









EWRC 300-500 LX

Cold Face Family

Multifunctional controller for cold rooms















Keys




- 
UP/HACCP
 Scrolls menu items
 Increases values
Press and hold to view HACCP alarms only in models with HACCP function. (set from par. H31)
 - 
DOWN
 Scrolls menu items
 Decrease values
 Press and hold to enable Deep Cooling Cycle (set from par. H32)
 - 
Esc
 View function menu
 ESC (exit) function
 Press and hold enable defrost (set from par. H33)
 - 
set
 Access setpoint
 Open the Programming Menu (when pressed and held)
 Enable functions/confirm commands
-
- 
Power
 Enable standby mode (set from par. H34)
 - 
Light
 Enable/disable light relay (set from par.H35)
 - 
AUX
 AOX Enable/disable auxiliary relay (set from par. H36)
 - 
Energy Saving-Night & Day
 Press once to enable/disable Energy Saving, press and hold for night & day function only when rtc function is present (set from par. H37)


Display and LEDs



- Process value (PV):**
 Used to display the process value, and the labels of parameters, alarms and functions.
- Set value (SV):**
 Used to display the setpoints, parameter values, function states, other states.

- 
Power
 Lights up when connected to mains power supply
- 
Alarm
 ON if there is an alarm; blinks if an alarm is acknowledged;
- 
HACCP alarms
 ON when there is an HACCP alarm. Blinks until HACCP alarm has been viewed; on controllers with HACCP function only.
- 
Panic Alarm
 ON when there is a Panic Alarm; otherwise OFF
- 
Energy Saving
 ON when Energy Saving function is enabled.
- 
Night & Day
 ON when Night & Day function is enabled *if controller also has rtc function.*
- 
rtc
 ON when time/date are displayed; in models with rtc function only.
- 
DAY
- 
Compressor
 ON when compressor 1 is on, blinks if there is a delay or activation is blocked; otherwise OFF.
- 
AUX
 ON if auxiliary relay is enabled
- 
Condenser fans
 ON when condenser fans are running; OFF if they are off.
- 
HACCP
 ON during navigation of "HACCP Alarms" menu if controller has HACCP function.

- 
Defrost 1/2
 ON when automatic 1/2 defrosting active; blinks during dripping.
- 
Evaporator fans
 ON when evaporator fans are running; blinking when forced ventilation is on.
- 
Light
 ON when light relay is enabled.

- 
Deep Cooling Cycle
 ON when Deep Cooling Cycle is running.

Programming Menu

The programming menu contains all parameters needed to set controller functions, and is divided into two levels: **user level** and **installer level**.



- Press "set" on the main display for 3 seconds to open the Parameter Programming menu; the label **USR** will appear to indicate user level of the menu.

User level access (USR):



- Beside the **USR** label, press and release the "set" key to open the files containing user level parameters.

Installer level access (InS):

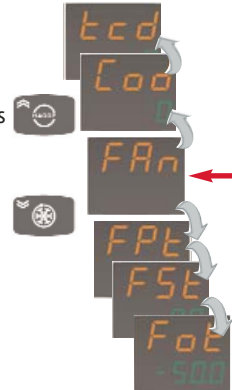


- Beside the **USR** label, press the UP and DOWN keys to view the **InS** label which indicates the addresses of folders containing installer level parameters. Beside **InS**, press and release the "set" key.

How to change the parameter values (for both levels):



- Press the "set" key to browse all folders at the user level until you find the folder you want.



- Once the label **FAn** for your selected folder appears, press the 'UP' and 'DOWN' keys to view the relative parameters. Press 'DOWN' to view the first parameter (**FPt**) in the selected folder (**FAn**). Press 'UP' on the other hand to display the last parameter in the previous folder (in this case, parameter **Cod**, the last one in the **dEF** folder).

All parameters are displayed as follows:
 - **PV** display: parameter label (e.g. **Fot**)
 - **SV** display: current parameter value (-50.0)

Press "set" to modify the current value of the selected parameter.



- In fact, when you press "set", the label on the **PV** display will start to blink to indicate that the parameter value can be modified. Press the UP and DOWN keys to change the value of the selected parameter. When the parameter has been set to the required value, press "ESC" or "set", or wait for the 60-second timeout to elapse to save the new value set.



- Now press and release the Esc key to return to previous levels viewed.

Machine State Menu

Press and release the “set” key from the main screen to open the Machine Status Menu containing a number of special functions which can be used to set and manage instruments such as the Setpoint Folder, the Probe folder and the Alarm folder (when one or more alarms has occurred).



After pressing the “set” key to open menu folders, you can then browse all visible folders using the same “set” key’.




Only the **Set** folder is always visible. The **ALr** folder is only visible if an alarm has occurred; folders **Pb1**, **Pb2** and **Pb3** are only visible if there are probes, and the **rtc** folder only if the relative function has been enabled (see parameter **H48**)


The following is a description of the menu structure and the functions in the individual files:

Programming the Setpoint


The steps you must follow to program the setpoint are described below:



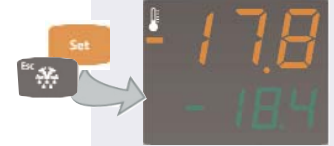
① When the initial display is present, press and release the “set” key. Use the “set” key to browse all folders until the **Set** label appears.



② The **PV** display shows the **SEt** label and the **SV** display shows the current Setpoint value.



③ The UP and DOWN keys can be used to change the Setpoint value shown on the **SV** display.



④ When the “set” or “fnc” key is pressed, or the timeout has elapsed (15 sec), the new value appears and the initial display returns.

Alarms File*

Press the UP and DOWN keys beside label **ALr** to browse all alarms managed by the device.

If no alarms are present, the file does not appear in the menu.

* Appears only if at least one alarm is present.



• If there are alarms present, these can be displayed and browsed using the UP and DOWN keys.

Label	Alarm	Cause	Effects	Troubleshooting
E1/E3 (I)	Probe 3/1 (cold room 1/3) faulty	<ul style="list-style-type: none"> Measured values outside nominal range Regulating probe faulty/short-circuited/open 	<ul style="list-style-type: none"> Label “E1”/“E2” shown on display”; Activation of compressor as shown by parameters On1/On2 and Ont and OFt; High/low alarm regulator disabled 	<ul style="list-style-type: none"> Check the probe wiring Replace probe. On removal of the error, regulation continues as normal.
E2 (I)	Probe 2 (defrost) faulty	Same as E1	<ul style="list-style-type: none"> Label E3 shown on display; End of defrost 1 due to timeout (if enabled) 	<ul style="list-style-type: none"> If same as E1 if defrost was in progress, it may terminate on reaching setpoint.
AH1/AH3	High temperature alarm	<ul style="list-style-type: none"> Value read by probe 1/3 >HAL after time tAO. (see “MIN. MAX ALARMS table and description of parameters HAL, Att and tAO) 	<ul style="list-style-type: none"> Recording of label AH1/AH3 in folder ALr of machine state menu No effect on regulation 	<ul style="list-style-type: none"> Wait until temperature value read by probe 1 returns below HAL.
AL1/AL3	Low temperature alarm	<ul style="list-style-type: none"> Value read by probe 1/3 < LAL after time tAO. (see “MIN. MAX ALARMS table and description of parameters LAL, Att and tAO) 	<ul style="list-style-type: none"> Label AL1/AL3 recorded in machine status menu folder ALr No effect on regulation 	<ul style="list-style-type: none"> Wait for the temperature value read by probe 1/3 to come back above LAL
EA	External alarm	<ul style="list-style-type: none"> For activation of digital input with delay set in parameter dAd 	<ul style="list-style-type: none"> Label EA recorded in machine status menu folder ALr Blocks controllers as indicated in parameter rLO 	<ul style="list-style-type: none"> Manual silencing of buzzer Controllers resume normal operation upon subsequent deactivation of DI
Ad2	Defrost alarm (Warning*)	<ul style="list-style-type: none"> Interruption of defrost due to timeout instead of 2nd probe reaching end defrost temperature. 	<ul style="list-style-type: none"> Fixed alarm LED lights up; Label Ad2 recorded in machine status menu folder ALr 	<ul style="list-style-type: none"> Manual silencing to turn off LED Wait for the subsequent defrost cycle to delete signal from folder ALr
Opd	Door open alarm	<ul style="list-style-type: none"> In the event of open door and after delay time tdO has elapsed. Delay tdO starts after the time set in parameter dAd 	<ul style="list-style-type: none"> Alarm LED lights up Activation of buzzer when delay time tdO has elapsed Label Opd recorded machine status menu folder ALr 	<ul style="list-style-type: none"> Manual silencing of alarm relay The LED and signal in folder AL will remain active until the door is closed
PAn	Panic alarm	<ul style="list-style-type: none"> To activate digital input configured as Panic alarm (H11...H14=18) with delay set in parameter dAd 	<ul style="list-style-type: none"> Panic LED lights up and LED for relay configured as alarm Label PAn recorded in machine status menu folder ALr 	<ul style="list-style-type: none"> The alarm remains on until DI is subsequently disabled.
PA LPA HPA	General pressure switch alarm Low pressure alarm High pressure alarm	<ul style="list-style-type: none"> To activate pressure alarm by pressure switch regulator (general/high/low) (see description of Page 9) 	<ul style="list-style-type: none"> Label PA/LPA/HPA (depending on type of pressure alarm that has occurred: general, high or low) recorded in ALr folder. 	<ul style="list-style-type: none"> The alarm can be reset from within folder FnC, or it can be disabled by turning the controller off then back on again.
E10	Battery exhausted alarm	<ul style="list-style-type: none"> On switching the controller on for the first time, when time is being set When switching the controller on after a power cut, if the latter lasted more than 24/32 hours 	<ul style="list-style-type: none"> Label E10 recorded in folder ALr 	<ul style="list-style-type: none"> To remove the alarm, set the date/time/minutes using the relative parameters. Resets automatically
Prr	Preheat alarm	<ul style="list-style-type: none"> To activate the digital input configured as preheat 	<ul style="list-style-type: none"> Label Prr recorded machine status menu folder ALr 	<ul style="list-style-type: none"> The alarm remains on until DI is subsequently disabled.

NOTE: Being more serious, E1/E2 and E3 alarms are signaled on the main display instead of being saved to folder ALr.

* Warning alarms have no effect on normal controller operation, they are for information purposes only.

** See “Pressure Switch Input Regulator” section on page 9.

Probes**

The temperature values read by probes connected to the controller can be viewed via the menu.



- Browse the various folders (ALr, SEt...) pressing the “set” key to view the label of the first probe detected (eg: Pb1).

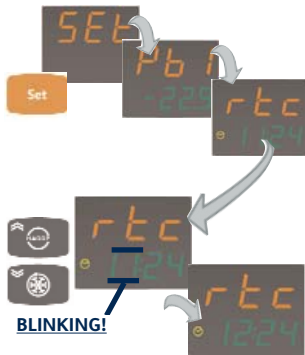


- Then use the UP and DOWN keys to browse all probes found. You will be able to see the label Pb1/Pb2 or Pb3 on the PV display and temperature read by the relative probe on the SV display.

** Appears only if at least one probe has been connected.

Data/time settings (only in models with rtc function)

Browse the various folders in the machine status menu (using the “set” key) to display the rtc folder containing date/time settings:



- Press the UP and DOWN keys to modify date and time.
- The current time set in the controller will be displayed as follows:
PV display: label rtc
SV display: “hours”(blinking): “minutes” (in this example 11:24). The “hours” value (eg: 11) blinks to indicate that it can be modified by pressing the UP and DOWN keys.

Once the required value has been set, press the “set” key to save it as the new current time. This value will then stop blinking and the “minutes” one will start (24 in this example). Repeat as before to set the minutes.

The values to be set in folder rtc are “time” (consisting of the “hours” and “minutes” fields), “date” (consisting of “day” and “month”) and “year”. Press the “set” key to save the value set and to move sequentially to the next one to be set.



Press the UP and DOWN keys to modify “blinking” values
Press “set” to save and move to the next value

Functions menu

To view the first element in the functions menu (Loc “Block Keypad” function), press the “Esc” key in the main display:

The label and current status of the function will be shown. To browse all functions, use the UP and DOWN keys.



Press the “set” key to change the status of a function



Function	Label	Status of status	D.I.	Key
Lock keyboard	Loc	OFF	-	-
Reset HACCP alarms	rHC	OFF	19	4
Reduced set	rSE	OFF	2	3
Reset pressure switch alarm	rPA	OFF	-	-
Disable recording	rEd	OFF	6	5
HACCP alarm				

* in models with HACCP function only

HACCP Menu (in models with HACCP function only)

Using the HACCP function, you can save and archive high and low temperature alarms recorded by cold room Pb1 probe or by display probe Pb3 or any power failures that the controller was subjected to.

Each HACCP alarm consists of a folder containing the following information:

- Number of alarms: up to 40 alarms can be saved: 20 high/low temperature and 20 power failures
- Type of alarm: Ht (high temperature), Lt (low temperature) and PF (Power Failure)
- Time/date and duration of all alarms
- Highest or lowest temperature, with relative time/date, reached during the event

Immediate HACCP alarm

When a temperature value exceeds the control range set in parameters SLi and SHi an HACCP alarm is signaled and saved. This threshold indicates the limit beyond which the food concerned would deteriorate irreparably.

HACCP Alarm

When a temperature value exceeds the control range set in parameters SLL and SHH for longer than the time set in drA an HACCP alarm is signaled and saved



Press and hold the HACCP key to open the folder for the first alarm. Use the UP and DOWN keys to browse all alarms.

The label AHC will appear on the PV display whilst the two values indicating the number (1) and type of alarm will appear on the SV display.



To view data in each AHC folder press the “set” key. The first value, labeled StA on the PV display, indicates the time the alarm commenced.

This screen alternates every three seconds with another screen, always labeled StA, indicating the date the alarm occurred.



To see the duration of the alarm in hours:minutes, press the “set” key when the date/time the alarm started are displayed.



Press the “set” key again to view the highest temperature measured by the probe during the alarm (on PV display) with relative time/date (on SV display).

As before in the display of alarm activation data (label StA), two screens will also alternate every three seconds: the first shows the time (hh:mm) and the second the date (dd:mm) of the temperature recorded.

To return to the alarm screen (label StA) from any level, just press the “Esc” key.

N.B.: When viewing times expressed in hours and minutes, the clock LED will be on; when viewing dates, the calendar LED will light up.

HACCP Power Failure Alarm

In the event of a power failure, up to 20 alarms are generated and identified with the label **PF** in order to accurately assess the state of foodstuffs

Power Failure alarm display (*)



Press and hold the HACCP key to open folders concerning HACCP alarms. Browse all saved alarms using the UP and DOWN keys until you find the power failure alarm **PF**.

The **AHC** label will appear on the **PV** display, whilst the two values indicating the number (1)

and type of alarm will appear on the **SV** display.



To view data in each **AHC** folder press the "set" key. The first value, labeled **StA** on the **PV** display, indicates the time the alarm commenced.

This screen alternates every three seconds with another screen, always labeled **StA**, indicating the date the alarm occurred.



To see the duration of the alarm in hours:minutes, press the "set" key when the date/time the alarm started are displayed.



Press the "set" key again to view the highest temperature measured by the probe after the controller was switched off and before it was switched back on again, if the preset temperature limit was exceeded.

This temperature is displayed on the **PV** display, whilst the label **PO FA** (Power Failure) is shown on the **SV** display.

To return to the alarm screen (label **StA**) from any level, just press the "Esc" key.

N.B.: When viewing times expressed in hours and minutes, the clock LED will be on; when viewing dates, the calendar LED will light up.

Deleting HACCP alarms

To avoid saving PF alarms each time the controller is automatically powered on:



When the label **PF CAnc** appears on the display (instead of the main display): press the HACCP key and the alarm will not be saved and this label will disappear.

Manual deletion of HACCP alarms can be associated to:

- A key (see configuration of parameter **H31...H37=4**) with the delay set in parameter **H02**
- Digital input (see configuration of parameter **H11...H14=9**)
- Function **rHC** (protected by 3 passwords, see Functions Menu)

Each time an HACCP alarm is deleted, the parameter **drH** also clears and the HACCP alarm LED goes off.

N.B.: (1) When the maximum number of alarms has already been saved, any further alarms will overwrite previous ones: to indicate this, the number of alarms on the display flashes.

(*) See the "Display and LEDs" section for information on how HACCP alarm indication LEDs work.

Copy Card

The Copy Card is an accessory which, when connected to the TTL serial port, allows quick programming of the device parameters (upload and download of a parameter map to or from one or more devices of the same type). The upload (label UL), download (label dL) and key formatting (label Fr) operations are performed as follows:



- The "FPr" file, located at **USr** level of the programming menu, contains all commands required to use the Copy Card. Press "set" to access the functions.



- Use the UP and DOWN keys to find the desired function. Press the "set" key and the selected function (upload, download or formatting) will be executed. During execution of the selected command, the label **run** appears on the **SV** display.



- If the command completes successfully, **y** appears on the **SV** display. Otherwise **n** appears.

Download reset: Connect the key with the device OFF. When the device is switched on, the programming parameters are loaded into the device; After the lamp test, the display shows the following for about 5 seconds:

- label **dLY**, if the operation is successful
- label **DLn** otherwise

N.B.:

- after the download operation, the instrument will work with the newly loaded parameters map.
- see file **FPr** in "Parameters" on page 4-5

Parameters table

Par.	Range	Default	UoM	Level
SEt	LSE...HSE	0.0	°C/°F	
Compressor - label CPR				
dIF	0.1...30.0	2.0	°C/°F	USer/InSt
HSE	LSE...HdL	50.0	°C/°F	USer/InSt
LSE	LdL...HSE	-50.0	°C/°F	USer/InSt
OSP	-30.0...30.0	0.0	°C/°F	USer/InSt
Cit	0...255	0	min	USer/InSt
CAt	0...255	0	min	USer/InSt
Ont	0...255	10	min	USer/InSt
OfT	0...255	10	min	USer/InSt
dOn	0...255	2	sec	USer/InSt
dOF	0...255	0	min	USer/InSt
dBi	0...255	2	min	USer/InSt
OdO	0...255	0	min	USer/InSt
dSC	0...255	0	sec	InSt
dCS	-58.0...302.0	0.0	°C/°F	InSt
tdC	0...600	10	min	InSt
dCC	0...255	0	min	InSt
Defrost - label dEF				
dtY	0...2	0	number	InSt
dit	0...255	6	h/min/sec	USer/InSt
dt1	0...2	0	number	InSt
dt2	0...2	1	number	InSt
dCt	0...3	3/1(5)	number	USer/InSt
dOH	0...59	0	min	USer/InSt
dEt	1...255	30	h/min/sec	USer/InSt
dSt	-58.0...302.0	6.0	°C/°F	USer/InSt
dS2	-58.0...302.0	8.0	°C/°F	InSt
dE2	1...255	30	h/min/sec	InSt
dPO	n/y	n	flag	USer/InSt
tCd	-31...31	0	min	InSt
Code	0...60	0	min	InSt
Sub-directory dd: dE1...dE8 (1) - (*)				
Sub-directory Fd: F1...F8 (1) - (*)				
Fans - label FAN				
FpT	0/1	0	flag	InSt
FSt	-50.0...150.0	6.0	°C/°F	USer/InSt
Fot	-50.0...150.0	-50.0	°C/°F	InSt
FAd	1.0...50.0	1.0	°C/°F	USer/InSt
Fdt	0...255	0	min	USer/InSt
dt	0...255	0	min	USer/InSt
dFd	n/y	y	flag	USer/InSt
FCO	n/y/dc	n	number	USer/InSt
Fod	n/y	y	flag	InSt
FdC	0...99	0	min	InSt
Fon	0...255	0	min	InSt
FoF	0...255	0	min	InSt
SCF	-50.0...150.0	10.0	°C/°F	InSt
dCF	-30.0...30.0	2.0	°C/°F	InSt
tCF	0...59	0	min	InSt
dCd	n/y	n	flag	InSt
Alarms - label ALR				
dAO	0...999	60	min	USer/InSt
OAO	0...10	1	hours	InSt
tdO	0...255	10	min	InSt
IAO	0...255	0	min	USer/InSt
dAt	n/y	n	flag	InSt
rLO	0...2	0	number	InSt
AOP	0...1	1	flag	InSt
PbA	0...3	0	number	InSt
SA3	-50.0...150.0	0.0	°C/°F	InSt
dA3	-30.0...30.0	2.0	°C/°F	InSt
IA3	0...59	0	min	InSt
ArE	0...2	0	number	InSt
label nAd (1)				
E00	0...4	0	number	InSt
E01	0...23/0...59	0	hours/mins	InSt
E02	0...99	0	hours	InSt
E03	0/1	0	flag	InSt
label Add				
PtS	t/d	t	flag	InSt
dEA	0...14	0	number	InSt
FAA	0...14	0	number	InSt
PtY	n/E/o	n	number	InSt
StP	1b/2b	1b	flag	InSt
label dIS				
LOC	n/y	n	flag	USer/InSt
PA1	0...999	0	number	USer/InSt
PA2	0...999	0	number	InSt
PA3	0...999	0	number	InSt
ndt	n/y	y	Flag	USer/InSt
CA1	-30.0...30.0	0.0	°C/°F	InSt
CA2	-30.0...30.0	0.0	°C/°F	InSt
CA3	-30.0...30.0	0.0	°C/°F	InSt
CA	0...2	2	number	InSt
LdL	-58...HdL	-50.0	°C/°F	InSt
HdL	LdL...302.0	140.0	°C/°F	InSt
ddL	0...2	1	number	InSt
Ldd	0...255	0	min	InSt
dro	0...1	0	Flag	InSt
ddd	0...3	1	number	InSt
dd2 (1)	0...1	1	flag	InSt
label HAC (2)				
SHi	SHH...150.0	35.0	°C/°F	InSt
SLi	-50.0...SLH	-35.0	°C/°F	InSt
SHH	SLH...150.0	30.0	°C/°F	InSt
SLH	-50.0...SHH	-30.0	°C/°F	InSt
drA	0...99	10	min	InSt
drH	0...255	0	hours	InSt
H50	0...2	2	number	InSt
H51	0...255	0	min	InSt
H52	1/3	1	number	InSt
label CnF				
H00	0...1	1	flag	InSt
H01	n/y	n	flag	InSt
H02	0...15	3	sec	InSt
H06	n/y	y	flag	InSt
H08	0...3	3	number	InSt
H11	-19...19	4	number	InSt
H12	-19...19	0	number	InSt
H21	0...12	1	number	InSt
H22	0...12	2	number	InSt
H23	0...12	3	number	InSt
H24 (3)	0...12	4	number	InSt
H25 (3)	0...12	7	number	InSt
H28	0...12	8	number	InSt
H31	0...14	13/0(6)	number	InSt
H32	0...14	12	number	InSt
H33	0...14	1	number	InSt
H34	0...14	7	number	InSt
H35	0...14	6/0(4)	number	InSt
H36	0...14	0	number	InSt
H37	0...14	14/0(7)	number	InSt
H41	n/y	y	flag	InSt
H42	n/y	y	flag	InSt
H43	n/y/2EP/3-1	n	number	InSt
H44	0...25.5	0	°C/°F	InSt
H45	0...2	0	number	InSt
H48 (1)	n/y	y	flag	InSt
H60	0...6	0	number	InSt
rEL	/	/	number	USer/InSt
tAb	/	/	number	USer/InSt
label FrH				
Hon	0...255	0	min	InSt
Hof	0...255	0	min	InSt
dt3	0...2	0	number	InSt
label FPr				
UL	/	/	/	USer/InSt
dL	/	/	/	USer/InSt
Fr	/	/	/	USer/InSt

* sub-folders are only visible if dit=0 and dCt=3.
 (1) in models with rtc function only.

- (2) in models with HACCP function only.
- (3) parameters present in EWRC 500 LX only.
- (4) set to 0 in the models EWRC 300
- (5) set to 1 in the models without rtc
- (6) set to 0 in the models without HACCP
- (7) set to 0 in the models without rtc

Description of Parameters

SEt	Setpoint COMPRESSOR REGULATOR (folder with label "CPR")	Cit	Minimum compressor activation time before disabling. If set to 0, it is not active.
dIF	Compressor relay activation differential; the compressor stops on reaching the setpoint value (as indicated by the adjustment probe) and restarts at a temperature equal to the setpoint plus the value of the differential.	CAt	Maximum compressor activation time before disabling. If set to 0, it is not active.
HSE	Maximum value that can be assigned to the setpoint.	Ont	Compressor start time in the event of faulty probe. If set to "1" with OfT at "0", the compressor remains on continuously, whilst with OfT >0 it runs in duty cycle mode.
LSE	Minimum value that can be assigned to the setpoint. N.B.: The two sets are interdependent: H51/H52 (maximum setpoint) cannot be less than L51/L52 (minimum setpoint) and vice versa.	OfT	Compressor switch off time in the event of a faulty probe. If set to "1" with Ont at "0", the compressor always remains off, whereas at Ont>, it runs in duty cycle mode.
OSP	Temperature value to be added algebraically to the setpoint if reduced set enabled (standby function). The reduced set can be enabled by pressing a key, which must be specially configured for this purpose.	don	Delayed start. This parameter indicates that a protection is active on the relay actuations of the generic compressor. The time indicated must elapse between the command and when the compressor relay actually actuates.

doF Delayed stop. The parameter indicates that the protection is active on compressor relay actuations. At least the indicated time must elapse between switch-off of the compressor relay actually actuates.

dbi Delay between switch-ons; the indicated delay time must elapse between two consecutive switch-ons of the regulator.

OdO Delay in activating outputs after the controller is switched on or after a power failure. 0= not active.

dSC Delay in activating compressor. Indicates the time after which the relay configured as compressor 2 will be activated after compressor 1. If compressor 1 disables during this time, the call for compressor 2 will be cancelled.

dCS Deep cooling set point.

tdc Deep cooling duration.

dcc Defrost delay after deep cooling.

DEFROST CONTROL (folders with label "DEF")

DEFROSTING CONDITIONS

The controller will activate defrost in the following circumstances:

- If the evaporator temperature is lower than the defrost end temperature set by the dSt parameter;
- If manual defrosting is not already activated (see); in this case the request for automatic defrosting will be cancelled.

dtY Type of defrost.
0 = Electrical defrosting;
1 = Cycle inversion defrosting (hot gas);
2 = Free mode defrost (independent of compressor)

Automatic defrosting

In this case, defrosting takes place at time intervals set by parameter dit (=0 defrosting will not take place at all).

As mentioned above, if the parameter dit > 0 and defrosting conditions apply (see parameter dSt), defrosting will take place at fixed intervals and according to the parameter dCt.

Manual defrost

If the right conditions apply, when the manual defrost key is pressed or by digital input, EWRC 300-500 LX will start the defrost cycle.

If the previous conditions apply, manual defrost is always enabled with the exception of the following parameter configuration: dCt different from 3 and dit = 0

dit Interval between the start of two subsequent defrosting cycles.
0= the function is disabled (defrosting is NEVER performed)

dt1 Unit of measure for duration of defrost
0 = hours; 1 = minutes; 2=seconds

dt2 Unit of measure of defrost interval
0 = hours; 1 = minutes; 2=seconds

dCt Selection of count mode for defrost interval.
0 = compressor hours of operation (DIGIFROST® method);
Defrosting active ONLY with the compressor on.
N.B.: compressor running time is counted separately from the evaporator probe (count active if evaporator probe missing or faulty).
1= Hours of running time; Defrost counting is always active when the controller is on and starts at each power-on.
2=Compressor stop. Every time the compressor stops, a defrosting cycle is performed according to parameter dtY.
3=With rtc. Defrost at specific times set in parameters **dE1...dE8, F1...F8**

dOH Delay start defrost after start-up of controller.

dEt Defrost time-out; determines the maximum duration of defrosting

dSt End of defrost temperature. Temperature measured by defrost probe.

Probe 3 configuration the same as evaporator probe 2.

With probe 3, you can control the defrost cycle of a second evaporator, configuring a relay output (see parameters H21...H26) as a defrost relay for evaporator 2. To activate this function:

- Configure probe 3 in control defrost evaporator 2 mode (H43=2EP)
- Configure a relay output (see parameters H21...H26) as a defrost relay for evaporator 2.
- Define defrost mode by setting parameter H45.

End defrost mode in the event of a double evaporator is activated when both probes have reached or exceeded the respective end defrost setpoints (dSt for evaporator 1 and dSt for evaporator 2). If one or both the probes encounter an error, end defrost is activated by a timeout

dS2 End of defrost temperature, evaporator 2.
dE2 Defrost timeout, evaporator 2.

dPO Determines if defrost cycle is activated at start-up of controller:
y=defrost enabled at start-up;
n=defrost not enabled at start-up;

tdc Minimum duration of each compressor state before defrost.

Cod Time compressor "OFF" prior to defrost cycle. The compressor is not switched on if a defrost cycle is scheduled within the time indicated in the parameter.

0=Function excluded

"dd" dE1...dE8: defrost start time on weekdays

"FF" F1...F8: defrost start time on weekends/public holidays

N.B.: sub-folders "dd" and "FF" are only visible if dit=0 and dCt=3

FAN CONTROL (folder with "FAn" label)

FPT Determines if "FSt" and "Fot" are expressed as absolute values or in relation to setpoint

0=Absolute value; 1=In relation to setpoint

FSt Fan stop temperature; When the value read by the evaporator probe is greater than the set value, the fans are stopped. The value can be positive or negative and, depending on parameter FPT, can represent the temperature as an absolute value or relative to the Setpoint.

Fot Start fan temperature. If the temperature read by the evaporator is lower than the setpoint, the fans remain off.

FAd Fan activation intervention differential (see par. "FSt" and "Fot").

Fdt Delay time at fan activation after a defrosting cycle.

dt Drip time

dFd To select or exclude the evaporator fans during defrost. y=yes (fans excluded); n=no

FCO Allows the fan lock to be selected or not when the compressor is OFF.

y = fans active (with thermostat; depending on the value read by the defrosting probe, see "FSt" parameter);

n = fans off;

dc = duty cycle (through "Fon" and "FoF" parameters).

Fod Allows fan lock to be selected when the door is open and fan restart when the door is shut (if they were running).

n=fan lock; y=fans unchanged

FdC Fan switch off delay time after compressor stop.

In minutes. 0= function excluded

FoF/Fon Fan ON/OFF time in duty cycle.

Use of fans in duty cycle mode; valid for FCO = dc

SCF Setpoint for activating condenser fans

dCF Condenser fan activation differential

tCF Condenser fan switch on delay after defrost

dCd Exclusion of condenser fans during defrost

ALARMS (folder with label "ALr")

Att Parameter "HAL" and "LAL" mode, as absolute temperature value or setpoint differential.

0 = absolute value; 1 = relative value.

AFd Alarm activation differential

HAL Maximum temperature alarm. Temperature value (difference from setpoint or absolute value in relation to Att), which when exceeded triggers an alarm signal. **See Max/Min. Alarm table**

LAL Low temperature alarm. Temperature value (difference from the Setpoint or as an absolute value based on Att). When temperature read is lower than this value, an alarm signal is triggered. **See Max/Min. Alarm Diagram.**

PAO Alarm exclusion time after the controller is switched on following a power failure.

dAO Alarm exclusion time after defrost

OAo Delay signaling high or low temperature alarm after digital input disabled (door closed)

tdO Timeout after alarm signal following disabling of digital input (door open).

tAO Delay signaling temperature alarms

dAt Alarm signaling end of defrost due to timeout.

n=Alarm not enabled y=Alarm enabled

rLO Regulators blocked by external alarm:

0= No resources blocked

1= Compressor and defrost blocked

2= Compressor, defrost and fan blocked

AOP Alarm output polarity:

0 = alarm active and output disabled

1 = alarm active and output enabled

PbA Configuration of temperature alarm on probe 1 and/or 3:

0=Probe 1 (temperature control)

1=Probe 3 (display)

2=Probes 1 and 3 (temperature control and display)

3=Probes 1 and 3 (temperature control and display) with external threshold

SA3 Probe 3 alarm setpoint

dA3 Probe 3 alarm differential

tA3 Probe 3 alarm signal delay

ArE Enables alarm relay in the event of probe 3-related alarms:

0= Alarms not enabled in the event of alarms/errors regarding probe 3

1 = Enables alarm relay in the event of alarms/errors regarding all probes.

2= Enables alarm relay ONLY in the event of alarms/errors regarding probe 3

LIGHT AND DIGITAL INPUTS (folder with "Lit" label)

The digital input can be configured as auxiliary (parameter H11...H12=3): in this case, a digital output should be provided as an auxiliary (parameters H21...H25=5). If on the other hand the digital input is configured as door switch (parameter H11...H12=4), a digital output will have to be provided as light (parameters H21...H25=7). As mentioned above, this function allows the light relay to be activated when de-energized and vice versa. When the digital input (DI) is enabled (if par. **dSd=y**), the light relay is enabled, and when the digital input is disabled, the light relay also disables. To maintain correct operation, the state is stored in the event of a power failure: the light key and the light enabling function can also be enabled, even when the controller is in STAND-BY (see par. **H06**). The light key always disables the light relay if par. **OFL=y**

- dSd** Enables light relay from door switch
n = Door open, the light does not turn on
y=Door open, light switched on (when off)
- dLt** Delay switching off relay configured as light after door is closed.
N.B.: valid if par. **dSd** is set to switch on light when door opens (if **dSd=y**).
- OFL** Disable light relay even with "dLt" disable delay enabled
- dOd*** Digital input for switching off utilities
n=Utilities not switched off y=Utilities switched off
- dAd** Delay activating digital inputs DI1, DI2
- dOA*** Action forced by digital input
0=Nothing activated 1=Compressor activated
2=Fans activated 3=Compressor and fans activated
- PEA** Enables forced action from door switch and/or external alarm:
0=Function disabled
1=Associated to door switch 2=Associated to external alarm
3=Associated to door switch and/or external alarm
- dCO*** Delay in activating compressor after door opened
- dFO*** Delay in activating fans after door opened
- * only if digital inputs are configured as door switch (H11 or H12=4)
- PEn** Number of errors allowed per min/max pressure switch input
- PEI** Minimum/maximum pressure switch error count interval

NIGHT & DAY REGULATOR (folder with label "nAd")

If the Night & Day regulator is enabled (by key or DI), defrosting can be managed on week days, weekends and public holidays (see sub-directories dd and Fd on page 8): the defrost cycles to be activated can be set using parameter E3 for each day. If Night & Day is not enabled, only weekday defrosts dE1...dE8 (dct=3, H48=1, dit=0) will be run.

Folder comprising 7 sub-folders: d0, d1, d2, d3, d4, d5, d6 and d7, each of which contain the following parameters:

- E00** Functions enabled during events:
0=Control disabled 1=Reduced set
2=Reduced set + light 3=Reduced set + light + aux
4=Stand-by
- E01** Hours/minutes to start of event. Set event start time based on value of E00
- E02** Duration of event. Set event duration based on value of value E00
- E03** Enables defrost on weekdays or weekends/public holidays:
0=Weekdays; 1=Weekends/public holidays;
- N.B.: This regulator can be enabled by key (see par. H31...H37) or by digital input (see par. H11...H12)

COMMUNICATION (file with label "Add")

- PtS** Protocol selection: t=Televis; d=Modbus
- dEA** Controller index within the family (valid values from 0 to 14).
- FAA** Controller family (valid values from 0 to 14).
The value pair FAA and dEA represents the network address of the controller and is indicated in the format "FF.DD" (where FF=FAA and DD=dEA).
- PtY** Modbus parity bit: n=none; E=Even; o=odd;
- StP** Modbus stop bit: 1b=1 bit; 2b=2 bit;
- DISPLAY (folder with "diS" label)**
- LOC** Keypad lock. It is still possible to open parameter programming page and modify parameters, including the state of this parameter in order to unlock the keyboard. y = Yes (keyboard locked); n = No.
- PA1** When enabled (value other than 0), it constitutes the access key to user level parameters (level **USr**).
- PA2** When enabled (value other than 0), it constitutes the access key to installer level parameters (level **Ins**).
- PA3** When enabled (value other than 0), it constitutes the access key to the reset HACCP alarms function.
- ndt** View with decimal point
n= No decimal point (only integers); y= With decimal point
- CA1** Calibration probe 1. Temperature value to be added to the value read by probe 1 in mode indicated in parameter CA.
- CA2** Calibration probe 2. Temperature value to be added to the value read by probe 2 in mode indicated in parameter CA

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- CA3** Calibration probe 3. Temperature value to be added to the value read by probe 3 in mode indicated in parameter CA
- CA** Activation of offset for display, temperature control or both:
0= Only temperature shown is modified
1= Only the temperature used by regulators and not the display (which remains unaltered) is modified.
2= Temperature displayed is modified which is also the one used by regulators.
- LdL** Minimum possible value
- HdL** Maximum possible value
- ddl** Displayed during defrost:
0= Shows value read by temperature control probe
1= Shows value read at start of defrost cycle until setpoint reached
2= Shows label "deF" during defrost until setpoint is reached (or until end of Ldd)
- Ldd** Display lock disabling timeout (con ddl=2) when defrost lasts too long
- dro** Selects °C or °F to display temperature values:
0= °C 1= °F
- ddd** Value to be shown on **PV** display:
0= Set point 1= Probe 1 (temperature control)
2= Probe 2 (evaporator) 3= Probe 3 (display)
- dd2** Value to be shown on **SV** display:
0= Set point 1= rtc

HACCP ALARM PARAMETERS (folder with label "HAC")

- SHi** High temperature "immediate" alarm signaling limit: when the temperature value read by the temperature control probe goes beyond the control range set in "SHH" an HACCP alarm is immediately generated and LED/(alarm relay) for parameter H50 (see) lights up. The differential after resetting an alarm is always 0.1 °C.
- SLi** High temperature "immediate" alarm signaling limit: when the temperature value read by the temperature control probe goes beyond the control range set in "SHH" an HACCP alarm is immediately generated and LED/(alarm relay) for parameter H50 (see) lights up. The differential after resetting an alarm is always 0.1 °C.
- SHH** Set High HACCP. Maximum HACCP alarm signals threshold: when the temperature of the temperature control probe is outside the control range set by the value "SHH" for longer than the time set in parameter "drA", an HACCP alarm is generated and the LED/(alarm relay) for parameter H50 comes on (see). The differential after resetting an alarm is always 0.1 °C.
- SLH** Set Low HACCP. Minimum HACCP alarm signals threshold: when the temperature of the temperature control probe shown is outside the control range set by the value "SLH" for longer than the time set in parameter "drA", an HACCP alarm is generated and the LED/(alarm relay) for parameter H50 (see) comes on (see). The differential after resetting an alarm is always 0.1 °C.
- drA** Record alarm time delay, minimum time in critical zone required for event to be recorded: once this time has elapsed, an HACCP alarm is signaled and memorised.
- drH** Record HACCP delay. HACCP alarm reset time after last reset: this is the time that must elapse after the controller is switched on before any alarms are automatically cleared. If the parameter is set to 0, the automatic reset is inhibited and only the manual reset is enabled.
- H50** HACCP alarms can be saved with or without enabling of alarm relay:
0=HACCP alarms disabled
1=HACCP alarms enabled with alarm relay NOT enabled
2=HACCP alarms enabled with alarm relay enabled
- H51** Time HACCP alarm recording is excluded (key or D.I.)
- H52** Probe enabled to signal HACCP alarms:
1=Probe 1; 3=Probe 3;

CONFIGURATION PARAMETERS (file with label "CnF")

- H00** Selection of probe type:
0=PTC; 1=NTC;
- H01** Enables deep cooling function: n=not enabled; y=enabled;
- H02** Keypad function activation time (except for AUX and LIGHT functions which have a fixed activation delay of 0.5 seconds)
- H06** Key or digital input configured as AUX/LIGHT active with controller OFF: n=Not active; y=Active;

CONTROLLER STAND-BY REGULATOR

This allows you to manage function modes during standby in relation to the following parameters:
The standby regulator can be activated via digital input or by key, when configured accordingly.
Controller state during standby is determined by the value in parameter H08, which defines three possible function modes:
EXAMPLE 1: the display is off, regulators enabled and the controller signals any alarms by reactivating the display - OFF DISPLAY
EXAMPLE 2: the display is on, all regulators are blocked including alarms - STAND-BY

EXAMPLE 3: the display is off, all regulators are blocked including alarms - STAND-BY

EXAMPLE 4: the PV displays the label "OFF", all regulators are blocked including alarms - STAND-BY

- H08** Standby mode:
 0=Only display switches off
 1=Display on, regulators and alarms off
 2=Display off, regulators and alarms off
 3=PV display with label **OFF** and regulators off
- H11** Digital inputs/polarity 1 configuration
 0 = Disabled; 1 = Defrosting; 2 = Reduced set;
 3 = AUX; 4 = Door switch 5 = External alarm
 6 =Disable HACCP. alarm recording; 7 = Standby
 8 = Maintenance request; 9 = Min. pressure switch.
 10= Max. pressure switch; 11= General pressure switch
 12= Preheat; 13=Force fans 14= Enable light relay
 15= Enable frame heater relay;
 16= Enable/disable night & day functions; 17= Deep Cooling cycle
 18= Panic Alarm 19= Reset HACCP alarms
- H12** Digital inputs/polarity 2 configuration. Same as H11
- H21** Configurability of digital output 1:
 0=Disabled; 1=Compressor; 2=Defrost; 3=Fans;
 4=Alarm; 5=AUX; 6=Standby; 7=Light;
 8=Buzzer; 9=Evaporator 2; 10=Compressor 2
 11=Frame Heater; 12=Condenser fans;
- H22** Configurability of digital output 2. Same as H21
H23 Configurability of digital output 3. Same as H31
H24 Configurability of digital output 4. Same as H21
H25 Configurability of digital output 5. Same as H21
H28 Configurability of digital output 8 (buzzer output). Same as H21
H31 Configurability of UP key:
 0=disabled; 1=Defrost;
 2=Auxiliary; 3=Activation of reduced set;
 4=Reset HACCP alarms; 5=Disable HACCP alarms;
 6=Light; 7=Standby; 8 = Maintenance request
 9=Condenser fans ON; 10=Enable/disable. Frame Heater relay
 11= Enable/disable night & day functions;
 12=Deep Cooling Cycle; 13=HACCP menu;
 14=Reduced set +night & day
- H32** Configurability of DOWN key. Same as H31
H33 Configurability of ESC key. Same as H31
H34 Configurability of Power key. Same as H31
H35 Configurability of Light key. Same as H31
H36 Configurability of AUX key. Same as H31
H37 Configurability of Energy Saving/Night & Day key. Same as H31
H41 Cold room probe inserted: n=Not inserted; y=Inserted;
H42 Evaporator probe inserted n= not inserted; y=Inserted;

if H43=3-1, regulation of the temperature differential between probes Pb3 and Pb1, in addition to regulation of probe Pb1, is enabled. In this way, to activate compressor regulation, one or both of the two conditions must be met (on Pb1 or Pb3-Pb1 differential). The differential is set in H44. To disable the compressor, both conditions must be met, so:
 Output enabled if: Pb1>set+dIF, or Delta T (Pb3-Pb1) > H44+dIF
 Output not enabled if: Pb1<set and Delta T (Pb3-Pb1) < H44

- H43** Probe Pb3 inserted:
 n=Not inserted; y=Inserted;
 2EP=inserted in evaporator 2;
 3-1=regulation enabled for Pb1 and/or Pb3-Pb1
- H44** Temperature differential setpoint; Allows you to set the temperature Delta T value (Pb3-Pb1) for when the relative function is enabled via parameter H43=3-1
- H45** Start defrost mode for applications with double evaporator:
 0=Defrost is enabled by controlling only that the temperature of evaporator 1 is lower than the value set in parameter dSt.
 1=Defrost is enabled, controlling that the readings from at least one of the two probes is below its end of defrost temperature (dSt for evaporator 1 and dS2 for evaporator 2)
 2=Defrost is enabled controlling that both probe values are below the relative end of defrost setpoints (dSt for evaporator 1 and dS2 for evaporator 2).
- H48** rtc present: n=Not inserted; y=Inserted;
H60 Select parameter vector
rEL Device version: read-only parameter.
tAb Reserved: read-only parameter.

FRAME HEATER REGULATOR (directory with label "FrH")

N.B.: The Frame Heater can be selected by key or by Digital Input
 This function can be associated to all relay outputs (setting parameters H21...H28 = 11) and allows you to enable "Duty Cycle" regulation at the intervals set in parameters Hon and HoF. See the relative FrH folder in "Description of Parameters".

- HOn** Frame Heater regulator output ON time
HOF Frame Heater regulator output OFF time
dt3 Frame Heater regulator time standard unit of measure:
 0=hours; 1=minutes; 2=seconds;
COPY CARD (file with label "Fpr")
UL UpLoad: transfer parameters from device to CopyCard.
dL downLoad: Transfer parameters from Copy Card to device.
Fr Format. Erase all data entered in the key.

Sub-directory dd - Defrost start time on weekdays

Par	Description	Range	Default	LEVEL	UoM
dE1	Time 1	00-24/00-59	0	USEr	hours/mins
dE2	Time 2	00-24/00-59	0	USEr	hours/mins
dE3	Time 3	00-24/00-59	0	USEr	hours/mins
dE4	Time 4	00-24/00-59	0	USEr	hours/mins
dE5	Time 5	00-24/00-59	0	USEr	hours/mins
dE6	Time 6	00-24/00-59	0	USEr	hours/mins
dE7	Time 7	00-24/00-59	0	USEr	hours/mins
dE8	Time 8	00-24/00-59	0	USEr	hours/mins

Sub-directory Fd - Defrost start time on weekends/public holidays

Par	Description	Range	Default	LEVEL	UoM
F1	Time 1	00-24/00-59	0	USEr	hours/mins
F2	Time 2	00-24/00-59	0	USEr	hours/mins
F3	Time 3	00-24/00-59	0	USEr	hours/mins
F4	Time 4	00-24/00-59	0	USEr	hours/mins
F5	Time 5	00-24/00-59	0	USEr	hours/mins
F6	Time 6	00-24/00-59	0	USEr	hours/mins
F7	Time 7	00-24/00-59	0	USEr	hours/mins
F8	Time 8	00-24/00-59	0	USEr	hours/mins

Parameter	Description	PRG 1 (H60=1)	PRG 2 (H60=2)	PRG 3 (H60=3)	PRG 4 (H60=4)	PRG 5 (H60=5)	PRG 6 (H60=6)
set	Regulation setpoint	0	2	-18	2	-18	5
dIF	Compressor relay activation differential	2	2	2	2	2	2
LSE	Minimum value that can be assigned to the setpoint	-50	-5	-25	-5	-25	2
HSE	Maximum value that can be assigned to the setpoint	50	5	-15	5	-15	10
dSt	End of defrost temperature	6	10	15	10	15	10
FSt	State of evaporator fans when compressor OFF	6	8	-5	8	-5	50
dtY	Defrost mode	0	1	1	0	0	0
dit	Interval been defrost cycles	6	6	6	6	6	6
dCt	Defrost interval count mode	1	1	1	1	1	1
dOH	Start defrost delay time from command	0	0	0	0	0	0
dEt	Defrost timeout	30	15	15	30	30	15
Fdt	Start evaporator fans delay after defrost cycle	3	1	2	1	2	0
dt	Drip time	0	2	2	2	2	0
dPO	Start defrost command from power on	n	n	n	n	n	n
ddl	Display lock mode during defrost	1	0	0	0	0	0
dFd	Exclude evaporator fans during defrost cycle	y	y	y	y	y	y

Description of function

Pressure switch input regulator

This regulator performs diagnostic operations via a digital input associated by means of a configuration table. It is activated by setting parameters H11-H12 = 11 (general pressure switch), 9 (minimum pressure switch) or 10 (maximum pressure switch).

If a pressure switch input is activated, power to the compressor is immediately cut off, the relative alarm LED lights up to indicate this visually and the following labels in the alarms folder are also displayed:

- **P01, P02, P03...** (up to the value set in parameter PEn) if H11-H12=11 for the general pressure switch.
- **H01, H02, H03...** (up to the value set in PEn) if H11-H12=10 for the maximum pressure switch
- **L01, L02, L03...** (up to the value set in PEn) if H11-H12=9 for the minimum pressure switch.

Regulation is provided via the configuration of two parameters: PEn e PEI:

An alarm is generated only if the maximum number of signals is reached before the time set in parameter PEI elapses. The time PEI is counted down from the first signal.

If the number of activations exceeds the number set in PEn within the time limit PEI, the following events occur:

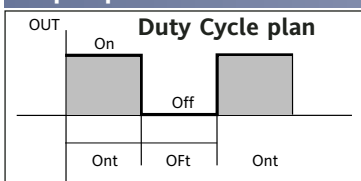
- The compressor, fans and defrost are disabled
- The label PA, HPA or LPA (depending on whether it relates to the general, maximum or minimum pressure switch or H11-H14 = 11, 9 or 10) appears in the alarm folder.
- The alarm relay comes on (if configured).

If the number of activations exceeds the number set in PEn within the time limit PEI, the alarm is automatically reset.

N.B.: Once the controller is in alarm state, it must be powered off then on, or reset by activating parameter rAP from the function menu. Pressure switch alarms can be reset via function rPA in folder Fnc.

N.B.: If parameter PEn is set to 0, the function is excluded and alarms and counters are also disabled.

Output protection

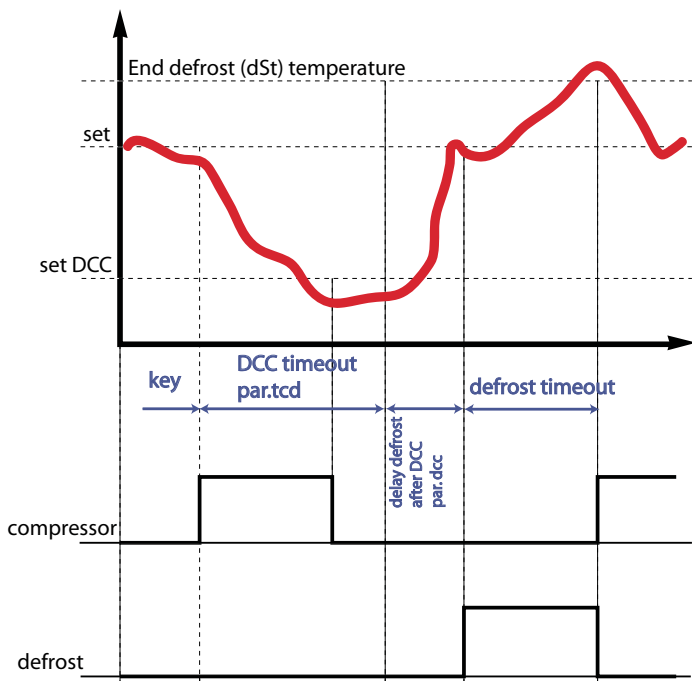


An error condition in the probe causes one of the following actions:

- code E1 is shown on the display
- activation of regulator as indicated by parameters Ont and OFt, if they have been set to Duty Cycle,

Ont	OFt	Compressor output
0	0	OFF
0	>0	OFF
>0	0	ON
>0	>0	dc

parameters Ont, OFt, set to duty Cycle



The Deep Cooling (DCC) function is activated by parameter H01.

Activation of DCC from function key: the compressor 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 cool cycle). When the DCC (Deep Cooling Cycle) activates, the interval between defrost cycles is cleared and defrosts disabled. After a DCC cycle 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 cycle, temperature alarms are disabled - except for the low temperature one - LAL if Att=1 (setpoint alarm). Normal temperature alarm control is restored at the end of the DCC cycle. In the event of a probe error and/or power failure, the Deep Cooling Cycle is stopped and standard controller function restored. If parameters dcS, tdc and ddc are modified, the Deep Cooling Cycle is recalculated with the new values set.

Condenser Fan Regulator

This regulator is associated to probe Pb3 and features:

- Activation setpoint
- Operational differential
- Exclusion of fans during defrost
- Activation delay after defrost

Programming a digital output as condenser fans (H21...H25=12), the output will behave as follows:

Output value	Pb3 value
ON	\geq SCF
OFF	\leq SCF - dCF

If probe Pb2 is not inserted and alarm E3 occurs, the regulator will remain on during the defrost cycle.

Probe 3 can be excluded and in this instance, this loss of connection to the controller will not result in an error message.

N.B.: The output is OFF during drip time.

N.B.: If a digital output is programmed as "condenser fans"

(H21...H25 =12), parameter SA3 will always be an absolute value, regardless of the value set in parameter Att.

Auxiliary Regulator

The auxiliary regulator can be enabled by digital input if this is set to auxiliary (parameter H11...H12=3) or by key (parameter **H31** or **H37**=2): in this case, regulator control must be configured as aux by setting parameters H21...H25=5.

This function is used to energize the relay if it was de-energized, or vice versa. The relay state is stored in order to maintain correct operation in the event of a power failure, unless parameter H11 = 3 (aux); in this case, the relay reflects the state of the digital input. Parameter H11...12 can also be used to set the priorities/polarities for activation by key or digital input.

When the controller is off, only the digital input and associated key can be used to vary the state of the output, as determined by parameter **H06**.

N.B.: The significance of the Digital Input (DI) must remain the same: for example, when activating the relay by DI and switching off with a key, if the DI is repositioned, the relay does not change state when de-energized by key.

Preheat Input Regulator

The digital input configured as Preheat (H11 or H12=12) disables compressor and fan outputs.

When the preheat input is activated, this is not indicated on the display but in folder AL by means of label **Prr** (see Alarms Folder)

Wall-mounting EWRC 500

Remove the screw caps on the right side of the door, pressing lightly on the points indicated by the arrows in Figure 1. Take out the screws and open the door.

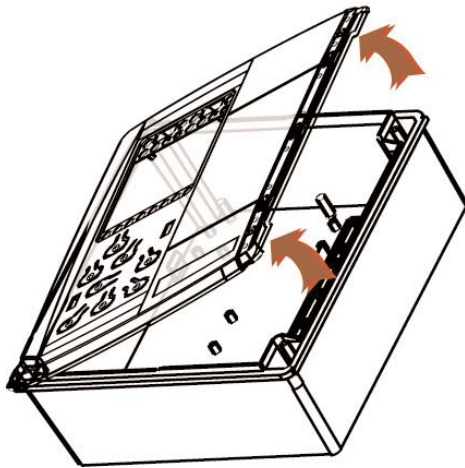


Fig.1

Drill holes in the backplate at the top or bottom to pass the wires through. See the example in figure 2:

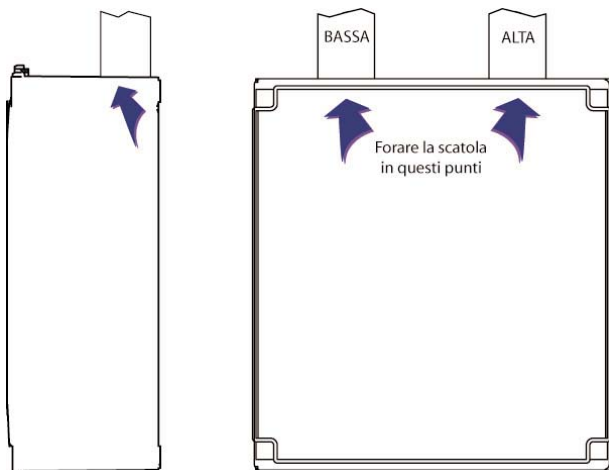


Fig.2

Screw the backplate to the wall using 4 screws (not supplied) to match the holes illustrated in figure 3.

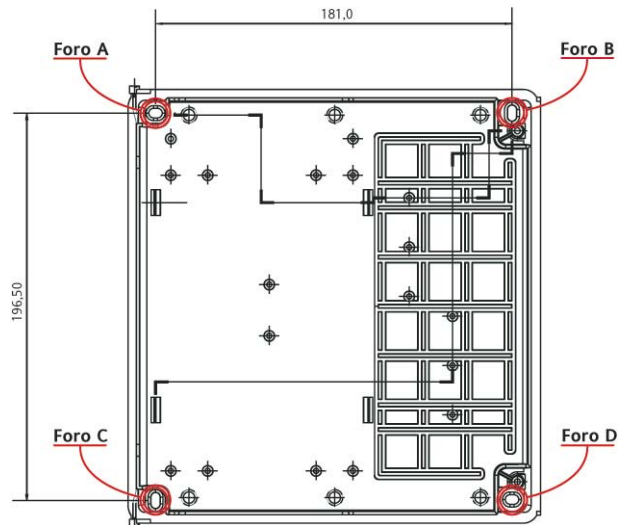


Fig.3

Shut the door by securing it with 2 screws (provided). Replace the screw caps removed earlier from the door (see point 1).

The door lock (supplied only in models where it is featured) can be installed in three different positions on the door. The holes to be drilled are indicated on the back. Each position of the door represents a different position where the disconnecter can be fitted to the backplate.

N.B.: to make it easier to mount the backplate, remove the door by pressing lightly on the left side (the side that the door is attached by). You will also have to separate the base from the keypad by disconnecting the keypad cable.

IMPORTANT: Cable clamps must be no bigger than size **PG29**

TECHNICAL SPECIFICATIONS

EWRC 300-500 LX

Front protection	IP65
Container	Babyblend FR 110
Dimensions	front 210x245 mm, depth 90 mm
Mounting:	with drilling template 202x212 mm, depth 70 mm
- panel - wall	
Connections	disconnectable screw terminals for serial port RS-485, digital and analogue inputs disconnectable screw or FASTON terminals for digital and analogue outputs (see Circuit Diagrams)
Operating temperature	-5 °C ... 50 °C
Storage temperature	-20 °C ... 85 °C
Ambient humidity for use and storage	10...90% RH (non-condensing)
Display range	-50...110 (NTC no decimal point, on 3-digit display with +/- sign)
Analogue input	3 x NTC input selectable from parameter H00
Digital input	2 voltage-free digital inputs
Serial	1 Copy Card connection 1 TTL port for TelevisSystem connection 1 optional serial RS-485 port
Digital outputs (configurable)	1 SPST 2Hp 250 V~ 1 SPDT 1Hp 250 V~ 8(3)A SPST 250 V~ 8(3)A SPDT 250 V~ 1 Hp SPST 250 V~
- Output OUT1	
- output OUT2	
- output OUT3	
- output OUT4 (EWRC 500 LX only) - output OUT5 (EWRC 500 LX only)	
Buzzer output	only on models where this is provided
Accuracy	better than 0.5% of full-scale +1 digit
Resolution	1 or 0.1 °C
Consumption	8VA
Power supply	230 V~ ±10%

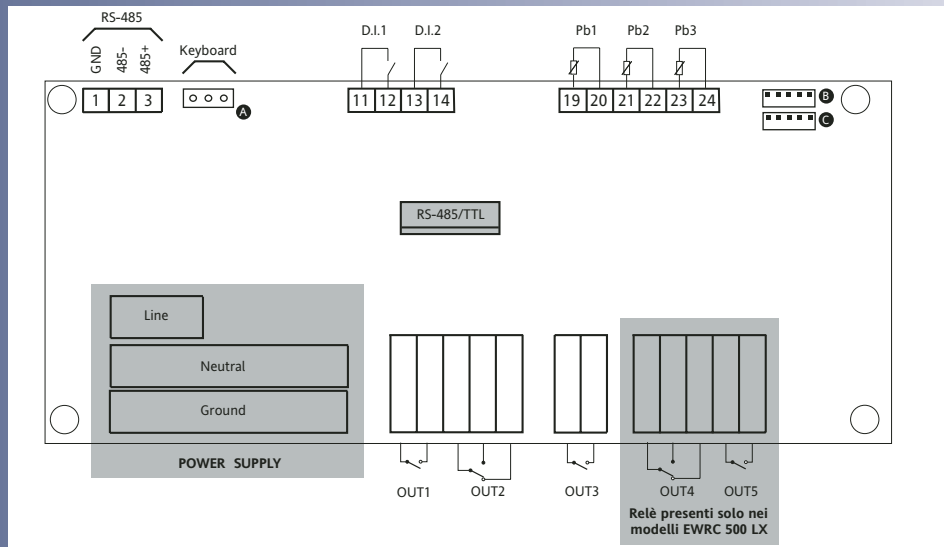
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Any measurement-related specifications provided herein (range, accuracy, resolution, etc.) refer strictly to the controller and not to any accessories supplied, such as probes for example. Consequently, any errors introduced by the probe must be added to the characteristic error of the device

CIRCUIT DIAGRAMS

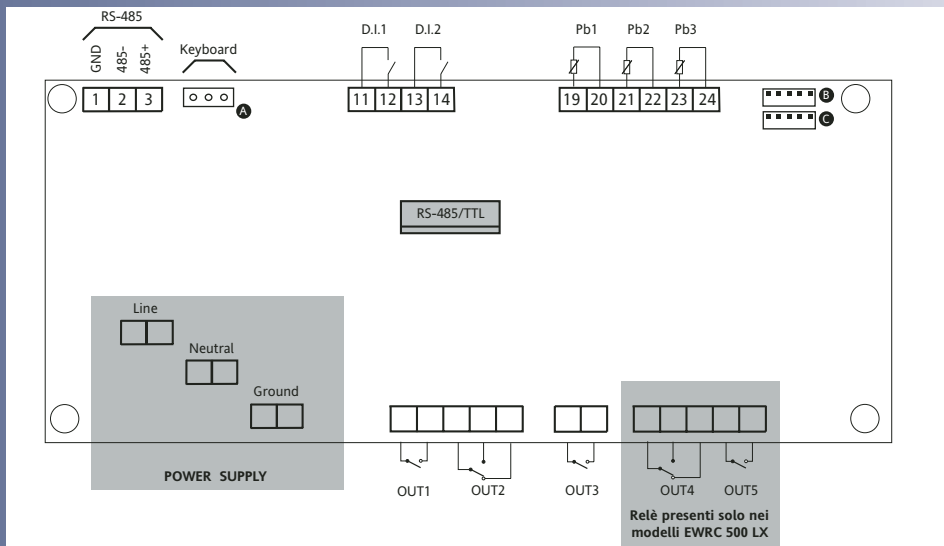
EWRC 300 - 500 LX with FASTON



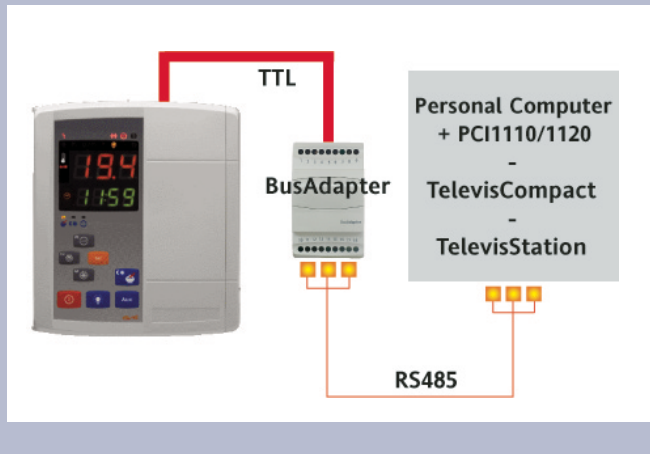
TERMINALS

out 1	out1 relay output, see H21
out 2	out2 relay output, see H22
out 3	out3 relay output, see H23
out 4	out4 relay output, see H24
out 5	out5 relay output, see H25
19-20	Probe input Pb1
21-22	Probe input Pb2
23-24	Probe input Pb3
11-12	Digital input DI 1
13-14	Digital input (DI). 2
1-2-3	RS-485 serial port (optional) for TelevisSystem connection
A	Keypad connection
B	TTL input for TelevisSystem connection
C	Copy Card connection

EWRC 300 - 500 LX with disconnectable terminals



TelevisSystem connection



The controller can be connected to Televis remote control systems through a TTL serial port (use the TTL - RS interface module 485 BUS ADAPTER 130 or 150), or by direct RS-485 connection if you have a RS485/TTL plug-in module. To configure the device for this purpose, open the file identified by the "Add" label and use parameters "dEA" and "FAA".

N.B.: The BusAdapter can be placed inside EWRC 300-500 LX

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 according to the application, and must only be accessible using tools (with the exception of the front panel).

The device is suitable for use with household refrigeration appliances and/or similar equipment, or as a standalone device, and has been tested for safety aspects in accordance with the harmonised European reference standards. It is classified as follows:

- In terms of design, as a built-in or freestanding automatic electronic control controller.
- In terms of automatic operating characteristics, as a type 1B controller.
- In terms of software class and structure, as a Class A controller.
- In terms of connection, as a device with flexible, external and disconnectable cable with Y connection.
- Grade 2 polluting device
- Grade II device in terms of the relative overvoltage category
- Ball test temperature: 80 °C

USES NOT PERMITTED

The device must not be used for applications other than those described.

Note that the relay contacts provided are of a functional type and therefore subject to malfunction: Any protection devices required by product standards, or suggested by common sense, must be installed externally to the instrument for obvious safety reasons.

RESPONSIBILITY AND RESIDUAL RISKS

Eliwell Controls srl shall not be liable for damage resulting from:

- installation/uses other than those specified and, in particular, which do not comply with the safety requirements set out in the regulations and/or stated herein;
- use on panels that do not provide adequate protection against electric shock, water or dust when assembled;
- use on panels that allow access to dangerous parts without having to use tools;
- tampering and/or modification of the product;
- installation/use on panels that do not comply with the current standards and regulations.



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EWRC 300-500 LX



ELECTRICAL CONNECTIONS

Important! Switch off the device before working on the electrical connections. The device is equipped with extractable screw terminals to connect electric cables, the cross-section of which must not exceed 2.5 mm² (one wire per terminal for power connections). For the capacity of the terminals, see the label on the device. The relay outputs are free of voltage. When current exceeds 8A on relay outputs, 2 x 2.5 mm² cables (2 fastons) must be run out for each individual contact to ensure the temperature of the cables does not exceed 85 °C. Do not exceed the maximum permitted current; for higher loads, use a contactor with sufficient power capacity. Make sure that power supply is the correct voltage for the device. The probe has no specific connection polarity and can be extended using a normal two-pole cable (note that extending the probe has a negative effect on the device's EMC characteristics: take great care with the wiring). The probe cables, power supply cables and the TTL serial cable should be kept separate from the power cables. Type of connection: removable terminal block screw connectors for signal ports, flat faston connectors with clamp contact for power ports.