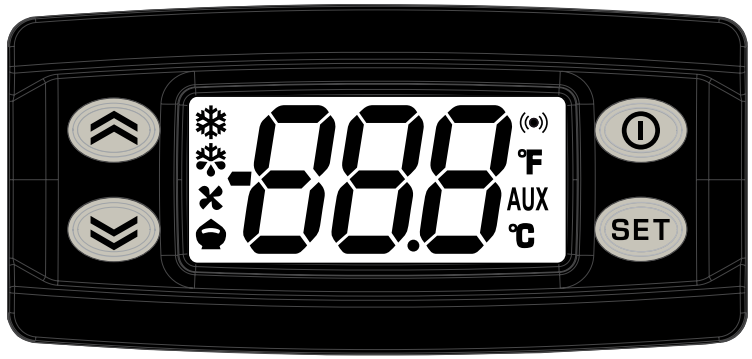
eliwell

ID PLUS 978

EN

Electronic controllers for refrigeration units

USER INTERFACE



ID*PLUS* 978

KEYS	
UP Press and release **Scroll menu items** **Increases values** Press for at least 5 sec **Activates the Manual Defrost function**	**STAND-BY (ESC)** Press and release **Returns to the previous menu level** **Confirms parameter value** Press for at least 5 sec **Activates the Standby function** (when outside the menus)
DOWN Press and release **Scroll menu items** **Decrease values** Press for at least 5 sec **Function can be configured by the user** (par.H32)	**SET (ENTER)** Press and release **Displays alarms** (if active) **Opens Machine Status menu** Press for at least 5 sec **Opens Programming menu** **Confirm commands**

LEDs

Reduced SET / Economy LED

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

Alarm LED

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

Compressor LED

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

Defrost LED

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

Fans LED

Permanently on:	fans active
Off:	otherwise

Aux LED

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

°C LED

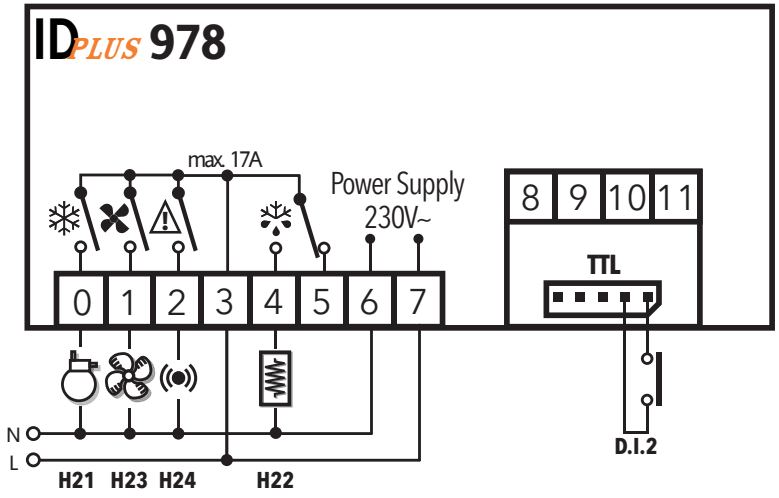
Permanently on:	°C setting (dro =0)
Off:	otherwise

°F LED

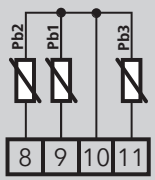
Permanently on:	°F setting (dro =1)
Off:	otherwise

* **To activate the LOC function:-** enter the "Basic Commands" menu by pressing the key **set**.
  - press keys ⏻ and ⏶ **within 2 seconds**.
  If the LOC function is **Active** and you try to enter the "Programming menu", the text LOC appears. If this happens, the parameters are still displayed but cannot be edited.
  To disable the keypad lock, repeat the aforementioned procedure.
* When switched on, the device performs a Lamp Test; the display and LEDs will flash for several seconds to check that they all function correctly.

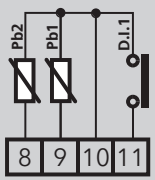
CONNECTIONS



Probe connections



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



version with D.I.1
(H11≠0 and H43=n)

Application settings

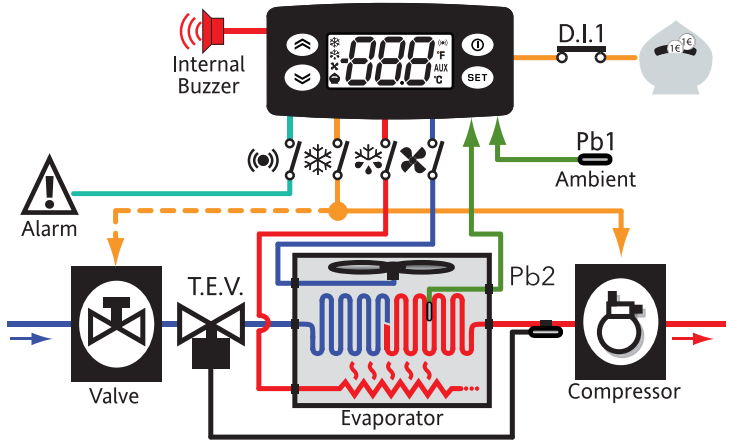
F = Functions H = Inputs and Outputs R = Relay Output	APP. 1	APP. 2	APP. 3	APP. 4
Cold application	X	X	X	X
F - End defrost by temperature	X	X	X	X
F - HACCP		X		
F - Alarm on Pb1	X	X	X	X
H - Pb1 present	X	X	X	X
H - Pb2 present	X	X	X	X
H - Pb3 / D.I.1 enabled	D.I.	Pb3	D.I.	D.I.
H - Buzzer	X	X	X	X
R - Compressor	X	X	X	X
R - Heating elements	X	X	X	
R - Fans	X	X	X	X
R - Auxiliary			X	
R - Reversing valve				X
R - Alarm	X	X		X

TERMINALS

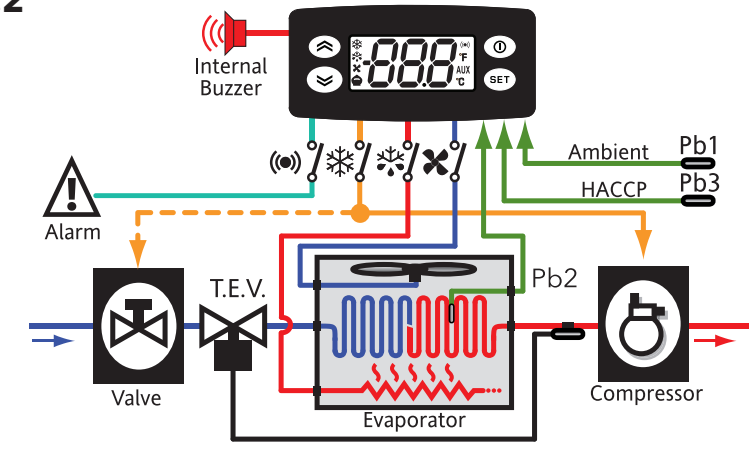
❄	**0-3**: Compressor relay
✣	**1-3**: Fans relay
⚠	**2-3**: Alarm relay
❄	**3-4-5**: Defrost relay
N-L	**6-7**: Power supply 230V~

10-9	probe Pb1
10-8	probe Pb2
10-11	Digital Input 1/ Pb3 probe
TTL	TTL Input or Digital Input 2

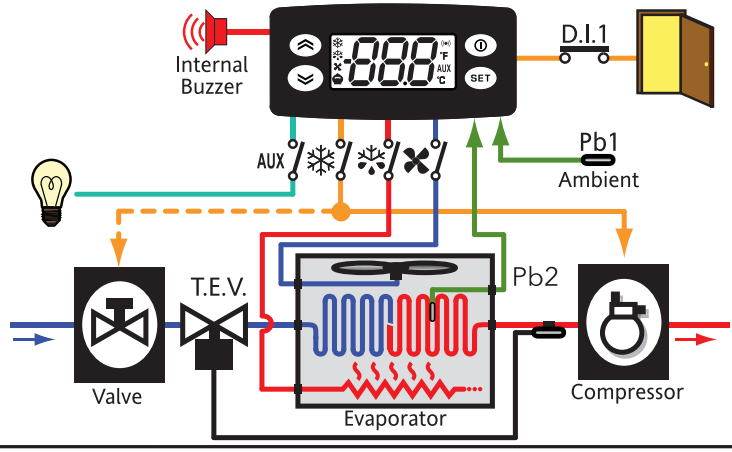
APP.1



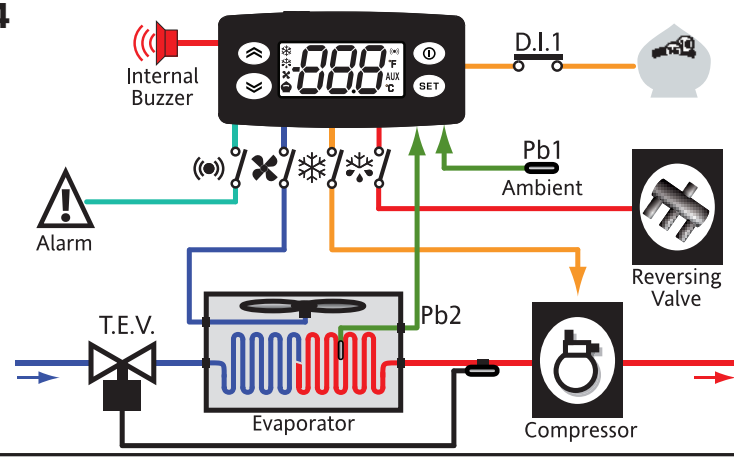
APP.2



APP.3



APP.4

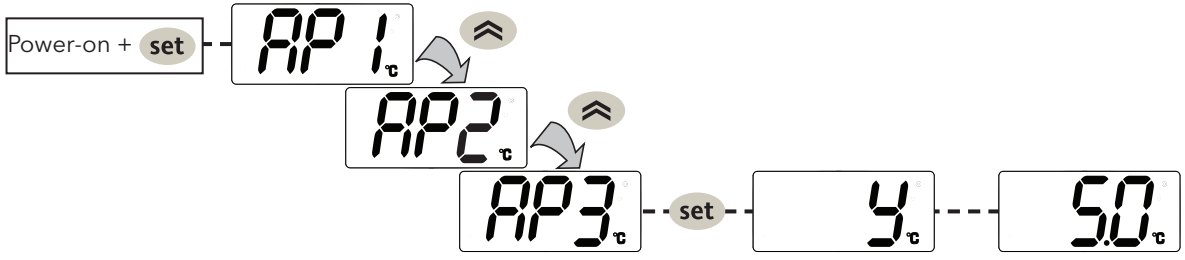


Ambient	= Ambient	**Valve**	= Valve
Evaporator	= Evaporator	**T.E.V.**	= Thermostatic Expansion Valve
Compressor	= Compressor	**AUX**	= AUX
Alarm	= Alarm	**Internal Buzzer**	= Internal Buzzer
Reversing valve	= Reversing valve		

LOADING DEFAULT APPLICATIONs

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

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



RESET PROCEDURE

IDPlus instruments can be **RESET** and the default factory settings restored in a simple and user-friendly way. Simply reload one of the basic applications (see "Loading default applications").

You may need to **RESET** 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 factory values. This means that all changes made to operating parameters will be lost.

LOCK SETPOINT MODIFICATION

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

INSTRUMENT ON/OFF

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

ACCESSING AND USING THE MENUs

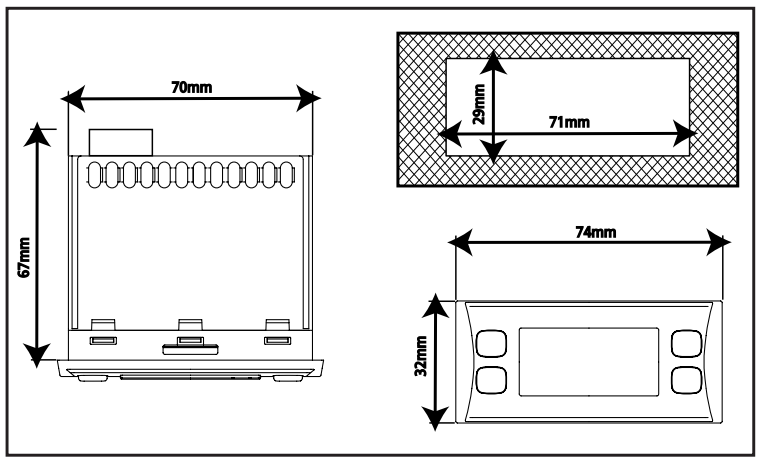
Resources are organised into menus. Press and release the **set** key to access the “Machine Status” menu.
To access the “Programming” menu, press the **set** key for more than 5 seconds. If no keys are pressed for over 15 seconds (Timeout), or if the ⏻ key is pressed, the last value to appear on the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

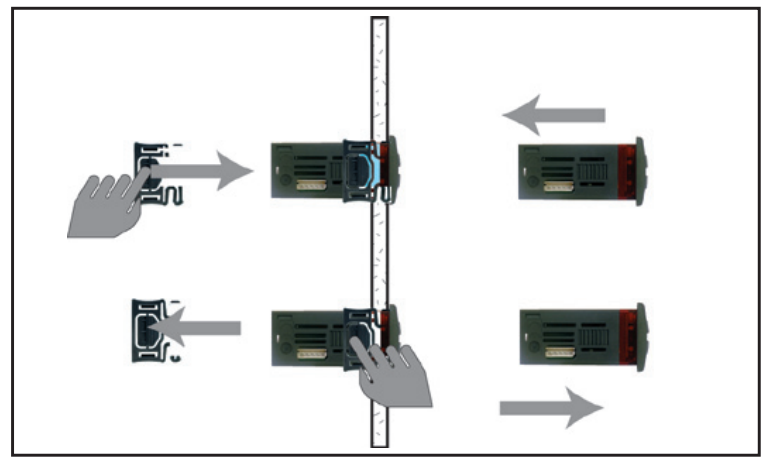
MANUAL DEFROST CYCLE ACTIVATION

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

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.





DIAGNOSTICS

Alarms are always indicated by the alarm icon ((•)), the buzzer and the relay (if setting).
To switch off the buzzer, press and release any key; the corresponding icon will continue to flash.
N.B.: If alarm exclusion times have been set (see "AL" folder in the parameters table) the alarm will not be signalled.

In the event of an alarm caused by a malfunctioning **Pb1** probe (ambient), the indication "E1" will appear on the display. For a malfunctioning **Pb2** probe (evaporator), the indication "E2" will appear and for a malfunctioning **Pb3** probe, the indication "E3" will appear on the display.

ALARMs

Label	Fault	Cause	Effects	Remedy
E1	Probe1 faulty (ambient)	• measured values are outside operating range • Probe faulty/short-circuited/open	• Display label **E1** • Alarm icon permanently on • Relay activation (if setting) • Disable max/min alarm controller • Compressor operation based on parameters "**Ont**" and "**OFt**"	• check probe type (**H00**) • check probe wiring • replace probe
E2	Probe2 faulty (defrost)	• measured values are outside operating range • Probe faulty/short-circuited/open	• Display label **E2** • Alarm icon permanently on • Relay activation (if setting) • The Defrost cycle will end due to Timeout (parameter **dEt**) • The evaporator fans will be: on if the compressor is ON, or running in accordance with the **FCO** parameter if the compressor is OFF.	• check probe type (**H00**) • check probe wiring • replace probe
E3	Probe3 faulty	• measured values are outside operating range • Probe faulty/short-circuited/open	• Display label **E3** • Alarm icon permanently on • Relay activation (if setting)	• check probe type (**H00**) • check probe wiring • replace probe
AH1	Alarm for HIGH Pb1 temperature	• value read by **Pb1** > **HAL** after time of "**tAO**". (see "MAX/MIN TEMP. ALARMS")	• Recording of label **AH1** in folder AL • Relay activation (if setting) • No effect on regulation	• Wait until value read by Pb1 returns below **HAL**.

Label	Fault	Cause	Effects	Remedy
AL1	Alarm for LOW Pb1 temperature	• value read by **Pb1** < **LAL** after time of "**tAO**". (see "MAX/MIN TEMP. ALARMS")	• Recording of label **AL1** in folder AL • Relay activation (if setting) • No effect on regulation	• Wait until value read by Pb1 returns above **LAL**
EA	External alarm	Digital input activated (**H11** = ±5)	• Recording of label **EA** in folder AL • Alarm icon permanently on • Relay activation (if setting) • Regulation locked if **rLO** = y	• Check and remove the external cause which triggered the alarm on the D.I.
OPd	Door open alarm	Digital input activated (**H11** = ±4) (for longer than **tdO**)	• Recording of label **Opd** in folder AL • Alarm icon permanently on • Relay activation (if setting) • Regulation locked	• close the door • delay function defined by **OAO**
Ad2	Defrost due to timeout	End of defrost cycle due to timeout rather than due to defrost end temperature being recorded by probe Pb2.	• Recording of label **Ad2** in folder AL • Alarm icon permanently on • Relay activation (if setting)	wait for the next defrost cycle for automatic return
COH	Over Heating alarm	Pb3 value set by parameter SA3 exceeded.	• Recording of label **COH** in folder AL • Alarm icon permanently on • Relay activation (if setting) • Regulation locked (Compressor)	wait for the temperature to return to a value of **SA3** (Setpoint) minus **dA3** (differential).
nPA	General pressure switch alarm	Activation of pressure alarm by general pressure switch.	If the number of pressure switch activations is **N** < **PEn**: • Recording of folder **nPA** in folder AL, with the number of pressure switch activations • Regulation locked (Compressor and Fans)	• check and remove the cause which triggered the alarm on the D.I. (Automatic Reset)

Label	Fault	Cause	Effects	Remedy
PAL	General pressure switch alarm	Activation of pressure alarm by general pressure switch.	If the number of pressure switch activations is **N** = **PEn**: • Display label **PAL** • Recording of label **PA** in folder AL • Alarm icon permanently on • Relay activation (if setting) • Regulation locked (Compressor and Fans)	• Switch the device off and back on again • Reset alarms by entering the functions folder and selecting the **rAP** function (Manual Reset)
HC **n**	Max/Min Pb3 value when out of range (SLH...SHH)	Logs the Max/Min value recorded by Pb3 when it exceeds the range SLH...SHH. **"n"** represents the sequential number of times the range is exceeded.	• Recording of folder "HC **n"** in folder AL • Alarm icon permanently on • Relay activation (if setting) • No effect on regulation	**N.B.**: "**n**" can assume the values 1 to 8. If **n** > 8, folder HC8 will flash and the system will overwrite folders where **n**=1.
tC **n**	Pb3 out-of-range dwell time (SLH...SHH)	Stores the dwell time of the Pb3 value outside of the range SLH...SHH. **"n"** represents the sequential number of times the range is exceeded.	• Recording of folder "tC **n"** in folder AL • Alarm icon permanently on • Relay activation (if setting) • No effect on regulation	**N.B.**: "**n**" can assume the values 1 to 8. If **n** > 8, folder HC8 will flash and the system will overwrite folders where **n**=1.
bC **n**	Value recorded by Pb3 on return from **bOt**	Logs the value recorded by Pb3 on return from a blackout. **"n"** represents the sequential number of blackouts that have occurred.	• Recording of folder "bC **n"** in folder AL • No effect on regulation	**N.B.**: "**n**" can assume the values 1 to 8. If **n** > 8, folder bC8 will flash and the system will overwrite folders where **n**=1.
bt **n**	Pb3 out-of-range dwell time during **bOt**	Stores the out-of-range dwell time of the Pb3 value during a blackout. **"n"** represents the sequential number of blackouts that have occurred.	• Recording of folder "bt **n"** in folder AL. The value contained will be **0** if the value of Pb3 has remained within the range, **≠ 0** if the value has gone outside of the range. • No effect on regulation	**N.B.**: "**n**" can assume the values 1 to 8. If **n** > 8, folder bC8 will flash and the system will overwrite folders where **n**=1.
NOTE: to delete folders "HC **n**", "tC **n**", "bC **n**" and "bt **n**" from folder AL, start function **rES** in folder FnC.				

PASSWORD

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

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

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

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

USING THE COPY CARD

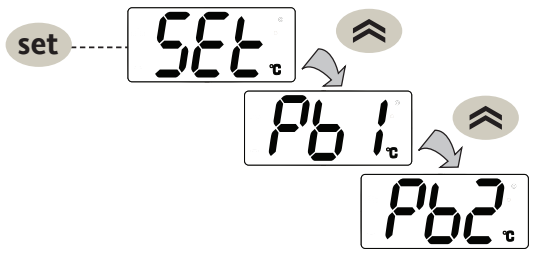
The Copy Card is connected to the serial port (TTL) and allows rapid programming of the instrument parameters. Access ***Installer*** parameters by entering "PA2", scroll through the folders using ⌃ and ⌄ until folder ***FPr*** appears. Select it using set, scroll through the parameters using ⌃ and ⌄,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

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

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

MACHINE STATUS MENU

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



*- AL: alarms folder (**visibile solo se ci sono allarmi attivi**);*
- SEt: Setpoint setting folder;
- Pb1: probe 1 - Pb1 folder;
- Pb2: probe 1 - Pb2 folder;*
*- Pb3: probe 1 - Pb3** folder;*

**** folder displayed if Pb2 present (H42 = y)***

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

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

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

PROGRAMMING MENU

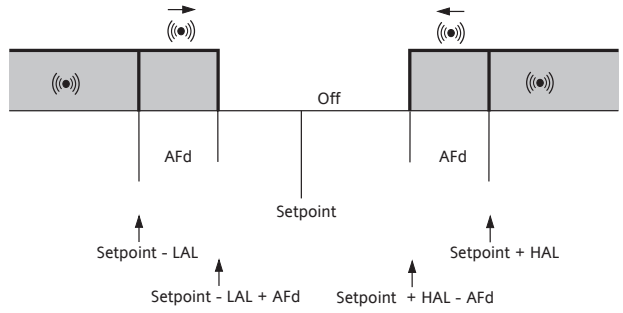
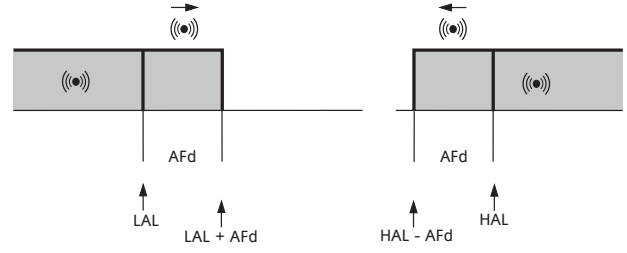
To access the "Programming" menu, press the set key for more than 5 seconds. If specified, an access PASSWORD will be requested: "PA1" for User parameters and "PA2" for Installer parameters (see "PASSWORD" paragraph).

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

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

NOTE: Make sure you switch the instrument off and on again each time the parameter configuration is changed, in order to prevent malfunctioning in the configuration and/or timing in progress.

MAX/MIN TEMPERATURE ALARMS

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

*** if LAL is negative, Set + LAL < Set**
**** if HAL is negative, Set + HAL < Set**

ELECTRICAL CONNECTIONS

Attention! Make sure the machine is switched off before working on the electrical connections.
The instrument is equipped with screw or disconnectable terminal blocks for connecting electrical cables with a max. diameter of 2.5 mm2 (one wire per terminal for power connections): for the terminal ratings, see the label on the instrument. Do not exceed the maximum permissible current; in case of higher loads, use a suitably rated contactor. Make sure the power supply voltage complies with that required by the instrument.
Probes have no connection polarity and can be extended using a normal bipolar cable (note that the extension of the probes influences the electromagnetic compatibility - EMC - of the instrument: take great care with the wiring). Probe cables, power supply cables and the TTL serial cable should be routed separately from power cables.

TECHNICAL DATA (EN 60730-2-9)

Classification:	operation (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
Material class:	IIIa
Overvoltage category:	II
Rated impulse voltage:	2500V
Temperature:	Operating: -5 … +55 °C - Storage: -30 … +85 °C
Power supply:	12V~/⎓ (±10%) 50/60 Hz oppure 230V~ (±10%) 50/60 Hz
Consumption:	4,5W max
Digital outputs (relay):	refer to the label on the device
Fire resistance category:	D
Software class:	A

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

FURTHER INFORMATION

Input Characteristics

Display range:	**NTC**: -50.0°C ... 110°C; **PTC**: -55.0°C ... 140°C; **PT1000**: -55.0°C ... 150°C (on display with 3 digits + sign)
Accuracy:	**NTC, PTC, PT1000** (-55,0°C...70°C)**:** Better than 0.5% of full scale +1 digit. **PT1000** (70,0°C...150°C): Better than 0.6% of full scale +1 digit.
Resolution:	0,1 °C
Buzzer:	YES
Analogue inputs:	2 NTC (default)/PTC/PT1000 (can be selected using parameter **H00**)
Digital inputs:	2 voltage-free digital inputs

N.B.:
- D.I.1 can also be configured as a probe input (**H11**=0 and **H43**=y)
- D.I.2, if activated, should be connected to terminals 1-2 of the TTL connector

Output Characteristics

Digital outputs:	1 Compressor relay:	UL60730 (A) 1,5Hp (10FLA - 60LRA) max 240V~
	1 Defrost relay:	N.A. 8(4)A - N.C. 6(3)A max 250V~
	1 Fans relay:	5(2)A max 250V~
	1 Alarm relay:	5(2)A max 250V~

Mechanical Characteristics

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

Regulations

Electromagnetic compatibility:	The device conforms to Directive 2004/108/EC
Safety:	The device conforms to Directive 2006/95/EC
Food Safety:	The device complies with standard EN 13485 as follows: - suitable for storage - climate range A - measurement class 1 in the range from -35°C to 25°C (*) (*** exclusively using Eliwell NTC probes)**

NOTE: The technical specifications given in this document regarding measurement (range, accuracy, resolution, etc.) refer to the instrument and not to any accessories provided, such as the probes. This means, for example, that the error introduced by the probe must be added to the typical error of the instrument.

DESCRIPTION OF IDPlus 978 FAMILY

IDPlus 978 devices are controllers with 4 relay outputs, 2 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
- defrost heating 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
- stand-by
- external alarm
- deep-cooling
- pressure switch
- HACCP alarms

TABLE OF "USER" MENU PARAMETERS

PAR.	DESCRIPTION	RANGE	APP1	APP2	APP3	APP4	M.U.
SEt	Temperature control SEtpoint	LSE ... HSE	0,0	0,0	0,0	0,0	°C/°F
diF	Compressor relay activation differential	+0,1 ... +30,0	2,0	2,0	2,0	2,0	°C/°F
HSE	Maximum value that can be assigned to the Setpoint	LSE ... +302	99,0	99,0	99,0	99,0	°C/°F
LSE	Minimum value that can be assigned to the Setpoint	-58,0 ... HSE	-50,0	-50,0	-50,0	-50,0	°C/°F
dty	Type of defrost	0/1/2	0	0	---	1	num
dit	Interval between the start of two consecutive defrost cycles	0 ... 250	6	6	6	6	hours
dEt	Defrost timeout	1 ... 250	30	30	30	30	min
dSt	End defrost temperature	-50,0 ... +150	8,0	8,0	8,0	8,0	°C/°F
FSt	Fans stop temperature	-50,0 ... +150	50,0	50,0	50,0	50,0	°C/°F
Fdt	Fan activation delay after a defrost cycle	0 ... 250	0	0	0	0	min
dt	Coil drainage time	0 ... 250	0	0	0	0	min
dFd	To select or exclude the fans	n/y	y	y	y	y	min
HAL	Maximum temperature alarm	LAL ... +150	50,0	50,0	50,0	50,0	°C/°F
LAL	Minimum temperature alarm	-50,0 ... HAL	-50,0	-50,0	-50,0	-50,0	°C/°F
LOC	Basic commands modification lock	n/y	n	n	n	n	flag
PS1	PAssword 1 for access to "QUICK" menu parameters	0 ... 250	0	0	0	0	num
CA1	Calibration1. Value to be added to the value read by probe 1	-12,0 ... +12,0	0,0	0,0	0,0	0,0	°C/°F
CA2	Calibration2. Value to be added to the value read by probe 2	-12,0 ... +12,0	0,0	0,0	0,0	0,0	°C/°F
CA3	Calibration3. Value to be added to the value read by probe 3	-12,0 ... +12,0	0,0	0,0	---	0,0	°C/°F
ddL	Display mode during defrost	0/1/2	0	0	0	0	num
Ldd	Timeout value for display unlock - dEF label	0 ... 255	30	30	30	30	min
SHH	Maximum HACCP alarm signals threshold	-55,0 ... +150	---	10,0	---	---	°C/°F
SLH	Minimum HACCP alarm signals threshold	-55,0 ... +150	---	-10,0	---	---	°C/°F
drA	Minimum time spent in critical range before alarm occurs	0 ... 99	---	10	---	---	min
drH	HACCP alarm reset time after last reset	0 ... 250	---	24	---	---	hours
H50	enable HACCP and alarm relay functions	0/1/2	---	2	---	---	num
H51	HACCP alarm exclusion time	0 ... 250	---	0	---	---	min
H42	Evaporator probe present. n = not present; y = present	n/y	y	y	y	y	flag
H43	Probe 3 present. n = not present; y = present	n/y	n	y	n	n	flag
rEL	firmware rELease. Reserved: read-only parameter	/	/	/	/	/	/
tAb	tAble of parameters. Reserved: read-only parameter	/	/	/	/	/	/

Notes: * The "USER" menu parameters also include: **PA2**, which can be used to access the "Installer" menu.
** To reset the HACCP alarms, use the **rES** function in the FnC folder for "Installer" parameters.

TABLE OF "INSTALLER" MENU PARAMETERS

PAR.	DESCRIPTION	RANGE	APP.1	APP.2	APP.3	APP.4	M.U.
SEt	Temperature control SEtpoint	LSE ... HSE	0,0	0,0	0,0	0,0	°C/°F
	COMPRESSOR (folder "CP")						
diF	diFferential. Compressor relay activation differential	+0,1...30,0	2,0	2,0	2,0	2,0	°C/°F
HSE	Higher SEt. Maximum value that can be assigned to the Setpoint	LSE...302	99,0	99,0	99,0	99,0	°C/°F
LSE	Lower SEt. Minimum value that can be assigned to the Setpoint	-58,0...HSE	-50,0	-50,0	-50,0	-50,0	°C/°F
OSP	Temperature value to be added to the Setpoint if reduced set enabled (Economy function)	-30,0...30,0	3,0	0,0	0,0	3,0	°C/°F
Hc	Control mode. "**C**" = Cold, "**H**" = Hot	C/H	C	C	C	C	flag
Ont	Controller on time for faulty probe. if **Ont**=1 and **OFt**=0, the compressor remains on; if **Ont**=1 and **OFt**>0, it runs in duty cycle mode	0 ... 250	0	0	0	0	min
OFt	Controller off time for faulty probe. if **OFt**=1 and **Ont**=0, the controller remains off; if **OFt**=1 and **Ont**>0, it operates in duty cycle mode	0 ... 250	1	1	1	1	min
dOn	Compressor relay activation delay after request	0 ... 250	0	0	0	0	secs
dOF	Delay after switching off and subsequent activation	0 ... 250	0	0	0	0	min
dbi	Delay between two consecutive compressor activations	0 ... 250	0	0	0	0	min
OdO (!)	Delay in activating outputs after the instrument is switched on or after a power failure. **0** = not active	0 ... 250	0	0	0	0	min
dcS	"Deep Cooling" Cycle setpoint	-58,0...302	0,0	0,0	0,0	0,0	°C/°F
tdc	"Deep Cooling" Cycle duration	0 ... 255	0	0	0	0	min*10
dcc	Defrost activation delay after a "Deep Cooling" cycle	0 ... 255	0	0	0	0	min
	DEFROST (folder "dEF")						
dtY	Type of defrost. **0** = electrical defrost; **1** = reverse cycle defrost; **2** = defrost independent of compressor	0/1/2	0	0	0	1	num
dit	Interval between the start of two consecutive defrost cycles	0 ... 250	6	6	6	6	hours

PAR.	DESCRIPTION	RANGE	APP.1	APP.2	APP.3	APP.4	M.U.
dCt	Selection of count mode for the defrost interval. **0** = compressor running time; **1** = appliance running time; **2** = a defrost cycle is run at each compressor stop	0/1/2	1	1	1	1	num
dOH	Delay for start of first defrost after request	0 ... 59	0	0	0	0	min
dEt	Defrost timeout; determines the maximum defrost duration	1 ... 250	30	30	30	30	min
dSt	Defrost end temperature - determined by probe Pb2	-50,0...150	8,0	8,0	8,0	50,0	°C/°F
dPO	Determines whether the instrument must enter defrost mode at start-up	n/y	n	n	n	n	flag
	FANs (folder "FAn")						
FSt	Fans stop temperature	-58,0...+302	50,0	50,0	50,0	50,0	°C/°F
FAd	Fan activation differential	1,0 ... 50,0	2,0	2,0	2,0	2,0	°C/°F
Fdt	Fan activation delay after a defrost cycle	0 ... 250	0	0	0	0	min
dt	Coil drainage time	0 ... 250	0	0	0	0	min
dFd	Allows evaporator fan exclusion to be selected or not selected during defrosting. **y** = yes (fans excluded); **n** = no.	n/y	y	y	y	y	flag
FCO	Allows to selects or deselects fan deactivation at compressor OFF. **0** = fans off; **1** = fans active; **2** = duty cycle.	0/1/2	0	0	0	0	num
FOn	Fans ON time in day duty cycle	0 ... 99	0	0	0	0	min
FOF	Fans OFF time in day duty cycle	0 ... 99	0	0	0	0	min
Fnn	Fans ON time in night duty cycle	0 ... 99	0	0	0	0	min
FnF	Fans OFF time in night duty cycle	0 ... 99	0	0	0	0	min
ESF	"Night" mode activation. **n** = no; **y** = yes	n/y	n	n	n	n	flag
	ALARMs (folder "AL")						
Att	Can be used to select absolute (**Att=0**) or relative (**Att=1**) values for **HAL** and **LAL** parameters.	0/1	0	0	0	0	num
Afd	Alarm differential	1,0 ... 50,0	2,0	2,0	2,0	2,0	°C/°F
HAL	Maximum temperature alarm	LAL...+302	50,0	50,0	50,0	50,0	°C/°F
LAL	Minimum temperature alarm	-58,0...HAL	-50,0	-50,0	-50,0	-50,0	°C/°F
PAO	Alarm exclusion time after re-activation following a power failure	0 ... 10	0	0	0	0	hours

PAR.	DESCRIPTION	RANGE	APP.1	APP.2	APP.3	APP.4	M.U.
dAO	Temperature alarm exclusion time after defrost	0 ... 999	0	0	0	0	min
OAO	Alarm signalling delay after disabling of digital input	0 ... 10	0	0	0	0	hours
tdO	Delay in door open alarm activation	0 ... 250	0	0	0	0	min
tAO	Time delay for temperature alarm indication	0 ... 250	0	0	0	0	min
dAt	Alarm signalling end of defrost due to timeout	n/y	n	n	n	n	flag
rLO	External alarm locks controllers. **n** = does not lock; **y** = locks	n/y	n	n	n	n	flag
SA3	Probe 3 alarm Setpoint	-58,0...+302	0,0	0,0	0,0	0,0	°C/°F
dA3	Probe 3 alarm differential	1,0 ... 50,0	1,0	1,0	1,0	1,0	°C/°F
	LIGHTS & DIGITAL INPUTS (folder "Lit")						
dOd	Digital input for switching off utilities. **0**=disabled; **1**=disables fans; **2**=disables the compressor; **3**=disables fans and compressor	0/1/2/3	0	0	0	0	num
dAd	Activation delay for digital input	0 ... 255	0	0	0	0	min
dCO	Compressor deactivation delay after door opened	0 ... 255	1	1	1	1	min
AuP	Aux output activation when door opened. n = not linked; y = linked	n/y	n	n	y	n	flag
	PRESSURE SWITCH (folder "PrE")						
Pen	Number of errors allowed for general pressure switch input	0 ... 15	0	0	0	0	num
PEI	General pressure switch error count interval	1 ... 99	1	1	1	1	min
PEt	Delay in activating compressor after pressure switch deactivation	0 ... 255	0	0	0	0	min
	COMMUNICATION (folder "Add")						
PtS	Communication protocol selection. **t** = Televis; **d** = Modbus	t/d	t	t	t	t	flag
dEA	Index of the device inside the family (valid values from 0 to 14)	0 ... 14	0	0	0	0	num
FAA	Device family (valid values from 0 to 14)	0 ... 14	0	0	0	0	num
Pty	Modbus parity bit. n=none; E=even; o=odd	n/E/o	n	n	n	n	num
StP	Modbus stop bit	1b/2b	1b	1b	1b	1b	flag
	DISPLAY (folder "diS")						
LOC	Basic commands modification lock. It is still possible to enter parameter programming mode and modify them. **y** = yes; **n** = no	n/y	n	n	n	n	flag
PS1	PAssword1: if **PS1≠0** is the access key to **User** parameters	0 ... 250	0	0	0	0	num
PS2	PAssword2: if **PS2≠0** is the access key to **Installer** parameters	0 ... 250	15	15	15	15	num
ndt	Display with decimal point. **y** = yes; **n** = no	n/y	y	y	y	y	flag

PAR.	DESCRIPTION	RANGE	APP.1	APP.2	APP.3	APP.4	M.U.
CA1	Calibration 1. Temperature value to be added to the Pb1 value.	-12,0...+12,0	0,0	0,0	0,0	0,0	°C/°F
CA2	Calibration 2. Temperature value to be added to the Pb2 value.	-12,0...+12,0	0,0	0,0	0,0	0,0	°C/°F
CA3	Calibration 3. Temperature value to be added to the Pb3 value.	-12,0...+12,0	0,0	0,0	0,0	0,0	°C/°F
ddL	Display mode during defrost. **0** = display the temperature recorded by Pb1; **1** = lock recorded value of Pb1 at defrost start; **2** = display the "dEF" label	0/1/2	0	0	0	0	num
Ldd	Timeout value for display unlock - dEF label	0 ... 255	30	30	30	30	min
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 or vice-versa DOES NOT modify the SEt, diF values, etc. (e.g. Setpoint=10°C becomes 10°F)**	0/1	0	0	0	0	flag
ddd	Selects the type of value to display. **0** = Setpoint; **1** = probe Pb1 ; **2** = probe Pb2 ; **3** = probe Pb3	0/1/2/3	1	1	1	1	num
	HACCP (folder "HCP")						
SHH	Maximum HACCP alarm signals threshold	-55,0...150	0	10	0	0	°C/°F
SLH	Minimum HACCP alarm signals threshold	-55,0...150	0	-10	0	0	°C/°F
drA	Minimum time spent in critical range for the event to be recorded. After this a HACCP alarm will be triggered and logged.	0 ... 99	0	10	0	0	min
drH	HACCP alarm reset time after last reset	0 ... 250	0	24	0	0	hours
H50	Enable HACCP and alarm relay functions. **0**= HACCP alarms NOT enabled; **1**= HACCP alarms enabled and alarm relay NOT enabled; **2**= HACCP alarms enabled and alarm relay enabled.	0/1/2	0	2	0	0	num
H51	HACCP alarm exclusion time.	0 ... 250	0	0	0	0	min
	CONFIGURATION (folder "CnF")						
H00	Probe type selection. **0** = PTC; **1** = NTC; **2** = PT1000	0/1/2	1	1	1	1	flag
H11	Configuration of digital input 1/polarity. **0**= disabled; **±1**= defrost; **±2**= economy Setpoint; **±3**= AUX; **±4**= door switch; **±5**= external alarm; **±6**= Stand-by; **±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	2	0	4	2	num

PAR.	DESCRIPTION	RANGE	APP.1	APP.2	APP.3	APP.4	M.U.
H12	Configuration of digital input 2/polarity. Same as H11.	-9 ... +9	0	0	0	0	num
H21	Configurability of digital output 1 (❄). **0** = disabled; **1** = compressor; **2** = defrost; **3** = fans; **4** = alarm; **5** = AUX; **6** = Stand-by	0 ... 6	1	1	1	1	num
H22	Configurability of digital output 2 (❄). Same as H21.	0 ... 6	2	2	2	2	num
H23	Configurability of digital output 3 (✤). Same as H21.	0 ... 6	3	3	3	3	num
H24	Configurability of digital output 4 (⚠). **0** = disabled; **1** = compressor; **2** = defrost; **3** = fans; **4** = alarm; **5** = AUX; **6** = Stand-by; **7** = Not used	0 ... 7	4	4	5	4	num
H25	Enable/Disable buzzer. **0** = Disabled; **4** = Enabled; **1-2-3-5-6-7-8** = not used.	0 ... 8	4	4	4	4	num
H31	Configurability of UP key. **0** = disabled; **1** = defrost; **2** = AUX; **3** = economy Setpoint; **4** = stand-by; **5** = reset HACCP alarms; **6** = disable HACCP alarms; **7** = Deep Cooling.	0 ... 7	1	1	1	1	num
H32	Configurability of DOWN key. Same as H31.	0 ... 7	0	0	0	0	num
H42	Evaporator probe present. **n** = not present; **y** = present	n/y	y	y	y	y	flag
H43	Probe 3 present. **n** = not present; **y** = present	n/y	n	y	n	n	flag
rEL	Device version. Read-only parameter.	/	/	/	/	/	/
tAb	tAble of parameters. Reserved: read-only parameter.	/	/	/	/	/	/
	COPY CARD (folder "FPr")						
UL	Programming parameter transfer from instrument to Copy Card.	/	/	/	/	/	/
Fr	Format Copy Card. Erase all data contained in the Copy Card. **NOTE: If parameter "Fr" is used, the data entered will be permanently lost. This operation cannot be cancelled.**	/	/	/	/	/	/
	FUNCTIONS (folder "FnC")						
rAP	Reset pressure switch alarms.	/	/	/	/	/	/
rES	Reset HACCP alarms.	/	/	/	/	/	/

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

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