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CE

REGULATOR **TYPE 30656**

EVOLUTIONARY SELF-ADAPTATIVE PID

⚠️

*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.*

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# CONTENTS

REGULATOR TYPE 30656
SIMPLIFIED 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.

45 x 45mm
+0.5 −0.0

Mounting board
Regulator block
Ratchets
Gasket

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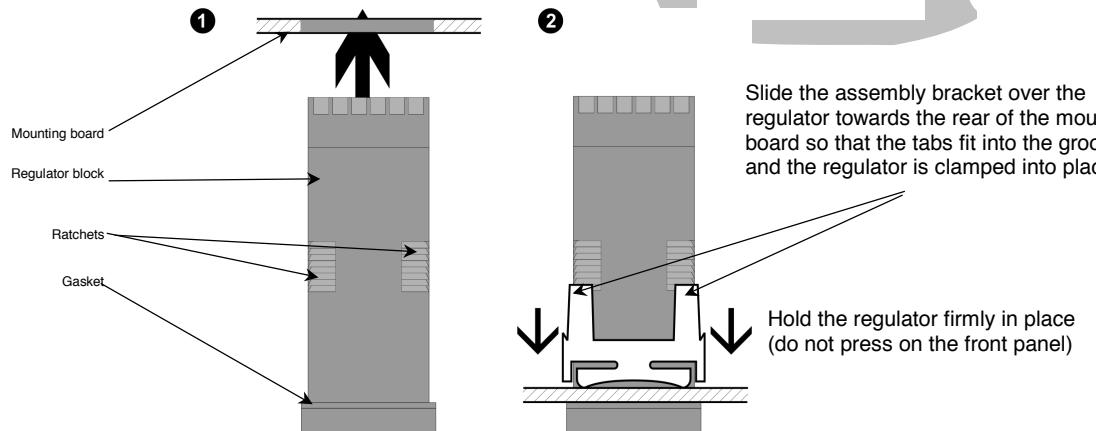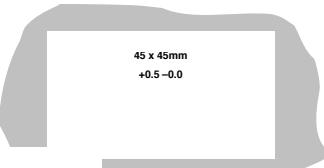
⚠ **CAUTION**: do not remove the metal gasket, it is designed to ensure tightness against dust and damp.

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.
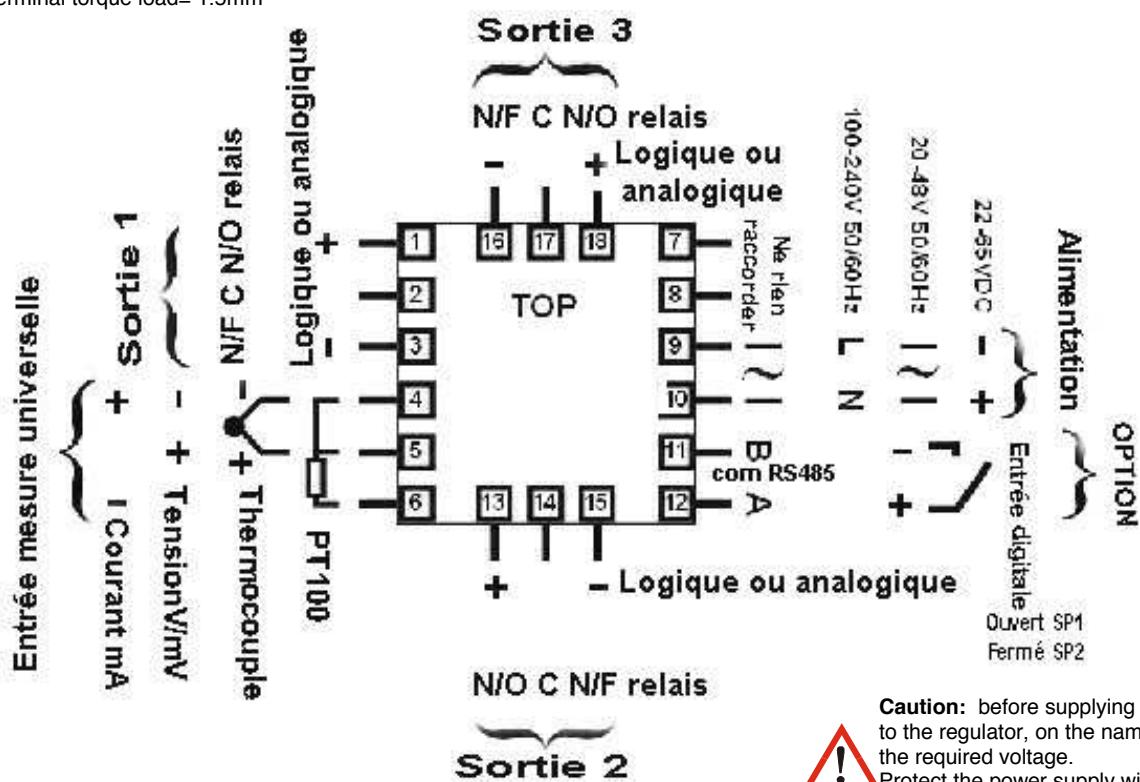

⚠ **Caution:** before supplying electric power to the regulator, on the nameplate, check the required voltage.
Protect the power supply with a 1A fuse. Between 100 and 240V, and 315mA between 24 and 48V.

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).

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

Output board 1
Connectors PL7 & PL8

Option board 2
Connectors PL4A

Output board 2
Connectors PL5 / PL6

Option board 3
Connectors PL4B
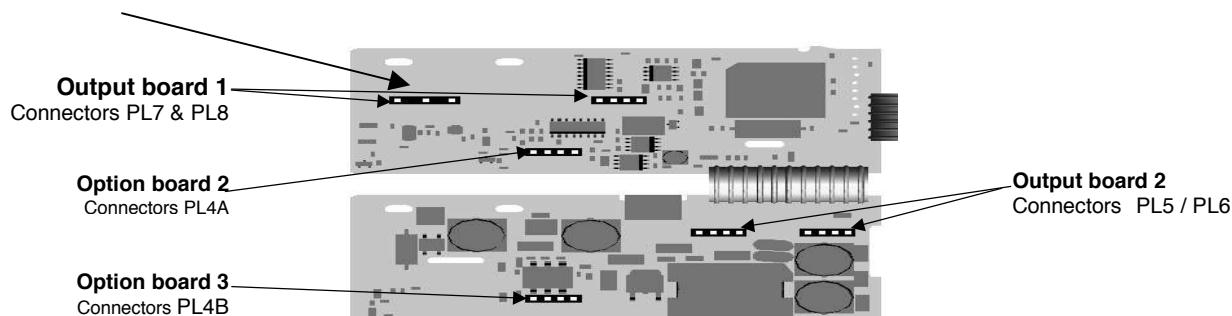
2. SELECTION MENU

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	sans
Parameter settings	SEtP	SLCt	User parameter setup mode	10
Configuration	ConF	SLCt	Regulator configuration mode	20
Product info	info	SLCt	Firmware information mode	Sans
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.
   *he parameters with an * are also present in the parameter setting mode.*

Parameters	Lower readout	Upper readout	Description	By default
Type of input & scale	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	Top of scale, or 1000 (analog)
Top of input & scale	rLL		of scale bottom to top scale limit	Bottom of scale Or 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
		dir	Direct action (cold regulation)	
Characteristics of alarm 1	ALA1	P_Hi	Full scale high alarm	P_Hi
		P_Lo	Full scale low alarm	
		dE	Deviation alarm	
		bAnd	Band alarm (centered on setpoint)	
		nonE	No alarm	
High value AI1 *	PhA1		Adjustable from min. and max. of measurement scale	Max scale.
Low value AI1 *	PLA1			Min scale.
High value AI1 *	bAL1		1 unit at max. range from setpoint	5
Deviation value AI1 *	dAL1		+ or – from setpoint	5
AI 1 Hysteresis*	AHY1		1 unit at full scale	1
Alarm 2 Type*	ALA2			P_Lo
High value AI2 *	PhA2			Max scale.
Low value AI2 *	PLA2		SAME AS ALARM 1	Min scale.
Band value AI2 *	bAL2			5
Deviation value AI2*	dAL2			5
AI 2 Hysteresis*	AHY2			1
Loop alarm	LAEn		diSA (deactivated) or EnAb (activated)	diSA
Loop alarm time*	LAt i		From 1 sec to 99 min. 59 sec	99.59

Alarm inhibition	Inhi	nonE	No alarm	nonE
		ALA1	Alarm 1 activated	
		ALA2	Alarm 2 activated	
		both	Alarm 1 and alarm 2 activated	
Output 1 load	USE1	Pri	Main (Hot)	Pri
		SEc	Secondary (Cold)	
		A1_d	Alarm 1 Direct (active above)	
		A1_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	tYP1	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	ro1H		-1999 to 9999	Max scale
Output 1 copy: scale bottom	ro1L		-1999 to 9999	Min scale
Output 2 load	USE2		SAME AS OUTPUT 1	Sec or Al2
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	A1_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	diSP		1, 2, 3, 4, 5 or 6 (see page 8)	1
Communication protocol	Prot	ASC1	Ascii	Mbn
		Mbn	Modbus without parity	
		MbE	Modbus with even parity	
		Mbo	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		Read only or read/write	r_W
Use of digital input	diGi	diS1	Selection setpoint 1 / setpoint 2	diS1
		diAS	Automatic / Manual	
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
HC	K : -240 to 1373 ºC	tC	T : -240 to 400 ºC	0_50	0 / 50 mV DC
HF	K : -400 to 2503 ºF	tF	T : -400 to 752 ºF	1050	10 / 50 mV DC
H.C	K : -128.8 to 537.7 ºC	t.C	T : -128.8 to 400.0 ºC	0.5	0 / 5 V DC
H.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 to 1403 ºF			2_10	2 / 10 V DC

4. PARAMETER SETTING MODE

Note : The configuration mode must be complete before moving on to the parameter setting mode.
Select the parameter 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 output band 1 (PB1)	Pb_P	0% to 999.9% of real input scale (ruL&rLL)	10.0
Proportional output band 2 (PB2)	Pb_S		
Integral time (Reset)	ArSt	1 sec to 99 min 59 sec and OFF	5.00
Drift time (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 go/nogo	d iFP	0.1% to 10.0% of real input scale (ruL&rLL) centered on the setpoint	0.5
Output differential 2 in go/nogo	d iFS		
Output differential 1&2 in go/nogo	d iFF		
Top limit of setpoint (Sphi)	SPuL	Of scale max. setpoint	Value of ruL
Bottom limit of setpoint (Splo)	SPLL	Of scale min. setpoint	Value of rLL
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
Alarm in band 2	bAL2	From 1 unit min to max. of real input scale (rLL)	5
Hysteresis Alarm 2	AHY 1	Up to 100%	1
Loop alarm temperature:	LAt i	From 1 sec to 99 min. 59 sec	99.59
Auto Pre-tune	APt	d iSA deactivated or EnAb activated	d iSA
Auto/manual regulation	PoEn		
Setpoint gradient (Rpen)	SPr		
Setpoint gradient rate	rP	1 to 9999 units per hour or Off	9999
Setpoint value (SP1 only)	SP	From min to max. of real input scale (ruL&rLL)	Value of rLL
Setpoint value 1 (if double setpoint)	_SP 1	From min to max. of real input scale (ruL/rLL) "_" indicates active setpoint.	
Setpoint value 2 (if double setpoint)	SP2		

Parameters	Lower readout	Upper readout Adjustment possibility	By default
Locking code		0 to 9999	10

5. AUTOMATIC ADJUSTMENT MODE

Enter SELF–ADJUSTMENT mode (Atun) of SELECTION menu then press 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 betwen the measurement and the setpoint is greater by 5% than the real input scale

(ruL/rLL). If, in the PARAMETER SETTING mode the parameter APt = EnAb , 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 (ruL/rLL).

For more information about the regulator adjustments, refer to the detailed user manual.

Paramètres	Legend: Readout (lower)	Legend: Readout (higher)	Description / Adjustment values	By default
Pre-tune	Ptun	ON		
Self-Tune	Stun	ou	These parameters cannot be changed as long as the regulator is calculating*	OFF
		OFF		
Locking code	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. MODE INFORMATIONS USINE

Enter INFO mode (info) of SELECTION menu then press

the key ⟲ to scroll through the parameters. To exit from the INFO mode,

hold down ⟲ then press △ : return to OPtr mode then press ⟲ .

Note : the information is not modifiable

Parameters	Readout (lower)	Readout (upper)	Description
Type of input	In_1	Un 1	Universal input only
Hardware configuration of output 1	OPn 1	nonE	Not used
		rLY	Relay
		SSr	PWM static unit control (10Vcc)
		tr 1	PWM Triac control (230 Vca max 1A)
		L in	Linear analog voltage or current
Hardware configuration of output 2	OPn2	Same as output 1	
Hardware configuration of output 3	OPn3		
Hardware configuration of auxiliary I/O	OPnA	nonE	No option
		r485	RS485 communication
		d iG i	Digital input (SP1/SP2)
Type of Firmware	FuJ	Identified by a number	
Version of Firmware	ISS	Identified by a number	
Revision level	PrL	Identified by a number	
Date of manufacture	dOr7	mm/AA	
Serial number (1st group)	Sn 1	First batch of 4 digits in serial number	

Parameters	Readout (lower)	Readout (upper)	Description
Serial number (2nd group)	Sn2		Second batch of 4 digits in serial number
Serial number (3rd group)	Sn3		Last batch of 4 digits in serial number

7. OPERATOR MODE

This mode is actiavted 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 (red)	Readout Lower (green)	strategy SPST	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*

Setpoint value 2	_ SP2	"-" lighted if digital input = 0 iS1 active setpoint SP2	Displays setpoint 2 *Adjustable except in strategy 6.*
Instant artificial setpoint value	SPrP	SPr activated and rP different from 0	Instant setpoint gradient value *Read only*
Gradient rate	rP	SPr activated in parameter setting mode	Setpoint gradient rate in unit/hour *Adjustable except in strategy 6.*
Alarms active	ALSt	if 1 or several alarms are active: ALM The indication ALM Will also flash	AL2 Alarm 2 active AL1 Alarm 1 active AL21 Loop alarm active
Measurement value	*(Empty)*	4 (default display on powering up)	Displays measurement only *Read only*
Setpoint value	*(Empty)*	5 (default display on powering up)	Displays only selected SP. *Read only*
Setpoint value	SP-{}-	1, 3, 4, 5 & 6 if digital input is not 0 iS1	Displays setoint SP *Adjustable except in Strategy 6*
Setpoint value 1	_ SP1	"-" lighted if digital input = 0 iS1 active setpoint SP1	Displays setpoint 1 *Adjustable except in Strategy 6*

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] in the operator mode or by changing the digital input state if d iGi or d iG2 or has been configureed as d iAS .

Indicator 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	Readout upper (red)	Readout lower (green)	Description
Regulator parameter default		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
External setpoint input at top of scale	CHHJ	Normal	Input > 5% from top of scale
External setpoint input at bottom of scale	CLLJ	Normal	Input < 5% from bottom of scale
Sensor breakdown	OPEN	Normal	Sensor 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
Erreur module Aux.		OPnA	Fault in optional module (I/O)

9. SERIAL COMMUNICATION

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

10. CHARACTERISTICS

Universal input

Input impedance:	higher than 10M (resistive), except for inputs CC, mA, (5Ω) AND V (47kΩ).
Insulation:	Insulated from all the outputs at 240V CA (except control of SSR).
Digital input (TTL)	Open (2 to 24 VDC) = SP1, Auto mode (<0.8 VDC)= SP2,

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 or at the other SSR outputs.

1.   TRIAC

Operating range:	20 – 280V RMS (47 – 63 Hz)
Rated current:	0.01 - 1A (complete rms cycle in switched state at 25℃); linear reduc tion above 40℃ reaching 0.5A at 80℃
Insulation:	Isolated from all other inputs and outputs.

Linear CC

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

OPERATING CONDITIONS: UNDER SHELTER

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

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 48 mm (panel cutout 45x45 mm, +0.5 –0mm)	
	Depth:	110 mm (behind the front panel)
Weight:	0.21kg maximum	

11. NOTES