	ID Plus 902/961/961 SMPS:	**1** voltage-free digital input
	ID Plus 971/974/974 SMPS/978:	**2** voltage-free digital inputs

NOTES: - 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 connector (ID Plus 971/974/978)

OUTPUT CHARACTERISTICS

IDPlus 902	1 OUT1 relay	NA 8(4) A - NC 6(3) A max 250 Vac
IDPlus 961/961 SMPS	1 Compressor relay	UL60730 (A) 1 Hp (16FLA - 96LRA) max 120 Vac UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac
IDPlus 971	1 Defrost relay	NA 8(4) A - NC 6(3) A max 250 Vac
	1 Compressor relay	UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac
IDPlus 974/974 SMPS	1 Defrost relay	NA 8(4) A - NC 6(3) A max 250 Vac
	1 Compressor relay	UL60730 (A) 1 Hp (16FLA - 96LRA) max 120 Vac UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac
	1 Fan relay	5(2) A max 250 Vac
IDPlus 978:	1 Defrost relay	NA 8(4) A - NC 6(3) A max 250 Vac
	1 Compressor relay	UL60730 (A) 1.5 Hp (10FLA - 60LRA) max 240 Vac
	1 Fan relay:	5(2) A max 250 Vac
	1 Alarm relay	5(2) A max 250 Vac

MECHANICAL CHARACTERISTICS

Container:	PC+ABS UL94 V-0 resin casing, polycarbonate window, thermoplastic resin keys
Dimensions:	front 74x32 mm, depth 59 mm (without terminals)
Terminals:	screw-on/removable for cables with cross-section of 2.5 mm^2
Connectors:	TTL for connection of Copy Card + **D.I.2** (IDPlus 971/974/974 SMPS/978 models only)
Humidity:	Usage / Storage: 10...90 %RH (non-condensing)

REGULATIONS

Food Safety: The device complies with standard EN13485 as follows:

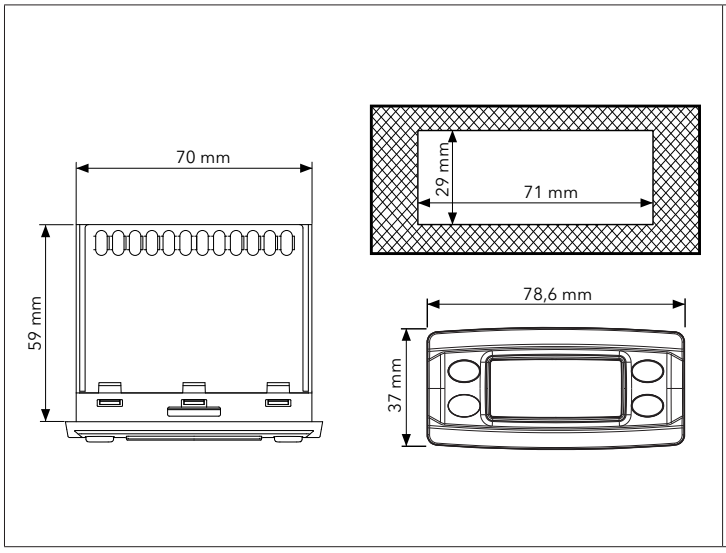
- suitable for storage
- climate range A
- measurement class 1 in the range -25 ... 15 °C (*)

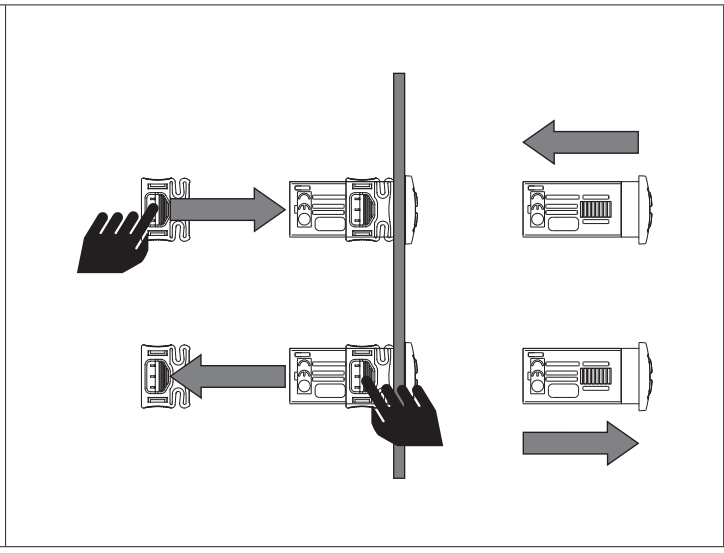
(* exclusively using Eliwell NTC probes)

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

MOUNTING - DIMENSIONS

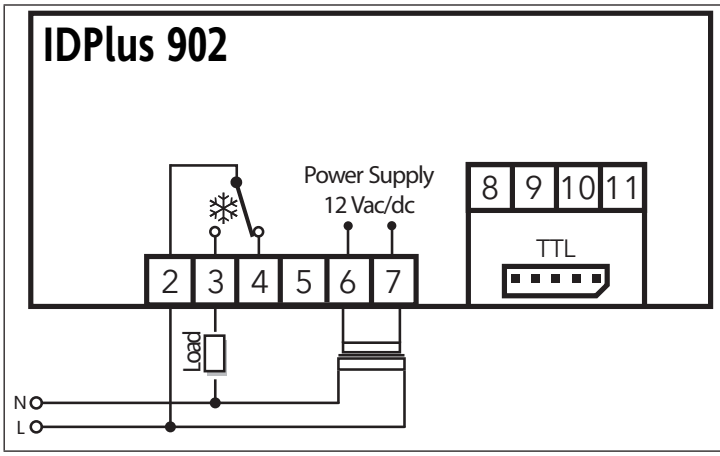
The device is designed for panel mounting. Drill a 29x71 mm hole and insert the instrument; secure it with the special brackets provided. Do not install the instrument in damp and/or dirty places; in fact, it is suitable for use in places with ordinary or normal levels of pollution.
Keep the area around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

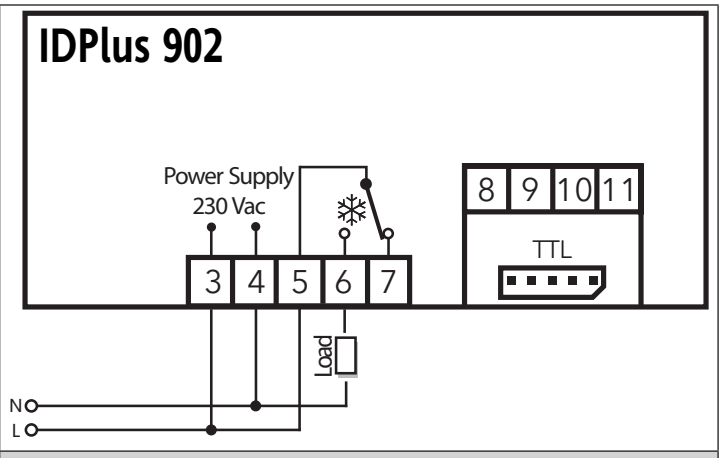




CONNECTIONS

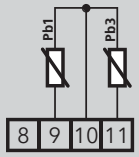
CONNECTIONS, IDPLUS 902



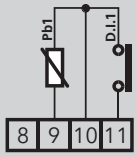


TERMINALS	
OUT1	OUT1 relay ➔ **2-3-4**: 12 Vac or **5-6-7**: 230 Vac
Power Supply	**6-7**: 12 Vac models or **3-4**: 230 Vac models
N-L	230 Vac power supply
10-9	Probe Pb1
10-11	Digital Input 1/ probe Pb3
TTL	TTL input

Probe Connections

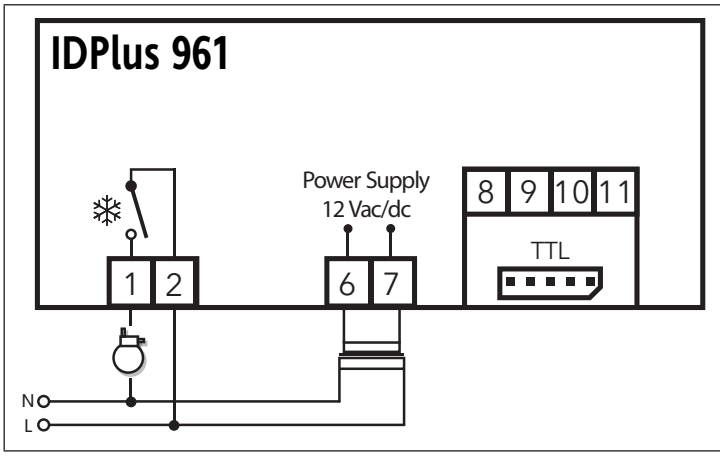


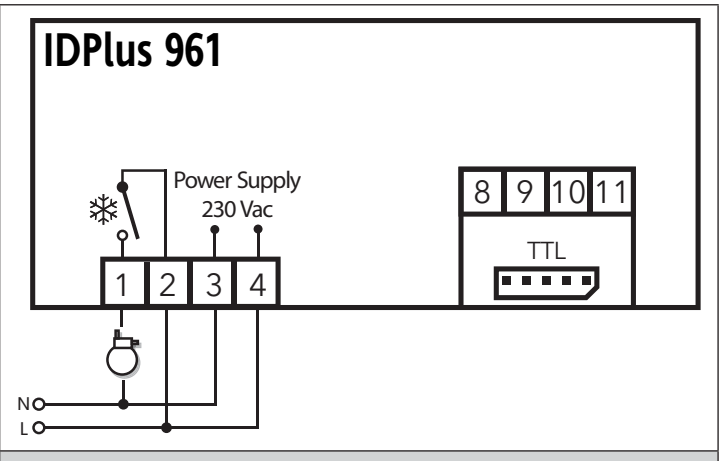
version with Pb3
(H11=0 and H43=y)



version with D.I.1
(H11≠0 and H43=n)

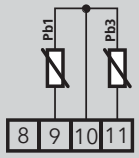
CONNECTIONS, IDPLUS 961



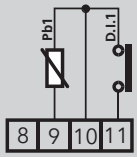


TERMINALS	
1-2	Compressor relay ❄
Power Supply	**6-7**: 12 Vac models or **3-4**: 230 Vac models
N-L	230 Vac power supply
10-9	Probe Pb1
10-11	Digital Input 1/ probe Pb3
TTL	TTL input

Probe Connections



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



version with D.I.1
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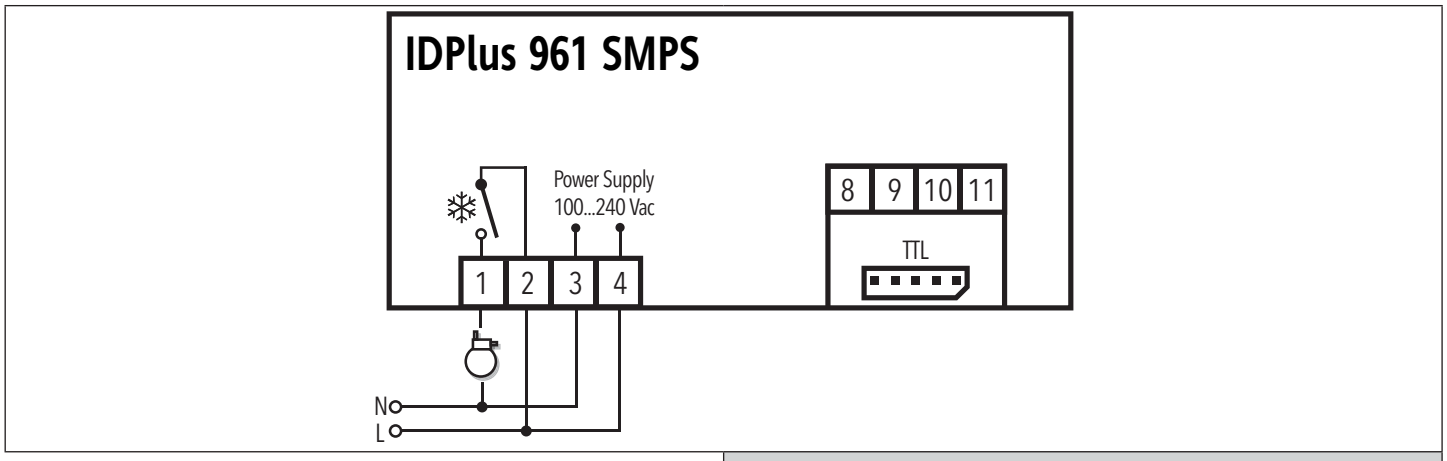
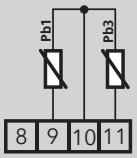
CONNECTIONS, IDPLUS 961 SMPS



TERMINALS	
1-2	Compressor relay ❄
3-4	100...240 Vac power supply
N-L	100...240 Vac power supply
10-9	Probe Pb1
10-11	Digital Input 1/ probe Pb3
TTL	TTL input

Probe Connections



version with Pb3
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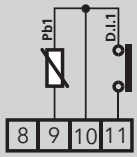
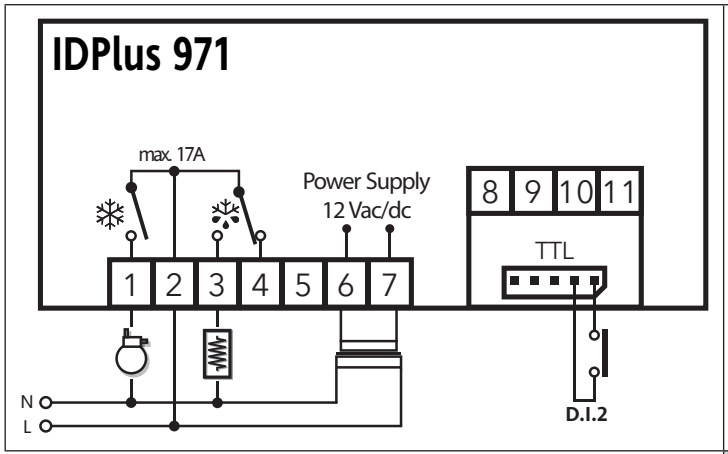
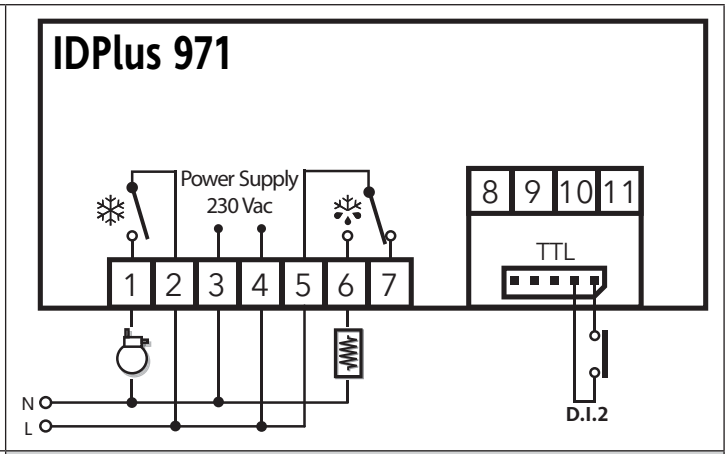


version with D.I.1
(H11≠0 and H43=n)

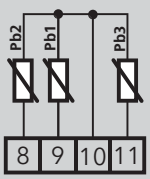
CONNECTIONS, IDPLUS 971



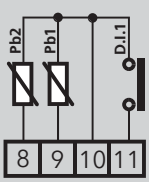


TERMINALS	
1-2	Compressor relay ❄
❄	Defrost relay ➔ **2-3-4**: 12 Vac or **5-6-7**: 230 Vac
Power Supply	**6-7**: 12 Vac models or **3-4**: 230 Vac models
N-L	230 Vac power supply
10-8	Probe Pb2
10-9	Probe Pb1
10-11	Digital Input 1/ probe Pb3
TTL	TTL input

Probe Connections

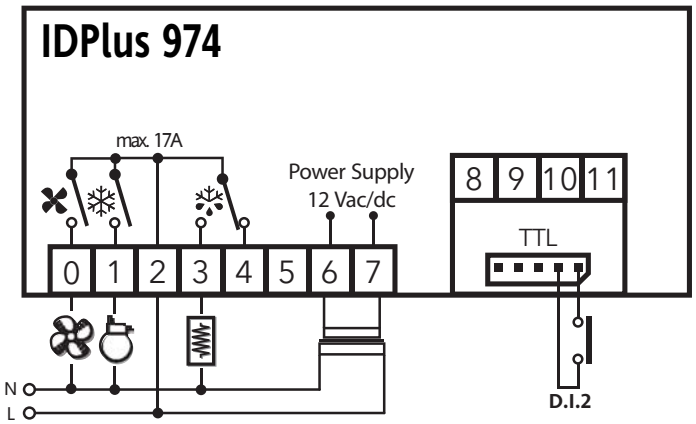


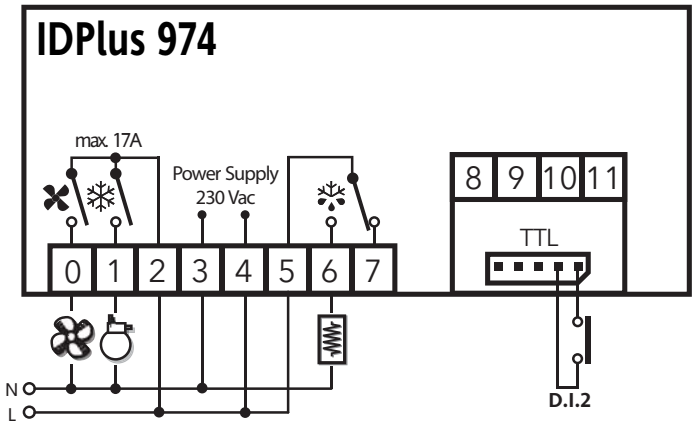
version with Pb3
(H11=0 and H43=y)



version with D.I.1
(H11≠0 and H43=n)

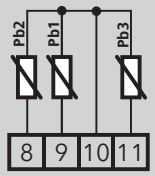
CONNECTIONS, IDPLUS 974



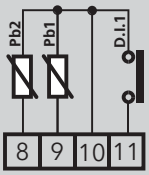


TERMINALS	
0-2	Fan relay
1-2	Compressor relay
❄	Defrost relay ➔ **2-3-4**: 12 Vac or **5-6-7**: 230 Vac
Power Supply	**6-7**: 12 Vac models or **3-4**: 230 Vac models
N-L	230 Vac power supply
10-8	Probe Pb2
10-9	Probe Pb1
10-11	Digital Input 1/ probe Pb3
TTL	TTL input

Probe Connections

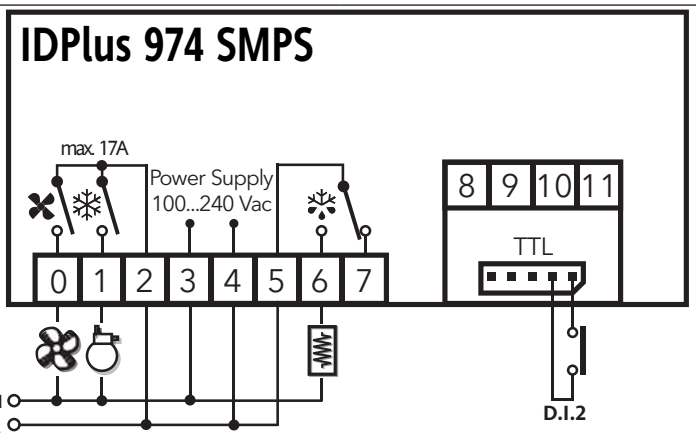


version with Pb3
(H11=0 and H43=y)



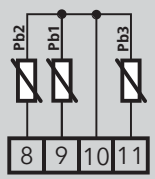
version with D.I.1
(H11≠0 and H43=n)

CONNECTIONS, IDPLUS 974 SMPS

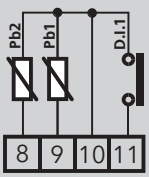


TERMINALS	
0-2	Fan relay
1-2	Compressor relay
❄	**5-6-7**: 230 Vac
3-4	100...240 Vac Power Supply
N-L	100...240 Vac Power Supply
10-8	Probe Pb2
10-9	Probe Pb1
10-11	Digital Input 1/ probe Pb3
TTL	TTL input

Probe Connections

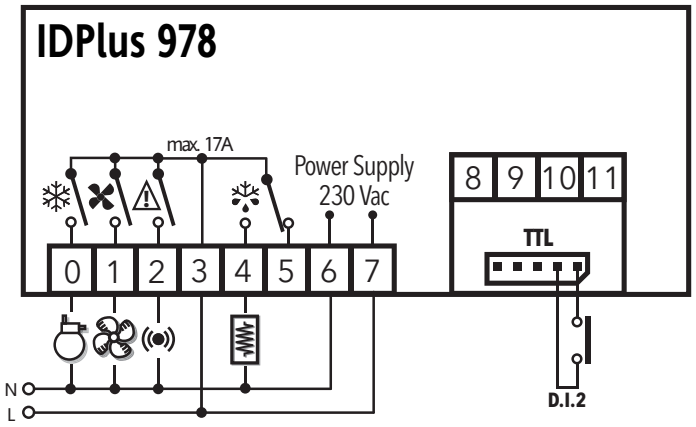


version with Pb3
(H11=0 and H43=y)



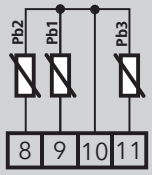
version with D.I.1
(H11≠0 and H43=n)

CONNECTIONS, IDPLUS 978

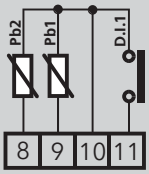


TERMINALS	
0-2	Fan relay
1-2	Compressor relay
	Defrost relay ➔ **2-3-4**: 12 Vac or **5-6-7**: 230 Vac
Power Supply	**6-7**: 12 Vac models or **3-4**: 230 Vac models
N-L	230 Vac power supply
10-8	Probe Pb2
10-9	Probe Pb1
10-11	Digital Input 1/ probe Pb3
TTL	TTL input

Probe Connections



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



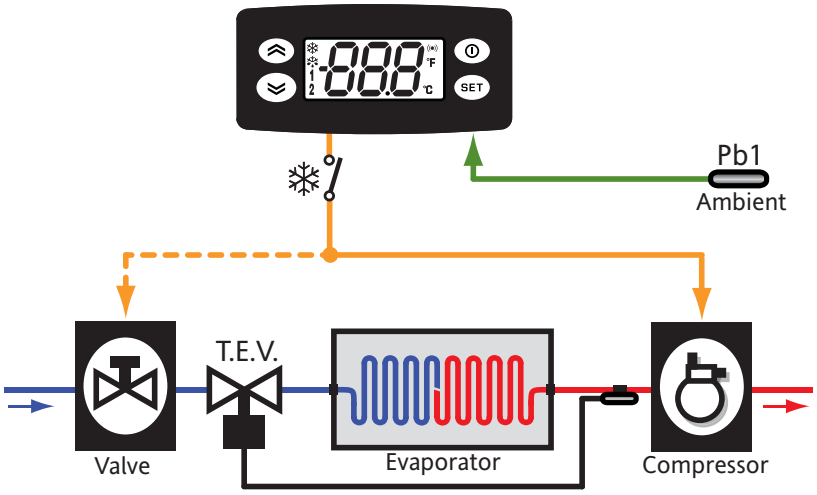
version with D.I.1
(H11≠0 and H43=n)

IDPLUS 902/961/961 SMPS MODEL

APPLICATION 1

The application is for "**COOL**" and the set configuration is as follows:

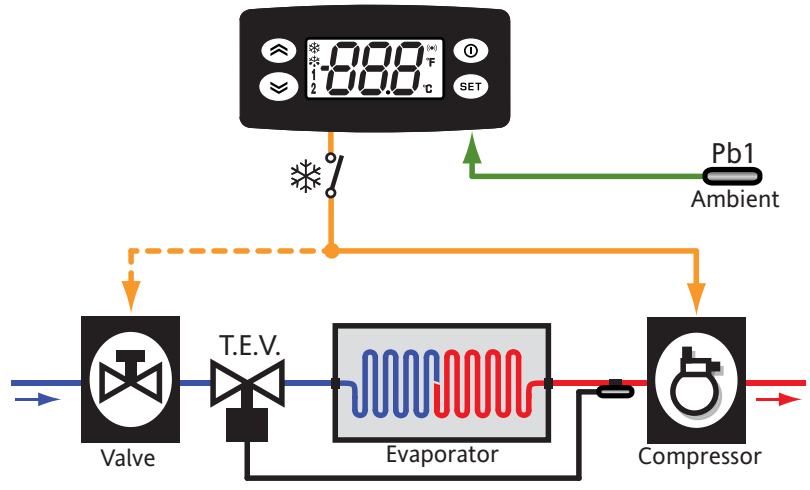
- Defrost end: set by time (start delay **dOH = 0 minutes**, maximum duration **dEt = 30 minutes**)
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an **absolute value**)
- Analogue Inputs: 1 NTC input (environmental probe Pb1)
- Digital Input: 1 D.I. input not set (H11 = 0)
- Digital Outputs:
  - **IDPlus 902**: 1 changeover relay: NO 8(4) A - NC 6(3) A max 250 Vac
  - **IDPlus 961**: 1 compressor relay: UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or UL60730 (A) 12(12) A max 250 Vac
  - **IDPlus 961 SMPS**: 1 compressor relay: UL60730 (A) 1 Hp (16FLA - 96LRA) max 120 Vac or UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or UL60730 (A) 12(12) A max 250 Vac
- Key configuration:
  - UP key: manual defrost
  - DOWN key: not set
  - ESC key: standby



APPLICATION 2

The application is for "**COOL**" and the set configuration is as follows:

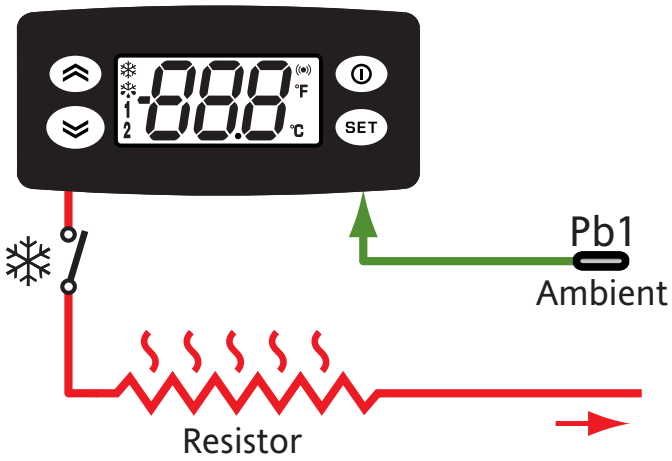
- Defrost end: not set
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
- Analogue Inputs: 1 NTC input (environmental probe Pb1)
- Digital Input: 1 D.I. input not set (H11 = 0)
- Digital Outputs:
  - **IDPlus 902**: 1 changeover relay: NO 8(4) A - NC 6(3) A max 250 Vac
  - **IDPlus 961**: 1 compressor relay: UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or UL60730 (A) 12(12) A max 250 Vac
  - **IDPlus 961 SMPS**: 1 compressor relay: UL60730 (A) 1 Hp (16FLA - 96LRA) max 120 Vac or UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or UL60730 (A) 12(12) A max 250 Vac
- Key configuration:
  - UP key: not set
  - DOWN key: not set
  - ESC key: standby



APPLICATION 3

The application is for "**HEAT**" and the set configuration is as follows:

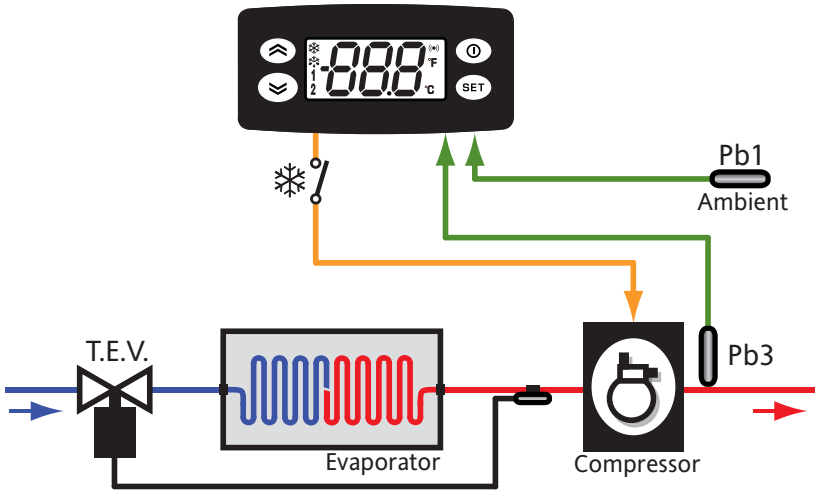
- Defrost end: not set
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an **absolute value**)
- Analogue Inputs: 1 NTC input (environmental probe Pb1)
- Digital Input: 1 D.I. input not set (H11 = 0)
- Digital Outputs:
  - **IDPlus 902**: 1 changeover relay: NO 8(4) A - NC 6(3) A max 250 Vac
  - **IDPlus 961**: 1 compressor relay: UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or UL60730 (A) 12(12) A max 250 Vac
  - **IDPlus 961 SMPS**: 1 compressor relay: UL60730 (A) 1 Hp (16FLA - 96LRA) max 120 Vac or UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or UL60730 (A) 12(12) A max 250 Vac
- Key configuration:
  - UP key: not set
  - DOWN key: not set
  - ESC key: standby



APPLICATION 4

The application is for "**COOL**" and the set configuration is as follows:

- Defrost end: set by time (start delay **dOH = 0 minutes**, maximum duration **dEt = 30 minutes**)
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
  Compressor overheating alarm on Pb3
- Analogue Inputs: 1 NTC input (environmental probe Pb1)
- Digital Input: 1 NTC input (set as analogue which connects to Pb3)
- Digital Outputs:
  - **IDPlus 902**: 1 changeover relay: NO 8(4) A - NC 6(3) A max 250 Vac
  - **IDPlus 961**: 1 compressor relay: UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or UL60730 (A) 12(12) A max 250 Vac
  - **IDPlus 961 SMPS**: 1 compressor relay: UL60730 (A) 1 Hp (16FLA - 96LRA) max 120 Vac UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or UL60730 (A) 12(12) A max 250Vac
- Key configuration:
  - UP key: manual defrost
  - DOWN key: not set
  - ESC key: standby

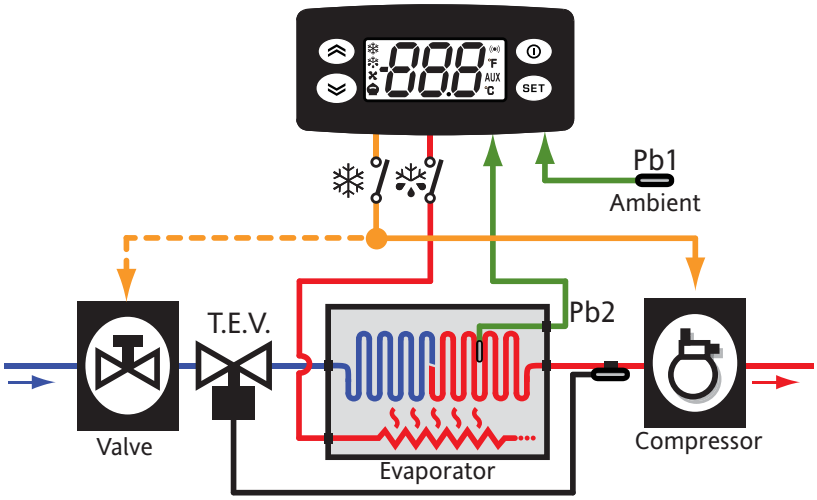


IDPLUS 971 MODEL

APPLICATION 1

The application is for "**COOL**" and the set configuration is as follows:

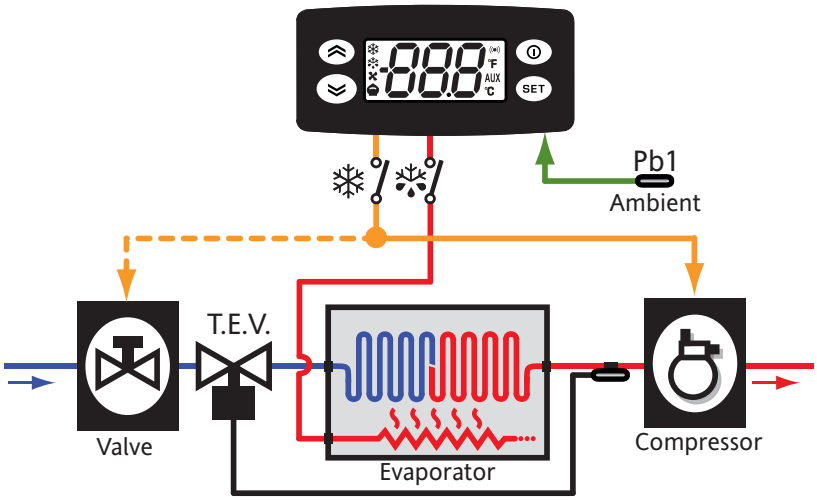
- Defrost end: set by temperature (**dSt = 8.0 °C**)
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an **absolute value**)
- Analogue Inputs: 2 NTC inputs (environmental probe Pb1 + evaporator probe Pb2)
- Digital Input: 1 D.I. input not set (H11 = 0)
- Digital Outputs: 1 defrost relay: NO 8(4) A - NC 6(3) A max 250 Vac
  1 compressor relay: UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or
  UL60730 (A) 12(12) A max 250 Vac
- Key configuration: UP key: manual defrost
  DOWN key: not set
  ESC key: standby



APPLICATION 2

The application is for "**COOL**" and the set configuration is as follows:

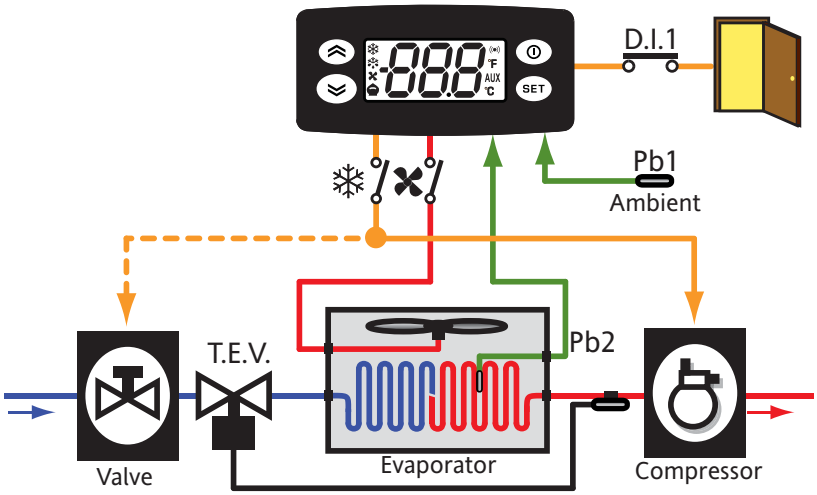
- Defrost end: set by time (start delay **dOH = 0 minutes**, maximum duration **dEt = 30 minutes**)
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
- Analogue Inputs: 1 NTC input (environmental probe Pb1)
- Digital Input: 1 D.I. input not set (H11 = 0)
- Digital Outputs: 1 defrost relay: N.O. 8(4)A - N.C. 6(3)A max 250Va
  1 compressor relay: UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or
  UL60730 (A) 12(12) A max 250 Vac
- Key configuration: UP key: manual defrost
  DOWN key: not set
  ESC key: standby



APPLICATION 3

The application is for "**COOL**" and the set configuration is as follows:

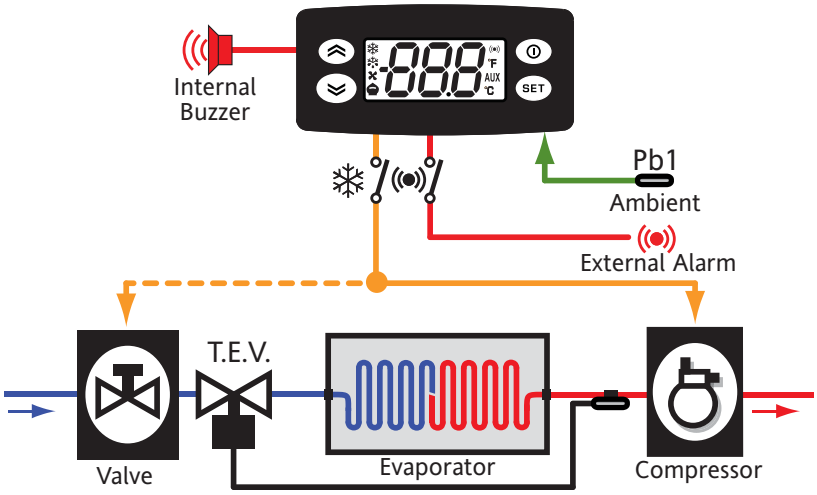
- Defrost end: set by temperature (**dSt = 8.0 °C**)
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
- Analogue Inputs: 2 NTC inputs (environmental probe Pb1 + evaporator probe Pb2)
- Digital Input: 1 D.I. input set as "Door switch" (H11 = 4)
- Digital Outputs: 1 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 or
  UL60730 (A) 12(12) A max 250 Vac
- Key configuration: UP key: manual defrost
  DOWN key: not set
  ESC key: standby



APPLICATION 4

The application is for "**COOL**" and the set configuration is as follows:

- Defrost end: set by time (start delay **dOH = 0 minutes**, maximum duration **dEt = 30 minutes**)
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
- Analogue Inputs: 1 NTC input (environmental probe Pb1)
- Digital Input: 1 D.I. input not set (H11 = 0)
- Digital Outputs: 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 or
  UL60730 (A) 12(12) A max 250 Vac
- Key configuration: UP key: manual defrost
  DOWN key: not set
  ESC key: standby

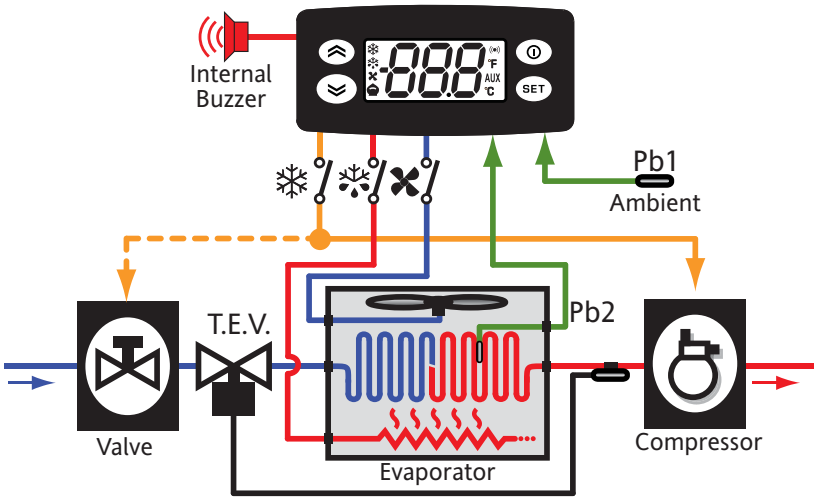


IDPLUS 974/974 SMPS MODEL

APPLICATION 1

The application is for "**COOL**" and the set configuration is as follows:

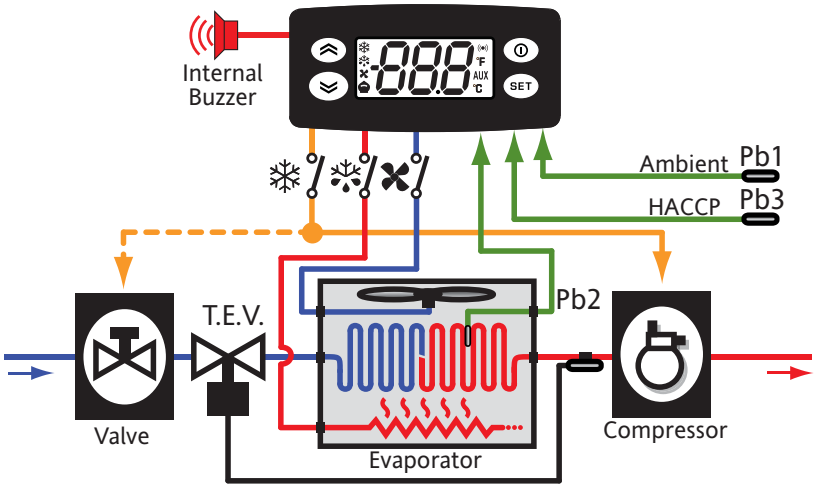
- Defrost: set by time (start delay **dOH = 0 minutes**, maximum duration **dEt = 30 minutes**)
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
- Analogue Inputs: 2 NTC inputs (environmental probe Pb1 + evaporator probe Pb2)
- Digital Input: 1 D.I. input not set (H11 = 0)
- Digital Outputs:
  - 1 defrost relay: NO 8(4) A - NC 6(3) A max 250 Vac
  - 1 compressor relay: UL60730 (A) 1 Hp (16FLA - 96LRA) max 120 Vac
    UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or
    UL60730 (A) 12(12) A max 250 Vac
  - 1 fan relay: 5(2) A max 250 Vac
- Key configuration:
  - UP key: manual defrost
  - DOWN key: not set
  - ESC key: standby



APPLICATION 2

The application is for "**COOL**" and the set configuration is as follows:

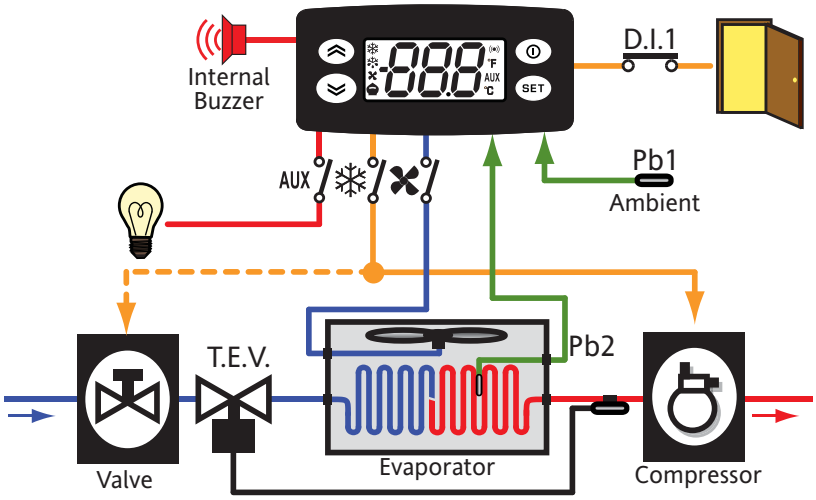
- Defrost: not set
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
  HACCP alarms on PB3 probe
- Analogue Inputs: 2 NTC inputs (environmental probe Pb1 + evaporator probe Pb2)
- Digital Input: 1 NTC input (set as analogue which connects to Pb3)
- Digital Outputs:
  - 1 defrost relay: NO 8(4) A - NC 6(3) A max 250 Vac
  - 1 compressor relay: UL60730 (A) 1 Hp (16FLA - 96LRA) max 120 Vac
    UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or
    UL60730 (A) 12(12) A max 250Va
  - 1 fan relay: 5(2) A max 250 Vac
- Key configuration:
  - UP key: manual defrost
  - DOWN key: not set
  - ESC key: standby



APPLICATION 3

The application is for "**COOL**" and the set configuration is as follows:

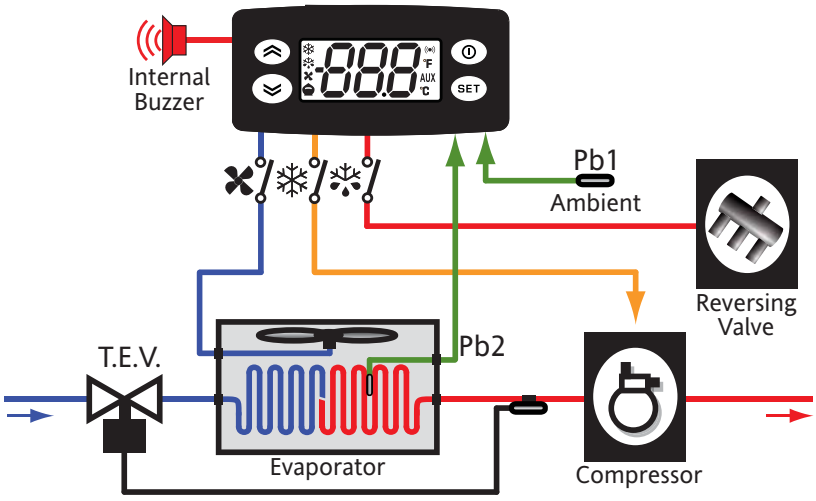
- Defrost: not set
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
- Analogue Inputs: 2 NTC inputs (environmental probe Pb1 + evaporator probe Pb2)
- Digital Input: 1 D.I. input set as "DOOR SWITCH" (H11 = 4)
- Digital Outputs: 1 AUX light relay: NO 8(4) A - NC 6(3) A max 250 Vac
  1 compressor relay: UL60730 (A) 1 Hp (16FLA - 96LRA) max 120 Vac
  UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or
  UL60730 (A) 12(12) A max 250 Vac
  1 fan relay: 5(2) A max 250 Vac
- Key configuration: UP key: manual defrost
  DOWN key: not set
  ESC key: standby



APPLICATION 4

The application is for "**COOL**" and the set configuration is as follows:

- Defrost: set by time (start delay **dOH = 0 minutes**, maximum duration **dEt = 30 minutes**)
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
- Analogue Inputs: 2 NTC inputs (environmental probe Pb1 + evaporator probe Pb2)
- Digital Input: 1 D.I. input not set (H11 = 0)
- Digital Outputs: 1 defrost relay: NO 8(4) A - NC 6(3) A max 250 Vac
  1 compressor relay: UL60730 (A) 1 Hp (16FLA - 96LRA) max 120 Vac
  UL60730 (A) 2 Hp (12FLA - 72LRA) max 240 Vac or
  UL60730 (A) 12(12) A max 250 Vac
  1 fan relay: 5(2) A max 250 Vac
- Key configuration: UP key: manual defrost
  DOWN key: not set
  ESC key: standby

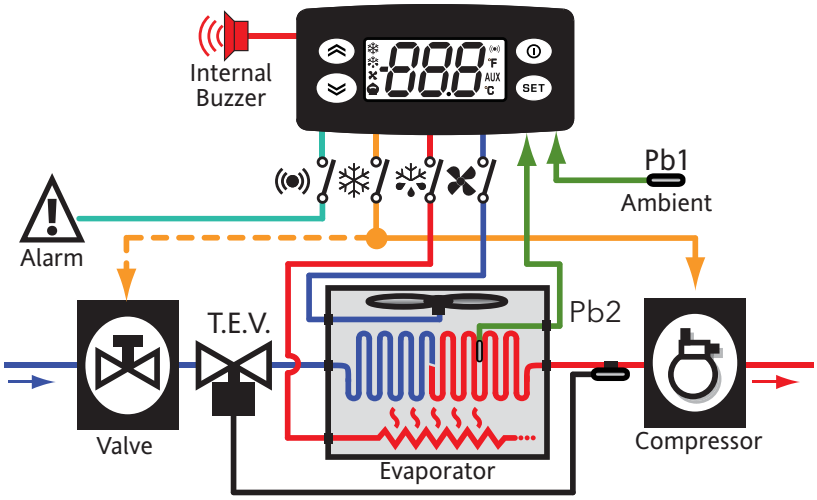


IDPLUS 978 MODEL

APPLICATION 1

The application is for "**COOL**" and the set configuration is as follows:

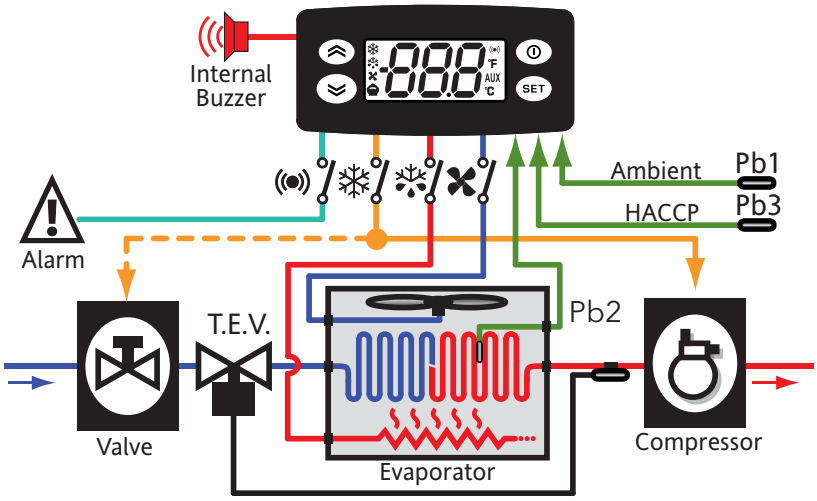
- Defrost: set by time (start delay **dOH = 0 minutes**, maximum duration **dEt = 30 minutes**)
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
- Analogue Inputs: 2 NTC inputs (environmental probe Pb1 + evaporator probe Pb2)
- Digital Input: 1 D.I. input not set (H11 = 0)
- Digital Outputs:
  - 1 defrost relay: NO 8(4) A - NC 6(3) A max 250 Vac
  - 1 compressor relay: UL60730 (A) 1.5 Hp (10FLA - 60LRA) max 240 Vac
  - 1 fan relay: 5(2) A max 250 Vac
  - 1 alarm relay: 5(2) A max 250 Vac
- Key configuration:
  - UP key: manual defrost
  - DOWN key: not set
  - ESC key: standby



APPLICATION 2

The application is for "**COOL**" and the set configuration is as follows:

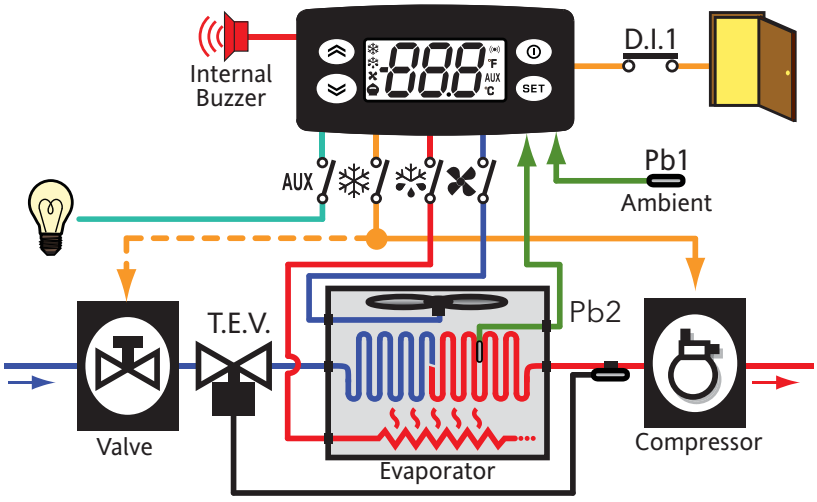
- Defrost: not set
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
- Analogue Inputs: 2 NTC inputs (environmental probe Pb1 + evaporator probe Pb2)
- Digital Input: 1 NTC input (set as analogue which connects to Pb3)
- Digital Outputs:
  - 1 defrost relay: NO 8(4) A - NC 6(3) A max 250 Vac
  - 1 compressor relay: UL60730 (A) 1.5 Hp (10FLA - 60LRA) max 240 Vac
  - 1 fan relay: 5(2) A max 250 Vac
  - 1 alarm relay: 5(2) A max 250 Vac
- Key configuration:
  - UP key: manual defrost
  - DOWN key: not set
  - ESC key: standby



APPLICATION 3

The application is for "**HEAT**" and the set configuration is as follows:

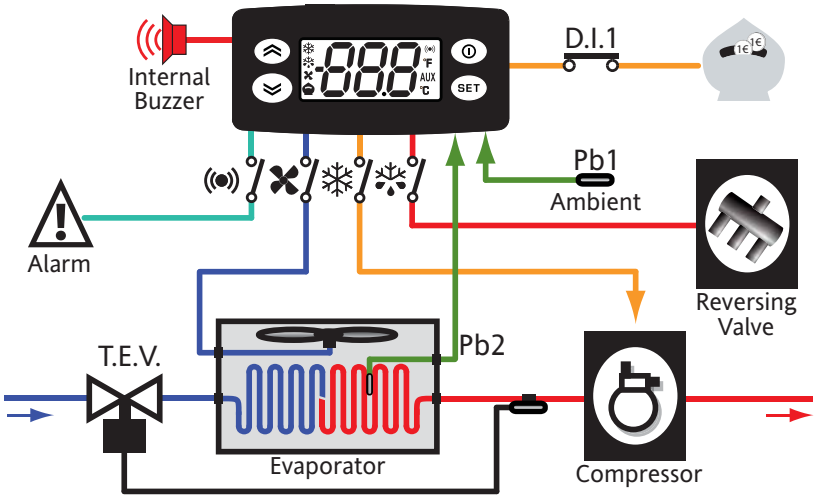
- Defrost: not set
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
- Analogue Inputs: 2 NTC inputs (environmental probe Pb1 + evaporator probe Pb2)
- Digital Input: 1 D.I. input set as "DOOR SWITCH" (H11 = 4)
- Digital Outputs:
  - 1 defrost relay: NO 8(4) A - NC 6(3) A max 250 Vac
  - 1 compressor relay: UL60730 (A) 1.5 Hp (10FLA - 60LRA) max 240 Vac
  - 1 fan relay: 5(2) A max 250 Vac
  - 1 AUX relay: 5(2) A max 250 Vac
- Key configuration:
  - UP key: manual defrost
  - DOWN key: not set
  - ESC key: standby



APPLICATION 4

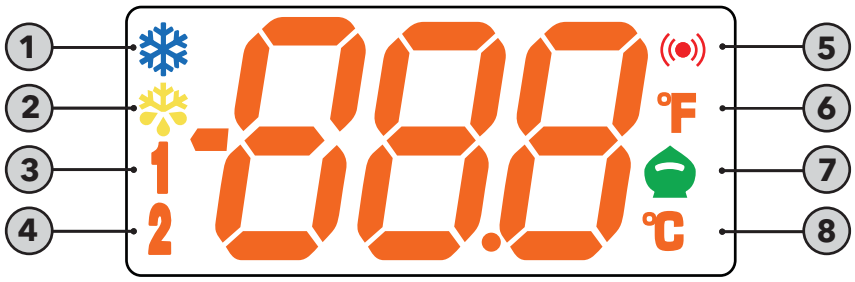
The application is for "**COOL**" and the set configuration is as follows:

- Defrost: set by time (start delay **dOH = 0 minutes**, maximum duration **dEt = 30 minutes**)
- ACTIVE alarms: max/min temperature alarm on Pb1 (HAL and LAL as an absolute value)
- Analogue Inputs: 2 NTC inputs (environmental probe Pb1 + evaporator probe Pb2)
- Digital Input: 1 D.I. input set as "REDUCED SET" (H11 = 2)
- Digital Outputs:
  - 1 defrost relay: NO 8(4) A - NC 6(3) A max 250 Vac
  - 1 compressor relay: UL60730 (A) 1.5 Hp (10FLA - 60LRA) max 240 Vac
  - 1 fan relay: 5(2) A max 250 Vac
  - 1 alarm relay: 5(2) A max 250 Vac
- Key configuration:
  - UP key: manual defrost
  - DOWN key: not set
  - ESC key: standby

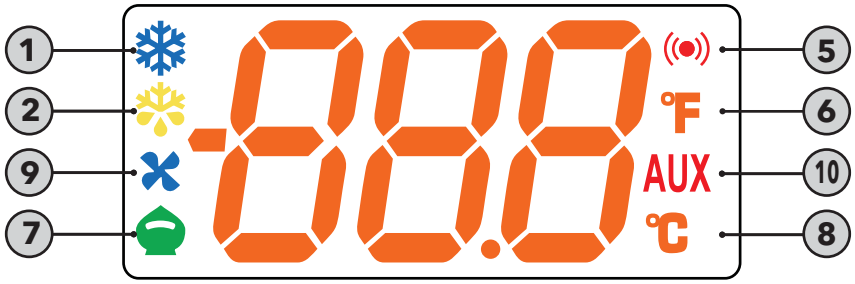


LED

Based on the model, the devices are fitted with 2 different displays that vary in terms of the icons/LEDs present.
IDPlus 902/961/961 SMPS models feature the following display:



IDPlus 971/974/974 SMPS/978 models feature the following display:



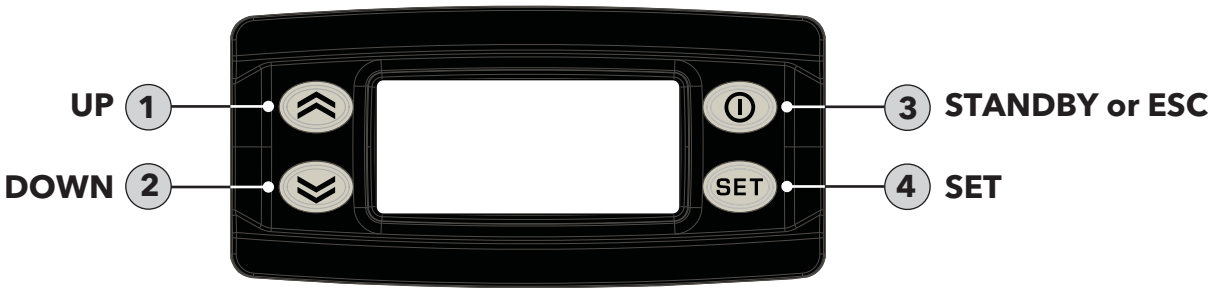
The LEDs that differ are those in the dotted boxes.
Meaning of LEDs:

No	Icon	Function	Operation	Meaning
1		**Compressor**	Permanently on	compressor active
			Blinking	delay, protection or start-up blocked
			OFF	otherwise
2		**Defrost**	Permanently on	defrost active
			Blinking	activated manually or from Digital Input
			OFF	otherwise
3	1	**HEAT status**	Permanently on	compressor in HEAT
			OFF	otherwise
4	2	**NOT USED**	---	---
5		**Alarm**	Permanently on	alarm present
			Blinking	alarm acknowledged
			OFF	otherwise
6	°F	**°F readout**	Permanently on	°F setting (dro = 1)
			OFF	otherwise
7		**Reduced SET / Economy**	Blinking	reduced setpoint active
			Rapid blinking	access to level2 parameters
			OFF	otherwise
8	°C	**°C readout**	Permanently on	°C setting (dro = 0)
			OFF	otherwise
9		**Fans**	Permanently on	fans active
			OFF	otherwise
10	AUX	**AUX**	Permanently on	Aux output active (according to model)
			OFF	otherwise

NOTE: When the instrument is powered on it performs a lamp test, during which time the display and LEDs will flash for several seconds to check that they all function correctly.

KEYS

All devices in the IDPlus family are equipped with 4 keys as shown in the picture:



Each key has a different function depending on whether it is:

- pressed and released
- pressed for at least 5 seconds
- pressed and held at start-up
- pressed in combination with another key.

The following table summarises the function of each key:

No	Key	Action		
		Pressed and released	**Press for at least 5 secs**	**Start-up**
1		- Scrolls through menu items - Decreases values	- Function can be configured by the user (when outside the menus) (see parameter H31) (Default: **Manual defrost)**	---
2		- Scrolls through menu items - Decreases values	- Function can be configured by the user (when outside the menus) (see parameter H32)	---
3		- Returns to the previous menu level - Confirms parameter value	- Activates the Standby function (when outside the menus)	---
4	set	- Displays any alarms (if active) - Opens Machine Status menu	- Opens Programming menu (User and Installer Parameters) - Confirms commands	when pressed during start-up it enables the user to select the application to be loaded.

Key combinations allowed:

Tasti	Pressed together
+	**Activates the LOC function** (only in the "MACHINE STATUS" menu). If the LOC function is active and you try to enter the PROGRAMMING menu, the word LOC appears. If this happens, the parameters are still displayed but cannot be edited. To disable the keypad lock, repeat the above-mentioned procedure.

PRELIMINARY CONFIGURATIONS

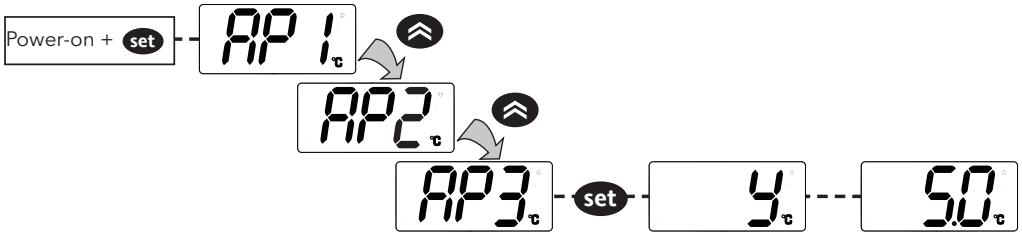
After making the electrical connections, simply power up the device to start operation.
At first start-up, Eliwell recommends that you:

1) select the preset Application that most closely matches your own.
2) configure the main parameters, indicated in the USER menu, as per your requirements.
3) make sure there are no active alarms (" ((●)) " icon off and labels **E1**, **E2** and **E3** not displayed).
   NOTE: E2 is only present on IDPlus 971/974/974 SMPS/978.

SELECTING APPLICATIONS

The procedure for loading one of the default applications is:

- at start-up of the device, keep the set key pressed: the label "**AP1**" will appear;
- browse the various applications (**AP1-AP2-AP3-AP4**) using the ⌃ and ⌄;keys;
- select the desired application using the set key ("**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**", if not it will show "**n**";
- after a few seconds the instrument will return to the main display.



RESET PROCEDURE

IDPlus devices can be **RESET** and the factory settings restored in a simple and user-friendly way.
This is done by simply reloading one of the basic applications (see "Loading default applications").

You may need to **RESET** the instrument in circumstances in which the normal operation of the instrument is compromised or if you decide to restore the instrument to its default configuration (e.g. Application 1 values).

⚠ **IMPORTANT!**: This operation resets the instrument to its initial state, returning all the parameters to their default values. This means that all changes made to operating parameters will be lost.

MAIN PARAMETERS

See USER menu table parameters for the various models.

SETPOINT: SETTING AND EDIT LOCK

To display the Setpoint value, press the set key and enter the "Machine Status" menu, then press the set key again 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.

It is possible to disable the keypad on this device.
The keypad can be locked by programming the “LOC” parameter or by pressing the ⏻ and ∧ keys.
With the keypad locked you can still access the “Machine Status” menu by pressing set to display the Setpoint, but you cannot edit it. To disable the keypad lock, repeat the locking procedure.

DISPLAY PROBES VALUE

To display the value read from probes connected to the device, press the set key and enter the "Machine Status" menu, then press the set key again when one of the probe-related labels “Pb1, Pb2 or Pb3” is displayed. The value measured by the associated probe will appear on the display.

NOTES:
1) Pb2 is only present on models IDPlus 971, IDPlus 974/974 SMPS and IDPlus 978
2) The displayed value is read-only and cannot be modified.

KEY-ACTIVATED FUNCTIONS

On all models, the UP and DOWN keys can be set so that they can activate a specific function.
The parameters for configuring the keys are:

- **H31** = UP key configuration
- **H32** = DOWN key configuration

The values that can be set apply to both keys and the functions that can be activated are:

H31/H32 value	Functions that can be activated by model			
	IDPlus 902/961/961 SMPS	IDPlus 971	IDPlus 974/974 SMPS	IDPlus 978
0	disabled	disabled	disabled	disabled
1	defrost	defrost	defrost	defrost
2	**not used**	aux	aux	aux
3	reduced set	reduced set	reduced set	reduced set
4	stand-by	stand-by	stand-by	stand-by
5	reset HACCP alarms	reset HACCP alarms	reset HACCP alarms	reset HACCP alarms
6	disable HACCP alarms	disable HACCP alarms	disable HACCP alarms	disable HACCP alarms

This section describes the various functions of the devices.

⚠ **IMPORTANT**: the functions may not be available in certain models.

SETTINGS

PROBE SETTING AND CALIBRATION

Depending on the model, the devices are equipped with:

- 1 or 2 analogue inputs Pb1 and Pb2;
- 1 multifunctional analogue/digital input that can be configured as:
  - Digital input (H11 ≠ 0 and H43 = n) or
  - Analogue probe Pb3 (H11 = 0 and H43 = y).

The probes used must all be of the same type and must be configured using parameter H00.
Parameter **H00** is located in the "Installer" menu in folder "CnF" and must be set as follows:

- **H00 = 0** if using PTC probes
- **H00 = 1** if using NTC probes (**default**)
- **H00 = 2** if using PT1000 probes

After installation, the values read by the probes can be corrected/calibrated using the following parameters:

- **CA1**: probe 1 offset. Positive or negative value to be added to the value read by Pb1 (Range: **-12.0 ... +12.0**)
- **CA2**: probe 2 offset. Positive or negative value to be added to the value read by Pb2 (Range: **-12.0 ... +12.0**)
- **CA3**: probe 3 offset. Positive or negative value to be added to the value read by Pb3 (Range: **-12.0 ... +12.0**)

⚠ **IMPORTANT**: parameter CA2 is not available in IDPlus 902/961 models since these devices are not equipped with probe Pb2.

DISPLAY SETTINGS

Folder "**diS**" contains the parameters used to set the temperature readout, decimal point usage, unit of measurement and display during defrost.

- **ndt**: enables/disables decimal point display (with resolution of one-tenth of a degree; e.g.: 10.0°C)
  Display with decimal point is only possible within the range of values from -99.9°C to +99.9°C
  - ndt = y ➔ displays read values with decimal point
  - ndt = n ➔ displays read values without decimal point

  NOTE: enabling/disabling the decimal point only affects the on-screen display of values. The controller will continue to perform calculations with decimal point.

- **ddL**: sets the type of display during and up to the end of defrost
  - ddL = 0 ➔ displays the value of Pb1
  - ddL = 1 ➔ continues to display the value read by Pb1 at the start of defrosting
  - ddL = 2 ➔ displays fixed label "**dEF**"

- **dro**: sets temperature display to °C or °F.
  - dro = 0 ➔ display in °C
  - dro = 1 ➔ display in °F

  ⚠ **IMPORTANT**: switching between °C and °F DOES NOT modify the values of temperature parameters (e.g. setpoint=10°C becomes 10°F). This means that the maximum and minimum limits of parameters as an absolute value are the same for both units of measurement and the ranges are therefore different from each other.

- **ddd**: determines whether to display the value of the Setpoint, probe Pb1, probe Pb2 or the value of multifunctional (analogue or digital) input Pb3. All other display and adjustment modes are the same.
  - ddL = 0 ➔ displays the Setpoint value
  - ddd = 1 ➔ displays the values read by Pb1
  - ddd = 2 ➔ displays the values read by Pb2
  - ddd = 3 ➔ displays the values read by Pb3

  ⚠ **IMPORTANT**: models IDPlus 902/961/961 SMPS are not equipped with probe Pb2 therefore the value ddd= 2 is not used and must not be set.

FUNCTIONS

UPLOAD, DOWNLOAD, FORMATTING

Description

The Unicard/Copy Card must be connected to the TTL serial port and allows the rapid programming of instrument parameters.

DOWNLOAD From Reset Only operating mode: at power-on, if the Unicard/Copy Card is inserted in the device, the controller automatically downloads data.

After connecting the Unicard/Copy Card with the device switched off and at the end of the lamp test, one of the following labels will be displayed:

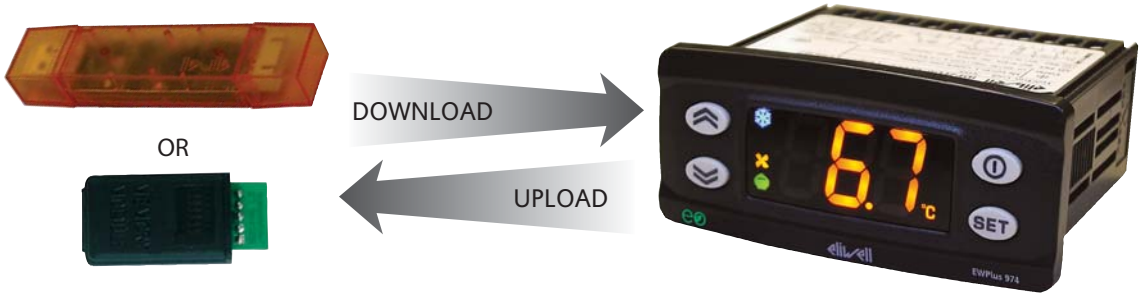
- **dLY** if the operation was successful
- **dLn** if the operation was not successful

After about 5 seconds, the display will display the probe or setpoint value, depending on the default settings.

IMPORTANT: once download has been completed successfully, the controller will start to work with the new map loaded.

Operating mode: access "Installer" parameters by entering the password "**PA2**" if enabled (PA2≠0), scroll through the folders using ∧ and ∨ until folder "**FPr**" appears. Select it using **set**, scroll through the parameters using ∧ and ∨ and finally select one of the functions by pressing **set**:

- **UL** (Upload): This function uploads the programming parameters from the instrument to the card. If the operation is successful, the display will show "**y**", otherwise it will show "**n**".
- **Fr** (Format): This command is used to format the copy card (which is necessary when using the card for the first time). Important: the **Fr** parameter deletes all data present and this operation cannot be reversed.
- **Download**: Connect the Unicard/Copy Card with the instrument switched off. At power-on, data will automatically start downloading from the Unicard/Copy Card to the instrument. At the end of the lamp test, the display will show "**dLy**" if the operation was successful and "**dLn**" if not.



User parameters

The parameters that control this function are:

Label	Description	Model
UL	Transfer programming parameters from instrument to Copy Card	All
Fr	Format Copy Card. Erases all data contained in the Copy Card.	All

COPY CARD

The Copy Card can be used to download/upload a parameter map from/to a controller.
Depending on whether the parameter map is being uploaded or downloaded, the controller must be powered on or in the process of starting up.

UNICARD

The Unicard, like the Copy Card, can be used to download/upload a parameter map from/to a controller.
Its flexibility enables the various devices to be customised quickly and simply.
The main features that distinguish it from the Copy Card are:

- **1)**: it can be connected directly to the computer via USB
- **2)**: it can be powered by means of a USB power supply and can directly power the controller during upload/download.

The Unicard power supply options are as follows:

A) Chiller power supply

UNICARD power supply — UNICARD — Controller

B) Field power supply

UNICARD — Controller — Controller Power Supply

UNICARD power supply — UNICARD — Controller

HACCP

Description
Using this function it is possible to save and archive high and low temperature alarms recorded by the Pb3 probe, as well as any controller blackouts (minimum HACCP characteristics).
This data can be viewed on the display (in the alarms folder **AL**).

Normal operation:
When the temperature value measured by the environmental probe (Pb3) is outside the range set by the values **SLL** and **SHH** for longer than the time set in parameter **drA**, a HACCP alarm is signalled and displayed in folder "**AL**".
Each HACCP alarm comprises two folders, a **HCn** folder containing the maximum or minimum temperature reached beyond the range limits and a **tCn** folder containing the time for which the temperature read by probe Pb3 is outside of the range; **n** is a sequential number between 1 and 8 indicating the number of times that the probe reading exceeded the range limits and so there can be up to 8 folders **HC1**...**HC8** for storing the temperature and 8 folders **tC1**...**tC8** for storing the out-of-range dwell time.
The alarm is signalled by the appearance of folders **HCn** and **tCn** and by the alarm LED. When any key is pressed, the LED will blink to confirm that the alarm has been read by the user. Once the probe value returns within the permitted range defined by **SLH** and **SHH**, the LED will remain in the previous condition (permanently on or blinking) to signal the event.
The first 8 HACCP alarms (probe value outside the range limits) are stored sequentially with the appearance of folders **HC1**...**HC8** and **tC1**...**tC8**, after which any further events will overwrite the previous ones starting from **HC1, tC1** and folder **HC8** blinks to signal that more than 8 events have been recorded.
In order to prevent false HACCP alarm signals, signalling is inhibited for the time set in parameter **H51** after the closure or opening [based on the sign of parameter **H11** or **H12 (IDPlus 971/974/974 SMPS/978 only**)] of digital input D.I.1 or D.I.2 and/or after pressing the key [selectable using parameter **H31** (UP) or **H32** (DOWN)]. Nevertheless, if the alarm is already present when defrosting commences and/or when the D.I. opens (or when the disable key is pressed), the recording of the maximum of minimum temperature reached or the out-of-range dwell time continues until the temperature value measured by Pb3 returns within the range.

Operation after a blackout:
If a machine blackout event (reset event) occurs, in order to enable the condition of the foodstuffs to be accurately assessed, under folder **AL** two folders **bCn** and **btn** are generated where **n** is a number between 1 and 8 indicating the sequential number of times that the machine was reset.
If, when restarting after the blackout, probe Pb3 returns a temperature value which is within the limits of the range set by values **SLL** and **SHH**, folder **bCn** will contain this value when restarting after the blackout and folder **btn** will contain the value zero. If probe Pb3 returns a temperature value which is outside the limits, a HACCP alarm will be generated, resulting in the recording in folder **bCn** of the maximum (or minimum) value measured by the probe and the recording in folder **btn** of the out-of-range dwell time according to the same rules already described for normal operation. In the same way as for the previous case, folder **bC8** blinks to signal when more than eight blackout events have been recorded and subsequent events will be saved starting from folders **bC1** and **bt1**.

Reset:
The **rES** (reset HACCP) function manually cancels HACCP alarms.
It can be associated to a key (using parameters **H31** or **H32**).
rES cancels folders **HC1...HC8**, **tC1...tC8**, **bC1...bC8**, **bt1...bt8** and reinitialises counter **drH**, the alarm LED will switch off and will no longer blink if no other alarm is present.
After a continuous period of time **drH** ≠ 0 has elapsed since the last reset, all HACCP alarms are cancelled automatically.
If during this period the machine is subjected to a blackout, this counter is reloaded with the value contained in **drH** and therefore the next automatic reset will occur after the time **drH** has elapsed since the last reset (restart after blackout).

User parameters
The parameters that control this function are:

Label	Description	Model
SHH	Max HACCP alarm signal limit	All
SLH	Min HACCP alarm signal limit	All
drA	Minimum dwelling time in critical area for the event to be recorded	All
drH	HACCP alarm reset time since the last manual reset, if 0 manual only	All
H50	Parameter to activate alarm relay in the case of HACCP alarm	All
H51	Alarm disabling time by key or by D.I.	All

REGULATORS

COMPRESSOR/GENERAL

Description

The compressor is controlled by the device's relay. It will be switched on or off depending on:

- the temperature status readings from probe Pb1
- the temperature control functions set
- the defrost/coil drainage functions (see Defrost section)

See the wiring diagrams for details of how to connect the compressor to the device.
The polarity of the relay is fixed and is NOT configurable.

To prevent activation of the regulator prior to a Defrost cycle, it is necessary to set parameter **Cod** which can be assigned a value ranging from 0 to 60 minutes. Before activating the compressor, the instrument will check whether the next defrost is scheduled after a time less than Cod and if so it will not activate the compressor, otherwise it will activate the compressor immediately.

NOTE: digital output 1 is always set as "**Compressor**".

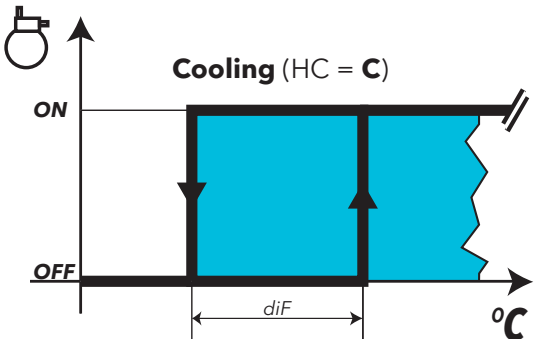
Operating conditions

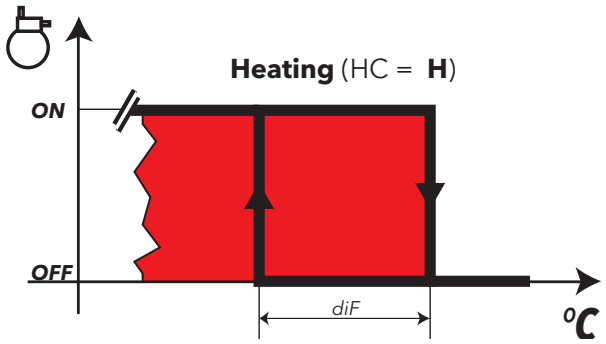
The regulator is activated provided that:

- the device is ON
- there is not a control probe fault alarm "E1"
- the time set in parameter **OdO** has elapsed (if OdO≠0)
- a defrost cycle is not underway (except in FREE mode)
- there is no External Alarm blocking the compressor
- there is no Overheating alarm on probe Pb3 (when H11 = 0 and H43 ≠ 0)

(There is a fixed interval of one second between the request and activation of the relay)

The diagrams below indicate the compressor activation mode for heating/cooling based on parameters **SEt** and **diF > 0**:





User parameters

The parameters that manage this regulator are:

Label	Description	Model
SEt	Control Setpoint	All
diF	diFferential. Regulator activation differential	All
HSE	Higher SEt. Maximum value settable for setpoint	All
LSE	Lower SEt. Minimum value settable for setpoint	All
OSP	Setpoint offset	All
Hc	Control mode selection (**H** = Heating / **C** = Cooling)	All
OdO	Delay output enabling from power-on	All
tcd	Compressor output enabling/disabling time before a defrost	All
Cod	Time compressor OFF before defrost {0}	All

COMPRESSOR/GENERAL PROTECTIONS

Description

If the cabinet probe is in error "E1" (conversion produces a number of points outside the preprogrammed limits), the output relay configured as compressor/general regulates in accordance with the times set in parameters **Ont** and **Oft**.
The first time to consider is **Ont**. If **Ont > 0**, the protection programmed in parameters **dOn**-**dOF**-**dbi** must be respected (see Compressor Safety Times).

NOTE: You are reminded that parameter **OdO** inhibits the activation of all outputs commanding a relay for its entire duration (compressor/general, defrost, fans), excluding buzzers or alarm relays.

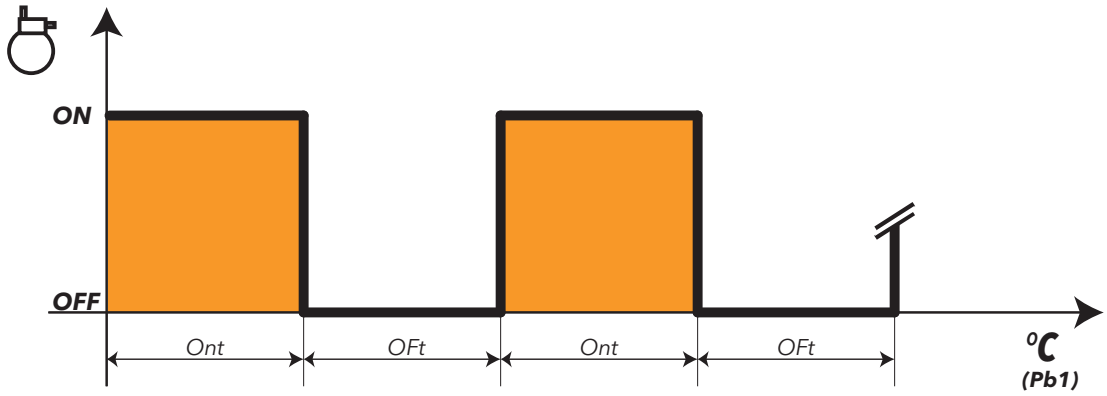
Operating conditions

The table below lists the ways the compressor relay output can be managed:

Ont	OFt	Compressor OUT
0	0	OFF
0	>0	OFF
>0	0	ON
>0	>0	DUTY CYCLE

If **Ont** > 0 and **OFt** = 0, the compressor regulator will remain on.
If **Ont** > 0 and **OFt** > 0, the compressor regulator activates in operating cycle mode irrespective of the values read by the probes (cabinet probe failure) and of requests from other utilities (**Duty Cycle** mode).
If the cabinet probe is working properly, the Duty Cycle mode does NOT activate as it does not have priority over normal compressor regulator settings.

The following diagram shows the **Duty Cycle** operating mode based on parameters **Ont** and **OFt > 0**:



User parameters

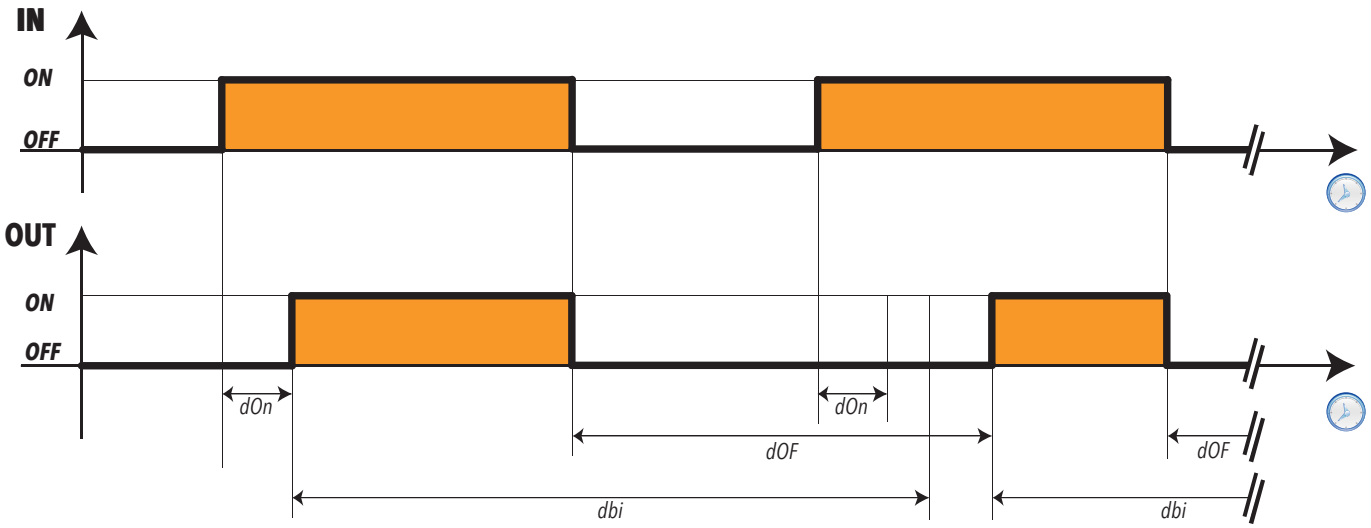
The parameters that manage this regulator are:

Label	Description	Model
Ont	Compressor output ON time in the event of a faulty Pb1 probe	All
OFt	Compressor output OFF time in the event of a faulty Pb1 probe	All
dOn	Compressor output enabling delay from request	All
dOF	Compressor output enabling delay from shutdown	All
dbi	Delay between two consecutive starts of the compressor output	All
OdO	Delay output enabling from power-on	All

Compressor safety timings

Compressor on-off operations must respect the safety times that you can set using the special parameters as described below.
The compressor LED will flash to indicate when an activate compressor request has been received but a safety protection exists.
A safety time (compressor On... Off safety time) regulated by the parameter **dOF** must be respected between a switch-off and switch-on of the same compressor. This waiting time also occurs at switch-on of the device.
A safety time regulated by the parameter **dbi** must be respected between one switch-on and the next.
The safety time set in parameter **dOn** must elapse between a start-up request and actual start-up.
Times set with parameters **dOn**, **dOF** and **dbi**, if active, are not accumulative but parallel.
The following diagram illustrates the operation of the compressor protection with parameters **dOn**, **dOF**, **dbi** set where:

IN	Input state for compressor regulator.
OUT	Output state for compressor regulator.



NOTE: See the section entitled Compressor Function During Defrost for other safety measures and compressor timings.

DEFROST/COIL DRAINAGE

Description

Defrost is used to stop ice from forming on the surface of the evaporator.
Defrost (see Defrost Modes) basically heats up the evaporator by means of:

- Electrical heaters
- Hot gas
- Simply stopping the compressor and hence the “cooling” cycle

Coil drainage

On completion of defrost, given that there will be water on the evaporator, it is better not to start "cooling" right away as this would ruin the effect of the defrost by creating ice immediately.
The drainage interval is regulated via parameter **dt**.

NOTE: parameter dt is only present on models IDPlus 971/974/974 SMPS/978 that can control the Evaporator fans

Defrost conditions and function

Defrosting is enabled if:

- The evaporator temperature is lower than the defrost end setpoint configured in parameter **dSt**.
  (**IDPlus 971/974/974 SMPS/978 only with Pb2 probe present - H42 ≠ 0**)
- Manual defrosting has not already been activated, in which case the request for automatic defrost will be cancelled.

Defrost requests can be made in the following ways:

Controller power-on	If parameter **dPO** (defrost at power-on) is programmed accordingly
Time interval	If **dit** > 0 whenever the defrost time interval set in parameter **dit** elapses
Manually via a key	By pressing the ⌃ key if enabled (H31 = 1) The cycle will not start if **OdO≠0**, the request will be refused and the display will flash three times to indicate that defrost is impossible.
External request via D.I.	If D.I. appropriately configured. Activation from D.I. respects the protections of the automatic cycle. The cycle will not start if **OdO≠0**, the request will be refused and the display will flash three times to indicate that defrost is impossible.

User parameters

The parameters that manage this regulator are:

Label	Description	Model
dtY	Selects defrost type	971/974/974 SMPS/978
dit	Time interval between 2 consecutive defrost cycles	All
dCt	Selects the count mode for the defrost interval	All
dOH	Delay in activating defrost cycle after request	All
dEt	Defrost timeout. Determines the maximum defrost duration	All
dSt	Defrost end temperature determined by probe Pb2	971/974/974 SMPS/978
dPO	Determines whether the instrument must enter defrost mode at power-on	All
Fdt	Delay in activating fans after a defrost cycle	971/974/974 SMPS/978
dt	Coil drainage time	971/974/974 SMPS/978
dFd	Allows exclusion of the evaporator fans to be selected or not selected during defrosting.	971/974/974 SMPS/978
dAO	Temperature alarm disabling time after defrost cycle	All
dAt	Alarm signalling end of defrost due to timeout	971/974/974 SMPS/978
ddL	Display mode during defrost cycle (lock display).	All

Automatic defrosting

The defrost cycle is programmed to start at intervals.

NOTE: To disable the automatic cycle, set **dit**=0.

If **dit**>0, then defrost cycles will be run at fixed intervals, as indicated in parameter **dit**, and the interval time is counted as follows:

Parameter	Value	UM	Description	Notes
dCt	0	Flag	Compressor running time (DIGIFROST® method)	In this case, the counter runs only if the compressor is on. A new count starts when the defrost interval elapses and a new defrost cycle starts if conditions permit. **NOTE**: compressor running time is counted separately from the evaporator temperature. If the evaporator probe is missing or faulty, the count continues for the time the compressor is on.
	1	Flag	Controller running time	The defrost time interval is counted continuously when the controller is on and starts at each power-on. A defrost cycle starts when the defrost interval elapses (indicated by dit) if conditions permit and the controller immediately starts counting a new defrost interval.
	2	Flag	Compressor stop	Each time the compressor stops, a defrost cycle is run according to the mode set in parameter dtY. **NOTE**: Parameter dtY can be viewed and set in models IDPlus 971/974/974 SMPS/978 only. In models ID Plus 902/961/961 SMPS a defrost cycle is performed every time the compressor stops.

IMPORTANT: Regardless of how the interval is counted, the following conditions apply:

IDPlus 902/961/961 SMPS:

- if the parameter **OdO** timing is in progress, defrost will not be permitted: a new interval will be counted and only at the end of this subsequent count will conditions be tested for the start of a defrost cycle.

IDPlus 971/974/974 SMPS/978:

- if the parameter **OdO** timing is in progress or the temperature read by the evaporator probe (Pb2) is higher than **dSt**, then defrost will not be permitted: a new interval will be counted and only at the end of this subsequent count will conditions be tested for the start of a defrost cycle.

Manual defrost

The defrost cycle is started by pressing the manual defrost key (if **H31 = 1**) or from Digital Input (if **H11 = 1**).
Procedures for the activation of this defrost cycle are the same as for external defrost.

The defrost interval will now be counted as described for Automatic Defrost (time **dEt** is not cleared, it continues).

If the following conditions are NOT present:
- time set with parameter **OdO** has not elapsed
- evaporator temperature greater than the value set in parameter **dSt** (IDPlus 971/974/974 SMPS/978 only)

this will be signalled on the display (screen flashes three times) and defrost will stop.

Manual defrost is always enabled except when **dit** = 0.

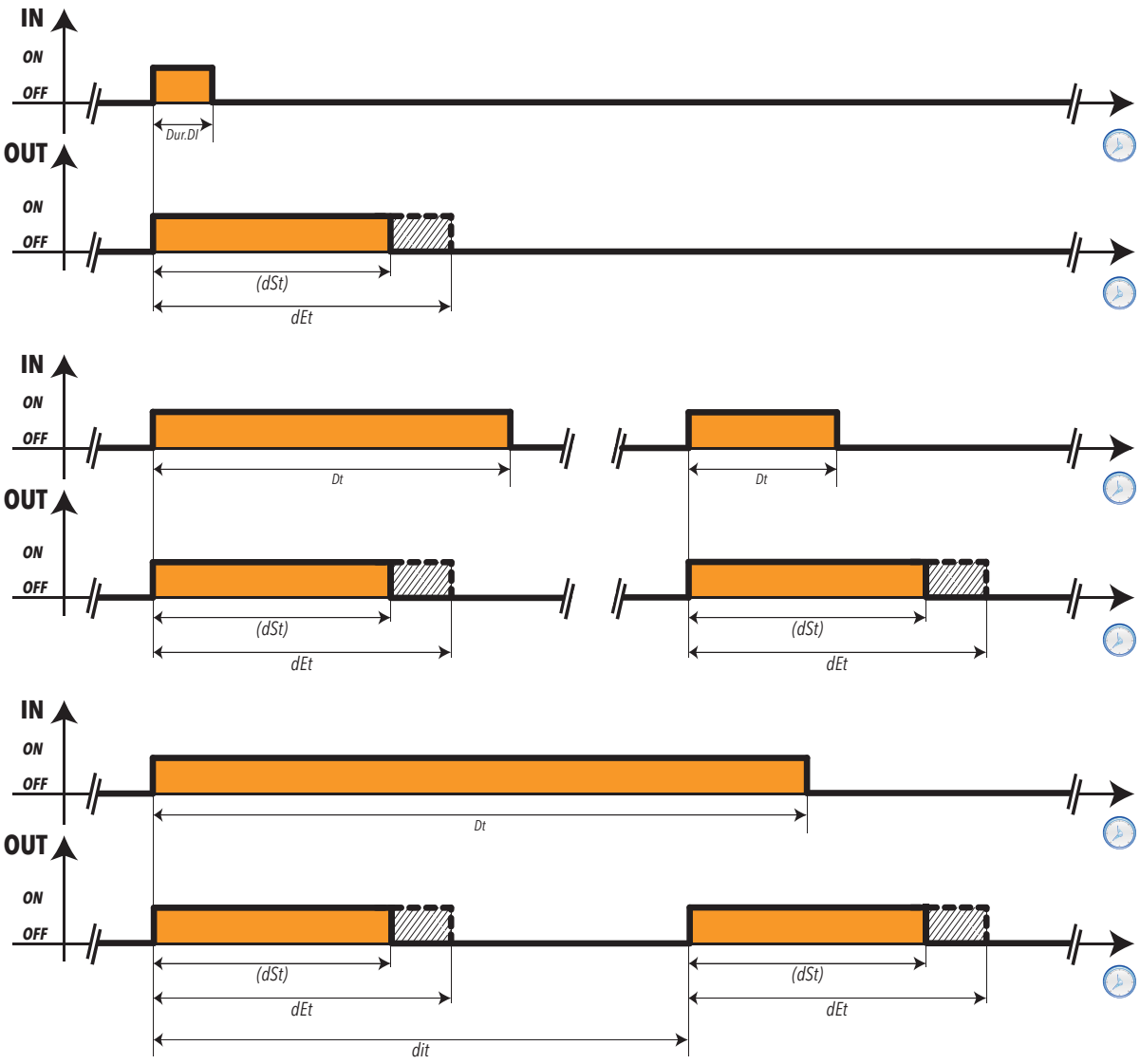
External or manual defrost

If the Digital Input is configured for this function (if **H11 = 1**) and if conditions permit, defrost can be requested and the relative regulator activated.
Time graphs for signals in each of the various function modes are presented below.

⚠ **IMPORTANT**: Defrost is activated at the level front (toggle). Hence you can only activate a defrost, NOT stop one that is underway. Defrost or coil drainage currently underway and the defrost or coil drainage interval count cannot be suspended

IN (Digital Input)	Input state for defrost regulator, with activation from Digital Input.
OUT (Defrost)	Output state for defrost regulator.
Dur	Digital Input duration.
NOTE	**IDPlus 971/974/974 SMPS/978:** **dSt** indicates end defrost time when Setpoint temperature reached and **dEt** indicates end of defrost due to timeout. **IDPlus 902/961/961 SMPS:** parameter **dSt** is not visible, defrost always ends due to timeout **(dEt)**

The control diagram is as follows:



Defrost modes

Defrost can be activated in three ways, as set in parameter **dtY**. In the case of

1) Defrost with electrical heaters

IDPlus 971/974/974 SMPS/978 models only.

Defrost with electrical heaters is configured by setting **dtY = 0**.
It is used in "**LOW TEMPERATURE**" applications.

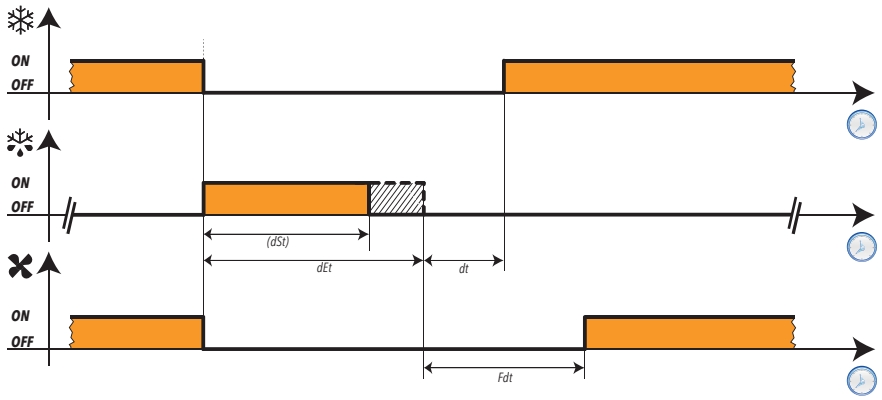
The compressor stops for the duration of the defrost cycle and the relay configured as defrost regulator output, and that the electrical heaters are connected to, activates. On completion of defrost, the electrical heaters are switched off and the compressor remains off for the coil drainage time set in parameter **dt**, if it is not equal to zero.

Defrost ends due to:

Evaporator probe (Pb2)	Value of H42	End of defrost description
Pb2 ABSENT	H42=0	Due to timeout set in parameter dEt (defrost timeout)
Pb2 PRESENT	H42=1	Temperature setpoint for the end of defrost set in parameter **dSt** reached. If this setpoint is not reached within the time set in parameter **dEt** (defrost timeout), the defrost will end due to timeout.

NOTES:
- If **dSt** intervenes before **dEt**, coil drainage (**dt** and **Fdt**) aligns with **dSt**.
- If **Fdt** < **dt** then **Fdt** = **dt**.
- During defrost, fans are OFF if parameter **dFd** is set accordingly, otherwise they will behave as set for the fan regulator.

The operating diagram is as follows:



Legend:

	Output state for **compressor** regulator
	Output state for **defrost** regulator
	Output state for **evaporator fans** regulator

2) Defrost with compressor stopped

The defrost cycle with the compressor stopped is configured by setting parameter **dtY =0**.
It is used in "**NORMAL TEMPERATURE**" applications.

The compressor stops for the duration of the defrost and there is no defrost relay.

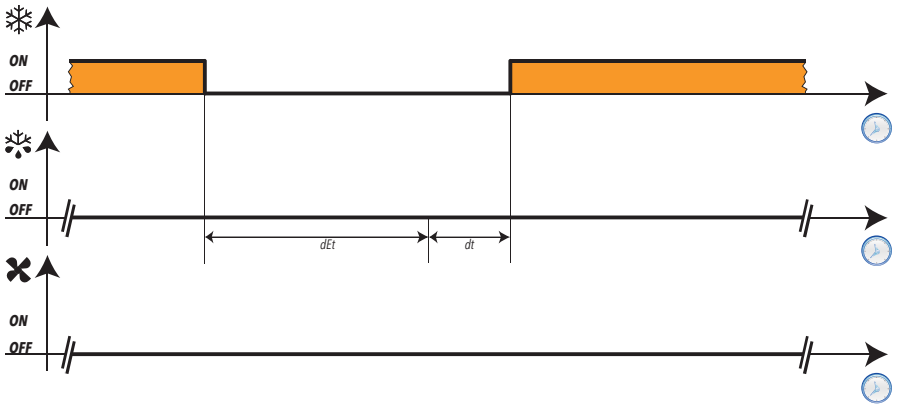
Defrost ends due to:

Evaporator probe (Pb2)	Value of H42	End of defrost description
Pb2 ABSENT	H42=0	Due to timeout set in parameter **dEt** (defrost timeout)
Pb2 PRESENT	H42=1	Temperature setpoint for the end of defrost set in parameter **dSt** reached. If this setpoint is not reached within the time set in parameter **dEt** (defrost timeout), the defrost will end due to timeout.

IMPORTANT: **on models IDPlus 902/961/961 SMPS parameter dt is not visible and cannot be set.**

Models IDPlus 971/974/974 SMPS/978: on completion of defrost, the compressor relay stays de-energised during the coil drainage time set in **dt** (if it is not equal to zero).

The operating diagram is as follows:



Legend:

	Output state for **compressor** regulator
	Output state for **defrost** regulator
	Output state for **evaporator fans** regulator

3) Cycle inversion defrost (hot gas)

IDPlus 971/974/974 SMPS/978 models only.

Hot gas defrost is configured by setting parameter **dtY = 1**.
It is used in "**LOW TEMPERATURE**" applications.

The compressor stays on for the entire duration of the defrost cycle and the relay configured as defrost regulator output, and that the solenoid valve is connected to, activates.
On completion of the defrost cycle, the solenoid valve relay is de-energised and the coil drainage phase set in parameter **dt** (if not equal to zero) is interrupted. The compressor relay is once again controlled by the compressor regulator.

Defrost ends due to:

Evaporator probe (Pb2)	Value of H42	End of defrost description
Pb2 ABSENT	H42=0	Due to timeout set in parameter **dEt** (defrost timeout)
Pb2 PRESENT	H42=1	Temperature setpoint for the end of defrost set in parameter **dSt** reached. If this setpoint is not reached within the time set in parameter **dEt** (defrost timeout), the defrost will end due to timeout.

IMPORTANT: parameters dOn, dOF and dbi (see "Compressor safety timings") have priority.

NOTES:
- If dSt intervenes before **dEt**, coil drainage (dt and **Fdt**) aligns with **dSt**.
- If **Fdt < dt** then **Fdt** = **dt**.
- During defrost, fans are OFF if parameter **dFd** is set accordingly, otherwise they will behave as set for the fan regulator.

The operating diagram is as follows:

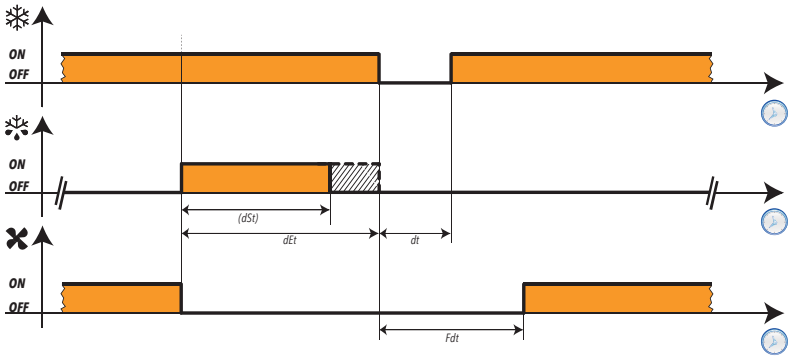


DIAGRAM 1

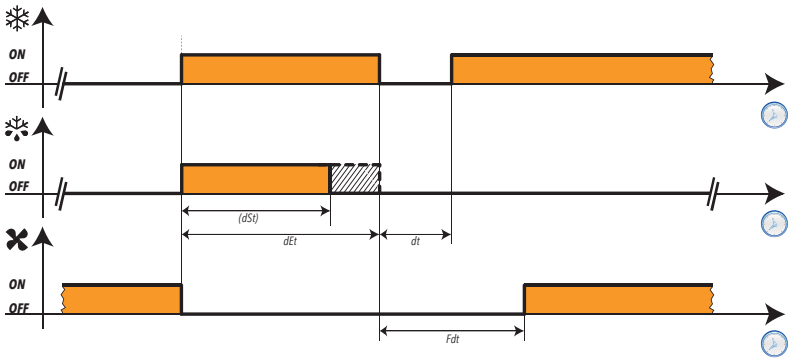


DIAGRAM 2

Legend:

❄	Output state for **compressor** regulator
❄	Output state for **defrost** regulator
✱	Output state for **evaporator fans** regulator

4) Defrost in FREE mode

IDPlus 971/974/974 SMPS/978 models only.

The defrost cycle with the compressor stopped is configured by setting parameter **dtY =2**.

The compressor remains under the control of the compressor regulator for the duration of the defrost cycle and the relay configured as defrost, and that the defrost heaters are connected to, activates.
The heaters are switched off on completion of the defrost cycle. During coil drainage, the compressor continues to thermoregulate.
Defrost ends in the same way as the previous case.

End of defrost due to timeout

IDPlus 971/974/974 SMPS/978 models only.

If the defrost cycle does not terminate on reaching the end of defrost temperature set in parameter **dSt**, a maximum defrost time interval can be set in parameter **dEt**.

NOTE: Defrost can only be terminated manually by switching the controller on and off again using the ON/OFF function.

Alarm function during defrost

IDPlus 971/974/974 SMPS/978 models only.

If the defrost cycle ends due to timeout, an alarm can be activated by configuring parameter **dAt** (see 'end of defrost due to timeout' alarm).
In the event of an environmental probe (Pb1) error, defrost cycles will still be run.
During defrost, the temperature values recorded by the Evaporator probe (Pb2) and probe 3 (Pb3) may be false readings. For this reason, the temperature alarm is excluded.

Display function during defrost

By setting parameter **ddL** (Display mode during defrost cycle - lock display), when the instrument enters defrost mode, the value shown on the display can be:

- left free to show the temperature read by the environmental probe (Pb1).
- locked at value read by the environmental probe (Pb1) at the start of the defrost cycle.
- locked to display the "dEF" (defrost) label.

Unlock display
The display can be set to unlock:

- when the defrost temperature is reached (**models IDPlus 971/974/974 SMPS/978 only**)
- when the timeout value for unlocking the display elapses, as defined in parameter **Ldd** (Lock defrost disable).

IMPORTANT:
1) parameter **Ldd** can be used in a link network to unlock both the display and other resources.
2) **IDPlus 971/974/974 SMPS/978 only**: if set, the display will be unlocked after the coil drainage cycle since it locks the regulators.

FANS

The following section applies to models IDPlus 971/974/974 SMPS/978 only since these are the only models with fan-related parameters.

Operating conditions

The regulator is activated provided that:

- the time set in parameter **OdO** has elapsed
- the temperature value read by the evaporator probe (Pb2), if present, is less than the value of parameter **FSt**
- during defrost it has not been excluded by parameter **dFd** (**dFd = y**)
- coil drainage is not active (**dt**)
- fans delay after defrost is not active (**Fdt**)

The request to switch fans on or off can be made in the following ways:

- by the compressor regulator to help in the "cooling" process (temperature control mode)
- by the defrost regulator to check and/or limit the diffusion of hot air

			DAY		NIGHT	
	H42	FCO	Compressor ON	Compressor OFF	Compressor ON	Compressor OFF
Probe Pb2 present	y	0	THERMOSTATCONTROLLED	OFF	THERMOSTAT CONTROLLED	OFF
		1	THERMOSTATCONTROLLED	THERMOSTATCONTROLLED	THERMOSTAT CONTROLLED	THERMOSTATCONTROLLED
		2	THERMOSTATCONTROLLED	DUTY CYCLE DAY	THERMOSTAT CONTROLLED	DUTY CYCLE NIGHT
Probe Pb2 in error "E2"	y	0	ON	OFF	ON	OFF
		1	ON	ON	ON	ON
		2	ON	DUTY CYCLE DAY	ON	DUTY CYCLE NIGHT
Probe Pb2 absent	n	0	ON	OFF	ON	OFF
		1	ON	ON	ON	ON
		2	ON	DUTY CYCLE DAY*	ON	DUTY CYCLE NIGHT*

* see paragraph "Fan operation without probe Pb2 (**H42** ≠ 0).

Fan function in thermostat control

During "cooling", the fans operate as shown in this diagram:

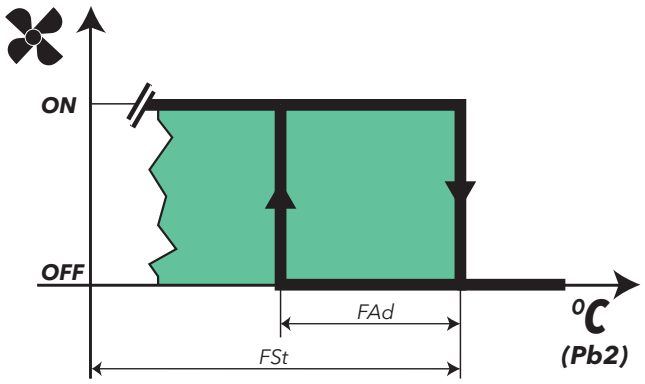
Thermostat control of fans takes place at the values set in parameters

- **FSt** (fans disabling temperature) and **FAd** (fans differential).

The fans disabling temperature, set in parameters **FSt** (fans disabling temperature) and **FAd** (fans differential), is an absolute value since **FPt = 0** (real temperature value).

Important: when the temperature approaches the start fan temperature (-50°C) the differential will always be referred to parameter **FAd** but with the opposite sign.

The fan regulator operates as indicated below:



Fan operation in Duty Cycle mode

The fans operate in Duty Cycle mode if the value read by probe Pb2 (evaporator/fans) is less than the value of parameter **FSt**.

There are two Duty Cycle modes: **Day** and **Night**.
Activation of the **Night** mode depends on parameter **ESF**:

ESF = n	**Night** mode disabled
ESF = y	**Night** mode active

Duty Cycle operation depends on the operating mode, e.g.:

- Day: parameters **Fon** and **FoF** must be set accordingly
- Night: parameters **Fnn** and **FnF** must be set accordingly

The fans operate as follows:

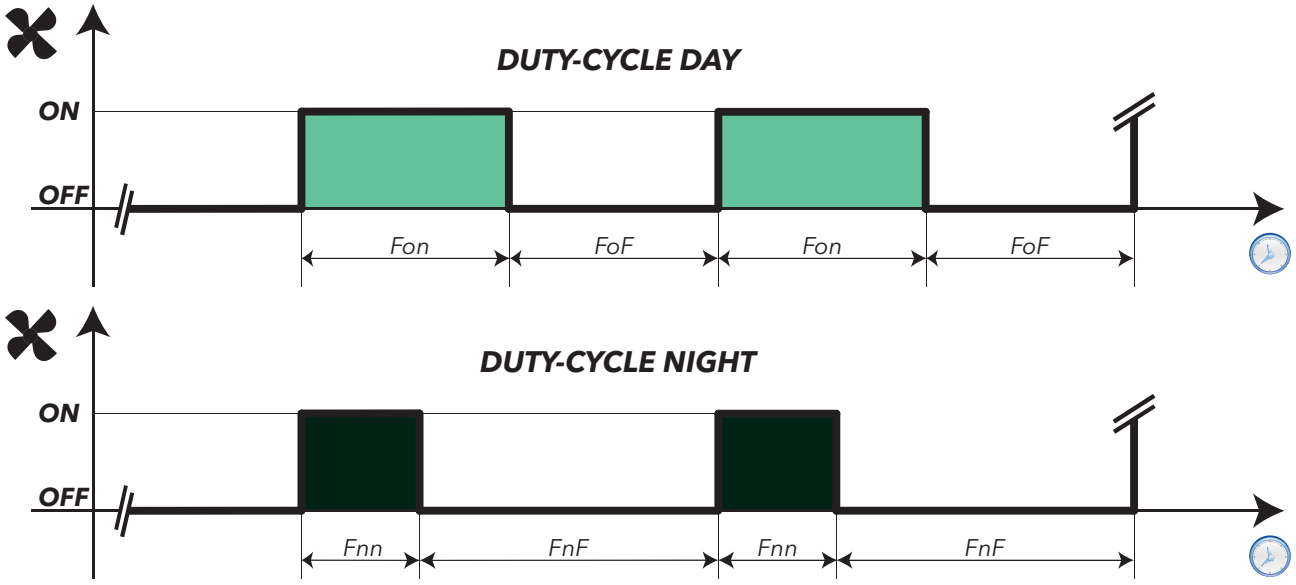
DUTY CYCLE DAY

Fon	FoF	Fan operation
0	0	**OFF**
0	≠0	**OFF**
≠0	0	**ON**
≠0	≠0	**DUTY CYCLE DAY**

DUTY CYCLE NIGHT

Fnn	FnF	Fan operation
0	0	**OFF**
0	≠0	**OFF**
≠0	0	**ON**
≠0	≠0	**DUTY CYCLE NIGHT**

The fan regulator operates as shown below:



Fan function during defrost

During defrost, the fans operate as shown in this diagram

dFd = y: exclusion of fans during defrost)	**OFF**
dFd = n: the fans are not excluded during defrost (see parameters **FCO**, **Fon**, **FoF**, **Fnn** and **FnF**)	**TEMPERATURE CONTROL / DUTY CYCLE**

Thermostat control of fans takes place at the values set in parameters:

- **FSt** (fans disabling temperature) and **FAd** (fans differential).

NOTE: during defrost with electrical heaters, the compressor is OFF but the fans work as if the compressor was still ON, unless they have been disabled during defrost (see parameter **dFd**)

Fan function during coil drainage

If parameter **dt ≠ 0** (coil drainage time), the fans will stay OFF for the time set in this parameter.
See "**Defrost with electrical heaters**".
Note that if **Fdt** (fan delay time) is greater than **dt** (coil drainage time) the fans stay OFF for the time set in **Fdt** rather than **dt** (e.g. whichever timing is longer will be applied).

Post-ventilation

Parameter **FdC** delays the switching off of the fans after the compressor has stopped (increasing efficiency of the system by making better use of inertia).
If **FdC = 0** the function is disabled.

User parameters

The parameters that manage the fan regulator are:

Label	Description	Model
FSt	Evaporator fans disabling temperature	**971/974/974 SMPS/978**
Fdt	Evaporator fans delay after defrost cycle	
dFd	Evaporator fans disabling during defrost time	
FCO	Evaporator fans operating mode	
FAd	Evaporator fans activation differential	
dt	Coil drainage time	
Fon	Evaporator fans ON time in duty cycle day mode	
FoF	Evaporator fans OFF time in duty cycle day mode	
Fnn	Evaporator fans ON time in duty cycle night mode	
FnF	Evaporator fans OFF time in duty cycle night mode	
ESF	Night mode activation	

AUXILIARY OUTPUT (AUX/LIGHT)

The following section applies to models IDPlus 971/974/SMPS/978 only since these are the only models that enable setting of the auxiliary output (AUX).

Description

If relay control is configured as AUX by setting parameters **H21** (IDPlus 971/974/974 SMPS/978), **H22** (IDPlus 902/961/961 SMPS/971/974/974 SMPS/978), **H23** (IDPlus 974/974SMPS/978) or **H24** (IDPlus 978) to the value **H2x=5**, and by pressing the associated key **H31** (UP key) or **H32** (DOWN key), which must be set to the value H3x=2, the relay activates if it was off or vice versa.

The on/off state is saved in non-volatile memory hence when power returns after a blackout, the device will restart in the state that was active prior to the blackout.

If parameter **H11** is set to the value **H11=3**, the AUX relay is commanded from the digital input; in this case the relay will reflect the state of the input.
In this case, on/off state is not saved in non-volatile memory

IMPORTANT: the meaning of the D.I. must always remain the same: for example, if the relay is activated by D.I. and switched off by key, when the D.I. is reset to the starting position, the relay does not change state (since it was already de-energised by key). With the instrument OFF, if set accordingly, only the digital input (D.I.) and the associated key can change the state of the output.

Operating conditions

The regulator is activated by:

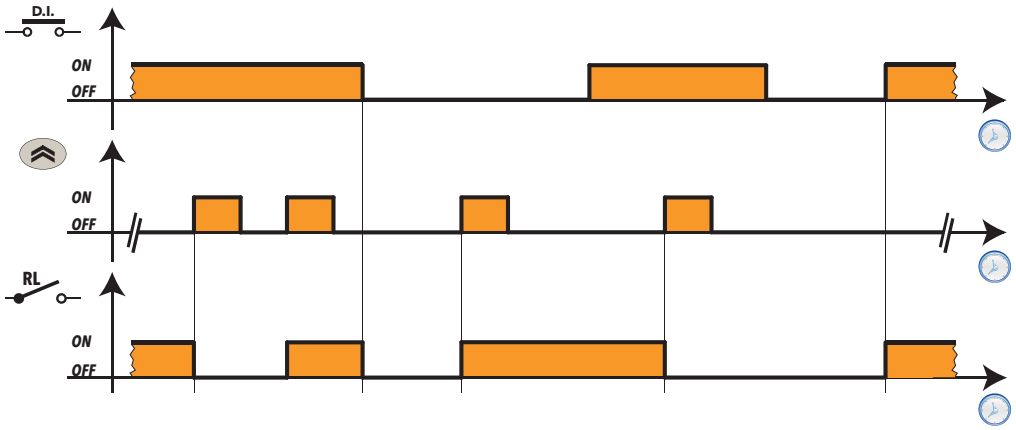
- Key
- Digital Input

if configured accordingly.

The regulator is not active when:

Condition	AUX output state	NOTES
during start-up	OFF	
during standby	word OFF displayed and regulator locked	

The control diagram is as follows:



User parameters

The parameters that manage the auxiliary (AUX) output regulator are:

Label	Description	Model
H11*	Configuration of digital input 1 / Polarity	All
H12	Configuration of digital input 2 / Polarity	971/974/974 SMPS/978
H21	Configuration of digital output 1	961/961 SMPS/971/974/ 974 SMPS/978
H22	Configuration of digital output 2 (digital output 1 in the case of IDPlus 902)	902/971/974/974 SMPS/978
H23	Configuration of digital output 3	971/974/974 SMPS/978
H24	Configuration of digital output 4	978
H31*	Configuration of UP key	All
H32*	Configuration of DOWN key	All

*** On models IDPlus 902/961/961 SMPS the parameters marked with * are visible but there is no option to set the auxiliary output.**

PRESSURE SWITCH

Description

This regulator performs diagnostic operations over a digital input activated by setting parameters:

- **H11** (D.I.1) = ±7
- **H12** (D.I.2) = ±7 (ID Plus 971/974/974 SMPS/978 models)

If a pressure switch input is activated, power to the compressor is immediately cut off, the relative alarm LED lights up to provide a visual warning and the folder **nPA** in the alarms folder **AL** is also displayed. The folder contains the label with the number of pressure switch activations (up to the maximum value set in parameter **PEn**)

When the pressure switch is deactivated because the pressure returns to normal levels, the time set in parameter **PEt** must elapse before regulation in cooling mode resumes.

If the number of activations exceeds the maximum number defined by parameter **PEn** within a time less than the value of **PEI**, the following conditions occur:

- The compressor, fans and defrost are disabled
- In the alarms folder **AL** the label **PA** (pressure alarm) is displayed in place of folder **nPA**
- **PAL** label shown on display
- The alarm relay comes on (if configured)

IMPORTANT: 1) If the number of activations exceeds the number set in **PEn** within the time limit **PEI**, the alarm is automatically reset.
2) The input must be closed on itself if not used and the input is normally closed active, or must be open if not used and normally open active, or deactivated by digital input configuration parameter.

NOTES: 1) Once the controller is in alarm state, it must be powered off then on, or RESET by activating function **rPA** in the functions folder **FPr**.
2) If parameter **PEn = 0**, the function is disabled and alarms and counters are also disabled.
3) the pressure switch alarm is not stored in EEPROM
4) During the pressure switch activation period the defrost interval count runs as normal.

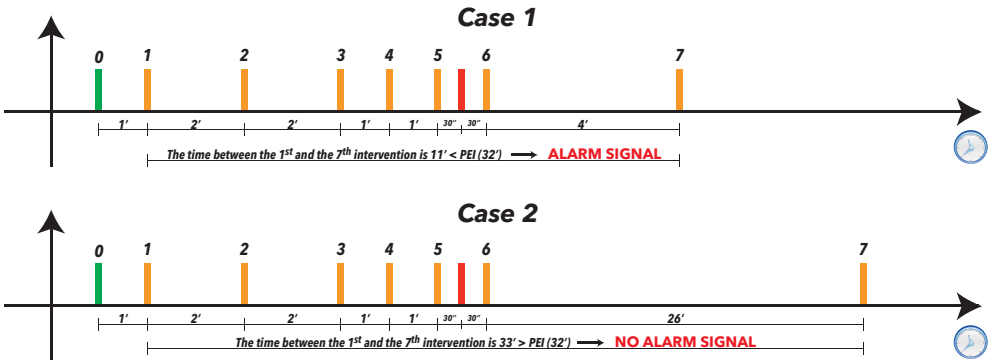
Operating conditions

The number of pressure switch errors is counted using a FIFO method. The time interval **PEI** is divided into 32 parts; the counter is incremented by one unit if there are one or more activations during one part of the entire interval **PEI**.

Two operating examples are given below: In both cases, suppose that **PEI** = 32 minutes (equal to 32 min/32 = 1 min) and **PEn** = 7.

Case1: **ALARM SIGNALLED**. The interval for storing activations is 1 minute: all activations within that minute are counted as a single activation and the alarm (if any) is activated when the sampling interval has elapsed. In this example the pressure switch alarm is signalled because there have been 7 activations during the 32 minute time window.

Case 2: **ALARM NOT SIGNALLED**. In this example the alarm is not activated because during the 32 minute time window the number of activations set in parameter **PEn** was not reached. In practice the time window is a rolling window and all activations that are outside of it are deleted: the reference point is the last activation and the time **PEI** is subtracted from that point to establish how many activations are included in the count.



User parameters

The parameters that manage the pressure switch regulator are:

Label	Description	Model
PEn	Number of errors allowed per maximum/minimum pressure switch input	All
PEI	Minimum/maximum pressure switch error count interval (in 32 parts)	All
PEt	Delay in activating compressor after pressure switch deactivation	All

DEEP COOLING CYCLE - DCC

Description

This regulator means that the compressor regulator regulates in relation to setpoint **dCS** with a differential equal to the value set in parameter **diF** for the time set in parameter **tdc** (deep cooling cycle).
When the DCC (Deep Cooling Cycle) activates, the interval between defrost cycles is cleared and defrosts disabled. After a DCC and once the time set in parameter **dcc** has elapsed, a defrost cycle is forced and the counters restart for the interval between defrost cycles (value set in parameter **dit**).
During the DCC the temperature alarms are disabled. Normal temperature alarm operation is resumed after the end of the DCC.

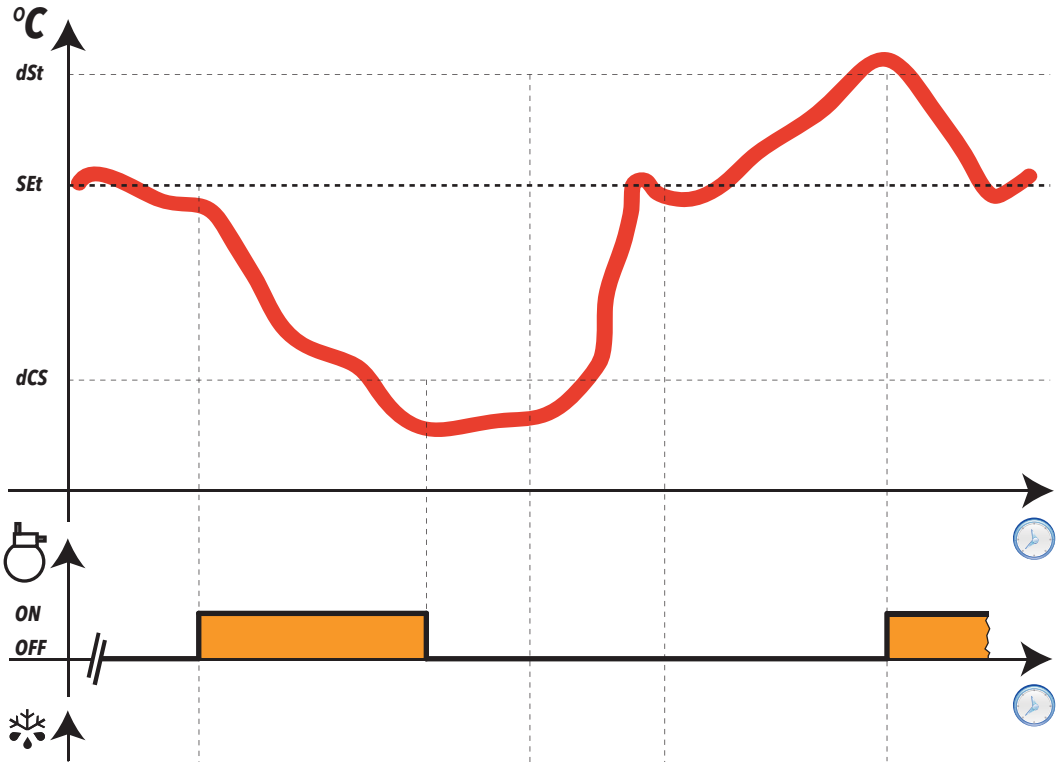
Operating conditions

The regulator is activated by:

- Key
- Digital Input

if configured accordingly.

In the event of a probe error and/or power failure, the Deep Cooling Cycle is stopped and standard controller function restored.
In the event of a power failure, when the controller is switched back on it always starts in standard mode, even if it was executing a Deep Cooling Cycle when the power failed.
If parameters **dCS**, **tdc** and **dcc** are modified, the Deep Cooling Cycle is recalculated with the new values set. The control diagram is as follows:



User parameters

The parameters that control the Deep Cooling cycle are:

Label	Description	Model
dSt	Defrost end temperature (determined by probe Pb2).	971/974/974 SMPS/978
dit	Time interval between 2 consecutive defrost cycles	All
dEt	Defrost timeout. Determines the maximum defrost duration	All
dCS	Deep cooling Setpoint	All
diF	Setpoint differential	All
tdc	Deep cooling duration	All
dcc	Defrost delay after deep cooling	All

DOOR SWITCH INPUT

Operating conditions

The door switch input is associated to an appropriately configured digital input (**H11 = ±4** or **H12 = ±4**).
By controlling the opening of the door, it is possible to deactivate the compressor output and/or the fans.
It is also possible to associate a deactivation delay to the compressor output by means of parameter **dCO**.

Parameter **dod** can be assigned the following values:

- 0: disabled;
- 1: disables fans only (FAN);
- 2: disables the compressor (COMP);
- 3: disables both compressor and fans (COMP and FAN);

If the door is opened during a defrost cycle, the cycle is not shut down.
When the door is opened, the controller operates as follows based on the value of parameters **dOd** and **dCO**:

dOd	dAd	Fans (FAN)	Compressor (COMP)
dOd = 0	---	ON	ON
dOd = 1	---	OFF	ON
dOd = 2	**dAd = 0**	ON	OFF
dOd = 2	**dAd > 0**	ON	OFF after time dCO
dOd = 3	**dAd = 0**	OFF	OFF
dOd = 3	**dAd > 0**	OFF	OFF after time dCO

User parameters

The parameters that manage the auxiliary (AUX) output regulator are:

Label	Description	Model
dOd	Enable utility switch-off on activation of digital input (set as door switch)	All
dAd	Digital input activation delay	All
OAO	Alarms signalling delay after disabling of digital input (door closing)	All
tdO	Door open alarm delay time	All
dCO	Compressor switch off delay from door switch	All

STANDBY

Operating conditions

The Standby regulator can be activated by digital input (if configured) or by key (if programmed).

With the device OFF the display shows "OFF" and all regulators are blocked including alarms.

When the device is switched on via a key or an appropriately configured digital input, regular operation commences, the same as from power-on. After power-on, the temperature alarm is excluded for a time set in parameter **PAO**, and the delay set in parameter **OdO** is activated.
Each time that the device is switched off, all cycle times are reset.
The on/off state is saved in non-volatile memory hence when power returns after a blackout, the device will restart in the state that was active prior to the blackout.
The output from standby is linked to the delay set in parameter **OdO**.

NOTE: With the controller off, all relays are de-energized except for Aux: button/aux input-light-door switch are active.

User parameters

The parameters that manage the Standby regulator are:

Label	Description	IDPlus model
PAO	Alarm disabling after power-on	All
OdO	Delay output enabling from power-on	All
OAO	High and low temperature alarms disabling time after door closing	All

IDPLUS 902/961/961 SMPS TABLES

"USER" MENU PARAMETERS TABLE

Cat	Parameter	Description	Range	UM	AP1	AP2	AP3	AP4
	SEt	Temperature control SEtpoint	LSE ... HSE	°C/°F	0.0	0.0	0.0	-2.0
	diF	Compressor relay activation differential	+0.1 ... 30.0	°C/°F	2.0	2.0	2.0	0.1
	HSE	Maximum value settable for setpoint	LSE ... 302	°C/°F	99.0	140	140	5.0
	LSE	Minimum value settable for setpoint	-58.0 ... HSE	°C/°F	-50.0	-55.0	-55.0	-10.0
	dit	Interval between the start of two consecutive defrost cycles	0 ... 250	hours	6			8
	dEt	Defrost timeout	1 ... 250	min	30			30
	HAL	Maximum temperature alarm	LAL ... 150	°C/°F	50.0	150	150	50.0
	LAL	Minimum temperature alarm	-50.0 ... HAL	°C/°F	-50.0	-50.0	-50.0	-50.0
Pb3	SA3	Probe 3 alarm Setpoint	-50.0 ... 150	°C/°F				70.0
	LOC	Basic commands edit lock	n/y	flag	n	n	n	n
PA1	PS1	PAssword1: if **PS1≠0** it is the password to the "**User**" parameters	0 ... 250	num	0	0	0	0
Pb1	CA1	Temperature value to be added to the value of Pb1	-12.0 ... 12.0	°C/°F	0.0	0.0	0.0	0.0
Pb3	CA3	Temperature value to be added to the value of Pb3	-12.0 ... 12.0	°C/°F				0.0
	ddL	Display mode during defrost. **0** = displays the temperature read by probe Pb1; **1** = locks recorded value of Pb1 at defrost start; **2** = displays label "dEF"	0/1/2	num	0			0
	Ldd	Timeout value for display unlock - label dEF	0 ... 255	min	30			30
Pb3	H43	Probe 3 present. **n**(0)= not present; **y**(1)= present	n/y	flag				y
-	reL	Read-only parameter	/	/	/	/	/	/
-	tAb	Reserved: read-only parameter	/	/	/	/	/	/
	PA2	Folder that permits access to the "Installer" menu. If **PS2≠0** the password will be requested.						

NOTES: * The "USER" menu parameters also include **PA2** which permits access to the "Installer" menu
** To reset the HACCP alarms use the function rES in folder FnC of the "Installer" parameters
*** For the complete list of parameters, see the "Installer Menu Parameters Table".

"INSTALLER" MENU PARAMETERS TABLE

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
	SEt	Control SEtpoint within the range between the minimum Setpoint LSE and the maximum Setpoint HSE. The setpoint value is located in the Machine Status menu.	LSE...HSE	°C/°F	0.0	0.0	0.0	-2.0
		COMPRESSOR (folder "CP")						
	diF	Compressor relay activation differential; the compressor stops on reaching the setpoint value (as indicated by the regulation probe) and restarts at a temperature value equal to the setpoint plus the value of the differential. **Note: cannot be equal to 0**.	0.1...30.0	°C/°F	2.0	2.0	2.0	0.1
	HSE	Maximum value settable for setpoint	LSE...302	°C/°F	99.0	140	140	5.0
	LSE	Minimum value settable for setpoint	-58.0...HSE	°C/°F	-50.0	-55.0	-55.0	-10.0
	OSP	Temperature value to be added to the setpoint if reduced set (Economy function) enabled.	-30.0...30.0	°C/°F	3.0	3.0	0.0	0.0
	Hc	The controller will go to COOL operating mode (set to "**C**(0)") or HEAT operating mode (set to "**H**(0)")	C/H	flag	C	C	H	C
	Ont	Controller switch-on time in the event of faulty probe: - if **Ont** = 1 and **OFt** = 0, the compressor will always stay ON; - if **Ont** = 1 and **OFt** > 0, it operates in Duty Cycle mode.	0 ... 250	min	0	0	0	0
	OFt	Controller switch-off time in the event of a faulty probe: - if **OFt** = 1 and **Ont** = 0 the controller will always stay OFF; - if **Ont** = 1 and **OFt** > 0, it operates in Duty Cycle mode.	0 ... 250	min	1	1	1	1
	dOn	Compressor relay activation delay after request.	0 ... 250	sec	0	0	0	0
	dOF	Delay time after power-off: the delay time indicated must elapse between deactivation of the compressor relay and the next power-on.	0 ... 250	min	0	0	0	0
	dbi	Delay time between power-ons; the delay time indicated must elapse between two consecutive compressor power-ons.	0 ... 250	min	0	0	0	0
	OdO (!)	Delay in activating outputs after the instrument is switched on or after a power failure. **0** = not active	0 ... 250	min	0	0	0	0
	dCS	"Deep Cooling Cycle" setpoint	-58.0...302	°C/°F	0.0	0.0	0.0	0.0
	tdC	"Deep Cooling Cycle" duration	0 ... 255	min*10	0	0	0	0
	dcc	Defrost activation delay after a "Deep Cooling Cycle"	0 ... 255	min	0	0	0	0
		DEFROST (folder "dEF")						
	dit	Interval between the start of two consecutive defrost cycles.	0 ... 250	hours	6	0	0	8
	dCt	Selects the count mode for the defrost interval. **0** = compressor running time (DIGIFROST® method); defrost active ONLY when the compressor is on; **1** = Real Time - appliance running time; defrost counting is always active when the machine is on and starts at each power-on; **2** = compressor stop. Every time the compressor stops, a defrost cycle is performed according to parameter dty.	0/1/2	num	1	1	1	1
	dOH	Delay for start of first defrost after request.	0 ... 59	min	0	0	0	0
	dEt	Defrost time-out; determines the maximum defrost duration.	1 ... 250	min	30	1	1	30
	dPO	Determines whether the instrument must enter defrost mode (if the temperature measured by Pb2 allows this operation). **n**(0)= no; **y**(1)= yes.	n/y	flag	n	n	n	n
		ALARMS (folder "AL")						
	Att	Can be used to select absolute (**Att=0**) or relative (**Att=1**) values for **HAL** and **LAL** parameters.	0/1	num	0	0	0	0
	AFd	Alarm Fan differential.	1.0 ... 50.0	°C/°F	2.0	2.0	2.0	2.0

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
((•))	HAL	Temperature value (as a relative value) which if exceeded in an upward direction triggers the activation of the alarm signal.	LAL...302	°C/°F	50.0	150	150	50.0
((•))	LAL	Temperature value (as a relative value) which if exceeded in a downward direction triggers the activation of the alarm signal.	-58.0...HAL	°C/°F	-50.0	-50.0	-50.0	-50.0
((•))		Alarm override time after device is switched on following a power failure.	0 ... 10	hours	0	0	0	0
((•))	dAO	Temperature alarm override time after defrost.	0 ... 999	min	0	0	0	0
((•))	OAO	Alarm signalling delay after digital input disabling (door closing). Alarm means high/low temperature alarms.	0 ... 10	hours	0	0	0	0
((•))	tdO	Delay in door open alarm activation.	0 ... 250	min	0	0	0	0
((•))	tAO	Time delay for temperature alarm indication.	0 ... 250	min	0	0	0	0
((•))	rLO	An external alarm locks the regulators. **n**(0)= does not lock; **y**(1) = locks	n/y	flag	n	n	n	n
((•))	SA3	Probe 3 alarm Setpoint.	-58.0...302	°C/°F	0.0	0.0	0.0	70.0
((•))	dA3	Probe 3 alarm differential.	1.0 ... 50.0	°C/°F	1.0	1.0	1.0	10.0
		LIGHTS & DIGITAL INPUTS (folder "Lit")						
	dOd	Digital input for switching off utilities: **0** = disabled; **1** = disables the fans; **2** = disables the compressor; **3** = disables fans and compressor	0/1/2/3	num	0	0	0	0
	dAd	Activation delay for digital input	0 ... 255	min	0	0	0	0
	dCO	Compressor enabling delay from acknowledgement	0 ... 255	min	1	1	1	1
		PRESSURE SWITCH (folder "PrE")						
	Pen	Number of errors allowed per maximum/minimum pressure switch input	0 ... 15	num	0	0	0	0
	PEI	Minimum/maximum pressure switch error count interval.	1 ... 99	min	1	1	1	1
	PEt	Delay in activating compressor after pressure switch deactivation	0 ... 255	min	0	0	0	0
		COMMUNICATION (folder "Add")						
	PtS	Selection of communication protocol. **t**(0) = Televis; **d**(1) = Modbus	t/d	flag	t	t	t	t
	dEA	Index of the device within the family (valid values from 0 to 14)	0 ... 14	num	0	0	0	0
	FAA	Device family (valid values from 0 to 14). The pair of values FAA and dEA are the network address of the device and are given in the format "FF.DD" (where FF=FAA and DD=dEA).	0 ... 14	num	0	0	0	0
	Pty	Modbus parity bit. n=none; E=even; o=odd	n/E/o	num	n	n	n	n
	StP	Modbus stop bit	1b/2b	flag	1b	1b	1b	1b
		DISPLAY (folder "DiS")						
	LOC	LOCk. Setpoint edit lock. See corresponding paragraph. You will still be able to open parameter programming and alter parameters, including the state of this parameter if you need to unlock the keyboard. **n**(0)= no; **y**(1) = yes.	n/y	flag	n	n	n	n
	PS1	When enabled (PS1≠0) it is the password to the "**User**" parameters	0 ... 250	num	0	0	0	0
	PS2	When enabled (PS2≠0) it is the password to the "**Installer**" parameters	0 ... 250	num	15	15	15	15
	ndt	Display with decimal point. **n**(0) = no **y**(1) = yes;	n/y	flag	y	y	y	y
	CA1	Positive or negative temperature value to be added to the value of Pb1.	-12.0...12.0	°C/°F	0.0	0.0	0.0	0.0
	CA3	Positive or negative temperature value to be added to the value of Pb3.	-12.0...12.0	°C/°F	0.0	0.0	0.0	0.0
	ddL	**0** = displays the temperature read by probe Pb1; **1** = locks the reading at the value of Pb1 at the start of defrosting until the setpoint is reached; **2** = displays the label "dEF" during defrosting until the setpoint is reached.	0/1/2	num	0	0	0	0
	Ldd	Timeout value for display unlock - label dEF	0 ... 255	min	30	30	30	30

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
	dro	Select the unit of measurement used when displaying the temperature recorded by the probes. (**0** = °C, **1** = °F). **NOTE: switching between °C and °F DOES NOT modify the SEt, diF values, etc. (e.g. set=10°C becomes 10°F)**	0/1	flag	0	0	0	0
	ddd	Selects type of value to display. **0** = Setpoint; **1** = probe Pb1; **2** = probe Pb2; **3** = probe Pb3	0/1/2/3	num	1	1	1	1
		HACCP (folder "HCP")						
	SHH	Maximum HACCP alarm signals threshold	-55.0...150	°C/°F	0.0	0.0	0.0	0.0
	SLH	Minimum HACCP alarm signals threshold	-55.0...150	°C/°F	0.0	0.0	0.0	0.0
	drA	Minimum dwelling time in critical area for the event to be recorded. After this time a HACCP alarm will be logged and signalled.	0 ... 99	min	0	0	0	0
	drH	HACCP alarm reset time from last reset	0 ... 250	hours	0	0	0	0
	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	num	0	0	0	0
	H51	HACCP alarm override time	0 ... 250	min	0	0	0	0
		CONFIGURATION (folder "CnF")						
	H00	Select probe type. **0** = PTC; **1** = NTC; **2** = PT1000	0/1/2	flag	1	1	1	1
D.I.1	H11	Configuration of digital input 1/polarity. **0**=disabled; **±1**=defrost; **±2**=reduced set; **±3**=not used; **±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	num	0	0	0	0
OUT1	H21	(**only IDPlus 961/961 SMPS**) Configurability of digital output 1 (❄). **0** = disabled; **1** = compressor; **2** = defrost; **3** = fans; **4** = alarm; **5** = AUX; **6** = standby	0 ... 6	num	1	1	1	1
OUT1	H22	(**only IDPlus 902**) Configurability of digital output 1 (❄). Same as **H21**	0 ... 6	num	1	1	1	1
UP	H31	Configurability of UP key. **0** = disabled; **1** = defrost; **2** = not used; **3** = reduced set; **4** = standby; **5** = reset HACCP alarms; **6** = disable HACCP alarms; **7** = activate Deep Cooling cycle	0 ... 7	num	1	0	0	1
DOWN	H32	DOWN key configuration. Same as H31.	0 ... 7	num	0	0	0	0
Pb3	H43	Probe Pb3 present. **n**(0)= not present; **y**(1)= present	n/y	flag	n	n	n	y
-	reL	Read-only parameter	/	/	/	/	/	/
-	tAb	Reserved: read-only parameter	/	/	/	/	/	/
		COPY CARD (folder "FPr")						
	UL	Transfer programming parameters from instrument to Copy Card	/	/	/	/	/	/
	Fr	Format Copy Card. Erases all data contained in the Copy Card. **NOTE: if parameter "Fr" is used, the data entered will be permanently lost. This operation cannot be reversed.**	/	/	/	/	/	/
		FUNCTIONS (folder "FnC")						
	rAP	Reset pressure switch alarms	/	/	/	/	/	/
	rES	Reset HACCP alarms	/	/	/	/	/	/

NOTES: 1) If one or more parameters marked with (!) in folder "CnF" are modified, the controller MUST be switched off and then switched on again to ensure correct operation.

IDPLUS 971 TABLES

"USER" MENU PARAMETERS TABLE

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
	SEt	Temperature control SEtpoint	LSE ... HSE	°C/°F	0.0	0.0	0.0	0.0
	diF	Compressor relay activation differential	+0.1 ... 30.0	°C/°F	2.0	2.0	2.0	2.0
	HSE	Maximum value settable for setpoint	LSE ... 302	°C/°F	99.0	99.0	99.0	99.0
	LSE	Minimum value settable for setpoint	-58.0 ... HSE	°C/°F	-50.0	-50.0	-50.0	-50.0
	dty	Type of defrost. **0** = Electrical defrost; **1** = Reverse cycle defrost; **2** = Defrost independent of compressor.	0/1/2	num	0	0		
	dit	Interval between the start of two consecutive defrost cycles	0 ... 250	hours	6	6	6	6
	dEt	Defrost timeout.	1 ... 250	min	30	30	30	30
	dSt	Defrost end temperature (determined by probe Pb2).	-50.0 ... 150	°C/°F	8.0		8.0	
	FSt	Fans disabling temperature.	-58.0 ... 302	°C/°F			50.0	
	Fdt	Fan activation delay after a defrost cycle.	0 ... 250	min			0	
	dt	Coil drainage time.	0 ... 250	min			0	
	dFd	Allows exclusion of the evaporator fans to be selected or not selected during defrosting.	n/y	flag			y	
	HAL	Maximum temperature alarm	LAL ... 150	°C/°F	50.0	50.0	50.0	50.0
	LAL	Minimum temperature alarm	-50.0 ... HAL	°C/°F	-50.0	-50.0	-50.0	-50.0
	dOd	Digital input for switching off utilities. **0** = disabled; **1** = disables the fans; **2** = disables the compressor; **3** = disables fans and compressor	0/1/2/3	num			0	
	dCO	Compressor enabling delay from acknowledgement.	0 ... 255	min			1	
	LOC	Basic commands edit lock	n/y	flag	n	n	n	n
PA1	PS1	PAssword1: if **PS1≠0** it is the password to the "**User**" parameters	0 ... 250	num	0	0	0	0
Pb1	CA1	Temperature value to be added to the value of Pb1.	-12.0 ... +12.0	°C/°F	0.0	0.0	0.0	0.0
Pb2	CA2	Temperature value to be added to the value of Pb2.	-12.0 ... +12.0	°C/°F	0.0		0.0	
	ddL	Display mode during defrost. **0** = displays the temperature read by probe Pb1; **1** = locks recorded value of Pb1 at defrost start; **2** = displays label "dEF"	0/1/2	num	0	0	0	0
	Ldd	Timeout value for display unlock - label dEF	0 ... 255	min	30	30	30	30
Pb2	H42	Evaporator probe (Pb2) present. **n**(0)= not present; **y**(1)= present	n/y	flag	y		y	
-	reL	Read-only parameter	/	/	/	/	/	/
-	tAb	Reserved: read-only parameter	/	/	/	/	/	/
	PA2	Folder that permits access to the "Installer" menu. If **PS2≠0** the password will be requested.						

NOTES: * The "USER" menu parameters also include **PA2** which permits access to the "Installer" menu
** To reset the HACCP alarms use the function **rES** in folder **FnC** of the "Installer" parameters
*** For the complete list of parameters, see the "Installer Menu Parameters Table".

"INSTALLER" MENU PARAMETERS TABLE

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
	SEt	Control SEtpoint within the range between the minimum Setpoint LSE and the maximum Setpoint HSE. The setpoint value is located in the Machine Status menu.	LSE...HSE	°C/°F	0.0	0.0	0.0	0.0
		COMPRESSOR (folder "CP")						
	diF	Compressor relay activation differential; the compressor stops on reaching the setpoint value (as indicated by the regulation probe) and restarts at a temperature value equal to the setpoint plus the value of the differential. **Note: cannot be equal to 0**.	0.1...30.0	°C/°F	2.0	2.0	2.0	2.0
	HSE	Maximum value settable for setpoint	LSE...302	°C/°F	99.0	99.0	99.0	99.0
	LSE	Minimum value settable for setpoint	-58.0...HSE	°C/°F	-50.0	-50.0	-50.0	-50.0
	OSP	Temperature value to be added to the setpoint if reduced set (Economy function) enabled.	-30.0...30.0	°C/°F	3.0	3.0	0.0	3.0
	Hc	The controller will go to HEAT operating mode operating mode (set to "**C**(0)") (set to "**H**(1)") or COOL	C/H	flag	C	C	C	C
	Ont	Controller switch-on time in the event of faulty probe: - if **Ont** = 1 and **OFt** = 0, the compressor will always stay ON; - if **Ont** = 1 and **OFt** > 0, it operates in Duty Cycle mode.	0 ... 250	min	0	0	0	0
	OFt	Controller switch-off time in the event of a faulty probe: - if **OFt** = 1 and **Ont** = 0 the controller will always stay OFF; - if **Ont** = 1 and **OFt** > 0, it operates in Duty Cycle mode.	0 ... 250	min	1	1	1	1
	dOn	Compressor relay activation delay after request.	0 ... 250	sec	0	0	0	0
	dOF	Delay time after power-off: the delay time indicated must elapse between deactivation of the compressor relay and the next power-on.	0 ... 250	min	0	0	0	0
	dbi	Delay time between power-ons; the delay time indicated must elapse between two consecutive compressor power-ons.	0 ... 250	min	0	0	0	0
	OdO (!)	Delay in activating outputs after the instrument is switched on or after a power failure. **0** = not active	0 ... 250	min	0	0	0	0
	dCS	"Deep Cooling Cycle" setpoint	-58.0...302	°C/°F	0.0	0.0	0.0	0.0
	tdC	"Deep Cooling Cycle" duration	0 ... 255	min*10	0	0	0	0
	dcc	Defrost activation delay after a "Deep Cooling Cycle"	0 ... 255	min	0	0	0	0
		DEFROST (folder "dEF")						
	dty	Type of defrost. **0** = electric defrost - compressor off (OFF) during defrosting; **1** = reverse cycle defrost (hot gas); compressor on during defrost; **2** = Free mode defrost; defrost independent of compressor.	0/1/2	num	0	0	0	0
	dit	Interval between the start of two consecutive defrost cycles.	0 ... 250	hours	6	6	6	6
	dCt	Selects the count mode for the defrost interval. **0** = compressor running time (DIGIFROST® method); defrost active ONLY when the compressor is on; **1** = Real Time - appliance running time; defrost counting is always active when the machine is on and starts at each power-on; **2** = compressor stop. Every time the compressor stops, a defrost cycle is performed according to parameter dty.	0/1/2	num	1	1	1	1
	dOH	Delay for start of first defrost after request.	0 ... 59	min	0	0	0	0
	dEt	Defrost time-out; determines the maximum defrost duration.	1 ... 250	min	30	30	30	30
	dSt	Defrost end temperature (determined by probe Pb2).	-50.0...150	°C/°F	8.0	50.0	8.0	50.0
	dPO	Determines whether the instrument must enter defrost mode (if the temperature measured by Pb2 allows this operation). **n**(0) = no; **y**(1) = yes.	n/y	flag	n	n	n	n
		FANS (folder "FAn")						
	FSt	Fan stop temperature; a value read by the evaporator probe.	-58.0 ... 302	°C/°F	50.0	50.0	50.0	50.0
	FAd	Fan activation intervention differential (see parameters "**FSt**").	1.0 ... 50.0	°C/°F	2.0	2.0	2.0	2.0
	Fdt	Fan activation delay after a defrost cycle.	0 ... 250	min	0	0	0	0
	dt	Coil drainage time.	0 ... 250	min	0	0	0	0

<table>
<tr><th>Cat</th><th>Par.</th><th>Description</th><th>Range</th><th>UM</th><th>AP1</th><th>AP2</th><th>AP3</th><th>AP4</th></tr>
<tr><td></td><td>dFd</td><td>Allows exclusion of the evaporator fans to be selected or not selected during defrosting. n(0) = no; y(1)= yes (fan excluded e.g. switched off).</td><td>n/y</td><td>flag</td><td>y</td><td>y</td><td>y</td><td>y</td></tr>
<tr><td></td><td>FCO</td><td>Evaporator fans operating mode. The state of the fans will be:
<table>
<tr><th></th><th colspan="2">DAY</th><th colspan="2">NIGHT</th></tr>
<tr><th>FCO</th><th>COMPRESSOR ON</th><th>COMPRESSOR OFF</th><th>COMPRESSOR ON</th><th>COMPRESSOR OFF</th></tr>
<tr><td>0</td><td>Thermostat controlled*</td><td>OFF</td><td>Thermostat controlled*</td><td>OFF</td></tr>
<tr><td>1</td><td>Thermostat controlled*</td><td>Thermostat controlled*</td><td>Thermostat controlled*</td><td>Thermostat controlled*</td></tr>
<tr><td>2</td><td>Thermostat controlled*</td><td>Duty Cycle Day</td><td>Thermostat controlled*</td><td>Duty Cycle Night</td></tr>
</table>
* if probe Pb2 is absent (H42=0) or in error, the fans are always ON.</td><td>0/1/2</td><td>num</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>Fon</td><td>Fan ON time in duty cycle day</td><td>0 ... 99</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>FoF</td><td>Fan OFF time in duty cycle day</td><td>0 ... 99</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>Fnn</td><td>Fan ON time in duty cycle night</td><td>0 ... 99</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>FnF</td><td>Fan OFF time in duty cycle night</td><td>0 ... 99</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>ESF</td><td>"Night" activation mode. n(0) = no; y(1)= yes</td><td>n/y</td><td>flag</td><td>n</td><td>n</td><td>n</td><td>n</td></tr>
<tr><td colspan="9">ALARMS (folder "AL")</td></tr>
<tr><td></td><td>Att</td><td>Can be used to select absolute (Att=0) or relative (Att=1) values for HAL and LAL parameters.</td><td>0/1</td><td>num</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>AFd</td><td>Alarm differential.</td><td>1.0 ... 50.0</td><td>°C/°F</td><td>2.0</td><td>2.0</td><td>2.0</td><td>2.0</td></tr>
<tr><td></td><td>HAL</td><td>Maximum temperature alarm.
Temperature value (as a relative value) which if exceeded in an upward direction triggers the activation of the alarm signal.</td><td>LAL...302</td><td>°C/°F</td><td>50.0</td><td>50.0</td><td>50.0</td><td>50.0</td></tr>
<tr><td></td><td>LAL</td><td>Minimum temperature alarm.
Temperature value (as a relative value) which if exceeded in a downward direction triggers the activation of the alarm signal.</td><td>-58.0...HAL</td><td>°C/°F</td><td>-50.0</td><td>-50.0</td><td>-50.0</td><td>-50.0</td></tr>
<tr><td></td><td>PAO</td><td>Alarm override time after device is switched on following a power failure.</td><td>0 ... 10</td><td>hours</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>dAO</td><td>Temperature alarm override time after defrost.</td><td>0 ... 999</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>OAO</td><td>Alarm signalling delay after digital input disabling (door closing). Alarm means high/low temperature alarms.</td><td>0 ... 10</td><td>hours</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>tdO</td><td>Delay in door open alarm activation.</td><td>0 ... 250</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>tAO</td><td>Time delay for temperature alarm indication.</td><td>0 ... 250</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>dAt</td><td>Alarm signalling end of defrost due to timeout.
n(0)= alarm not activated; y(1)= alarm activated.</td><td>n/y</td><td>flag</td><td>n</td><td>n</td><td>n</td><td>n</td></tr>
<tr><td></td><td>rLO</td><td>An external alarm locks the regulators. n(0) = does not lock; y(1)= locks</td><td>n/y</td><td>flag</td><td>n</td><td>n</td><td>n</td><td>n</td></tr>
<tr><td></td><td>SA3</td><td>Probe 3 alarm Setpoint.</td><td>-58.0...302</td><td>°C/°F</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td></tr>
<tr><td></td><td>dA3</td><td>Probe 3 alarm differential.</td><td>1.0 ... 50.0</td><td>°C/°F</td><td>1.0</td><td>1.0</td><td>1.0</td><td>1.0</td></tr>
<tr><td colspan="9">LIGHTS & DIGITAL INPUTS (folder "Lit")</td></tr>
<tr><td></td><td>dOd</td><td>Digital input for switching off utilities:
0 = disabled; 1 = disables the fans;
2 = disables the compressor; 3 = disables fans and compressor</td><td>0/1/2/3</td><td>num</td><td>0</td><td>0</td><td>2</td><td>0</td></tr>
<tr><td></td><td>dAd</td><td>Activation delay for digital input</td><td>0 ... 255</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>dCO</td><td>Compressor enabling delay from acknowledgement</td><td>0 ... 255</td><td>min</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td colspan="9">PRESSURE SWITCH (folder "PrE")</td></tr>
<tr><td></td><td>Pen</td><td>Number of errors allowed per maximum/minimum pressure switch input</td><td>0 ... 15</td><td>num</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>PEI</td><td>Minimum/maximum pressure switch error count interval.</td><td>1 ... 99</td><td>min</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td></td><td>PEt</td><td>Delay in activating compressor after pressure switch deactivation</td><td>0 ... 255</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td colspan="9">COMMUNICATION (folder "Add")</td></tr>
<tr><td></td><td>PtS</td><td>Selection of communication protocol. t = Televis; d = Modbus</td><td>t/d</td><td>flag</td><td>t</td><td>t</td><td>t</td><td>t</td></tr>
<tr><td></td><td>dEA</td><td>Index of the device within the family (valid values from 0 to 14)</td><td>0 ... 14</td><td>num</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>FAA</td><td>Device family (valid values from 0 to 14). The pair of values FAA and dEA are the network address of the device and are given in the format "FF.DD" (where FF=FAA and DD=dEA).</td><td>0 ... 14</td><td>num</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>Pty</td><td>Modbus parity bit. n(0) =none; E(1) =even; o(2) =odd</td><td>n/E/o</td><td>num</td><td>n</td><td>n</td><td>n</td><td>n</td></tr>
</table>

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
	StP	Modbus stop bit	1b/2b	flag	1b	1b	1b	1b
		DISPLAY (folder "DiS")						
	LOC	Setpoint edit lock. See corresponding paragraph. You will still be able to open parameter programming and alter parameters, including the state of this parameter if you need to unlock the keyboard for example. **n**(0)= no. **y**(1)= yes.	n/y	flag	n	n	n	n
	PS1	When enabled (PS1≠0) it is the password to the "**User**" parameters	0 ... 250	num	0	0	0	0
	PS2	When enabled (PS1≠0) it is the password to the "**Installer**" parameters	0 ... 250	num	15	15	15	15
	ndt	Display with decimal point. **n**(0)= no; **y**(1)= yes.	n/y	flag	y	y	y	y
	CA1	Positive or negative temperature value to be added to the value of Pb1.	-12.0...12.0	°C/°F	0.0	0.0	0.0	0.0
	CA2	Positive or negative temperature value to be added to the value of Pb2.	-12.0...12.0	°C/°F	0.0	0.0	0.0	0.0
	CA3	Positive or negative temperature value to be added to the value of Pb3.	-12.0...12.0	°C/°F	0.0	0.0	0.0	0.0
	ddL	Display mode during defrost. **0** = displays the temperature read by probe Pb1; **1** = locks the reading at the value of Pb1 at the start of defrosting until the setpoint is reached; **2** = displays the label "dEF" during defrosting until the setpoint is reached.	0/1/2	num	0	0	0	0
	Ldd	Timeout value for display unlock - label dEF	0 ... 255	min	30	30	30	30
	dro	Select the unit of measurement used when displaying the temperature recorded by the probes. (**0** = °C, **1** = °F). **NOTE: switching between °C and °F DOES NOT modify the SEt, diF values, etc. (e.g. set=10°C becomes 10°F)**	0/1	flag	0	0	0	0
	ddd	Selects type of value to display. **0** = Setpoint; **1** = probe Pb1; **2** = probe Pb2; **3** = probe Pb3	0/1/2/3	num	1	1	1	1
		HACCP (folder "HCP")						
	SHH	Maximum HACCP alarm signals threshold	-55.0...150	°C/°F	0.0	0.0	0.0	0.0
	SLH	Minimum HACCP alarm signals threshold	-55.0...150	°C/°F	0.0	0.0	0.0	0.0
	drA	Minimum dwelling time in critical area for the event to be recorded. After this time a HACCP alarm will be logged and signalled.	0 ... 99	min	0	0	0	0
	drH	HACCP alarm reset time from last reset	0 ... 250	hours	0	0	0	0
	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	num	0	0	0	0
	H51	HACCP alarm override time	0 ... 250	min	0	0	0	0
		CONFIGURATION (folder "CnF")						
	H00	Select probe type. **0** = PTC; **1** = NTC; **2** = PT1000	0/1/2	flag	1	1	1	1
D.I.1	H11	Configuration of digital input 1/polarity. **0**=disabled; **±1**=defrost; **±2**=reduced set; **±3**=not used; **±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	num	0	0	4	0
D.I.2	H12	Configuration of digital input 2/polarity. Same as H11.	-9 ... +9	num	0	0	0	0
❄	H21	Configurability of digital output 1. **0** = disabled; **1** = compressor; **2** = defrost; **3** = fans; **4** = alarm; **5** = AUX; **6** = standby	0 ... 6	num	1	1	1	1
❄	H22	Configurability of digital output 2. Same as H21.	0 ... 6	num	2	2	3	4
🔊	H25	Enable/disable buzzer. **0** = disabled; **4** = enabled; **1-2-3-5-6-7-8** = NOT USED;	0 ... 8	num	0	0	0	4

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
UP	H31	Configurability of UP key. **0** = disabled; **1** = defrost; **2** = not used; **3** = reduced set; **4** = standby; **5** = reset HACCP alarms; **6** = disable HACCP alarms; **7** = activate Deep Cooling cycle	0 ... 7	num	1	1	1	1
DOWN	H32	DOWN key configuration. Same as H31.	0 ... 7	num	0	0	0	0
Pb2	H42	Evaporator probe present. **n**(0)= not present; **y**(1)= present	n/y	flag	y	n	y	n
Pb3	H43	Probe Pb3 present. **n**(0)= not present; **y**(1)= present	n/y	flag	n	n	n	n
-	reL	Read-only parameter	/	/	/	/	/	/
-	tAb	Reserved: read-only parameter	/	/	/	/	/	/
		COPY CARD (folder "FPr")						
	UL	Transfer programming parameters from instrument to Copy Card	/	/	/	/	/	/
	Fr	Format Copy Card. Erases all data contained in the Copy Card. **NOTE: if parameter "Fr" is used, the data entered will be permanently lost. This operation cannot be reversed.**	/	/	/	/	/	/
		FUNCTIONS (folder "FnC")						
	rAP	Reset pressure switch alarms	/	/	/	/	/	/
	rES	Reset HACCP alarms	/	/	/	/	/	/

NOTES: 1) If one or more parameters marked with (!) in folder "CnF" are modified, the controller MUST be switched off and then switched on again to ensure correct operation.

IDPLUS 974/974 SMPS TABLES

"USER" MENU PARAMETERS TABLE

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
	SEt	Temperature control SEtpoint	LSE ... HSE	°C/°F	0.0	0.0	0.0	0.0
	diF	Compressor relay activation differential	+0.1 ... 30.0	°C/°F	2.0	2.0	2.0	2.0
	HSE	Maximum value settable for setpoint	LSE ... 302	°C/°F	99.0	99.0	99.0	99.0
	LSE	Minimum value settable for setpoint	-58.0 ... HSE	°C/°F	-50.0	-50.0	-50.0	-50.0
	dty	Type of defrost. **0** = Electrical defrost; **1** = Reverse cycle defrost; **2** = Defrost independent of compressor.	0/1/2	num	0	0		1
	dit	Interval between the start of two consecutive defrost cycles	0 ... 250	hours	6	6	6	6
	dEt	Defrost timeout.	1 ... 250	min	30	30	30	30
	dSt	Defrost end temperature (determined by probe Pb2).	-50.0 ... 150	°C/°F	8.0	8.0	8.0	8.0
	FSt	Fans disabling temperature.	-58.0 ... 302	°C/°F	50.0	50.0	50.0	50.0
	Fdt	Fan activation delay after a defrost cycle.	0 ... 250	min	0	0	0	0
	dt	Coil drainage time.	0 ... 250	min	0	0	0	0
	dFd	Allows exclusion of the evaporator fans to be selected or not selected during defrosting.	n/y	flag	y	y	y	y
	HAL	Maximum temperature alarm	LAL ... 150	°C/°F	50.0	50.0	50.0	50.0
	LAL	Minimum temperature alarm	-50.0 ... HAL	°C/°F	-50.0	-50.0	-50.0	-50.0
	LOC	Basic commands edit lock	n/y	flag	n	n	n	n
PA1	PS1	PAssword1: if **PS1≠0** it is the password to the "**User**" parameters	0 ... 250	num	0	0	0	0
Pb1	CA1	Temperature value to be added to the value of Pb1.	-12.0 ... +12.0	°C/°F	0.0	0.0	0.0	0.0
Pb2	CA2	Temperature value to be added to the value of Pb2.	-12.0 ... +12.0	°C/°F	0.0	0.0	0.0	0.0
Pb3	CA3	Temperature value to be added to the value of Pb3.	-12.0 ... +12.0	°C/°F	0.0	0.0		0.0
	ddL	Display mode during defrost. **0** = displays the temperature read by probe Pb1; **1** = locks recorded value of Pb1 at defrost start; **2** = displays label "dEF"	0/1/2	num	0	0	0	0
	Ldd	Timeout value for display unlock - label dEF	0 ... 255	min	30	30	30	30
	SHH	Maximum HACCP alarm signals threshold.	-50.0 ... 150	°C/°F		10.0		
	SLH	Minimum HACCP alarm signals threshold.	-50.0 ... 150	°C/°F		-10.0		
	drA	Minimum dwelling time in critical area for the event to be recorded.	0 ... 99	min		10		
	drH	HACCP alarm reset time from last reset.	0 ... 250	hours		24		
	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	num		1		
	H51	HACCP alarm override time.	0 ... 250	min		0		
Pb2	H42	Evaporator probe (Pb2) present. **n**(0)= not present; **y**(1)= present	n/y	flag	y	y	y	y
Pb3	H43	Probe Pb3 present. **n**(0)= not present; **y**(1)= present	n/y	flag	n	y	n	n
-	reL	Read-only parameter	/	/	/	/	/	/
-	tAb	Reserved: read-only parameter	/	/	/	/	/	/
	PA2	Folder that permits access to the "Installer" menu. If **PS2≠0** the password will be requested.						

NOTES: * The "USER" menu parameters also include **PA2** which permits access to the "Installer" menu
** To reset the HACCP alarms use the function **rES** in folder **FnC** of the "Installer" parameters
*** For the complete list of parameters, see the "Installer Menu Parameters Table".

"INSTALLER" MENU PARAMETERS TABLE

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
	SEt	Control SEtpoint within the range between the minimum Setpoint LSE and the maximum Setpoint HSE. The setpoint value is located in the Machine Status menu.	LSE...HSE	°C/°F	0.0	0.0	0.0	0.0
		COMPRESSOR (folder "CP")						
	diF	Compressor relay activation differential; the compressor stops on reaching the setpoint value (as indicated by the regulation probe) and restarts at a temperature value equal to the setpoint plus the value of the differential. **Note: cannot be equal to 0**.	0.1...30.0	°C/°F	2.0	2.0	2.0	2.0
	HSE	Maximum value settable for setpoint	LSE...302	°C/°F	99.0	99.0	99.0	99.0
	LSE	Minimum value settable for setpoint	-58.0...HSE	°C/°F	-50.0	-50.0	-50.0	-50.0
	OSP	Temperature value to be added to the setpoint if reduced set (Economy function) enabled.	-30.0...30.0	°C/°F	3.0	0.0	0.0	3.0
	Hc	The controller will go to COOL operating mode (set to "**C**(0)") or HEAT operating mode (set to "**H**")	C/H	flag	C	C	C	C
	Ont	Controller switch-on time in the event of faulty probe: - if **Ont** = 1 and **OFt** = 0, the compressor will always stay ON; - if **Ont** = 1 and **OFt** > 0, it operates in Duty Cycle mode.	0 ... 250	min	0	0	0	0
	OFt	Controller switch-off time in the event of a faulty probe: - if **OFt** = 1 and **Ont** = 0 the controller will always stay OFF; - if **Ont** = 1 and **OFt** > 0, it operates in Duty Cycle mode.	0 ... 250	min	1	1	1	1
	dOn	Compressor relay activation delay after request.	0 ... 250	sec	0	0	0	0
	dOF	Delay time after power-off: the delay time indicated must elapse between deactivation of the compressor relay and the next power-on.	0 ... 250	min	0	0	0	0
	dbi	Delay time between power-ons; the delay time indicated must elapse between two consecutive compressor power-ons.	0 ... 250	min	0	0	0	0
	OdO (!)	Delay in activating outputs after the instrument is switched on or after a power failure. **0** = not active	0 ... 250	min	0	0	0	0
	dCS	"Deep Cooling Cycle" setpoint	-58.0...302	°C/°F	0.0	0.0	0.0	0.0
	tdC	"Deep Cooling Cycle" duration	0 ... 255	min*10	0	0	0	0
	dcc	Defrost activation delay after a "Deep Cooling Cycle"	0 ... 255	min	0	0	0	0
		DEFROST (folder "dEF")						
	dty	Type of defrost. **0** = electric defrost - compressor off (OFF) during defrosting; **1** = reverse cycle defrost (hot gas); compressor on during defrost; **2** = Free mode defrost; defrost independent of compressor.	0/1/2	num	0	0	0	1
	dit	Interval between the start of two consecutive defrost cycles.	0 ... 250	hours	6	6	6	6
	dCt	Selects the count mode for the defrost interval. **0** = compressor running time (DIGIFROST® method); defrost active ONLY when the compressor is on; **1** = Real Time - appliance running time; defrost counting is always active when the machine is on and starts at each power-on; **2** = compressor stop. Every time the compressor stops, a defrost cycle is performed according to parameter dty.	0/1/2	num	1	1	1	1
	dOH	Delay for start of first defrost after request.	0 ... 59	min	0	0	0	0
	dEt	determines the maximum defrost duration.	1 ... 250	min	30	30	30	30
	dSt	Defrost end temperature (determined by probe Pb2).	-50.0...150	°C/°F	8.0	8.0	8.0	8.0

<table>
<tr><th>Cat</th><th>Par.</th><th>Description</th><th>Range</th><th>UM</th><th>AP1</th><th>AP2</th><th>AP3</th><th>AP4</th></tr>
<tr><td>❄</td><td>dPO</td><td>Determines whether the instrument must enter defrost mode (if the temperature measured by Pb2 allows this operation). n(0)= no; y(1)= yes.</td><td>n/y</td><td>flag</td><td>n</td><td>n</td><td>n</td><td>n</td></tr>
<tr><td></td><td></td><td>FANS (folder "FAn")</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>🌀</td><td>FSt</td><td>Fan stop temperature; a value read by the evaporator probe.</td><td>-58.0 ... 302</td><td>°C/°F</td><td>50.0</td><td>50.0</td><td>50.0</td><td>50.0</td></tr>
<tr><td>🌀</td><td>FAd</td><td>Fan activation intervention differential (see parameters "FSt").</td><td>1.0 ... 50.0</td><td>°C/°F</td><td>2.0</td><td>2.0</td><td>2.0</td><td>2.0</td></tr>
<tr><td>🌀</td><td>Fdt</td><td>Fan activation delay after a defrost cycle.</td><td>0 ... 250</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>🌀</td><td>dt</td><td>Coil drainage time.</td><td>0 ... 250</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>🌀</td><td>dFd</td><td>Allows exclusion of the evaporator fans to be selected or not selected during defrosting. n(0) = no; y(1) = yes (fan excluded e.g. switched off).</td><td>n/y</td><td>flag</td><td>y</td><td>y</td><td>y</td><td>y</td></tr>
<tr><td>🌀</td><td>FCO</td><td>Evaporator fans operating mode. The state of the fans will be:
<table>
<tr><th></th><th colspan="2">DAY</th><th colspan="2">NIGHT</th></tr>
<tr><th>FCO</th><th>COMPRESSOR ON</th><th>COMPRESSOR OFF</th><th>COMPRESSOR ON</th><th>COMPRESSOR OFF</th></tr>
<tr><td>0</td><td>Thermostat controlled*</td><td>OFF</td><td>Thermostat controlled*</td><td>OFF</td></tr>
<tr><td>1</td><td>Thermostat controlled*</td><td>Thermostat controlled*</td><td>Thermostat controlled*</td><td>Thermostat controlled*</td></tr>
<tr><td>2</td><td>Thermostat controlled*</td><td>Duty Cycle Day</td><td>Thermostat controlled*</td><td>Duty Cycle Night</td></tr>
</table>
* if probe Pb2 is absent (H42=0) or in error, the fans are always ON.</td><td>0/1/2</td><td>num</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>🌀</td><td>Fon</td><td>Fan ON time in duty cycle day</td><td>0 ... 99</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>🌀</td><td>FoF</td><td>Fan OFF time in duty cycle day</td><td>0 ... 99</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>🌀</td><td>Fnn</td><td>Fan ON time in duty cycle night</td><td>0 ... 99</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>🌀</td><td>FnF</td><td>Fan OFF time in duty cycle night</td><td>0 ... 99</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>🌀</td><td>ESF</td><td>"Night" activation mode. n(0) = no; y(1) = yes</td><td>n/y</td><td>flag</td><td>n</td><td>n</td><td>n</td><td>n</td></tr>
<tr><td></td><td></td><td>ALARMS (folder "AL")</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>((•))</td><td>Att</td><td>Can be used to select absolute (Att=0) or relative (Att=1) values for HAL and LAL parameters.</td><td>0/1</td><td>num</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>((•))</td><td>AFd</td><td>Alarm differential.</td><td>1.0 ... 50.0</td><td>°C/°F</td><td>2.0</td><td>2.0</td><td>2.0</td><td>2.0</td></tr>
<tr><td>((•))</td><td>HAL</td><td>Temperature value (as a relative value) which if exceeded in an upward direction triggers the activation of the alarm signal.</td><td>LAL...302</td><td>°C/°F</td><td>50.0</td><td>50.0</td><td>50.0</td><td>50.0</td></tr>
<tr><td>((•))</td><td>LAL</td><td>Temperature value (as a relative value) which if exceeded in a downward direction triggers the activation of the alarm signal.</td><td>-58.0...HAL</td><td>°C/°F</td><td>-50.0</td><td>-50.0</td><td>-50.0</td><td>-50.0</td></tr>
<tr><td>((•))</td><td>PAO</td><td>Alarm override time after device is switched on following a power failure.</td><td>0 ... 10</td><td>hours</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>((•))</td><td>dAO</td><td>Temperature alarm override time after defrost.</td><td>0 ... 999</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>((•))</td><td>OAO</td><td>Alarm signalling delay after digital input disabling (door closing). Alarm means high/low temperature alarms.</td><td>0 ... 10</td><td>hours</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>((•))</td><td>tdO</td><td>Delay in door open alarm activation.</td><td>0 ... 250</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>((•))</td><td>tAO</td><td>Time delay for temperature alarm indication.</td><td>0 ... 250</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>((•))</td><td>dAt</td><td>Alarm signalling end of defrost due to timeout.
n(0) = alarm not activated; y(1) = alarm activated.</td><td>n/y</td><td>flag</td><td>n</td><td>n</td><td>n</td><td>n</td></tr>
<tr><td>((•))</td><td>rLO</td><td>An external alarm locks the regulators. n(0) = does not lock; y(1) = locks</td><td>n/y</td><td>flag</td><td>n</td><td>n</td><td>n</td><td>n</td></tr>
<tr><td>((•))</td><td>SA3</td><td>Probe 3 alarm Setpoint.</td><td>-58.0...302</td><td>°C/°F</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td></tr>
<tr><td>((•))</td><td>dA3</td><td>Probe 3 alarm differential.</td><td>1.0 ... 50.0</td><td>°C/°F</td><td>1.0</td><td>1.0</td><td>1.0</td><td>1.0</td></tr>
<tr><td></td><td></td><td>LIGHTS & DIGITAL INPUTS (folder "Lit")</td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
<tr><td>💡</td><td>dOd</td><td>Digital input for switching off utilities:
0 = disabled;
1 = disables the fans;
2 = disables the compressor;
3 = disables fans and compressor.</td><td>0/1/2/3</td><td>num</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>💡</td><td>dAd</td><td>Activation delay for digital input</td><td>0 ... 255</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td>💡</td><td>dCO</td><td>Compressor enabling delay from acknowledgement</td><td>0 ... 255</td><td>min</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td>💡</td><td>AuP</td><td>Aux output activation when door opened. n(0) = not linked; y(1) = linked</td><td>n/y</td><td>flag</td><td>n</td><td>n</td><td>y</td><td>n</td></tr>
</table>

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
		PRESSURE SWITCH (folder "PrE")						
	Pen	Number of errors allowed per maximum/minimum pressure switch input	0 ... 15	num	0	0	0	0
	PEI	Minimum/maximum pressure switch error count interval.	1 ... 99	min	1	1	1	1
	PEt	Delay in activating compressor after pressure switch deactivation	0 ... 255	min	0	0	0	0
		COMMUNICATION (folder "Add")						
	PtS	Selection of communication protocol. **t**(0)= Televis; **d**(1)= Modbus	t/d	flag	t	t	t	t
	dEA	Index of the device within the family (valid values from 0 to 14)	0 ... 14	num	0	0	0	0
	FAA	Device family (valid values from 0 to 14). The pair of values FAA and dEA are the network address of the device and are given in the format "FF.DD" (where FF=FAA and DD=dEA).	0 ... 14	num	0	0	0	0
	Pty	Modbus parity bit. **n**(0)=none; **E**(1)=even; **o**(2)=odd	n/E/o	num	n	n	n	n
	StP	Modbus stop bit	1b/2b	flag	1b	1b	1b	1b
		DISPLAY (folder "DiS")						
	LOC	SetSee corresponding paragraph. You will still be able to open parameter programming and alter parameters, including the state of this parameter if you need to unlock the keyboard for example. **n**(0) = no; **y**(1) = yes.	n/y	flag	n	n	n	n
	PS1	When enabled (**PS1≠0**) it is the password to the "**User**" parameters	0 ... 250	num	0	0	0	0
	PS2	When enabled (**PS1≠0**) it is the password to the "**Installer**" parameters	0 ... 250	num	15	15	15	15
	ndt	Display with decimal point. **n**(0) = no; **y**(1) = yes.	n/y	flag	y	y	y	y
	CA1	Positive or negative temperature value to be added to the value of Pb1.	-12.0...12.0	°C/°F	0.0	0.0	0.0	0.0
	CA2	Positive or negative temperature value to be added to the value of Pb2.	-12.0...12.0	°C/°F	0.0	0.0	0.0	0.0
	CA3	Positive or negative temperature value to be added to the value of Pb3.	-12.0...12.0	°C/°F	0.0	0.0	0.0	0.0
	ddL	Display mode during defrost. **0** = displays the temperature read by probe Pb1; **1** = locks the reading at the value of Pb1 at the start of defrosting until the setpoint is reached; **2** = displays the label "**dEF**" during defrosting until the setpoint is reached.	0/1/2	num	0	0	0	0
	Ldd	Timeout value for display unlock - label dEF	0 ... 255	min	30	30	30	30
	dro	Select the unit of measurement used when displaying the temperature recorded by the probes. (**0** = °C, **1** = °F). **NOTE: switching between °C and °F DOES NOT modify the SEt, diF values, etc. (e.g. set=10°C becomes 10°F)**	0/1	flag	0	0	0	0
	ddd	Selects type of value to display. **0** = Setpoint; **1** = probe Pb1; **2** = probe Pb2; **3** = probe Pb3	0/1/2/3	num	1	1	1	1
		HACCP (folder "HCP")						
	SHH	Maximum HACCP alarm signals threshold	-55.0...150	°C/°F	0.0	10.0	0.0	0.0
	SLH	Minimum HACCP alarm signals threshold	-55.0...150	°C/°F	0.0	-10.0	0.0	0.0
	drA	Minimum dwelling time in critical area for the event to be recorded. After this time a HACCP alarm will be logged and signalled.	0 ... 99	min	0	10	0	0
	drH	HACCP alarm reset time from last reset	0 ... 250	hours	0	24	0	0
	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	num	0	1	0	0
	H51	HACCP alarm override time	0 ... 250	min	0	0	0	0
		CONFIGURATION (folder "CnF")						
	H00	Select probe type. **0** = PTC; **1** = NTC; **2** = PT1000	0/1/2	flag	1	1	1	1

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
D.I.1	H11	Configuration of digital input 1/polarity. **0**=disabled; **±1**=defrost; **±2**=reduced set; **±3**=not used; **±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	num	0	0	4	0
D.I.2	H12	Configuration of digital input 2/polarity. Same as H11.	-9 ... +9	num	0	0	0	0
❄	H21	Configurability of digital output 1. **0** = disabled; **1** = compressor; **2** = defrost; **3** = fans; **4** = alarm; **5** = AUX; **6** = standby	0 ... 6	num	1	1	1	1
❄	H22	Configurability of digital output 2. Same as H21.	0 ... 6	num	2	2	5	2
	H23	Configurability of digital output 3. Same as H21.	0 ... 6	num	3	3	3	3
	H25	Enable/disable buzzer. **0** = disabled; **4** = enabled; **1-2-3-5-6-7-8** = NOT USED;	0 ... 8	num	4	4	4	4
UP	H31	Configurability of UP key. **0** = disabled; **1** = defrost; **2** = not used; **3** = reduced set; **4** = standby; **5** = reset HACCP alarms; **6** = disable HACCP alarms; **7** = activate Deep Cooling cycle	0 ... 7	num	1	1	1	1
DOWN	H32	DOWN key configuration. Same as H31.	0 ... 7	num	0	0	0	0
Pb2	H42	Evaporator probe present. **n**(0) = not present; **y**(1) = present	n/y	flag	y	y	y	y
Pb3	H43	Probe Pb3 present. **n**(0) = not present; **y**(1) = present	n/y	flag	n	y	n	n
-	reL	Read-only parameter	/	/	/	/	/	/
-	tAb	Reserved: read-only parameter	/	/	/	/	/	/
		COPY CARD (folder "FPr")						
	UL	Transfer programming parameters from instrument to Copy Card	/	/	/	/	/	/
	Fr	Format Copy Card. Erases all data contained in the Copy Card. **NOTE: if parameter "Fr" is used, the data entered will be permanently lost. This operation cannot be reversed.**	/	/	/	/	/	/
		FUNCTIONS (folder "FnC")						
	rAP	Reset pressure switch alarms	/	/	/	/	/	/
	rES	Reset HACCP alarms	/	/	/	/	/	/

NOTES: 1) If one or more parameters marked with (!) in folder "CnF" are modified, the controller MUST be switched off and then switched on again to ensure correct operation.

IDPLUS 978 TABLES

"USER" MENU PARAMETERS TABLE

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
	SEt	Temperature control SEtpoint	LSE ... HSE	°C/°F	0.0	0.0	0.0	0.0
	diF	Compressor relay activation differential	+0.1 ... 30.0	°C/°F	2.0	2.0	2.0	2.0
	HSE	Maximum value settable for setpoint	LSE ... 302	°C/°F	99.0	99.0	99.0	99.0
	LSE	Minimum value settable for setpoint	-58.0 ... HSE	°C/°F	-50.0	-50.0	-50.0	-50.0
	dty	Type of defrost. **0** = Electrical defrost; **1** = Reverse cycle defrost; **2** = Defrost independent of compressor.	0/1/2	num	0	0		1
	dit	Interval between the start of two consecutive defrost cycles	0 ... 250	hours	6	6	6	6
	dEt	Defrost timeout.	1 ... 250	min	30	30	30	30
	dSt	Defrost end temperature (determined by probe Pb2).	-50.0 ... 150	°C/°F	8.0	8.0	8.0	8.0
	FSt	Fans disabling temperature.	-58.0 ... 302	°C/°F	50.0	50.0	50.0	50.0
	Fdt	Fan activation delay after a defrost cycle.	0 ... 250	min	0	0	0	0
	dt	Coil drainage time.	0 ... 250	min	0	0	0	0
	dFd	Allows exclusion of the evaporator fans to be selected or not selected during defrosting.	n/y	flag	y	y	y	y
	HAL	Maximum temperature alarm	LAL ... 150	°C/°F	50.0	50.0	50.0	50.0
	LAL	Minimum temperature alarm	-50.0 ... HAL	°C/°F	-50.0	-50.0	-50.0	-50.0
	LOC	Basic commands edit lock	n/y	flag	n	n	n	n
PA1	PS1	PAssword1: if **PS1≠0** it is the password to the "**User**" parameters	0 ... 250	num	0	0	0	0
Pb1	CA1	Temperature value to be added to the value of Pb1.	-12.0 ... +12.0	°C/°F	0.0	0.0	0.0	0.0
Pb2	CA2	Temperature value to be added to the value of Pb2.	-12.0 ... +12.0	°C/°F	0.0	0.0	0.0	0.0
Pb3	CA3	Temperature value to be added to the value of Pb3.	-12.0 ... +12.0	°C/°F	0.0	0.0		0.0
	ddL	Display mode during defrost. **0** = displays the temperature read by probe Pb1; **1** = locks recorded value of Pb1 at defrost start; **2** = displays label "dEF"	0/1/2	num	0	0	0	0
	Ldd	Timeout value for display unlock - label dEF	0 ... 255	min	30	30	30	30
	SHH	Maximum HACCP alarm signals threshold.	-50.0 ... 150	°C/°F		10.0		
	SLH	Minimum HACCP alarm signals threshold.	-50.0 ... 150	°C/°F		-10.0		
	drA	Minimum dwelling time in critical area for the event to be recorded.	0 ... 99	min		10		
	drH	HACCP alarm reset time from last reset.	0 ... 250	hours		24		
	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	num		2		
	H51	HACCP alarm override time.	0 ... 250	min		0		
Pb2	H42	Evaporator probe (Pb2) present. **n**(0) = not present; **y**(1) = present	n/y	flag	y	y	y	y
Pb3	H43	Probe Pb3 present. **n**(0) = not present; **y**(1) = present	n/y	flag	n	y	n	n
-	reL	Read-only parameter	/	/	/	/	/	/
-	tAb	Reserved: read-only parameter	/	/	/	/	/	/
	PA2	Folder that permits access to the "Installer" menu. If **PS2≠0** the password will be requested.						

NOTES: * The "USER" menu parameters also include **PA2** which permits access to the "Installer" menu
** To reset the HACCP alarms use the function **rES** in folder **FnC** of the "Installer" parameters
*** For the complete list of parameters, see the "Installer Menu Parameters Table".

"INSTALLER" MENU PARAMETERS TABLE

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
	SEt	Control SEtpoint within the range between the minimum Setpoint LSE and the maximum Setpoint HSE. The setpoint value is located in the Machine Status menu.	LSE...HSE	°C/°F	0.0	0.0	0.0	0.0
		COMPRESSOR (folder "CP")						
	diF	Compressor relay activation differential; the compressor stops on reaching the setpoint value (as indicated by the regulation probe) and restarts at a temperature value equal to the setpoint plus the value of the differential. **Note: cannot be equal to 0**.	0.1...30.0	°C/°F	2.0	2.0	2.0	2.0
	HSE	Maximum value settable for setpoint	LSE...302	°C/°F	99.0	99.0	99.0	99.0
	LSE	Minimum value settable for setpoint	-58.0...HSE	°C/°F	-50.0	-50.0	-50.0	-50.0
	OSP	Temperature value to be added to the setpoint if reduced set (Economy function) enabled.	-30.0...30.0	°C/°F	3.0	0.0	0.0	3.0
	Hc	The controller will go to COOL operating mode (set to "**C**(0)") or HEAT operating mode (set to "**H**(1)")	C/H	flag	C	C	C	C
	Ont	Controller switch-on time in the event of faulty probe: - if **Ont** = 1 and **OFt** = 0, the compressor will always stay ON; - if **Ont** = 1 and **OFt** > 0, it operates in Duty Cycle mode.	0 ... 250	min	0	0	0	0
	OFt	Controller switch-off time in the event of a faulty probe: - if **OFt** = 1 and **Ont** = 0 the controller will always stay OFF; - if **Ont** = 1 and **OFt** > 0, it operates in Duty Cycle mode.	0 ... 250	min	1	1	1	1
	dOn	Compressor relay activation delay after request.	0 ... 250	sec	0	0	0	0
	dOF	Delay time after power-off: the delay time indicated must elapse between deactivation of the compressor relay and the next power-on.	0 ... 250	min	0	0	0	0
	dbi	Delay time between power-ons; the delay time indicated must elapse between two consecutive compressor power-ons.	0 ... 250	min	0	0	0	0
	OdO (!)	Delay in activating outputs after the instrument is switched on or after a power failure. **0** = not active	0 ... 250	min	0	0	0	0
	dCS	"Deep Cooling Cycle" setpoint	-58.0...302	°C/°F	0.0	0.0	0.0	0.0
	tdC	"Deep Cooling Cycle" duration	0 ... 255	min*10	0	0	0	0
	dcc	Defrost activation delay after a "Deep Cooling Cycle"	0 ... 255	min	0	0	0	0
		DEFROST (folder "dEF")						
	dty	Type of defrost. **0** = electric defrost - compressor off (OFF) during defrosting; **1** = reverse cycle defrost (hot gas); compressor on during defrost; **2** = Free mode defrost; defrost independent of compressor.	0/1/2	num	0	0	0	1
	dit	Interval between the start of two consecutive defrost cycles.	0 ... 250	hours	6	6	6	6
	dCt	Selects the count mode for the defrost interval. **0** = compressor running time (DIGIFROST® method); defrost active ONLY when the compressor is on; **1** = Real Time - appliance running time; defrost counting is always active when the machine is on and starts at each power-on; **2** = compressor stop. Every time the compressor stops, a defrost cycle is performed according to parameter dty.	0/1/2	num	1	1	1	1
	dOH	Delay for start of first defrost after request.	0 ... 59	min	0	0	0	0
	dEt	Defrost time-out; determines the maximum defrost duration.	1 ... 250	min	30	30	30	30
	dSt	Defrost end temperature (determined by probe Pb2).	-50.0...150	°C/°F	8.0	8.0	8.0	8.0
	dPO	Determines whether the instrument must enter defrost mode (if the temperature measured by Pb2 allows this operation). **n**(0)= no; **y**(1)= yes.	n/y	flag	n	n	n	n
		FANS (folder "FAn")						

<table>
<tr><th>Cat</th><th>Par.</th><th>Description</th><th>Range</th><th>UM</th><th>AP1</th><th>AP2</th><th>AP3</th><th>AP4</th></tr>
<tr><td></td><td>FSt</td><td>Fan stop temperature; a value read by the evaporator probe.</td><td>-58.0 ... 302</td><td>°C/°F</td><td>50.0</td><td>50.0</td><td>50.0</td><td>50.0</td></tr>
<tr><td></td><td>FAd</td><td>Fan activation intervention differential (see parameters “FSt”).</td><td>1.0 ... 50.0</td><td>°C/°F</td><td>2.0</td><td>2.0</td><td>2.0</td><td>2.0</td></tr>
<tr><td></td><td>Fdt</td><td>Fan activation delay after a defrost cycle.</td><td>0 ... 250</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>dt</td><td>Coil drainage time.</td><td>0 ... 250</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>dFd</td><td>Allows exclusion of the evaporator fans to be selected or not selected during defrosting. n(0) = no y(1) = yes (fan excluded e.g. switched off).</td><td>n/y</td><td>flag</td><td>y</td><td>y</td><td>y</td><td>y</td></tr>
<tr><td></td><td>FCO</td><td>Evaporator fans operating mode. The state of the fans will be:
<table>
<tr><th rowspan="2">FCO</th><th colspan="2">DAY</th><th colspan="2">NIGHT</th></tr>
<tr><th>COMPRESSOR ON</th><th>COMPRESSOR OFF</th><th>COMPRESSOR ON</th><th>COMPRESSOR OFF</th></tr>
<tr><td>0</td><td>Thermostat controlled*</td><td>OFF</td><td>Thermostat controlled*</td><td>OFF</td></tr>
<tr><td>1</td><td>Thermostat controlled*</td><td>Thermostat controlled*</td><td>Thermostat controlled*</td><td>Thermostat controlled*</td></tr>
<tr><td>2</td><td>Thermostat controlled*</td><td>Duty Cycle Day</td><td>Thermostat controlled*</td><td>Duty Cycle Night</td></tr>
</table>
* if probe Pb2 is absent (H42=0) or in error, the fans are always ON.</td><td>0/1/2</td><td>num</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>Fon</td><td>Fan ON time in duty cycle day</td><td>0 ... 99</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>FoF</td><td>Fan OFF time in duty cycle day</td><td>0 ... 99</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>Fnn</td><td>Fan ON time in duty cycle night</td><td>0 ... 99</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>FnF</td><td>Fan OFF time in duty cycle night</td><td>0 ... 99</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>ESF</td><td>"Night" activation mode. n(0)= no; y(1)= yes.</td><td>n/y</td><td>flag</td><td>n</td><td>n</td><td>n</td><td>n</td></tr>
<tr><td colspan="9">ALARMS (folder "AL")</td></tr>
<tr><td></td><td>Att</td><td>Can be used to select absolute (Att=0) or relative (Att=1) values for HAL and LAL parameters.</td><td>0/1</td><td>num</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>AFd</td><td>Alarm differential.</td><td>1.0 ... 50.0</td><td>°C/°F</td><td>2.0</td><td>2.0</td><td>2.0</td><td>2.0</td></tr>
<tr><td></td><td>HAL</td><td>Temperature value (as a relative value) which if exceeded in an upward direction triggers the activation of the alarm signal.</td><td>LAL...302</td><td>°C/°F</td><td>50.0</td><td>50.0</td><td>50.0</td><td>50.0</td></tr>
<tr><td></td><td>LAL</td><td>Temperature value (as a relative value) which if exceeded in a downward direction triggers the activation of the alarm signal.</td><td>-58.0...HAL</td><td>°C/°F</td><td>-50.0</td><td>-50.0</td><td>-50.0</td><td>-50.0</td></tr>
<tr><td></td><td>PAO</td><td>Alarm override time after device is switched on following a power failure.</td><td>0 ... 10</td><td>hours</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>dAO</td><td>Temperature alarm override time after defrost.</td><td>0 ... 999</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>OAO</td><td>Alarm signalling delay after digital input disabling (door closing). Alarm means high/low temperature alarms.</td><td>0 ... 10</td><td>hours</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>tdO</td><td>Delay in door open alarm activation.</td><td>0 ... 250</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>tAO</td><td>Time delay for temperature alarm indication.</td><td>0 ... 250</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>dAt</td><td>Alarm signalling end of defrost due to timeout.
n(0) = alarm not activated; y(1) = alarm activated.</td><td>n/y</td><td>flag</td><td>n</td><td>n</td><td>n</td><td>n</td></tr>
<tr><td></td><td>rLO</td><td>An external alarm locks the regulators. n(0) = does not lock; y(1) = locks</td><td>n/y</td><td>flag</td><td>n</td><td>n</td><td>n</td><td>n</td></tr>
<tr><td></td><td>SA3</td><td>Probe 3 alarm Setpoint.</td><td>-58.0...302</td><td>°C/°F</td><td>0.0</td><td>0.0</td><td>0.0</td><td>0.0</td></tr>
<tr><td></td><td>dA3</td><td>Probe 3 alarm differential.</td><td>1.0 ... 50.0</td><td>°C/°F</td><td>1.0</td><td>1.0</td><td>1.0</td><td>1.0</td></tr>
<tr><td colspan="9">LIGHTS & DIGITAL INPUTS (folder "Lit")</td></tr>
<tr><td></td><td>dOd</td><td>Digital input for switching off utilities:
0 = disabled; 1 = disables the fans;
2 = disables the compressor; 3 = disables fans and compressor</td><td>0/1/2/3</td><td>num</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>dAd</td><td>Activation delay for digital input</td><td>0 ... 255</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>dCO</td><td>Compressor enabling delay from acknowledgement</td><td>0 ... 255</td><td>min</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td></td><td>AuP</td><td>Aux output activation when door opened. n(0) = not linked; y(1) = linked</td><td>n/y</td><td>flag</td><td>n</td><td>n</td><td>y</td><td>n</td></tr>
<tr><td colspan="9">PRESSURE SWITCH (folder "PrE")</td></tr>
<tr><td></td><td>Pen</td><td>Number of errors allowed per maximum/minimum pressure switch input</td><td>0 ... 15</td><td>num</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
<tr><td></td><td>PEI</td><td>Minimum/maximum pressure switch error count interval.</td><td>1 ... 99</td><td>min</td><td>1</td><td>1</td><td>1</td><td>1</td></tr>
<tr><td></td><td>PEt</td><td>Delay in activating compressor after pressure switch deactivation</td><td>0 ... 255</td><td>min</td><td>0</td><td>0</td><td>0</td><td>0</td></tr>
</table>

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
		COMMUNICATION (folder "Add")						
	PtS	Selection of communication protocol. **t**(0) = Televis; **d**(1) = Modbus	t/d	flag	t	t	t	t
	dEA	Index of the device within the family (valid values from 0 to 14)	0 ... 14	num	0	0	0	0
	FAA	Device family (valid values from 0 to 14). The pair of values FAA and dEA are the network address of the device and are given in the format "FF.DD" (where FF=FAA and DD=dEA).	0 ... 14	num	0	0	0	0
	Pty	Modbus parity bit. **n**(0)=none; **E**(1)=even; **o**(2)=odd	n/E/o	num	n	n	n	n
	StP	Modbus stop bit	1b/2b	flag	1b	1b	1b	1b
		DISPLAY (folder "DiS")						
	LOC	Setpoint edit lock. See corresponding paragraph. You will still be able to open parameter programming and alter parameters, including the state of this parameter if you need to unlock the keyboard for example. **n**(0)= no; **y**(1)= yes.	n/y	flag	n	n	n	n
	PS1	When enabled (**PS1≠0**) it is the password to the "**User**" parameters	0 ... 250	num	0	0	0	0
	PS2	When enabled (**PS1≠0**) it is the password to the "**Installer**" parameters	0 ... 250	num	15	15	15	15
	ndt	Display with decimal point. **n**(0) =no; **y**(1) =yes.	n/y	flag	y	y	y	y
	CA1	Positive or negative temperature value to be added to the value of Pb1.	-12.0...12.0	°C/°F	0.0	0.0	0.0	0.0
	CA2	Positive or negative temperature value to be added to the value of Pb2.	-12.0...12.0	°C/°F	0.0	0.0	0.0	0.0
	CA3	Positive or negative temperature value to be added to the value of Pb3.	-12.0...12.0	°C/°F	0.0	0.0	0.0	0.0
	ddL	Display mode during defrost. **0** = displays the temperature read by probe Pb1; **1** = locks the reading at the value of Pb1 at the start of defrosting until the setpoint is reached; **2** = displays the label "**dEF**" during defrosting until the setpoint is reached.	0/1/2	num	0	0	0	0
	Ldd	Timeout value for display unlock - label dEF	0 ... 255	min	30	30	30	30
	dro	Select the unit of measurement used when displaying the temperature recorded by the probes. (**0** = °C, **1** = °F). **NOTE: switching between °C and °F DOES NOT modify the SEt, diF values, etc. (e.g. set=10°C becomes 10°F)**	0/1	flag	0	0	0	0
	ddd	Selects type of value to display. **0** = Setpoint; **1** = probe Pb1; **2** = probe Pb2; **3** = probe Pb3	0/1/2/3	num	1	1	1	1
		HACCP (folder "HCP")						
	SHH	Maximum HACCP alarm signals threshold	-55.0...150	°C/°F	0.0	10.0	0.0	0.0
	SLH	Minimum HACCP alarm signals threshold	-55.0...150	°C/°F	0.0	-10.0	0.0	0.0
	drA	Minimum dwelling time in critical area for the event to be recorded. After this time a HACCP alarm will be logged and signalled.	0 ... 99	min	0	10	0	0
	drH	HACCP alarm reset time from last reset	0 ... 250	hours	0	24	0	0
	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	num	0	2	0	0
	H51	HACCP alarm override time	0 ... 250	min	0	0	0	0
		CONFIGURATION (folder "CnF")						
	H00	Select probe type. **0** = PTC; **1** = NTC; **2** = PT1000	0/1/2	flag	1	1	1	1
D.I.1	H11	Configuration of digital input 1/polarity. **0**=disabled; **±1**=defrost; **±2**=reduced set; **±3**=not used; **±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	num	0	0	4	0

Cat	Par.	Description	Range	UM	AP1	AP2	AP3	AP4
D.I.2	H12	Configuration of digital input 2/polarity. Same as H11.	-9 ... +9	num	0	0	0	0
❄	H21	Configurability of digital output 1. **0** = disabled; **1** = compressor; **2** = defrost; **3** = fans; **4** = alarm; **5** = AUX; **6** = standby	0 ... 6	num	1	1	1	1
❄	H22	Configurability of digital output 2. Same as H21.	0 ... 6	num	2	2	2	2
	H23	Configurability of digital output 3. Same as H21.	0 ... 6	num	3	3	3	3
⚠	H24	Configurability of digital output 4. **0** = disabled; **1** = compressor; **2** = defrost; **3** = fans; **4** = alarm; **5** = AUX; **6** = Standby; **7** = NOT USED	0 ... 7	num	4	4	5	4
	H25	Enable/disable buzzer. **0** = disabled; **4** = enabled; **1-2-3-5-6-7-8** = NOT USED;	0 ... 8	num	4	4	4	4
UP	H31	Configurability of UP key. **0** = disabled; **1** = defrost; **2** = not used; **3** = reduced set; **4** = standby; **5** = reset HACCP alarms; **6** = disable HACCP alarms; **7** = activate Deep Cooling cycle	0 ... 7	num	1	1	1	1
DOWN	H32	DOWN key configuration. Same as H31.	0 ... 7	num	0	0	0	0
Pb2	H42	Evaporator probe present. **n**(0) =Not present; **y**(1) =present	n/y	flag	y	y	y	y
Pb3	H43	Probe Pb3 present. **n**(0) =not present; **y**(1) =present	n/y	flag	n	y	n	n
-	reL	Read-only parameter	/	/	/	/	/	/
-	tAb	Reserved: read-only parameter	/	/	/	/	/	/
		COPY CARD (folder "FPr")						
	UL	Transfer programming parameters from instrument to Copy Card	/	/	/	/	/	/
	Fr	Format Copy Card. Erases all data contained in the Copy Card. **NOTE: if parameter "Fr" is used, the data entered will be permanently lost. This operation cannot be reversed.**	/	/	/	/	/	/
		FUNCTIONS (folder "FnC")						
	rAP	Reset pressure switch alarms	/	/	/	/	/	/
	rES	Reset HACCP alarms	/	/	/	/	/	/

NOTES: 1) If one or more parameters marked with (!) in folder "CnF" are modified, the controller MUST be switched off and then switched on again to ensure correct operation.

ALARMS AND SIGNALS TABLE

When an alarm condition is detected, the alarm icon " ((•)) " will come on.
If present and enabled, the buzzer and alarm relay will also activate.
To silence the buzzer, press and release any key, the relative icon will continue to flash.
All alarms reset automatically (e.g. they switch off when the cause of the alarm is removed) except for the pressure switch and HACCP alarms, which must be reset manually using functions rAP and rES.

The alarm codes are as follows:

Code	Description	LED ((•))	Buzzer and Alarm Relay	Reset	Parameters used to ENABLE ALARM	Alarms by Model			
						902/961	971	974	978
E1	probe Pb1 error	ON	active	Automatic	Ont, OFt	X	X	X	X
E2	probe Pb2 error	ON	active	Automatic			X	X	X
E3	probe Pb3 error	ON	active	Automatic		X	X	X	X
AH1	Pb1 HIGH alarm	ON	active	Automatic	SEt, Att, Afd, HAL, LAL	X	X	X	X
AL1	Pb1 LOW alarm	ON	active	Automatic	SEt, Att, Afd, HAL, LAL	X	X	X	X
EA	external alarm	ON	active	Automatic	rLO, dAd	X	X	X	X
OPd	door open alarm	ON	not active	Automatic	dAd, tdO	X	X	X	X
Ad2	defrost due to timeout	ON	not active	Automatic	dEt, dAt	X	X	X	X
COH	overheating alarm	ON	not active	Automatic	SA3, dA3	X	X	X	X
nPA	pressure switch alarm	ON	not active	Automatic	PEn, PEI, PEt	X	X	X	X
PAL	pressure switch alarm	ON	not active	Manual	PEn, PEI, PEt	X	X	X	X
HC n	Pb1 max/min out-of-range value	ON	not active	Manual	SHH, SLH, drA, drH, H50, H51	X	X	X	X
tC n	Pb1 out-of-range dwell time	ON	not active	Manual	SHH, SLH, drA, drH, H50, H51	X	X	X	X
bC n	value read by Pb1 on return from a blackout	ON	not active	Manual	SHH, SLH, drA, drH, H50, H51	X	X	X	X
bt n	Pb1 out-of-range dwell time during a blackout	ON	not active	Manual	SHH, SLH, drA, drH, H50, H51	X	X	X	X

NOTES:
1) If alarm exclusion times have been set (see "AL" folder in the parameters table) the alarm will not be signalled.
2) With the exception of faulty probe alarms, all other alarms will record the corresponding label in the folder AL in the "MACHINE STATUS" menu.
3) Faulty probe alarms will be indicated on the display by means of label E1, E2 or E3 depending on whether the fault relates to probe Pb1, Pb2* or Pb3 respectively. (*** Probe Pb2 is only present in models ID Plus 971/974/978**).

Cause/effect table

Controllers in the ID Plus family are able to perform complete diagnostics of the system and report any operating trouble with specific alarms, display and record particular events, defined by the user, to achieve greater control over the system.

Label	Fault	Cause	Effects	Remedy
E1	Cabinet probe1 faulty	• Measured values are outside operating range • Probe faulty/short-circuited/ open	• **E1** label shown on display • Alarm icon permanently on • High/low alarm regulator disabled • Compressor operation based on parameters "**Ont**" and "**OFt**".	• Check the probe type (NTC) • Check the probe wiring • Replace probe When error has been removed, regulation continues as normal
E2	Defrost probe2 faulty **IDPlus 971/974/974 SMPS/978 only**	• Measured values are outside operating range • Probe faulty/short-circuited/ open	• **E2** label shown on display • Alarm icon permanently on • Defrost will end due to timeout (**dEt**) • The evaporator fans will be: ON if the compressor is ON and will operate based on parameter **FCO** if the compressor is OFF.	• Check the probe type (NTC) • Check the probe wiring • Replace probe when error has been removed, regulation continues as normal
E3	Probe3 faulty	• Measured values are outside operating range • Probe faulty/short-circuited/ open	• **E3** label shown on display • Alarm icon permanently on • No effect on control	• Check the probe type (NTC) • Check the probe wiring • Replace probe
AH1	Probe 1 HIGH Temperature alarm	Value read by probe Pb1 > **HAL** after time " **tAO**". (see "MAX/MIN TEMPERATURE ALARMS")	• Label **AH1** recorded in folder **AL** • No effect on control	Wait until temperature value read by Pb1 returns below (**HAL-AFd**).
AL1	Probe 1 LOW Temperature alarm	Value read by probe Pb1 < **HAL** after time" **tAO**".(see "MAX/MIN TEMPERATURE ALARMS")	• Label **AL1** recorded in folder **AL** • No effect on control	Wait for the temperature value read by Pb1 to come back above (**LAL+AFd**).
EA	External alarm	Digital input activated (H11 = ±5)	• Label **EA** recorded in folder **AL** • Alarm icon permanently on. • Regulation locked if **rLO** = y	Check and remove the external cause which triggered the alarm on D.I.
OPd	Door open alarm	Digital input activated (H11 = ±4) (for a time greater than tdO)	• Label **Opd** recorded in **AL** • Alarm icon permanently on. • Regulator 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 read by Pb2.	• Label **dAt** recorded in folder **AL** • Alarm icon permanently on.	Wait for the next defrost cycle for automatic reset
COH	Overheating alarm	Value set by parameter SA3 exceeded.	• **COH** label shown on display • Alarm icon permanently on • Regulation locked (Compressor)	wait for the temperature to return to a value of **SA3** (Setpoint) minus **dA3** (differential).
nPA	General pressure alarm	Activation of pressure switch alarm by general pressure switch regulator.	If the number **N** of pressure switch activations is **N** < **PEn**: • Folder **nPA** recorded 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 D.I. Auto reset
PAL	General Pressure switch Alarm	Activation of pressure switch alarm by general pressure switch regulator.	If the number **N** of pressure switch activations is **N** = **PEn**: • Label **PAL displayed** • Label **PA** recorded in folder AL deleting folder **nPA** from folder AL • Alarm LED permanently on • 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 Pb1 value when out of range (SLH...SHH)	Stores the Max/Min value read by Pb1 when it exceeds the range SLH...SHH. "**n**" represents the sequential number of times the range is exceeded.	• Folder "HC **n"** recorded in folder AL • Alarm LED permanently on • No effect on control	**NOTE**: "**n**" can assume the values 1 to 8. If **n** > 8, folder HC8 will blink and the system will overwrite the folders starting from **n**=1.
tC **n**	Pb1 out-of-range dwell time (SLH... SHH)	Stores the time for which the Pb1 value remains outside of the range SLH...SHH. "**n**" represents the sequential number of times the range is exceeded.	• Folder "tC **n"** recorded in folder AL • Alarm LED permanently on • No effect on control	**NOTE**: "**n**" can assume the values 1 to 8. If **n** > 8, folder HC8 will blink and the system will overwrite the folders starting from **n**=1.
bC **n**	Value read by Pb1 on return from **bOt**	Stores the value read by Pb1 on return from a blackout. "**n**" represents the sequential number of blackouts that have occurred.	• Folder "bC **n"** recorded in folder AL • No effect on control	**NOTE**: "**n**" can assume the values 1 to 8. If **n** > 8, folder bC8 will blink and the system will overwrite the folders starting from **n**=1.
bt **n**	Pb1 out-of-range dwell time during **bOt**	Stores the time for which the Pb1 value remains out of range during a blackout. "**n**" represents the sequential number of blackouts that have occurred.	• Folder "bt **n"**recorded in folder AL. The value contained will be **0** if the value of Pb1 has remained within the range, **≠ 0** if the value has gone outside of the range. • No effect on control	**NOTE**: "**n**" can assume the values 1 to 8. If **n** > 8, folder bC8 will blink and the system will overwrite the folders starting from n=1.

DESCRIPTION OF ALARMS

PROBE ALARM

OPERATING CONDITIONS

When one of the probes is out of the nominal operating range or in the case of an open probe or a probe in short circuit, an alarm is generated if this condition persists for longer than 10 seconds.
The alarm condition is indicated on the display by means of the following error codes:

- **E1** = Environmental probe Pb1 faulty
- **E2** = Defrost probe Pb2 faulty (**IDPlus 971/974/974 SMPS/978 only**)
- **E3** = Probe Pb3 faulty

The alarm LED and alarm relay are activated.
When active, error code **E1** remains permanently on.
Error code **E2** alternates with the temperature read by the cabinet probe every 2 seconds.
Codes **E1**, **E2** and **E3**, when occurring at the same time,are shown in the following sequence: E1 x 2 sec, E2 x 2 sec etc.

ACTIONS ON CURRENT REGULATION

Probe Pb1: An error condition in the cabinet probe causes one of the following actions:

- Code E1 is shown on the display
- Activation and permanent display of alarm icon and activation of buzzer/alarm relay (if present)
- Activation of compressor as shown by parameters **Ont** and **Oft**
- Disabling of maximum and minimum alarm regulator

When the probe error condition ceases, regulation resumes as normal.
During the probe error, the defrost interval count continues as normal.

Probe Pb2: A defrost probe error causes the following actions:

- Code E2 is shown on the display
- Activation and permanent display of alarm icon and activation of buzzer/alarm relay (if present)
- End of defrost due to timeout (if enabled)

When the defrost probe error condition ceases, regulation resumes as normal: if a defrost was in progress, it may terminate on reaching the end of defrost setpoint.
The probe fault alarm is not stored by the controller.

Probe Pb3: A over-heating/HACCP probe error causes the following actions:

- Code E3 is shown on the display
- Activation and permanent display of alarm icon and activation of buzzer/alarm relay (if present)

The probe fault alarm is not stored by the controller.

SIGNALLING

Code	Meaning	Model
E1	Probe Pb1 error	All
E2	Probe Pb2 error	971/974/974 SMPS/978
E3	Probe Pb3 error	All

ALARM ACKNOWLEDGEMENT

In the alarm condition, it is possible to acknowledge the alarm and/or relay configured as an alarm, even if the alarm condition persists, by pressing any key or using the corresponding function in the menu The alarm LED will start to blink.
Eliminating the cause of the alarm disarms the acknowledgement.
The probe fault alarm is not stored by the controller.

USER PARAMETERS

Label	Description	Model
Ont	ON time for compressor output with faulty regulation probe	All
OFt	OFF time for compressor output with faulty regulation probe	All

MINIMUM AND MAXIMUM TEMPERATURE ALARM

OPERATING CONDITIONS

The alarm regulation is carried out on environmental probe Pb1. The temperature limits defined in parameters **HAL** and **LAL** are determined by parameter **Att** which specifies if they represent the absolute temperature value or a setpoint differential (in the case of offset on the entered setpoint, the high and low alarms will refer to this new control setpoint).

- If **Att** =0 **Ab(solute)**, the temperature limits for probe Pb1 are absolute.
- If **Att** =1 **rE(lative)**, the temperature limits for probe Pb1 refer to the **SEt**.

NOTE: to obtain the minimum alarm below the setpoint in the case of **Att**=1 (relative) it is necessary to set **LAL** < 0

Alarm condition

A maximum/minimum alarm is generated when the Pb1 temperature is:

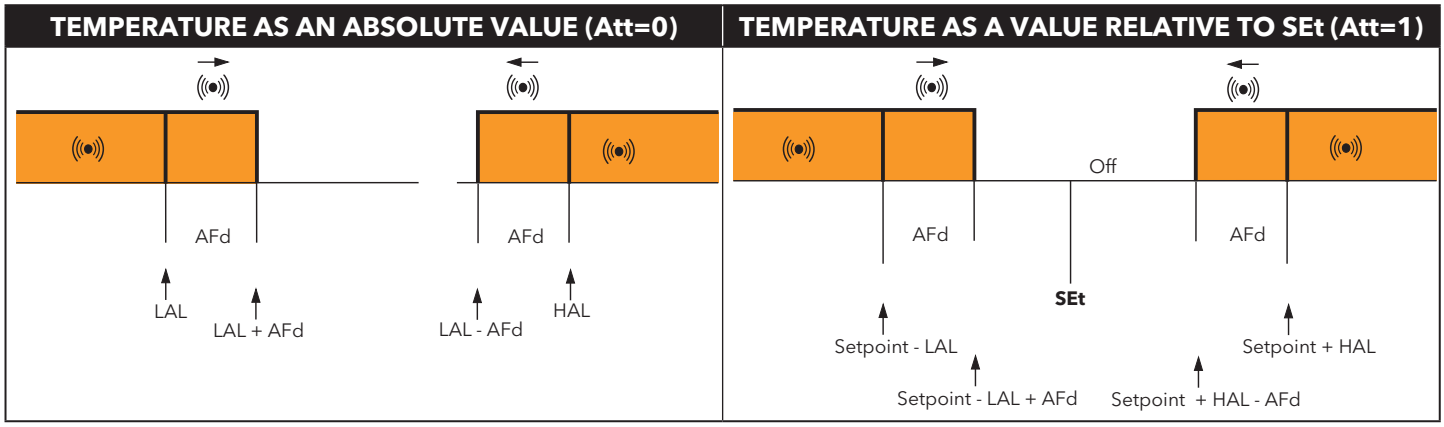
- Maximum alarm: ≥ **HAL** if **Att=Ab(solute)** and ≥ (**Set + HAL**) if **Att=rE(lative)**
- Minimum alarm: ≤ **LAL** if **Att=Ab(solute)** and ≤ (**Set + LAL**) if **Att=rE(lative)**

If **Att=Ab(solute)** the values of **HAL and LAL** must be with sign, if **Att=rE(lative)** it is necessary that **HAL > 0 and LAL < 0**.

When one of the two aforementioned conditions occurs, if no alarm override times apply (see alarm override parameters), the alarm LED lights up, the buzzer sounds (if present) and/or the relay configured as alarm activates.

The maximum/minimum alarm will be reset when the temperature of probe Pb1 is:

- Reset from maximum alarm: ≤ (**HAL - AFd**) if **Att=Ab(solute)** and ≤ (**Set + HAL - AFd**) if **Att=rE(lative)**
- Reset from maximum alarm: ≥ (**LAL + AFd**) if **Att=Ab(solute)** and ≥ (**Set + LAL + AFd**) if **Att=rE(lative)**



NOTES:
- During a defrost cycle, high and low temperature alarms are overridden.
- Occurrence of this alarm does not effect any regulation in progress.

SIGNALLING

Code	Meaning	ID Plus model
AH1	high temperature alarm referred to probe Pb1	All
AL1	low temperature alarm referred to probe Pb1	All

ALARM ACKNOWLEDGEMENT

In the alarm condition, it is possible to acknowledge the buzzer (if present) and/or relay configured as an alarm, even if the alarm condition persists, by pressing any key or using the corresponding function in the menu.
The alarm LED will start to blink. Eliminating the cause of the alarm disarms the acknowledgement.
The probe fault alarm is not stored by the controller.

USER PARAMETERS

Label	Description	Model
Att	HAL and LAL parameter mode (absolute or relative)	All
Afd	Alarm activation differential	All
HAL	Maximum alarm threshold	All
LAL	Minimum alarm threshold	All
PAO	Temperature alarms disabling time from power-on	All
dAO	Temperature alarm disabling time after defrost cycle	All
OAO	High and low temperature alarms disabling time after door closing	All
tAO	Temperature alarms delay time	All

DEFROST ALARM

OPERATING CONDITIONS

The regulator is activated without any delay in the case of end of defrost due to timeout, instead of probe 2 reaching the defrost end temperature.
The action consist of:

- Permanent illumination of alarm LED
- Recording of label **Ad2** in the alarms menu

Automatic reset occurs with the start of the next defrost cycle.
The alarm LED can be switched off using the normal acknowledgement procedure, although the alarm signal is only actually cancelled at the start of the next defrost cycle.

Signal

Code	Meaning	ID Plus model
Ad2	Defrost alarm on Pb2	All

USER PARAMETERS

Label	Description	ID Plus model
dEt	Defrost timeout	All
dAt	Alarm signalling end of defrost due to timeout	All

EXTERNAL ALARM

OPERATING CONDITIONS

In the case of activation of the digital input, the alarm regulator is activated with the delay set in parameter **dAd**, and this alarm persists until the next time the digital input is deactivated.
The action consist of:

- Permanent illumination of alarm LED
- Recording of label **EA** in the alarms menu
- Activation of the buzzer (if present and enabled)
- Activation of the relay configured as alarm (if enabled)
- Deactivation of the compressor, defrost and fan regulators depending on the configuration of parameter EAL.

It is possible to acknowledge the buzzer (if present) / alarm relay but the regulators still remain locked until the next time the digital input is deactivated.

The values that can be assigned to parameter **rLo** are:

- **rLO = n**: An external alarm does not lock the regulators;
- **rLO = y**: An external alarm locks the regulators.

SIGNALLING

Code	Meaning	Model
EA	external alarm	All

USER PARAMETERS

Label	Description	Model
rLO	An external alarm blocks the regulators	All
dAd	D.I. activation delay	All

DOOR OPEN ALARM

OPERATING CONDITIONS

The door switch alarm is associated to a specially configured digital input:

- **H11 = ± 4**
- **H12 = ± 4 (IDPlus 971/974/974 SMPS/978 only)**

On activation of the digital input (door open) and after delay **tdO** has elapsed, the door open alarm must be signalled in the alarms folder and the LED and alarm relay must light up The label **OPd** is displayed.
The action consist of:

- Permanent illumination of alarm LED
- Recording of label **OPd** in the alarms menu
- Activation of the relay configured as alarm

Parameter **tdO** will start to decrement once the time set in parameter **dAd** has elapsed.
As in the case of the other alarms, the relay may be deactivated by pressing an acknowledgement key, the alarm LED will blink and label **OPd** will remain in the alarms menu until the door is closed.
If the door is opened, the regulator will operate based on the value of parameter **dOd**. The values that can be assigned to the parameter are:

- **dOd = 0**: No resource is locked;
- **dOd = 1**: Fans are locked (FAN);
- **dOd = 2**: Compressor is locked (COMPR);
- **dOd = 3**: both Fans (FAN) and Compressor (COMPR) are locked

If the door open alarm blocks the compressor, it can still be re-activated even if the door remains open by setting parameter **dCO**.

SIGNALLING

Code	Meaning	Model
OPd	door open alarm	All

USER PARAMETERS

Label	Description	Model
dAd	D.I. activation delay	All
dOd	Digital input for switching off utilities: **0** = disabled; **1** = disables the fnas; **2** = disables the compressor; **3** = disables fans and compressor.	All
dCO	Compressor enabling delay from acknowledgement	All
tdO	Open door disabling time	All

COMPRESSOR OVERHEATING ALARM

OPERATING CONDITIONS

Probe Pb3 is associated to a "Compressor Overheating" alarm triggered when the value set in parameter SA3 is exceeded.
This alarm is reset automatically when the temperature returns to a value of:

Value Pb3 < **SA3 - dA3** (Setpoint - differential).

The compressor will at that point be free to restart, if requested, respecting the relevant protections. The alarm will be treated like a normal temperature alarm, therefore for the alarm signalling delays refer to the standard delays.

Activation of the alarm results in:

- Display of label **COH**
- Illumination of alarm LED
- Activation of the buzzer (if present and enabled)
- Activation of the relay configured as alarm (if enabled)
- Deactivation of compressor relay

SIGNALLING

Code	Meaning	Model
COH	compressor overheating alarm	All

USER PARAMETERS

Label	Description	Model
SA3	Probe 3 alarm setpoint	All
dA3	Probe 3 alarm differential	All

Modbus is a client/server protocol for communication between devices connected in a network.
Modbus devices communicate using a master-slave technique in which only one device (master) can send messages.
The other devices in the network (slave) respond, returning the data requested by the master or executing the action contained in the message sent.
A slave is a device connected to a network that processes information and sends the results to the master using the Modbus protocol.
The master device can send messages to individual slaves or to the entire network (broadcast) whilst slaves can only respond individually to the master.
The Modbus standard used by Eliwell employs the RTU code for data transmission.

DATA FORMAT (RTU)

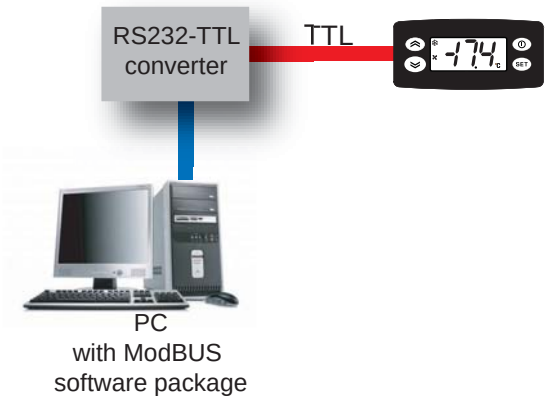
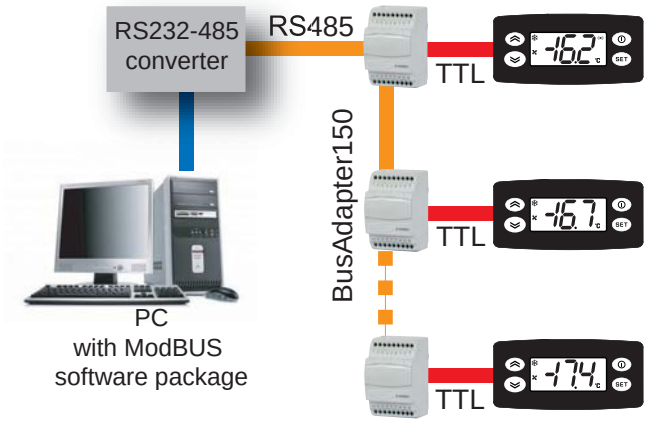
The coding model used defines the structure of messages transmitted on the network and the way in which this information is deciphered. The type of coding is usually selected on the basis of specific parameters (baud rate, parity, etc.); furthermore, some devices support only specific coding models, although it must be the same one for all devices connected in a Modbus network.
The protocol uses the RTU binary method with bytes configured as follows: **8 bit for data, even parity bit (configurable), 1 stop bit.**

NOTE: the transmission speed must be set at 9600 baud.
Parameter setting allows the full configuration of the device
They can be modified using:

- Device keypad
- Copy Card
- Sending data via Modbus protocol directly to an individual controller or broadcasting it, using the address 0 (broadcast)

NETWORK

The 2 connection diagrams for using Modbus are shown below:

ModBus connection to individual devices via TTL	ModBus connection to multiple devices via RS485
	

PC / Interface connection	RS232 cable
Device / Bus Adapter connection	5-way TTL connector cable (30 cm) (other sizes/lengths available)
Bus Adapter	BA150
Bus Adapter / Interface connection	Shielded and twisted RS485 cable (e.g. Belden model 8762)

MODBUS COMMANDS AVAILABLE AND DATA AREAS

The following commands are implemented:

Modbus command	Description of command
3	Read 16 consecutive registers for Client side Read 1 single register for parameters
16	Write 15 consecutive registers for Client side Write 1 register for the parameters
43	Read device ID It is possible to read the following 3 fields:

Field code	Field description
0	Manufacturer ID (="Invensys")
1	Device model/polycarbonate ID
2	Device family (MSK447)/version ID

Length restrictions

Maximum length in bytes of messages sent to device	30 BYTES
Maximum length in bytes of messages received by the device	30 BYTES

ADDRESS CONFIGURATION

The serial TTL - which we will call COM1 – can be used to configure the device, parameters, states, and variables with Modbus via the Modbus protocol.
The address of a device within a ModBus message is made up of one byte and is formed by the family code and the instrument code, indicated by dBA, made up of parameters FAA and dEA respectively.
The address (Device Address) is thus formed of two nibbles:

dEA: low nibble
FAA: high nibble

To calculate the address starting from parameters FAA and dEA:

dBA = FAA x 16 + dEA

The address 0 is used for broadcast messages that all slaves recognise. Slaves don't respond to broadcast messages.
The parameters for configuring the device are:

Parameter	Description	Values	Range
PtS	Select COM1 (TTL) protocol	p	t = Televis d = Modbus
dEA	Device index in family	0	0 ... 14
FAA	Device family	0	0 ... 14
Pty	Modbus protocol parity bit	n	• n= NONE • E= EVEN • o= ODD
StP	Modbus protocol stop bit	1b	• 1b= 1 BIT • 2b= 2 BIT

NOTE: To guarantee correct operation, the controller must be switched off and switched on again after modification of parameters Pty and StP.

PARAMETER VISIBILITY AND VALUES

There are 4 hardware models (ID Plus 902, ID Plus 961, ID Plus 961 SMPS, ID Plus 971 e ID Plus 974, ID Plus 974 SMPS) with varying numbers of inputs/outputs.
Depending on the model, some configuration parameters may not (usually) be visible and/or be of no significance given that the associated resource is not present.
In the parameter/visibility table, parameters that are not present will be indicated in the default column by means of a grey rectangle.

IMPORTANT:

1) When not indicated otherwise, the parameter is always visible and modifiable, unless customised settings have been configured via serial.
2) If folder visibility is modified, the new setting will apply to all parameters in the folder.

PARAMETER/VISIBILITY TABLE AND CLIENT TABLE

The tables below list all information required to read, write and decode all accessible resources in the device. There are three tables:

- The "**PARAMETERS TABLE**" contains all device configuration parameters stored in the controller's non-volatile memory, including visibility
- The **"FOLDER VISIBILITY TABLE"** indicates the visibility of the folders containing the parameters
- The **"CLIENT TABLE"** includes all I/O and alarm status resources available in the volatile memory of the instrument.

Description of columns:

FOLDER
This indicates the label of the folder containing the parameter in question.

LABEL
This indicates the label used to display the parameters in the menu of the controller.

VALUE PAR. ADDRESS
The whole part represents the address of the MODBUS register containing the value of the resource to be read or written in the controller. The value after the point indicates the position of the most significant data bit inside the register; if not indicated it is taken to be zero. This information is always provided when the register contains more than one information item, and it is necessary to distinguish which bits actually represent the data (the working size of the data indicated in the column DATA SIZE is also taken into consideration).
Given that the modbus registers have the size of one WORD (16 bit), the index number after the point can vary from 0 (least significant bit –LSb–) to 15 (most significant bit –MSb–).
Examples (in binary form the least significant bit is the first on the right):

VAL PAR. ADDRESS	DATA SIZE	Value	Content of register	
8806	WORD	1350	1350	(0000010101000110)
8806	BYTE	70	1350	(00000101**01000110**)
8806.8	BYTE	5	1350	(**00000101**01000110)
8806.14	1 BIT	0	1350	(0**0**000010101000110)
8806.7	4 BIT	10	1350	(00000**1010**1000110)

IMPORTANT: when the register contains more than one piece of data, the write procedure is as follows:

- Read current value of register
- Modify bits for the resource concerned
- Write register

VIS PAR. ADDRESS
The same as above. In this case, the MODBUS register address contains the visibility value of the parameter.
By default all parameters have:

- Data size 2 bit
- Range 0…3
- **Visibility 3
- U.M. num

****Value Meaning**

- Value 3 = parameter or folder always visible
- Value 2 = **manufacturer level**; these parameters can only be viewed by enter the manufacturer's password (see parameter UI28) (all parameters declared as always visible, parameters visible at the installer level and manufacturer's level will be visible)
- Value 1 = **installer level**; these parameters can only be viewed by enter the installer's password (see parameter UI17) (all parameters declared as always visible and parameters visible at the installer level)
- Value 0 = parameter or folder NOT visible

1. Parameters and/or folders with a level of visibility <>3 (password-protected) will be visible only if the correct password is entered (installer or manufacturer) following this procedure:
2. Parameters and/or folders with a level of visibility =3 are always visible even without a password: in this case, the following procedure is not necessary.

Examples (in binary form the least significant bit is the first on the right):
Default visibility:

VAL PAR. ADDRESS	DATA SIZE	Value	Content of register	
49336.6	2 BIT	3	65535	----------(**11**1111111111111)
49337	2 BIT	3	65535	(111111**11**11111111)
49337.2	2 BIT	3	65535	(1111**11**1111111111)
49337.4	2 BIT	3	65535	(11**11**111111111111)
49337.6	2 BIT	3	65535	(**11**111111111111111)

R/W
Indicates if resources are read/write, read-only or write-only:

R	The resource is read-only
W	The resource is write-only
RW	The resource can be both read and written to

DESCRIPTION
This is the description of the meaning of the **parameters** in the **LABEL** column.

DATA SIZE
Indicates the size of the data in bits.

WORD	=	16 bit
Byte	=	8 bit
"n" bit	=	0...15 bit based on the value of "n"

CPL
When the field indicates "Y", the value read by the register needs to be converted because the value represents a number with a sign. In the other cases the value is always positive or null.
To carry out conversion, proceed as follows:

- If the value in the register is between 0 and 32.767, the result is the value itself (zero and positive values)
- If the value in the register is between 32.768 and 65.535, the result is the value of the register - 65.536 (negative values)

RANGE
Describes the interval of values that can be assigned to the parameter. It can be correlated with other instrument parameters (indicated with the parameter label).

DEFAULT
Indicates the factory setting for the standard model of the instrument.

UM
Measurement unit for values converted according to the rules indicated in the CPL and EXP columns.

PARAMETER TABLE

Folder	Label	Value Address	Visibility Address	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	M.U.
	Set	16416	49320.4	RW	Control Setpoint	WORD	Y	LSE ... HSE	°C/°F
CP	diF	16386	49320.6	RW	Activation differential	WORD		0.1 ... 30.0	°C/°F
CP	HSE	16418	49321	RW	Maximum value settable for setpoint	WORD	Y	LSE ... 302	°C/°F
CP	LSE	16420	49321.2	RW	Minimum value settable for setpoint	WORD	Y	-58.0...HSE	°C/°F
CP	OSP	16388	49321.4	RW	Setpoint offset	WORD	Y	-30.0...30.0	°C/°F
CP	HC	49212	49321.6	RW	Operating mode (Heating/Cooling)	BYTE		0 ... 1	flag
CP	Ont	49217	49322.4	RW	ON time for compressor output with faulty Pb1 probe	BYTE		0 ... 250	minutes
CP	OFt	49218	49322.6	RW	OFF time for compressor output with faulty Pb1 probe	BYTE		0 ... 250	minutes
CP	dOn	49219	49323	RW	Compressor output enabling delay from request	BYTE		0 ... 250	seconds
CP	dOF	49220	49323.2	RW	Compressor output enabling delay from shutdown	BYTE		0 ... 250	minutes
CP	dbi	49221	49323.4	RW	Delay between two consecutive starts of the compressor output	BYTE		0 ... 250	minutes
CP	OdO	49222	49323.6	RW	Delay output enabling from power-on	BYTE		0 ... 250	minutes
CP	dCS	16442	49324	RW	Deep cooling Setpoint	WORD	Y	-58.0 ... 302	°C/°F
CP	tdC	49291	49324.2	RW	Deep cooling duration	BYTE		0 ... 255	min*10
CP	dcc	49292	49324.4	RW	Defrost delay after deep cooling	BYTE		0 ... 255	num
dEF	dtY	49223	49324.6	RW	Type of defrost	BYTE		0 ... 2	num
dEF	dit	49266	49325	RW	Interval between defrost cycles	BYTE		0 ... 250	hours
dEF	dCt	49226	49325.6	RW	Defrost interval count mode	BYTE		0 ... 3	num
dEF	dOH	49227	49326	RW	Defrost cycle enabling delay from request	BYTE		0 ... 59	minutes
dEF	dEt	49228	49326.2	RW	Defrost timeout	BYTE		1 ... 250	minutes
dEF	dSt	16390	49326.4	RW	Defrost end temperature	WORD	Y	-58.0 ... 302	°C/°F
dEF	dPO	49229	49326.6	RW	Defrost enabling request from power-on	BYTE		0 ... 1	flag
Fan	FSt	16394	49327.6	RW	Evaporator fans disabling temperature	WORD	Y	-58.0 ... 302	°C/°F
Fan	FAd	16398	49328.2	RW	Evaporator fans activation differential	WORD		1.0 ... 50.0	°C/°F
Fan	Fdt	49232	49328.4	RW	Evaporator fans delay after defrost cycle	BYTE		0 ... 250	minutes
Fan	dt	49233	49328.6	RW	Coil drainage time	BYTE		0 ... 250	minutes
Fan	dFd	49234	49329	RW	Evaporator fans disabling during defrost time	BYTE		0 ... 1	flag
Fan	FCO	49235	49329.2	RW	Evaporator fans status with OFF compressor output	BYTE		0 ... 2	num
Fan	Fon	49237	49329.6	RW	Evaporator fans ON time in Duty Cycle mode	BYTE		0 ... 99	minutes
Fan	FoF	49238	49330	RW	Evaporator fans OFF time in Duty Cycle mode	BYTE		0 ... 99	minutes
Fan	Fnn	49278	49330.2	RW	Evaporator fans ON time in duty cycle night mode	BYTE		0 ... 99	num
Fan	FnF	49279	49330.4	RW	Evaporator fans OFF time in duty cycle night mode	BYTE		0 ... 99	num
Fan	ESF	49280	49330.6	RW	Night activation mode	BYTE		0 ... 1	flag
AL	Att	49241	49331	RW	HAL and LAL parameter mode (absolute or relative)	BYTE		0 ... 1	flag
AL	AFd	16400	49331.2	RW	Alarm activation differential	WORD		1.0 ... 50.0	°C/°F
AL	HAL	16422	49331.4	RW	Maximum alarm threshold	WORD	Y	LAL ... 302	°C/°F
AL	LAL	16424	49331.6	RW	Minimum alarm threshold	WORD	Y	-58.0 ... HAL	°C/°F
AL	PAO	49242	49332	RW	Alarm disabling after power-on	BYTE		0 ... 10	hours
AL	dAO	16402	49332.2	RW	Temperature alarm disabling time after defrost cycle	WORD		0 ... 999	minutes
AL	OAO	49243	49332.4	RW	High and low temperature alarms disabling time after door closing	BYTE		0 ... 10	hours
AL	tdO	49244	49332.6	RW	Open door disabling time	BYTE		0 ... 250	minutes
AL	tAO	49245	49333	RW	Temperature alarms delay time	BYTE		0 ... 250	minutes

Folder	Label	Value Address	Visibility Address	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	M.U.
AL	dAt	49246	49333.2	RW	Alarm signalling end of defrost due to timeout	BYTE		0 ... 1	flag
AL	rLO	49247	49333.4	RW	An external alarm blocks the regulators	BYTE		0 ... 1	flag
AL	SA3	16432	49334.2	RW	Alarm setpoint for probe 3	WORD	Y	-58.0...302	°C/°F
AL	dA3	16434	49334.4	RW	Probe 3 alarm activation differential	WORD		1.0 ... 50.0	°C/°F
Lit	dOd	49215	49334.6	RW	Enable utility switch-off on activation of door switch	BYTE		0 ... 3	num
Lit	dAd	49216	49335	RW	Activation delay for digital inputs	BYTE		0 ... 255	minutes
Lit	dCO	49293	49345.4	RW	Delay in deactivating compressor after door opened	BYTE		0 ... 255	minutes
PrE	PEn	49274	49335.4	RW	Number of errors allowed for min/max pressure switch input	BYTE		0 ... 15	num
PrE	PEi	49275	49335.6	RW	Minimum/maximum pressure switch error count interval	BYTE		1 ... 99	minutes
PrE	PEt	49276	49336	RW	Delay in activating compressor after pressure switch deactivation	BYTE		0 ... 255	minutes
Add	F-PtS	49281	49312.2	RW	Protocol selection	BYTE		0 ... 1	flag
Add	F-dEA	49239	49312.4	RW	Device address	BYTE		0 ... 14	num
Add	F-FAA	49240	49312.6	RW	Family address	BYTE		0 ... 14	num
Add	F-PtY	49282	49313	RW	MODBUS parity bit	BYTE		0 ... 2	num
Add	F-StP	49283	49313.2	RW	MODBUS stop bit	BYTE		0 ... 1	flag
diS	LOC	49250	49336.2	RW	Enable keypad lock	BYTE		0 ... 1	flag
diS	PS1	49267	49336.4	RW	Password 1 value	BYTE		0 ... 250	num
diS	PS2	49268	49336.6	RW	Password 2 value	BYTE		0 ... 250	num
diS	ndt	49251	49337	RW	Display with decimal point	BYTE		0 ... 1	flag
diS	CA1	16404	49337.2	RW	Cell probe calibration	WORD	Y	-12.0 ... 12.0	°C/°F
diS	CA2	16406	49337.4	RW	Evaporator probe calibration	WORD	Y	-12.0 ... 12.0	°C/°F
diS	CA3	16436	49337.6	RW	Probe 3 calibration	WORD	Y	-12.0 ... 12.0	°C/°F
diS	ddL	49253	49338.6	RW	Resource locking after defrost end	BYTE		0 ... 2	num
diS	Ldd	49277	49339	RW	Display lock timeout from defrost end	BYTE		0 ... 255	minutes
diS	dro	49270	49339.2	RW	°C/°F selection	BYTE		0 ... 1	flag
diS	ddd	49254	49339.4	RW	Selection of main display value	BYTE		0 ... 3	num
HCP	SHH	16438	49339.6	RW	Maximum HACCP alarm threshold	WORD	Y	-55.0 ... 150	°C/°F
HCP	SLH	16440	49340	RW	Minimum HACCP alarm threshold	WORD	Y	-55.0 ... 150	°C/°F
HCP	drA	49286	49340.2	RW	Minimum dwelling time in critical area before alarm signalling	BYTE		0 ... 99	minutes
HCP	drH	49287	49340.4	RW	HACCP alarm reset time from last manual reset	BYTE		0 ... 250	hours
HCP	H50	49288	49340.6	RW	Enable HACCP alarms storage with/without alarm relay enabling	BYTE		0 ... 2	num
HCP	H51	49289	49341	RW	HACCP alarms storage disabling time (key or digital input)	BYTE		0 ... 250	minutes
CnF	H00	49269	49341.2	RW	NTC/PTC analogue input type selection	BYTE		0 ... 2	num
CnF	H11	16412	49342.2	RW	Configurability and polarity of digital input 1	WORD	Y	-9 ... 9	num
CnF	H12	16430	49342.4	RW	Configurability and polarity of digital input 2	WORD	Y	-9 ... 9	num
CnF	H21	49256	49342.6	RW	Configurability of digital output 1	BYTE		0 ... 6	num
CnF	H22	49257	49343	RW	Configurability of digital output 2	BYTE		0 ... 6	num
CnF	H23	49258	49343.2	RW	Configurability of digital output 3	BYTE		0 ... 6	num
CnF	H24	49259	49343.4	RW	Configurability of digital output 4	BYTE		0 ... 6	num
CnF	H25	49260	49343.6	RW	Configurability of digital output 5 (Buzzer)	BYTE		0 ... 6	num
CnF	H31	49261	49344	RW	Configurability of UP key	BYTE		0 ... 6	num
CnF	H32	49262	49344.2	RW	Configurability of DOWN key	BYTE		0 ... 6	num

Folder	Label	Value Address	Visibility Address	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	M.U.
CnF	H42	49265	49345	RW	Evaporator probe present	BYTE		0 ... 1	flag
CnF	H43	49284	49345.2	RW	Probe Pb3 present	BYTE		0 ... 1	flag
CnF	rEL	---	49313.6	RW	Device version visibility	2 BIT		0 ... 3	num
CnF	tAb	---	49314	RW	Parameters table visibility	2 BIT		0 ... 3	num
FPr	UL	---	49318.6	RW	Visibility of function for transferring programming parameters from instrument to Copy Card	2 BIT		0 ... 3	num
FPr	Fr	---	49319.2	RW	Visibility of Copy Card formatting function	2 BIT		0 ... 3	num
FnC	rAP	---	49320	RW	Pressure switch alarms reset visibility	2 BIT		0 ... 3	num
FnC	rES	---	49345.6	RW	HACCP alarms reset visibility	2 BIT		0 ... 3	num
APPLICATION 1 PARAMETERS									
V1	V1-Set	16732	49604.4	RW	Control Setpoint	WORD	Y	LSE ... HSE	°C/°F
V1	V1-diF	16704	49604.6	RW	Activation differential	WORD		0.1 ... 30.0	°C/°F
V1	V1-HSE	16734	49605	RW	Maximum value settable for setpoint	WORD	Y	LSE ... 302	°C/°F
V1	V1-LSE	16736	49605.2	RW	Minimum value settable for setpoint	WORD	Y	-58.0...HSE	°C/°F
V1	V1-OSP	16706	49605.4	RW	Setpoint offset	WORD	Y	-30.0...30.0	°C/°F
V1	V1-HC	49524	49605.6	RW	Operating mode (Heating/Cooling)	BYTE		0 ... 1	flag
V1	V1-Ont	49529	49606.4	RW	ON time for compressor output with faulty Pb1 probe	BYTE		0 ... 250	minutes
V1	V1-OFt	49530	49606.6	RW	OFF time for compressor output with faulty Pb1 probe	BYTE		0 ... 250	minutes
V1	V1-dOn	49531	49607	RW	Compressor output enabling delay from request	BYTE		0 ... 250	seconds
V1	V1-dOF	49532	49607.2	RW	Compressor output enabling delay from shutdown	BYTE		0 ... 250	minutes
V1	V1-dbi	49533	49607.4	RW	Delay between two consecutive starts of the compressor output	BYTE		0 ... 250	minutes
V1	V1-OdO	49534	49607.6	RW	Delay output enabling from power-on	BYTE		0 ... 250	minutes
V1	V1-dCS	16754	49608	RW	Deep cooling Setpoint	WORD	Y	-58.0 ... 302	°C/°F
V1	V1-tdC	49596	49608.2	RW	Deep cooling duration	BYTE		0 ... 255	min*10
V1	V1-dcc	49597	49608.4	RW	Defrost delay after deep cooling	BYTE		0 ... 255	num
V1	V1-dtY	49535	49608.6	RW	Type of defrost	BYTE		0 ... 2	num
V1	V1-dit	49576	49609	RW	Interval between defrost cycles	BYTE		0 ... 250	hours
V1	V1-dCt	49538	49609.6	RW	Defrost interval count mode	BYTE		0 ... 3	num
V1	V1-dOH	49539	49610	RW	Defrost cycle enabling delay from request	BYTE		0 ... 59	minutes
V1	V1-dEt	49540	49610.2	RW	Defrost timeout	BYTE		1 ... 250	minutes
V1	V1-dSt	16708	49610.4	RW	Defrost end temperature	WORD	Y	-58.0 ... 302	°C/°F
V1	V1-dPO	49541	49610.6	RW	Defrost enabling request from power-on	BYTE		0 ... 1	flag
V1	V1-FSt	16712	49611.6	RW	Evaporator fans disabling temperature	WORD	Y	-58.0 ... 302	°C/°F
V1	V1-FAd	16716	49612.2	RW	Evaporator fans activation differential	WORD		1.0 ... 50.0	°C/°F
V1	V1-Fdt	49544	49612.4	RW	Evaporator fans delay after defrost cycle	BYTE		0 ... 250	minutes
V1	V1-dt	49545	49612.6	RW	Coil drainage time	BYTE		0 ... 250	minutes
V1	V1-dFd	49546	49613	RW	Evaporator fans disabling during defrost time	BYTE		0 ... 1	flag
V1	V1-FCO	49547	49613.2	RW	Evaporator fans status with OFF compressor output	BYTE		0 ... 2	num
V1	V1-Fon	49549	49613.6	RW	Evaporator fans ON time in Duty Cycle mode	BYTE		0 ... 99	minutes
V1	V1-FoF	49550	49614	RW	Evaporator fans OFF time in Duty Cycle mode	BYTE		0 ... 99	minutes
V1	V1-Fnn	49587	49614.2	RW	Evaporator fans ON time in duty cycle night mode	BYTE		0 ... 99	num
V1	V1-FnF	49588	49614.4	RW	Evaporator fans OFF time in duty cycle night mode	BYTE		0 ... 99	num
V1	V1-ESF	49589	49614.6	RW	Night activation mode	BYTE		0 ... 1	flag
V1	V1-Att	49551	49615	RW	HAL and LAL parameter mode (absolute or relative)	BYTE		0 ... 1	flag
V1	V1-AFd	16718	49615.2	RW	Alarm activation differential	WORD		1.0 ... 50.0	°C/°F

Folder	Label	Value Address	Visibility Address	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	M.U.
V1	V1-HAL	16738	49615.4	RW	Maximum alarm threshold	WORD	Y	LAL ... 302	°C/°F
V1	V1-LAL	16740	49615.6	RW	Minimum alarm threshold	WORD	Y	-58.0 ... HAL	°C/°F
V1	V1-PAO	49552	49616	RW	Alarm disabling after power-on	BYTE		0 ... 10	hours
V1	V1-dAO	16720	49616.2	RW	Temperature alarm disabling time after defrost cycle	WORD		0 ... 999	minutes
V1	V1-OAO	49553	49616.4	RW	High and low temperature alarms disabling time after door closing	BYTE		0 ... 10	hours
V1	V1-tdO	49554	49616.6	RW	Open door disabling time	BYTE		0 ... 250	minutes
V1	V1-tAO	49555	49617	RW	Temperature alarms delay time	BYTE		0 ... 250	minutes
V1	V1-dAt	49556	49617.2	RW	Alarm signalling end of defrost due to timeout	BYTE		0 ... 1	flag
V1	V1-rLO	49557	49617.4	RW	An external alarm blocks the regulators	BYTE		0 ... 1	flag
V1	V1-SA3	16744	49618.2	RW	Alarm setpoint for probe 3	WORD	Y	-58.0 ... 302	°C/°F
V1	V1-dA3	16746	49618.4	RW	Probe 3 alarm activation differential	WORD		1.0 ... 50.0	°C/°F
V1	V1-dOd	49527	49618.6	RW	Enable utility switch-off on activation of door switch	BYTE		0 ... 3	num
V1	V1-dAd	49528	49619	RW	Activation delay for digital inputs	BYTE		0 ... 255	minutes
V1	V1-dCO	49598	49629.4	RW	Delay in deactivating compressor after door opened	BYTE		0 ... 255	minutes
V1	V1-PEn	49583	49619.4	RW	Number of errors allowed per maximum/minimum pressure switch input	BYTE		0 ... 15	num
V1	V1-PEi	49584	49619.6	RW	Minimum/maximum pressure switch error count interval	BYTE		1 ... 99	minutes
V1	V1-PEt	49585	49620	RW	Delay in activating compressor after pressure switch deactivation	BYTE		0 ... 255	minutes
V1	V1-LOC	49560	49620.2	RW	Enable keypad lock	BYTE		0 ... 1	flag
V1	V1-PS1	49577	49620.4	RW	Password 1 value	BYTE		0 ... 250	num
V1	V1-PS2	49578	49620.6	RW	Password 2 value	BYTE		0 ... 250	num
V1	V1-ndt	49561	49621	RW	Display with decimal point	BYTE		0 ... 1	flag
V1	V1-CA1	16722	49621.2	RW	Cell probe calibration	WORD	Y	-12.0...12.0	°C/°F
V1	V1-CA2	16724	49621.4	RW	Evaporator probe calibration	WORD	Y	-12.0...12.0	°C/°F
V1	V1-CA3	16748	49621.6	RW	Probe 3 calibration	WORD	Y	-12.0...12.0	°C/°F
V1	V1-ddL	49563	49622.6	RW	Resource locking after defrost end	BYTE		0 ... 2	num
V1	V1-Ldd	49586	49623	RW	Display lock timeout from defrost end	BYTE		0 ... 255	minutes
V1	V1-dro	49580	49623.2	RW	°C/°F selection	BYTE		0 ... 1	flag
V1	V1-ddd	49564	49623.4	RW	Selection of main display value	BYTE		0 ... 3	num
V1	V1-SHH	16750	49623.6	RW	Maximum HACCP alarm threshold	WORD	Y	-55.0 ..150	°C/°F
V1	V1-SLH	16752	49624	RW	Minimum HACCP alarm threshold	WORD	Y	-55.0...150	°C/°F
V1	V1-drA	49591	49624.2	RW	Minimum dwelling time in critical area before alarm signalling	BYTE		0 ... 99	minutes
V1	V1-drH	49592	49624.4	RW	HACCP alarm reset time from last manual reset	BYTE		0 ... 250	hours
V1	V1-H50	49593	49624.6	RW	Enable HACCP alarms storage with/without alarm relay enabling	BYTE		0 ... 2	num
V1	V1-H51	49594	49625	RW	HACCP alarms storage disabling time (key or digital input)	BYTE		0 ... 250	minutes
V1	V1-H00	49579	49625.2	RW	NTC/PTC analogue input type selection	BYTE		0 ... 2	num
V1	V1-H11	16730	49626.2	RW	Configurability and polarity of digital input 1	WORD	Y	-9 ... 9	num
V1	V1-H12	16742	49626.4	RW	Configurability and polarity of digital input 2	WORD	Y	-9 ... 9	num
V1	V1-H21	49566	49626.6	RW	Configurability of digital output 1	BYTE		0 ... 6	num
V1	V1-H22	49567	49627	RW	Configurability of digital output 2	BYTE		0 ... 6	num
V1	V1-H23	49568	49627.2	RW	Configurability of digital output 3	BYTE		0 ... 6	num
V1	V1-H24	49569	49627.4	RW	Configurability of digital output 4	BYTE		0 ... 6	num
V1	V1-H25	49570	49627.6	RW	Configurability of digital output 5 (Buzzer)	BYTE		0 ... 6	num
V1	V1-H31	49571	49628	RW	Configurability of UP key	BYTE		0 ... 6	num
V1	V1-H32	49572	49628.2	RW	Configurability of DOWN key	BYTE		0 ... 6	num

Folder	Label	Value Address	Visibility Address	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	M.U.
V1	V1-H42	49575	49629	RW	Evaporator probe present	BYTE		0 ... 1	flag
V1	V1-H43	49590	49629.2	RW	Probe Pb3 present	BYTE		0 ... 1	flag
APPLICATION 2 PARAMETERS									
V2	V2-Set	16908	49780.4	RW	Control Setpoint	WORD	Y	LSE ... HSE	°C/°F
V2	V2-diF	16880	49780.6	RW	Activation differential	WORD		0.1 ... 30.0	°C/°F
V2	V2-HSE	16910	49781	RW	Maximum value settable for setpoint	WORD	Y	LSE ... 302	°C/°F
V2	V2-LSE	16912	49781.2	RW	Minimum value settable for setpoint	WORD	Y	-58.0...HSE	°C/°F
V2	V2-OSP	16882	49781.4	RW	Setpoint offset	WORD	Y	-30.0...30.0	°C/°F
V2	V2-HC	49700	49781.6	RW	Operating mode (Heating/Cooling)	BYTE		0 ... 1	flag
V2	V2-Ont	49705	49782.4	RW	ON time for compressor output with faulty Pb1 probe	BYTE		0 ... 250	minutes
V2	V2-OFt	49706	49782.6	RW	OFF time for compressor output with faulty Pb1 probe	BYTE		0 ... 250	minutes
V2	V2-dOn	49707	49783	RW	Compressor output enabling delay from request	BYTE		0 ... 250	seconds
V2	V2-dOF	49708	49783.2	RW	Compressor output enabling delay from shutdown	BYTE		0 ... 250	minutes
V2	V2-dbi	49709	49783.4	RW	Delay between two consecutive starts of the compressor output	BYTE		0 ... 250	minutes
V2	V2-OdO	49710	49783.6	RW	Delay output enabling from power-on	BYTE		0 ... 250	minutes
V2	V2-dCS	16930	49784	RW	Deep cooling Setpoint	WORD	Y	-58.0...302	°C/°F
V2	V2-tdC	49772	49784.2	RW	Deep cooling duration	BYTE		0 ... 255	min*10
V2	V2-dcc	49773	49784.4	RW	Defrost delay after deep cooling	BYTE		0 ... 255	num
V2	V2-dtY	49711	49784.6	RW	Type of defrost	BYTE		0 ... 2	num
V2	V2-dit	49752	49785	RW	Interval between defrost cycles	BYTE		0 ... 250	hours
V2	V2-dCt	49714	49785.6	RW	Defrost interval count mode	BYTE		0 ... 3	num
V2	V2-dOH	49715	49786	RW	Defrost cycle enabling delay from request	BYTE		0 ... 59	minutes
V2	V2-dEt	49716	49786.2	RW	Defrost timeout	BYTE		1 ... 250	minutes
V2	V2-dSt	16884	49786.4	RW	Defrost end temperature	WORD	Y	-58.0...302	°C/°F
V2	V2-dPO	49717	49786.6	RW	Defrost enabling request from power-on	BYTE		0 ... 1	flag
V2	V2-FSt	16888	49787.6	RW	Evaporator fans disabling temperature	WORD	Y	-58.0...302	°C/°F
V2	V2-FAd	16892	49788.2	RW	Evaporator fans activation differential	WORD		1.0 ... 50.0	°C/°F
V2	V2-Fdt	49720	49788.4	RW	Evaporator fans delay after defrost cycle	BYTE		0 ... 250	minutes
V2	V2-dt	49721	49788.6	RW	Coil drainage time	BYTE		0 ... 250	minutes
V2	V2-dFd	49722	49789	RW	Evaporator fans disabling during defrost time	BYTE		0 ... 1	flag
V2	V2-FCO	49723	49789.2	RW	Evaporator fans status with OFF compressor output	BYTE		0 ... 2	num
V2	V2-Fon	49725	49789.6	RW	Evaporator fans ON time in Duty Cycle mode	BYTE		0 ... 99	minutes
V2	V2-FoF	49726	49790	RW	Evaporator fans OFF time in Duty Cycle mode	BYTE		0 ... 99	minutes
V2	V2-Fnn	49763	49790.2	RW	Evaporator fans ON time in duty cycle night mode	BYTE		0 ... 99	num
V2	V2-FnF	49764	49790.4	RW	Evaporator fans OFF time in duty cycle night mode	BYTE		0 ... 99	num
V2	V2-ESF	49765	49790.6	RW	Night activation mode	BYTE		0 ... 1	flag
V2	V2-Att	49727	49791	RW	HAL and LAL parameter mode (absolute or relative)	BYTE		0 ... 1	flag
V2	V2-AFd	16894	49791.2	RW	Alarm activation differential	WORD		1.0 ... 50.0	°C/°F
V2	V2-HAL	16914	49791.4	RW	Maximum alarm threshold	WORD	Y	LAL ... 302	°C/°F
V2	V2-LAL	16916	49791.6	RW	Minimum alarm threshold	WORD	Y	-58.0...HAL	°C/°F
V2	V2-PAO	49728	49792	RW	Alarm disabling after power-on	BYTE		0 ... 10	hours
V2	V2-dAO	16896	49792.2	RW	Temperature alarm disabling time after defrost cycle	WORD		0 ... 999	minutes
V2	V2-OAO	49729	49792.4	RW	High and low temperature alarms disabling time after door closing	BYTE		0 ... 10	hours
V2	V2-tdO	49730	49792.6	RW	Open door disabling time	BYTE		0 ... 250	minutes
V2	V2-tAO	49731	49793	RW	Temperature alarms delay time	BYTE		0 ... 250	minutes

Folder	Label	Value Address	Visibility Address	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	M.U.
V2	V2-dAt	49732	49793.2	RW	Alarm signalling end of defrost due to timeout	BYTE		0 ... 1	flag
V2	V2-rLO	49733	49793.4	RW	An external alarm blocks the regulators	BYTE		0 ... 1	flag
V2	V2-SA3	16920	49794.2	RW	Alarm setpoint for probe 3	WORD	Y	-58.0...302	°C/°F
V2	V2-dA3	16922	49794.4	RW	Probe 3 alarm activation differential	WORD		1.0 ... 50.0	°C/°F
V2	V2-dOd	49703	49794.6	RW	Enable utility switch-off on activation of door switch	BYTE		0 ... 3	num
V2	V2-dAd	49704	49795	RW	Activation delay for digital inputs	BYTE		0 ... 255	minutes
V2	V2-dCO	49774	49805.4	RW	Delay in deactivating compressor after door opened	BYTE		0 ... 255	minutes
V2	V2-PEn	49759	49795.4	RW	Number of errors allowed per maximum/minimum pressure switch input	BYTE		0 ... 15	num
V2	V2-PEi	49760	49795.6	RW	Minimum/maximum pressure switch error count interval	BYTE		1 ... 99	minutes
V2	V2-PEt	49761	49796	RW	Delay in activating compressor after pressure switch deactivation	BYTE		0 ... 255	minutes
V2	V2-LOC	49736	49796.2	RW	Enable keypad lock	BYTE		0 ... 1	flag
V2	V2-PS1	49753	49796.4	RW	Password 1 value	BYTE		0 ... 250	num
V2	V2-PS2	49754	49796.6	RW	Password 2 value	BYTE		0 ... 250	num
V2	V2-ndt	49737	49797	RW	Display with decimal point	BYTE		0 ... 1	flag
V2	V2-CA1	16898	49797.2	RW	Cell probe calibration	WORD	Y	-12.0...12.0	°C/°F
V2	V2-CA2	16900	49797.4	RW	Evaporator probe calibration	WORD	Y	-12.0...12.0	°C/°F
V2	V2-CA3	16924	49797.6	RW	Probe 3 calibration	WORD	Y	-12.0...12.0	°C/°F
V2	V2-ddL	49739	49798.6	RW	Resource locking after defrost end	BYTE		0 ... 2	num
V2	V2-Ldd	49762	49799	RW	Display lock timeout from defrost end	BYTE		0 ... 255	minutes
V2	V2-dro	49756	49799.2	RW	°C/°F selection	BYTE		0 ... 1	flag
V2	V2-ddd	49740	49799.4	RW	Selection of main display value	BYTE		0 ... 3	num
V2	V2-SHH	16926	49799.6	RW	Maximum HACCP alarm threshold	WORD	Y	-55.0...150	°C/°F
V2	V2-SLH	16928	49800	RW	Minimum HACCP alarm threshold	WORD	Y	-55.0...150	°C/°F
V2	V2-drA	49767	49800.2	RW	Minimum dwelling time in critical area before alarm signalling	BYTE		0 ... 99	minutes
V2	V2-drH	49768	49800.4	RW	HACCP alarm reset time from last manual reset	BYTE		0 ... 250	hours
V2	V2-H50	49769	49800.6	RW	Enable HACCP alarms storage with/without alarm relay enabling	BYTE		0 ... 2	num
V2	V2-H51	49770	49801	RW	HACCP alarms storage disabling time (key or digital input)	BYTE		0 ... 250	minutes
V2	V2-H00	49755	49801.2	RW	NTC/PTC analogue input type selection	BYTE		0 ... 2	num
V2	V2-H11	16906	49802.2	RW	Configurability and polarity of digital input 1	WORD	Y	-9 ... 9	num
V2	V2-H12	16918	49802.4	RW	Configurability and polarity of digital input 2	WORD	Y	-9 ... 9	num
V2	V2-H21	49742	49802.6	RW	Configurability of digital output 1	BYTE		0 ... 6	num
V2	V2-H22	49743	49803	RW	Configurability of digital output 2	BYTE		0 ... 6	num
V2	V2-H23	49744	49803.2	RW	Configurability of digital output 3	BYTE		0 ... 6	num
V2	V2-H24	49745	49803.4	RW	Configurability of digital output 4	BYTE		0 ... 6	num
V2	V2-H25	49746	49803.6	RW	Configurability of digital output 5 (Buzzer)	BYTE		0 ... 6	num
V2	V2-H31	49747	49804	RW	Configurability of UP key	BYTE		0 ... 6	num
V2	V2-H32	49748	49804.2	RW	Configurability of DOWN key	BYTE		0 ... 6	num
V2	V2-H42	49751	49805	RW	Evaporator probe present	BYTE		0 ... 1	flag
V2	V2-H43	49766	49805.2	RW	Probe Pb3 present	BYTE		0 ... 1	flag
APPLICATION 3 PARAMETERS									
V3	V3-Set	17084	49956.4	RW	Control Setpoint	WORD	Y	LSE ... HSE	°C/°F
V3	V3-diF	17056	49956.6	RW	Activation differential	WORD		0.1 ... 30.0	°C/°F
V3	V3-HSE	17086	49957	RW	Maximum value settable for setpoint	WORD	Y	LSE ... 302	°C/°F
V3	V3-LSE	17088	49957.2	RW	Minimum value settable for setpoint	WORD	Y	-58.0...HSE	°C/°F

Folder	Label	Value Address	Visibility Address	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	M.U.
V3	V3-OSP	17058	49957.4	RW	Setpoint offset	WORD	Y	-30.0...30.0	°C/°F
V3	V3-HC	49876	49957.6	RW	Operating mode (Heating/Cooling)	BYTE		0 ... 1	flag
V3	V3-Ont	49881	49958.4	RW	ON time for compressor output with faulty Pb1 probe	BYTE		0 ... 250	minutes
V3	V3-OFt	49882	49958.6	RW	OFF time for compressor output with faulty Pb1 probe	BYTE		0 ... 250	minutes
V3	V3-dOn	49883	49959	RW	Compressor output enabling delay from request	BYTE		0 ... 250	seconds
V3	V3-dOF	49884	49959.2	RW	Compressor output enabling delay from shutdown	BYTE		0 ... 250	minutes
V3	V3-dbi	49885	49959.4	RW	Delay between two consecutive starts of the compressor output	BYTE		0 ... 250	minutes
V3	V3-OdO	49886	49959.6	RW	Delay output enabling from power-on	BYTE		0 ... 250	minutes
V3	V3-dCS	17106	49960	RW	Deep cooling Setpoint	WORD	Y	-58.0...302	°C/°F
V3	V3-tdC	49948	49960.2	RW	Deep cooling duration	BYTE		0 ... 255	min*10
V3	V3-dcc	49949	49960.4	RW	Defrost delay after deep cooling	BYTE		0 ... 255	num
V3	V3-dtY	49887	49960.6	RW	Type of defrost	BYTE		0 ... 2	num
V3	V3-dit	49928	49961	RW	Interval between defrost cycles	BYTE		0 ... 250	hours
V3	V3-dCt	49890	49961.6	RW	Defrost interval count mode	BYTE		0 ... 3	num
V3	V3-dOH	49891	49962	RW	Defrost cycle enabling delay from request	BYTE		0 ... 59	minutes
V3	V3-dEt	49892	49962.2	RW	Defrost timeout	BYTE		1 ... 250	minutes
V3	V3-dSt	17060	49962.4	RW	Defrost end temperature	WORD	Y	-58.0...302	°C/°F
V3	V3-dPO	49893	49962.6	RW	Defrost enabling request from power-on	BYTE		0 ... 1	flag
V3	V3-FSt	17064	49963.6	RW	Evaporator fans disabling temperature	WORD	Y	-58.0...302	°C/°F
V3	V3-FAd	17068	49964.2	RW	Evaporator fans activation differential	WORD		1.0 ... 50.0	°C/°F
V3	V3-Fdt	49896	49964.4	RW	Evaporator fans delay after defrost cycle	BYTE		0 ... 250	minutes
V3	V3-dt	49897	49964.6	RW	Coil drainage time	BYTE		0 ... 250	minutes
V3	V3-dFd	49898	49965	RW	Evaporator fans disabling during defrost time	BYTE		0 ... 1	flag
V3	V3-FCO	49899	49965.2	RW	Evaporator fans status with OFF compressor output	BYTE		0 ... 2	num
V3	V3-Fon	49901	49965.6	RW	Evaporator fans ON time in Duty Cycle mode	BYTE		0 ... 99	minutes
V3	V3-FoF	49902	49966	RW	Evaporator fans OFF time in Duty Cycle mode	BYTE		0 ... 99	minutes
V3	V3-Fnn	49939	49966.2	RW	Evaporator fans ON time in duty cycle night mode	BYTE		0 ... 99	num
V3	V3-FnF	49940	49966.4	RW	Evaporator fans OFF time in duty cycle night mode	BYTE		0 ... 99	num
V3	V3-ESF	49941	49966.6	RW	Night activation mode	BYTE		0 ... 1	flag
V3	V3-Att	49903	49967	RW	HAL and LAL parameter mode (absolute or relative)	BYTE		0 ... 1	flag
V3	V3-AFd	17070	49967.2	RW	Alarm activation differential	WORD		1.0 ... 50.0	°C/°F
V3	V3-HAL	17090	49967.4	RW	Maximum alarm threshold	WORD	Y	LAL ... 302	°C/°F
V3	V3-LAL	17092	49967.6	RW	Minimum alarm threshold	WORD	Y	-58.0...HAL	°C/°F
V3	V3-PAO	49904	49968	RW	Alarm disabling after power-on	BYTE		0 ... 10	hours
V3	V3-dAO	17072	49968.2	RW	Temperature alarm disabling time after defrost cycle	WORD		0 ... 999	minutes
V3	V3-OAO	49905	49968.4	RW	High and low temperature alarms disabling time after door closing	BYTE		0 ... 10	hours
V3	V3-tdO	49906	49968.6	RW	Open door disabling time	BYTE		0 ... 250	minutes
V3	V3-tAO	49907	49969	RW	Temperature alarms delay time	BYTE		0 ... 250	minutes
V3	V3-dAt	49908	49969.2	RW	Alarm signalling end of defrost due to timeout	BYTE		0 ... 1	flag
V3	V3-rLO	49909	49969.4	RW	An external alarm blocks the regulators	BYTE		0 ... 1	flag
V3	V3-SA3	17096	49970.2	RW	Alarm setpoint for probe 3	WORD	Y	-58.0...302	°C/°F
V3	V3-dA3	17098	49970.4	RW	Probe 3 alarm activation differential	WORD		1.0 ... 50.0	°C/°F
V3	V3-dOd	49879	49970.6	RW	Enable utility switch-off on activation of door switch	BYTE		0 ... 3	num
V3	V3-dAd	49880	49971	RW	Activation delay for digital inputs	BYTE		0 ... 255	minutes
V3	V3-dCO	49950	49981.4	RW	Delay in deactivating compressor after door opened	BYTE		0 ... 255	minutes

Folder	Label	Value Address	Visibility Address	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	M.U.
V3	V3-PEn	49935	49971.4	RW	Number of errors allowed per maximum/minimum pressure switch input	BYTE		0 ... 15	num
V3	V3-PEi	49936	49971.6	RW	Minimum/maximum pressure switch error count interval	BYTE		1 ... 99	minutes
V3	V3-PEt	49937	49972	RW	Delay in activating compressor after pressure switch deactivation	BYTE		0 ... 255	minutes
V3	V3-LOC	49912	49972.2	RW	Enable keypad lock	BYTE		0 ... 1	flag
V3	V3-PS1	49929	49972.4	RW	Password 1 value	BYTE		0 ... 250	num
V3	V3-PS2	49930	49972.6	RW	Password 2 value	BYTE		0 ... 250	num
V3	V3-ndt	49913	49973	RW	Display with decimal point	BYTE		0 ... 1	flag
V3	V3-CA1	17074	49973.2	RW	Cell probe calibration	WORD	Y	-12.0...12.0	°C/°F
V3	V3-CA2	17076	49973.4	RW	Evaporator probe calibration	WORD	Y	-12.0...12.0	°C/°F
V3	V3-CA3	17100	49973.6	RW	Probe 3 calibration	WORD	Y	-12.0...12.0	°C/°F
V3	V3-ddL	49915	49974.6	RW	Resource locking after defrost end	BYTE		0 ... 2	num
V3	V3-Ldd	49938	49975	RW	Display lock timeout from defrost end	BYTE		0 ... 255	minutes
V3	V3-dro	49932	49975.2	RW	°C/°F selection	BYTE		0 ... 1	flag
V3	V3-ddd	49916	49975.4	RW	Selection of main display value	BYTE		0 ... 3	num
V3	V3-SHH	17102	49975.6	RW	Maximum HACCP alarm threshold	WORD	Y	-55.0...150	°C/°F
V3	V3-SLH	17104	49976	RW	Minimum HACCP alarm threshold	WORD	Y	-55.0... 150	°C/°F
V3	V3-drA	49943	49976.2	RW	Minimum dwelling time in critical area before alarm signalling	BYTE		0 ... 99	minutes
V3	V3-drH	49944	49976.4	RW	HACCP alarm reset time from last manual reset	BYTE		0 ... 250	hours
V3	V3-H50	49945	49976.6	RW	Enable HACCP alarms storage with/without alarm relay enabling	BYTE		0 ... 2	num
V3	V3-H51	49946	49977	RW	HACCP alarms storage disabling time (key or digital input)	BYTE		0 ... 250	minutes
V3	V3-H00	49931	49977.2	RW	NTC/PTC analogue input type selection	BYTE		0 ... 2	num
V3	V3-H11	17082	49978.2	RW	Configurability and polarity of digital input 1	WORD	Y	-9 ... 9	num
V3	V3-H12	17094	49978.4	RW	Configurability and polarity of digital input 2	WORD	Y	-9 ... 9	num
V3	V3-H21	49918	49978.6	RW	Configurability of digital output 1	BYTE		0 ... 6	num
V3	V3-H22	49919	49979	RW	Configurability of digital output 2	BYTE		0 ... 6	num
V3	V3-H23	49920	49979.2	RW	Configurability of digital output 3	BYTE		0 ... 6	num
V3	V3-H24	49921	49979.4	RW	Configurability of digital output 4	BYTE		0 ... 6	num
V3	V3-H25	49922	49979.6	RW	Configurability of digital output 5 (Buzzer)	BYTE		0 ... 6	num
V3	V3-H31	49923	49980	RW	Configurability of UP key	BYTE		0 ... 6	num
V3	V3-H32	49924	49980.2	RW	Configurability of DOWN key	BYTE		0 ... 6	num
V3	V3-H42	49927	49981	RW	Evaporator probe present	BYTE		0 ... 1	flag
V3	V3-H43	49942	49981.2	RW	Probe Pb3 present	BYTE		0 ... 1	flag
APPLICATION 1 PARAMETERS									
V4	V4-Set	17260	50132.4	RW	Control Setpoint	WORD	Y	LSE ... HSE	°C/°F
V4	V4-diF	17232	50132.6	RW	Activation differential	WORD		0.1 ... 30.0	°C/°F
V4	V4-HSE	17262	50133	RW	Maximum value settable for setpoint	WORD	Y	LSE ... 302	°C/°F
V4	V4-LSE	17264	50133.2	RW	Minimum value settable for setpoint	WORD	Y	-58.0...HSE	°C/°F
V4	V4-OSP	17234	50133.4	RW	Setpoint offset	WORD	Y	-30.0...30.0	°C/°F
V4	V4-HC	50052	50133.6	RW	Operating mode (Heating/Cooling)	BYTE		0 ... 1	flag
V4	V4-Ont	50057	50134.4	RW	ON time for compressor output with faulty Pb1 probe	BYTE		0 ... 250	minutes
V4	V4-OFt	50058	50134.6	RW	OFF time for compressor output with faulty Pb1 probe	BYTE		0 ... 250	minutes
V4	V4-dOn	50059	50135	RW	Compressor output enabling delay from request	BYTE		0 ... 250	seconds
V4	V4-dOF	50060	50135.2	RW	Compressor output enabling delay from shutdown	BYTE		0 ... 250	minutes
V4	V4-dbi	50061	50135.4	RW	Delay between two consecutive starts of the compressor output	BYTE		0 ... 250	minutes

Folder	Label	Value Address	Visibility Address	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	M.U.
V4	V4-OdO	50062	50135.6	RW	Delay output enabling from power-on	BYTE		0 ... 250	minutes
V4	V4-dCS	17282	50136	RW	Deep cooling Setpoint	WORD	Y	-58.0...302	°C/°F
V4	V4-tdC	50124	50136.2	RW	Deep cooling duration	BYTE		0 ... 255	min*10
V4	V4-dcc	50125	50136.4	RW	Defrost delay after deep cooling	BYTE		0 ... 255	num
V4	V4-dtY	50063	50136.6	RW	Type of defrost	BYTE		0 ... 2	num
V4	V4-dit	50104	50137	RW	Interval between defrost cycles	BYTE		0 ... 250	hours
V4	V4-dCt	50066	50137.6	RW	Defrost interval count mode	BYTE		0 ... 3	num
V4	V4-dOH	50067	50138	RW	Defrost cycle enabling delay from request	BYTE		0 ... 59	minutes
V4	V4-dEt	50068	50138.2	RW	Defrost timeout	BYTE		1 ... 250	minutes
V4	V4-dSt	17236	50138.4	RW	Defrost end temperature	WORD	Y	-58.0...302	°C/°F
V4	V4-dPO	50069	50138.6	RW	Defrost enabling request from power-on	BYTE		0 ... 1	flag
V4	V4-FSt	17240	50139.6	RW	Evaporator fans disabling temperature	WORD	Y	-58.0...302	°C/°F
V4	V4-FAd	17244	50140.2	RW	Evaporator fans activation differential	WORD		1.0 ... 50.0	°C/°F
V4	V4-Fdt	50072	50140.4	RW	Evaporator fans delay after defrost cycle	BYTE		0 ... 250	minutes
V4	V4-dt	50073	50140.6	RW	Coil drainage time	BYTE		0 ... 250	minutes
V4	V4-dFd	50074	50141	RW	Evaporator fans disabling during defrost time	BYTE		0 ... 1	flag
V4	V4-FCO	50075	50141.2	RW	Evaporator fans status with OFF compressor output	BYTE		0 ... 2	num
V4	V4-Fon	50077	50141.6	RW	Evaporator fans ON time in Duty Cycle mode	BYTE		0 ... 99	minutes
V4	V4-FoF	50078	50142	RW	Evaporator fans OFF time in Duty Cycle mode	BYTE		0 ... 99	minutes
V4	V4-Fnn	50115	50142.2	RW	Evaporator fans ON time in duty cycle night mode	BYTE		0 ... 99	num
V4	V4-FnF	50116	50142.4	RW	Evaporator fans OFF time in duty cycle night mode	BYTE		0 ... 99	num
V4	V4-ESF	50117	50142.6	RW	Night activation mode	BYTE		0 ... 1	flag
V4	V4-Att	50079	50143	RW	HAL and LAL parameter mode (absolute or relative)	BYTE		0 ... 1	flag
V4	V4-AFd	17246	50143.2	RW	Alarm activation differential	WORD		1.0 ... 50.0	°C/°F
V4	V4-HAL	17266	50143.4	RW	Maximum alarm threshold	WORD	Y	LAL ... 302	°C/°F
V4	V4-LAL	17268	50143.6	RW	Minimum alarm threshold	WORD	Y	-58.0...HAL	°C/°F
V4	V4-PAO	50080	50144	RW	Alarm disabling after power-on	BYTE		0 ... 10	hours
V4	V4-dAO	17248	50144.2	RW	Temperature alarm disabling time after defrost cycle	WORD		0 ... 999	minutes
V4	V4-OAO	50081	50144.4	RW	High and low temperature alarms disabling time after door closing	BYTE		0 ... 10	hours
V4	V4-tdO	50082	50144.6	RW	Open door disabling time	BYTE		0 ... 250	minutes
V4	V4-tAO	50083	50145	RW	Temperature alarms delay time	BYTE		0 ... 250	minutes
V4	V4-dAt	50084	50145.2	RW	Alarm signalling end of defrost due to timeout	BYTE		0 ... 1	flag
V4	V4-rLO	50085	50145.4	RW	An external alarm blocks the regulators	BYTE		0 ... 1	flag
V4	V4-SA3	17272	50146.2	RW	Alarm setpoint for probe 3	WORD	Y	-58.0...302	°C/°F
V4	V4-dA3	17274	50146.4	RW	Probe 3 alarm activation differential	WORD		1.0 ... 50.0	°C/°F
V4	V4-dOd	50055	50146.6	RW	Enable utility switch-off on activation of door switch	BYTE		0 ... 3	num
V4	V4-dAd	50056	50147	RW	Activation delay for digital inputs	BYTE		0 ... 255	minutes
V4	V4-dCO	50126	50157.4	RW	Delay in deactivating compressor after door opened	BYTE		0 ... 255	minutes
V4	V4-PEn	50111	50147.4	RW	Number of errors allowed per maximum/minimum pressure switch input	BYTE		0 ... 15	num
V4	V4-PEi	50112	50147.6	RW	Minimum/maximum pressure switch error count interval	BYTE		1 ... 99	minutes
V4	V4-PEt	50113	50148	RW	Delay in activating compressor after pressure switch deactivation	BYTE		0 ... 255	minutes
V4	V4-LOC	50088	50148.2	RW	Enable keypad lock	BYTE		0 ... 1	flag
V4	V4-PS1	50105	50148.4	RW	Password 1 value	BYTE		0 ... 250	num
V4	V4-PS2	50106	50148.6	RW	Password 2 value	BYTE		0 ... 250	num

Folder	Label	Value Address	Visibility Address	R/W	DESCRIPTION	DATA SIZE	CPL	RANGE	M.U.
V4	V4-ndt	50089	50149	RW	Display with decimal point	BYTE		0 ... 1	flag
V4	V4-CA1	17250	50149.2	RW	Cell probe calibration	WORD	Y	-12.0...12.0	°C/°F
V4	V4-CA2	17252	50149.4	RW	Evaporator probe calibration	WORD	Y	-12.0...12.0	°C/°F
V4	V4-CA3	17276	50149.6	RW	Probe 3 calibration	WORD	Y	-12.0...12.0	°C/°F
V4	V4-ddL	50091	50150.6	RW	Resource locking after defrost end	BYTE		0 ... 2	num
V4	V4-Ldd	50114	50151	RW	Display lock timeout from defrost end	BYTE		0 ... 255	minutes
V4	V4-dro	50108	50151.2	RW	°C/°F selection	BYTE		0 ... 1	flag
V4	V4-ddd	50092	50151.4	RW	Selection of main display value	BYTE		0 ... 3	num
V4	V4-SHH	17278	50151.6	RW	Maximum HACCP alarm threshold	WORD	Y	-55.0...150	°C/°F
V4	V4-SLH	17280	50152	RW	Minimum HACCP alarm threshold	WORD	Y	-55.0...150	°C/°F
V4	V4-drA	50119	50152.2	RW	Minimum dwelling time in critical area before alarm signalling	BYTE		0 ... 99	minutes
V4	V4-drH	50120	50152.4	RW	HACCP alarm reset time from last manual reset	BYTE		0 ... 250	hours
V4	V4-H50	50121	50152.6	RW	Enable HACCP alarms storage with/without alarm relay enabling	BYTE		0 ... 2	num
V4	V4-H51	50122	50153	RW	HACCP alarms storage disabling time (key or digital input)	BYTE		0 ... 250	minutes
V4	V4-H00	50107	50153.2	RW	NTC/PTC analogue input type selection	BYTE		0 ... 2	num
V4	V4-H11	17258	50154.2	RW	Configurability and polarity of digital input 1	WORD	Y	-9 ... 9	num
V4	V4-H12	17270	50154.4	RW	Configurability and polarity of digital input 2	WORD	Y	-9 ... 9	num
V4	V4-H21	50094	50154.6	RW	Configurability of digital output 1	BYTE		0 ... 6	num
V4	V4-H22	50095	50155	RW	Configurability of digital output 2	BYTE		0 ... 6	num
V4	V4-H23	50096	50155.2	RW	Configurability of digital output 3	BYTE		0 ... 6	num
V4	V4-H24	50097	50155.4	RW	Configurability of digital output 4	BYTE		0 ... 6	num
V4	V4-H25	50098	50155.6	RW	Configurability of digital output 5 (Buzzer)	BYTE		0 ... 6	num
V4	V4-H31	50099	50156	RW	Configurability of UP key	BYTE		0 ... 6	num
V4	V4-H32	50100	50156.2	RW	Configurability of DOWN key	BYTE		0 ... 6	num
V4	V4-H42	50103	50157	RW	Evaporator probe present	BYTE		0 ... 1	flag
V4	V4-H43	50118	50157.2	RW	Probe Pb3 present	BYTE		0 ... 1	flag

FOLDER VISIBILITY TABLE

Label	ADDRESS	R/W	DESCRIPTION	DATA SIZE	RANGE	Address by Application				M.U.
						AP1	AP2	AP3	AP4	
vis_CP	49316	RW	CP (Compressor) folder visibility	2 BIT	0 ... 3	49600	49776	49952	50128	num
vis_dEF	49316.2	RW	dEF (Defrost) folder visibility	2 BIT	0 ... 3	49600.2	49776.2	49952.2	50128.2	num
vis_FAn	49316.4	RW	FAn (Fans) folder visibility	2 BIT	0 ... 3	49600.4	49776.4	49952.4	50128.4	num
vis_AL	49316.6	RW	AL (Alarms) folder visibility	2 BIT	0 ... 3	49600.6	49776.6	49952.6	50128.6	num
vis_Lit	49317	RW	Lit (Lights & Digital Inputs) folder visibility	2 BIT	0 ... 3	49601	49777	49953	50129	num
vis_PrE	49317.2	RW	PrE (Pressure switch) folder visibility	2 BIT	0 ... 3	49601.2	49777.2	49953.2	50129.2	num
vis_Add	49312	RW	Add (Communication) folder visibility	2 BIT	0 ... 3					num
vis_diS	49317.4	RW	diS (Display) folder visibility	2 BIT	0 ... 3	49601.4	49777.4	49953.4	50129.4	num
vis_HCP	49317.6	RW	HCP (HACCP) folder visibility	2 BIT	0 ... 3	49601.6	49777.6	49953.6	50129.6	num
vis_CnF	49318	RW	CnF (Configuration) folder visibility	2 BIT	0 ... 3	49602	49778	49954	50130	num
vis_FPr	49318.2	RW	FPr (Copy Card) folder visibility	2 BIT	0 ... 3	49602.2	49778.2	49954.2	50130.2	num
vis_FnC	49318.4	RW	FnC (Functions) folder visibility	2 BIT	0 ... 3	49602.4	49778.4	49954.4	50130.4	num
vis_PA2	49364.3	RW	PA2 (Password for accessing "Installer" parameters) folder visibility	2 BIT	0 ... 3	49634.3	49810.3	49986.3	50162.3	num

CLIENT TABLE

WARNING!:
RW (Reading/Writing) commands are enabled by activating a timer: it is mandatory to write a WORD (containing a time in seconds) at address 115 (0x73) before sending any command. The commands will be accepted only within the time herewith set.

LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	RANGE	M.U.
AI1	295	R	Analogue input (view) 1	WORD	-58.0 ... 302	°C/°F
AI2	297	R	Analogue input (view) 2	WORD	-58.0 ... 302	°C/°F
AI3	299	R	Analogue input (view) 3	WORD	-58.0 ... 302	°C/°F
D.I. 1	33056.7	R	Digital input 1	1 BIT	0 ... 1	flag
D.I. 2	33056.2	R	Digital input 2	1 BIT	0 ... 1	flag
E1	32876.1	R	Analogue input 1 fault	1 BIT	0 ... 1	flag
E2	32876.2	R	Analogue input 2 fault	1 BIT	0 ... 1	flag
E3	32877	R	Analogue input 3 fault	1 BIT	0 ... 1	flag
PA	32876.3	R	Critical pressure	1 BIT	0 ... 1	flag
nPA	32878.5	R	Pressure switch	1 BIT	0 ... 1	flag
EA	32876.4	R	External	1 BIT	0 ... 1	flag
AH1	32876.5	R	Analogue input 1 high threshold exceeded	1 BIT	0 ... 1	flag
AL1	32876.6	R	Analogue input 1 low threshold exceeded	1 BIT	0 ... 1	flag
OPd	32876.7	R	Door open	1 BIT	0 ... 1	flag
AllarmHACCP	32877.1	R	HACCP alarm	1 BIT	0 ... 1	flag
AllAlta3	32876	R	Overtemperature alarm	1 BIT	0 ... 1	flag
Tout_SBR	32878	R	Defrost timeout	1 BIT	0 ... 1	flag
B_Alarm	32891.5	R	Alarm	1 BIT	0 ... 1	flag
Compressor	32886.3	R	Compressor	1 BIT	0 ... 1	flag
Defrost	32886.5	R	Defrosting status	1 BIT	0 ... 1	flag
Fans	32888.7	R	Evaporator fans	1 BIT	0 ... 1	flag
Door	32896.3	R	Door	1 BIT	0 ... 1	flag
Reduced set	32882	R	Reduced set (Economy setpoint)	1 BIT	0 ... 1	flag
AUX	32882.4	R	Auxiliary relay control output	1 BIT	0 ... 1	flag
modify parameters	32882.5	R	Parameters changed	1 BIT	0 ... 1	flag
stand-by	32882.1	R	Stand-by	1 BIT	0 ... 1	flag

LABEL	ADDRESS	R/W	DESCRIPTION	DATA SIZE	RANGE	M.U.
Att_Sbr	32865	RW	Manual defrost activation	1 BIT	0 ... 1	flag
Att_SetR	32865.1	RW	Economy mode On	1 BIT	0 ... 1	flag
Disatt_SetR	32865.2	RW	Economy mode Off	1 BIT	0 ... 1	flag
TelRSetPar	32865.3	RW	Reset changed parameters indicator	1 BIT	0 ... 1	flag
ROnAux	32865.4	RW	Auxiliary output On	1 BIT	0 ... 1	flag
ROffAux	32865.5	RW	Auxiliary output Off	1 BIT	0 ... 1	flag
ROnOn	32865.6	RW	Instrument on	1 BIT	0 ... 1	flag
ROffOff	32865.7	RW	Instrument off	1 BIT	0 ... 1	flag

ELECTRICAL CONNECTIONS

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

The device is equipped with screw-on or removable terminal boards to connect electrical cables, the cross-section of which must not exceed 2.5mm^2 (one wire per terminal for power connections): see the rating plate on the device for terminal ratings. Do not exceed the maximum permitted current; for higher loads, use a contactor with sufficient power capacity. Make sure that the power supply is of the correct voltage for the device.

Probes have no connection polarity and can be extended using a normal bipolar cable (note that the extension of the probes influences the instrument's electromagnetic compatibility -EMC: take great care with the wiring). Probe cables, power supply cables and the TTL serial cables should be routed separately from power cables.

DISCLAIMER

LIABILITY AND RESIDUAL RISKS

ELIWELL CONTROLS SRL declines any liability for damage due to:

- installation/uses other than those expressly specified and, in particular, failure to comply with the safety requirements of established standards and/or instructions specified 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 having to use tools
- tampering with and/or modification of the product
- installation/use on panels which are not compliant with current standards and regulations

CONDITIONS OF USE

Permitted use

For safety reasons, the device must be installed and used according to the instructions provided. In particular, parts carrying dangerous voltages must not be accessible in normal conditions. The device must be adequately protected from water and dust with regard to the application, and must only be accessible using tools (with the exception of 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 relays provided are of a functional type and can be 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 controller.

DISPOSAL

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

by Schneider Electric

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Certified System ISO 9001

ENVIRONMENTAL SYSTEM CERTIFICATION ISO 14001 DNV

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