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CE

REGULATOR TYPE 30881

EVOLUTIONARY PID SELF-ADAPTATIVE TYPE

PLEASE READ CAREFULLY AND FULLY THIS MANUAL BEFORE INSTALLING THE UNIT THIS MANUAL IS AN INTEGRAL PART OF THE PRODUCT AND SHOULD ACCOMPANY IT UNTIL ITS POSSIBLE DISASSEMBLY.

GB

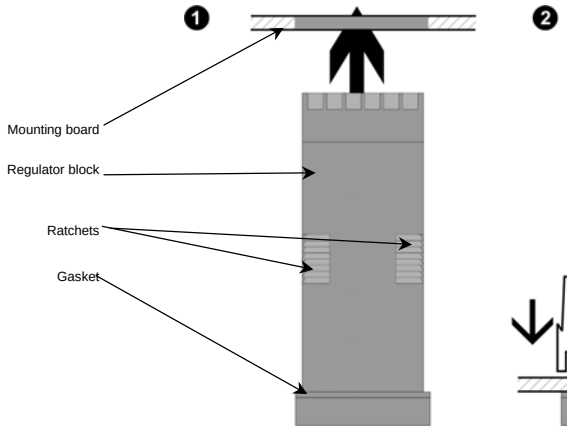
CONTENTS

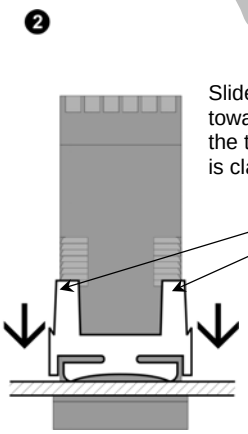
REGULATOR TYPE 30881
SIMPLIFIIED MANUAL

CAUTION:
Installation and configurations only to be performed by technically competent personnel authorised to do so.
Local regulations concerning electrical installation and safety must be observed.

1. INSTALLATION

Mounting board
The mounting board must be rigid and can be up to 6 mm thick
The cutout required for the regulator is shown on the right. Several regulators can be mounted side by side in a multiple installation with a minimum centre distance of 48 mm.





Slide the assembly bracket over the regulator towards the rear of the mounting board so that the tabs fit into the grooves and the regulator is clamped into place

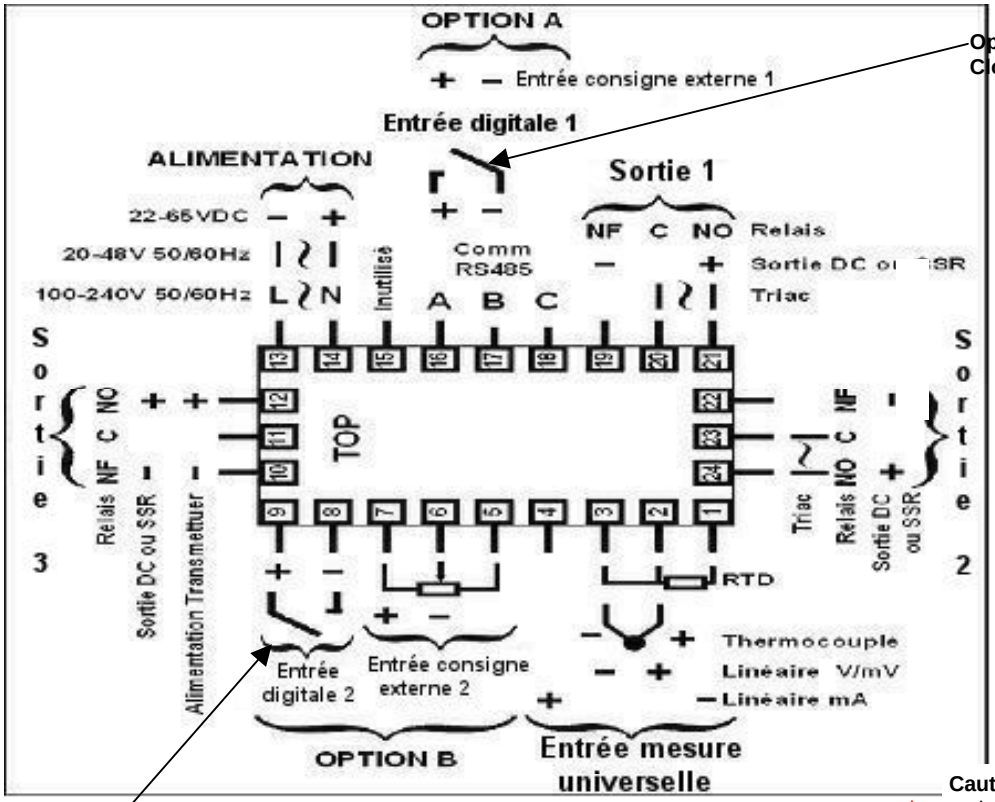
Hold the regulator firmly in place (do not press on the front panel)

CAUTION: do not remove the metal gasket, it is designed to ensure tightness against dust and damp.

REAR TERMINALS

USE COPPER CONDUCTORS
(EXCEPT ON THE THERMOCOUPLE INPUT)
Terminal torque load= 1.5mm²

Caution: the connection diagram below shows all the possibilities of wiring the equipment. Your model may have different inputs and outputs depending on its configuration.



Open SP1 or Auto or Local setpoint
Closed SP2 or Manu or External setpoint
(depending on configuration)

Open SP1 or Auto
Closed SP2 or Manu
(depending on configuration)

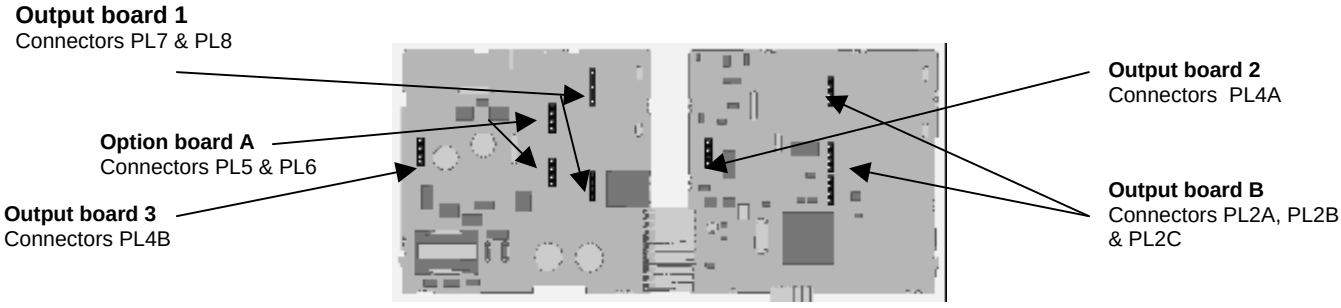
Caution: before supplying electric power to the regulator, on the nameplate, check the required voltage.
Protect the power supply with a 1A fuse.
Between 100 and 240V, and 315mA between 24 and 48V.

Installation of optional boards

To install additional boards corresponding to various desired outputs and options, pull on the front panel to disconnect the printed circuit boards from the housing. Release the 2 side boards from the front panel by lifting slightly the 2 locking tabs, then the lower ones. Spread these 2 circuits apart gently, without applying excessive stress to the interconnecting harnesses. Insert the additional boards into their respective connectors as indicated below. To reassemble, position the lugs of each additional board in the slot of the opposite circuit then place the 2 side boards in the front panel locking tabs. Push the assembly into the housing with care (the 2 side boards must slide smoothly into the runners of the housing).

Operate with care.

Note: The regulator will automatically recognize the optional boards in place.



2. SELECTION MENU

The selection menu is used to gain access to the various modes. It can be opened at any time by simultaneously pressing on ↺ then △
The message **SLCt** is displayed, so press △ or ▽ to select the desired mode then press ↺ to validate.
An **ULoc** access code is sometimes required to avoid modifications by unauthorised third parties.
Press △ or ▽ to enter the correct code and then press ↺ to validate.

Mode	Readout (upper)	Readout (lower)	Description	Locking codes
Operator	OPtr	SLCt	Normal operating mode	None
Parameter settings	SEtP	SLCt	User parameter setup mode	10
Configuration	Conf	SLCt	Regulator configuration mode	20
Product info	inFo	SLCt	Firmware information mode	none
Self adjustment	Atun	SLCt	Preadjustment and selfadjustment validation mode	0

To exit from the selection menu, use the same procedure as for the entering it. The regulator will return automatically to the operator mode (display of measurement and centrepoint) if no action is applied to the keys for 2 minutes.

3. CONFIGURATION MODE

It is essential to fully configure the regulator before gaining access to the other modes. Open up the CONFIGURATION mode using the message and the login code indicated in paragraph 2). In this mode which starts with the parameter nPt Press the key ↺ to scroll through the various parameters then the keys △ or ▽ to modify their value and finally the key AUTO MAN to validate. To exit from the CONFIGURATION menu, use the same procedure as for the entering it. The regulator will return automatically to the operator mode (display of measurement and centrepoint) if no action is applied to the keys for 2 minutes.

Note: The displayed parameters will vary depending on the configuration of the regulator.

The parameters with an * are also present in the parameter setting mode

Parameters	Lower readout	Upper readout	Description	By default
Type and scale of input	inPt	See table of types and scales of input at top of page 7		J C
Type of input & scale	ruL	Of low limit at scale top		Haut d'échelle, ou 1000 (analog
Top of input & scale	rLL	Of scale bottom to top scale limit		Bas d'échelle, ou 0 (analog)
Position of Decimal point	dPoS	0, 1, 2 or 3 digits after decimal point, for current or voltage inputs only		1
Type of regulation	CtyP	SnGL	Output 1 (hot) only	SnGL
		duAL	Outputs 1&2 (hot / cold)	
Type of output 1 action (main)	CtrL	rEu	Inverse action (hot regulation)	rEu
		d ir	Direct action (cold regulation)	
Characteristics: alarm 1	AL A 1	P_H i	Full scale high alarm	P_H i
		P_Lo	Full scale low alarm	
		dE	Deviation alarm	
		bAnd	Band alarm (centered on setpoint)	
		nonE	No alarm	
High value Al1 *	PhA 1	Adjustable from min. and max. of measurement scale		Max scale.
Low value Al1 *	PLA 1			Min scale.
Band value Al1 *	bAL 1	1 unit at max. range from setpoint		5
Band value Al1 *	dAL 1	+ or – from setpoint		5
Al 1 hysteresis*	AHy 1	1 unit at full scale		1
Alarm 2 type*	AL A2	SAME AS ALARM 1		P_Lo
High value Al1 *	PhA2			Max scale.
High value Al1 *	PLA2			Min scale.
Band value Al1 *	bAL2			5
Deviation value Al1 *	dAL2			5
Al 2 hysteresis*	AHy2			1
Loop alarm	LAEn	d iSA (deactivated) or EnAb (activated)		d iSA
Loop alarm timeLoop alarm temperature:	LAt i	From 1 sec to 99 min. 59 sec		99.59

Alarm inhibition	inh i	nonE	No alarm	nonE
		AL A 1	Alarm 1 activated	
		AL A2	Alarm 2 activated	
		both	Alarm 1 and alarm 2 activated	
Output 1 load	USE 1	Pr i	Main (Hot)	Pr i
		SEc	Secondary (Cold)	
		A 1_d	Alarm 1 Direct (active above)	
		A 1_r	Alarm 1 Reverse (active below)	
		A2_d	Alarm 2 Direct (active above)	
		A2_r	Alarm 2 Reverse (active below)	
		LP_d	Direct alarm loop	
		LP_r	Reverse alarm loop	
		Or_d	Sof alarm 1 OR 2, Direct	
		Or_r	Soft alarm 1 OR 2, Reverse	
		Ad_d	Soft alarm 1 AND 2, Direct	
		Ad_r	Alarm 1 AND 2, Reverse	
		rEtS	Setpoint copy	
		rEtP	Measurement copy	
Scale for linear output In current or voltage	tyP 1	0_5	0 – 5 V DC	0_10
		0_10	0 – 10 V DC	
		2_10	2 – 10 V DC	
		0_20	0 – 20 mA DC	
		4_20	4 – 20 mA DC	
Output 1 copy: scale top	ro 1H	-1999 to 9999		Max range
Output 1 copy: scale bottom	ro 1L	-1999 to 9999		Min range

Output 2 load	USE2	Same as output 1			Sec or AI2
Lin. O/P 2 Range	tYP2				0_10
Output 2 copy: scale top	ro2H	-1999 to 9999			Max scale
Output 2 copy: scale bottom	ro2L	-1999 to 9999			Min scale
Output 3 load	USE3	Same as output 1			AI_d
Linear Output 3 Range	tYP3				0_10
Output 3 copy: scale top	ro3H	-1999 to 9999			Max scale
Output 3 copy: scale bottom	ro3L	-1999 to 9999			Min scale
Display strategy	d iSP	1, 2, 3, 4, 5 or 6 **see page 9**			1
Communication protocol	Prot	ASCI	Ascii		Pmbn
		Pmbn	Modbus without parity		
		PmbE	Modbus with even parity		
		Pmbo	Modbus with odd parity		
Transmission rate	bAud	1.2	1200		4.8
		2.4	2400		
		4.8	4800		
		9.6	9600		
		19.2	19200		
Address	Addr	1	1 –255 (Modbus), 1-99 (Ascii)		1
Action	CoEn	r_Wd	Read/write		r_ Wd
		r_ d	Readonly		
Use of digital input 1	di1	di S1	Selection setpoint 1 / setpoint 2		di S1
		di AS	Automatic / Manual		
Use of digital input 2	di2	di S1	Selection setpoint 1 / setpoint 2		di rS
		di AS	Automatic / Manual		
		di rS	Selection locale setpoint / external setpoint		
External setpoint input range	r inP	0-20	0 – 20 mA DC		0 - 10
		4-20	4 – 20 mA DC		
		0-10	0 – 10 V DC		
		2-10	2 – 10 V DC		
		0-5	0 – 5 V DC		
		1-5	1 – 5 V DC		
		100	0 – 100 mV DC	Available with external setpoint board only	
		Pot	Potentiometer (2KΩ min)		
External setpoint max. scale	rSPu	– 1999 to 9999			Scale max
External setpoint min. scale	rSPL	– 1999 to 9999			Scale max
External setpoint offset	rSPo	Depending on imput range			0
Locking code	CLoc	0 to 9999			20

Note: *For more information about the parameters described in this table, refer to the detailed manual, available from your supplier.*

Code	Type of input & scale	Code	Type of input & scale	Code	Type of input & scale
bC	B : 100 to 1824 ºC	L.C	L : 0.0 to 537.7 ºC	P24F	PtRh20% - 40%: 32 to 3362 ºF
bF	B : 211 to 3315 ºF	L.F	L : 32.0 to 999.9 ºF		
CC	C : 0 to 2320 ºC	nC	N : 0 to 1399 ºC	PtC	Pt100 : -199 to 800 ºC
CF	C : 32 to 4208 ºF	nF	N : 32 to 2551 ºF	PtF	Pt100 : -328 to 1472 ºF
JC	J : -200 to 1200 ºC	rC	R : 0 to 1759 ºC	Pt.C	Pt100 : -128.8 to 537.7 ºC
JF	J : -328 to 2192 ºF	rF	R : 32 to 3198 ºF	Pt.F	Pt100 : -199.9 to 999.9 ºF
J.C	J : -128.8 to 537.7 ºC	SC	S : 0 to 1762 ºC	0_20	0 / 20 mA DC
J.F	J : -199.9 to 999.9 ºF	SF	S : 32 to 3204 ºF	4_20	4 / 20 mA DC
KC	K : -240 to 1373 ºC	tC	T : -240 to 400 ºC	0_50	0 / 50 mV DC
KF	K : -400 to 2503 ºF	tF	T : -400 to 752 ºF	1050	10 / 50 mV DC
K.C	K : -128.8 to 537.7 ºC	t.C	T : -128.8 to 400.0 ºC	0_5	0 / 5 V DC
K.F	K : -199.9 to 999.9 ºF	t.F	T : -199.9 to 752.0 ºF	1_5	1 / 5 V DC
LC	L : 0 to 762 ºC	P24C	PtRh20% - 40%: 0 to 1850 ºC	0_10	0 / 10 V DC
LF	L : 32 à 1403 ºF			2_10	2 / 10 V DC

4. MODE PARAMETRAGE

Note : The configuration mode must be complete before moving on to the parameter setting mode.
Select the parameer setting up mode (see paragraph 2). *The* MAN *lights up.* To select the parameters, press ↺ then press △ or ▽ to change the values.

To get out of the parameter setting mode, press and hold down the ↺ key then press △ return to the Optr mode then press ↺
Note: The displayed parameters will depend on the hardware configuration.

Parameters	Lower readout	Upper readout Adjustment possibility	By default
Display filter time constant	F iLt	None, 0.5 to 100.0 sec	2.0
Measurement offset	OFFS	+/- of measurement unit	0
Output power (hot) OUT1	PPU	*Indicates the value of the power in % (read only)*	N/A
Output power (cold) OUT2	SPU		
Proportional band 1 (PB1)	Pb_P	0% to 999.9% of real input scale (ruL/rLL)	10.0
Proportional band 2 (PB2)	Pb_S		
Integral (Reset)	ArSt	1 sec to 99 min 59 sec and OFF	5.00
Drifted (Rate)	rAtE	00 secs to 99 min 59 sec	1. 15
Overlapping	OL	From -20 (dead band) to +20% (overlapping) of PB1+PB2	0
Proportional band offset (Bias)	b iAS	0% (-100% if outputs 1 and 2) at 100%	25
Output differential 1 in TOR	d iFP	0.1% to 10.0% of real input scale (ruL/rLL), centered on the setpoint	0.5
Output differential 2 in TOR	d iFS		
Output differential 1&2 in TOR	d iFF		
Top limit of setpoint (Sphi)	SPuL	Of scale max. setpoint	R/max
Bottom limit of setpoint (Splo)	SPLL	Of scale min. setpoint	R/min
Power limit of output 1 (Ophi)	OPuL	0% to 100%	100
Output cycle time 1	Ct 1	0.5, 1, 2, 4, 8, 16, 32, 64, 128, 256 or 512 sec.	32
Output cycle time 2	Ct2		
Output cycle time 3	Ct3		
High alarm 1	PhA 1	From min to max. of real input scale (ruL/rLL)	R/max
Low alarm 1	PLA 1		R/min
Deviation alarm 1	dAL 1	+/- from the setpoint	5
Alarm in band 1	bAL 1	From 1 unit min to max. of real input scale (ruL)	5
Hysteresis Alarm 1	AHY 1	Up to 100%	1
High alarm 2	PhA2	From min to max. of real input scale (ruL/rLL)	R/max
Low alarm 2	PLA2		R/min
Deviation alarm 2	dAL2	+/- from the setpoint	5

Parameters	Lower readout	Upper readout Adjustment possibility	By default
Alarm in band 2	bAL2	From 1 unit min to max. of real input scale (rLL)	5
Hysteresis Alarm 2	AHY2	Up to 100%	1
Loop alarm temperature:	LAt 1	1 sec to 99 min. 59 sec.	99.59
Auto Pre-tune	APt	d 1SA deactivated or EnAb activated d 1SA deactivated or EnAb activated d 1SA	d 1SA
Auto/manual regulation	PoEn		
Selection of setoint (see operator mode)	SSEn		
Setpoint gradient (Rpen)	SPr		
Setpoint gradient rate	rP	1 to 9999 units per hour or Off	OFF
Setpoint value	SP	High limit to low limit of range scale(when double or remote setpoint options are used, SP is replaced by SP 1 & SP2 or LSP - ou = indicates the active setpoint)	Valeur de rLL
Local setpoint value	_LSP		
Setpoint value 1	_SP 1		
Setpoint value 2	_SP2		
Locking code	SLoc	0 to 9999	10

5. AUTOMATIC ADJUSTMENT MODE

Enter mode SELF–ADJUSTMENT ( ) of SELECTION menu then press the key to scroll through the parameters. Press or to change the values. To exit from the SELF-ADJUSTMENT mode, hold down then press : return to mode then press .
The function of **Pre-Tune** is a function used only on initial starting of the regulator and is inhibited as soon as the approximate adjustments of the PID have been calculated. It only acts if the deviation between the measurement and the setpoint is greater by 5% than the real input scale (). If, in the PARAMETER SETTING mode the parameter, then the Pre-Tune function will be activated on each powering up*.
The function of Self-Tune is a function for optimizing the PID parameters that is activated automatically on load or setpoint variations, when the deviation between the measurement and the setpoint is less than 5% of the real input scale entrée ().
For more information about the regulator adjustments, refer to the detailed user manual.

Parameters	Lower readout	Upper readout	Description/adjustment values	Par défaut
Pre-Tune	Ptun	ON ou OFF	These parameters cannot be changed as long as the regulator is calculating*	OFF
Self-Tune	Stun			
Tune Lock	tLoc		0 to 9999	0

*** Note: Pre-adjustment will not engage if the setpoint is a gradient. Likewise, automatic adjustment will not engage if the proportional band = 0.**

6. FACTORY INFORMATION MODE

Enter the INFO mode (InFo) of the SELECTION menu then press the key to scoll through the parameters. To exit fro the INFO mode, hold down then press on : return to OPtr then press .

Note: the information is not modifiable

Parameters	Lower readout	Upper readout	Description
Type of input	In_ 1	Un 1	Universal input only
Hardware configuration of output 1	OPn 1	nonE	Not usded
		rLY	Realy
		SSr	PWM static unit control (10Vcc)
		tr 1	Triac
		L in	Linear voltage or current output
Hardware configuration of output 2	OPn2	Same as output 1	
Hardware configuration of output 3	OPn3	nonE	No option
		rLY	Relay
		SSr	PWM control of static unit (10Vcc)
		L in	Linear analog voltage or current output
		dc24	24Vcc 20mA transmitter power supply
Hardware configuration of I/O option A	OPnA	nonE	No option

Parameters	Lower readout	Upper readout	Description
		r485	RS485 communication
		diG1	Digital input 1
		rSP1	External setpoint
Hardware configuration of E/S option B	OPnb	nonE	No options
		rSP1	External setpoint and digital input 2
Type de Firmware	FWJ	Identified by a number	
Version de Firmware	ISS	Identified by a number	
Niveau de révision	PrL	Identified by a number	
Date de fabrication	dOM7	mm/AA	
N° de série (1er Groupe)	Sn1	First batch of digits in serial number	
N° de série (2 éme Groupe)	Sn2	Second batch of digits in serial number	
N° de série (3 éme Groupe)	Sn3	Last batch of 4 digits in serial number	

7. OPERATOR MODE

This mode is activated on power up. It can then be accessed via the SELECTION mode (see paragraph 2).

Note: All the parameters of the CONFIGURATION and PARAMETER SETTING mode need to be set before using the regulator on the process.

Press on ↺ to scroll through the parameters then on △ or ▽ to adjust the value.

Note: In display strategy No. 6, the parameters are only accessible during reading. To change them, go through the PARAMETER SETTING mode.

Readout (upper)	Readout (lower)	Dispaly strategy and when visible	Description
Measurement value	Setpoint value	1 & 2 (default display on powering up)	Display of measurement and setpoint (adjustable in Strategy *2)*
Measurement value	Artificaial setpoint value	3 & 6 (default display on powering up)	Display of measurement and artificaial setpoint (indicating instant value during a gradient) *Read only*
Measurement value	*(Empty)*	4 (default display on powering up)	Displays measurement only *Read only*
Desired SP value	***(Empty)***	5	Displays only selected SP. *Read only*
Setpoint value	-M-SP	1, 3, 4, 5 & 6 if digital input is not diS1 and RSP is not mounted	Displays setpoint SP *Adjustable except in Strategy 6*

Setpoint value 1	- SP1	"-" lighted if digital input = diS1 active setpoint SP1	Displays Displays setpointSP1 *Adjustable except in Strategy 6*
Setpoint value 2	- SP2	"-"lighted if digital input = diS1 active setpoint SP2	Displays setpointSP2 *Adjustable except in Strategy 6*
Valeur Consigne locale	- LSP	RSP mounted . OR lighted if activated setpoint SP = LSP	Display local setpoint *Adjustable except in Strategy 6*
Valeur Consigne externe	- rSP	RSP mounted OR lighted if activated setpoint SP = rSP	Displays external setpoint *Read only*
diG1, LSP ou rSP	-SPS	RSP mounted if digital input is not diS1 and if SSEn is activated in parameter setting mode	Selection of active setpoint. LSP= local setpoint rSP= external setpoint diG1 = selection by digital input(if configured). NOTE: the selection of LSP or rSP cancels the digital input. *Adjustable except in Strategy 6*
Valeur instantanée de la consigne fictive	SPrP	rP different from 0	Instant value of setpoint gradient. *Read only*
Taux de rampe	rP	SPr activated in parameter setting mode	Gradient factor in units/hour. *Adjustable except in Strategy 6*
Alarmes actives	ALSt	if 1 or several alarms activated: ALM indication ALM will also flash	L⌜ Alarm 2 active L2 1⌜ Alarm 1 active L⌞ LOOP ALARM ACTIVE

Manual operation check for power dispenser

If PoEn is EnAb in the parameter setting mode, manual control can be activated or deactivated by pressing the key AUTO MAN e operator mode, or by changing the digital input state if diG1 or diG2 or has been configureed as diAS.

Indicator MAN will flash as long as it is in Control mode and the bottom readout will indicate xxx (where Pxxx represents the output power value). The change to the manual mode is of the smooth type.

Press △ or ▽ to adjust the output power.

Caution: the limit generated by the function OPuL is not active in this mode.

8. ERROR / FAULT INDICATIONS

Parameters	**Upper readout**	**Lower readout**	**Description**	
Regulator parameter default	Goto	ConF	Configuration & Parameter setting not done. Fault encountered on initial starting or after addition of optional modules: Follow on the instructions of paragraphs 3 and 4	
Upper range input	[HH]	Normal	Input > 5% from top of scale	
Lower range input	[LL]	Normal	Input > 5% from bottom of scale	
Sensor breakdown	OPEN	Normal	Sensor defective or wiring broken	
External setpoint input higher than scale	Normal	[HH]**	External setpoint>scale top	** Also visible when external setpoint value has to be displayed
External setpoint input lower than scale	Normal	[LL]**	External setpoint<scale bottom	
External setpoint breakdown	Normal	OPEN**	External setpoint defective or wiring broken	
Error in module No. 1	Err	OPn1	Fault in output board No 1	
Error in module No. 2		OPn2	Fault in output board No 2	
Error in module No. 3		OPn3	Fault in output board No 3	
Error in option A module		OPnA	Fault in optional module Auxiliary A or RSP on both A & B	
Error in option B module		OPnB	Fault in optional Auxiliary module B	

9. SERIES COMMUNICATION

For more information about the parameters described in this table, refer to the detailed manual, available from your supplier.

10. CHARACTERISTICS

Universal input

Thermocouple:	+- 0.1% of max. range +-1LSD (+-1°C for thermocouples CJC) calibration: BS4937, NBS125 & IEC584
PT100	+- 0.1% of max. range +-1LSD calibration: BS1904 & DIN43760(0 °C)
DC calibration	+- 0.1% of max. range +-1LSD
Sampling	4 per second
Input impedance:	higher than 10M (resistive), except for inputs CC, mA, (5) and V (47k).
Insulation:	Insulated from all the outputs at 240V CA (except control of SSR).
Digital input (TTL)	Open (2 to 24 VDC) =SP1, local setpoint or Auto mode, Closed (<0,8VDC)=SP2 , external setpoint or manual mode
External setpoint input:	
Precision	+- 0.25% of max. range +-1LSD
Sampling	4 per second

OUTPUTS

Relays

Type / breaking capacity:	Single-pole switch (SPDT); 2A resistive at 120/240V CA
Life duration:	Greater than 500,000 operations at nominal voltage / current.
Insulation:	Isolated from all other inputs and outputs.

SSR /TTL control

Operating range:	SSR > 10V for load of 500 min.
Insulation:	Not insulated at input nor at the other SSR outputs.

CC

Definition:	8 bits in 250mS (10 bits in 1s: Typical >10 bits in >1s typical).
Insulation:	Isolated from all other inputs and outputs.

Transmitterpower supply

from 20 to 28 Vcc (24V nominal) on resistance of 910 mini

Communication protocol

Modbus or West ASCII selectable
RS485, 1200,2400,4800,9600 or 19200 Bauds

Power supply voltage 100 - 240V CA, 50/60Hz 7.5VA (optional)
20 - 48V CA, 50/60Hz 7.5VA (optional)
22 - 65V CC, 5W maximum (low voltage version)

OPERATING CONDITIONS: UNDER SHELTER

Duty temperature: 0°C to 55°C (ambient temperature)
Storage temperature: -20°C to 80°C (ambient temperature)
Relative humidity: 20% - 95% RH, condensation-free

ENVIRONMENT

Approvals: CE, UL, ULC
Sensitivity to IEM: Conforming to EN61326 (immunity and emissions)
Safety approvals: Conforming to EN61010-1 and UL3121
Pollution Degree 2, Installation Category II
Degree of protection: IP66

DIMENSIONAL CHARACTERISTICS

Dimensions Front panel 48 x 96 mm (panel cutout 45x93 mm, +0.5 –0mm)
Depth: 100 mm (behind the front panel)
Weight: 0.27kg maximum

11. NOTES