cod. 9IS44019
rel. 10/05 -GB-

IC 912 LX

NTC-PTC/ P R V-I I-V/ Pt100 Tc

electronic controller with single intervention point

BUTTONS

UP
Scrolls through the menu items
Increases the values
Par. programmable
(see par. H31)

DOWN
Scrolls through the menu items
Decreases the values
Parameter programmable
(see H32 parameter)

fnc
ESC function (quit)
Parameter programmable
(see par. H33)

set
Accesses the set point and Menus
Activates functions
Confirms the commands
Displays the alarms (if active)

LED

Relay OUT
ON for relay on (energized);blinking for delay, protection or enabling blocked.

Alarm
ON for active alarm; blinking for silenced alarm

Soft Start (and Set Point setting)
ON for reduced Set Point;
blinking when Soft Start function is on;

MACHINE STATUS MENU

a) Press the 'set' button and release it to access the machine status menu. In normal conditions, the label for the Set point value can be found in the menu. Once the 'SP1' label has been displayed, press the "set" button to display the Setpoint value.

The Setpoint value appears on the display. To change the Set point value, use the "UP" and "DOWN" buttons within 15 seconds. If you press the "set" button again, when the fnc button is pressed or 15 seconds elapse, the last value displayed will be stored and the "SP1" label will reappear on the display.

b) If alarms are present, the "AL" label appears.

By using the "UP" and "DOWN" buttons, you can scroll through all the folders in the menu:
-AL: alarm folder (if alarms present, except for faulty probes/probe errors);
-SP1: Set point 1 setting folder.

c) If an alarm condition exists when the Machine Status menu is accessed, the "ALfolder label appears.

(example: when maximum and minimum temperature alarms are present)

Use the UP and DOWN buttons to scroll through the list of active alarms and press 'set' to display the selected alarm.

PROGRAMMING MENU

The menu is divided into 2 levels; once users have pressed the 'set' button for 5 seconds, they can access the user level folders (1)

Navigation at user level(1):

• By using the 'UP' / 'DOWN' buttons you can scroll through all the folders in the programming menu that only contain user level parameters (1)

How to access the installer level (2):

• By using the 'UP' / 'DOWN' buttons, scroll through the user level folders (1) until the folder with the "CnF" label is displayed. Then press 'set' to access the parameters contained in it.

• By using the 'UP' / 'DOWN' all the parameters in the user level (1) in 'CnF' are displayed, continue until the 'PA2' label is not longer displayed and press 'set'.

• By pressing the 'set' button next to 'PA2' the first folder containing installer level parameters will be displayed and then the 'rE1' folder.

Navigation at installer level(2):

• By using the 'UP' / 'DOWN' buttons you can scroll through all the folders in the programming menu that only contain installer level parameters (2)

How to modify the parameter value (on both levels):

• When the 'set' button is pressed, the first folder in the menu is displayed. (e.g.: "rE1" folder)

• By using the 'UP' / 'DOWN' buttons you can scroll through all the folders in current level.

• By pressing the 'set' button next to the selected folder (in this case "SFt") the first parameter in the current level will be displayed. Select the desired parameter using the 'UP' / 'DOWN' keys.

• By pressing the 'set' button the value of the selected parameter is displayed and by using the 'UP' and 'DOWN' buttons it can be modified.

PASSWORD

Access to parameter handling both at user level and installer level can be limited by using passwords. The passwords can be enabled by setting the PA1 (user password) and PA2 (installer password) in the 'dIS' folder. The passwords are enabled if the value of the 2 parameters PA1 and PA2 is not 0.

• To access the "Programming" menu hold down the "set" button for more than 5 seconds.
If specified, the user level(1) access PASSWORD will be requested

• If password 1 is enabled (not 0) you will be asked to enter it. Perform the operation by selecting the correct value using the 'UP' and 'DOWN' keys and press the 'set' button to confirm.

Installer level (2) parameters

In the programming menu scroll through the folders containing the user level parameters using the UP' and 'DOWN' buttons until the CnF folder is displayed.

- Press the 'set' button to enter the 'CnF' folder where the 'PA2' label is present.
- Scroll through the folder parameters and press the 'set' button next to the 'PA2' label, '0' will appear on the display.

- Use the 'UP' / 'DOWN' buttons to select the correct value of the installer password and then press the 'set' button to access the installer level parameters (2).

If the password is not entered correctly, the device will display the 'PA2' label again and the operation will have to be repeated.

At each level in both menus, when the "fnc" button is pressed or the 15 second time out elapses, you are taken back to the higher display level and the last value on the display is stored.

COPY CARD

The Copy Card is an accessory connected to the TTL serial port used for quick programming of the unit parameters (upload and download parameter map to one or more units of the same type). Upload (UL label), download (dL label) and copy card formatting (Fr label) operations are performed in the following way:

- The 'FPr' folder contains the commands necessary for use of the Copy Card. Press 'set' to access the functions.

- Use the 'UP' / 'DOWN' buttons to display the required function. Press the 'set' and uploading (or downloading) will be performed.

- If the operation is successful 'y' will be displayed, if it is not successful, 'n' will be displayed.

Download from reset

Connect the copy card when the instrument is OFF. The programming parameters are downloaded when the device is switched on. At the end of the lamp test, the following messages are displayed for about 5 seconds:

- dLY label if copy operation is successful
- DLn label if operation fails

Uploading and Downloading parameters from instrument

NOTE:

- after the parameters have been downloaded, the device uses the downloaded parameter map settings.
- **see** "FPr folder" in Parameter Table and Description of parameters

FUNCTIONS

The following functions are available in the FnC folder (last folder visible from the Programming Menu, level 1):

Function	Function label ACTIVE	Function label NOT ACTIVE	D.I.	Button	Active function signalling
soft start	SOn	SOF*	1	1	LED blinking
economy set point	OSP	SP*	2	2	LED ON
shut-down	bOn*	bOF	3	3	LED ON
stand-by	On*	OF	6	6	LED ON
maintenance request	Atn	AtF*	7	7	UnP lampeggiante

***** indicates default

NOTE: to modify the status of a specified function press the 'set' button

NOTE: If the unit is switched off, the function labels go back to their default status.

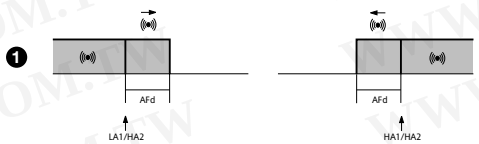
ALARMS

LABEL	ALARM	CAUSE	EFFECTS*	Resolving problems	IC 912 LX MODELS NTC/PTC	V-I	Pt100-Tc
E1	Probe 1(control) faulty	• measuring of values outside the nominal reading range • control probe faulty/shorted/open probe	"E1" label appears on display; Controller enabled as indicated by the On1 and OF1 parameters if programmed for the Duty Cycle	• check the probe wiring • replace the probe	●	●	●
AH1	High temperature alarm	• value read by probe 1 > HA1 after time equal to "tAO". (see " MIN MAX ALARMS" and description of "HA1", "Att" and "tAO" parameters)	Alarms created in the "AL" folder with the AH1 label	• Wait for temperature value read by probe 1 to fall below HA1	●		●
AL1	Low temperature alarm	• value read by probe 1 < LA1 after time equal to "tAO". (see " MIN MAX ALARMS" and description of "LA1", "Att" and "tAO" parameters)	Alarms created in the "AL" folder with the AL1 label	• Wait for temperature value read by probe 1 to go above LA1	●		●
EA	External alarm	• control of alarm from active D.I. if "H11" = 8 or 9 (see description of "H11" parameter)	Alarms signalled in the "AL" folder with the EA label It only blocks the controllers if "H11"=9	• Manual silencing by pressing button	●		●

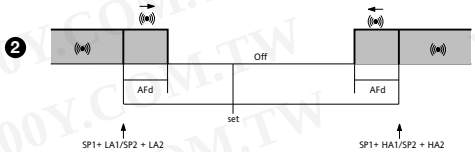
***** Effects common to all alarms: Alarm LED permanently on; Buzzer activated (if present);;

MAX-MIN ALARMS

Temperature expressed as an absolute value (par "Att"=0) Abs(olute)



Temperature in relation to set point (par "Att"=1) rEL(ative)



	Temperature expressed as an absolute value (par "Att"=0) Abs(olute)	Temperature in relation to set point (par "Att"=1) rEL(ative)
Minimum temperature alarm	Temperature lower than or equal to LA1 (LA1 with sign)	Temperature lower than or equal to set point +LA1 (LA1 positive only)
Maximum temperature alarm	Temperature higher than or equal to HA1 (HA1 with sign)	Temperature lower than or equal to set point +HA1 (HA1 positive only)
Minimum temperature alarm back swing	Temperature higher than or equal to LA1+AFd	Temperature higher than or equal to set point + LA1 + AFd set point -|LA1|+AFd
Maximum temperature alarm back swing	Temperature lower than or equal to HA1-AFd	Temperature lower than or equal to set point+HA1-AFd

if Att=reL(ative) LA1 must be negative: therefore set point+LA1<set point because set point+(-\|LA1\|)=set-\|LA1\|

PARAMETER TABLE

	PAR.		RANGE	DEFAULT	LEVEL	M.U.
	SP1		LS1...HS1	0.0		°C/°F
Controller 1 - rE1 label	**HC1**		H/C	H/C*	1	Flag
	OS1		-30.0...30.0	0*	**2**	°C/°F
	db1		0...30.0	0	1	°C/°F
	dF1		0...30.0	1*	1	°C/°F
	HS1		LS1...HdL	*	1	°C/°F
	LS1		LdL...HS1	*	1	°C/°F
	HA1	**IC 912 LX NTC/PTC**	LA1...350	140*	1	°C/°F
		IC 912 LX V-I	LA1...150.0	*		
		IC 912 LX Pt100-Tc	LA1...1999	*		
	LA1	**IC 912 LX NTC/PTC**	-99.9...HA1	-50*	1	°C/°F
		IC 912 LX V-I	-150...HA1	*		
		IC 912 LX Pt100-Tc	-328...HA1	*		
	dn1		0...250	1	1	°C/°F
	dO1		0...250	0	1	sec
	di1		0...250	0	1	min
	dE1		0...250	0	1	min
	On1		0...250	0	1	sec
	OF1		0...250	1	1	min
SFt label	**dSi**		0...25.0	0	**2**	°C/°F
	dSt		0...250	0	**2**	hours/mm/sec
	Unt		0/1/2	0	**2**	hours/mm/sec
	SEn		0/1/2/3	0	**2**	num
	Sdi		0...30.0	0	**2**	°C/°F
Alarms-AL label	**Att**		AbS/rEL	AbS	**2**	flag
	Afd		1.0...50.0	2.0	**2**	°C/°F
	PAO (1) (!)		0...10	0	**1**	°C/°F
	SAO		0...10	0	1	hours
	tAO (1)		0...250	0	1	min
Add label	**dEA (!)**		0...14	0	1	num
	FAA (!)		0...14	0	1	num
Display - diS label	**LOC**		n/y	n	1	flag
	PA1		0...250	0	1	num
	PA2 **		0...250	0	**2**	num
	ndt	**IC 912 LX NTC/PTC**	n/y	n	1	flag
		IC 912 LX V-I	n/y/int			
		IC 912 LX Pt100-Tc	n/y			
	CA1		-30.0...30.0	0	1	°C/°F
	CAI		0/1/2	2	**2**	num
	LdL	**IC 912 LX NTC/PTC**	-67.0...HdL	-50	**2**	°C/°F
		IC 912 LX V-I	-99...HdL	*		
		IC 912 LX Pt100-Tc	-328...HdL	*		
	HdL	**IC 912 LX NTC/PTC**	LdL...302	140	**2**	°C/°F
		IC 912 LX V-I	LdL...100	*		
		IC 912 LX Pt100	LdL...1999	*		
	dro	**IC 912 LX NTC/PTC**	°C/°F	°C	1	flag
		IC 912 LX Pt100				

	PAR.		RANGE	DEFAULT	LEVEL	M.U.
Configuration - CnF label	**H00 (!)**	**IC 912 LX NTC/PTC**	PtC/ntC	PtC/ntC*	1	flag
		IC 912 LX V-I	420/020/010/05/01	*		num
		IC 912 LX Pt100-Tc(2)	Pt1/JtC/HtC	Pt1/JtC/HtC*		num
	H02		0...15	5	2	sec
	H03	**IC 912 LX V-I**	(ndt=n) -99...100 (ndt=y) -99.0...100.0 (ndt=int) -990...1000	*	1	°C/°F
	H04	**IC 912 LX V-I**	(ndt=n) -99...100 (ndt=y) -99.0...100.0 (ndt=int) -990...1000	*	1	°C/°F
	H05		-2/-1/0/+1/2	0	**2**	num
	H06		n/y	y	**2**	flag
	H08		0/1/2	2	**2**	num
	H10		0...250	0	1	min
	H11	**IC 912 LX NTC/PTC** **IC 912 LX Pt100-Tc**	0...9	0	**2**	num
	H13	**IC 912 LX NTC/PTC** **IC 912 LX Pt100-Tc**	no/nc/noP/nCP	no	**2**	num
	H14	**IC 912 LX NTC/PTC** **IC 912 LX Pt100-Tc**	0...250	0	**2**	num
	H31		0...7	0(2?)	**2**	num
	H32 (!)		0...7	0	**2**	num
	H33 (!)		0...7	0	**2**	num
	rEL		/	/	1	/
	tAb		/	/	1	/

PA2 label
In the CnF folder you can access all level 2 parameters with the PA2 label by pressing the "set" button

label FPr	**UL**	/	/	1	/
	dL	/	/	1	/
	Fr (3)	/	/	**2**	/

FUNCTIONS (folder with "FnC" label)
The FnC folder (last folder visible from the Programming Menu) contains several functions that are activated using the "set" button.

NOTES:
(1) Refers exclusively to high and low temperature alarms.
(2) The Pt100 model only works with the Pt100 input (3 wires) whereas Tcj/TcK models, on the basis of this parameter, can work with the Tc input and the Pt100 input.
(3) If the Fr command is used, the data entered in the card will be permanently lost. This operation cannot be undone. After the operation with the Copy Card, the controller must be switched off and then switched back on

WARNING (!)
If one or more parameters marked with (!) are modified, the controller must be switched off after the modification and then switched back on

PLEASE NOTE:
The parameters dro, H11, H13 and H14 are only present in IC 915 LX NTC/PTC and Pt100/TcJ-TcK models.
Parameters H03 and H04 are only present in the IC 915 LX V-I model
* The default value depends on the model
** Visible at level 1 **in the CnF folder** and can be set at level 2 **in the diS folder**

DESCRIPTION OF PARAMETERS

CONTROLLER 1 (folder with "rE1" label)

HC1 If set to H, the controller operates in heating mode. If set to C, the controller operates in cooling mode.
OS1 Offset Setpoint
db1 Operating band 1 **See ON-OFF control diagram**
dF12 Relay OUT1 intervention differential. The load will stop when Set point is reached (as indicated by the control probe) and will restart at a temperature equal to setpoint plus (or minus, depending on HC1 the value of the differential. **See ON-OFF adjustment diagram**
HS1 Maximum value for set point
LS1 Minimum value for set point
HA1 Maximum alarm OUT1 **See Max/Min. Alarm diagram**
LA1 Minimum alarm OUT1 **See Max/Min. Alarm diagram.**

dn1 Start-up delay. The specified time must elapse between the controller relay start-up request and actual start-up.
do1 Delay after shut-down. The specified time must elapse between shut-down of the controller 1 relay and a subsequent start-up
di1 Delay between start-ups. The specified time must elapse between two subsequent start-ups of controller
dE1 Shut-down delay. The specified time must elapse between shut-down of the controller 1 relay and a subsequent start-up
NOTE: for parameters dn1, do1, di1, dE1 0= not active
On1 Controller start-up time if probe is faulty. If set to "1" with Of1 at "0" the controller is always on whereas if Of1 >0 it operates in duty cycle mode.
OF1 Controller shut-down time if probe is faulty. If set to "1" with On1 at "0" the controller is always on whereas if On1>0 it operates in duty cycle mode.

SOFT START (folder with "SFt" label)

N.B.: The SOFT START function is button, D.I. or function selectable.
The Soft Start controller can be used to set the temperature gradient required to reach a specific set point in a specific period of time. This function automatically gives you a progressive increase of the control set point from the Ta value (ambient temperature at start-up) to the value actually displayed. This means that a rise in temperature can be immediately stopped and the risk of overshooting reduced.

dSi Value (in degrees) of each of subsequent increases (dynamic) of adjustment point 0=disables the SOFT START function.
dSt Time between two subsequent increases (dynamic) of set point
Unt Unit of measurement (hours, minutes, seconds)
SEn Enabled outputs. Establishes which outputs the function must be enabled on: 0 = disabled; 1 = OUT 1; 2 = 3 = not used;
Sdi Function reinsertion threshold. Establishes the threshold beyond which the SOFT START function is automatically re-inserted

ALARMS (folder with "AL" label)

Att Parameter "HA1" and "LA1" modes, as absolute temperature values or as differential compared with the Set point.
0 = absolute value; 1 = relative value.
AFd Alarm differential.
PAO Alarm exclusion time on device start-up after a power failure.
SAO Alarm exclusion time after reaching the Set point. 0 = disabled. If >0, an alarm will be generated if the Set point is not reached after the time (in hours) set by this parameter.
tAO Temperature alarm signal delay time.

COMMUNICATION (folder with "Add" label)

dEA Device address: indicates the device address to the management protocol.
FAA Family address: indicates the device family to the management protocol.

DISPLAY (folder with "diS" label)

Keyboard Lock
Keyboard operating can be locked by programming the "Loc" parameter (see folder with "diS" table). If the keyboard is locked you can access the Programming Menu by pressing the "set" button. The Set point can also be displayed.

LOC Keyboard locked (set point and buttons). However, you can still access the parameter programming menu and modify the parameters including the status of this parameter to allow keyboard unlocking. y = yes; n = no.

PA1 Password 1. When enabled (value is not 0) it represents the access key to level 1 parameters.
PA2 Password 2. When enabled (value is not 0) it represents the access key to level 2 parameters.
ndt number display type. Display with decimal point.
y = yes, range = -99...10
n = no, range = -99,9 ... 100,0
int = integer, range = -990...1000
CA1 Calibration 1. Positive or negative temperature value that is added to the value read by control probe (probe 1) before being displayed or used for control.

CAI Offset intervenes on display, thermostat control or both.
0 = only modifies the temperature displayed
1 = adds to the temperature used by controllers not the temperature displayed that remains unchanged;
2 = adds to temperature displayed that is also used by the controllers
LdL Minimum value the instrument is able to display.
HdL Maximum value the instrument is able to display.
dro Select °C or °F to display temperature read by probe.
N. B.: switching from °C to °F or vice versa DOES NOT modify set points, differentials, etc. (e.g. set point=10°C becomes 10°F)

CONFIGURATION (folder with "CnF" label)

H00 Selection of probe type.
H01 Output link. 0 = independent; 1 = dependent; 2 = Neutral Area (or window)
H02 Button activation time if buttons are configured for a second function. For the ESC, Up and DOWN buttons configured for a second function (defrost, aux, etc) the time for quick enabling is set. Fa Aux is an exception and has a set time of 1 second
H03 Minimum value of current input
H04 Maximum value of current input
H05 Window filter. -2=very fast; -1=fast; 0=normal; 1=slow; 2=very slow
H06 button/aux input/door switch light active when instrument is off (but powered)
H08 Stand-by operating mode. 0= only display is switched off; 1= display on and controllers disabled; 2= display off and controllers disabled;
H10 Output delay from power-on Attention! If = 0 is not active; if ≠ 0 the output will not be activated before this time has expired
H11 Configuration of digital inputs
0 = disabled; 1 = SOFT START; 2 = Set point Offset;
3 = outputs shut down; 4 = periodic cycle; 5 = auxiliary output;
6 = stand-by 7 = maintenance request
8 = external alarm 9 = external alarm disables controllers.
H13 Polarity and priority Digital Input
no= normally open/ nc= normally closed /
noP= normally open with polarity / ncP= normally closed with polarity
see "H13 parameter configuration" table
H14 Digital input enabling delay
H31 UP button configurability.
0 = disabled; 1 = SOFT START;
2 = Set point Offset; 3 = outputs shut down;
4 = periodic cycle; 5 = auxiliary output (aux);
6 = stand-by; 7 = maintenance request
H32 DOWN button configurability. Same as H31.
H33 fnc button configurability. Same as H31.
rEL Device version. Read only parameter.
tAb Reserved. Read only parameter.

COPY CARD (folder with "Fpr" label)

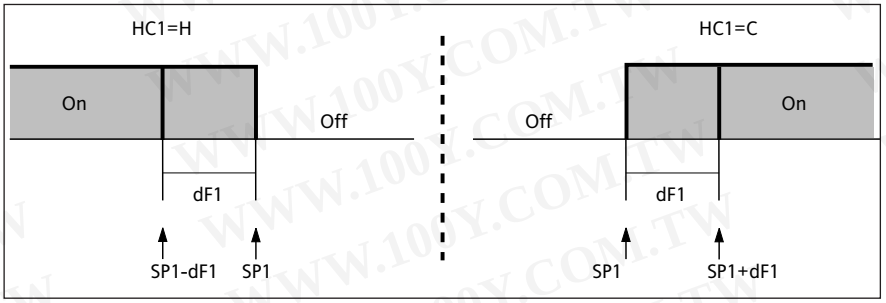
UL UpLoad: transfer of programming parameters from instrument to Copy Card.
dL downLoad: transfer of programming parameters from Copy Card to device.
Fr Format. Cancelling all data entered in the copy card.
N.B.: if the "Fr" parameter is used (copy card formatting) the data entered in the card will be permanently lost. This operation cannot be undone. After the operation with the Copy Card the controller must be switched off and then on again

H13 PARAMETER CONFIGURATION

H13	D.I. STATE	WITH BUTTON OR MENU ENABLED	WITH BUTTON OR MENU DISABLED	FUNCTION STATE	COMMENTS
NO	open	YES	YES	ON	enabled/disabled with each mode
NO	closed	YES	YES	OFF	enabled/disabled with each mode
NC	open	YES	YES	OFF	enabled/disabled with each mode
NC	closed	YES	YES	ON	enabled/disabled with each mode
NOP	open	YES	YES	ON	enabled only from D.I. / disabled with each mode
NOP	closed	NO	N/A	OFF	enabled only when D.I. / is reopened
NCP	open	YES	YES	OFF	enabled with each mode / disabled only from D.I.
NCP	closed	N/A	NO	ON	enabled with each mode / disabled only from D.I.

ON-OFF CONTROL DIAGRAM

HC1 Heat/Cool Mode
SP1 Setpoint 1
dF1 Relay 1 tripping differential.



TECHNICAL DATA	IC 912 LX NTC/PTC	IC 912 LX P/R/V-I/I-V	IC 912 LX Pt100/TC
Front protection	IP65	IP65	IP65
Casing	PC+ABS plastic resin body PC+ABS UL94 V-0, polycarbonate front, thermoplastic resin buttons	PC+ABS plastic resin body PC+ABS UL94 V-0, polycarbonate front, thermoplastic resin buttons	PC+ABS plastic resin body PC+ABS UL94 V-0, polycarbonate front, thermoplastic resin buttons
Dimensions	front keypad 74x32 mm, depth 59mm (excluding terminals)	front keypad 74x32 mm, depth 59mm (excluding terminals)	front keypad 74x32 mm, depth 59mm (excluding terminals)
Assembly	each panel with drilling template 71x29mm (+0.2/-0.1mm)	each panel with drilling template 71x29mm (+0.2/-0.1mm)	each panel with drilling template 71x29mm (+0.2/-0.1mm)
Operating temperature	-5°C...55°C	-5°C...55°C	-5°C...55°C
Storage temperature	-30°C...85°C	-30°C...85°C	-30°C...85°C
Ambient operating and storage humidity	10...90% RH (non-condensing)	10...90% RH (non-condensing)	10...90% RH (non-condensing)
Display range	NTC: -50...110°C (-58...230°F) / PTC: -50...140°C(-58...302°F) on display 3 1/2 digits plus sign	-99...100 (ndt=n), -99,9...100,0 (ndt=y), -999...1000 (ndt=int) on display 3 1/2 digits plus sign	Pt100: -150...650°C / TcJ: -40...750°C / TcK: -40...1350°C* on display 3 1/2 digits plus sign
Digital Input	1 voltage-free parameter-configurable digital input	1 voltage-free parameter-configurable digital input	1 voltage-free parameter-configurable digital input
Analogue input	1 NTC or 1 PTC (parameter selectable)	1 V-I (0-1V, 0-5V, 0-10V, 0-20...mA, 4...20mA par.H00)	Pt100 or 1 TcJ or TcK (depending on model)
Serial	TTL for connection to Copy Card or Televis**System**	TTL for connection to Copy Card and Televis **System**	TTL for connection to Copy Card or Televis**System**
Digital outputs (configurable)	1 SPDT 8(3)A 1/2 hp 250 V~	1 SPDT 8(3)A 1/2 hp 250 V~	1 SPST 8(3)A 1/2 hp 250 V~
Buzzer output	only in specific models from	only in specific models from	only in specific models from
Measurement range	from -50 to 140°C	from -999 to 1000	from -150 to 1350
Accuracy	better than 0.5% of full scale value + 1 digit	better than 0.5% of full scale value + 1 digit	**see "Pt100/TcJ/TcK models" table**
Resolution	0,1°C (0,1°F up to +199,9°F; 1°F over)	1 or 0.1 digits depending on parameter settings	**see "Pt100/TcJ/TcK models" table**
Power consumption	1,5 W max(mod. 12V) / 3 VA max (mod. 230V)	1,5 W max(mod. 12V) / 3 VA max (mod. 230V)	1,5 W max(mod. 12V) / 3 VA max (mod. 230V)
Power supply	12V~/⎓, 12/24 V~/⎓, 24V~/⎓ 10%, 110/115V~, 220/230 V~ 10% 50/60 Hz	12V~/⎓, 12/24 V~/⎓, 24V~/⎓ 10%, 110/115V~, 220/230 V~ 10% 50/60 Hz	12V~/⎓, 12/24 V~/⎓, 24V~/⎓ 10%, 110/115V~, 220/230 V~ 10% 50/60 Hz

0/ TcJ/ TcK MODELS

Pt100:

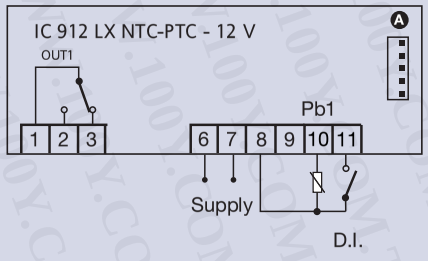
Accuracy:
0,5% for full scale value + 1 digit;
0.2% from -150 to 300°C
Resolution:
0.1°C (0.1°F) up to 199.9°C; 1°F over

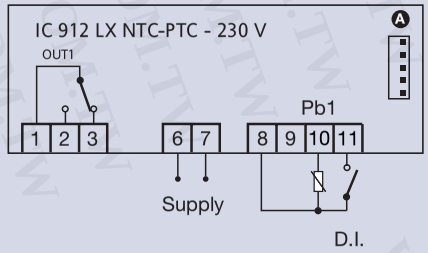
TcJ:

Accuracy:
0.4% for full scale value + 1 digit;
Resolution:
1°C (1°F)

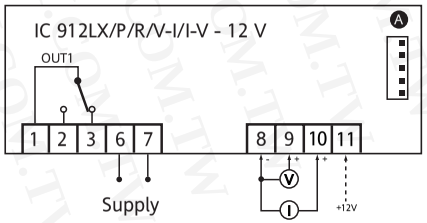
TcK:

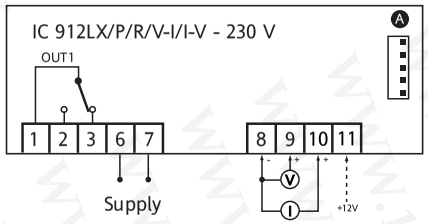
Accuracy:
0,5% for full scale value + 1 digit;
0.3% from -40 to 800°C
Resolution:
1°C (1°F)





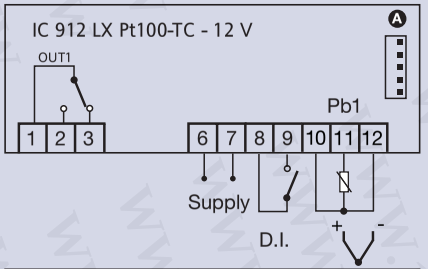
1-2	N.O. controller relay OUT1
1-3	N.C. controller relay OUT1
6-7	Power supply
8-10	Pb1 probe input (control)
8-11	Digital input D.I.
A	TTL input for Copy Card and connection to to Televis**System**

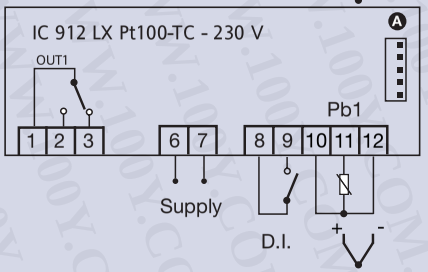




1-2	N.O. controller relay OUT1
1-3	N.C. controller relay OUT1
6-7	Power supply
*8-9-11	Voltage input (8=ground; 9=signal; 11=12V)
*8-10-11	Current input (8=ground; 9=signal; 11=12V)
A	TTL input for Copy Card and Televis **System**

* depending on model



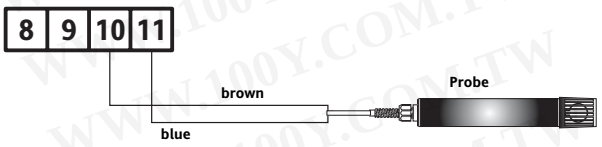


1-2	N.O. controller relay OUT1
1-3	N.O. controller relay OUT1
6-7	Power supply
8-9	Digital input D.I.
*10-11-12	Probe input Pt100 3 wires Pb1
*11-12	TcJ/TcK input
A	TTL input for Copy Card and Televis **System**

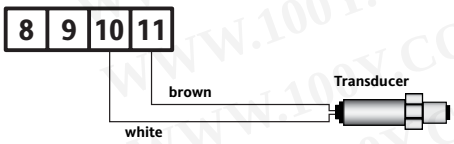
* depending on model

EWPA-EWHS PROBES CONFIGURATION

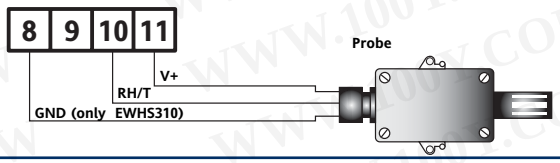
EWHS 280 2 wires



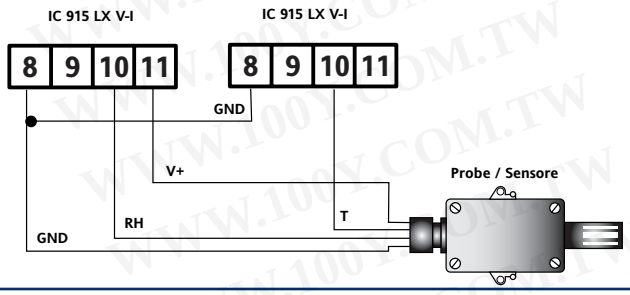
EWPA 007/030 2 wires / Transducer



EWHS 300/310 3 wires



EWHS 310 4 wires



MECHANICAL ASSEMBLY

The unit has been designed for panel-mounting: Drill a 29x71 mm hole, insert a tool and fix it in place with the brackets provided. Do not assemble the instrument in excessively humid or dirty locations since it is designed to be used in locations with normal pollution levels. Always make sure that the area next to the cooling openings of the tool is adequately ventilated.

ELECTRICAL CONNECTIONS

Warning! Always switch off machine before working on electrical connections. The instrument has screw terminals for connecting electrical cables with a maximum diameter of 2.5 mm² (only one conductor per terminal for power connections): for terminal capacity, see instrument label.The relay contacts are voltage-free. Do not exceed the maximum current allowed. For higher loads, use a suitable contactor. Make sure that the power voltage complies with the device voltage. The sensor has no connection polarity and can be extended using an ordinary bipolar cable (note that extending the probe may affect the electromagnetic compatibility (EMC) of the instrument: special care must be used when wiring). Probe cables, power supply cables and the TTL serial cable should be kept separate from power cables.

RESPONSIBILITY AND RESIDUAL RISKS

Eliwell shall not be liable for any damages deriving from:

- installation/use other than that prescribed and, in particular, which does not comply with the safety standards specified in the regulations and/or those given herein;
- use on boards which do not guarantee proper protection against electric shock, water or dust when assembled;
- use on boards which allow dangerous parts to be accessed without the use of tools;
- tampering with and/or alteration of the product;
- installation/use on boards that do not comply with the standards and regulations in force.

DISCLAIMER

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The technical characteristics in this document concerning measurements (range, accuracy, resolution, etc.) refer to the instrument in the strictest sense and not to any accessories provided such as probes, for example. This means, for example, that an error introduced by the probe is added to any error that is typical of the instrument.

TELEVIS SYSTEM

The Televis remote control systems can be connected using the TTL serial port (the 130 or 150 485 BUS ADAPTER TTL-RS interface module must be used). To configure the instrument to do this, you need to access the “Add” folder and use the “dEA” and “FAA” parameters.

CONDITIONS OF USE

PERMITTED USE

For safety reasons the instrument must be installed and used in accordance with the instructions supplied. Users must not be able to access parts with dangerous voltage levels under normal operating conditions. The device must be suitably protected from water and dust according to the specific application and only be accessible using special tools (except for the front keypad). The device can be fitted to equipment for household use and/or similar use in the refrigeration sector and has been tested with regard to safety in accordance with the European harmonized reference standards: It is classified as follows:

- as an automatic electronic control device to be integrated as regards its construction;
- as a 1 B type operated control device as regards its automatic operating features;
- as a Class A device in relation to the category and structure of the software.

UNPERMITTED USE

The use of the unit for applications other than those described above is forbidden. It should be noted that the relay contacts supplied with the device are functional and therefore exposed to potential faults. Any protection devices required to comply with product requirements or dictated by common sense due to obvious safety reasons should be installed externally.

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cod.9IS44019
10-05 GB
IC 912 LX

IC 912 LX Pt100-TC

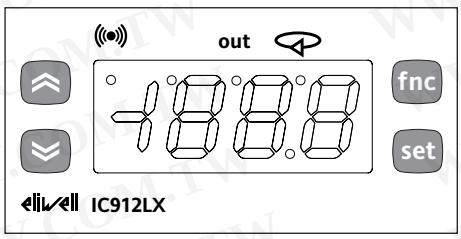
electronic controller with single output

USER INTERFACE

The user has a display and four keys for controlling status and programming of the instrument.

KEYS AND MENUS

UP key		Scrolls through the menu items Increases the values Can be set by parameter (par. H31)
DOWN key		Scrolls through the menu items Decreases the values Can be set by parameter (par. H32)
fnc key		ESC function (exit) Can be set by parameter (par. H33)
set key		Accesses the setpoint Accesses the menus Activates the functions* Confirms the commands Displays the alarms (if active)



At start-up the instrument performs a Lamp Test; for five (5) seconds the display and the leds blink, in order to verify their integrity and correct operation; afterwards it will appear the label "Lod" (Loading) for ten (10) seconds. The instrument has two main menus: the "Machine Status" and "Programming" menu.

ACCESSING AND USING MENUS

Resources are arranged in a menu, which can be accessed by pressing and quickly releasing the "set" key ("Machine Status" menu) or by holding down the "set" key for more than 5 seconds ("Programming" menu).

To access the contents of each folder, indicated by the relevant label, just press the "set" key once.

You can now scroll through the contents of each folder, modify it or use its functions. If you do not use the keyboard for over 15 seconds (time-out) or if you press the "fnc" key once, the last value shown on the display is confirmed and you return to the previous screen mask.

MACHINE STATUS MENU

(See Machine Status Menu Diagram)

To access the "Machine Status" menu press and quickly release the "set" key. The label "SP1" appears.

By using the "UP" and "DOWN" keys you can scroll through the other folders in the menu:

-AL: alarm folder (if alarms present, except for faulty probe/probe error;

-SP1: Setpoint 1 setting folder.

Setpoint 1 Setting

Access the "Machine Status" menu by pressing and quickly releasing the "set" key. The label of the "SP1" folder appears.

To display the Setpoint 1 value press the "set" key again.

The value appears on the display.

To change the Setpoint 1 value, use the "UP" and "DOWN" keys within 15 seconds.

If the parameter is LOC = y the Setpoint cannot be changed.

Alarm on

If an alarm condition exists, when accessing the "Machine Status" menu the "AL" folder label appears (see the "Diagnostics" section).

PROGRAMMING MENU

(See Programming Menu Diagram)

1) Level 1 Parameters

To access the "Programming" menu, press the "set" key for more than 5 seconds. If specified, the level 1 access PASSWORD will be requested (see parameter "PA1") and (if the password is correct) the label of the first folder will follow. If the password is wrong, the display will show the PA1 label again.

To scroll other folders, use the "UP" and "DOWN" keys; **the folders contain only the level 1 parameters.**

NOTE: At this point level 2 parameters are NOT visible, even if they aren't protected by password.

2) Level 2 Parameters

In the Programming Menu go into the "CnF" folder, scroll all the parameter until you reach the PA2 label. By pressing and releasing the "set" button you will enter to level 2 parameters and the label of the first folder in the programming menu will follow.

The level 2 parameters may be protected by a second password (see "PA2" parameter inside "diS" folder, not to be confused with PA2 label inside "CnF" folder.

If specified, level 2 parameters are hidden to user; accesing the "CnF" folder the level 2 access PASSWORD will be requested and (if the correct password is entered) the label of the first folder in the programming menu will follow.

NOTE: At this point you will see only level 2 parameters.

Level 1 parameters will NOT be visible; to reach them you shall exit the Programming Menu and re-entry the Programming Menu section (see step 1).

To enter the folder, press "set". The label of the first visible parameter appears. To scroll through the other parameters, use the "UP" and "DOWN" keys; to change the parameter, press and release "set", then set the desired value using the "UP" and "DOWN" keys, and confirm with the "set" key. Move to the next parameter.

PLEASE NOTE: It is suggested to switch-off and switch-on again the instrument everytime it is changed the configuration of the parameters: this prevents malfunctioning on regulation and delay time occuring.

*FOLDER FUNCTIONS FnC

Inside Fnc folder (last folder visible from Programming Menu, level 1) there are available the following functions: (enable them with the "set" button).

Function	Label function ENABLED	Label function DISABLED
Soft Start	Son	SoF**
Reduced Set	OSP	SP**
Activation stopped	bon**	boF
Stand-by	on**	oF
Maintenance required	Atn	AtF**

NOTE: In this case the label UnP will be shown (blinking)

**default

LED

Position	Related Function	Status
out	Relay 1 (OUT)	ON for relay on; blinking for delay, locked protection or activation
	Alarm	ON when the alarm is enabled; blinking when the alarm is silenced
	Soft Start (and Setpoint setting)	**ON** when setting Setpoint; **blinking** when Soft Start is enabled;

When you turn Off the instrument all labels return to default status

PASSWORD
The passwords "PA1" and "PA2" allow access respectively to level 1 and level 2 parameters. In the standard configuration passwords are not present. To enable them (value ≠ 0) and assign them the desired value, access the "Programming" menu, within the folder with the "diS" label. If passwords are enabled, they will be requested:
- PA1 at the entrance of the "Programming" menu (see the "Programming Menu" section);
- PA2 within the folder with the "Cnf" label containing level 1 parameters.

COPY CARD
The Copy Card is an accessory connected to the TTL serial port which allows programming quickly the instrument parameters (upload and download parameter's map). The operation is performed as follows:
Format
This command allows Copy Card formatting, an operation necessary in case of first use or to copy maps with different models.
Warning: if the Copy Card has been programmed, using the "Fr" the data entered are erased. This operation cannot be cancelled.
Upload
This operation loads the programming parameters from the instrument.
Download
This operation downloads to the instrument the programming parameters.
NOTE:
• UPLOAD: instrument --> Copy Card
• DOWNLOAD: Copy Card --> instrument.
The operations are performed accessing the folder identified by the "FPr" label and selecting, according to the case, "UL", "dL" or "Fr" commands; the operation is confirmed by pressing the "set" key. If the operation is successful an "y" is displayed, on the contrary, if it fails a "n" will be displayed.
Download "from reset (instrumennt OFF"
Connect the Copy Card with the instrument OFF (not under voltage).
When the instrument is switched on the programming parameters will be downloaded into the instrument; after the lamp-test the diplay will show for about 5 seconds:
• label dLY if copy operation successful
• label DLn if not
PLEASE NOTE:
• after the download operation the instrument will immediately work with the new parameters map setting

KEYBOARD LOCKING

The instrument includes a facility for disabling the keyboard, by programming the "LOC" parameter (see folder with "diS" label). If the keyboard is locked, you can still access the programming menu by pressing the "set" key.
The Setpoint can also be viewed.

TELEVIS SYSTEM
The Televis**System** can be connected through TTL serial port (the TTL- RS 485 BUS ADAPTER 130 interface module must be used). To configure the instrument for this purpose you need to access to the folder identified by the "Add" label and to use the "dEA" and "FAA" parameters.

ADVANCED FUNCTIONS

SOFT START
Note: the SOFT START function can be enabled by key or by function.
The Soft Start regulator permits to set the temperature gradient to reach a defined setpoint in a defined lapse of time.
Through this function, actually, you can obtain a progressive increase of the Setpoint (on which you regulate) from the Ta value (environment TemperAture at instruments' start-up) to the real value set on display; this permits to delay the increase of the temperature reducing "overshooting" problems.
Soft Start parameters are visible in the "SOFT START" folder (defined by the "SFt" label)

DIAGNOSTICS

The alarm condition is always signalled by the buzzer (if present) and by the led of the alarm icon
The alarm signal produced by:
• a regulator probe that measures a value outside probe's range
• a faulty regulator probe
is shown as E1 on the instrument display

Probe faults table

DISPLAY	FAULT
E1	Faulty probe 1 (regulator)

PLEASE NOTE: In case of wrong connection of the 3rd wire (Pt100 sensor) in "AL" folder it will appear the label "Pt3".
For few seconds the display will shows a uncorrect temperature.
When the sensor detects an error condition:
• the code E1 is displayed
• the regulator is activated as indicated by the "On1" and "OF1" parameters if programmed for the duty cycle or:

On1	OF1	Regulator Output
0	0	OFF
0	>0	OFF
>0	0	ON
>0	>0	dc

see Duty Cycle Diagram

MAXIMUM AND MINIMUM TEMPERATURE ALARM
In case of alarm condition, if alarm exclusion times are not in progress (see, alarm exclusion parameters), the fixed alarm icon is turned on and the relay configured as an alarm is activated. This kind of alarm does not affect the regulation in progress.
Alarms are considered as absolute (Abs, default) values or as values related to the Setpoint (rEL, the distance from the Setpoint itself) and based on the Att parameter. In this case (Att=rEL), the HA1 parameter must be set to positive values and the LA1 parameter to negative values.
This alarm condition can be viewed in the folder "AL" with the labels "AH1-AL1".

EXTERNAL ALARM
The device includes the possibility to control an external alarm, from a digital input. If the digital input is active, the alarm control is activated, if programmed, and stays until the next time the digital input is deactivated. The alarm is signaled by turning on the fixed alarm icon, by activating the relay configured as alarm, and by deactivating the other regulators (if specified by the "H11=9" parameter).
This alarm condition can be viewed in the "AL" folder with the label "EA". The relay can be silenced; even if alarm icon starts blinking, controls stay locked until the next time the digital input is deactivated.

Alarms Table

DISPLAY	ALARM
*AH1	High temperature alarm (referred to regulator 1)
*AL1	Low temperature alarm (referred to regulator 1)
EA	External alarm
Opd	Open door alarm

To silence the alarm, press any keys.
In this case the LED will blink
*Alarms are considered as absolute values or as values related to the Setpoint based on the Att parameter.
See Max-Min Alarms Diagram

INSTALLATION

The instrument is designed for panel mounting. Make a hole of 29x71 mm, insert the instrument and fix it using the brackets provided. Do not mount the instrument in humid and/or dirty places; it is suitable for use in ordinary polluted places. Ventilate the place in proximity to the instrument colling slits.

ELECTRICAL WIRING

Attention! Never work on electrical connections when the machine is switched on.
The instrument is equipped with screw terminal boards for connection of electrical cables with a diameter of 2.5 mm^2 (one conductor only per terminal for power connections).
For the capacity of the terminals, see the label on the instrument.
The relay contacts are voltage free. Do not exceed the maximum current allowed; in case of higher loads, use an appropriate contactor. Make sure the power supply voltage complies with the one required by the instrument.
Probe cables, power supply cables and the TTL serial cables should be distant from power cables.
In 12V versions the power supply however could be cabled with the probe cables and the TTL serial cable.
In 230 V versions the power supply should be cabled with the loads.
Probes can be extended using a regular bipolar cable (note that the extension of the probes affects the EMC electromagnetic compatibility of the instrument: pay extreme attention to wiring).
NOTE: Pay extreme attention to the probe connection polarity.

CONDITIONS OF USE

PERMITTED USE
For safety reasons the instrument must be installed and used according to the instruction provided and in particular, under normal conditions, parts bearing dangerous voltage levels must not be accessible.
The device must be adequately protected from water and dust as per the application and must also only be accessible via the use of tools (with the exception of the frontlet).
The device is ideally suited for use on household appliances and/or similar refrigeration equipment and has been tested with regard to the aspects concerning European reference standards on safety. It is classified as follows:
• according to its manufacture: as an automatic electronic control device to be incorporated by independent mounting;
• according to its automatic operating features: as a 1 B-type operated control type;
• as a Class A device in relation to the category and structure of the software

UNPERMITTED USE
Any other use other than that permitted is de facto prohibited. It should be noted that the relay contacts provided are of a practical type and therefore subject to fault. Any protection devices required by product standards or dictated by common sense due to obvious safety reasons should be applied externally.

LIABILITY AND RESIDUAL RISKS

Invensys Controls Italy S.r.L. shall not be liable for any damages deriving from:
- installation/use other than that prescribed and, in particular, that which does not comply with safety standards anticipated by regulations and/or those given herein;
- use on boards which do not guarantee adequate protection against electric shock, water or dust under the conditions of assembly applied;
- use on boards which allow access to dangerous parts without the use of tools;
- tampering with and/or alteration of the products;
- installation/use on boards that do not comply with the standards and regulations in force.

TECHNICAL DATA

Frontal panel protection: IP65.
Casing: plastic body in resin type PC+ABS UL94 V-0, inspection window in polycarbonate, buttons in thermoplastic resin.
Dimensions: frontal panel 74x32 mm, depth 59 mm (without wirings).
Installation: on panel, with drilling template 71x29 mm (+0.2/–0.1 mm).
Use temperature: –5...55 °C.
Storage temperature.: –30...85 °C.
Use environment humidity: 10...90 % RH (not condensing).
Storage environment humidity: 10...90% RH (not condensing).
Viewing range:
• Pt100 model : -150...650°C, with decimal point, selectable through parameter ndt
• TcJ model -40...750°C*
• TcK model -40...1350°C*
*without decimal point
on 3 digit & $^1/_2$ + mark display.
PLEASE NOTE: viewing is 1/10 °C for model Pt100 and 1°C for models TcJ/TcK
Serial: TTL for connection to Copy Card and Televis**System**.
Analogue input: one PT100 input or TcJ or TcK depending on model.
Digital inputs: 1 voltage-free digital input.
Digital output: 1 SPDT output on 8(3)A 1/2 hp configurable. (for relay capabilities see label on the instrument)
Buzzer output: only on models with Buzzer.
Measuring range: from -150 to 1350.
Accuracy:
• Pt100 model : 0,5% for all scale + 1 digit; 0,2% from -150 to 300°C.
• TcJ model: 0,4% for all scale + 1 digit;
• TcK model 0,5% for all scale + 1 digit; 0,3% from -40 to 800°C.
Resolution:
• Pt100 model: 0,1°C (0,1°F) within 199,9 °C, 1°C (1°F) over
• TcJ/TcK model 1°C (1°F).
Consumption:
• model 230V: 3 VA max.
• model 12/24V: 1,5 VA max.
Power supply: 12/24 V~/⎓ ±10% or 230V~ ±10% 50/60 Hz.

Warning: check the power supply specified on the instrument label; for relay and power supply capacities, contact the Sales Office).

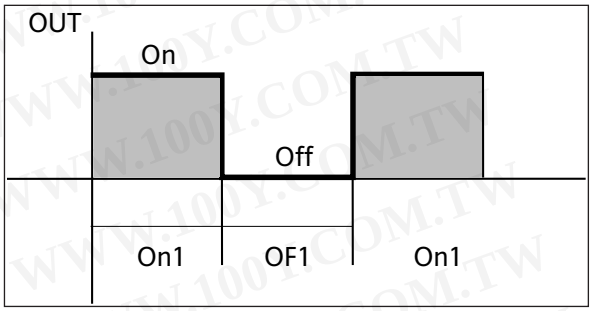
PLEASE NOTE: The technical data included in this document, related to measurement (range, accuracy, resolution, etc.) refer to the instrument itself, and not to its equipment such as, for example, sensors.
This means, for example, that sensor(s) error(s) shall be added to the instrument's one.

Duty Cycle Diagram

parameters On1 ed OF1 programmed for the duty cycle

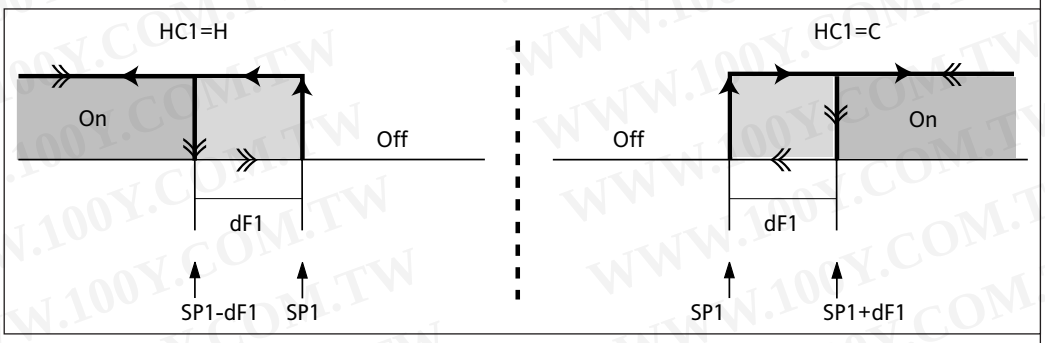
On1	OF1	regulator output
0	0	OFF
0	>0	OFF
>0	0	ON
>0	>0	dc

When the analogue input detects an error condition:
• the code E1 is displayed
• the regulator is activated as indicated by the "On1" and "OF1" parameters if programmed for the duty cycle



ON-OFF Regulation Diagram

HC1 Heat/Cool Mode.
SP1 Setpoint 1.
dF1 diFferential. Relay 1 tripping differential.



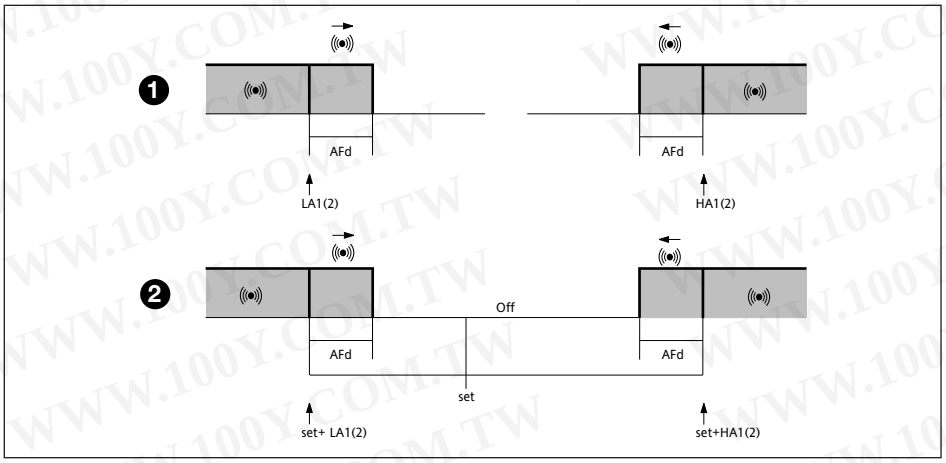
Max/Min. Alarms Diagram (Maximum and Minimum Temperature Alarms)

The maximum alarm will become when the probe temperature will be:
(1) higher o equal to HA1 if Att=Abs(olute)
(2) higher o equal set + HA1 if Att=rEL(ative)

• if Att=Abs(olute) HA1 should be with sign;
• if Att=rEL(ative) HA1 should be only positive

The minimum alarm will become when the probe temperature will be::
(1) lower or equal to LA1 if Att=Ab(solute)
(2) lower or equal to set + LA1 if Att=rEl(ative)

• se Att=Ab(solute) LA1 should be with sign;
• se Att=rEl(ative) LA1 should be only positive



The maximum alarm will ends when the probe temperature will be:
(1) lower or equal to HA1 - AFd if Att=Abs(olute)
(2) lower or equal to set + HA1 - AFd if Att=rEL(ative)

The minimum alarm will ends when the probe temperature will be:
(1) higher o equal a LA1 + AFd if Att=Abs(olute)
(2) higher o equal a set + LA1 + AFd if Att=rEL(ative)

Tab. 1 Parameter Table

****NOTE: At level 1 the folders will show only level 1 parameters. At level 2 the folders will show only level 2 parameters.**

PAR.	DESCRIPTION	RANGE	DEFAULT*	VALUE**	LEVEL**	U.M.
	REGULATOR 1 (folder with "rE1" label)					
HC1	Heat/Cool Mode. If set to H the generic regulator actuates for hot operation. If set to C the generic regulator actuates for cold operation	H/C	H/C*		1	flag
OS1	Offset Setpoint 1 **see ON-OFF regulation diagram**	-30.0...30.0	0		**2**	°C/°F
db1	Operating Range 2 **see ON-OFF regulation diagram**	0...30.0	1*		1	°C/°F
dF1	diFferential. Relay 1 tripping differential. The regulator stops on reaching the Setpoint value (as indicated by the adjustment probe), and restarts at temperature value equal to the Setpoint 1 plus (o minus depending on HC1) the value of the differential. **see ON-OFF regulation diagram**	0.0...30.0	0 (n.z. models)* 1*		1	°C/°F
HS1	Higher SEt. Maximum possible setpoint 1 value.	LS1..HdL	*		1	°C/°F
LS1	Lower SEt. Minimum possible setpoint 1 value.	LdL..HS1	*		1	°C/°F
HA1	Maximum Alarm OUT **See Max/Min. Alarm Diagram**	LA1...1999	*		1	°C/°F
LA1	Maximum Alarm OUT **See Max/Min. Alarm Diagram**	-328.0...HA1	*		1	°C/°F
	REGULATOR 1 PROTECTIVE DEVICE (folder with "rE1" label)					
dn1	Delay time in activating the regulator relay after switch-on of instrument.	0...250	1		1	°C/°F
do1	Delay after switch off. The indicated time must elapse between switch-off of the regulator relay and the successive switch-on.	0...250	0		1	sec
di1	Delay between switch-ons. The indicated time must elapse between two successive switch-ons of the regulator.	0...250	0		1	min
dE1	Delay before switch-off. The indicated time must elapse between switch-off request and the switch-off of the regulator. **PLEASE NOTE: for parameters dn1, do1, di1, dE1 0= not active**	0...250	0		1	min
On1	On time (regulator 1). Regulator activation time in the event of faulty probe. If set to "1" with OF1 at "0" the regulator is always on, while at OF1 >0 it functions always in duty cycle mode. **see Duty Cycle diagram**	0...250	0		1	sec
OF1	OFF time (regulator 1). Regulator in disabled state time in the event of a faulty probe. If set to "1" with On1 at "0" the regulator is always off, while at On1 >0 it functions always in duty cycle mode. **see DC diagr.**	0...250	1		1	min
	SOFT START (folder with label "SFt")					
dSi	dynamic Step increment (Step Value). Value (°C/°F) of every incremental step (dynamic) of the regulation (set)point. 0=disable SOFT START function.	0...25.0 (0...twentyfive.0)	0		**2**	°C/°F
dSt	dynamic Step time (Step Duration). Delay time between two steps (dynamic) of the regulation (set)point	0...250	0		**2**	H/m/sec
Unt	U.M (hours, minuts, seconds)	0/1/2	1		**2**	H/m/sec
SEn	Outputs enabled. Define on which output the function should be enabled: 0 = function disabled; 1 = OUT 1; 2,3 = not used	0/1/2/3	0		**2**	num
Sdi	Function Threshold re-entry . Define the threshold, over which there is the automatic re-entry of the SOFT START function	0...30.0	0		**2**	°C/°F
	ALARMS (folder with "AL" label)					
Att	Alarm type. Parameter "HA1" and "LA1" modes, as temperature absolute values or as differential compared to the Setpoint. 0 = absolute value; 1 = relative value.	Abs/reL	Abs		**2**	flag
AFd	Alarm Fan differential. Alarm differential.	1.0...50.0	2.0		**2**	°C/°F
PAO (!) (8)	Power-on Alarm Override. Alarm exclusion time after instrument switch on, after a power failure.	0...10	0		1	hours
SAO	Setpoint Alarm Override. Exclusion alarm time until Setpoint is reached. 0 = disabled. If >0, an alarm occours, if setpoint has not been reached after the time (hours) set by this parameter.	0...10	0		1	hours
tAO (8)	temperature Alarm Override. Temperature alarm signal delay time.	0...250	0		1	min
	COMMUNICATION (folder with "Add" label)					
dEA (!)	dEvice Address. Device address: indicates the appliance address to the management protocol. dEvice Address.	0...14	0		1	num
FAA (!)	Family Address: indicates the appliance family to the management protocol.	0...14	0		1	num
	DISPLAY (folder with "diS" label)					
LOC	(keyboard) LOCk (set and keys). Keyboard locking. However, you can enter parameter programming modify them along with the status of this parameter in order to allow keyboard locking. y = yes; n = no	n/y	n		1	flag
PA1	PAssword 1. When enabled (value other than 0) it constitutes the access key for level 1 parameters.	0...250	0		1	num
PA2****	PAssword 2. When enabled (value different from 0) it represents the access key for level 2 parameters.	0...250	0		**2**	num
ndt	number display type. View with decimal point. y = yes; n = no **PLEASE NOTE: for modelsTcJ/TcK only n value.**	n/y	n		1	flag
CA1	CAlibration 1.Calibration 1. Positive or negative temperature value added to the value read by probe 1,	-30.0...30.0	0		1	°C/°F
CAI	CAlibration Intervention. Intervention on view offset, thermostat offset or both. 0 = modifies the temperature displayed only; 1 = adds to the temperature used by regulators, not to the temperature displayed, which stays unchanged; 2 = adds to the temperature displayed that is also used by regulators.	0/1/2	2		**2**	num
LdL	Low display Label. Minimum value the instrument is able to display.	-328.0...HdL	*		**2**	°C/°F
HdL	High display Label. Maximum value the instrument is able to display.	LdL...1999	*		**2**	°C/°F
dro	display read-out. Select °C or °F for displaying the temperature read by the probe. **PLEASE NOTE: the switch between °C and °F DO NOT modify setpoint, differential, etc. (for example set=10°C become 10°F).**	°C/°F	°C		1	flag

PAR.	DESCRIPTION	RANGE	DEFAULT*	VALUE**	LEVEL**	U.M.
	CONFIGURATION (folder with "CnF" label)					
H00(1)(!)	**PLEASE NOTE: PARAMETER VISIBLE ONLY INTcJ/TcK MODELS** Probe type selection: Pt1 for Pt100; JtC: for TcJ; HtC for Tck	Pt1/JtC/HtC	Pt1/JtC/HtC*		1	num
H02	Time to enable keys, if these are configured for a specific function. For ESC, UP and DOWN keys configured for specific function (defrost, aux, etc) it set the elapsed time for the manual activation of the related function. aux function has a fixed time of 1 second	0...15	5		**2**	sec
H05	Window Filter. -2=very fast; -1=fast; 0=normal; =slow; 2=very slow	-2/+1/0/1/2	0		**2**	°C/°F
H06	key/input aux/door switch light active when instrument is off (but under tension)	n/y	y		**2**	flag
H08	Stand-by operating mode. 0=display switch off; 1= diplay on and loads stopped; 21= display off and loads stopped;	0/1/2	2		**2**	num
H10	Delay outputs from power-on. WARNING! If set = 0 it is not active; if set ≠0 output will not be activated before this time	0...250	0		1	min
H11	Configuring digital inputs. 0 = disabled; 1 = SOFT START; 2 = Offset Setpoint; 3 = outputs stopped; 4 = not used; 5 = auxiliary output; 6 = stand-by 7 = maintenance requested 8 = external alarm 9 = external alarm stop regulators	0...9	0		**2**	num
H13	Polarity and Priority Digital Input no= normally open/ nc= normally closed / noP= normally open with Polarity / ncP= normally close with Polarity	no/nc/noP/ncP	no		**2**	num
H14	Delay Activation Digital Input	0...250	0		**2**	num
H31 (!)	Configurability UP key. 0 = disabled; 1 = SOFT START; 2 = Offset Setpoint; 3 = outputs stopped; 4 = not used; 5 = auxiliary output; 6 = stand-by 7 = maintenance requested	0...7	0		**2**	num
H32 (!)	Configurability DOWN key. Same as H31.	0...7	0		**2**	num
H33 (!)	Configurability ESC key. Same as H31. (2 = Offset Setpoint; default)	0...7	0		**2**	num
rEL	reLease firmware. Device version: read only parameter.	/	/		1	/
tAb	tAble of parameters. Reserved: read only parameter.	/	/		1	/
	COPY CARD (folder with "Fpr"label)					
UL	Up load. Programming parameter transfer from instrument to Copy Card.	/	/		1	/
dL	Down load. Programming parameter transfer from Copy Card to instrument	/	/		1	/
Fr	Format. Erasing all data in the copy card. **PLEASE NOTE using "Fr" parameter (copy card formatting) the data within the copy card will be lost permenently. The operation cannot be cancelled. After using the copy Card device the controller must be switch off and switch on again**	/	/		**2**	/

label PA2
Inside CnF folder it is possible to reach all level 2 parameters from label PA2 by pressing the "set" button
SEE 2) level 2 Parameters paragraph

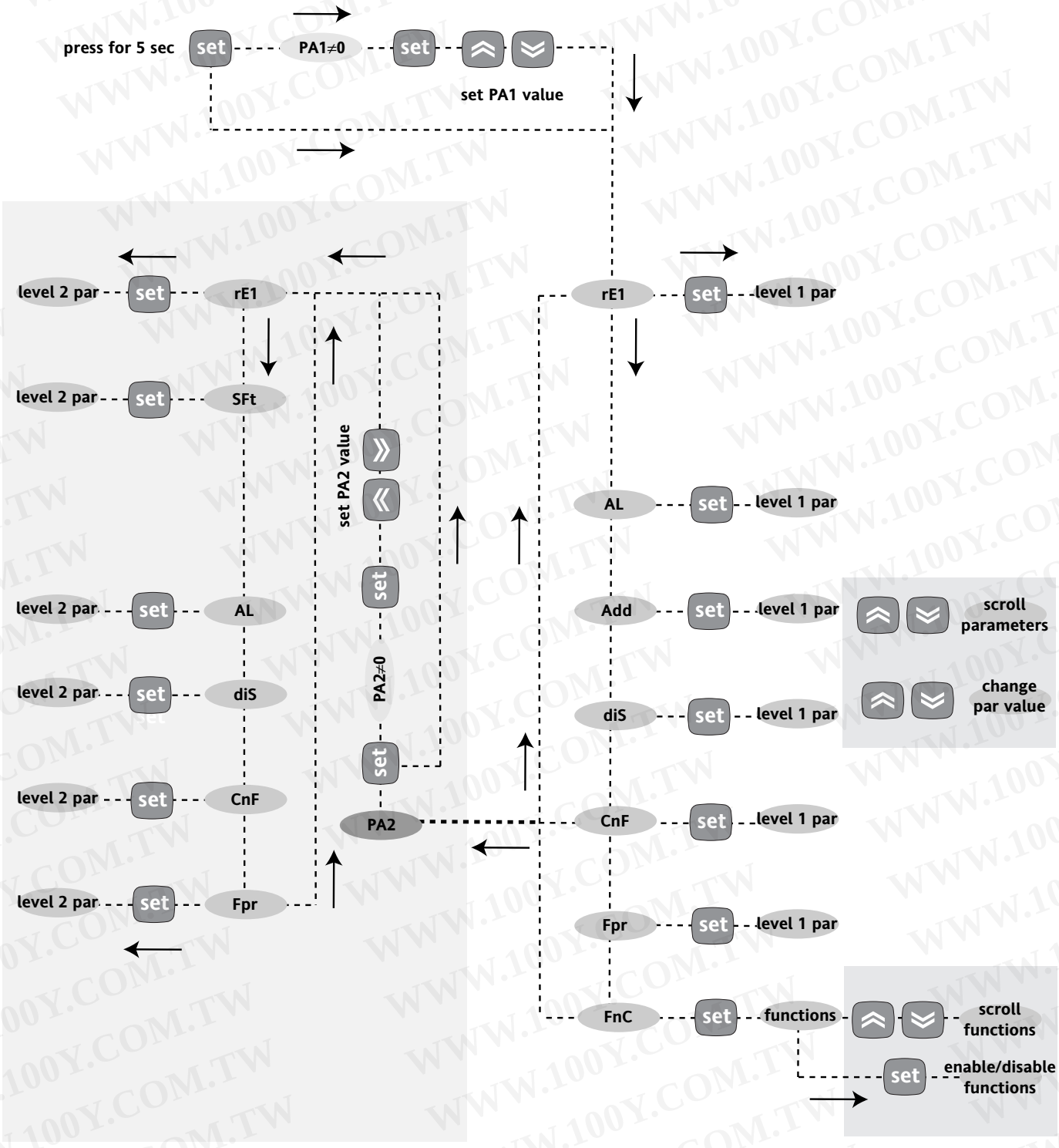
FUNCTIONS (folder with label "FnC")
Inside FnC folder (last visble folder from Programming Menu) there are available some functions that could be enabled by "set" button
SEE FUNCTIONS paragraph

(1) **PARAMETER VISIBLE ONLY INTcJ/TcK MODELS. Pt100 Model works only with Pt100 sensor (3 wires) while TcJ and TcK Models work also with Pt100 sensor selectable by this parameter**
(2) Positive values: active input when the contact is closed; negative values: 1= Active when contact is open
(5) If alarm are relative, the HAL parameter must be set to positive values and the LAL parameter to negative values
(8) Referred exclusively to high and low temperature alarms

*** DEFAULT column: for parameters highlighted with * default value depending on model.**
** VALUE column: to be filled manually, with custom settings (if different from the default value).
*** LEVEL column: indicates the level of visibility for parameter that can be accessed by a PASSWORD (see the related paragraph)
**** PA2 is visible (it will be requested, if specified) at level 1 in **CnF folder** and can be set (it can be modified) at level 2 in **diS folder**

(!) WARNING!
• If one or more of these parameters highlighted with (!) are modified, the controllller must be switched off and switched on again to ensure correct operation.
• It is strongly recommended, anyway to switch off and switch on again the controller anytime parameters have been changed to prevent malfunctioning on configuration and/or ongoing timings

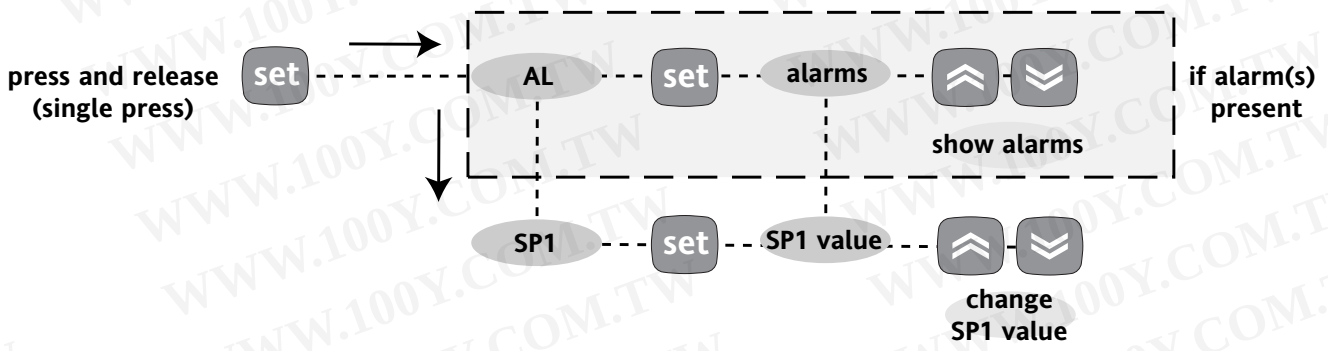
Programming Menu Diagram



PARAMETERS	
Level 1 folders	**Level 2 folders**
rE1	rE1
	SFt
AL	AL
Add	
diS	diS
CnF	CnF
FPr	FPr

FUNCTIONS
FnC

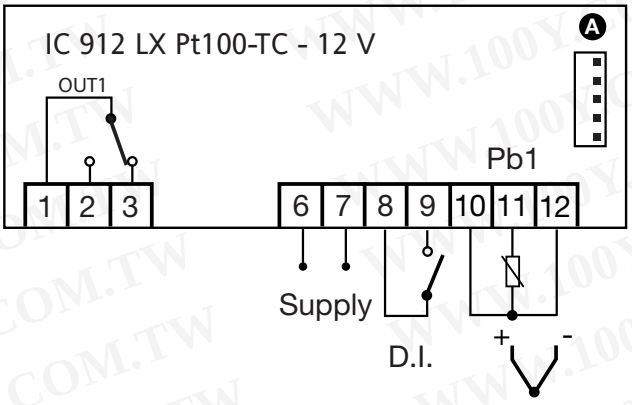
Status Machine Diagram



Wiring diagram

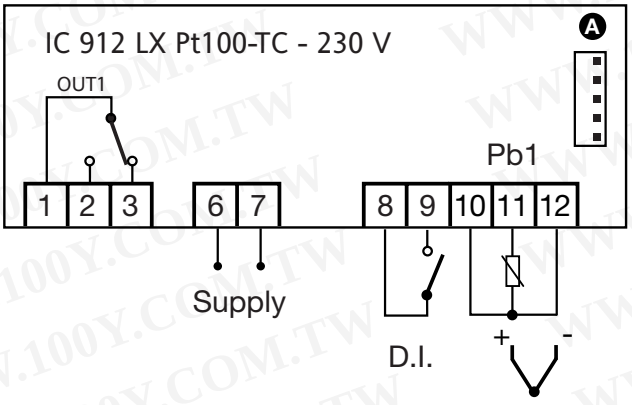
WIRING (12V and 230V supply)

1 - 2	N.O. regulator relay output (OUT1)
1 - 3	N.C. regulator relay output (OUT1)
6 - 7	Power supply 1,5 VA max. (12V version) Power supply 3 VA max. (230V version)
8 - 9	Digital Input (D.I.)
*10-11-12	Pt100 3 wires input
*11-12	TcJ/TcK input
A	TTL input for Copy Card and Televis**System**



PLEASE NOTE:

• User Default Settings
• for relay capacities check on the instrument label
In the diagram there are shown only 12V and 230V supply and relays with 8(3) 1/2 hp 250V capability
•**Pay extreme attention to the probe connection polarity.**



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