EW 4800

UNIVERSAL CONTROLLERS

Temperature regulators and process controllers



UP

Scrolls through menu items Increases values Programmable by parameter (see par. H31)



DOWN

Scrolls through menu items Decreases values Programmable by parameter (see par. H32)



fnc

Opens QuickStart menu ESC (exit) function



set

Accesses the Setpoint Opens the Programming Menu Activates functions Confirms commands

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 statuses, other statuses.



Tun Flashes when Autotuning is active; otherwise OFF;



ON if the Soft Start function is active; OFF in all other cases;

out1 - out2

ON when output active; otherwise OFF: Flashes if there is a delay, a protection, or activation is blocked

ON for output active;otherwise OFF

Alarm

ON if there is an alarm; otherwise OFF; flashes if an alarm is switched off;

Indicates whether the temperature display is in °C or °F;

Setting the Setpoint

The following procedure is to be followed in order to set the 2 setpoint values in the device: SEt1 and SEt2









(2) The PV display shows label SEt1, and the SV display shows the current Setpoint value. Press the Set key again to display the Setpoint 2 in the same way.



(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

Programming menu

The programming menu contains all the parameters needed for setting the device functions, and is divided into two levels user level and installer level:



• When the Set is pressed on the main display for 3 seconds, the user can access the Parameter Programming menu; the USEr label appears, to indicate user level of the menu.

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



• Press the UP and DOWN keys to scroll through all the user level folders and, on the desired folder, press the Set key to access the parameters in the folder (for example, the ALAr folder).



- When the Set key is pressed on the ALAr folder, the first parameter in the folder is displayed, as follows:
 - PV display: parameter label (PAO)
- SV display: current parameter value (0) The Set key can be used to scroll through all the parameters in the folder.



• To change the value of a displayed parameter, use the UP and DOWN keys. When the parameter has been set to the desired value, press "fnc", or allow the 15 second timeout to elapse, to save the new parame-



• Now press and release the "fnc" key to return to the previous display levels.

User level access:





• Indicated by label **USEr** press and release the Set key to open the folders containing the user level parameters

Installer level access (InSt):





• Indicated by label UsEr the UP and DOWN keys can be used to display the InSt label, which indicates the access point of the folders containing the installer level parameters. When InStis displayed, press and release the Set key

At any level of any of the menus, press the "fnc" key, or allow the 15 second timeout to elapse, in order to return to the previous menu level. The last value shown on the display will then be stored in memory.

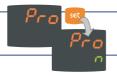


QuickStart Menu

In the main menu, the "fnc" key can be pressed to open the QuickStart menu and access the special functions, which are useful for setting and managing the device, for example the Functions Folder and the Alarms Folder (if at least one alarm is present).



After pressing the "fnc" key, the UP and DOWN keys can be used to scroll through the folders in the menu



When a label is selected, the Set key can be pressed to access the corresponding folder.

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

Functions Folder

On the **FnC** label, the Set key can be pressed to access the functions.



The label will be displayed, with the current status of the function.

To scroll through the available functions, use the Set key.



To change the status of a function, use the UP and DOWN keys.

Function	Label function	Status of default	D.I.	Key	Indication function active
Soft Start	SStr	ON	1	1	LED S.Str ON
Stand-by	Stnb	OFF	5	5	/
Autotuning*	Auto	OFF	7	7	LED Tun flashing
Start work cycles/sequences**	StEP	OFF	8	8	/
Reset work cycles/sequences**	* rStS	OFF	-	-	/
Reset PID*	rStP	OFF	-	-	/

Notes

- * function visible if H01=2-3-7-8-9-10-11
- ** If pressed during a work cycle, the device goes into STOP status. In this status, the cycle time must stop and be re-started by a START command.
- *** Visible only if work cycles have been enabled. When pressed, the cycle is reset and the device is brought into the STOP position.

Alarms Folder*

On the **ALAr label**, **press Set to** access the alarms folder.

This folder contains all the alarms managed by the device.

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



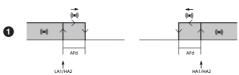
If there are alarms present, the UP and DOWN keys can be used to scroll through and display them

* Appears only if at least one alarm is present.

	Label	Alarm	Cause	EFFECTS*	Problem solving
> '	E1	Probe 1	• measured values are outside the	Label E1 shown on main dis-	check the probe
		(regulation)	nominal range	play but not in the ALAr	wiring
:		faulty	· regulating probe faulty/short-cir-	folder;	 replace probe
			cuited/open		
	HA1	High tempera-	 value read by probe > HA1/2 after 	Alarm created in the ALAr	· Wait for the tempera-
		ture alarm	time "tAO". (see "ALARMS MIN MAX"	folder through label	ture value read by the
			diagram and description of parameters	HA1/HA2	probe to come back
			"HA1/2" and "Att" and "tAO")		below HA1/2-AFd
	LA1	Low	 value read by probe < LA1/2 after 	Alarm created in the ALAr	· Wait for the tempera-
		temperature	time "tAO". (see "ALARMS MIN MAX"	folder through label	ture value read by the
		alarm	diagram and parameters "LA1/2" and	LA1/LA2	probe to come back
			"Att" e "tAO")		above LA1/2-AFd
	EAL	External	 alarm regulating with delay set 	Alarm Led lit continuously;	 Stop the alarm manually
		alarm	by parameter H14 from D.I. active	Alarm indicated in the	by pressing a key
			if H11 =9 or 10 (see H11 and H14)	ALAr folder through label	• if H11=10, the regu-
				EAL;	lators are activated
				If H11 =10, the regulators	again only after the
				are blocked.	digital input is disabled
	tOA	Autotuning	 Autotuning cycle aborted within 	Autotuning is blocked	Press 'set' button to
		timeout	AtO time out	Label tOA shown on SV dis-	restore the normal dis-
				play	play
	nOC	Autotuning	Autotuning cycle failure before	Autotuning is blocked	Press 'set' button to
		failure	time out	Label nOC shown on SV	restore the normal dis-

MAX-MIN ALARMS

Absolute temperature value (par "Att"=0) Abs(olute)

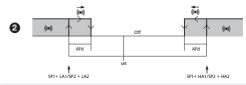


	SWIII	100777042
Minimum temperature alarm	Temperature less than or equal to	LA1/2 (LA1/2 with sign)
Maximum temperature alarm	Temperature greater than or equal	to HA1/2 (HA1/2 with sign)
Returning from minimum temperature alarm	Temperature greater than or equal	to LA1/2+AFd
Returning from maximum temperature alarm	Temperature less than or equal to	HA1/2-AFd

Temperature relative to Setpoint value (par "Att"=1) rEL(ative)

play

display



Temperature less than or equal to set+LA1/2 (LA1/2 positive only)

Temperature greater than or equal to set+HA1/2 (HA1/2 positive only)

Temperature greater than or equal to set + LA1/2 + AFd

set - | LA1/2 | +AFd

Temperature less than or equal to set+HA1/2-AFd

if Att=reL(ative) LA1/2 must be negative: therefore, set+LA1/2<set since set+(-|LA1/2|)=set-|LA1/2|

The unit can be used to program 2 different sequences, each with 8 steps; the individual steps can be set in the **StEP** folder in the parameter setting menu. (see "STEP Folder" on page 3)

The **Pro** folder can be opened and the desired steps in the 2 possible sequences (programs) can be set by pressing the Set key.



When the desired program has been set, it can be activated by selecting the special **StEP** function in the Functions folder.



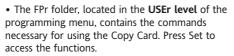
To indicate that a program is running, the display on the device shows **SV** and the current step, from first (Step 0) to last (Step 7).

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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:







• Scroll with the UP and DOWN keys to find the desired function. Press the Set key and the desired function (upload, download or formatting) will be carried out.



• If the operation is successful, the display shows y; otherwise, it shows n.

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.



NOTES:

- after the reset download operation, the device will operate with the settings in the map that has been newly loaded.
- see folder FPr, "Parameters" on page 4-5
- · Connect Copy Card with "MEMORY MODULE" label upside"

Passwords

Passwords can be set to limit the accesses to each parameter management level. The two different passwords can be activated by setting parameters PA1 and PA2 in folders "diSP" (PA1 at USEr level and PA2 at InSt level). The password is enabled if the value of parameter PA1/PA2 is different from 0.





• To access the "Programming" menu, hold down the "set" key for more than 5 seconds". If it has been set, the PASSWORD will be requested; press Set again.



• If activated (value different from 0), password PA1 must be entered. Carry out this operation by selecting the correct value using the UP and DOWN keys, then confirm by pressing the Set key.

If the password entered is incorrect, the device displays label PAS1 again and the operation must be repeated.

Password PAS2, for the InSt level, works in the same way as password PAS1.

STEP Folder

Only Installer level (InSt) shows the StEP folder, which can be used to store two working programs, each consisting of up to 8 steps; 9 parameters must be set for each step. The operations for setting these parameters correctly are described below. Press and release the Set key on the StEP folder label to access the folder:



- Use the UP and DOWN keys to select one of the two programs available, and press Set on either 1 or 2.
- The first parameter (01), corresponding to the first step (00) is then displayed; use the Set key to scroll through the parameters.



• To change the value of a parameter, use the UP and DOWN keys.

Each label is made up of 4 digits, which indicate the step and the number of the parameter it contains:



Indicates the number of the parameter (from 01 to 09)

To exit from any level of the **StEP** folder, simply press the "fnc" key, or allow the 15 second timeout to elapse.

0x01 Step activation delay. Defines the delay at which the step is activated after starting. If it is the first step in the program, it is activated by the "Start process" key

During the delay time, the working set is the one defined by Fine Step mode. 0x02 Step duration. Defines the length of time of the step: expressed in hours/minutes; if set a=0 indicates that the step ends when a temperature is reached.

0x03 Length of time from start, or from when Setpoint is reached. Defines whether step duration is to be calculated from when the step started (value 0), or from when the Setpoint (value 1) is reached within the step.

0x04 Setpoint step. Defines the regulation set for the step.

Regulator active. Indicates which regulator is active in the step: 0x05

On1=on/off1; On2=on/off2; Ne=neutral zone; Cyc=cyclic; PH=Pid heating; PHC=Pid heating/cooling; PC=Pid cooling;

0x06 Enable/disable Soft Start. Indicates whether the Soft Start function is enabled during the step. AUX relay mode. Indicates a mode for the AUX relay, if configured, during the the step between 0x07

ON, OFF and Duty Cycle Fine step mode. Indicates the way in which the step ends; any of the following can be selected: 0x08

2*=go to next step, maintaining the current setpoint; 1= end program;

3*=go to next step waiting for the new set point (unregulated); 4=go back to start of sequence; 5=go back to sequence No. xx; 6=infinite duration, maintaining the setpoint

0x09 Go back to sequence No.xx. indicates the sequence number to go back to. This parameter has a

	Par.	Range	Default	* U.M.	Level
2	0x01	099:59	0	hours/mins	InSt
g 1/2	0x02	099:59	00:59	hours/mins	InSt
· Prog	0x03	01	0	Flag	InSt
Folder Parameters -	0x04	-3282910	0	°C/°F	InSt
met	0x05	06	0	num	InSt
Para	0x06	01	0	Flag	InSt
der	0x07	01	0	Flag	InSt
Fol	0x08	17	2	num	InSt
StEP	0x09	07	0	num	InSt

value only if parameter 0x08 is set to 5.

NOTE: The values 2 and 3 are disabled only for parameter 0708.

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Dynamic Parameter Folders

The two folders **Pid** and **Aut** are visible only if the device has been set for PID regulation, i.e. if parameter **H01** is equal to 2-3-7-8-9-10-11. These folders can be navigated along with their subfolders, and there is a procedure for saving values when exiting from these subfolders. How to navigate inside the two **Pid** and **Aut** dynamic parameter folders is described below:



Press the Set key on the **Pid** label the label of the first subfolder **PrH** is displayed. Scroll through the subfolders using the UP and DOWN keys.



Press the Set key on the desired subfolder to access the parameters. To scroll through the parameters, use the Set key, and to change a value, use the UP and DOWN keys.



When exiting the subfolders using the "fnc" key, or after the 15 second timeout has elapsed, the user will be asked whether to save any changes that have been made.



Use the UP and DOWN keys to select **y** (save changes) or **n** (not to save changes), then press Set to exit the folder.

PARAMETERS TABLE

										10 1710	
	Par.	Range D	efault*	U.M.	Level						
	SP1	LS1HS1	0.0	°C/°F			Pid C	ooling - PrC	**		
	SP2	LS2HS2	0.0	°C/°F			bP	0.1999.9	50.0	°C/°F	USEr/InSt
	OS1	-30.030.0	0	°C/°F	InSt	-	ti	09999	600	sec	USEr/InSt
	db1					-	td	09999	150	sec	USEr/InSt
		0.030.0	1.0	°C/°F	USEr/InSt		biA	-100100	0	num	InSt
	dF1	-30.030.0	-1.0	°C/°F	USEr/InSt		tt	09999	300	sec	USEr/InSt
	HS1	-50.02910.0	800.0	°C/°F	USEr/InSt		C	0100	0	num	InSt
_	LS1	-328140	-200	°C/°F	USEr/InSt		SLO	0100	0	num	InSt
듄	HA1	-502910	2910	°C/°F	USEr/InSt	Pid	SHI	0100	100	num	InSt
Je l	LA1	-328300	-328	°C/°F	USEr/InSt	۵		201310	20	sec	USEr/InSt
- label	dn1	0255	0	sec	InSt			tuning - PA*		-	
1	do1	0255	0	min	InSt		tun(2		0	flag	USEr/InSt
Ī	di1	0255	0	min	InSt		AtO Adt	1100	10	hours	USEr/InSt InSt
ato	dE1	0255	0	sec	InSt		PrE	01	1	Flag	InSt
T I	On1	0255	0	min	InSt		ASA	01	1	Flag Flag	InSt
Regulator	OF1	0255	1	min	InSt						IIISL
~	<u></u>						Fun	tuning Heat P/Pi/Pd/Pid	Pid		InSt
	OS2	-30.030.0	0	°C/°F	InSt		APL		1	num °C/°F	
	db2	0.030.0	1.0	°C/°F	USEr/InSt		biAt	0100	50		InSt InSt
	dF2	-30.030.0	-1.0	°C/°F	USEr/InSt		APr	0100	50	num	InSt
	HS2	-50.02910.0	800.0	°C/°F	USEr/InSt		AHr	0.0100.0	0.3	°C/°F	InSt
2	LS2	-328140	-200	°C/°F	USEr/InSt			tuning Cool			msc
2 - label rE2	HA2	-502910	2910	°C/°F	USEr/InSt		Fun	P/Pi/Pd/Pid	Pid	num	InSt
þel	LA2	-328300	-328	°C/°F	USEr/InSt	5	APL	0100	1	°C/°F	InSt
la	dn2	0255	0	sec	InSt	AUto	biAt	0100	50	num	InSt
2 -	do2	0255	0	min	InSt	e e	APr	0100	50	num	InSt
	di2	0255	0	min	InSt	label	AHr	0.0100.0	0.3	°C/°F	InSt
ate	dE2	0255	0	sec	InSt		AOL	020/420/001/	020	num	USEr/InSt
Regulator	On2	0255	0	min	InSt		AGE	005/010	020	Hulli	U3EI/III3t
Reg	OF2	0255	1	min	InSt	* *	AOF	rO/Er/cPH/	rO	num	USEr/InSt
	Regi	ılator PID - I	Pr			2		cPc/diS			
	run	01	1	Flag	InSt	Q	AOS	Aon/AoF	AoF	Flag	USEr/InSt
	dut	-100100	0	%	InSt	label AnOu(2)	LAO	-3282910	0	num	USEr/InSt
	Pid I	Heating - Pri	H*			pel	HAO	-3282910	100	num	USEr/InSt
	bP	0.1999.9	50.0	°C/°F	USEr/InSt						
	ti	09999	600	sec	USEr/InSt	(E)	Pro 1	Progran	n 1 pa	rameters	InSt
Ε	td	09999	150	sec	USEr/InSt	STEP(3)	Pro 2	Progran	n 2 pa	rameters	InSt
Pid	biA	-100100	0	num	InSt	S	٩c:	0.2=		96.05	
1.0	tt	09999	300	sec	USEr/InSt		dSi	025	0	°C/°F hours/min/se	InSt
PID	C	0100	0	num	InSt	SF	Std	0255	0		
٠.	SLO	0100	0	num	InSt		unt	02	1	num	InSt
Reg.	SHI	0100	100	num	InSt	abel	SEn	03	1	num	InSt
~	PEd	201310	20	sec	USEr/InSt	<u>a</u>	Sdi	030	0	°C/°F	InSt

	Con	0255	0	min	InSt
급	CoF	0255	0	min	InSt
	Att	AbS/rEL	AbS	flag	InSt
	AFd	150	2	°C/°F	InSt
<u>_</u>	PAO	010	0	hours	USEr/InSt
Alar	SAO	024	0	hours	USEr/InSt
e	tAO	0255	0	min	USEr/InSt
lab	AOP	nC/nO	nC	Flag	InSt
	PSt	t/d	t	flag	InSt
_	dEA	014	0	num	InSt
βqc	FAA	014	0	num	InSt
el /	PtY	n/E/o	Е	num	InSt
lab	StP	1b/2b	1b	flag	InSt
	LOC	n/y	n	Flag	USEr/InSt
	PA1	0999	0	num	USEr/InSt
	PA2	0999	0	num	InSt
	ndt	n/y	у	Flag	USEr/InSt
	CA1	-3030	0	°C/°F	USEr/InSt
SP	CAi	02	2	num	InSt
b	LdL	-3282910	-328	°C/°F	InSt
abel	HdL	-3282910	2910	°C/°F	InSt
<u>E</u>	dro	01	0	Flag	USEr/InSt
	H00	ntc/Ptc/pt10/ tcJ/tcH/tcS/ tcr/tct/Pt1	Pt1	flag	USEr/InSt
	H01	011	4	num	InSt
	H02	015	5	sec	InSt
	H06	n/y	у	flag	InSt
	H08	02	2	num	InSt
	H10	0255	0	num	USEr/InSt
	H11(2	*	0	num	InSt
	H13(2		0	num	InSt
	H14(2 H21		0	min	InSt InSt
	H22	no/nc/noP/ncP 04	noP 0	num	InSt
	H25	04	0	num	InSt
	H31	08	0	num	InSt
Ë	H32	08	0	num	InSt
				num	USEr/InSt
41	rEL	/			
ape	rEL tAb	/	/	num	USEr/InSt
Pr labe				num /	USEr/InSt USEr/InSt
l FPr labe	tAb	/	/		
label FPr label CnF	tAb UL	/	/	/	USEr/InSt

NOTES:

- **(1)** Folder visible if H01= 2-3-7-8-9-10-11.
- (2) Visible only if H01=7
- (3) Folder present only in models equipped with an analog output
- (4) see paragraph "STEP Folder" on page 3.
- (5) These parameters are visible only in models equipped with a digital input
- * These subfolders are visible only if H01=2-7-8-10
- ** These subfolders are visible only if H01=3-7-9-11
- *** Folder AnOu is visible in models equipped with an analog output

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	DESCRIPTION C	F PAR	AMETERS
SP1/SP2	Setpoint 1/2 Control Setpoint		PH= PID Hot control variable, output proportional to the
	REGULATOR 1/2 (folder with label "rE1"/"rE2")	р	ercentage power output, if
OS1/OS2	Offset Setpoint 1/2. Temperature value to be added arithmetically to the Setpoint if a reduced set is enabled; it cannot have a 0 value.		D Hot is selected. PC= PID control variable, output proportional to the percentage powe.
dh1/dh2	Response band above Setpoint 1/2		utput, if PID Cold is selected.
	Setpoint 1/2 differential band. With negative sign		nalog output mode if probe faulty:
	Hot operation; with positive sign, Cold operation.		on=analog output ON; AoF=analog output OFF;
	If dF1=0 goes back above SP1/2, dF1=db1		nalog output minimum limit
	Maximum value that can be assigned to setpoint 1/2.	HAO A	nalog output maximum limit
	Minimum value that can be assigned to setpoint 1/2.		
1A1/HA2	Maximum temperature alarm. Temperature limit (the relative or absolute status of this value is controlled by "Att", present in the		ROGRAM 1/2 PARAMETERS FOLDER
	installer menu, folder ALAr), beyond which the alarm is activated.		older with label "StEP")
A1/LA2	Minimum temperature alarm. Temperature limit (the relative or abso		rogram 1/2 parameters subfolder
	lute status of this value is controlled by "Att", present in the installer		side folder StEP there are 2 subfolders
	menu, folder ALAr) below which the alarm is activated.		at contain the parameters that make up the steps in each
ln1/dn2	Delay after which regulator 1/2 is started. The delay time indicated must		rogram. It is possible to set 2 different programs, each with
4/1.5	elapse between the request for activation of the regulator relay and switch-on.		steps and each step made up of 9 parameters.
lo1/do2	Delay time after switching off. The delay time indicated must elapse	Se	ee "STEP Folder" on page 3
i1/di2	between deactivation of the regulator relay and the next switch-on. Delay between switch-ons. The delay time indicated must elapse	S	OFT START REGULATOR (folder with label "SFt")
11/412	between two consecutive switch-ons of the regulator.		ee "Soft Start", page 7
E1/dE2	Switch-off delay. The delay time indicated must elapse between the		oft Start regulator step value
	request for deactivation of the regulator relay and switch-off.	Std D	uration of step for Soft Start regulator (unit of measurement defined by unt)
	NOTE: for parameters dn1/2, do1/2, di1/2, dE1/2, 0= not active	unt U	nit of measurement for step duration (defines the unit of measure-
	On1/On2 Switch-on time for regulator if probe faulty. If set to "1"	ment	
	with Of1/2 at "0", the regulator remains on continuously, and with		or Std)
NE1/OE2	Of1/2 > 0, it operates in Duty Cycle mode. See the Duty Cycle diagram. Perulator switch off time if probe faulty if set to "1" with On1/2 at		egulator selection for Soft Start function. Determines the
F I/OF2	Regulator switch-off time if probe faulty. If set to "1" with On1/2 at "0", the regulator remains off continuously, and with On1/2 >0 it	16	gulator on which the Soft Start function is to be enabled. 0=disabled; 1=enabled on regulator 1;
	operates in Duty Cycle mode. See the Duty Cycle diagram.		2=enabled on regulator 2 3=enabled on regulators 1 and 2
	operates in Buty eyele mode. See the Buty eyele diagram	Sdi	Automatic return band for Soft Start function
	PID REGULATOR (folder with label "Pid")		
	(folder visible only if H01=2-3-7-8-9-10-11)		CYCLIC REGULATOR (folder with label "cLc")
	PID regulator, common parameters		see "Cyclic Regulator", page 7
	heating/cooling (subfolder with label Pr)	Con	ON time for cyclic regulator output
run	Manual or automatic mode selection:	CoF	Off time for cyclic regulator output
dut	0=manual; 1=automatic; PID Duty Cycle in manual mode.		ALARM REGULATOR (folder with label "ALAr")
uut	PID heating regulator (subfolder with label PrH)/	Att	Modes of parameters HA1/HA2 and LA1/LA2:
	PID cooling regulator (subfolder with label PrC)		Abs=absolute; rEL=relative;
bp	PID proportional band	Afd	Alarm differential
ti	Total PID time; OFF if =0	PAO	Alarm exclusion time after the device is
td	derivative time		switched on, following a power failure.
biA	Static PID polarization	SAO tAO	Timeout for "set point not reached" alarm indication
tt n	total time for antireset windup (OFF if =0) derivative component limiting	AOP	Time delay for temperature alarm indication. Alarm output polarity:
b	proportional setpoint weighting	AUI	nc=normally closed; no=normally open;
c	derivative setpoint weighting		The Hormany crosed,
SLO			COMMUNICATION (folder with label "Add")
SHi	maximum output saturation	Pts	Protocol selection: t=Televis; d=Modbus
PEd	1	dEA	index of the device within the family (valid values from 0 to 14)
	AUTOTUNING (folder with label "AutO")	FAA	device family (valid values from 0 to 14)
	(folder visible only if H01=2-3-7-8-9-10-11)		The pair of values FAA and dEA represents the network address of
	Autotuning, common parameters heating/cooling (subfolder with label PA)		the device and is indicated in the format "FF.DD" (where FF=FAA and DD=dEA).
tun	Hot/cold Autotuning selection; 0=hot, 1=cold;	PtY	Modbus parity bit: n=none; E=Even; o=odd;
tuii	IMPORTANT: parameter visible only if H01=7;	StP	Modbus stop bit: 1b=1 bit;2b=2 bit;
AtO	,		10 1 01t,40 4 01t,
Adt	<u> </u>		DISPLAY (folder with label "diSP")
PrE	Restore parameter default settings (pretuning)	LOC	Keyboard lock (set and keys). It is still possible to go into paramet
	0=no; 1=yes;		programming and modify the parameters, including this one,
ASA	· · · · · · · · · · · · · · · · · · ·		in order to allow keyboard unlocking.
	0=no; 1=yes;	DA4	y = yes; n = no. Presuperd 1. When enabled (value other than 0), this is the assess.
	Heating Autotuning (subfolder with label DAH)/	PA1	Password 1. When enabled (value other than 0), this is the access key to the user level parameters (USEr)
	Heating Autotuning (subfolder with label PAH)/ Cooling Autotuning (subfolder with label PAC)	PA2	key to the user level parameters (USEr). Password 2. When enabled (value other than 0), this is the access
Fun		1712	key to the installer level parameters (inSt).
	P=Proportional; 1=Proportional/supplementary;	ndt	Format with decimal point. y = yes; n = no.
	2=Proportional/derivative; 3=Prop./supplementary/derivative;	CA1	Calibration 1. Positive or negative temperature value added to the
APL			value read from probe 1, according to the setting of parameter "CA
biAt	· · · · · · · · · · · · · · · · · · ·	CAi	Calibration operation:
APr	, · · · · · · · · · · · · · · · · · · ·		0=sum with displayed temperature only;
AHr	relay hysteresis in Autotuning		1=sum with only the temperature used by the regulators; not for the display, which remains unchanged;
			HOLLOL LIE GISDIAV. WHICH FEHIAMS UNCHANGED:

CONFIGURATION OF ANALOG OUTPUT (folder with label "AnOu") 2=sum with the displayed temperature, which is also used **AOL** Analog output mode: by the regulators; LdL 020=0...mA; 420=4...20mA; 001=0...10V; Minimum value that can be displayed by the device. Maximum value that can be displayed by the device.

Selection of °C or °F for displaying the temperature read from the probe. 0 = °C, 1 = °F.

PLEASE NOTE: if °C is changed to °F or vice versa, the 005=0...5V; 010=0...10V; HdL **AOF** Analog output mode: dro dis=output disabled; ro=read out, output proportional to probe reading, within the range set by parameters LAO and HAO values for setpoint, differential, etc., are not changed. Er=error, output proportional to error between setpoint 1 and the value (for example, set=10°C becomes 10°F) read on the probe, within the error range specified by the parameters LAO and HAO

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CONFIGURATION PARAMETERS (folder with label "CnF")

H00 Selection of probe type:

H01

Configuration of regulators:

H01	Description	OUT1	OUT2
0	free	H21	H22
1	ON/OFF	H/C	H22
2	PID Heating	Н	H22
3	PID Cooling	С	H22
4	two independent ON/OFFs	H/C	H/C
5	two related ON/OFFs	H/C	H/C
6	neutral zone	H/C	H/C
7	PID Heating-Cooling	Н	С
8	PID Heating-O/OFF	Н	H/C
9	PID Cooling-ON/OFF	С	H/C
10	PID Heating-Alarm	Н	Alarm
11	PID Cooling-Alarm	C	Alarm

H02 Activation time for keyboard functions. For the ESC, UP and DOWN keys, which are configured with a second function, a time is set for activation of the second function. One exception is the AUX

function, which has a fixed delay of 0.5 sec.

H06 Key or aux/light digital input active with the device OFF:

0=n=not active; 1=y=active;

H08 Stand By mode:

0=case 1; 1=case 2; 2=case 3;

H10 Delay for output activation after Power On; Minimum delay time for connection of utilities in the event of restart after a power failure;

H11 Configurability and polarity of digital input:

0=disabled; 1=activate/deactivate Soft Start; 2=activate/deactivate OSP; 3=activate/deactivate cyclic regulator; 4=activate/deactivate Aux output; 5=activate/deactivate Stand-by; 6=call for maintenance; 7=activate/deactivate Autotuning;

8=activate/deactivate step control; 9=external alarm;

10=external alarm to lock controllers;

H13 Polarity and priority of digital inputs:

no=normally open; nc=normally closed;

noP=normally open with priority; ncP=normally closed with priority; Activation delay for digital inputs;

Configurability of digital output 1: 0=disabled; 1=alarm; 2=cyclic; 3=aux/light;

4=stand-by; 5=buzzer;

H22* Configurability of digital output 2: Same as H21

* see table of H01 parameter

H14

H21*

H31

H25 Buzzer enabling (only if buzzer present):

n=not enabled; y=enabled;

Configurability of UP key: 0=disabled;

0=disabled; 1=activates/deactivates soft start; 2=activates/deactivates OSP; 3=activates/deactivates cyclic regulator; 4=activates/deactivates aux output; 5=activates/deactivates stand-by; 6=request maintenance; 7=activates/deactivates autotuning;

8=activates/deactivates step control;

H32 Configurability of DOWN key: Same as H31

rEL Device version. read-only parameter. **tAb** Reserved. Read-only parameter.

COPY CARD (folder with label "Fpr") see "Copy Card", page 3

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.

Description of Regulators

The PID regulator is available as an alternative to the on/off regulator, if greater control precision is required.

Enabling:

The PID regulator is enabled if:

• **H01** = 2-3-7-8-9-10-11 (see Parameters, folder **CnF**)

This setting of parameter H01 enables display of the PId and Aut folders in the parameter Programming Menu.

Parameter settings:

It is also necessary to set the **run** parameter. This parameter is used to select the regulating mode: manual* (Duty Cycle) or automatic (PID). The **run** parameter is therefore set to=1.

The device is now enabled for PID regulation; the **PId folder** is visible in the Programming Menu, and the parameters in it can be modified in order to improve regulating performance: these parameters can also be modified in automatic mode using the **Autotuning function**.

* if manual regulation is selected (run=0), the activation percentage must be set dut (see 'Parameters' on page 4). Then set the period divided with the Duty Cycle, using the **PEd parameter** (see 'Parameters on ages 4-5)

Autotuning

The setting of the PID regulation parameters can be simplified using the

The device has two ON/OFF type regulators that can be configured by the user through the H01 parameter:

- H01=4, 5 threshold regulator
- H01=5 regulator with window

dF1<0	dF2>0	H01	regulation type
hot	cold	4	independent setpoints
hot	cold	5	relative setpoints
-	-	6	Neutral Zone (or window)

NOTE: examples with dF1<0 ((hot) and dF2>0 (cold)

Autotuning function, which can calculate the PID parameters automatically. Autotuning is activated through a dedicated function in the Functions Folder (see QuickStart Menu on page 2), or by using a key if appropriately configured (see par. **H31**, **H32** in 'Parameters' on page 5).

The Tun Led on the device flashes to indicate when Autotuning is in progress.

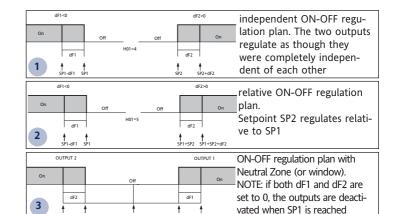
Mode setting

If parameter **H07** is set to 7 (PID hot-cold regulation), Autotuning must be carried out twice: once for cold and once for hot.

In this mode, the **tun parameter is also visible in** the **PA subfolder** contained in the **Aut folder**; this parameter is used to select the Autotuning mode: hot (**tun=0**)/cold (**tun=1**).

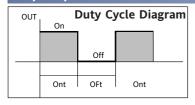
To carry out autotuning in PID hot-cold mode (H01=7), therefore, proceed as follows:

- set **H01**=7
- set **tun**=0
- activate the Autotuning function in the Functions Folder
- wait for the Autotuning function to be performed
- set **tun**=1
- activate the Autotuning function in the Functions Folder



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Outputs protection



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

- · code E1 is shown on the display
- the regulator is activated as indicated by parameters On1/On2 and OF1/OF2 if set for Duty Cycle

On1/On2	OF1/OF2	Compressor output
0	0	OFF
0	>0	OFF
>0	0	ON
>0	>0	dc

parameters On1/On2, OF1/OF2 set for Duty Cycle

Auxiliary Regulator

The auxiliary regulator can be activated through the digital input if this is set to auxiliary (parameter H11=4), or by a key (parameter **H31** or **H32**=4): in this case, the regulator control must be configured as Aux by setting parameters H21(22) to 4.

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 is set to 4 (aux); in this case, the relay reflects the state of the digital input.

Parameter H13 can also be used to set the priorities/polarities for activation by key or digital input.

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

Soft Start

NOTE: The SOFT START function can be selected by key, by D.I. or by a function.

The Soft Start regulator can be used to set the temperature gradient over which a given setpoint is reached within a predefined time.

With this function, the regulation Setpoint is raised progressively and automatically from value Ta (ambient temperature when switched on) to the value actually set on the display; this allows the initial temperature rise to be slowed down and thus reduce the risk of "overshoot".

Cvclic Regulator

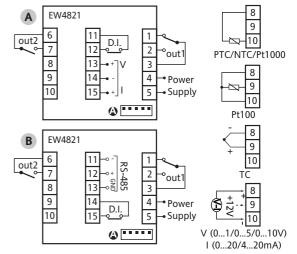
NOTE: The PERIODIC CYCLE function can be selected by key or by digital input

This function can be associated with both the outputs by relay (by setting parameters H21, H22 to 2), and can be used to actuate "Duty Cycle" regulation with the intervals set by parameters Con and CoF.

TECHNICAL DATA EW4820 WIRING DIAGRAM 8 Front protection IP65 PC+ABS plastic resin body PC+ABS UL94 V-0 EW4820 9 Container 10 Dimensions front 180x37 mm, depth 69mm 6 out2 Mounting and panel with 45x45mm drilling template PTC/NTC/Pt1000 7 2 °out1 Usage temperature -5°C...55°C 8 8 3 -20°C...85°C Storage temperature 9 4 9 Power Ambient humidity in use 10...90% RH (non-condensing) 10 5 Supply 10 and in storage **A** Pt100 Display range See Probes Table Analog input 1 1 input selectable by parameter H00 8 TTL for connection to Copy Card or TelevisSystem Serial 9 Digital outputs (configurable) - output OUT1 10 **TERMINALS** 1 SPDT 3A 250 V~ - output OUT2 1 SPST 2A 250 V~ N.C. out1 relay output, see H21 Buzzer output only on models where this is provided N.O. out1 relay output, see H21 9 See Probes Table 6 - 7 N.A. out2 relay output, see H22 Accuracy 8-9-10 Resolution See Probes Table probe input 10 Consumption 2,45W (12-24V~/12-36V-- model) 4 - 5 Power supply V (0...1/0...5/0...10V) 2,40W (95-240 V~ model) TTL input for Copy Card and I (0...20/4...20mA) 12-24Va ±10% / 12-36V... ±10% / 95-240 V~ ±10% Power supply Televis system

TECHNICAL DATA	EW4821
Front protection	IP65
Container	PC+ABS plastic resin body PC+ABS UL94 V-0
Dimensions	front 48x48 mm, depth 113mm
Mounting	and panel with 45x45mm drilling template
Usage temperature	-5°C55°C
Storage temperature	-20°C85°C
Ambient humidity in use and in storage	1090% RH (non-condensing)
Display range	See Probes Table
Analog input	1 input - set by parameter H00
Digital input	1 digital input free of voltage
Serial	-TTL for connection to Copy Card or Televis System/ -RS-485 serial port (Configuration B only)
Analog outputs	Analog output V-I: 0-1V,0-5V,0-10V,020mA,420mA (Configuration A only)
Digital outputs (configurable) - OUT1 output - OUT2 output	1 SPDT 3A 250 V~ 1 SPST 2A 250 V~
Buzzer output	only on models where provided
Accuracy	See probes Table
Resolution	See probes Table
Consumption	2,80W (12-24V~/12-36V model) 2,60W (95-240 V~ model)
Power supply	12-24V~ ±10% / 12-36V ±10% / 95-240 V~ ±10%

The technical specifications in the document that relate to measurement (range, accuracy, resolution, etc.,) refer to the device in the strict sense, not to any of the accessories supplied, for example probes. Consequently, any errors introduced by the probe must be added to the characteristic error of the device



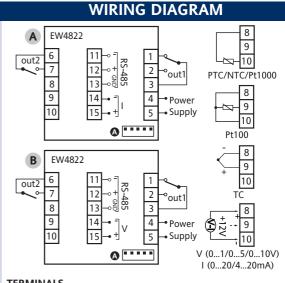
WIRING DIAGRAM

TERMINALS				
1 - 3	N.C. relay output out1, see H21			
2 - 3	N.O. relay output out1, see H21			
6 - 7	N.O. relay output out2, see H22			
8-9-10	Probe input			
4 - 5	Power supply			
A	TTL input for Copy Card and Televis system			

Configur	ation A:	Configuration B:	
11-12	Digital Input D.I.	11-12-13	Serial port RS-485
13-14-15	Analog output V-I	14-15	Digital input

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TECHNICAL DATA	EW4822	
Format montanting	Incr	
Front protection	IP65	
Container	PC+ABS plastic resin body PC+ABS UL94 V-0	
Dimensions	front 48x48 mm, depth 113mm	
Mounting	and panel with drilling template 45x45mm	
Usage temperature	-5°C55°C	
Storage temperature	-20°C85°C	
Ambient humidity in use and in storage	1090% RH (non-condensing)	
Display range	See Probes Table	
Analog input	1 input selectable by parameter H00	
Serial	TTL for connection to Copy Card or Televis System/ RS-485 serial port	
Analog output*	Configuration A : Analog output I: 0-1V, 0-5V, 0-10V Configuration B : Analog output V: 020mA, 420mA	
Digital outputs (configurable) - output OUT1 - output OUT2	1 SPDT 3A 250 V~ 1 SPST 2A 250 V~	
Buzzer output	only on models where provided	
Accuracy	See Probes Table	
Resolution	See Probes Table	
Consumption	2,80W (12-24V~/12-36V model) 2,60W (95-240 V~ model)	
Power supply	12-24V~ ±10% / 12-36V= ±10% / 95-240 V~ ±10%	



TERMINALS

1 - 3	N.C. relay output out1, see H21
2 - 3	N.O. relay output out1, see H21
6 - 7	N.O. relay output out2, see H22
8-9-10	Probe input
4 - 5	Power supply

TTL input for Copy Card and Televis system

Configur	ation A:	Configuration B:	
11-12-13	RS-485 serial port	11-12-13	RS-485 serial port
14-15	Analog output I	14-15	Analog output V

* maximum loads controlled by the analog output:

output type	maximum toad
0-1 V	20mA with minimum load resistance 50 Ohm
0-5 V	20mA with minimum load resistance 250 Ohm
0-10 V	20mA with minimum load resistance 500 Ohm
0-20mA	350 Ohm
4-20mA	350 Ohm

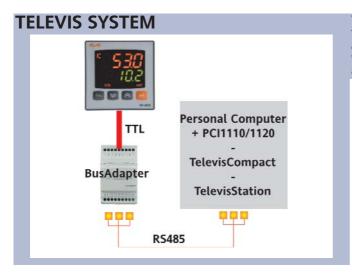
Probes table

Probe*	Range	Probe error limits	Resolution	Accuracy**
Ptc	-55150°C	-60155°C	0.1°C (0.1°F)	0.5% end of scale + 1 digit
Ntc	-50110°C	-55115°C	0.1°C (0.1°F)	0.5% at end of scale + 1 digit
Pt1000	-200800°C	-210810°C	0.2°C	0.5% end of scale + 1 digit
TCj	-40760°C	-50770°C	0.6°C (0.6°F)	0.4% end of scale + 1 digit
TCk	-401350°C	-501360°C	0.6°C (0.7°F)	0.5% end of scale + 1 digit (over entire scale) 0.3% end of scale + 1 digit (-40800°C)
TCS	01600°C	-101610°C	0.6°C (0.8°F)	0.5% end of scale + 1 digit (over entire scale) 0.3% end of scale + 1 digit (-40800°C)
TCR	01600°C	-101610°C	0.6°C (0.7°F)	0.5% end of scale + 1 digit (over entire scale) 0.3% end of scale + 1 digit (-40800°C)
тст	-40350°C	-50360°C	0.6°C (0.7°F)	0.5% end of scale + 1 digit (over entire scale) 0.3% end of scale + 1 digit (-40800°C)
Pt100	-200800°C	-210810°C	0.1°C (0.2°F)	0.5% end of scale + 1 digit (over entire scale) 0.2% end of scale + 1 digit (-150300°C)

^{*} Important! Check the probes and models available.

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^{**} NOTE: The accuracy values shown are valid for an ambient temperature of 25°C



The device can be connected to Televis remote control systems through a TTL serial port (use TTL- RS interface module 485 BUS ADAPTER 130 or 150). To configure the device for this purpose, open the folder identified by the "Add" label and use parameters "dEA" and "FAA".

MECHANICAL ASSEMBLY

The device is designed for panel mounting. Make a 45x45 mm drill hole and insert the device; fix it with the special brackets provided. Do not mount the device in damp and/or dirt-laden areas. It is suitable for use in places with ordinary or normal levels of pollution. Keep the area around the device cooling slots adequately ventilated

ELECTRICAL CONNECTIONS

Warning! Switch off the device before working on the electrical connection. The device is equipped with screw terminals for connecting electric cables of 2.5 mm2 maximum cross-section(one wire per terminal in the case of power connections): for the capacity of the terminals, see the label on the device. The relay outputs are free of voltage. 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.

RESPONSIBILITY AND RESIDUAL RISKS

Eliwell Controls will 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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3/2006 GB code. 9IS24040



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 also only be accessible using tools (with the exception of the front panel).

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

- depending on construction, as a built-in automatic electronic control device;
- · according to its automatic operating characteristics, as a type 1B control type device;
- according to its software class and structure, as a Class A device.

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.

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