

# eliwell

## ICPlus 902



**EN**

**Electronic controller with 1 intervention point**

## USER INTERFACE



**ICPlus 902**

### KEYS



#### **UP**

##### **Press and release**

Scroll menu items

Increases values

##### **Press for at least 5 sec**

Function can be configured by the user (H31)



#### **STAND-BY (ESC)**

##### **Press and release**

Returns to the previous menu level

Confirms parameter value

##### **Press for at least 5 sec**

Function can be configured by the user (H33)



#### **DOWN**

##### **Press and release**

Scroll menu items

Decrease values

##### **Press for at least 5 sec**

Function can be configured by the user (H32)



#### **SET (ENTER)**

##### **Press and release**

Displays alarms (if active)

Opens Machine Status menu

Confirm commands

##### **Press for at least 5 sec**

Opens Programming menu

## ICONS



### Decimal Point

Permanently on: decimal point  
Off: otherwise



### Temperature

Permanently on: displays a temperature  
Flashing: reduced set active, displays a temperature or no unit of measure selected



### Pressure

Permanently on: displays a pressure  
Flashing: reduced set active and displays a pressure



### Humidity

Permanently on: displays a humidity  
Flashing: reduced set active and displays a humidity



### Relay OUT1

Permanently on: OUT1 output active  
Flashing: a delay, a protection or a locked start-up  
Off: otherwise



### Not Used



### Alarm

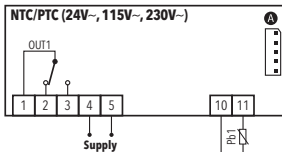
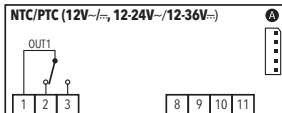
Permanently on: alarm active  
Flashing: alarm acknowledged  
Off: otherwise

### NOTE:

When switched on, the device performs a Lamp Test; the display and LEDs will flash for several seconds to check that they all function correctly.

## NTC/PTC MODEL

### CONNECTIONS



### INPUT/OUTPUT CHARACTERISTICS

|                   |                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------|
| Display range:    | <b>NTC:</b> -50...110°C (-58...230°F)<br><b>PTC:</b> -50...140°C (-58...302°F)<br>on display with 3½ digits + sign |
| Analogue input    | 1 <b>NTC</b> or 1 <b>PTC</b><br>(selectable by parameter <b>H00</b> )                                              |
| Serial            | TTL for connection to Copy Card or<br>Televis/Modbus remote control systems                                        |
| Digital outputs   | <b>OUT1:</b> 1 SPDT relay 8(4)A 250 V~                                                                             |
| Buzzer output     | only on models where this is provided                                                                              |
| Measurement range | -50 ... 140°C (-58 ... 284°F)                                                                                      |
| Accuracy          | better than 0.5% of end of scale + 1 digit                                                                         |
| Resolution        | 0.1°C (0.1°F up to +199.9°F; 1°F over)                                                                             |

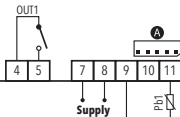
### TERMINALS

|              |                                                      |             |                                         |
|--------------|------------------------------------------------------|-------------|-----------------------------------------|
| <b>1-2</b>   | N.C. regulator relay <b>OUT1</b>                     | <b>*4-5</b> | Power supply 24V~, 115V~ and 230V~.     |
| <b>1-3</b>   | N.O. regulator relay <b>OUT1</b>                     | <b>*8-9</b> | Power supply 12V~/ and 12-24V~/12-36V~. |
| <b>10-11</b> | Probe Pb1 Input                                      |             |                                         |
| <b>A</b>     | TTL input for Copy Card and TelevisSystem connection |             | <b>* depends on model</b>               |

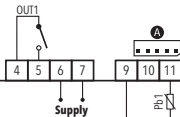
## NTC/PTC MODEL (with 2HP relay)

### CONNECTIONS

#### NTC/PTC - 2 Hp (12V~/~)



#### NTC/PTC - 2 Hp (230V~/~)



### INPUT/OUTPUT CHARACTERISTICS

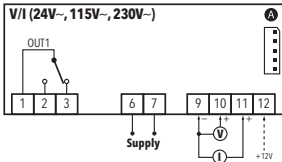
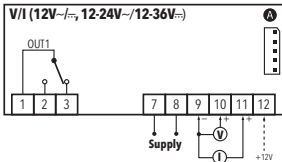
|                   |                                                                                                                    |
|-------------------|--------------------------------------------------------------------------------------------------------------------|
| Display range:    | <b>NTC:</b> -50...110°C (-58...230°F)<br><b>PTC:</b> -50...140°C (-58...302°F)<br>on display with 3½ digits + sign |
| Analogue input    | 1 <b>NTC</b> or 1 <b>PTC</b><br>(selectable by parameter <b>H00</b> )                                              |
| Serial            | TTL for connection to Copy Card or<br>Televis/Modbus remote control systems                                        |
| Digital outputs   | <b>OUT1:</b> 1 SPST relay 16(8)A 2Hp 250 V~                                                                        |
| Buzzer output     | only on models where this is provided                                                                              |
| Measurement range | -50 ... 140°C (-58 ... 284°F)                                                                                      |
| Accuracy          | better than 0.5% of end of scale +1 digit                                                                          |
| Resolution        | 0.1°C (0.1°F up to +199.9°F; 1°F over)                                                                             |

### TERMINALS

|             |                                                      |                           |                      |
|-------------|------------------------------------------------------|---------------------------|----------------------|
| <b>4-5</b>  | N.O. regulator relay <b>OUT1</b>                     | <b>*6-7</b>               | Power supply 230V~.  |
| <b>9-11</b> | Probe Pb1 Input                                      | <b>*7-8</b>               | Power supply 12V~/~. |
| <b>A</b>    | TTL input for Copy Card and TelevisSystem connection | <b>* depends on model</b> |                      |

## V/I MODEL

### CONNECTIONS



### INPUT/OUTPUT CHARACTERISTICS

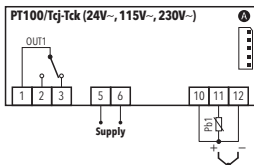
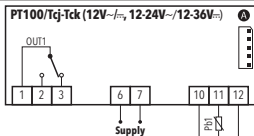
|                   |                                                                                                                                                                      |
|-------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display range:    | -199...199 (ndt = <b>n</b> )<br>-199.9...199.9 (ndt = <b>y</b> )<br>-1999...1999 (ndt = <b>int</b> )<br>on display with 3½ digits + sign                             |
| Analogue input    | 1 <b>V/I</b> (0-1V, 0-5V, 0-10V, 0...20mA, 4...20mA)<br>(selectable by parameter <b>H00</b> )<br>Maximum load: - current = 100 $\Omega$<br>- voltage = 20 k $\Omega$ |
| Serial            | TTL for connection to Copy Card or<br>Televis/Modbus remote control systems                                                                                          |
| Digital outputs   | <b>OUT1</b> : 1 SPDT relay 8(4)A 250 V~                                                                                                                              |
| Buzzer output     | only on models where this is provided                                                                                                                                |
| Measurement range | -1999 ... 1999                                                                                                                                                       |
| Accuracy          | better than 0.5% of end of scale + 1 digit                                                                                                                           |
| Resolution        | 1 or 0.1 digit according to settings                                                                                                                                 |

### TERMINALS

|             |                                                      |                           |                                                                |
|-------------|------------------------------------------------------|---------------------------|----------------------------------------------------------------|
| <b>1-2</b>  | N.O. regulator relay <b>OUT1</b>                     | <b>*7-8</b>               | Power supply 12V~/ and 12-24V~/12-36V~.                        |
| <b>1-3</b>  | N.C. regulator relay <b>OUT1</b>                     | <b>*9-10-12</b>           | Voltage input ( <b>9</b> =GND; <b>10</b> ="+"; <b>12</b> =12V) |
| <b>*6-7</b> | Power supply 24V~, 115V~ and 230V~.                  | <b>*9-11-12</b>           | Current input ( <b>9</b> =GND; <b>11</b> ="+"; <b>12</b> =12V) |
| <b>A</b>    | TTL input for Copy Card and TelevisSystem connection | <b>* depends on model</b> |                                                                |

# PT100/Tcj-Tck MODEL

## CONNECTIONS



## INPUT/OUTPUT CHARACTERISTICS

|                   |                                                                                                                       |
|-------------------|-----------------------------------------------------------------------------------------------------------------------|
| Display range:    | <b>PT100:</b> -150...650°C<br><b>TcJ:</b> -40...750°C<br><b>TcK:</b> -40...1350°C<br>on display with 3½ digits + sign |
| Analogue input    | 1 <b>PT100</b> or 1 <b>TcJ / Tck</b><br>(selectable by parameter <b>H00</b> )                                         |
| Serial            | TTL for connection to Copy Card or<br>Televis/Modbus remote control systems                                           |
| Digital outputs   | <b>OUT1:</b> 1 SPDT relay 8(4)A 250 V~                                                                                |
| Buzzer output     | only on models where this is provided                                                                                 |
| Measurement range | -150 ... 1350°C (-238 ... 2462°F)                                                                                     |
| Accuracy          | see 'Pt100/TcJ/TcK models' table                                                                                      |
| Resolution        | see 'Pt100/TcJ/TcK models' table                                                                                      |

## TERMINALS

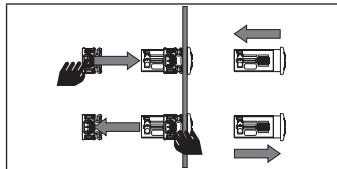
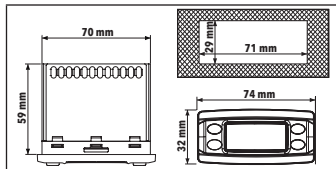
|             |                                                      |                           |                                          |
|-------------|------------------------------------------------------|---------------------------|------------------------------------------|
| <b>1-2</b>  | N.O. regulator relay <b>OUT1</b>                     | <b>*6-7</b>               | Power supply 12V~/ and 12-24V~/12-36V~.  |
| <b>1-3</b>  | N.C. regulator relay <b>OUT1</b>                     | <b>*10-11-12</b>          | Probe <b>PT100</b> input - 3 wires (Pb1) |
| <b>*5-6</b> | Power supply 24V~, 115V~ and 230V~.                  | <b>*11-12</b>             | <b>TcJ/TcK</b> input                     |
| <b>A</b>    | TTL input for Copy Card and TelevisSystem connection | <b>* depends on model</b> |                                          |

## PT100/Tcj-Tck MODELS

|               |             |                                                             |
|---------------|-------------|-------------------------------------------------------------|
| <b>PT100:</b> | ACCURACY:   | 0.5% for whole scale + 1 digit<br>0.2% from -150 to 300°C   |
|               | RESOLUTION: | 0.1°C (0.1°F) from -199.9°C up to 199.9°C; 1°C (1°F) beyond |
| <b>Tcj:</b>   | ACCURACY:   | 0.4% for whole scale + 1 digit                              |
|               | RESOLUTION: | 0.1°C (0.1°F) from -199.9°C up to 199.9°C; 1°C (1°F) beyond |
| <b>Tck:</b>   | ACCURACY:   | 0.5% for whole scale + 1 digit<br>0.3% from -40 to 800°C    |
|               | RESOLUTION: | 0.1°C (0.1°F) from -199.9°C up to 199.9°C; 1°C (1°F) beyond |

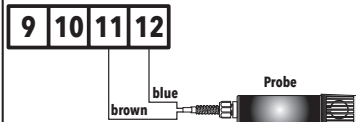
## MOUNTING - DIMENSIONS

The device is designed for panel mounting. Drill a 29x71 mm hole and insert the instrument; secure it with the special brackets provided. Do not install the instrument in damp and/or dirty places; in fact, it is suitable for use in places with ordinary or normal levels of pollution. Keep the area around the instrument cooling slots adequately ventilated.

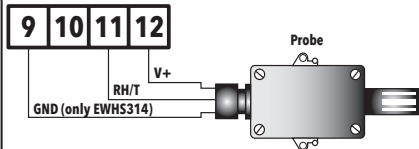


## EWPA-EWHS PROBE CONFIGURATION

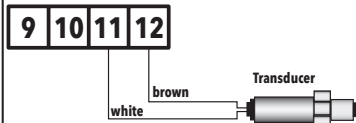
### ● EWHS 284 2 wires



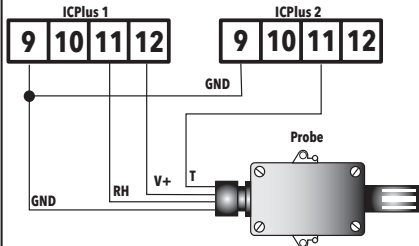
### ● EWHS 304/314 3 wires



### ● EWPA 007/030 2 wires / Transducer



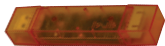
### ● EWHS 314 4 wires (V-I model)



## USING THE COPY CARD

The Copy Card is connected to the serial port (TTL) and allows rapid programming of the instrument parameters. Access **Installer** parameters by entering 'PA2', scroll through the folders using  and  until folder **FPr** appears. Select it using , scroll through the parameters using  and , then select the function using  (eg. **UL**).

- **Upload (UL):** Select UL and press . This function uploads the programming parameters from the instrument to the card. If the procedure is a success, 'y' will appear on the display, otherwise 'n' will appear.
- **Format (Fr):** This command is used to format the copy card (recommended when using the card for the first time).  
**Important:** the **Fr** parameter deletes all data present. This operation cannot be cancelled.
- **Download:** Connect the Copy Card when the instrument is switched off. At power-on, data is downloaded from the copy card to the instrument automatically. At the end of the lamp test, the display will show '**dly**' if the operation was successful and '**dLn**' if not.



OR



NOTE: **After downloading, the instrument works with the settings of the new map just downloaded.**

## ACCESSING AND USING THE MENUS

The resources are organized into 2 menus which are accessed as follows:

- 'Machine Status' menu: press and release the  key.
- 'Programming' menu: hold down the  key for 5 seconds.

Either do not press any keys for 15 seconds (timeout) or press the  key once, to confirm the last value displayed and return to the previous screen.

## PASSWORD

**Password 'PA1':** used to access **User** parameters. The password is not enabled by default (**PS1=0**).

To enable it (**PS1≠0**): press and hold  for longer than 5 seconds, scroll through the parameters using  and  until you see the label **PS1**, press  to display the value, modify it using  and , then save it by pressing  or . If enabled, it will be required in order to access the User parameters.

**Password 'PA2':** used to access **Installer** parameters. The password is enabled by default (**PS2=15**).

To modify it (**PS2≠15**): press and hold  for longer than 5 seconds, scroll through the parameters using  and  until you see the label **PA2**, press , set the value to '15' using  and , then confirm using . Scroll through the folders until you find the label **diS** and press  to enter. Scroll through the parameters using  and  until you see the label **PS2**, press  to display the value, modify it using  and , then save it by pressing  or .

The visibility of '**PA2**' is as follows:

- 1) **PA1 and PA2 ≠ 0:** Press and hold  for longer than 5 seconds to display **PA1** and **PA2**. It will then be possible to decide whether to access the User parameters (**PA1**) or the Installer parameters (**PA2**).
- 2) **Otherwise:** The password **PA2** is amongst the level1 parameters. If enabled, it will be required when accessing the Installer parameters; to enter it, proceed as instructed for password **PA1**.

If the value entered is incorrect, the label **PA1/PA2** will be displayed again and the procedure will need to be repeated.

## MACHINE STATUS MENU

Access the Machine Status menu by pressing **SET** and releasing the key. If no alarms are active, the 'SP1' label appears.

Use the keys **⏮** and **⏭** to scroll through all the folders in the menu:



- **AL:** alarms folder (**only visible if an alarm is active**);

- **SP1:** Setpoint 1 setting folder;

- **Pb1:** probe 1 - Pb1 folder;

### Setting the Setpoint:

To display the Setpoint value press the **SET** key when the 'SP1' label is displayed.

The Setpoint value appears on the display. To change the Setpoint value, press the **⏮** and **⏭** keys within 15 seconds. Press **SET** to confirm the modification.

### Displaying probes:

When label Pb1 is present, press the **SET** key to view the value measured by the corresponding probe (**NOTE:** the value cannot be modified).

## PROGRAMMING MENU

To access the 'Programming' menu, press the **SET** key for more than 5 seconds. If specified, an access PASSWORD will be requested: 'PA1' for User parameters and 'PA2' for Installer parameters (see 'PASSWORD' paragraph).

**User** Parameter: When accessed, the display will show the first parameter (e.g. 'dF1').

Press **⏮** and **⏭** to scroll through all the parameters on the current level. Select the desired parameter by pressing **SET**. Press **⏮** and **⏭** to modify it and **SET** to save the changes.

**Installer** Parameter: When accessed, the display will show the first folder (e.g. 'rE1').

Press **⏮** and **⏭** to scroll through the folders on the current level. Select the desired folder using **SET**. Press **⏮** and **⏭** to scroll through the parameters in the current folder and select the parameter using **SET**. Press **⏮** and **⏭** to modify it and **SET** to save the changes.

**NOTE:** Make sure you switch the instrument off and on again each time the parameter configuration is changed, in order to prevent malfunctioning in the configuration and/or timing in progress.

## DIAGNOSTICS

Alarms are always indicated by the alarm icon  and the buzzer.

To switch off the buzzer, press and release any key; the corresponding icon will continue to flash.

**N.B.:** If alarm exclusion times have been set (see 'AL' folder in the parameters table) the alarm will not be signalled.

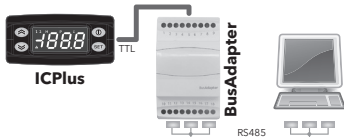
## ALARMS

| Label      | Fault                         | Cause                                                                                                                                    | Effects                                                                                                                                                                                                                                                                    | Remedy                                                                                                                             |
|------------|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| <b>E1</b>  | Probe1 faulty (ambient)       | <ul style="list-style-type: none"> <li>measured values are outside operating range</li> <li>Probe faulty/short-circuited/open</li> </ul> | <ul style="list-style-type: none"> <li>Display label <b>E1</b></li> <li>Alarm icon permanently on</li> <li>Buzzer activation (if present)</li> <li>Disable max/min alarm controller</li> <li>Compressor operation based on parameters <b>On1</b> and <b>OF1</b></li> </ul> | <ul style="list-style-type: none"> <li>check probe type (<b>H00</b>)</li> <li>check probe wiring</li> <li>replace probe</li> </ul> |
| <b>AH1</b> | Alarm for HIGH value (Probe1) | value read by <b>Pb1</b> > <b>HA1</b> after time of <b>tA0</b> .                                                                         | <ul style="list-style-type: none"> <li>Recording of label <b>AH1</b> in folder AL</li> <li>Alarm icon permanently on</li> <li>Buzzer activation (if present)</li> <li>No effect on regulation</li> </ul>                                                                   | Wait until value read by Pb1 returns below <b>HA1</b> .                                                                            |
| <b>AL1</b> | Alarm for LOW value (Probe1)  | value read by <b>Pb1</b> < <b>LA1</b> after time of <b>tA0</b> .                                                                         | <ul style="list-style-type: none"> <li>Recording of label <b>AL1</b> in folder AL</li> <li>Alarm icon permanently on</li> <li>Buzzer activation (if present)</li> <li>No effect on regulation</li> </ul>                                                                   | Wait until value read by Pb1 returns above <b>LA1</b> .                                                                            |

## TELEVIS SYSTEM

The Televis remote control systems can be connected using the TTL serial port (TTL-RS485 **BusAdapter** 130 or 150 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.



**IMPORTANT! CHECK THE AVAILABILITY OF MODELS COMPATIBLE WITH REMOTE SUPERVISION SYSTEMS.**

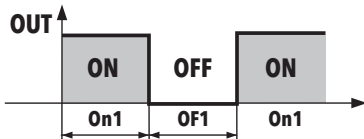
## DUTY CYCLE DIAGRAM

The device uses parameters On1 e OF1 set for Duty Cycle.

An error condition in probe1 (regulation) causes one of the following actions:

- Code '**E1**' is shown on the display
- The regulator is activated as indicated by parameters On1 and OF1 if set for Duty Cycle

| On1 | OF1 | Regulator output |
|-----|-----|------------------|
| 0   | 0   | OFF              |
| 0   | >0  | OFF              |
| >0  | 0   | ON               |
| >0  | >0  | Duty Cycle       |



## TECHNICAL DATA (EN 60730-2-9)

|                           |                                                                                                                                                                                                                                                                                                                                |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Classification:           | operation (not safety) device for incorporation                                                                                                                                                                                                                                                                                |
| Mounting:                 | panel mounting with 71x29 mm (+0.2/-0.1 mm) drilling template                                                                                                                                                                                                                                                                  |
| Type of action:           | 1.B                                                                                                                                                                                                                                                                                                                            |
| Pollution class:          | 2                                                                                                                                                                                                                                                                                                                              |
| Material class:           | IIIa                                                                                                                                                                                                                                                                                                                           |
| Overvoltage category:     | II                                                                                                                                                                                                                                                                                                                             |
| Rated impulse voltage:    | 2500V                                                                                                                                                                                                                                                                                                                          |
| Temperature:              | Operating: -5 ... +55 °C - Storage: -30 ... +85 °C                                                                                                                                                                                                                                                                             |
| Power supply:             | <ul style="list-style-type: none"><li>• 12V~/= (<math>\pm 10\%</math>)</li><li>• 24 V~ <math>\pm 10\%</math></li><li>• 12-24V~/12-36V= <math>\pm 10\%</math> (Dedicated power supply not grounded or earth connected)</li><li>• 115V~ <math>\pm 10\%</math> 50/60 Hz</li><li>• 230 V~ <math>\pm 10\%</math> 50/60 Hz</li></ul> |
| Consumption:              | <ul style="list-style-type: none"><li>• 1.5 VA max (model 12V~/=)</li><li>• 3 W max (models: 24V~, 12-24V~/12-36V=, 115V~ and 230V~)</li></ul>                                                                                                                                                                                 |
| Digital outputs (relay):  | refer to the label on the device                                                                                                                                                                                                                                                                                               |
| Fire resistance category: | D                                                                                                                                                                                                                                                                                                                              |
| Software class:           | A                                                                                                                                                                                                                                                                                                                              |

**NOTE:** check the power supply specified on the instrument label.

## FURTHER INFORMATION

### Input/Output Characteristics

See 'Connections' section

### Mechanical Characteristics

|             |                                                                                 |
|-------------|---------------------------------------------------------------------------------|
| Casing:     | PC+ABS UL94 V-0 resin casing, polycarbonate window, thermoplastic resin keys    |
| Dimensions: | front panel 74x32 mm, depth 59 mm (without terminals)                           |
| Terminals:  | screw/disconnectable terminals for cables with a diameter of 2,5mm <sup>2</sup> |
| Connectors: | TTL for connection of Unicard/Copy Card                                         |
| Humidity:   | Operating / Storage: 10...90 % RH (non-condensing)                              |

### Regulations

|                                |                                                       |
|--------------------------------|-------------------------------------------------------|
| Electromagnetic compatibility: | The device conforms to Directive 2004/108/EC          |
| Safety:                        | The device conforms to Directive 2006/95/EC           |
| Food Safety:                   | The device complies with standard EN13485 as follows: |

- suitable for storage
- application: air
- climate range A
- measurement class 1 in the range from -25°C to 15°C (\*)

**(\* exclusively using Eliwell probes)**

**NOTE:** The technical specifications given in this document regarding measurement (range, accuracy, resolution, etc.) refer to the instrument and not to any accessories provided, such as the probes. This means, for example, that the error introduced by the probe must be added to the typical error of the instrument.

## PARAMETERS TABLE

| PAR.                       | DESCRIPTION                                                                                                                                                                                                | MODEL    | RANGE        | VALUE  | M.U.  | LEVEL     |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|--------------|--------|-------|-----------|
| SP1                        | Pb1 value control setpoint <b>SP1</b> . The <b>SEtpoint</b> is visible from the machine status menu and not from the programming menu.                                                                     | NTC/PTC  | LS1...HS1    | 0.0    | °C/°F |           |
|                            |                                                                                                                                                                                                            | PT100-Tc |              | 0.0    | °C/°F |           |
|                            |                                                                                                                                                                                                            | V/I      |              | 0      | num   |           |
| REGULATOR 1 (folder 'rE1') |                                                                                                                                                                                                            |          |              |        |       |           |
| HC1                        | This sets the controller 1 operating mode.<br><b>H</b> (0) = Hot; <b>C</b> (1) = Cold.                                                                                                                     | ALL      | H/C          | H      | flag  | Inst      |
| OS1                        | Value to be added to <b>SP1</b> if reduced set enabled                                                                                                                                                     | NTC/PTC  | -30.0...30.0 | 0.0    | °C/°F | Inst      |
|                            |                                                                                                                                                                                                            | PT100-Tc | -30.0...30.0 | 0.0    | °C/°F |           |
|                            |                                                                                                                                                                                                            | V/I      | -30...30     | 0      | num   |           |
| dF1                        | <b>Regulator 1</b> activation differential.<br>The utility stops on reaching the <b>SP1</b> value (as indicated by control probe) and restarts at value equal to <b>T=SP1+dF1</b> relative to <b>HC1</b> . | NTC/PTC  | 0.0...30.0   | 1.0    | °C/°F | User/Inst |
|                            |                                                                                                                                                                                                            | PT100-Tc | 0.0...30.0   | 1.0    | °C/°F |           |
|                            |                                                                                                                                                                                                            | V/I      | 0...30       | 1      | num   |           |
| HS1                        | Maximum value assignable to setpoint SP1.                                                                                                                                                                  | NTC/PTC  | LS1...HdL    | 140.0  | °C/°F | User/Inst |
|                            |                                                                                                                                                                                                            | PT100-Tc |              | 1350   | °C/°F |           |
|                            |                                                                                                                                                                                                            | V/I      |              | 199    | num   |           |
| LS1                        | Minimum value assignable to setpoint SP1.                                                                                                                                                                  | NTC/PTC  | LdL...HS1    | -50.0  | °C/°F | User/Inst |
|                            |                                                                                                                                                                                                            | PT100-Tc |              | -199.9 | °C/°F |           |
|                            |                                                                                                                                                                                                            | V/I      |              | -199   | num   |           |
| HA1                        | Pb1 maximum value alarm on Regulator 1.                                                                                                                                                                    | NTC/PTC  | LA1...150.0  | 140.0  | °C/°F | Inst      |
|                            |                                                                                                                                                                                                            | PT100-Tc | LA1...1999   | 1350   | °C/°F |           |
|                            |                                                                                                                                                                                                            | V/I      | LA1...150    | 150    | num   |           |
| LA1                        | Pb1 minimum value alarm on Regulator 1.                                                                                                                                                                    | NTC/PTC  | -150.0...HA1 | -50.0  | °C/°F | Inst      |
|                            |                                                                                                                                                                                                            | PT100-Tc | -328...HA1   | -199.9 | °C/°F |           |
|                            |                                                                                                                                                                                                            | V/I      | -150...HA1   | -150   | num   |           |
| dn1                        | Switch-on delay. The indicated time must elapse between the request for activation of the controller 1 relay and switch-on. <b>0</b> = not active.                                                         | ALL      | 0...250      | 0      | secs  | Inst      |

| PAR.                         | DESCRIPTION                                                                                                                                                                                                      | MODEL           | RANGE             | VALUE | M.U.  | LEVEL |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-------------------|-------|-------|-------|
| <b>d01</b>                   | Delay time after switching off. The indicated time must elapse between deactivation of the controller 1 relay and the next switch-on. <b>0</b> = not active.                                                     | ALL             | 0...250           | 0     | min   | Inst  |
| <b>di1</b>                   | Delay between switch-ons. The indicated time must elapse between two consecutive switch-ons of regulator 1. <b>0</b> = not active.                                                                               | ALL             | 0...250           | 0     | min   | Inst  |
| <b>dE1</b>                   | Switch-off delay. The indicated time must elapse between the request for deactivation of the controller 1 relay and switch-off. <b>0</b> = not active.                                                           | ALL             | 0...250           | 0     | secs  | Inst  |
| <b>On1</b>                   | Controller 1 switch-on time in the event of faulty probe.<br>if <b>On1</b> =1 and <b>OF1</b> =0, the controller remains on;<br>if <b>On1</b> =1 and <b>OF1</b> >0, the controller operates in Duty Cycle mode.   | ALL             | 0...250           | 0     | min   | Inst  |
| <b>OF1</b>                   | Controller 1 switch-off time in the event of faulty probe.<br>if <b>OF1</b> =1 and <b>On1</b> =0, the controller remains off;<br>if <b>OF1</b> =1 and <b>On1</b> >0, the controller operates in Duty Cycle mode. | ALL             | 0...250           | 1     | min   | Inst  |
| ALARMS (folder 'AL')         |                                                                                                                                                                                                                  |                 |                   |       |       |       |
| <b>AFd</b>                   | Alarm differential.                                                                                                                                                                                              | <b>NTC/PTC</b>  | 1.0...50.0        | 2.0   | °C/°F | Inst  |
|                              |                                                                                                                                                                                                                  | <b>PT100-Tc</b> | 1.0...50.0        | 2.0   | °C/°F |       |
|                              |                                                                                                                                                                                                                  | <b>V/I</b>      | 1...50            | 2     | num   |       |
| <b>tP</b>                    | Enable all keys to acknowledge an alarm. <b>n</b> (0) = no; <b>y</b> (1) = yes.                                                                                                                                  | ALL             | n/y               | y     | flag  | Inst  |
| COMMUNICATION (folder 'Add') |                                                                                                                                                                                                                  |                 |                   |       |       |       |
| <b>PtS</b>                   | Selection of communication protocol. <b>t</b> = Televis; <b>d</b> = Modbus.                                                                                                                                      | ALL             | t/d               | t     | flag  | Inst  |
| <b>dEA</b>                   | Index of the device within the family (valid values from 0 to 14).                                                                                                                                               | ALL             | 0...14            | 0     | num   | Inst  |
| <b>FAA</b>                   | Device family (valid values from 0 to 14).                                                                                                                                                                       | ALL             | 0...14            | 0     | num   | Inst  |
| <b>Adr</b>                   | Modbus protocol controller address.                                                                                                                                                                              | ALL             | 1...255           | 1     | num   | Inst  |
| <b>bAU</b>                   | Baudrate selection.<br><b>48</b> (0) = 4800; <b>96</b> (1) = 9600; <b>192</b> (2) = 19200; <b>384</b> (3) = 38400.                                                                                               | ALL             | 48/96/<br>192/384 | 96    | num   | Inst  |
| <b>Pty</b>                   | Modbus parity bit. <b>n</b> (0) = none; <b>E</b> (1) = even; <b>o</b> (2) = odd.                                                                                                                                 | ALL             | n/E/o             | E     | num   | Inst  |
| <b>StP</b>                   | Modbus stop bit. <b>1b</b> (0) = 1 bit; <b>2b</b> (1) = 2 bit.                                                                                                                                                   | ALL             | 1b/2b             | 1b    | flag  | Inst  |

| PAR.                   | DESCRIPTION                                                                                                                                                                                                                                                                                                           | MODEL           | RANGE        | VALUE  | M.U.  | LEVEL     |
|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|--------------|--------|-------|-----------|
| DISPLAY (folder 'diS') |                                                                                                                                                                                                                                                                                                                       |                 |              |        |       |           |
| <b>LOC</b>             | LOCK. Setpoint edit lock. The parameter programming menu can still be accessed, and the settings changed, which means also that the status of this parameter can be changed so as to unlock the keypad. <b>n</b> (0) = no; <b>y</b> (1) = yes.                                                                        | ALL             | n/y          | n      | flag  | User/Inst |
| <b>PS1</b>             | Password 1. When enabled ( <b>PS1</b> ≠ 0) it is the password to the 'User' parameters (User).                                                                                                                                                                                                                        | ALL             | 0...250      | 0      | num   | User/Inst |
| <b>PS2</b>             | Password 2. When enabled ( <b>PS2</b> ≠ 0) it is the password to the 'Installer' parameters (Inst).                                                                                                                                                                                                                   | ALL             | 0...250      | 15     | num   | Inst      |
| <b>ndt</b>             | Display values with decimal point. <b>n</b> (0) = no (without decimal point); <b>y</b> (1) = yes (with decimal point); <b>int</b> (2) = integer (V/I models only).                                                                                                                                                    | ALL             | n/y/int      | n      | num   | User/Inst |
| <b>CA1</b>             | Calibration 1. Positive or negative value added to the value read by <b>Pb1</b> , according to the setting of parameter <b>CAI</b> .                                                                                                                                                                                  | <b>NTC/PTC</b>  | -30.0...30.0 | 0.0    | °C/°F | User/Inst |
|                        |                                                                                                                                                                                                                                                                                                                       | <b>PT100-Tc</b> | -30.0...30.0 | 0.0    | °C/°F |           |
|                        |                                                                                                                                                                                                                                                                                                                       | <b>V/I</b>      | -30...30     | 0      | num   |           |
| <b>CAI</b>             | Intervention of the offset on display, temperature control or both.<br><b>0</b> = only the value shown is modified;<br><b>1</b> = sum with only the value used by the controllers and not for the display, which remains unchanged;<br><b>2</b> = sum with the displayed value, which is also used by the regulators. | ALL             | 0/1/2        | 2      | num   | Inst      |
| <b>LdL</b>             | Minimum value that can be displayed by the device.                                                                                                                                                                                                                                                                    | <b>NTC/PTC</b>  | -199.9...HdL | -50.0  | °C/°F | Inst      |
|                        |                                                                                                                                                                                                                                                                                                                       | <b>PT100-Tc</b> | -328...HdL   | -199.9 | °C/°F |           |
|                        |                                                                                                                                                                                                                                                                                                                       | <b>V/I</b>      | -199...HdL   | -199   | num   |           |
| <b>HdL</b>             | Maximum value that can be displayed by the device.                                                                                                                                                                                                                                                                    | <b>NTC/PTC</b>  | LdL...199.9  | 140.0  | °C/°F | Inst      |
|                        |                                                                                                                                                                                                                                                                                                                       | <b>PT100-Tc</b> | LdL...1350   | 1350   | °C/°F |           |
|                        |                                                                                                                                                                                                                                                                                                                       | <b>V/I</b>      | LdL...199    | 199    | num   |           |
| <b>dro</b>             | Select the unit of measurement of probe 1.<br>• <b>NTC/PTC</b> and <b>PT100-Tc</b> : <b>C</b> (0) = °C, <b>F</b> (1) = °F<br>• <b>V/I</b> : <b>n</b> (0) = no unit of measure selected,<br><b>t</b> (1) = temperature, <b>P</b> (2) = pressure, <b>H</b> (3) = humidity                                               | <b>NTC/PTC</b>  | C/F          | C      | flag  | Inst      |
|                        |                                                                                                                                                                                                                                                                                                                       | <b>PT100-Tc</b> | C/F          | C      | flag  |           |
|                        |                                                                                                                                                                                                                                                                                                                       | <b>V/I</b>      | n/t/P/H      | n      | num   |           |

| PAR.                                                                                                                             | DESCRIPTION                                                                                                                                                                                                                                                                                                                                                                                      | MODEL           | RANGE                  | VALUE | M.U. | LEVEL     |
|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------------|-------|------|-----------|
| CONFIGURATION (folder 'CnF') ➡ If one or more parameters are changed, the controller MUST be switched off and switched on again. |                                                                                                                                                                                                                                                                                                                                                                                                  |                 |                        |       |      |           |
| <b>H00</b>                                                                                                                       | Probe type selection.<br><ul style="list-style-type: none"> <li>• <b>NTC/PTC</b>: <b>Ptc</b> (0) = PTC, <b>ntC</b> (1) = NTC</li> <li>• <b>PT100-Tc</b>: <b>Jtc</b> (0) = TcJ, <b>Htc</b> (1) = Tck, <b>Pt1</b> (2) = PT100.</li> <li>• <b>V/I</b>: <b>420</b> (0) = 4...20mA, <b>020</b> (1) = 0...20mA, <b>t10</b> (2) = 0...10V, <b>t05</b> (3) = 0...5V, <b>t01</b> (4) = 0...1V.</li> </ul> | <b>NTC/PTC</b>  | Ptc/ntC                | ntc   | flag | User/Inst |
|                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                  | <b>PT100-Tc</b> | Jtc/Htc/Pt1            | Jtc   | num  |           |
|                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                  | <b>V/I</b>      | 420/020<br>t10/t05/t01 | 420   | num  |           |
| <b>H02</b>                                                                                                                       | Press the ESC, UP and DOWN keys (if configured for a second function) for the time <b>H02</b> to activate the function itself.                                                                                                                                                                                                                                                                   | ALL             | 0...15                 | 5     | secs | Inst      |
| <b>H03</b>                                                                                                                       | Lower input current/voltage limit.<br>(only present on model V/I)                                                                                                                                                                                                                                                                                                                                | <b>NTC/PTC</b>  |                        |       |      | User/Inst |
|                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                  | <b>PT100-Tc</b> |                        |       |      |           |
|                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                  | <b>V/I</b>      | -1999...1999           | 0     | num  |           |
| <b>H04</b>                                                                                                                       | Upper current/voltage limit for input.<br>(only present on model V/I)                                                                                                                                                                                                                                                                                                                            | <b>NTC/PTC</b>  |                        |       |      | User/Inst |
|                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                  | <b>PT100-Tc</b> |                        |       |      |           |
|                                                                                                                                  |                                                                                                                                                                                                                                                                                                                                                                                                  | <b>V/I</b>      | -1999...1999           | 1000  | num  |           |
| <b>H05</b>                                                                                                                       | Window filter:<br>-2 = very fast; -1 = fast; 0 = normal; 1 = slow; 2 = very slow.                                                                                                                                                                                                                                                                                                                | ALL             | -2/-1/0/1/2            | 0     | num  | Inst      |
| <b>H08</b>                                                                                                                       | Stand-by operating mode.<br>0 = only display switches off; 1 = display on and controllers locked;<br>2 = display off and controllers locked.                                                                                                                                                                                                                                                     | ALL             | 0/1/2                  | 2     | num  | Inst      |
| <b>H10</b>                                                                                                                       | Delay for output activation after Power On. If <b>H10</b> = 0 the delay is NOT active; if <b>H10</b> ≠ 0 the output will not be activated before this time has expired.                                                                                                                                                                                                                          | ALL             | 0...250                | 0     | min  | Inst      |
| <b>H31</b>                                                                                                                       | Configuration of <b>UP</b> key.<br>0 = disabled; 1 = not used; 2 = Offset setpoint; 3 = OUT1 stopped;<br>4 = not used; 5 = not used; 6 = Stand-by; 7 = not used.                                                                                                                                                                                                                                 | ALL             | 0...7                  | 0     | num  | Inst      |
| <b>H32</b>                                                                                                                       | Configuration of <b>DOWN</b> key. Same as <b>H31</b> .                                                                                                                                                                                                                                                                                                                                           | ALL             | 0...7                  | 0     | num  | Inst      |

[illegible]

## ELECTRICAL CONNECTIONS

### **Attention! Make sure the machine is switched off before working on the electrical connections.**

The instrument is equipped with screw or disconnectable terminal blocks for connecting electrical cables with a max. diameter of 2.5 mm<sup>2</sup> (one wire per terminal for power connections): for the terminal ratings, see the label on the instrument.

Do not exceed the maximum permissible current; in case of higher loads, use a suitably rated contactor.

Make sure the power supply voltage complies with that required by the instrument. NTC/PTC/PT100 probes have no connection polarity and can be extended using a normal bipolar cable (Note that extending the probes burdens the behaviour of the instrument in terms of EMC electromagnetic compatibility: specifically, if Pt100 probes with cable longer than 3 mt are used, an extreme care must be taken during wiring operations).

Probe cables, power supply cables and the TTL serial cable should be routed separately from power cables.

## CONDITIONS OF USE

### **Permitted use**

For safety reasons, the instrument must be installed and used according to the instructions supplied and, in particular, parts under dangerous voltages must not be accessible in normal conditions.

The device must be adequately protected from water and dust with regard to its application, and must only be accessible using tools (except for the front panel). The device is suitable for use in household refrigeration appliances and/or similar equipment and has been tested for safety aspects in accordance with the harmonised European reference standards.

### **Improper use**

Any use other than that expressly permitted is prohibited. The relay contacts provided are of a functional type and subject to failure: any protection devices required by product standards, or suggested by common sense for obvious safety requirements, must be installed externally to the instrument.

## LIABILITY AND RESIDUAL RISKS

ELIWELL CONTROLS SRL declines any liability for damage due to:

- installation/uses different from those specified and, in particular, not complying with the safety regulations and/or instructions given in this document;
- use on panels that do not provide adequate protection against electric shocks, water or dust when assembled;
- use on panels allowing access to dangerous parts without the use of tools;
- tampering with and/or modifying the product;
- installation/use on panels not complying with current standards and regulations.

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## DISPOSAL



The appliance (or the product) must be disposed of separately in compliance with the local standards in force on waste disposal.



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ISO 9001



cod. 9IS44315-1 • ICPlus 902 • EN • rel. 11/13

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