KOSMOS SERIES

INDICATOR FOR
ELECTRICAL RESISTANCE

CE

JUNIOR-RES
JUNIOR20-RES

INSTRUCTIONS MANUAL

Code: 30727174
Edition: January 2003
Valid for models with software version res1

100% RECYCLED PAPER

Junior-RES
Junior20-RES
English

INTRODUCTION TO THE KOSMOS SERIES

This manual does not constitute a formal agreement. All information given in this manual is subject to change without notice.

The KOSMOS SERIES brings a new philosophy in digital panel instrumentation, which is expressed by multipurpose, modular-concept devices providing a rich array of basic functions and advanced capabilities.

With a fully MODULAR DESIGN, it is possible to implement a wide variety of applications by only adding the adequate options.

Intelligence within allows the meter to recognize the options installed and ask for the necessary parameters to properly function within desired margins. The basic instrument without output options omits these data in the program routines.

The instrument CALIBRATION is realized at the factory eliminating the need for adjustment potentiometers.
Any circuit or option liable to be adjusted incorporates a memory where calibration parameters are stored, making it possible the optional cards be totally interchangeable without need of any subsequent adjust.

Custom CONFIGURATION for specific applications can be made quickly and easily through five front panel keys, following structured choice menus aided by display prompts at each programming step.

Other features of the KOSMOS family include:

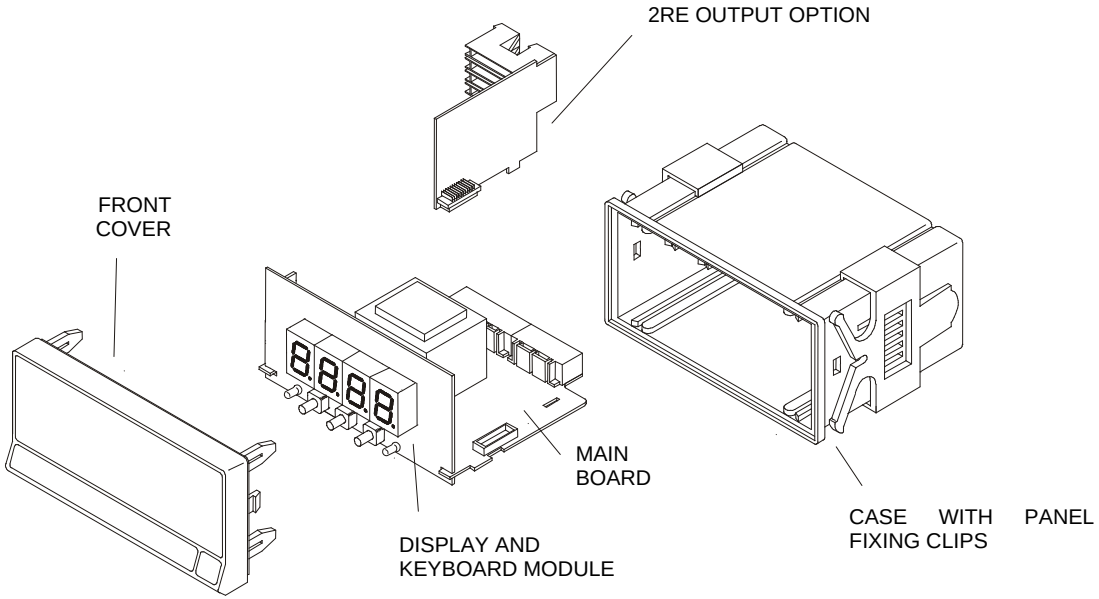
- CONNECTIONS via plug-in terminal blocks without screws and CLEMP-WAGO clips cable retention system.
- DIMENSIONS
  Models ALPHA & BETA 96 x 48 x 120 mm DIN 43700
  Models MICRA & JR/JR20 96 x 48 x 60 mm DIN 43700
- CASE MATERIAL UL-94 V0-rated polycarbonate.
- PANEL INSTALLATION by means of single part fingertip without screws.

To guarantee the meter's technical specifications, its is advised to check calibration parameters at periodical intervals according to the ISO 9001 standards for the particular application operating criteria.
Recalibration of the meter should be made at the factory or in a qualified laboratory.

DIGITAL PANEL INSTRUMENT **JUNIOR FAMILY**

JUNIOR-RES & JUNIOR20-RES

INDEX


2RE OUTPUT OPTION
FRONT
COVER
MAIN
BOARD
CASE WITH PANEL
FIXING CLIPS
DISPLAY AND
KEYBOARD MODULE

1. MODELS JUNIOR-RES and JUNIOR20-RES

This manual describes the models Junior-RES and Junior20-RES, both instruments are small format.

The difference between both models is the size of the digits of the display. Model JR20-PRC provides 20mm-high digits which make it easy readable at long distances. In this manual both models are referred with the generic name of JR/ JR20-RES.

The JR/ JR20-RES measures electrical resistances from 0,1 Ω to 99, 99 kΩ in three ranges selectables by programming. Fully configurables by software, the three selectable ranges: from 0,1 Ω to 999,9 Ω, from 1 Ω to 9999 Ω and from 0,01 k Ω to 99,99 k Ω , can be used as calibrated scales or programmable within a range defined by the user and asign a resistance range to a engineering unit, by the method SCAL or assigning real values with the teach method.

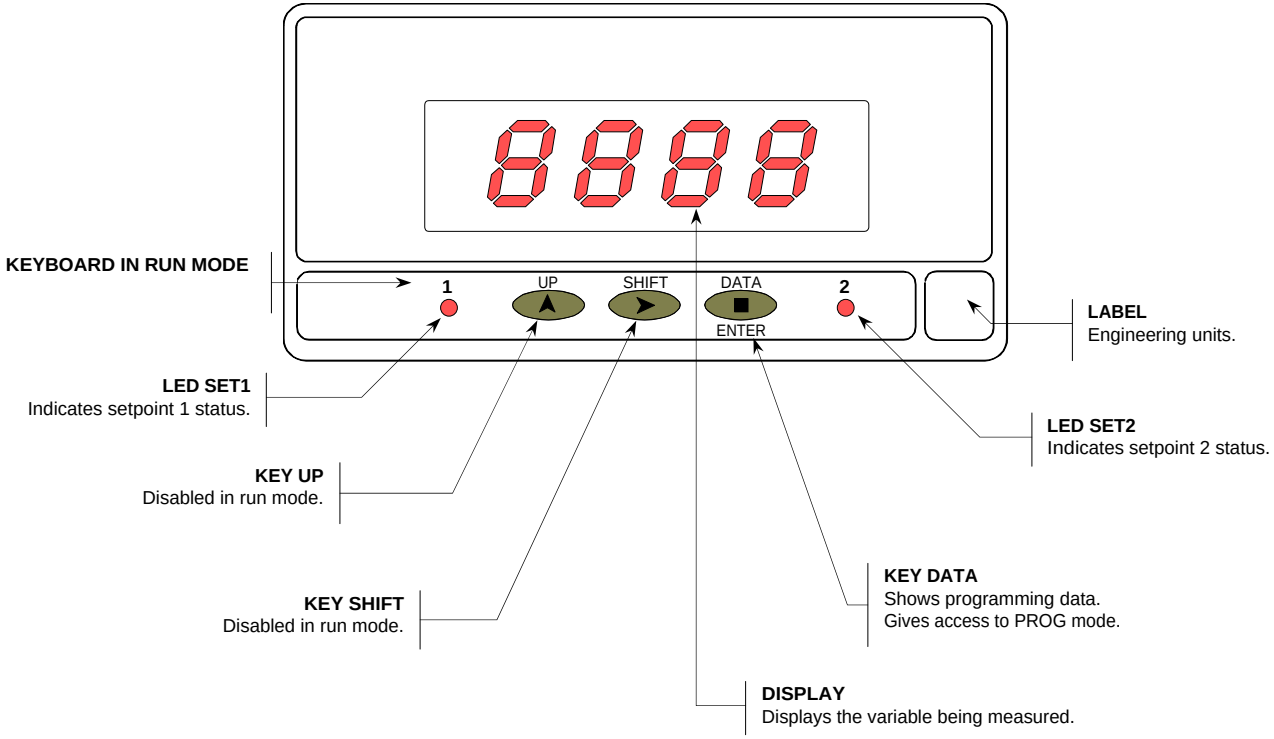
The basic instrument is a soldered assembly composed of the main board, and the display and keyboard module.

Optionally, it can be equipped with a 2-relay control output card (2RE). This option provides an output connector at the rear of the meter, status LED's visible from the front and specific programming routines which are enabled automatically once the card is installed.

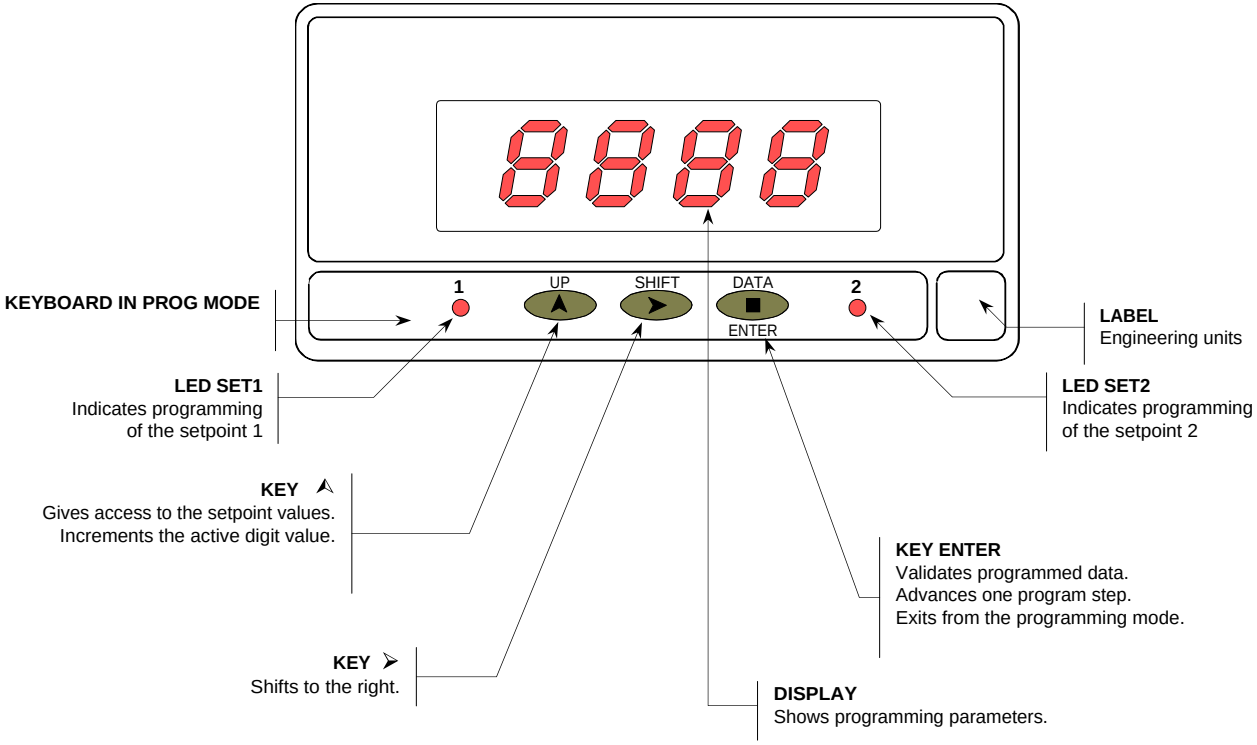
The outputs are isolated from signal input and power supply.

This instrument conforms the following community standards: 89/336/CEE and 73/23/CEE
WARNING: Refer to the instructions manual to preserve safety protections.

FRONT-PANEL FUNCTIONS DESCRIPTION (RUN MODE)



FRONT-PANEL FUNCTIONS DESCRIPTION (PROG MODE)



2. OPERATING INSTRUCTIONS

PACKING CONTENTS

- ❑ Instructions manual in English including Declaration of Conformity.
- ❑ The digital panel instrument JR/ JR20-RES.
- ❑ Accessories for panel mounting (sealing gasket and fixing clips).
- ❑ Accessories for wiring connection (removable terminal block connectors and fingertip).
- ❑ Wiring label stuck to the instrument's case JR/ JR20-RES
- ❑ Set of 4 labels with different engineering units.

✓ **Check packing contents.**

CONFIGURATION

Power supply (pages 9 & 10)

- ❑ The instruments for 115/230V AC power supply are set up at the factory for 230V AC. (USA market 115 V AC).
- ❑ The instruments for 24/48V AC power supply are set up at the factory for 24V AC.
- ❑ If the instrument is supplied for 12V DC, 24V or 48V DC power supply, it is not necessary to make any change.

✓ **Check wiring label before connecting the instrument to the supply**

Programming instructions (page 11)

- ❑ The software inside the instrument allows configuring the input and display parameters. If a two-relay output option is installed ref. 2RE (page 23), the software detects it on power up enabling a specific routine for setpoints configuration.

✓ **Read carefully this paragraph.**

Input type (page 12-15)

- ❑ The strument admits through a physical input for every range a total of three ranges.

✓ **Check selected range and max measurement value.**

Programming lockout (page 22)

- ❑ As shipped from the factory, the instrument allows full access to change programming parameters.
  To disable the possibility of making changes on the configuration, it is necessary to remove a plug-in jumper located on the main board.

✓ **Check jumper position.**

2.1 - Power supply and connectors

To change the meter's physical configuration remove the case as shown in figure 9.1.

115/ 230 V AC: The instruments with 115/230 V AC power are set up at factory for 230 V AC (USA market 115 V AC), see figure 9.2. To change power supply configuration to 115 V AC, make the jumpers indicated in figure 9.3 and table 1. The wiring label should be modified to match the new configuration.

24/48 V AC: The instruments with 24/48 V AC power are set up at factory for 24 V AC, see figure 9.2. To change power supply configuration to 48 V AC, make the jumpers indicated in figure 9.3 and table 1. The wiring label should be modified to match the new configuration.

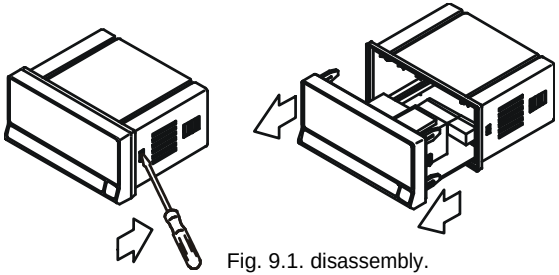


Fig. 9.1. disassembly.

Table 1. Jumper settings. .

Pin	1	2	3	4	5
230V AC	-	▬		▬	
115V AC	▬		▬		-
48V AC	-	▬		▬	
24V AC	▬		▬		-

12, 24 or 48V DC: Instruments for DC power are set up for the supply voltage specified in the wiring label (12V, 24V or 48V according to the order reference).

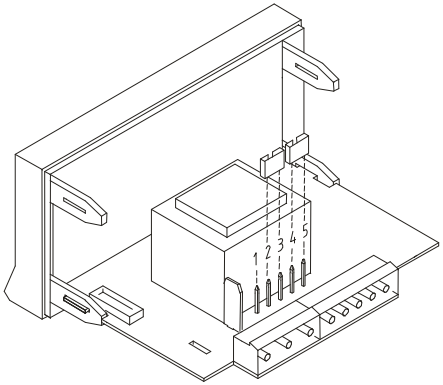


Fig. 9.2. Jumper settings for 230 V or 48 V AC

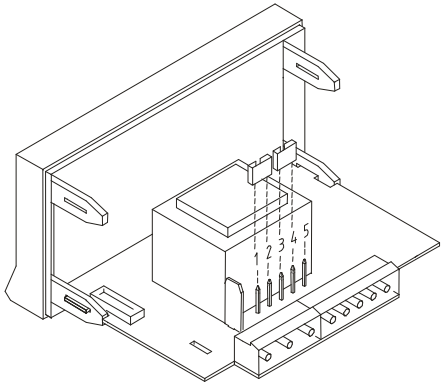
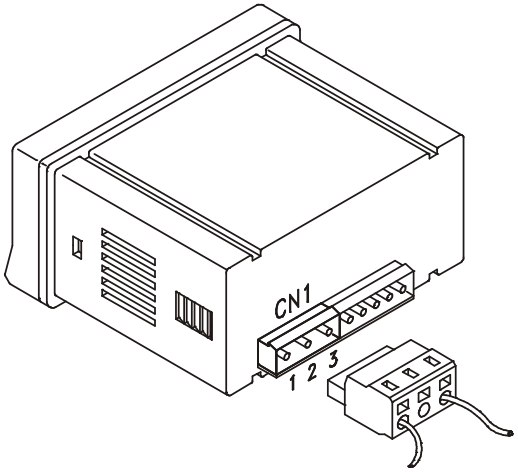


Fig. 9.3. Jumper settings for 115 V or 24 V AC

POWER CONNECTION



AC VERSIONS
PIN 1 – AC PHASE
PIN 2 – Not connected
PIN 3 – AC NEUTRAL

DC VERSIONS
PIN 1 – DC POSITIVE
PIN 2 – Not connected
PIN 3 – DC NEGATIVE

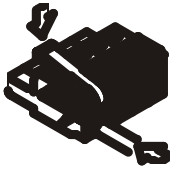
WARNING

INSTALLATION
To meet the requirements of the directive EN61010-1, where the unit is permanently connected to the mains supply it is obligatory to install a circuit breaking device easy reachable to the operator and clearly marked as the disconnect device.

WARNING
In order to guarantee the electromagnetic compatibility, the following guidelines should be kept in mind :
- Power supply wires may be routed separated from signal wires. Never run power and signal wires in the same conduit.
- Use shielded cable for signal wiring and connect the shield to the ground of the indicator (pin2 CN1).
- The cables section should be ≥ 0.25 mm^2

If not installed and used in accordance with these instructions, protection against hazards may be impaired.

CONNECTOR



To perform wiring connections, remove the terminal block from the meter's connector, strip the wire leaving from 7 to 10 mm exposed and insert it into the proper terminal while pushing the fingertip down to open the clip inside the connector as shown in the figure.
Proceed in the same manner with all pins and plug the terminal block back to the corresponding meter's connector.
Each terminal can admit wires of section between 0.08 mm² and 2.5 mm² (AWG 26 ÷ 14).
Some terminals have removable adaptors to provide proper fastening for wires of sections less than 0.5 mm².

2.2 – Programming instructions

To enter in the programming mode

Connect the meter to the mains supply, for approx. 1s a self-test routine automatically activates all the digits of the display. After, the instrument goes to the normal operating mode (RUN).

To enter in the programming mode press ENTER for 5 seconds until the the indication **Pro** shown in figure 11.1 appears on the display.

To exit from the programming mode

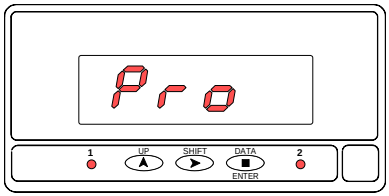
To return to the run mode, it is necessary to pass through the different menu steps by successively pressing the ENTER key until the meter displays the indication **Stor** while internally stores the programmed parameters into the memory. After, it automatically goes to the normal operating mode.

How to interpret the programming instructions

The programming software routine is composed by a series of hierarchically organized menus, each allowing the setting of a specific parameter. In general, the normal sequence at each step is to push the ▶ key a number of times to make changes and the ENTER key to store them in the memory and advance to the next step.

The elements used along the programming instructions are described following.

[11.1] Programming mode

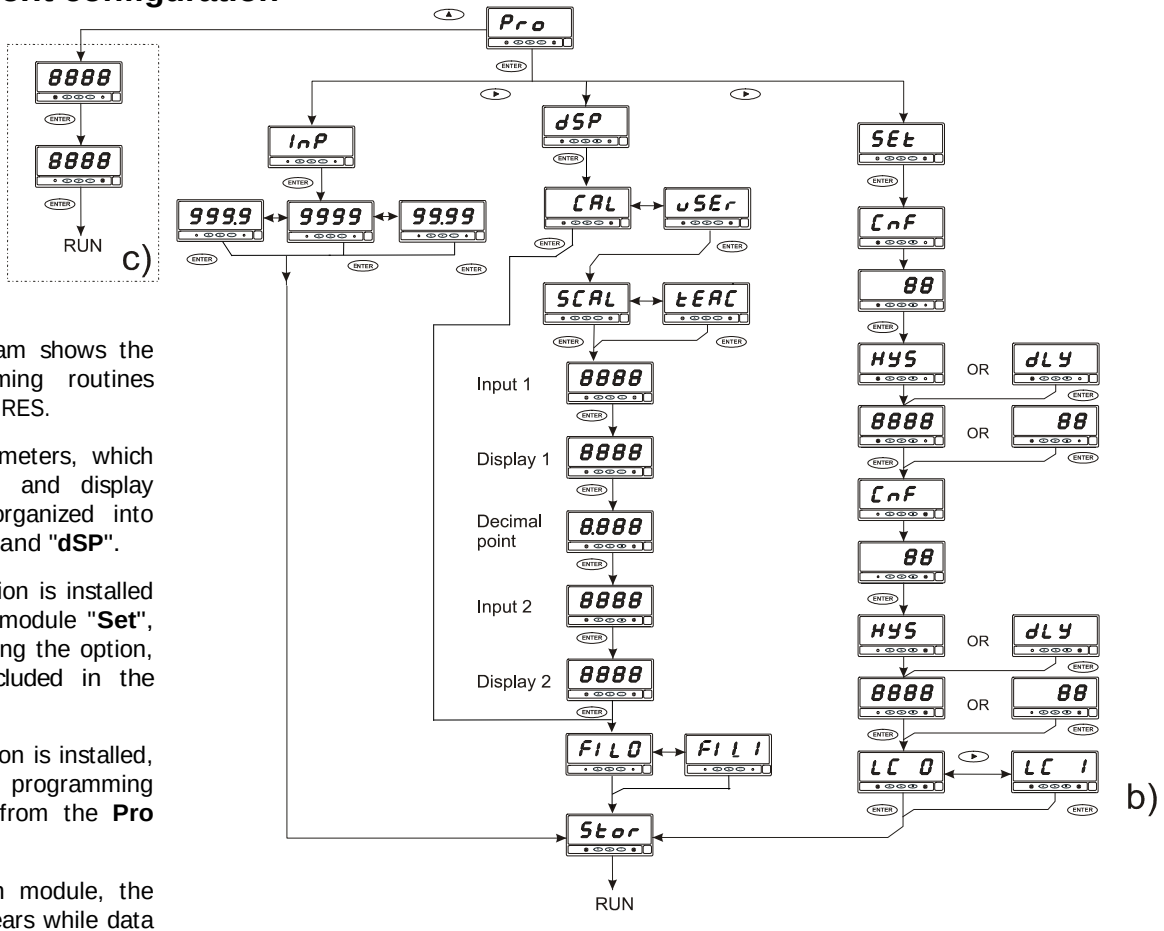


The programming instructions for each menu step are accompanied by a figure representing the display indication for the corresponding parameter. Pay special attention to the LED indications and active keys and follow the procedure described on the text to introduce correctly the desired data.

When the display indication is represented with blank segments, it means that this is one of the possible options of this menu (normally the default one) depending on the previous selection.

A series of blanked '8' represents any numerical value that can be changed by use of keys ▶ (change digit) and ▲ (change value).

2.3 – Instrument configuration



The enclosed diagram shows the complete programming routines for models JR/ JR20-RES.

a) The basic parameters, which refer to the input and display configuration are organized into two modules: "**InP**" and "**dSP**".

b) If a 2-relay option is installed (see page 23), the module "**Set**", that allows configuring the option, is automatically included in the routines.

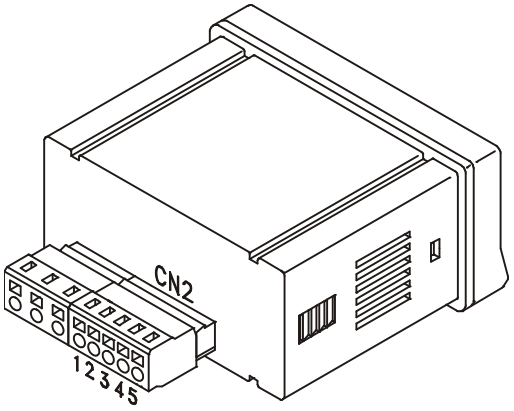
c) If a 2-relay option is installed, the setpoint values programming is directly entered from the **Pro** stage.

At the end of each module, the indication **Stor** appears while data is saved in the memory.

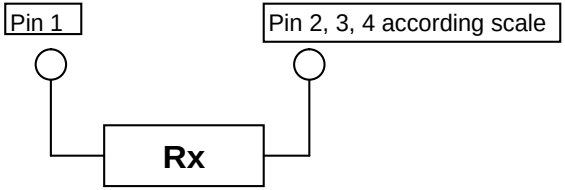
2.4 – Input connection

Refer to the transducer's specifications and to the wiring advisements given in page 10.

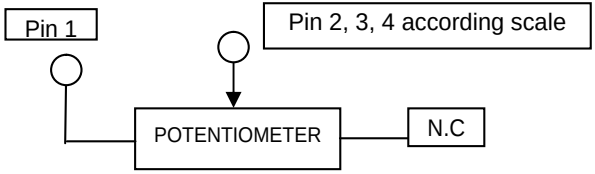
Input signal connection (CN2)
PIN 1 = 0
PIN 2 = 999,9 Ω
PIN 3 = 9999 Ω
PIN 4 =99,99 kΩ
PIN 5 = N.C.



Note: DO NOT aplly voltage to the measurement inputs.



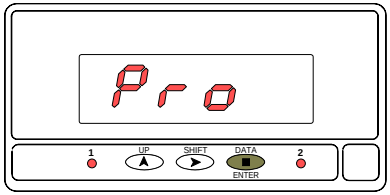
Two wires resistance measurement



Two wires potentiometer measurement

ACCESS TO THE PROGRAMMING MODE

[14.1] Programming mode

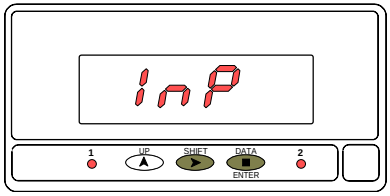


Connect the instrument to the main supply, it automatically enters in a self-test routine which briefly illuminates all segments and LED's then shows the software version and finally goes to the normal reading ("RUN" mode).

Press ENTER to acceed the programming mode.
The display shows the indication given in fig. 15.1. The LED's 1 and 2 will flash during the programming mode (except when programming the setpoints).
Press ENTER to have access to the programming parameters.

2.5 - INPUT CONFIGURATION

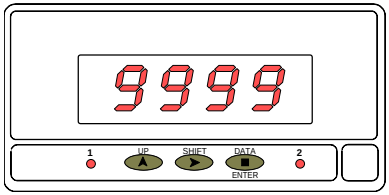
[14.2] Input Module



Press ENTER to access to the input configuration module (fig. 15.2).

Other modules (dSP = display, and, if option installed, SEt = setpoints) are selected by pressing the ▶ key.

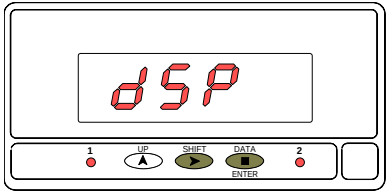
[14.3] Input type



The figure 14.3 shows the indication of the selected input type. If you want to modify this parameter, press the ▶ key until the desired input type appears in the display [**999,9** = input from 0,1 Ω to 999,9 Ω, **9999** = from 1 Ω to 9999 Ω and **99,99** = input from 0,01 kΩ to 99,99 kΩ]. Press ENTER key to validate the selection and return to the run mode.

2.6 – Display configuration

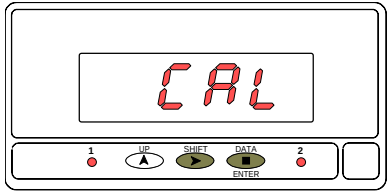
[15.1] Display configuration



The figure 15.1 shows the menu indication that allows the display full configuration. To this point you arrive from Fig. 14.1, pressing one time the ▶ key.

Pressing ENTER key enter the menu.

[15.2] CAL or USER mode selection



At this moment the display indicates **CAL** and by pressing the ▶ key you can select between **CAL** and **uSEr** , if you select **CAL** the instrument will work with the scale selected in the chapter **InP** in calibrated mode, with direct indication in ohms, pressing ENTER enter key go direct to the filter type selection, see page 18. The **uSEr** mode allows to program with the **ScAL** or **tEAC** modes, see page 17**,** a linear relation between the ohm value and an engineering unit.
In **uSEr** mode, pressing ENTER key access to the **ScAL** or **tEAC** selection method

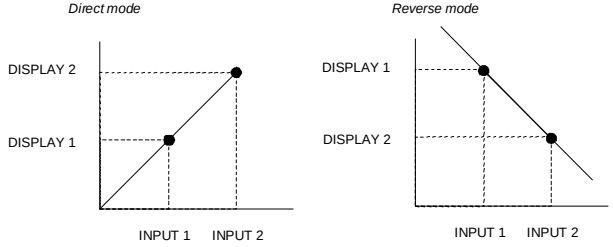
2.6 – Display configuration

After the input configuration it is necessary to program the display range to adapt the meter to the particular application in the desired units.

Display range should be between -1999 and 9999.

Scaling the display consist on programming two points by introducing two input values (INP1, INP2) and their corresponding display values (DSP1, DSP2). The decimal point position will complete the indication in the required engineering units. For the best accuracy, both points 1 and 2 should be approximately the process limits.

It is possible to set up the scale so that the display varies in reverse proportion to the input signal.
This is accomplished by programming the high display for the low input and the low display for high input. The figure shows how to program points 1 and 2 direct or reverse operation.



Direct mode:

- If input signal increases display reading increases.
- If input signal decreases display reading decreases.

Reverse mode:

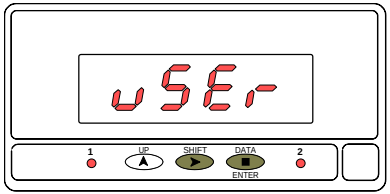
- If input signal increases display reading decreases.
- If input signal decreases display reading increases.

In programmation menus for display configuration first will be introduced the input and display for point 1, next the decimal position and finally the input and display for point 2.

When introducing the input values the decimal point position is automatically adjusted to get the best possible resolution.

The decimal point should be placed on any desired position and this position will remain during the rest of steps of programmation or when working. If the most right position has been choosed when the instrument is working the decimal point doesn 't appears.

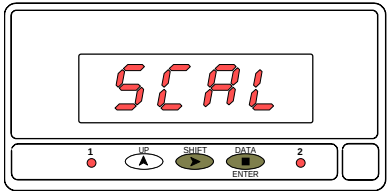
[17.1] Display module



From the **dSP** indication press ENTER and select by pressing the key ▶, the display configuration menu uSEr (Fig. 17.1)

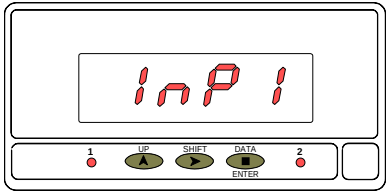
ENTER Access display configuration.

[17.2] Configuration method



In the figure 17.2 the configuration method of the display scale is shown. If you want to modify this parameter, press the ▶ key until the wanted method appears in the display [**SCAL** = configuration method by keyboard or **tEAC** = configuration method by keyboard with real input signal values] and press ENTER to validate the selection and go to the next programming step.

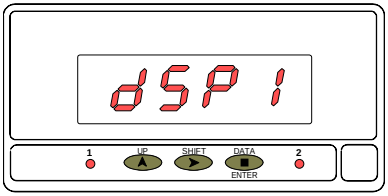
[17.3] Input 1 value



The indication "**InP1**" (fig. 17.3) is viewed for 2s before giving access to the programming of the input value for point 1 (InP1). Depending on the selected scaling method, the input value is programmed in one of the following ways:

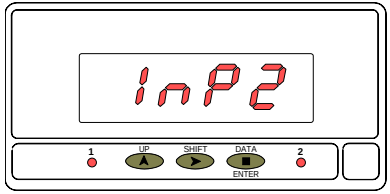
- **SCAL method**. The previously programmed value appears on the display with the first digit in flashing. To change this value (allowable range is –1999 to 9999), use the ▲ key to increment the active digit value and the ▶ key to go to the next digit to be modified. Repeat these operations with all digits until desired InP1 value is registered on the display and press ENTER.
- **tEAC method**. Brings the process to the conditions of point 1. The display reads the actual input value present at the input connector. To accept this value as InP1 press ENTER.

[18.1] Display 1



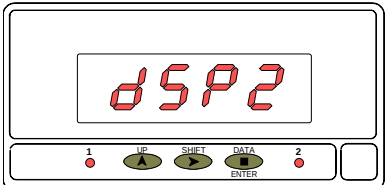
The indication "**dSP1**" (fig. 18.1) is viewed for 2s before giving access to the programming of the display value for point 1 (dSP1).
The previously programmed value appears on the display with the first digit in flash. To change this value (allowable range is –1999 to 9999), use the ▲ key to increment the active digit value and the ▶ key to go to the next digit to be modified. Repeat these operations with all digits until desired dSP1 value is registered on the display and press ENTER.
The decimal point flashes to indicate that it can be moved at this step. Press repeatedly the ▶ key to move it to the right until it takes desired location. If no decimal point is required, it must be placed to the rightmost digit of the display. Press ENTER again to validate programmed data and go to the next step.

[18.2] Input 2



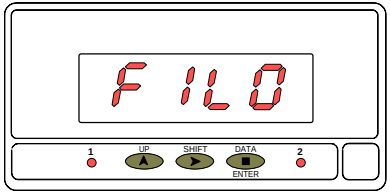
The indication "**InP2**" (fig. 18.2) is viewed for 2s before giving access to the programming of the input value for point 2 (InP2). The procedure for programming this parameter is the same as described in section 17.3.

[18.3] Display 2



The indication "**dSP2**" (fig. 18.3) is viewed for 2s before giving access to the programming of the display value for point 2 (dSP2).
The display shows the previously programmed value with the first digit in flashing. To change this value follow the procedure described in section 18.1. The decimal point is fixed in the position selected in section 18.1. Press ENTER to validate changes and proceed to the filter value configuration.

[18.4] Filter value

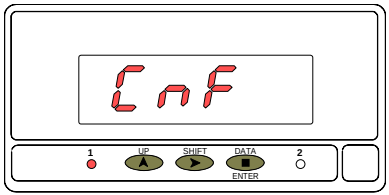


In this case you can select [**FIL0** which not applies the low-pass digital filter or **FIL1** which applies a low-pass filter 1,14 Hz @ –3dB], the selection will depen on the applied signal type. By pressing t... ▶ key select the desired filter level.
Press ENTER to validate the selection. The **Stor** indication return the instrument to the run mode and save the programmed parameters.

2.7 SETPOINT CONFIGURATION (accessible if 2RE option is installed)

If a two relay option is installed (see page 23) the instrument will allow to enter on the following routines: activation mode, delay or hysteresis and setpoint program lockout.
From the run mode press ENTER to call the **Pro** stage and press ▲ to acced the first setpoint value.

[19.1] Setpoint 1 Configuration



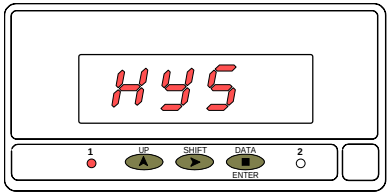
LEFT DIGIT VALUE	RIGHT DIGIT VALUE
MODE HI=0 MODE LO=1	DELAY=0 HYSTERESIS=1

The indication shown in figure 19.1 appears on the display to indicate that the next step is to program the setpoint1 operating parameters (led Setpoint 1 activated). After 2 seconds or by a press ENTER , the meter allows access to this menu.

The display then shows two digits: the leftmost one corresponds to the output mode (HI or LO) and the rightmost one corresponds to the delay unit (time -delay- or counts of display -hysteresis-) according to the table below the figure. Use the ▲ key to change the active digit value (in flashing) and the ▶ key to go to the next digit to be set.

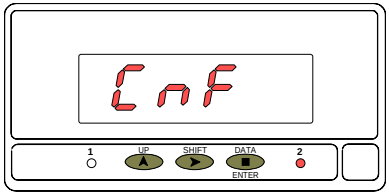
Press ENTER to validate selections and advance to the next phase.

[19.2] SET1 Hysteresis/Delay



Depending on previous phase choice, the display will show for 2 seconds the indication corresponding to the selected delay units before giving access to the time delay or hysteresis magnitude programming (**dLY**) or (**HYS**). After 2 seconds or by a press of ENTER, the initially programmed numerical value appears on the display with the first digit in flashing. To program the desired value (from 0 to 9999 counts of hysteresis or from 0 to 99 seconds of time delay) use the ▲ key to increment the active digit value and the ▶ key to advance to the next digit to be modified. Repeat this procedure until desired value is completed on the display and press ENTER to validate and acceed to the programming of the setpoint 2 parameters.

[20.1] Setpoint 2 Configuration



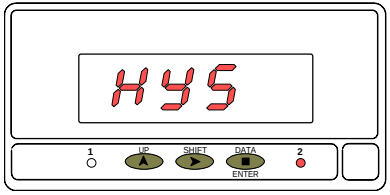
LEFT DIGIT VALUE	RIGHT DIGIT VALUE
MODE HI=0 MODE LO=1	DELAY=0 HYSTERESIS=1

The indication shown in figure 20.1 appears on the display to indicate that the next step is to program the setpoint 2 operating parameters (led Setpoint 2 activated). After 2 seconds or by a press ENTER, the meter allows access to this menu.

The display then shows two digits; the one on left corresponds to the output mode (HI or LO) and the rightmost one to the delay unit (time -delay- or counts of display -hysteresis-). See table in figure 20.1. Use the ▲ key to change the active digit value (in flashing) and the ▶ key to go to the next digit to be modified.

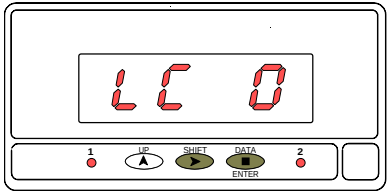
Press ENTER to validate changes and advance to the next phase.

[20.2] SET2 Histeresis/Delay



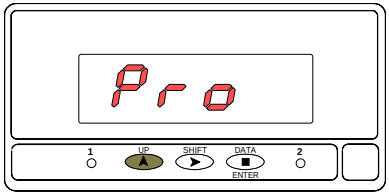
The display shows for 2 seconds the indication corresponding to the selected delay units before giving access of the time delay or hysteresis magnitude programming (**dLY**) or (**HYS**). After 2 seconds or by a press ENTER, the initially programmed numerical value appears on the display with the first digit in flashing. To change the value (from 0 to 9999 counts of hysteresis or from 0 to 99 seconds of time delay) use the ▲ key to increment the active digit value and the ▶ key to advance to the next digit to be modified. Repeat this procedure until desired value is completed on the display and press ENTER to validate and advance to the next step.

[20.3] Setpoint Program lockout



The figure 20.3 shows one of the two options available at this stage [**LC O** = setpoint values programming enabled (unlocked) or **LC 1** = setpoint values programming disabled (locked)].
If wanted to modify this parameter, use the ▶ key to switch to the desired option. If you decide to lock the setpoint values, it will be also necessary to lock out the entire program routines (see page 22).
Press ENTER to validate the choice, save programmed data and return to the run mode (indication **Stor**).

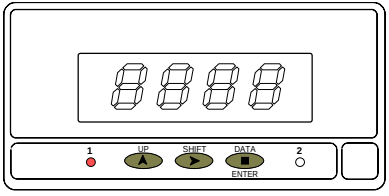
[21.1] Setpoints Programming



To program the setpoint values, press ENTER to access the programming mode (indication **Pro**, figure 21.1) and press ▲ to make the display show the previously programmed value of setpoint 1.

NOTE: The setpoint values should be programmed within the selected measurement range.

[21.2] Setpoint 1 value

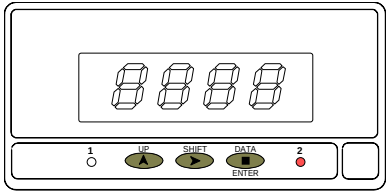


Program setpoint 1 value, LED 1 activated.

The initially programmed value appears on the display with the first digit flashing. Press repeatedly the ▲ key to increment the active digit from 0 to 9 until it takes the desired value and press ▶ to advance to the next digit to be modified. Repeat these operations to complete the desired setpoint value with sign.

Press ENTER to validate the entry and pass to the programming of setpoint 2.

[21.3] Setpoint 2 value



Program setpoint 2 value, LED 2 activated.

Program the setpoint 2 value with sign by means of the ▲ (change value) and ▶ (change digit) procedure as described in previous phase.

Press ENTER to store programmed data in the memory and exit from the programming mode.

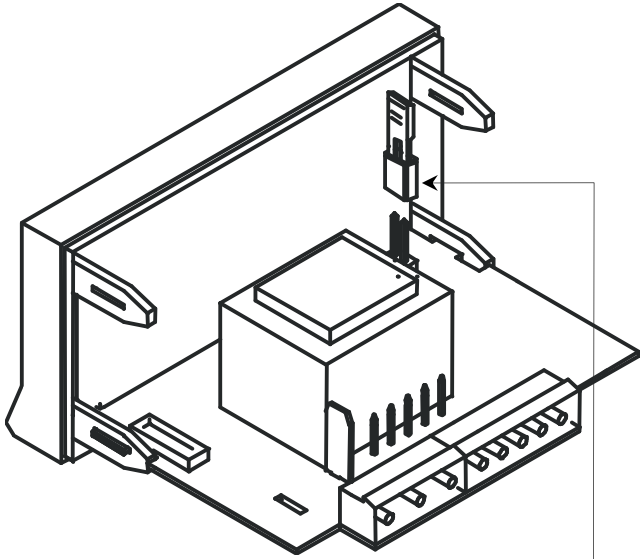
2.8 – Programming lockout

After completing the instrument's programming, it is recommended to lockout the access to the programming to prevent from accidental or unauthorized modifications.

This operation is made by taking off a plug-in jumper located on the main board circuit (see figure at right).

NOTE : Disconnect power before changing
the jumper position.

While the instrument is locked out it is however possible to access to the programming routines to check the current configuration, but it won't be possible to entry or modify data. In this case, a push of ENTER to acceed the programming routines will show the indication **dAtA** instead of **Pro**.



3. SETPOINT OUTPUT OPTION

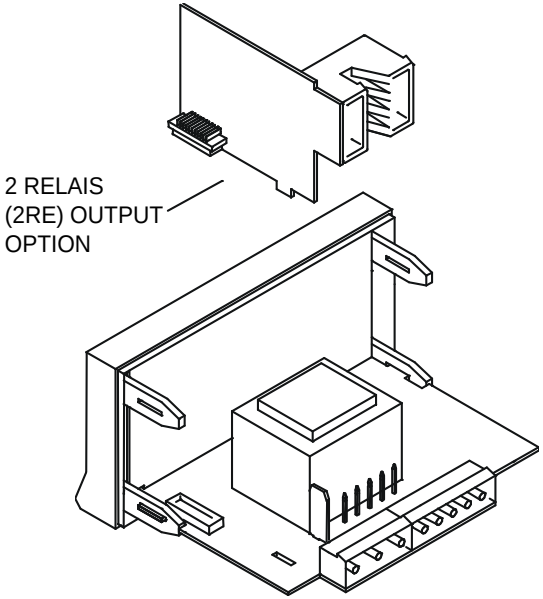
As an option, the Jr/Jr20-RES models can be equipped with the following output option:

• A control output card with two SPDT relays outputs rating 8 A @ 250 V AC / 150 V DC. The outputs can be programmed for HI or LO operation and selectable time delay or hysteresis action. **Ref. 2RE**

The 2RE option consists of an additional card installable to the meter's main board by means of a plug-in connector.

The option is supplied with a specific instructions manual describing installation and characteristics. Nevertheless, the programming instructions are given in the Jr/Jr20-RES manual.

For more detailed information on characteristics, applications and mounting please refer to the specific 2RE instructions manual.



4. TECHNICAL SPECIFICATIONS

INPUT SIGNAL

- Configuration.....differential asymmetrical
- Inputs .....999,9 Ω ...9999 Ω.... 99,99 kΩ
- Resolution .....0,07 Ω ..... 0,7 Ω.....7 Ω
- Max measured current..... 2,3 mA .. 0,23 mA....0,023 mA
- Max aplicable voltage ..... ±10 V ..... ±35 V.....±35 V
- Filter (Cut-out frequency at –3 dB)..... 1,14 Hz

ACCURACY AT 23º ± 5º C

- Max. error .....± (0.1% of the reading +2 digits)
- Temperature coefficient.....100 ppm/ ºC
- Warmup time..... 10 minutes

POWER SUPPLY

- AC..... 230/115 V, 24/48 V 50/60 Hz AC
- DC .....12 V (10.5 a 16 V), 24 V (21 a 32 V), 48 V (42 a 64 V)
- Power consumption.....3 W

FUSES (DIN 41661) - (Recommended)

- JR/ JR20-RES (230/115 V AC)..... F 0.1A / 250 V
- JR/ JR20- RES2 (24/48 V AC)..... F 2A / 250 V
- JR/ JR20- RES3 (12 V DC) ..... F 1A / 250 V
- JR/ JR20- RES4 (24 V DC) ..... F 0.5A / 250 V
- JR/ JR20- RES5 (48 V DC) ..... F 0.5A / 250V

A/D CONVERSION

- Technique .....Sigma-Delta
- Resolution ..... ±15 bits
- Rate..... 25/ s

DISPLAY

- Range .....-1999/ 9999
- Junior-RES..... 4 digits 14mm red LED
- Junior20-RES ..... 4 digits 20mm red LED
- Decimal point ..... programmable
- LEDs ..... 2 for output status
- Display rate .....250 ms
- Display overrange .....OvE
- Input overrange.....OvE

ENVIROMENTALS

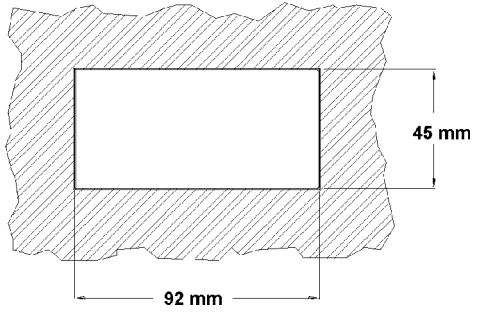
- Operating temperature..... -10 ºC at +60 ºC
- Storage temperature ..... -25 ºC at +85 ºC
- Relative humidity, non condensing ..... <95 % at 40 ºC
- Altitude max ..... 2000 meters

DIMENSIONS

- Dimensions.....96 x 48 x 60 mm
- Panel cutout .....92 x 45 mm
- Weigth ..... 250 g
- Case material..... poli carbonato s /UL 94 V-0
- Front protection .....IP65 (indoor use)

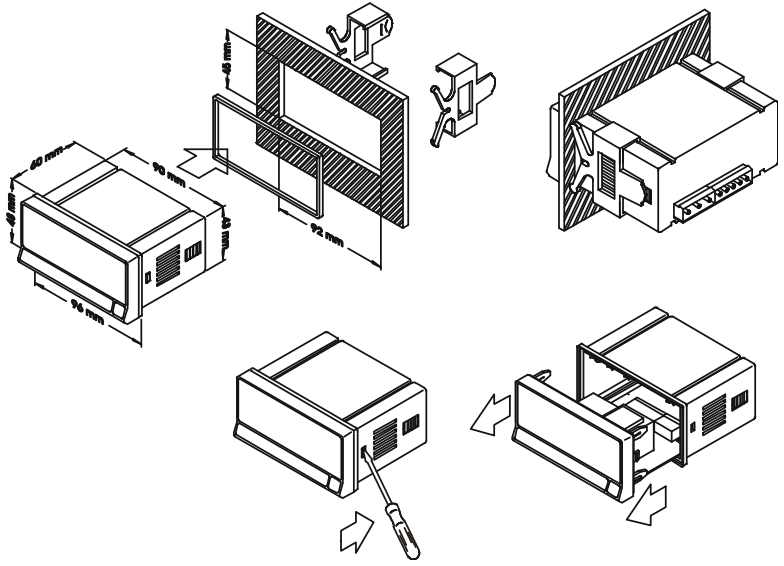
4.1 - Dimensions and mounting

To install the instrument into the panel, make a 92x45 mm cut-out and insert the instrument from the front placing the sealing gasket between this and the front bezel.



Place the fixing clips on both sides of the case and slide them over the guide tracks until they touch the panel at the rear side.
Press slightly to fasten the bezel to the panel and secure the clips.

To remove the instrument from the panel, pull outwards the fixing clips rear tabs to disengage and slide them back over the case.



CLEANING: The front cover should be cleaned only with a soft cloth soaked in neutral soap product.
DO NOT USE SOLVENTS

5. WARRANTY

The instruments are warranted against defective materials and workmanship for a period of three years from date of delivery.

If a product appears to have a defect or fails during the normal use within the warranty period, please contact the distributor from which you purchased the product.

This warranty does not apply to defects resulting from action of the buyer such as mishandling or improper interfacing.

The liability under this warranty shall extend only to the repair of the instrument. No responsibility is assumed by the manufacturer for any damage, which may result from its use.

6. DECLARATION OF CONFORMITY

Manufacturer : DITEL - Diseños y Tecnología S.A.

Address : Travessera de les Corts, 180
08028 Barcelona
ESPAÑA

Declares, that the product :

Name : Digital panel meter

Model : JUNIOR-RES and JUNIOR20-RES

Conforms with : EMC 89/336/CEE
LVD 73/23/CEE

Fecha: November 2002
Signed: José M. Edo
Position: Technical Manager

Applicable Standards : EN55022/CISPR22	**EN50081-1** Generic emission Class B
Applicable Standards : IEC1000-4-2	**EN50082-1** Generic inmunity Level 3 Criteria B Air Discharge 8kV Contact Discharge 6kV
IEC1000-4-3	Level 2 Criteria A 3V/m 80..1000MHz
IEC1000-4-4	Level 2 Criteria B 1kV Power Lines 0.5kV Signal Lines
Applicable Standards : IEC1010-1	**EN61010-1** Generic Safety Installation Category II Transient Voltages <2.5kV Degree of Pollution 2 Conductive pollution excluded Insulation type Enclosure : Double Inputs/Outputs : Basic