

# Product catalogue

Temperature control and Automation





# **Product catalogue**

Temperature control and Automation

## KEY



### **EO (Environmentally Optimised)**

EO (Environmentally Optimised) refers to the new solutions created by Eliwell designers that are highly efficient, eco-system compliant and designed to deliver the clear environmental benefits for users. Devices are developed with new energy saving algorithms that can guarantee immediate, measurable economic returns. Compatible with the new ecological refrigerants R290 and R600, the products have been designed to guarantee lower operating and maintenance costs and have an active packaging recycling program. Design efforts have also enabled us to simplify installation, maintenance and operational use of Eliwell EO products.



### **MODBUS-RTU**

ModBus is a serial communication protocol that allows communication between different devices connected to the same network. ModBus is often used to connect a supervisor computer to a remote terminal unit (RTU) in monitoring control and data acquisition systems.



### **RS-485**

This is the standard that describes the communication interface for serial connection between a network of devices and the computer. The network, normally with 3 wires, makes it possible to cover much longer distances than the RS232 standard. The protocol used for the communication can either be Eliwell, i.e. created according to Eliwell specifications, or ModBus.



### **COPY CARD**

The Copy Card is an accessory that connects to a TTL type serial port and allows the rapid programming of instrument parameters.



### **TELEVISSYSTEM**

TelevisSystem is a remote management and monitoring system for industrial and commercial systems, such as supermarkets and hypermarkets. Data can either be printed or extracted and downloaded in a format which is compatible with the most commonly used office automation software. The monitoring system can be accessed remotely via a web browser, using any PC or handheld device connected to the network.



### **TEMPERATURE PROBES**

Thanks to the different materials used in the different models, the temperature probes are capable of covering a very wide temperature range; the sensors used are PTC, NTC, thermocouple, Pt100 and Pt1000. Depending on the kind of sensor, the protective casing (usually cylindrical) can be made of either ABS, Aisi 304/316 stainless steel or Inconel. For additional sensor protection, special materials are used (e.g. resins) between sensor and casing. The cable that transmits the signal to the instrument is made of either PVC, Silicone or Vetrotex and is available in different lengths. The range of use depends on the materials used, as well as on the type of sensor.

## KEY



### **HUMIDITY PROBES**

The EWHS series of probes are specially made for connection to humidity measurement instruments. EWHS 280 and EWHS 300 probes have one current output (4...20 mA) proportional to the relative humidity. EWHS 310 probes have two current outputs (0...20 mA), one for humidity and one for temperature.

### **PRESSURE PROBES**

The EWPA series of probes are pressure reading devices that have one 4...20 mA current output for transferring the signal to the measuring instrument. The EWPA 007 probes have an operating range up to 7 bar, whereas the EWPA 030 probes operate up to 30 bar.

### **PID**

The PID function is an alternative to the on-off control for use in situations requiring greater precision and reduced oscillations with regard to the setpoint, in both 'hot' and 'cold' applications. Controllers with the PID function have a further option known as Autotuning, which automatically calculates the parameters necessary for better process control.

### **SWITCHING POWER SUPPLY**

The switching power supply, that switches from either 100...240 V~ or from 12...24 V~/12...36 V~ offers the installer the option of covering most applications, thus reducing the number of models that would be necessary if a transformer-type power supply was used.

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## ELECTRONIC CONTROLS

Eliwell supplies products and solutions that are distinguished by high quality and reliability, the fruit of more than 25 years of experience and of collaboration with the leading manufacturers of appliances that need temperature, humidity and pressure regulators.

The vast range of formats that Eliwell has developed always enables the most suitable solution to be found for any specific application requirements.

Eliwell products are characterised by:

- Reliability
- Simplicity
- Energy saving
- Minimum environmental impact



# ICPlus 902

32x74 cold/hot thermostats



| Codes         | Descr.                       | Probe*  | Power supply        |
|---------------|------------------------------|---------|---------------------|
| ICP11D0750000 | ICPlus 902 NTC-PTC 230V      | NTC/PTC | 230V~               |
| ICP11D0450000 | ICPlus 902 NTC-PTC 12/24V~/≐ | NTC/PTC | 12...24V~/12...36V≐ |

\*selectable by parameter

## Applications

ICPlus 902 controllers are one-step electronic devices, used to control temperature. They are compatible with TelevisSystem and with Modbus protocol monitoring systems.

## Common features

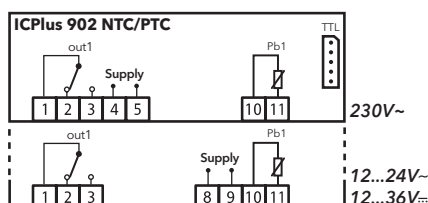
|                     |                                                                                                 |                                                   |                              |
|---------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|
| <b>Container</b>    | PC+ABS UL94 V-0 plastic resin casing, polycarbonate display window, thermoplastic resin buttons | <b>Operating temperature</b>                      | 0...55°C                     |
| <b>Dimensions</b>   | front panel 74x32mm, depth 59mm                                                                 | <b>Storage temperature</b>                        | -30...85°C                   |
| <b>Installation</b> | panel mounting with 71x29mm (+0.2/-0.1mm) drilling template                                     | <b>Ambient humidity for operation and storage</b> | 10...90% RH (non-condensing) |

## Technical data

|                    | ICPlus 902 NTC/PTC                                                                                                                       |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| Display range:     | <ul style="list-style-type: none"> <li>• NTC probe: -50.0...110.0°C</li> <li>• PTC probe: -50.0...140.0°C</li> </ul>                     |
| Display:           | no decimal point *<br>3 and a half digits + sign                                                                                         |
| Analogue inputs:   | 1 PTC or NTC *                                                                                                                           |
| Digital inputs:    | not available                                                                                                                            |
| Connections:       | TTL port for connection to USB Unicard, TelevisSystem and systems with ModBus protocol                                                   |
| Digital outputs:   | 1 SPDT 8(4)A 250V~                                                                                                                       |
| Measurement range: | from -50 to 140                                                                                                                          |
| Accuracy:          | better than 0.5% of end of scale+1 digit                                                                                                 |
| Resolution:        | 0.1 or 1°C                                                                                                                               |
| Power consumption: | <ul style="list-style-type: none"> <li>• 3W for 12...24V~ model</li> <li>• 3W for 230V~ model</li> </ul>                                 |
| Power supply:      | <ul style="list-style-type: none"> <li>• 12V~, 24V~, 12...24V~/12...36V≐ (°) ±10% 50/60Hz</li> <li>• 115V~/230V~ ±10% 50/60Hz</li> </ul> |

\* selectable by parameter (°) non-insulated power supply

## Wiring diagrams





# ICPlus 915

32x74 cold/hot thermostats



| Codes                | Descr.                         | Probe*    | Power supply        |
|----------------------|--------------------------------|-----------|---------------------|
| <b>ICP22JI750000</b> | ICPlus 915 J/K PT100 230V      | J/K PT100 | 230V~               |
| <b>ICP22JI450000</b> | ICPlus 915 J/K PT100 12/24V~/≐ | J/K PT100 | 12...24V~/12...36V≐ |
| <b>ICP22DI750000</b> | ICPlus 915 NTC-PTC 230V        | NTC/PTC   | 230V~               |
| <b>ICP22DI450000</b> | ICPlus 915 NTC-PTC 12/24V~/≐   | NTC/PTC   | 12...24V~/12...36V≐ |
| <b>ICP22I0750000</b> | ICPlus 915 V/I 230V            | V/I       | 230V~               |
| <b>ICP22I0450000</b> | ICPlus 915 V/I 12/24V~/≐       | V/I       | 12...24V~/12...36V≐ |

\*selectable by parameter

## Applications

IC Plus 915 controllers are electronic two-step devices, either dependent or independent or with neutral zone, used for the control of temperature, relative humidity and pressure. They are compatible with Televis**System** and with Modbus protocol monitoring systems.

## Common features

|                     |                                                                                                 |                                                   |                              |
|---------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|
| <b>Container</b>    | PC+ABS UL94 V-0 plastic resin casing, polycarbonate display window, thermoplastic resin buttons | <b>Operating temperature</b>                      | 0...55°C                     |
| <b>Dimensions</b>   | front panel 74x32mm, depth 59mm                                                                 | <b>Storage temperature</b>                        | -30...85°C                   |
| <b>Installation</b> | panel mounting with 71x29mm (+0.2/-0.1mm) drilling template                                     | <b>Ambient humidity for operation and storage</b> | 10...90% RH (non-condensing) |

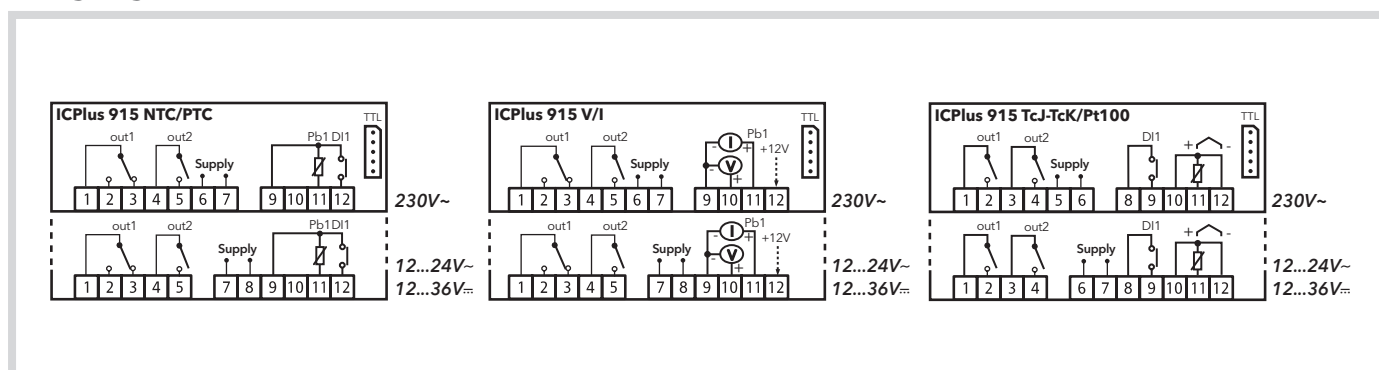
## Technical data

|                    | ICPlus 915 NTC/PTC                                                                                                                                | ICPlus 915 V/I                                                                                                                                    | ICPlus 915 TC/Pt100                                                                                                                                                        |
|--------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display range:     | <ul style="list-style-type: none"> <li>• NTC probe: -50.0...110.0°C</li> <li>• PTC probe: -50.0...140.0°C</li> </ul>                              | <ul style="list-style-type: none"> <li>• -199...199 *</li> <li>• -199.9...199.9 *</li> <li>• -1999...1999 *</li> </ul>                            | <ul style="list-style-type: none"> <li>• Pt100 probe: -150...650°C</li> <li>• TcJ probe: -40...750°C</li> <li>• TcK probe: -40...1350°C</li> </ul>                         |
| Display:           | no decimal point *<br>3 and a half digits + sign                                                                                                  | no decimal point *<br>3 and a half digits + sign                                                                                                  | no decimal point *<br>3 and a half digits + sign                                                                                                                           |
| Analogue inputs:   | 1 PTC or NTC *                                                                                                                                    | 1 V-I (0...1V, 0...5V, 0...10V, 0...20mA, 4...20mA)*                                                                                              | 1 Pt100 or 1 TcJ/TcK                                                                                                                                                       |
| Digital inputs:    | 1 clean contact at extra low safety voltage                                                                                                       | not available                                                                                                                                     | 1 clean contact at extra low safety voltage                                                                                                                                |
| Connections:       | TTL port for connection to USB Uni-card, Televis <b>System</b> and systems with ModBus protocol                                                   | TTL port for connection to USB Uni-card, Televis <b>System</b> and systems with ModBus protocol                                                   | TTL port for connection to USB Uni-card, Televis <b>System</b> and systems with ModBus protocol                                                                            |
| Digital outputs:   | 1 SPDT 8(4)A 250V~ +<br>1 SPST 8(4)A 250V~                                                                                                        | 1 SPDT 8(4)A 250V~ +<br>1 SPST 8(4)A 250V~                                                                                                        | 1 SPST 8(4)A 250V~ +<br>1 SPST 8(4)A 250V~                                                                                                                                 |
| Measurement range: | from -50 to 140                                                                                                                                   | from -999 to 1000                                                                                                                                 | from -150 to 1350                                                                                                                                                          |
| Accuracy:          | better than 0.5% of end of scale +1 digit                                                                                                         | better than 0.5% of end of scale +1 digit                                                                                                         | Pt100: 0.5% for whole scale + 1 digit,<br>0.2% from -150 to 300°C<br>TcJ: 0.4% for whole scale + 1 digit<br>TcK: 0.5% for whole scale + 1 digit,<br>0.3% from -40 to 800°C |
| Resolution:        | 0.1 or 1°C                                                                                                                                        | 0.1 or 1°C                                                                                                                                        | Pt100: 0.1°C (0.1°F) up to 199.9°C,<br>1°C (1°F) over<br>TcJ: 0.1°C (0.1°F) up to 199.9°C<br>1°C (1°F) over<br>TcK: 0.1°C (0.1°F)                                          |
| Power consumption: | <ul style="list-style-type: none"> <li>• 3W for 12...24V~ model</li> <li>• 3W for 230V~ model</li> </ul>                                          | <ul style="list-style-type: none"> <li>• 3W for 12...24V~ model</li> <li>• 3W for 230V~ model</li> </ul>                                          | <ul style="list-style-type: none"> <li>• 3W for 12...24V~ model</li> <li>• 3W for 230V~ model</li> </ul>                                                                   |
| Power supply:      | <ul style="list-style-type: none"> <li>• 12V~, 24V~, 12...24V~/12...36V≐ (°)</li> <li>±10% 50/60Hz</li> <li>• 115V~/230V~ ±10% 50/60Hz</li> </ul> | <ul style="list-style-type: none"> <li>• 12V~, 24V~, 12...24V~/12...36V≐ (°)</li> <li>±10% 50/60Hz</li> <li>• 115V~/230V~ ±10% 50/60Hz</li> </ul> | <ul style="list-style-type: none"> <li>• 12V~, 24V~, 12...24V~/12...36V≐ (°)</li> <li>±10% 50/60Hz</li> <li>• 115V~/230V~ ±10% 50/60Hz</li> </ul>                          |

\* selectable by parameter

(°) non-insulated power supply

## Wiring diagrams



# IC 917/PID (SSR)

PID 32x74 cold/hot thermostats



| Codes         | Description         | Probe*   | Power supply |
|---------------|---------------------|----------|--------------|
| IC12DIOTMD700 | IC 917/PID          | NTC/PTC  | 230V~        |
| IC12ZIOTMD700 | IC 917/PID          | TC/Pt100 | 230V~        |
| IC1RDIOTMD700 | IC 917/PID SSR      | NTC/PTC  | 230V~        |
| IC1RZIOTMD700 | IC 917/PID SSR      | TC/Pt100 | 230V~        |
| IC1TZIOTMD700 | IC 917/PID SSR/RELÈ | TC/Pt100 | 230V~        |

\* probe not included

## Applications

IC 917/PID controllers are electronic two-step devices, either dependent or independent, with ON/OFF action, PD, PID, Soft Start function and Autotuning.

## Common features

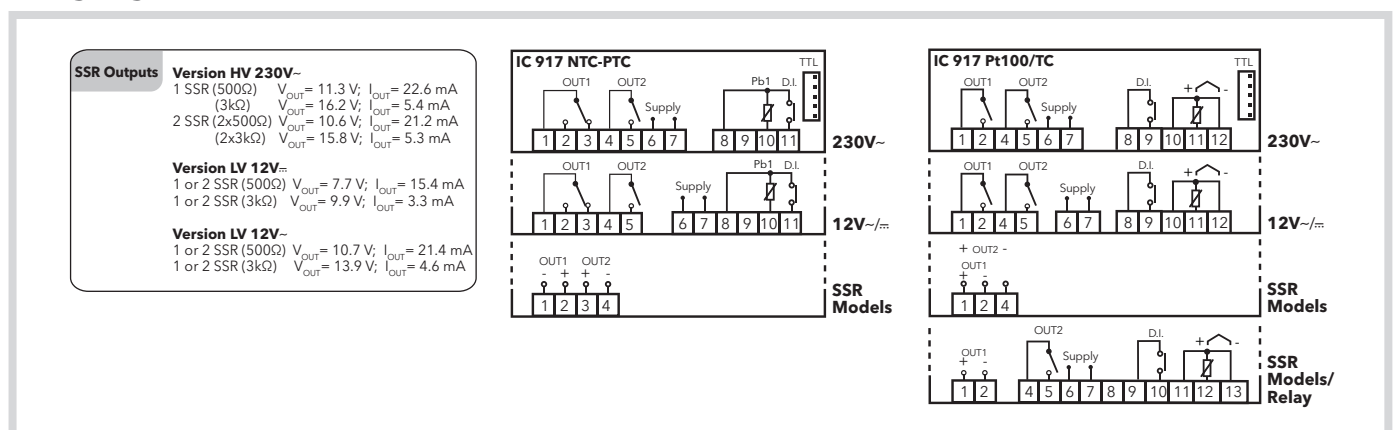
|                     |                                                                                                 |                                                   |                              |
|---------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|
| <b>Container</b>    | PC+ABS UL94 V-0 plastic resin casing, polycarbonate display window, thermoplastic resin buttons | <b>Operating temperature</b>                      | -5...55°C                    |
| <b>Dimensions</b>   | front panel 74x32 mm, depth 59 mm                                                               | <b>Storage Temperature</b>                        | -30...85°C                   |
| <b>Installation</b> | panel mounting with 71x29 mm (+0.2/-0.1 mm) drilling template                                   | <b>Ambient humidity for operation and storage</b> | 10...90% RH (non-condensing) |
|                     |                                                                                                 | <b>Soft Start Function</b>                        | present                      |

## Technical data

|                    | IC 917/PID NTC/PTC (SSR)                                                                                             | IC 917/PID TC/Pt100 (SSR)                                                                                                                                            |
|--------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display range:     | <ul style="list-style-type: none"> <li>• NTC probe: -50.0...110.0°C</li> <li>• PTC probe: -55.0...140.0°C</li> </ul> | <ul style="list-style-type: none"> <li>• Pt100 probe: -150...650°C</li> <li>• TcJ probe: -40...750°C</li> <li>• TcK probe: -40...1350°C</li> </ul>                   |
| Display:           | 3 and a half digits + sign                                                                                           | 3 and a half digits + sign                                                                                                                                           |
| Analogue inputs:   | 1 PTC or NTC *                                                                                                       | 1 Pt100 or 1 TcJ/TcK*                                                                                                                                                |
| Digital inputs:    | 1 clean contact at extra low safety voltage                                                                          | 1 clean contact at extra low safety voltage                                                                                                                          |
| Connections:       | TTL port for connection to Copy Card                                                                                 | TTL port for connection to Copy Card                                                                                                                                 |
| Digital outputs:   | 1 SPDT 8(3)A 1/2hp 250 V~ • 1 SPST 8(3)A 1/2hp 250 V~<br><b>SSR models: please see wiring diagram</b>                | 2 SPST 8(3)A 1/2hp 250 V~<br><b>SSR models: please see wiring diagram</b>                                                                                            |
| Measurement range: | from -55 to 140°C                                                                                                    | from -150 to 1350°C                                                                                                                                                  |
| Accuracy:          | better than 0.5% of end of scale+1 digit                                                                             | Pt100: 0.5% for whole scale + 1 digit, 0.2% from -150 to 300°C<br>TcJ: 0.4% for whole scale + 1 digit<br>TcK: 0.5% for whole scale + 1 digit, 0.3% from -40 to 800°C |
| Resolution:        | 0.1°C (0.1°F) up to 199.9°C, 1°C (1°F) over                                                                          | Pt100: 0.1°C (0.1°F) up to 199.9°C, 1°C (1°F) over<br>TcJ: 0.1°C (0.1°F) up to 199.9°C, (1°F) over<br>TcK: 0.1°C (0.1°F)                                             |
| Power consumption: | <ul style="list-style-type: none"> <li>• 1.5W for 12 V~ model</li> <li>• 3W for 230 V~ model</li> </ul>              | <ul style="list-style-type: none"> <li>• 1.5W for 12 V~ model</li> <li>• 3W for 230 V~ model</li> </ul>                                                              |
| Power supply:      | <ul style="list-style-type: none"> <li>• 12 V~/~ ±10% 50/60 Hz</li> <li>• 230 V~ ±10% 50/60 Hz</li> </ul>            | <ul style="list-style-type: none"> <li>• 12 V~/~ ±10% 50/60 Hz</li> <li>• 230 V~ ±10% 50/60 Hz</li> </ul>                                                            |
| Alarm:             | optional                                                                                                             | optional                                                                                                                                                             |

\*(selectable by parameter)

## Wiring diagrams



# EMPlus 600

Temperature, humidity, pressure indicators



| Codes         | Description            | Probe*           | Power supply |
|---------------|------------------------|------------------|--------------|
| EMP60D0350000 | EMPlus 600 NTC-PTC     | NTC/PTC          | 12V~/~       |
| EMP60D0450000 | EMPlus 600 NTC-PTC     | NTC/PTC          | 12...24V~/~  |
| EMP60D0750000 | EMPlus 600 NTC-PTC     | NTC/PTC          | 230V~        |
| EMP60P0350000 | EMPlus 600 Pt100/TcJ-K | Pt100/TC         | 12V~/~       |
| EMP60P0450000 | EMPlus 600 Pt100/TcJ-K | Pt100/TC         | 12...24V~/~  |
| EMP60P0750000 | EMPlus 600 Pt100/TcJ-K | Pt100/TC         | 230V~        |
| EMP60I0350000 | EMPlus 600 V-I         | 4...20mA/0...10V | 12V~/~       |
| EMP60I0750000 | EMPlus 600 V-I         | 4...20mA/0...10V | 230V~        |

\*selectable by parameter

## Applications

The EMPlus 600 is a device for measuring temperature, humidity and pressure in commercial refrigeration and industrial applications

## Common features

|                     |                                                                                                 |                                                   |                              |
|---------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|
| <b>Container</b>    | PC+ABS UL94 V-0 plastic resin casing, polycarbonate display window, thermoplastic resin buttons | <b>Operating temperature</b>                      | -5...55°C                    |
| <b>Dimensions</b>   | front panel 74x32mm, depth 59mm                                                                 | <b>Storage temperature</b>                        | -30...85°C                   |
| <b>Installation</b> | panel mounting with 71x29mm (+0.2/-0.1mm) drilling template                                     | <b>Ambient humidity for operation and storage</b> | 10...90% RH (non-condensing) |

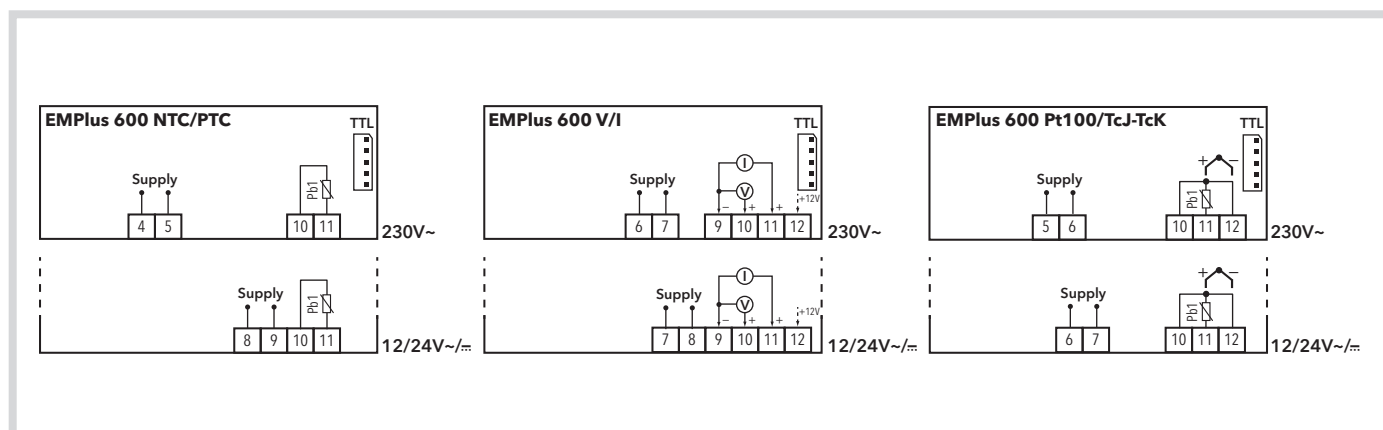
## Technical data

|                    | EMPlus 600 NTC/PTC                                                                                                                       | EMPlus 600 V/I                                                                                                                           | EMPlus 600 TC/Pt100                                                                                                                                                  |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display range:     | <ul style="list-style-type: none"> <li>• NTC probe: -50.0...110.0°C</li> <li>• PTC probe: -50.0...140.0°C</li> </ul>                     | <ul style="list-style-type: none"> <li>• -199...199 *</li> <li>• -199.9...199.9 *</li> <li>• -1999...1999 *</li> </ul>                   | <ul style="list-style-type: none"> <li>• Pt100 probe: -150...650°C</li> <li>• TcJ probe: -40...750°C</li> <li>• TcK probe: -40...1350°C</li> </ul>                   |
| Display:           | no decimal point *<br>3 and a half digits + sign                                                                                         | no decimal point *<br>3 and a half digits + sign                                                                                         | no decimal point *<br>3 and a half digits + sign                                                                                                                     |
| Analogue inputs:   | 1 PTC or NTC *                                                                                                                           | 1 V-I (0...1V, 0...5V, 0...10V, 0...20mA, 4...20mA)*                                                                                     | 1 Pt100 or 1 TcJ/TcK                                                                                                                                                 |
| Connections:       | TTL port for connection to USB Uni-card, TelevisSystem and systems with ModBus protocol                                                  | TTL port for connection to USB Uni-card, TelevisSystem and systems with ModBus protocol                                                  | TTL port for connection to USB Uni-card, TelevisSystem and systems with ModBus protocol                                                                              |
| Measurement range: | from -50 to 140                                                                                                                          | from -999 to 1000                                                                                                                        | from -150 to 1350                                                                                                                                                    |
| Accuracy:          | better than 0.5% of end of scale +1 digit                                                                                                | better than 0.5% of end of scale +1 digit                                                                                                | Pt100: 0.5% for whole scale + 1 digit, 0.2% from -150 to 300°C<br>TcJ: 0.4% for whole scale + 1 digit<br>TcK: 0.5% for whole scale + 1 digit, 0.3% from -40 to 800°C |
| Resolution:        | 0.1 or 1°C                                                                                                                               | 0.1 or 1°C                                                                                                                               | Pt100: 0.1°C (0.1°F) up to 199.9°C, 1°C (1°F) over<br>TcJ: 0.1°C (0.1°F) up to 199.9°C, 1°C (1°F) over<br>TcK: 0.1°C (0.1°F)                                         |
| Power consumption: | <ul style="list-style-type: none"> <li>• 3W for 12...24V~ model</li> <li>• 3W for 230V~ model</li> </ul>                                 | <ul style="list-style-type: none"> <li>• 3W for 12...24V~ model</li> <li>• 3W for 230V~ model</li> </ul>                                 | <ul style="list-style-type: none"> <li>• 3W for 12...24V~ model</li> <li>• 3W for 230V~ model</li> </ul>                                                             |
| Power supply:      | <ul style="list-style-type: none"> <li>• 12V~, 24V~, 12...24V~/12...36V~ (*) ±10% 50/60Hz</li> <li>• 115V~/230V~ ±10% 50/60Hz</li> </ul> | <ul style="list-style-type: none"> <li>• 12V~, 24V~, 12...24V~/12...36V~ (*) ±10% 50/60Hz</li> <li>• 115V~/230V~ ±10% 50/60Hz</li> </ul> | <ul style="list-style-type: none"> <li>• 12V~, 24V~, 12...24V~/12...36V~ (*) ±10% 50/60Hz</li> <li>• 115V~/230V~ ±10% 50/60Hz</li> </ul>                             |

\* selectable by parameter

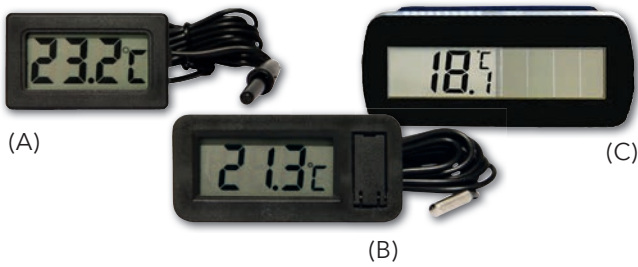
(\*) non-insulated power supply

## Wiring diagrams



# EWTL 300 - EWTL 310 - DST-30

## LCD thermometers



| Codes             | Description           | Probe cable length |
|-------------------|-----------------------|--------------------|
| <b>T1M1BT0107</b> | (A) EWTL 300          | 1,5m               |
| <b>T1M1BT0109</b> | (B) EWTL 310          | 1,5m               |
| <b>T1M1BT0105</b> | (C) DST-30            | 1m                 |
| <b>AT111120</b>   | EWTL300 32x64 Adapter |                    |

### Applications

The EWTL 300/310 is a range of LCD digital temperature gauges with temperature probes connected to the instrument via a cable of length 1.5, 2 or 3 metres. AN adapter that allows to replace 32x64 mm front tools (with 24.5x58 template hole mm) with the EWTL 300 thermometer is available. DST-30 is a solar-cell thermometer specifically designed for refrigerated counters and display units.

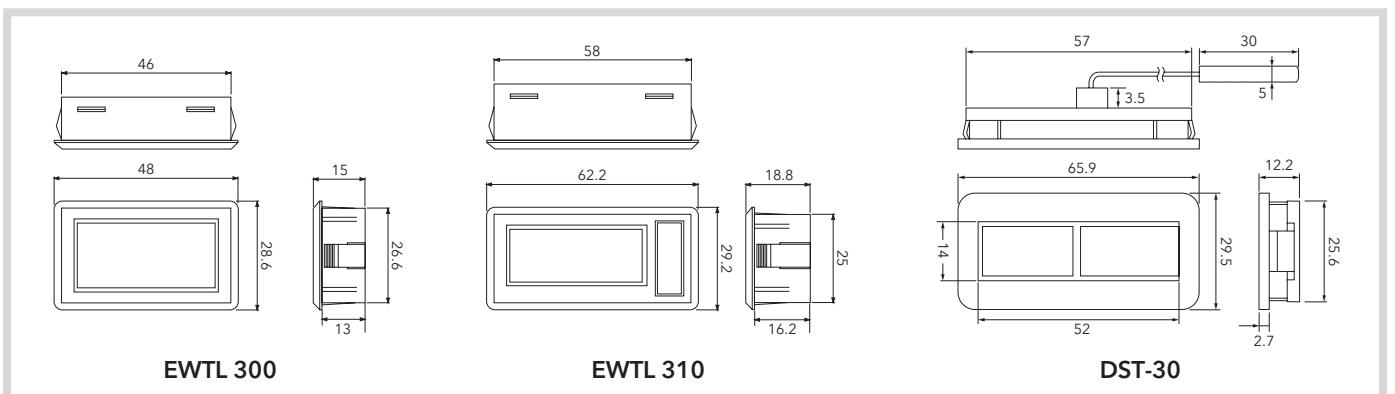
### Common features

**Installation** panel-mounted

### Technical data

|                    | EWTL 300                                                    | EWTL 310                                                  | DST-30                                   |
|--------------------|-------------------------------------------------------------|-----------------------------------------------------------|------------------------------------------|
| Display:           | LCD with 2 and 1/2 digits                                   | LCD with 2 and 1/2 digits                                 | 24x14mm LCD                              |
| Resolution:        | 0.1 °C                                                      | 0,1 °C (1°C <20°C)                                        | 0.1°C                                    |
| Accuracy:          | ±1°C                                                        | ±1°C                                                      | ±1°C                                     |
| Probe:             | connected to instrument, cable length 1.5m                  | connected to instrument, cable length 1.5m                | connected to instrument, cable length 1m |
| Display refresh:   | 10 seconds                                                  | 12 seconds                                                |                                          |
| Display range:     | -50...70°C (-58...158 °F)                                   | -50...70°C (-58...158 °F)                                 | -20...80°C                               |
| Dimensions:        | front panel 48x28.6 mm<br>depth 13 mm                       | front panel 62.2x29.2 mm<br>depth 16.2 mm                 | front panel 66x30 mm<br>depth 11.6 mm    |
| Mounting:          | 46x26.6 mm                                                  | 58x25 mm                                                  | 57x25.6 mm                               |
| Power supply:      | two 1.5V LR 44 batteries or equivalent - duration 12 months | one 1.5V LR 44 battery or equivalent - duration 12 months | integrated solar cells                   |
| Protection rating: |                                                             |                                                           | IP68                                     |

### Dimensions



# EWTS 950 LX - EWTS 990 LX

32x74 timers and counters



| Codes         | Description | Power supply |
|---------------|-------------|--------------|
| ET01010XTT700 | EWTS 950 LX | 230 V~       |
| ET02010XTT700 | EWTS 990 LX | 230 V~       |

## Applications

The Eliwell series of digital timers are the ideal measuring solution for use in commercial refrigeration and light industry. The range, which consists of 2 different models, can be used in all applications requiring precision control of processing stages and the management of functions linked to preset time intervals.

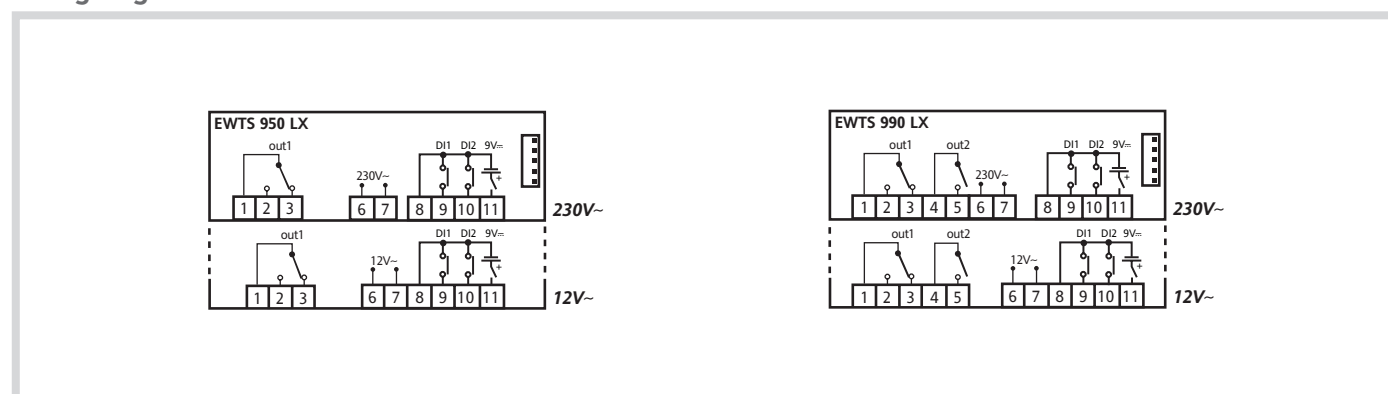
## Common features

|                     |                                                                                                 |                                                   |                              |
|---------------------|-------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|
| <b>Container</b>    | PC+ABS UL94 V-0 plastic resin casing, polycarbonate display window, thermoplastic resin buttons | <b>Operating temperature</b>                      | -5...55°C                    |
| <b>Dimensions</b>   | front panel 32x74 mm, depth 59 mm                                                               | <b>Storage Temperature</b>                        | -30...85°C                   |
| <b>Installation</b> | panel mounting with 71x29 mm (+0.2/-0.1 mm) drilling template                                   | <b>Ambient humidity for operation and storage</b> | 10...90% RH (non-condensing) |

## Technical data

|                    | EWTS 950 LX                                                                                                                                                                                                              | EWTS 990 LX                                                                                                                                                                                                              |
|--------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display range:     | 9999 hours / 99 hours and 59 minutes / 99 minutes and 59 seconds / 99 seconds and 99 hundredths of a second                                                                                                              | 9999 hours / 99 hours and 59 minutes / 99 minutes and 59 seconds / 99 seconds and 99 hundredths of a second                                                                                                              |
| Display:           | no decimal point * 4 digits + sign                                                                                                                                                                                       | no decimal point * 4 digits + sign                                                                                                                                                                                       |
| Digital inputs:    | 2 clean contacts at extra low safety voltage                                                                                                                                                                             | 2 clean contacts at extra low safety voltage                                                                                                                                                                             |
| Connections:       | TTL port for connection to Copy Card and Televis <b>System</b>                                                                                                                                                           | TTL port for connection to Copy Card and Televis <b>System</b>                                                                                                                                                           |
| Digital outputs:   | 1 SPDT 8(3)A 1/2hp 250 V~                                                                                                                                                                                                | 1 SPDT 8(3)A 1/2hp 250 V~<br>1 SPST 8(3)A 1/2hp 250 V~                                                                                                                                                                   |
| Accuracy:          | 3.6 sec/h                                                                                                                                                                                                                | 3.6 sec/h                                                                                                                                                                                                                |
| Power consumption: | 3 VA max                                                                                                                                                                                                                 | 3 VA max                                                                                                                                                                                                                 |
| Power supply:      | 12 V~/= or 230 V~ ±10% 50/60 Hz                                                                                                                                                                                          | 12 V~/= or 230 V~ ±10% 50/60 Hz                                                                                                                                                                                          |
| External battery:  | <ul style="list-style-type: none"> <li>power supply 9 V=</li> <li>battery duration: based on model, with 9 V=/10 mA/h battery duration 1h</li> <li>instrument absorption with power supply from 10 mA battery</li> </ul> | <ul style="list-style-type: none"> <li>power supply 9 V=</li> <li>battery duration: based on model, with 9 V=/10 mA/h battery duration 1h</li> <li>instrument absorption with power supply from 10 mA battery</li> </ul> |

## Wiring diagrams



# DR4020

Universal DIN controllers



| Codes         | Description | Probe*   | Power supply |
|---------------|-------------|----------|--------------|
| E4D12E00BH710 | DR4020      | Pt100    | 100...240V~  |
| E4D12A00BD710 | DR4020      | TCJ      | 100...240V~  |
| E4D12I00BN710 | DR4020      | 4...20mA | 100...240V~  |
| E4D12N00BH710 | DR4020      | NTC      | 100...240V~  |
| E4D12V00BN710 | DR4020      | 0...5V   | 100...240V~  |
| E4D12E00BH410 | DR4020      | Pt100    | 12...24V~/=  |
| E4D12A00BD410 | DR4020      | TCJ      | 12...24V~/=  |
| E4D12I00BN410 | DR4020      | 4...20mA | 12...24V~/=  |
| E4D12N00BH410 | DR4020      | NTC      | 12...24V~/=  |
| E4D12V00BN410 | DR4020      | 0...5V   | 12...24V~/=  |

\* probe not included

## Applications

The new Eliwell thermoregulators in the Universal Controller series are ideal for all industrial applications requiring high precision temperature control.

## Common features

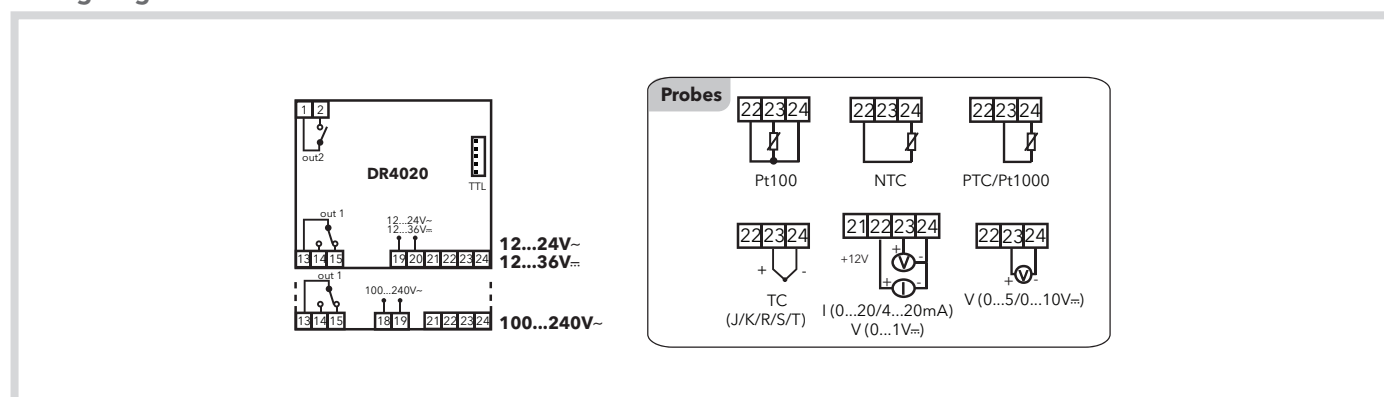
|                     |                                                                                       |                                                   |                              |
|---------------------|---------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|
| <b>Container</b>    | plastic casing with 4 DIN modules                                                     | <b>Operating temperature</b>                      | -5...55°C                    |
| <b>Dimensions</b>   | front panel 70x85 mm, depth 61 mm                                                     | <b>Storage Temperature</b>                        | -20...85°C                   |
| <b>Installation</b> | on DIN rail (Omega) or panel mounting, with 70x45 mm (+0.2/-0.1 mm) drilling template | <b>Ambient humidity for operation and storage</b> | 10...90% RH (non-condensing) |

## Technical data

|                    | DR4020                                                                                                                    |
|--------------------|---------------------------------------------------------------------------------------------------------------------------|
| Display:           | no decimal point *<br>2 4-digit displays + sign                                                                           |
| Analogue inputs:   | 1 input* (see Probes table)                                                                                               |
| Digital inputs:    | not available                                                                                                             |
| Connections:       | TTL port for connection to Copy Card and Unicard                                                                          |
| Digital outputs:   | 1 SPDT 8(3)A 250 V~<br>1 SPST 8(3)A 250 V~                                                                                |
| Analogue output:   | not available                                                                                                             |
| Measurement range: | according to probe used                                                                                                   |
| Accuracy:          | according to probe used                                                                                                   |
| Resolution:        | according to probe used                                                                                                   |
| Power consumption: | 4W max                                                                                                                    |
| Power supply:      | <ul style="list-style-type: none"> <li>12...24 V~/12...36 V= ±10% 50/60 Hz</li> <li>100...240 V~ ±10% 50/60 Hz</li> </ul> |

\*(selectable by parameter)

## Wiring diagrams



# DR4022

Universal DIN controllers with serial port



| Codes                | Description | Probe* | Power supply |
|----------------------|-------------|--------|--------------|
| <b>E4D12EASBH710</b> | DR4022      | Pt100  | 100...240V~  |
| <b>E4D12NASBH710</b> | DR4022      | NTC    | 100...240V~  |
| <b>E4D12AASBD710</b> | DR4022      | TCJ    | 100...240V~  |
| <b>E4D12IASBN710</b> | DR4022      | 4/20ma | 100...240V~  |
| <b>E4D12VASBN410</b> | DR4022      | 0...5V | 12...24V~/=  |

\* probe not included

## Applications

The new Eliwell thermoregulators in the Universal Controller series are ideal for all industrial applications requiring high precision temperature control.

## Common features

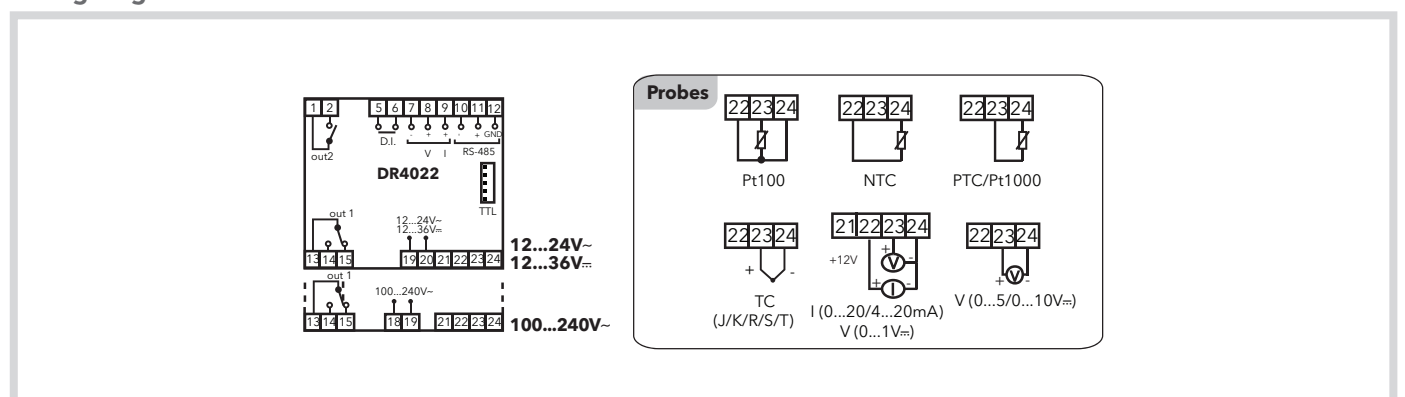
|                     |                                                                                       |                                                   |                              |
|---------------------|---------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|
| <b>Container</b>    | plastic casing with 4 DIN modules                                                     | <b>Operating temperature</b>                      | -5...55°C                    |
| <b>Dimensions</b>   | front panel 70x85 mm, depth 61 mm                                                     | <b>Storage Temperature</b>                        | -20...85°C                   |
| <b>Installation</b> | on DIN rail (Omega) or panel mounting, with 70x45 mm (+0.2/-0.1 mm) drilling template | <b>Ambient humidity for operation and storage</b> | 10...90% RH (non-condensing) |

## Technical data

|                    | DR4022                                                                                                                        |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------|
| Display:           | no decimal point *<br>2 4-digit displays + sign                                                                               |
| Analogue inputs:   | 1 input* (see Probes table)                                                                                                   |
| Digital inputs:    | 1 clean contact at extra low safety voltage                                                                                   |
| Connections:       | TTL port and internal RS-485 for connection to Copy Card, Unicard, TelevisSystem and ModBus protocol systems                  |
| Digital outputs:   | 1 SPDT 8(3)A 250 V~<br>1 SPST 8(3)A 250 V~                                                                                    |
| Analogue output:   | V-I: 0...1 V, 0...5 V, 0...10 V / 0...20 mA, 4...20 mA                                                                        |
| Measurement range: | according to probe used                                                                                                       |
| Accuracy:          | according to probe used                                                                                                       |
| Resolution:        | according to probe used                                                                                                       |
| Power consumption: | 4W max                                                                                                                        |
| Power supply:      | <ul style="list-style-type: none"> <li>• 12...24 V~/12...36 V= ±10% 50/60 Hz</li> <li>• 100...240 V~ ±10% 50/60 Hz</li> </ul> |

\*(selectable by parameter)

## Wiring diagrams



# EW 4820 (SSR)

Universal 48x48 controllers



| Codes                | Description       | Probe*   | Power supply |
|----------------------|-------------------|----------|--------------|
| <b>E481BIOXBH700</b> | EW4820            | 4...20mA | 100...240V~  |
| <b>E481SIOXBN700</b> | EW4820 SSR Output | 4...20mA | 100...240V~  |
| <b>E481BP0PMH700</b> | EW4820            | Pt100    | 100...240V~  |
| <b>E481SP0PMH700</b> | EW4820 SSR Output | Pt100    | 100...240V~  |
| <b>E481BP0PMH400</b> | EW4820            | Pt100    | 12...24V~/±  |
| <b>E481SP0PMH400</b> | EW4820 SSR Output | Pt100    | 12...24V~/±  |

\*probe not included

## Applications

The Eliwell thermoregulators in the Universal Controller series are ideal for all industrial applications requiring high precision temperature control, ranging from the moulding of plastic materials and packaging, to raw material transformation process control.

## Common features

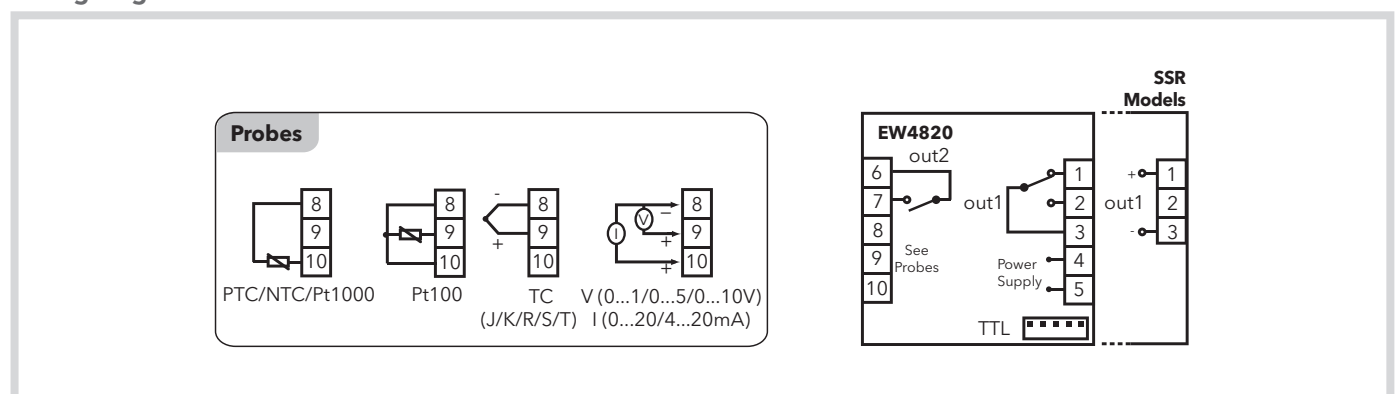
|                     |                                                                                    |                                                   |                              |
|---------------------|------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|
| <b>Container</b>    | PC+ABS UL94 V-0 resin plastic casing, switch keys with adhesive polycarbonate film | <b>Operating temperature</b>                      | -5...55°C                    |
| <b>Dimensions</b>   | front panel 48x48 mm, depth 113 mm                                                 | <b>Storage Temperature</b>                        | -20...85°C                   |
| <b>Installation</b> | panel-mounting, with 45x45 mm (+0.2/-0.1 mm) drilling template                     | <b>Ambient humidity for operation and storage</b> | 10...90% RH (non-condensing) |

## Technical data

|                                      | EW 4820 (SSR)                                                                                                                                                                                                        |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Display:                             | no decimal point *<br>2 4-digit displays + sign                                                                                                                                                                      |
| Analogue inputs:                     | 1 input* (see Probes table)                                                                                                                                                                                          |
| Digital inputs:                      | not available                                                                                                                                                                                                        |
| Connections:                         | TTL port for connection to Copy Card or TelevisSystem                                                                                                                                                                |
| Digital outputs:                     | 1 SPDT 3A 250 V~<br>1 SPST 2A 250 V~                                                                                                                                                                                 |
| <b>Digital outputs - SSR models:</b> | <b>Vout = 0...12 V~/ Imax = 0...15 mA / Vmin = 7.5 V</b><br><b>1 SPST 2A 250 V~</b>                                                                                                                                  |
| Analogue output:                     | not available                                                                                                                                                                                                        |
| Measurement range:                   | according to probe used                                                                                                                                                                                              |
| Accuracy:                            | according to probe used                                                                                                                                                                                              |
| Resolution:                          | according to probe used                                                                                                                                                                                              |
| Power consumption:                   | <ul style="list-style-type: none"> <li>• 2.45W 12...24 V~/12...36 V~/model</li> <li>• 2.40W for 100...240 V~/model</li> <li>• 12...24 V~/12...36 V~/ ±10% 50/60 Hz</li> <li>• 100...240 V~/ ±10% 50/60 Hz</li> </ul> |
| Power supply:                        |                                                                                                                                                                                                                      |

\*(selectable by parameter)

## Wiring diagrams





# EW4822 (SSR)

Universal 48x48 controllers with serial port



| Codici        | Descr.                        | Sonda* | Alim.                |
|---------------|-------------------------------|--------|----------------------|
| E481BI5BH700  | EW4822 AO 4...20mA            |        | 4...20mA 100...240V~ |
| E481BPIQMH700 | EW4822 AO 0...20mA            | Pt100  | 100...240V~          |
| E481BPVQMH700 | EW4822 AO 0/10V               | Pt100  | 100...240V~          |
| E481SPIQMH700 | EW4822 AO 0...20mA SSR Output | Pt100  | 100...240V~          |
| E481BPIQMH400 | EW4822 AO 0...20mA            | Pt100  | 12...24V~/=          |
| E481SPIQMH400 | EW4822 AO 0...20mA SSR Output | Pt100  | 12...24V~/=          |

\*probe not included

## Applications

The Eliwell thermoregulators in the Universal Controller series are ideal for all industrial applications requiring high precision temperature control.

## Common features

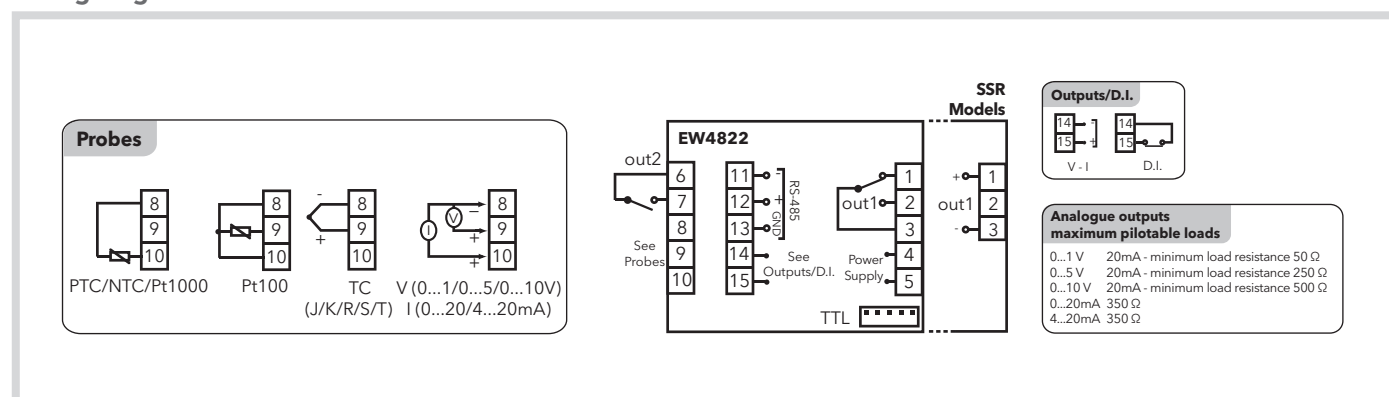
|                     |                                                                                    |                                                   |                              |
|---------------------|------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|
| <b>Container</b>    | PC+ABS UL94 V-0 resin plastic casing, switch keys with adhesive polycarbonate film | <b>Operating temperature</b>                      | -5...55°C                    |
| <b>Dimensions</b>   | front panel 48x48 mm, depth 113 mm                                                 | <b>Storage Temperature</b>                        | -20...85°C                   |
| <b>Installation</b> | panel-mounting, with 45x45 mm (+0.2/-0.1 mm) drilling template                     | <b>Ambient humidity for operation and storage</b> | 10...90% RH (non-condensing) |

## Technical data

|                                      | EW4822 (SSR)                                                                                                                      |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------|
| Display:                             | no decimal point *<br>2 4-digit displays + sign                                                                                   |
| Analogue inputs:                     | 1 input* (see Probes table)                                                                                                       |
| Digital inputs:                      | 1 clean contact at extra low safety voltage                                                                                       |
| Connections:                         | TTL port for connection to Copy Card or TelevisSystem + internal RS-485 for connection to systems with ModBus protocol            |
| Digital outputs:                     | 1 SPDT 3A 250 V~<br>1 SPST 2A 250 V~                                                                                              |
| <b>Digital outputs - SSR models:</b> | <b>Vout = 0...12 V~/ Imax = 0...15 mA / Vmin = 7.5 V</b><br><b>1 SPST 2A 250 V~</b>                                               |
| Analogue output:                     | V: 0...1 V, 0...5 V, 0...10 V or I: 0...20 mA, 4...20 mA<br>maximum pilotable loads: please see wiring diagrams                   |
| Measurement range:                   | according to probe used                                                                                                           |
| Accuracy:                            | according to probe used                                                                                                           |
| Resolution:                          | according to probe used                                                                                                           |
| Power consumption:                   | <ul style="list-style-type: none"> <li>• 2.80W for 12...24 V~/12...36 V= model</li> <li>• 2.60W for 100...240 V~ model</li> </ul> |
| Power supply:                        | <ul style="list-style-type: none"> <li>• 12...24 V~/12...36 V= ±10% 50/60 Hz</li> <li>• 100...240 V~ ±10% 50/60 Hz</li> </ul>     |

\*(selectable by parameter)

## Wiring diagrams



# EW7210 - EW7220

Universal 72x72 controllers



| Codes         | Description | Probe*         | Power supply |
|---------------|-------------|----------------|--------------|
| E7211A0XHD700 | EW7210      | TC             | 100...240V~  |
| E7211E0XHD700 | EW7210      | Pt100          | 100...240V~  |
| E7211N0XHD700 | EW7210      | NTC            | 100...240V~  |
| E7211A0XHD400 | EW7210      | TC             | 12...24V~/=  |
| E7211E0XHD400 | EW7210      | Pt100          | 12...24V~/=  |
| E7211N0XHD400 | EW7210      | NTC            | 12...24V~/=  |
| E7212E0XBH700 | EW7220      | Pt100          | 100...240V~  |
| E7212A0XBD700 | EW7220      | TC             | 100...240V~  |
| E7212I0XBH700 | EW7220      | V/I            | 100...240V~  |
| E7212N0XBD700 | EW7220      | NTC/PTC/Pt1000 | 100...240V~  |
| E7212E0XBH400 | EW7220      | Pt100          | 12...24V~/=  |
| E7212A0XBD400 | EW7220      | TC             | 12...24V~/=  |
| E7212I0XBH400 | EW7220      | V/I            | 12...24V~/=  |
| E7212N0XBD400 | EW7220      | NTC/PTC/Pt1000 | 12...24V~/=  |

\* probe not included

## Applications

The Eliwell thermoregulators in the Universal Controller series are ideal for all industrial applications requiring high precision temperature control.

## Common features

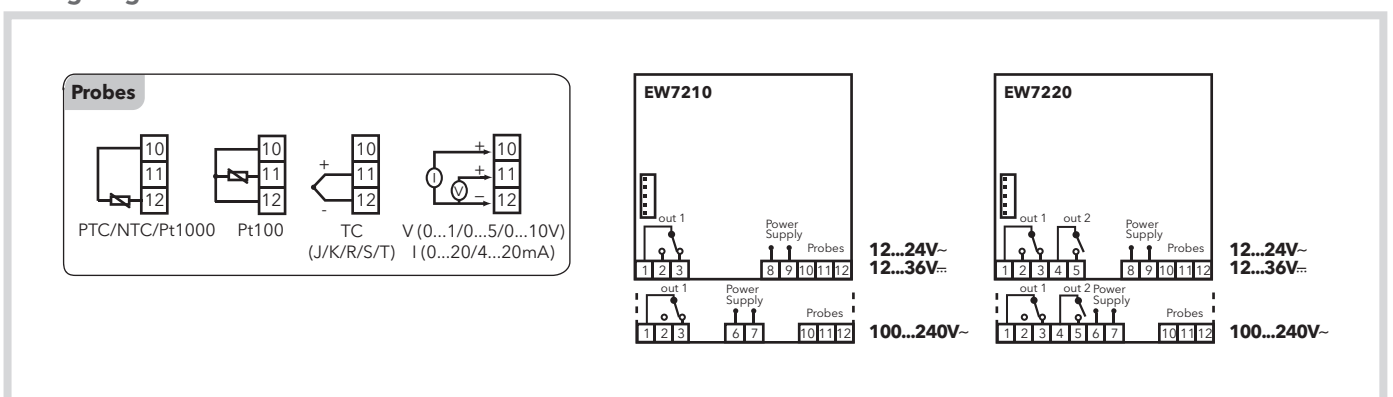
|                     |                                                                                    |                                                   |                              |
|---------------------|------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|
| <b>Container</b>    | PC+ABS UL94 V-0 resin plastic casing, switch keys with adhesive polycarbonate film | <b>Operating temperature</b>                      | -5...55°C                    |
| <b>Dimensions</b>   | front panel 72x72 mm, depth 80 mm                                                  | <b>Storage Temperature</b>                        | -20...85°C                   |
| <b>Installation</b> | panel mounting with 67x67 mm (+0.2/-0.1 mm) drilling template                      | <b>Ambient humidity for operation and storage</b> | 10...90% RH (non-condensing) |

## Technical data

|                    | EW7210                                                                                                               | EW7220                                                                                                               |
|--------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Display:           | no decimal point *<br>2 4-digit displays + sign                                                                      | no decimal point *<br>2 4-digit displays + sign                                                                      |
| Analogue inputs:   | 1 input*(see Probes table)                                                                                           | 1 input*(see Probes table)                                                                                           |
| Digital inputs:    | not available                                                                                                        | not available                                                                                                        |
| Connections:       | TTL port for connection to Copy Card, TelevisSystem or systems with ModBus protocol                                  | TTL port for connection to Copy Card, TelevisSystem or systems with ModBus protocol                                  |
| Digital outputs:   | 1 SPDT 8(3)A 250V~                                                                                                   | 1 SPDT 8(3)A 250V~<br>1 SPST 8(3)A 250V~                                                                             |
| Analogue output:   | not available                                                                                                        | non disponibile                                                                                                      |
| Measurement range: | according to probe used                                                                                              | according to probe used                                                                                              |
| Accuracy:          | according to probe used                                                                                              | according to probe used                                                                                              |
| Resolution:        | according to probe used                                                                                              | according to probe used                                                                                              |
| Power consumption: | 4W max                                                                                                               | 4W max                                                                                                               |
| Power supply:      | <ul style="list-style-type: none"> <li>12...24V~/12...36V= ±10% 50/60Hz</li> <li>100...240V~ ±10% 50/60Hz</li> </ul> | <ul style="list-style-type: none"> <li>12...24V~/12...36V= ±10% 50/60Hz</li> <li>100...240V~ ±10% 50/60Hz</li> </ul> |

\*(selectable by parameter)

## Wiring diagrams



# EW7221 - EW7222

Universal 72x72 controllers with serial port



| Codes                | Description          | Probe*                  | Power supply |
|----------------------|----------------------|-------------------------|--------------|
| <b>E7213PAXBH700</b> | EW7221 Univ.         | Pt100                   | 100...240V~  |
| <b>E7213IAXBH700</b> | EW7221               | 4...20mA                | 100...240V~  |
| <b>E7213PAXBH700</b> | EW7221 Univ. - RS485 | Pt100                   | 100...240V~  |
| <b>E7213PAXBH400</b> | EW7221 Univ.         | Pt100                   | 12...24V~/-  |
| <b>E7213PASBH700</b> | EW7222 Univ.-RS485   | Pt100/TC/PTC/NTC/Pt1000 | 100...240V~  |
| <b>E7213IASBH700</b> | EW7222               | Pt100/V/I               | 100...240V~  |
| <b>E7213PASBH400</b> | EW7222 Univ.-RS485   | Pt100/TC/PTC/NTC/Pt1000 | 12...24V~/-  |

\* probe not included

## Applications

The Eliwell thermoregulators in the Universal Controller series are ideal for all industrial applications requiring high precision temperature control.

## Common features

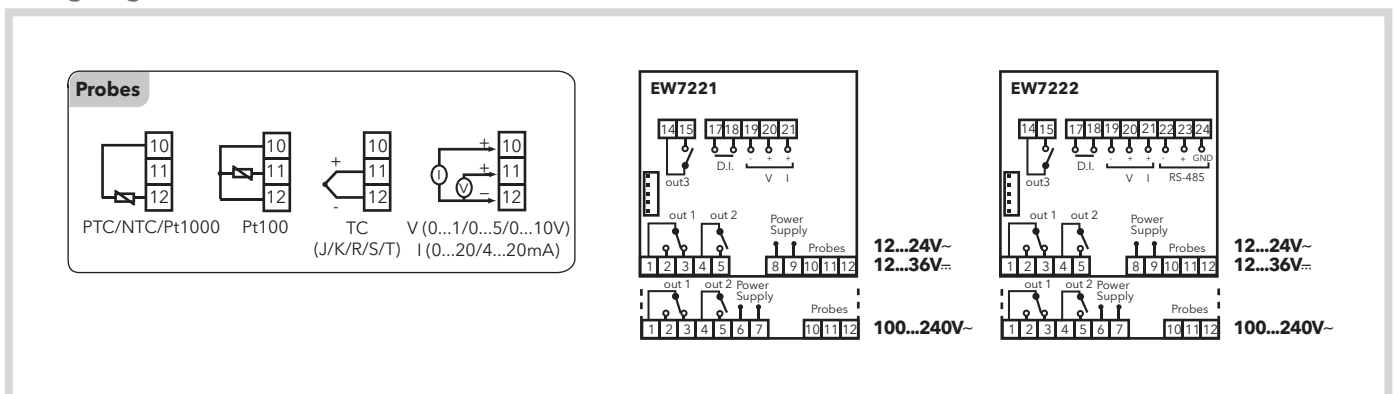
|                     |                                                                                    |                                                   |                              |
|---------------------|------------------------------------------------------------------------------------|---------------------------------------------------|------------------------------|
| <b>Container</b>    | PC+ABS UL94 V-0 resin plastic casing, switch keys with adhesive polycarbonate film | <b>Operating temperature</b>                      | -5...55°C                    |
| <b>Dimensions</b>   | front panel 72x72 mm, depth 80 mm                                                  | <b>Storage Temperature</b>                        | -20...85°C                   |
| <b>Installation</b> | panel mounting with 67x67 mm (+0.2/-0.1 mm) drilling template                      | <b>Ambient humidity for operation and storage</b> | 10...90% RH (non-condensing) |

## Technical data

|                    | EW7221                                                                                                               | EW7222                                                                                                               |
|--------------------|----------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| Display:           | no decimal point *<br>2 4-digit displays + sign                                                                      | no decimal point *<br>2 4-digit displays + sign                                                                      |
| Analogue inputs:   | 1 input* (see Probes table)                                                                                          | 1 input* (see Probes table)                                                                                          |
| Digital inputs:    | 1 clean contact at extra low safety voltage                                                                          | 1 clean contact at extra low safety voltage                                                                          |
| Connections:       | TTL port for connection to Copy Card, Televis <b>System</b> or systems with ModBus protocol                          | TTL port and internal RS-485 for connection to Copy Card, Televis <b>System</b> or systems with ModBus protocol      |
| Digital outputs:   | 1 SPDT 8(3)A 250V~<br>1 SPST 8(3)A 250V~<br>1 SPST 5A 250V~                                                          | 1 SPDT 8(3)A 250V~<br>1 SPST 8(3)A 250V~<br>1 SPST 5A 250V~                                                          |
| Analogue output:   | V-I: 0...1V, 0...5V, 0...10V / 0...20mA, 4...20mA                                                                    | V-I: 0...1V, 0...5V, 0...10V / 0...20mA, 4...20mA                                                                    |
| Measurement range: | according to probe used                                                                                              | according to probe used                                                                                              |
| Accuracy:          | according to probe used                                                                                              | according to probe used                                                                                              |
| Resolution:        | according to probe used                                                                                              | according to probe used                                                                                              |
| Power consumption: | 4W max                                                                                                               | 4W max                                                                                                               |
| Power supply:      | <ul style="list-style-type: none"> <li>12...24V~/12...36V= ±10% 50/60Hz</li> <li>100...240V~ ±10% 50/60Hz</li> </ul> | <ul style="list-style-type: none"> <li>12...24V~/12...36V= ±10% 50/60Hz</li> <li>100...240V~ ±10% 50/60Hz</li> </ul> |

\*(selectable by parameter)

## Wiring diagrams



# FREE Way

## Programmable platform



### Applications

Eliwell's new programmable platform

**FREE Way:** Eliwell's new approach to programmability, giving customers the tools to find their own faster and more effective solutions.

**FREE Way** is the new programmable platform from Eliwell, consisting of the **FREE Studio** software suite, **FREE Smart**, **FREE Panel** and **FREE Evolution**, the new range of programmable controllers available in various formats to choose from.

The simple and flexible **FREE Studio** software suite is compatible with the 5 standard programming languages (**IEC61131-3**), and is structured to manage a whole range of controllers of different sizes and with varying levels of complexity, in order to fully satisfy the customer's system customization requirements.

#### FREE Smart features

- User interface with configurable keys
- Available in three formats
  - **FREE Smart SMP\*** 32x74mm
  - **FREE Smart SMD\*** 4 Din with LED display
  - **FREE Smart SMC\*** 4 Din with no display
- \* Electrical connections compatible with existing Eliwell product platforms (e.g. Energy Flex); versions available 100...240V~
- Can be connected to RS-485, Modbus RTU
- Can be connected to standard Eliwell peripherals and user interfaces

#### FREE Panel features

- **FREE Panel EVP** system controller, with gateway functions and backlit LCD graphic display
- High connectivity: integrates into industrial systems and BMS
- Connects to standard Eliwell or third-party peripheral devices
- Available for panel or wall mounting

#### FREE Evolution features

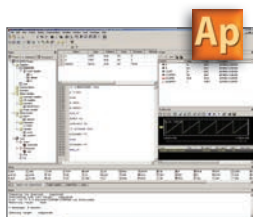
- Fully customizable graphic user interface
- Available in two formats
  - **FREE Evolution EVD** 8 Din with backlit LCD graphic display
  - **FREE Evolution EVC** 8 Din with no display
- High connectivity: integrates into industrial systems, BMS and networks using dedicated plug-in modules
- Connects to standard Eliwell peripheral devices (including **FREE Smart**)
- Connects to standard third-party peripheral devices

#### FREE Studio features

- Quick and easy programming
- Single software suite
- Complete and effective online help
- Advanced debugging and simulation options
- Protection of the applications and Different levels of use
- Application revision log
- Interfaccia personalizzabile

# FREE Studio

Programmable platform



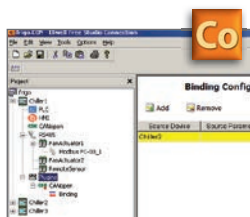
### Application

Component for software developers to allow them to develop and modify applications in the 5 standard programming languages.



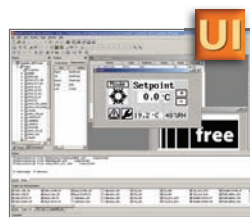
### Device

Component dedicated to less skilled users for the management of parameters, application downloads, field tests, etc.



### Connection

Network configuration component, for both field and open networks in order to integrate other systems.



### User Interface

Component for developing and personalizing the graphic interface on user terminals.



### Simulation

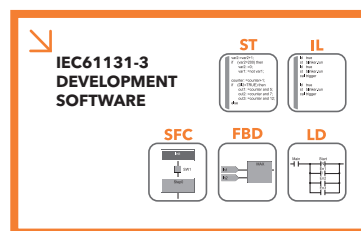
Component for simulating the application on a PC.

## Applications

The **FREE Studio** software suite is compatible with all 5 standard programming languages (**IEC61131-3**). Each project may consist of several programs. The developer may use one or more languages in the same project.

Each new programme can be chosen from the 5 programming languages, 2 text and 3 graphic:

- **ST, Structured Text**
- **FBD, Functional Block Diagram**
- **LD, Ladder**
- **IL, Instruction List**
- **SFC, Sequential Function Chart**



# FREE Panel

Programmable platform



| Codes               | Description  |
|---------------------|--------------|
| <b>EVP330010B00</b> | EVP3300/C    |
| <b>EVP350010B00</b> | EVP3500/C/RH |

## Application

**FREE Panel (EVP)** is the panel solution, with an LCD display that can be used as a system controller, with the function of a gateway, used in association with the other **FREE Evolution** and **FREE Smart** or third-party controllers.

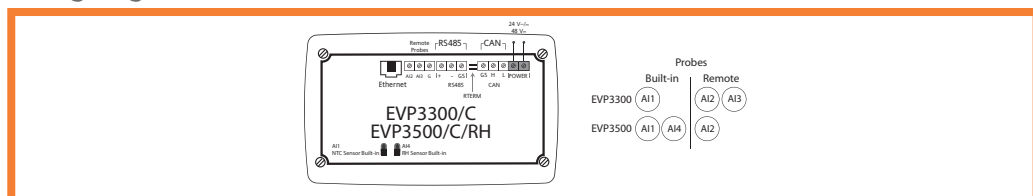
**FREE Panel** ensures high performance in terms of memory, connectivity and user interface as well as straightforward programming, maintenance and servicing.

**FREE Panel** is designed for panel mounting: a special backplate, available as an accessory, enables it to be wall mounted.

## Technical data

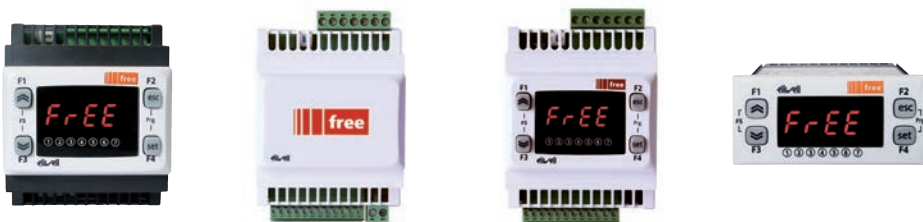
|                          | <b>EVP3300/C</b>                                                                                                  | <b>EVP3500/C/RH</b>                                                                            |
|--------------------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| Format:                  | 160x96x10mm panel (°) IP65                                                                                        | 160x96x10mm panel (°) IP65                                                                     |
| Display:                 | backlit 128x64 pixel LCD graphic display                                                                          | backlit 128x64 pixel LCD graphic display                                                       |
| Power supply:            | 24V~/~ - 48V~                                                                                                     | 24V~/~ - 48V~                                                                                  |
| Analogue inputs <b>3</b> | <b>A11</b> 1 x NTC on board<br><b>A12</b> 1 x NTC / D.I. remote<br><b>A13</b> 1 x 4...20 mA / 0-5V / 0-10V remote | <b>A11</b> 1 x NTC on board<br><b>A12</b> 1 x NTC / D.I. remote<br><b>A14</b> 1 x %RH on board |
| Connectivity:            | CANOpen / RS485 / ETHERNET                                                                                        | CANOpen / RS485 / ETHERNET                                                                     |
| Buzzer:                  | YES                                                                                                               | YES                                                                                            |

## Wiring diagram



# FREE Smart

## Programmable platform



### Applications

**FREE Smart** models are available as a DIN rail-mounted version (SMD with display, SMC with no display), which saves time in terms of wiring, and in the compact 32x74 Eliwell (SMP) size for panel-mounting. Eliwell supplies various expansion modules (SE, SME) and terminals (SKP, SKW) for use in conjunction with the corresponding models in the FREE Smart range. All inputs and outputs are independent and configurable, meaning they can be adapted to fit any system.

### FREE Smart 12...24V~ / 24V- /C indicates the presence of real-time clock (RTC)

| Model              | Part number   | Digital outputs high voltage relays | TRIAC outputs high voltage relays | O.C. outputs: PWM/PPM safety extra low voltage SELV | Analogue outputs 0-10V safety extra low voltage SELV | Digital inputs dry contacts | Analogue inputs safety extra low voltage SELV | O.C. outputs | RS 485 on board |
|--------------------|---------------|-------------------------------------|-----------------------------------|-----------------------------------------------------|------------------------------------------------------|-----------------------------|-----------------------------------------------|--------------|-----------------|
| <b>SMP5500/C/S</b> | SMP5500050450 | 5                                   | -                                 | 2                                                   | 3                                                    | 6                           | 5                                             | 1            | yes             |
| <b>SMP5500/C</b>   | SMP5500010450 | 5                                   | -                                 | 2                                                   | 3                                                    | 6                           | 5                                             | 1            | -               |
| <b>SMD5500/C/S</b> | SMD5500050450 | 5                                   | -                                 | 2                                                   | 3                                                    | 6                           | 5                                             | 1            | yes             |
| <b>SMD5500/C</b>   | SMD5500010450 | 5                                   | -                                 | 2                                                   | 3                                                    | 6                           | 5                                             | 1            | -               |
| <b>SMD3600/C/S</b> | SMD3600050450 | 3                                   | 2                                 | 1                                                   | 3                                                    | 6                           | 5                                             | 1            | yes             |
| <b>SMC5500/C/S</b> | SMC5500050450 | 5                                   | -                                 | 2                                                   | 3                                                    | 6                           | 5                                             | 1            | yes             |
| <b>SMC5500/C</b>   | SMC5500010450 | 5                                   | -                                 | 2                                                   | 3                                                    | 6                           | 5                                             | 1            | -               |

### Expansion modules

|                |               |   |   |   |   |   |   |   |   |
|----------------|---------------|---|---|---|---|---|---|---|---|
| <b>SME3200</b> | SME3200000400 | 3 | - | 2 | - | 6 | 3 | 1 | - |
| <b>SME5500</b> | SME5500000450 | 5 | - | 2 | 3 | 6 | 5 | 1 | - |

### FREE Smart 100...240V~ /C indicates the presence of real-time clock (RTC); /S indicates integrated RS485 serial port

| Model              | Part number   | Digital outputs high voltage relays | O.C. outputs: PWM / DI safety extra low voltage SELV | Outputs 0-10V safety extra low voltage SELV | Outputs 4...20mA 0...20mA | Analogue inputs safety extra low voltage SELV |
|--------------------|---------------|-------------------------------------|------------------------------------------------------|---------------------------------------------|---------------------------|-----------------------------------------------|
| <b>SMD4500/C/S</b> | SMD4500050H00 | 4                                   | 2                                                    | 2                                           | 1                         | 5                                             |
| <b>SMD4500/C</b>   | SMD4500010H00 | 4                                   | 2                                                    | 2                                           | 1                         | 5                                             |
| <b>SMC4500/C/S</b> | SMC4500050H00 | 4                                   | 2                                                    | 2                                           | 1                         | 5                                             |

### Expansion module

|                |               |   |   |   |   |   |
|----------------|---------------|---|---|---|---|---|
| <b>SME4500</b> | SME4500000H00 | 4 | 2 | 2 | 1 | 5 |
|----------------|---------------|---|---|---|---|---|

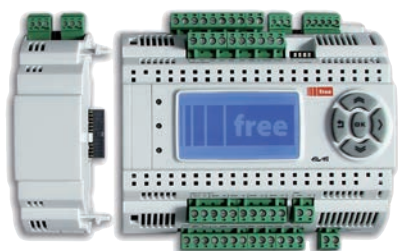
### Terminals with power supply from the base

| Model         | Part number   | Installation                              | Dimensions      | Display       | Analogue inputs safety extra low voltage SELV |
|---------------|---------------|-------------------------------------------|-----------------|---------------|-----------------------------------------------|
| <b>SKP10</b>  | SKP100G000000 | Panel                                     | 74x32x30mm      | LED / 4 digit | -                                             |
| <b>SKW22</b>  | SKW220G000000 | Wall                                      | 137x96.5x31.3mm | LCD           | 1 integrated NTC<br>1 NTC/DI/4...20mA input   |
| <b>SKW22L</b> | SKW22LG000000 | Wall                                      | 137x96.5x31.3mm | Backlit LCD   | 1 integrated NTC<br>1 NTC/DI/4...20mA input   |
| <b>SKP22</b>  | SKP220G000000 | Panel;<br>Wall: see page 17 (accessories) | 160x96x10mm     | LCD           | 1 NTC input<br>1 NTC/DI/4...20mA input        |

KEY: SELV = Safety Extra Low Voltage; PPM = Pulse Position Modulation; PWM = Pulse Width Modulation; O.C. = Open Collector

# FREE Evolution

## Programmable platform



### Applications

**FREE Evolution** models (EVD with display, EVC without display) are available in the 8 DIN rail-mounted version, with disconnectable screw terminals to make installation easier and faster.

Each EVD or EVC can be expanded by CANbus (field) up to 12 expansion modules and 2 terminals (EVK). By CANbus (network) it is also possible to connect up to 10 controllers to one another. Up to 127 devices can be managed with the Modbus Master, by RS485.

### FREE Evolution with or without display /C indicates the presence of the RTC - Real Time Clock; RS485 and CANbus integrated as standard

| Model              | Part number   | Relay outputs high voltage relays | SSR Outputs | Analogue outputs safety extra low voltage SELV <b>A04/A05</b> configurable as Open Collector 12V $\approx$ 100mA max each | Digital inputs safety extra low voltage SELV | Digital inputs dry contacts | Analogue inputs safety extra low voltage SELV |
|--------------------|---------------|-----------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------|-----------------------------------------------|
| <b>EVD7500/C/U</b> | EVD7500060B00 | 7                                 | -           | 5                                                                                                                         | 8                                            | 1*                          | 6                                             |
| <b>EVD75SS/C/U</b> | EVD75SS060B00 | 5                                 | 2           | 5                                                                                                                         | 8                                            | 1*                          | 6                                             |
| <b>EVC7500/C/U</b> | EVC7500060B00 | 7                                 | -           | 5                                                                                                                         | 8                                            | 1*                          | 6                                             |

\*Fast counter 1KHz

### Expansion modules RS485 (EVE7500 only) and CANbus integrated as standard

| Model          | Part number   | Relay outputs high voltage relays | SSR Outputs | Analogue outputs safety extra low voltage SELV <b>A04/A05</b> configurable as Open Collector 12V $\approx$ 100mA max each | Digital inputs safety extra low voltage SELV | Digital inputs dry contacts | Analogue inputs safety extra low voltage SELV |
|----------------|---------------|-----------------------------------|-------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|-----------------------------|-----------------------------------------------|
| <b>EVE7500</b> | EVE7500000B00 | 7                                 | -           | 5                                                                                                                         | 8                                            | 1*                          | 6                                             |
| <b>EVE4200</b> | EVE4200000500 | 4                                 | -           | 2                                                                                                                         | 4                                            | -                           | 4                                             |

\*Fast counter 1KHz

### Terminals

| Model          | Part number   | Installation                                   | Dimensions  | Display     | Serial |
|----------------|---------------|------------------------------------------------|-------------|-------------|--------|
| <b>EVK1000</b> | EVK1000000B00 | Panel (for wall-mounting see Accessories page) | 160x96x10mm | Backlit LCD | CANbus |

### Plug-in 2DIN models; power supply from the base EVD / EVC

| Model                | Part number   | Output high voltage relays | Connectivity protocol                                    |
|----------------------|---------------|----------------------------|----------------------------------------------------------|
| <b>EVS RS232</b>     | EVS10R2000000 | 1 x SPDT 5A 250V~          | Modbus ASCII                                             |
| <b>EVS RS485</b>     | EVS00R4000000 | -                          | Modbus RTU                                               |
| <b>EVS CAN</b>       | EVS00CA000000 | -                          | CANopen                                                  |
| <b>EVS ETH</b>       | EVS00ET000000 | -                          | Modbus TCP - BACnet IP - HTTP                            |
| <b>EVS Profibus</b>  | EVS00PB000000 | -                          | Profibus DP Slave-V0                                     |
| <b>EVS Bacnet</b>    | EVS00BM000000 | -                          | Modbus RTU - BACnet MSTP                                 |
| <b>EVS ETH/RS485</b> | EVS00EB000000 | -                          | Modbus RTU - BACnet MSTP - Modbus TCP - BACnet IP - HTTP |

KEY: SSR = Solid State Relay; SELV = Safety Extra Low Voltage

## SUPERVISION AND MONITORING

Eliwell offers a wide range of instruments and components for the monitoring and remote management of a system.

The solutions we propose range from devices for data recording and temperature display in real time to software for the remote management of alarms and graphic display of systems.





# Memory 1000

## Recording and printing temperature



| Codes                | Description           | Temperature input |
|----------------------|-----------------------|-------------------|
| <b>M1K04N03D1X00</b> | MEMORY 1040 F*        | 4                 |
| <b>M1K04N03D0X00</b> | MEMORY 1045 F         | 4                 |
| <b>M1K08N03D1X00</b> | MEMORY 1080 F*        | 8                 |
| <b>M1K08N03D0X00</b> | MEMORY 1085 F         | 8                 |
| <b>M1K26N03D1X00</b> | MEMORY 1080 F 2AI*    | 8                 |
| <b>M1K26N03D0X00</b> | MEMORY 1085 F 2AI     | 8                 |
| <b>M1K26N03D1X00</b> | MEMORY 1180/15 F 2AI* | 8                 |
| <b>M1K26N03D0X00</b> | MEMORY 1185/15 F 2AI  | 8                 |
| <b>RC444444</b>      | Thermal paper roll    |                   |

\* models with printer

### Applications

Memory 1000 is available in a wide range of models, combining the capabilities of a monitoring system with the ease-of-use of a data logger in order to meet various customer requirements.

### Common features

Powerful and easy to use thanks to:

- fast data download on SD CARD, without using the PC
- soft key to enter the report printing menu directly

Compatible with RadioAdapter wireless networks

Manages all aspects of network controller alarms

12 months+ data logging capacity

A wide range of models to fit all application requirements

Up to 10 digital and analogue inputs

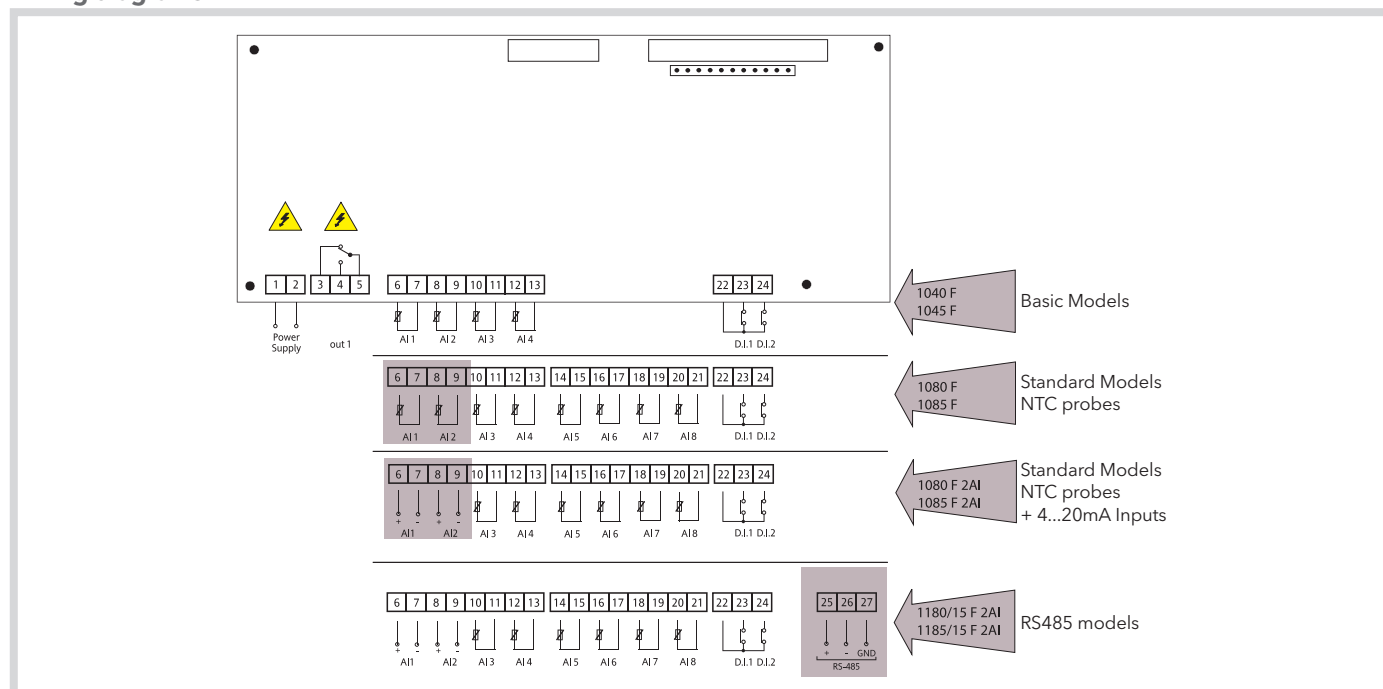
### Technical data

|                    | Memory 1000 with printer                                                                                                                                                                              | Memory 1000 without printer                                                                                                                                                                           |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| User interface:    | Backlit graphic LCD<br>8 polycarbonate keys                                                                                                                                                           | Backlit graphic LCD<br>7 polycarbonate keys                                                                                                                                                           |
| Analogue inputs:   | <ul style="list-style-type: none"> <li>• max 8 NTC / 4 NTC based on model</li> <li>• max 2 4...20 mA (<b>just for models 2AI</b>)</li> </ul>                                                          | <ul style="list-style-type: none"> <li>• max 8 NTC / 4 NTC based on model</li> <li>• max 2 4...20 mA (<b>just for models 2AI</b>)</li> </ul>                                                          |
| Digital inputs:    | 2 fixed D.I. Max 8 / 4 configurable based on model                                                                                                                                                    | 2 fixed D.I. Max 8 / 4 configurable based on model                                                                                                                                                    |
| Digital outputs:   | 1 SPDT 5(2)A 250 V~                                                                                                                                                                                   | 1 SPDT 5(2)A 250 V~                                                                                                                                                                                   |
| Connections:       | RS-485 port for input expansion via compatible Eliwell Televis controllers<br>RS-232 port for exporting data using Microsoft Windows® software (supplied)<br>SD memory card slot for downloading data | RS-485 port for input expansion via compatible Eliwell Televis controllers<br>RS-232 port for exporting data using Microsoft Windows® software (supplied)<br>SD memory card slot for downloading data |
| Clock:             | present                                                                                                                                                                                               | present                                                                                                                                                                                               |
| Buzzer:            | present                                                                                                                                                                                               | present                                                                                                                                                                                               |
| Power consumption: | 20W max (printer in use)                                                                                                                                                                              | 5W max                                                                                                                                                                                                |
| Power supply:      | 230 V~ ±10% 50/60 Hz                                                                                                                                                                                  | 230 V~ ±10% 50/60 Hz                                                                                                                                                                                  |
| Printer:           | Integrated thermal printer                                                                                                                                                                            | -                                                                                                                                                                                                     |

### Accessories

| Codes    | Description        |
|----------|--------------------|
| RC444444 | Thermal paper roll |

### Wiring diagrams



# TelevisGo

Monitoring and maintenance systems via web



## Specifications

### For the end user

- recording of HACCP temperatures
- information on energy consumption
- complete, easy to use system
- open, expandable system

### For the maintenance technician

- compact, reliable, ready-to-use system
- intuitive user interface easy to learn
- alarm signalling via email and SMS, with priority configuration
- remote web access for diagnostics and control
- dedicated devices for maintenance: device parameters, controls, detailed diagnostics and recording of all functional states
- complete remote system updating via web: software, languages, controller drivers
- devices for offline configuration and quick modification of settings

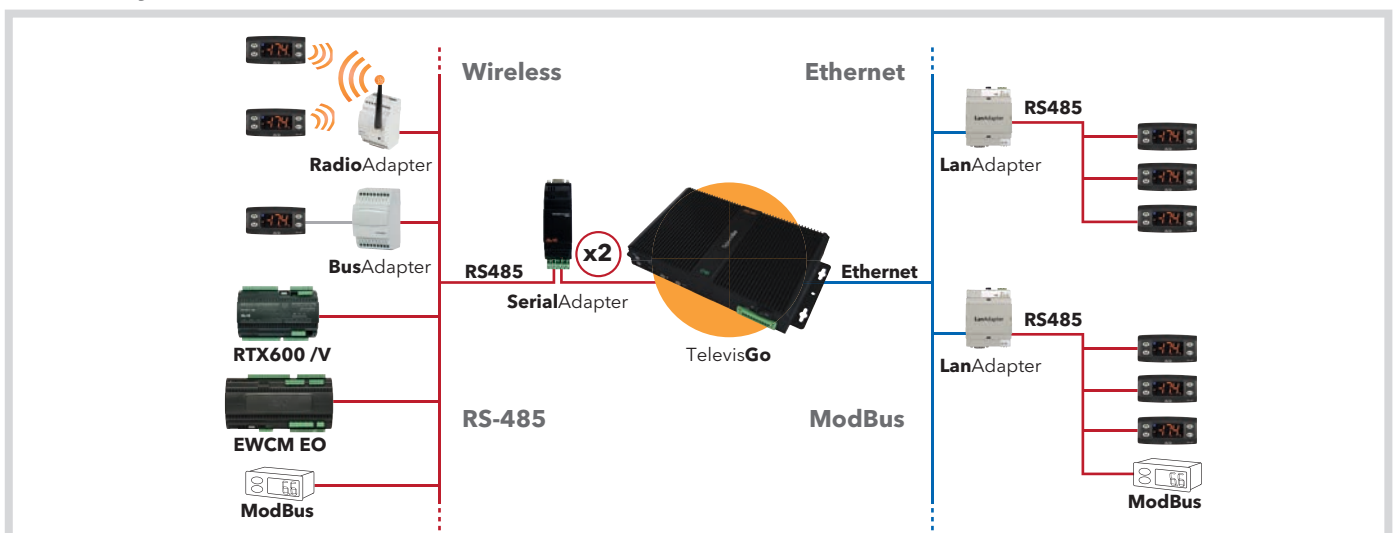
### For supermarket chains and system integrators

- solution can be scaled to suit the size of the installation
- instruments for off line configuration, plant cloning and configuration modification in series
- compatibility with third-party Modbus devices: energy measurement and HVAC controls
- XML protocol open:
  - regular data transmission (push function)
  - transmission of data and alarms as they occur
  - real-time data acquisition
  - querying of data and alarm history
  - execution of commands / modification of controller parameters in remote mode
  - SOCKS protocol integrated for routing of TCP and UDP communications

## Technical Data

| TelevisGo 10 / 30 / 60 / 224         |                                                                                                                                                                                         |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| User interface:                      | from web browser                                                                                                                                                                        |
| Browsers supported:                  | <ul style="list-style-type: none"> <li>• Internet Explorer 7 or later</li> <li>• Mozilla Firefox 3.5 or later</li> <li>• Google Chrome 16.0.x or later</li> </ul>                       |
| User language interfaces pre-loaded: | IT - EN - FR - DE - ES - PT - PL - NL - RU - CN                                                                                                                                         |
| Operating System:                    | MS Windows 7 Embedded                                                                                                                                                                   |
| Power supply:                        | 12V= with external power supply<br>100...240V~ ±10%                                                                                                                                     |
| Power consumption:                   | 10W max                                                                                                                                                                                 |
| Connections:                         | 4 USB port<br>2 RS-232 ports (for analogue modem or GSM)<br>2 RS-232 ports (for <b>SerialAdapter</b> )<br>1 Ethernet port (LANRJ45)<br>VGA monitor connection<br>PS2 keyboard connector |

## Connectivity



# TelevisGo

## Monitoring and maintenance systems via web



| Codes         | Description           | Applications          |
|---------------|-----------------------|-----------------------|
| TGOBSE101E00K | KIT TelevisGo R2 10*  | up to 10 controllers  |
| TGOBSE301E00K | KIT TelevisGo R2 30*  | up to 30 controllers  |
| TGOBSE601E00K | KIT TelevisGo R2 60*  | up to 60 controllers  |
| TGOBSE2H1E00K | KIT TelevisGo R2 224* | up to 224 controllers |

\*contains No.1 SerialAdapter + 1.5m serial cable

| Codes         | Description             | Applications         |
|---------------|-------------------------|----------------------|
| TGOBSE101ER0K | KIT TelevisGo R2 LE 10* | up to 10 controllers |
| TGOBSE301ER0K | KIT TelevisGo R2 LE 30* | up to 30 controllers |
| TGOBSE601ER0K | KIT TelevisGo R2 LE 60* | up to 60 controllers |

LE versions do not include the Algorithms function

\*contains No.1 SerialAdapter + 1.5m serial cable

### Applications

TelevisGo is a family of devices to monitor, control and manage installations from a distance.

The product is based on a PC Embedded standard platform to offer greater calculation power, data filing space and, thanks to the Microsoft Embedded operating system, easy system expansion using standard peripherals available on the market.



#### Data recording and alarm management

- Recording temperature / pressure / humidity / digital inputs and outputs / functional statuses
- Recording alarm conditions and sending a signal by email and SMS



#### Energy reports

- Connection to energy meters with MODBUS protocol
- Dashboards dedicated to the real time and historic display of energy consumption
- Graphic display of energy consumption combined with the functional parameters of the system



#### Graphic display of the system

- Display and access to data and parameters of the controllers by means of a freely configurable graphic interface
- HTML interface accessible by most browsers for PC, tablet and smartphone (Internet Explorer, Mozilla, Firefox)
- The graphic interface can be planned off-line with the tools freely available for download from the site [www.eliwell.com](http://www.eliwell.com)



#### Web connectivity

- All TelevisGo functions are accessible in remote mode with a web browser
- It is possible to access all the historic and real time information and to interact with each controller connected to the system to change its parameters and activate the functions
- The complete management of TelevisGo is included (configuration, updating, restarting of the device)
- TelevisGo can be connected to the Internet with ADSL, 3G or 4G connections, or by configuring the LAN/WAN network to which the device is connected



#### Activity automation

- Automation of recurrent activities such as switching the lights on and off for energy saving
- Periodic sending by e-mail of detailed reports in PDF format
- Periodic transfer of data to centralised systems for performance analysis



#### Algorithms and Expandability with IEC 61131\*

- System extensions with new plug-n-play algorithms installable from the web interface
- Algorithms for management of floating evaporation, faulty pressure probe backup and distribution of the dewpoint for energy saving functions with RTX600 /V and EWCM 9000 EO
- System for the development of new algorithms for distributed management of the installation based on FREE Studio with standard languages IEC 61131

\*functions not available in LE versions

# TelevisIn / TelevisOut

Data acquisition modules and actuators



| Codes                | Description | Power supply |
|----------------------|-------------|--------------|
| <b>TAMID152RS700</b> | TelevisIn   | 100...240 V~ |
| <b>TAMOD602RS700</b> | TelevisOut  | 100...240 V~ |

## Applications

TelevisIn and TelevisOut are data acquisition, alarm signalling and user control modules which can be connected via the ModBus protocol to Televis or third-party systems. The TelevisIn controller, connected to specific probes, enables the acquisition of temperature, humidity and pressure data, and digital signals. It will also calculate dew points. TelevisOut provides alarm signalling and utility monitoring functions. It can be used to connect warning devices or telephone diallers and, in combination with the supervisor, to deliver energy savings via the management of lights and other utilities.

## Common features

Compatible with third-party and ModBus systems

**Two models** to cover all applications

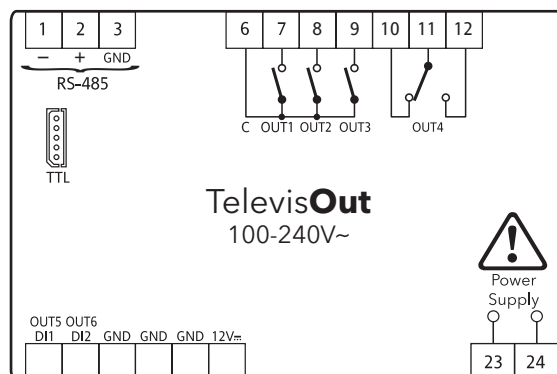
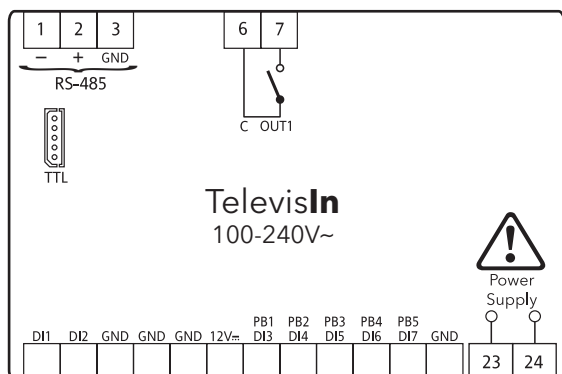
**Up to 8 configurations** for fast installation

Removable 'T' connector for fast installation of the RS-485 line

## Technical data

|                    | TelevisIn                                                                                                                                                                                                                                                 | TelevisOut                                                                                                                                                                                                                                               |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dimensions:        | 4 DIN modules                                                                                                                                                                                                                                             | 4 DIN modules                                                                                                                                                                                                                                            |
| Mounting:          | on DIN Omega bar support                                                                                                                                                                                                                                  | on DIN Omega bar support                                                                                                                                                                                                                                 |
| Display range:     | <ul style="list-style-type: none"> <li>• NTC probe: -50.0...110.0°C</li> <li>• PTC probe: -55.0...140.0°C</li> <li>• Pt1000 probe: -55.0...400.0°C</li> <li>• Vin probe: 0-1 V, 0-5 V and 0-10 V</li> <li>• Ain probe: 0...20 mA and 4...20 mA</li> </ul> | <ul style="list-style-type: none"> <li>• NTC probe: -50.0...110.0°C</li> <li>• PTC probe: -55.0...140.0°C</li> <li>• Pt1000 probe: -55.0...400.0°C</li> <li>• Vin probe: 0-1 V, 0-5 V and 0-10 V</li> <li>• Ain probe: 0...20 V and 4...20 mA</li> </ul> |
| Analogue inputs:   | 3 NTC/PTC/Pt1000/DI inputs +1 V (0-1 V / 0-5 V / 0-10 V) input + 1 I (0...20 mA / 4...20 mA) input                                                                                                                                                        | -                                                                                                                                                                                                                                                        |
| Digital inputs:    | 2 digital inputs (DI1 / DI2)                                                                                                                                                                                                                              | 2 clean contact digital inputs (DI1 / DI2) also configurable as analogue outputs with no dangerous voltage                                                                                                                                               |
| Digital outputs:   | 1 SPST 2A 250 V~                                                                                                                                                                                                                                          | 2 (SELV) Open Collector: PWM<br>3 SPST 2A 250 V~<br>1 SPDT 2A 250 V~                                                                                                                                                                                     |
| Connectivity:      | <ul style="list-style-type: none"> <li>• 1 RS-485 for connection to TelevisSystem monitoring and systems based on ModBus protocol</li> <li>• 1 TTL to connect to Eliwell Unicard USB, Copycard and DMI interface for DeviceManager</li> </ul>             | <ul style="list-style-type: none"> <li>• 1 RS-485 for connection to TelevisSystem monitoring and systems based on ModBus protocol</li> <li>• 1 TTL to connect to Eliwell Unicard USB, Copycard and DMI interface for DeviceManager</li> </ul>            |
| Connectors:        | Removable screw terminals                                                                                                                                                                                                                                 | Removable screw terminals                                                                                                                                                                                                                                |
| Applications:      | <b>AP1</b> =Temperature; <b>AP2</b> =Analogue Inputs; <b>AP3</b> =Digital Inputs; <b>AP4</b> =Dew Point; <b>AP5...8</b> =Free                                                                                                                             | <b>AP1</b> =Alarm signalling; <b>AP2...8</b> =Free                                                                                                                                                                                                       |
| Power consumption: | 5W                                                                                                                                                                                                                                                        | 5W                                                                                                                                                                                                                                                       |
| Power supply:      | SMPS 100...240 V~ ±10% 50/60 Hz                                                                                                                                                                                                                           | SMPS 100...240 V~ ±10% 50/60 Hz                                                                                                                                                                                                                          |

## Wiring diagrams



# DeviceManager

## Controller configuration software



| Codes                | Description             |
|----------------------|-------------------------|
| <b>DMP1000002000</b> | CD DeviceManager        |
| <b>DMI1001002000</b> | DMI 100-1 End User      |
| <b>DMI1002002000</b> | DMI 100-2 Service       |
| <b>DMI1003002000</b> | DMI 100-3 Manufacturer  |
| <b>CO111127</b>      | TTL Cable               |
| <b>COLV000016200</b> | USB-A/A extension cable |

### Applications

**DeviceManager** is windows based software used to manage and install Eliwell devices. The software can be used to create and save parameter mapping and transfer it to and from the controller.

**DeviceManager** needs the USB communication interface **DeviceManager Interface (DMI)** to communicate directly with controllers. It is compatible with Unicard USB and Multi Function Key to transfer maps, parameters and controller firmware updates.

For information on compatibility and functions for each controller family, please check the compatibility table on [www.eliwell.com](http://www.eliwell.com)

### Features

|                                              |                             |
|----------------------------------------------|-----------------------------|
| Graphic interface                            | Device alarm log management |
| Eliwell instrument parameter management      | Firmware updating           |
| Real-time variable monitoring and management |                             |

### Minimum system requirements

|                                                        | DeviceManager                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating system:                                      | <ul style="list-style-type: none"> <li>Windows XP Pro SP2, Italian and English.</li> <li>Windows XP Home SP2, Italian and English.</li> <li>Windows 2000 Professional SP4, Italian and English.</li> <li>Windows 7 Premium, Windows 7 Professional, Windows 7 Ultimate, versions 32bit, Italian-English</li> </ul> |
| Software components required besides operating system: | <ul style="list-style-type: none"> <li>.NET Framework 2.0</li> </ul>                                                                                                                                                                                                                                               |
| Minimum hardware:                                      | <ul style="list-style-type: none"> <li>graphics resolution 1024x768</li> <li>700 MHz CPU</li> <li>256 MB RAM</li> <li>HD 1 GB</li> <li>Mouse or equivalent navigation system</li> </ul>                                                                                                                            |
| Space required on disk:                                | Approx. 500 MB for normal installation (2 languages, 50 models)                                                                                                                                                                                                                                                    |

### Accessories

| Code          | Description                | Details              |
|---------------|----------------------------|----------------------|
| CO111127      | TTL cable                  | 1 m reinforced cable |
| COLV000016200 | USB-A/A 2MT extension lead | Length 2 m           |

## ACCESSORIES

Eliwell has developed a wide range products, from accessories for connectivity to a wide range of transformers, switches, protections and even memory devices such as Memory Cards for the rapid transfer of the controller parameters.

Eliwell has developed these devices to provide customers with instruments that allow ever increasing quality of performance and a better productive yield.



# SerialAdapter - Ethernet LanAdapter - WiFi LanAdapter

Connectivity modules for systems



| Codes                | Description                |
|----------------------|----------------------------|
| <b>SAT1AMM100000</b> | <b>SerialAdapter</b> 232   |
| <b>LA0ET00X700</b>   | Ethernet <b>LanAdapter</b> |
| <b>LA0WF00X700</b>   | WiFi <b>LanAdapter</b>     |

## Applications

**SerialAdapter** is a galvanically isolated RS-232/RS-485 adapter for use on networks with **TeleviGo**.

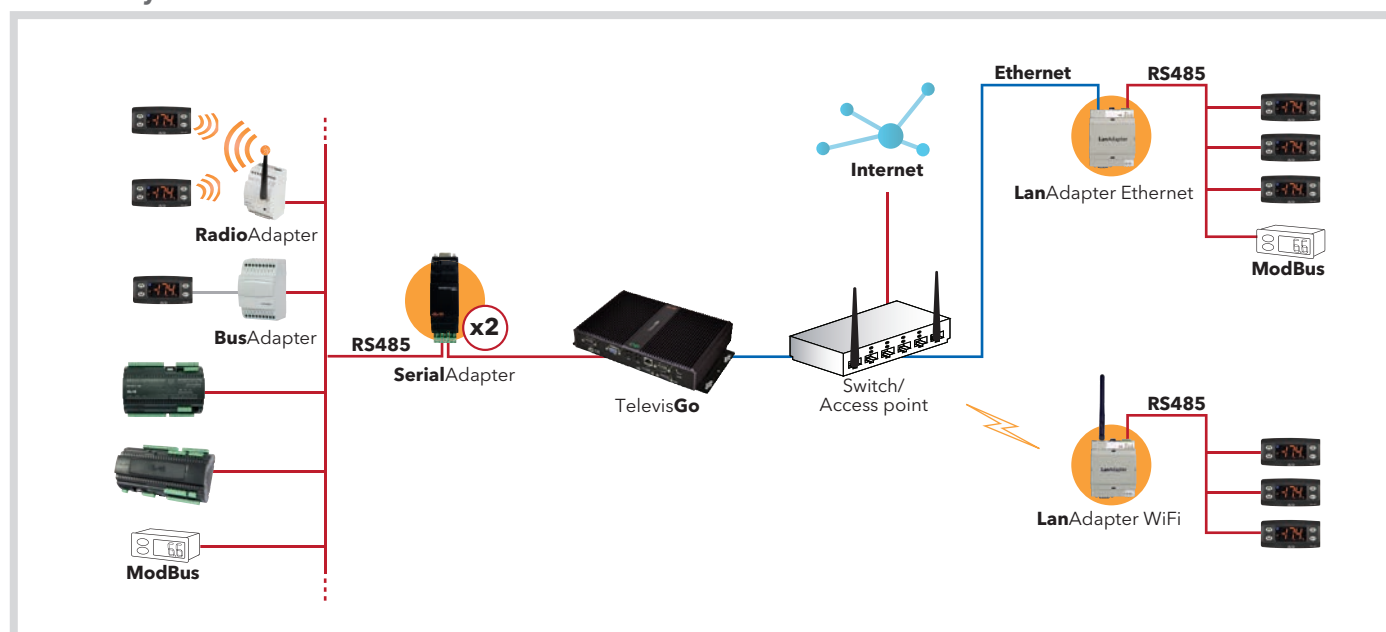
**LanAdapter** is an Ethernet/RS-485 (or TTL) interface module enabling communication between a LAN and a network of instruments compatible with the **Televi** protocol. In this way, the LAN network monitoring system can manage data, alarms and connected instrument network functions. The **LanAdapter** can be configured via the web from any PC on the LAN.

## Features

|                                                     |                                                      |
|-----------------------------------------------------|------------------------------------------------------|
| RS-232, Ethernet and WiFi connectivity              | Multiple networks using existing LAN infrastructures |
| Up to 2 SerialAdapter networks with <b>TeleviGo</b> | <b>Televi</b> and ModBus protocol compatibility      |

| General technical specifications        | SerialAdapter                                                                                                       | Ethernet LanAdapter                                                                                                                                                          | WiFi LanAdapter                                                                                                                                                                                                                                                                                               |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Casing:                                 | plastic, 2 DIN modules                                                                                              | plastic, 4 DIN modules                                                                                                                                                       | plastic, 4 DIN modules                                                                                                                                                                                                                                                                                        |
| Mounting:                               | on DIN Omega bar support                                                                                            | on DIN Omega bar support                                                                                                                                                     | on DIN Omega bar support                                                                                                                                                                                                                                                                                      |
| Power supply:                           | 12 V $\overline{=}$ through <b>TeleviGo</b> serial port                                                             | 100...240 V $\sim$ $\pm$ 10% 50/60 Hz                                                                                                                                        | 100...240 V $\sim$ $\pm$ 10% 50/60 Hz                                                                                                                                                                                                                                                                         |
| Power consumption:                      | -                                                                                                                   | 4W max                                                                                                                                                                       | 4W max                                                                                                                                                                                                                                                                                                        |
| Insulation class:                       | -                                                                                                                   | II                                                                                                                                                                           | II                                                                                                                                                                                                                                                                                                            |
| Ambient operating temperature:          | -5...+55°C                                                                                                          | 0...+55°C                                                                                                                                                                    | 0...+55°C                                                                                                                                                                                                                                                                                                     |
| Ambient storage temperature:            | -30...+75°C                                                                                                         | -20...+85°C                                                                                                                                                                  | -20...+85°C                                                                                                                                                                                                                                                                                                   |
| Ambient operation and storage humidity: | 10...90% RH (non-condensing)                                                                                        | 10...90% RH (non-condensing)                                                                                                                                                 | 10...90% RH (non-condensing)                                                                                                                                                                                                                                                                                  |
| Terminals:                              | screw terminals to connect electric cables with a section of max. 2.5 mm <sup>2</sup> (one connector per terminal). | screw terminal to connect electric cables with a section of max. 2.5 mm <sup>2</sup> (one wire per terminal).<br>RJ-45 connector for connection to Ethernet network          | screw terminal to connect electric cable with a section of max. 2.5 mm <sup>2</sup> (one wire per terminal).<br>Antenna (external)                                                                                                                                                                            |
| Connectivity:                           | <ul style="list-style-type: none"> <li>RS-485 port for connection to <b>TeleviSystem</b></li> </ul>                 | <ul style="list-style-type: none"> <li>RS-485 port for connection to <b>TeleviSystem</b></li> <li>TTL port for connection to instruments</li> <li>LAN 10/100 MBps</li> </ul> | <ul style="list-style-type: none"> <li>RS-485 port for connection to <b>TeleviSystem</b></li> <li>TTL port for connection to instruments</li> <li>Standard: IEEE 802.15.4</li> <li>Frequency band: ISM 2.400 GHz...2.485 GHz (&lt;100 mW e.i.r.p.)</li> <li>Selection of channel: manual/automatic</li> </ul> |

## Connectivity



# RadioAdapter - RadioAdapter (/S) EXT - RadioKey

## Wireless connectivity modules



| Codes                | Description                    |
|----------------------|--------------------------------|
| <b>BARF0TT00NH00</b> | <b>RadioAdapter</b> V2.0       |
| <b>BARF0DT00NH00</b> | <b>RadioAdapter/S</b> V2.0     |
| <b>BARF0TT20NH00</b> | <b>RadioAdapterEXT</b> V2.0    |
| <b>BARF0DT20NH00</b> | <b>RadioAdapter/S EXT</b> V2.0 |
| <b>MD0000003</b>     | External antenna kit for EXT   |
| <b>CCA0B0T01Tx00</b> | RadioKey (Televis)             |
| <b>CCA0B0T01Mx00</b> | RadioKey (ModBus RTU)          |

x = based on setting of ModBus RTU serial:

**0:** 9600, 8, N, 1 - **1:** 9600, 8, O, 1 - **2:** 9600, 8, E, 1 - **3:** 19200, 8, N, 1

**4:** 19200, 8, O, 1 - **5:** 19200, 8, E, 1

### Applications

**RadioAdapter** provides a cost-effective, reliable way of building communication networks between monitoring systems and controllers by replacing cables or extending existing networks.

**RadioKey** is a device needed to configure the network.

### Common features

Frequency band ISM 2.400 GHz...2.485 GHz

MESH communication technology with automatic directory selection

Extensive surface coverage

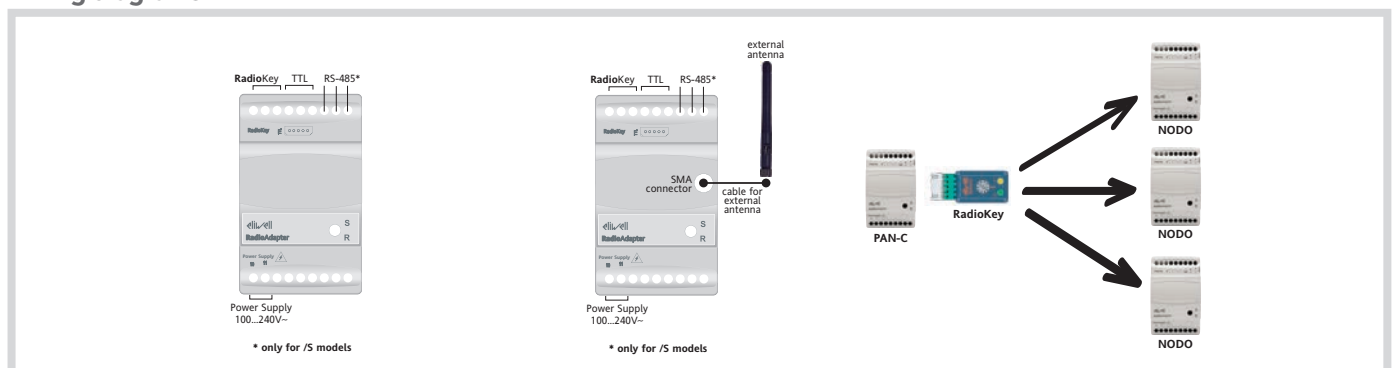
Ability to act as a repeater for adjacent nodes

EC certification for European market

FCC certification for American market

| General technical specifications        | RadioAdapter<br>RadioAdapter/S                                                | RadioAdapter EXT<br>RadioAdapter/S EXT                                            | RadioKey                                                                          |
|-----------------------------------------|-------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|
| Casing:                                 | 3 DIN modules                                                                 | 3 DIN modules                                                                     | -                                                                                 |
| Mounting:                               | on DIN Omega bar support                                                      | on DIN Omega bar support                                                          | -                                                                                 |
| Power supply:                           | 100...240 V~ ±10% 50/60 Hz                                                    | 100...240 V~ ±10% 50/60 Hz                                                        | -                                                                                 |
| Power consumption:                      | 2W                                                                            | 2W                                                                                | -                                                                                 |
| Insulation class:                       | II                                                                            | II                                                                                | -                                                                                 |
| Ambient operating temperature:          | -5...+60°C                                                                    | -5...+60°C                                                                        | -                                                                                 |
| Ambient storage temperature:            | -20...+85°C                                                                   | -20...+85°C                                                                       | -                                                                                 |
| Ambient operation and storage humidity: | 10...90% RH (non-condensing)                                                  | 10...90% RH (non-condensing)                                                      | 10...90% RH (non-condensing)                                                      |
| Operating class:                        | Class 4, ISA classification SP100.11 (not to be used for safety equipment)    | Class 4, ISA classification SP100.11 (not to be used for safety equipment)        | -                                                                                 |
| Type of network:                        | MESH                                                                          | MESH                                                                              | -                                                                                 |
| Protocol supported:                     | Televis or ModBus RTU                                                         | Televis or ModBus RTU                                                             | -                                                                                 |
| Number of nodes per network:            | 100 max                                                                       | 100 max                                                                           | -                                                                                 |
| Number of controllers per node:         | 240 max                                                                       | 240 max                                                                           | -                                                                                 |
| Radio response time:                    | 800 msec max.                                                                 | 800 msec max.                                                                     | -                                                                                 |
| Connectivity:                           | TTL port for connection to RS-485 serial port devices - <b>just models /S</b> | TTL port for connection to RS-485 serial port devices - <b>just models /S</b>     | -                                                                                 |
| Antenna:                                | 2 x 4 GHz integrated, multi-directional                                       | external - not included (see Accessories)                                         | -                                                                                 |
| Accessories/notes:                      | -                                                                             | External antenna kit + SMA 90° connector + 1 m cable.<br>To be ordered separately | needed for network configuration.<br>Available for Televis or ModBus RTU networks |

### Wiring diagrams





# BusAdapter 130 - 150

RS-485 opto isolator connectivity modules



| Codes               | Description    | Details     |
|---------------------|----------------|-------------|
| <b>BA11250N3700</b> | BusAdapter 130 | 1.5 m cable |
| <b>BA10000R3700</b> | BusAdapter 150 | 1.5 m cable |

## Applications

BusAdapter 130 and 150 is a family of devices used to connect Eliwell controllers to wired supervision and monitoring networks in RS-485 mode.

## Specifications

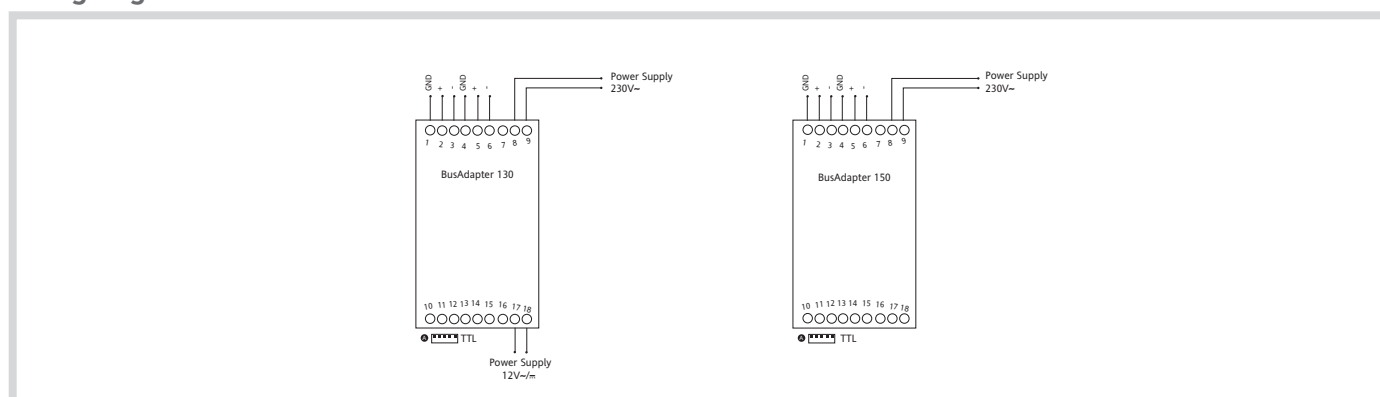
**130 models** have an auxiliary 12V (5 VA) output to power the instrument.

**150 models** are equipped with reinforced electric insulation

## General technical specifications

|                                                  | BusAdapter 130                                                                                                                                                  | BusAdapter 150                                                                                                                                                  |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Casing:                                          | 3 DIN modules                                                                                                                                                   | 3 DIN modules                                                                                                                                                   |
| Mounting:                                        | on DIN Omega bar support                                                                                                                                        | on DIN Omega bar support                                                                                                                                        |
| Power supply:                                    | 230V~ / 115V~ ±10% 50/60Hz                                                                                                                                      | 230V~ / 115V~ ±10% 50/60Hz                                                                                                                                      |
| Power consumption:                               | 6W                                                                                                                                                              | 1.5W                                                                                                                                                            |
| Insulation class:                                | II                                                                                                                                                              | II                                                                                                                                                              |
| Ambient operating temperature:                   | -5...+55°C                                                                                                                                                      | -5...+60°C                                                                                                                                                      |
| Storage ambient temperature:                     | -30...+75°C                                                                                                                                                     | -30...+75°C                                                                                                                                                     |
| Ambient humidity operation and storage humidity: | 10...90% RH (non-condensing)                                                                                                                                    | 10...90% RH (non-condensing)                                                                                                                                    |
| Terminals:                                       | screw-on terminal block to connect electric cables with a section of max. 2.5 mm <sup>2</sup> (one wire per terminal for power connections)                     | screw-on terminal block to connect electric cables with a section of max. 2.5 mm <sup>2</sup> (one wire per terminal for power connections)                     |
| Connectivity:                                    | <ul style="list-style-type: none"> <li>• double RS-485 port for connection to Televis<b>System</b></li> <li>• TTL port for connection to instruments</li> </ul> | <ul style="list-style-type: none"> <li>• double RS-485 port for connection to Televis<b>System</b></li> <li>• TTL port for connection to instruments</li> </ul> |
| Baud rate:                                       | 2400...9600 Baud                                                                                                                                                | 2400...9600 Baud                                                                                                                                                |
| Auxiliary output:                                | 12V~ / C ±10% 50/60Hz                                                                                                                                           | /                                                                                                                                                               |

## Wiring diagrams



# Modem GSM/GPRS

## Modems



### Codes

**SAMGPRS35AL00**

### Description

GSM/GPRS W/ANT PSU MODEM KIT  
Includes: power supply unit (European  
10A plug) + antenna with 1.5 m cable

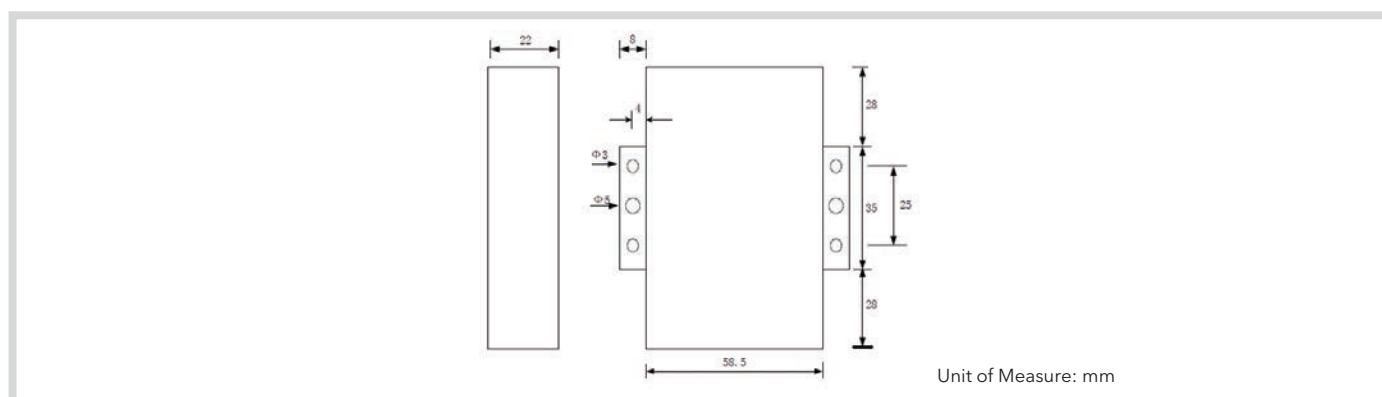
### Applications

The GSM/GPRS modem can be used to send SMS and for backup connectivity.

### Technical Specifications

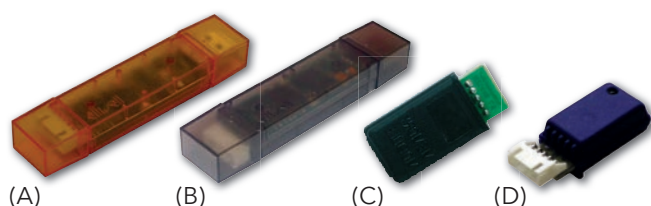
|                                 | Modem GSM/GPRS                                                                                                                                                                                                                                                                                                                    |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Case:                           | Metal                                                                                                                                                                                                                                                                                                                             |
| Dimensions:                     | 91x58.5x22 mm (BxHxD)                                                                                                                                                                                                                                                                                                             |
| Weight:                         | 195g                                                                                                                                                                                                                                                                                                                              |
| Frequency bands:                | EGSM900/GSM1800 MHz, GSM850/900/1800                                                                                                                                                                                                                                                                                              |
| GSM standard:                   | GSM phase 2/2+                                                                                                                                                                                                                                                                                                                    |
| GPRS standard:                  | class 10 - 85.6Kbps                                                                                                                                                                                                                                                                                                               |
| Transmission power:             | GSM850/900: <33dBm;<br>GSM1800: <30dBm                                                                                                                                                                                                                                                                                            |
| Reception sensitivity:          | <-107dBm                                                                                                                                                                                                                                                                                                                          |
| Connections:                    | <ul style="list-style-type: none"> <li>• DB9 port RS-232 serial port, with 15KV ESD protection</li> <li>• SMA 50 Ohm antenna connection, female connector</li> <li>• connector powering 3-pole jack with protection for overvoltages and inverted polarity</li> <li>• SIM/USIM 3 V/1.8 V slot with 15KV ESD protection</li> </ul> |
| Power supply:                   | 5...35 V≐ 12 V                                                                                                                                                                                                                                                                                                                    |
| Power consumption:              | <200 mA (12 V)                                                                                                                                                                                                                                                                                                                    |
| Serial configuration:           | Speed 110 ... 230400 bps<br>5, 6, 7, 8 data bit<br>1, 1.5, 2 stop bit<br>Parity none, even, odd, space, mark                                                                                                                                                                                                                      |
| Operating temperature:          | -25...+65°C (-13...+149°F)                                                                                                                                                                                                                                                                                                        |
| Storage temperature:            | -40...+85°C (-40...+185°F)                                                                                                                                                                                                                                                                                                        |
| Operation and storage humidity: | 10...95% RH (non-condensing)                                                                                                                                                                                                                                                                                                      |

### Dimensions



# Unicard - USB Copy Card - Copy Card - Multi Function Key

Memory for fast configuration and updating of controllers



| Codes                    | Description                      |
|--------------------------|----------------------------------|
| <b>CCA0BHT00UU00(A)</b>  | UNICARD USB/TTL                  |
| <b>CCA0BUI02N000</b> (B) | USB Copy Card                    |
| <b>COLV000016200</b>     | Extension lead for USB Copy Card |
| <b>CC0S00A00M000</b> (C) | Standard Copy Card               |
| <b>MFK100T000000</b> (D) | Multi Function Key 100           |

## Applications

The new USB/TTL Unicard is a memory device for rapid parameter configuration/duplication, specifically designed for controllers in the IDPlus family.

By downloading the **DeviceManager** software from the [www.eliwell.com](http://www.eliwell.com) website, maps for instruments in the ID and IDPlus families can be read and written on the Unicard device without having to use other interfaces/licences.

Copy Card and USB Copy Card are memory devices for rapid Eliwell controller parameter configuration/duplication. Multi Function Key is used with

**DeviceManager** to transfer maps, parameters and controller firmware updating.

## Common features

Unicard has a **standard USB port** for connection to the most widely-used power supply units and adapters on the market (mains-powered, machine-powered, battery-powered, etc.).

Updating device parameter values

Updating device firmware/applications

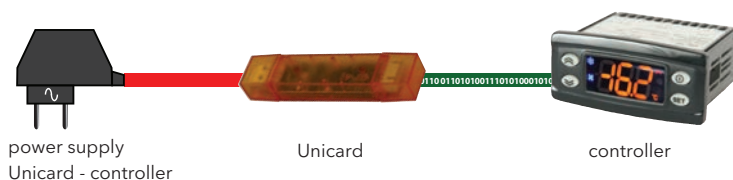
Downloading parameter values from the instrument

Downloading alarm log from the instrument

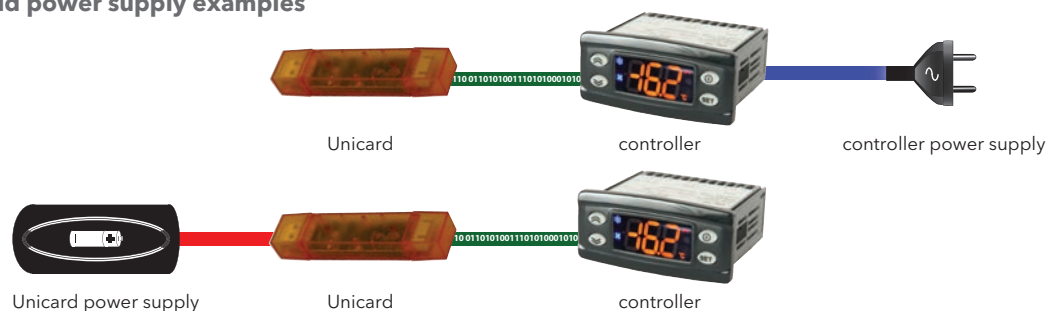
| Use                           | Copy Card | Multi Function key | Unicard | USB Copy Card |
|-------------------------------|-----------|--------------------|---------|---------------|
| IDPlus and ICPlus series      | •         | -                  | •       | -             |
| EW - EWPlus (EO LVD) series   | •         | -                  | •       | -             |
| IC series                     | •         | -                  | -       | -             |
| ID series                     | •         | -                  | -       | -             |
| DR 4020 - DR4022              | •         | -                  | •       | -             |
| EW4820 - EW4822               | •         | -                  | -       | -             |
| EW 7220 - EW 7222             | •         | -                  | -       | -             |
| EWTS 950 LX - EWTS 990 LX     | •         | -                  | -       | -             |
| EWRC 300 - EWRC 500 NT series | •         | -                  | •       | -             |
| EWDR series                   | •         | -                  | -       | -             |
| IWC series                    | •         | -                  | -       | -             |
| IWP 750                       | •         | -                  | •       | -             |
| TelevisIn - TelevisOut        | •         | -                  | • / F   | -             |
| RTN series                    | -         | •                  | • / F   | -             |
| RTX - RTD series              | -         | •                  | • / F   | -             |
| ID 985/V                      | •         | -                  | •       | -             |
| V800 Pulse EEV driver         | -         | -                  | -       | •             |
| V910 - XVD Step EEV Driver    | -         | •                  | • / F   | -             |
| EWCM 8000...9000 EO           | -         | -                  | -       | • / F / L / D |
| EWCM 4000                     | •         | •                  | -       | -             |
| EMPlus 600                    | -         | -                  | •       | -             |
| EWBC 800 series               | •         | -                  | •       | -             |
| EWBC 1400                     | •         | -                  | -       | -             |

**KEY** •: Reading/writing maps parameters    **F**: Updating Firmware    **L**: Updating Interface Languages    **D**: Download Data/Alarms

## Counter power supply examples



## Field power supply examples



# Drip protection - Plexiglass protection

Protections for 32x74 controllers



## Applications

These accessories can be used with devices in the ID, IC, IDPlus, EW, EWPlus series.

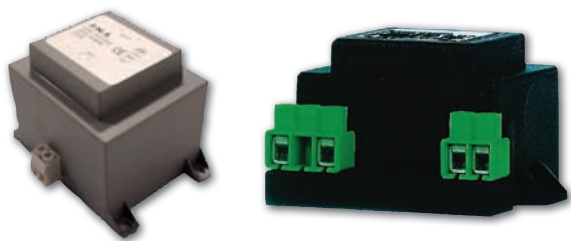
The drip protection, applied to the rear of the instrument, is a valid support in protecting electrical connectors against dripping liquid.

The plexiglass accessory, equipped with a surface easy to clean, is particularly suitable for use in outdoor environments or characterized by a high degree of dirt.

| Code     | Description                                 | Details    |
|----------|---------------------------------------------|------------|
| ZZ000270 | Drip protection                             | Pack of 20 |
| ZZ000272 | Plexiglass protection for controllers 32x74 | Pack of 10 |

# TF Transformers

## Transformers



### Applications

TF transformers are resin-coated in plastic containers, equipped with fixing tabs and screw terminals for wires  $\leq 2.5 \text{ mm}^2$ . Models with different power supply voltages are available.

| Code     | Models              | Details                    |
|----------|---------------------|----------------------------|
| TF511113 | TF 100...115...120V | 115/12V 3VA - cert. UL     |
| TF111145 | TF 100...115...120V | 115/12V 3VA                |
| TF11115A | TF 100...115...120V | 110-230/12-12-12 o 12 15VA |
| TF111115 | TF 12...24...48V    | 24/12V 3VA                 |
| TF111162 | TF 12...24...48V    | 24/12V 5,6VA               |
| TF111173 | TF 200...250V       | 230/12V 3VA                |
| TF411200 | TF 200...250V       | 230/12V 5VA protected      |
| TF411173 | TF 200...250V       | 230/12V 3VA approved VDE   |
| TF411117 | TF 200...250V       | 240/12V 3VA approved VDE   |
| TF411205 | TF 200...250V       | 230/12V 6VA protected      |
| TF411210 | TF 200...250V       | 230/12V 11VA protected     |
| TF111202 | TF 200...250V       | 230/24V 25VA               |
| TF111205 | TF 200...250V       | 230/24V 35VA               |

# Panel switches for ID and IC series

Panel switches for IC - ID - Ammeter transformers

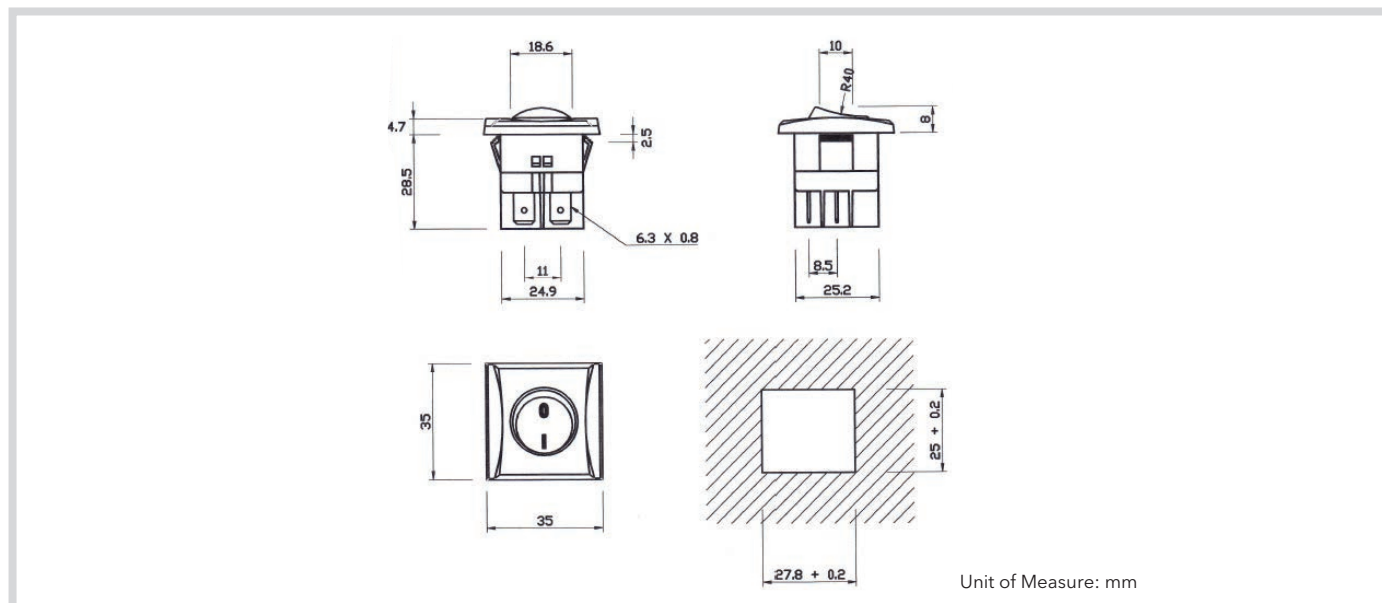


## Applications

Switches specifically designed for use in conjunction with the Digifrost Line and Universal Controllers range. Available in different luminous/non-luminous colours or with luminous dot.

| Code        | Model          | Colour                   | Details                          |
|-------------|----------------|--------------------------|----------------------------------|
| SW22023A000 | Bipolar switch | non-luminous grey button | grey frame 220 V serigraphed 0/1 |
| SW22223D000 | Bipolar switch | full green light         | grey frame 220 V serigraphed 0/1 |
| SW22123D000 | Bipolar switch | green luminous dot       | grey frame 220 V                 |
| SW22223B000 | Bipolar switch | full red light           | grey frame 220 V serigraphed 0/1 |
| SW22123B000 | Bipolar switch | red luminous dot         | grey frame 220 V                 |
| SW22223E000 | Bipolar switch | full yellow light        | grey frame 220 V serigraphed 0/1 |

## Dimensions



## PROBES AND TRANSDUCERS

To complete the range of electronic instruments, Eliwell supplies a series of temperature probes and humidity and pressure transducers that are recognised on the market for their reliability and quality of construction.



# NTC

## NTC semi-conductor temperature probes



### NTC co-moulded with double insulation

| Codes      | Description                | Capsule Material | Size of capsule mm (ØxL) | Cable type | Level of protection | Dielectric strength | Operating range | Length of probe |
|------------|----------------------------|------------------|--------------------------|------------|---------------------|---------------------|-----------------|-----------------|
| SN8SAA1502 | NTC with double insulation | AISI 304         | 6x40                     | silicone   | IP67                | 4000 V              | -50...+120°C    | 1.5 m           |
| SN8PAA1500 | NTC with double insulation | AISI 304         | 6x40                     | PVC        | IP67                | 4000 V              | -30...+105°C    | 1.5 m           |

### NTC co-moulded with double insulated cable

| Codes         | Description                                         | Capsule Material     | Size of capsule mm (ØxL) | Cable type                                            | Level of protection | Dielectric strength | Operating range | Length of probe |
|---------------|-----------------------------------------------------|----------------------|--------------------------|-------------------------------------------------------|---------------------|---------------------|-----------------|-----------------|
| SN8T6H0005    | NTC co-moulded with double insulated cable          | Thermoplastic rubber | 5x20                     | Thermoplastic rubber shielded                         | IP68                | 2000 V              | -50...+110°C    | 10.0 m          |
| SN8T6H1505    | NTC co-moulded with double insulated cable shielded | Thermoplastic rubber | 5x20                     | Thermoplastic rubber                                  | IP68                | 2000 V              | -50...+110°C    | 1.5 m           |
| SN8DED11502C0 | NTC co-moulded with double insulated cable          | Thermoplastic rubber | 5x20                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000 V              | -50...+110°C    | 1.5 m           |
| SN8DED13002C0 | NTC co-moulded with double insulated cable          | Thermoplastic rubber | 5x20                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000 V              | -50...+110°C    | 3.0 m           |
| SN8DAE11502C0 | NTC co-moulded with double insulated cable          | AISI 304             | 6x20                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000 V              | -50...+110°C    | 1.5 m           |
| SN8DAE13002C0 | NTC co-moulded with double insulated cable          | AISI 304             | 6x20                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000 V              | -50...+110°C    | 3.0 m           |
| SN8T6N1502    | NTC co-moulded with double insulated cable          | AISI 304             | 6x50                     | Thermoplastic rubber                                  | IP68                | 2000 V              | -50...+110°C    | 1.5 m           |



# Special NTC probes - TC

Special NTC semi-conductor temperature probes



## NTC special versions

| Codes         | Description                              | Capsule Material     | Size of capsule mm (ØxL) | Cable type                                            | Level of protection | Dielectric strength | Operating range | Length of probe |
|---------------|------------------------------------------|----------------------|--------------------------|-------------------------------------------------------|---------------------|---------------------|-----------------|-----------------|
| SN8DEB21502C0 | NTC clamp-on                             | Thermoplastic rubber | 6x20                     | Thermoplastic rubber (Outer)<br>Polypropylene         | IP68                | 2000 V              | -50...+110°C    | 1.5 m           |
| SN8DEB23002C0 | NTC clamp-on                             | Thermoplastic rubber | 6x20                     | (Inner)<br>Thermoplastic rubber (Outer)               | IP68                | 2000 V              | -50...+110°C    | 3.0 m           |
| SN8DNB11502A0 | NTC clamp-on probe IP67<br>Fast response | Copper               | 4x16                     | Polypropylene (Inner)<br>Thermoplastic rubber (Outer) | IP67                | 1500 V              | -50...+110°C    | 1.5 m           |
| SN8DAC11502AV | NTC probe<br>Fast response               | AISI 304             | 4x40                     | Polypropylene (Inner)                                 | IP67                | 2000 V              | -50...+110°C    | 1.5 m           |
| SN8DAC13002AV | NTC probe<br>Fast response               | AISI 304             | 4x40                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP67                | 2000 V              | -50...+110°C    | 3.0 m           |

## TCK

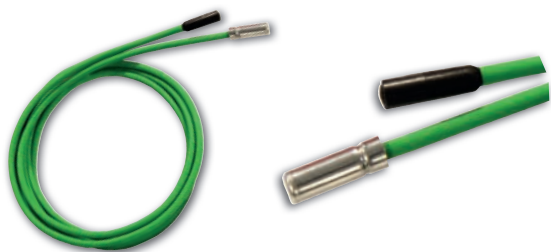
| Codes    | Description | Capsule Material | Size of capsule mm (ØxL) | Cable type | Level of protection | Dielectric strength | Operating range | Length of probe |
|----------|-------------|------------------|--------------------------|------------|---------------------|---------------------|-----------------|-----------------|
| SN400000 | Tck         | AISI 304         | 6x100                    | TTS        | IP45                | -                   | 0...400°C       | 3.0 m           |
| SN400004 | Tck         | Inconel 600      | 6x200                    | TTS        | IP45                | -                   | -40...1150°C    | 1.0 m           |

## TCJ

| Codes    | Description | Capsule Material | Size of capsule mm (ØxL) | Cable type | Level of protection | Dielectric strength | Operating range | Length of probe |
|----------|-------------|------------------|--------------------------|------------|---------------------|---------------------|-----------------|-----------------|
| SN300000 | Tcj         | AISI 316         | 6x100                    | Vetrotex   | IP44                | -                   | 0...350°C       | 3.0 m           |
| SN300008 | Tcj         | AISI 316         | 6x100                    | Vetrotex   | IP44                | -                   | 0...350°C       | 1.5 m           |
| SN300042 | Tcj         | AISI 304         | 6x100                    | TTS        | IP45                | -                   | 0...350°C       | 3.0 m           |

## Pt100 - Pt1000 probes

### Pt100 - Pt1000 thermo-resistive temperature probes



#### Pt100

| Code          | Description                    | Capsule Material | Size of capsule mm (ØxL) | Cable type           | Level of protection | Operating range | Length of probe |
|---------------|--------------------------------|------------------|--------------------------|----------------------|---------------------|-----------------|-----------------|
| SN200009      | Pt100, 3 wires with steel tube | AISI 316         | 6x100                    | Vetrotex             | IP44                | 0...+600°C      | 3 mm            |
| SN206000      | Pt100, 3 wires with steel tube | AISI 316         | 6x100                    | silicone             | IP67                | -40...200°C     | 3 mm            |
| SN2TAE51502C0 | P100 with steel tube           | AISI 304         | 6x50                     | thermoplastic rubber | IP68                | -50...+110°C    | 1.5 mm          |

#### Pt1000

| Codes         | Description                                   | Capsule Material     | Size of capsule mm (ØxL) | Cable type                                            | Level of protection | Dielectric strength | Operating range | Length of probe |
|---------------|-----------------------------------------------|----------------------|--------------------------|-------------------------------------------------------|---------------------|---------------------|-----------------|-----------------|
| SN950A2500    | Pt1000 with two wires                         | AISI 304             | 6x40                     | Silicone                                              | IP67                | 2000 V              | -50...+200°C    | 2.5 m           |
| SN9DAE11502C6 | Pt1000 co-moulded with double insulated cable | AISI 304             | 6x20                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000 V              | -50...+110°C    | 1.5 m           |
| SN9DAE13002C6 | Pt1000 co-moulded with double insulated cable | AISI 304             | 6x20                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000 V              | -50...+110°C    | 3.0 m           |
| SN9DED11502C6 | Pt1000 co-moulded with double insulated cable | Thermoplastic rubber | 5x20                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000 V              | -50...+110°C    | 1.5 m           |
| SN9DED13002C6 | Pt1000 co-moulded with double insulated cable | Thermoplastic rubber | 5x20                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000 V              | -50...+110°C    | 3.0 m           |

# PTC Probes

## PTC semi-conductor temperature probes



### Applications

Eliwell temperature probes are devices that provide the instruments to which they are connected with temperature measurement through a physical process.

### Common features

Accuracy of temperature measurement: +/- 1%

| Codes         | Description                                | Capsule Material     | Size of capsule mm (ØxL) | Cable type                                            | Level of protection | Dielectric strength | Operating range | Length of probe |
|---------------|--------------------------------------------|----------------------|--------------------------|-------------------------------------------------------|---------------------|---------------------|-----------------|-----------------|
| SN7T6A1502    | PTC co-moulded with double insulated cable | AISI 304             | 6x40                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000                | -50...+110°C    | 1.5 m           |
| SN7DAE11502C0 | PTC co-moulded with double insulated cable | AISI 304             | 6x20                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000                | -50...+110°C    | 1.5 m           |
| SN7DAE13002C0 | PTC co-moulded with double insulated cable | AISI 304             | 6x20                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000                | -50...+110°C    | 3.0 m           |
| SN7DED11502C0 | PTC co-moulded with double insulated cable | Thermoplastic rubber | 5x20                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000                | -50...+110°C    | 1.5 m           |
| SN7DED13002C0 | PTC co-moulded with double insulated cable | AISI 304             | 6x20                     | Thermoplastic rubber (Outer)<br>Polypropylene (Inner) | IP68                | 2000                | -50...+110°C    | 3.0 m           |
| SN6070000     | PTC for ambient temperature                | Plastic              | 15x70                    | -                                                     | IP54                | -                   | -40...+120°C    | -               |
| SN603008      | PTC for piercing, with PVC grip            | AISI 316             | 3x150                    | Silicone                                              | IP65                | -                   | -20...+110°C    | 3.0 m           |

# EWPA 007 - 030 - 050

## Pressure transducers



### Applications

EWPA pressure transducers are sensors with a voltage output through which they transmit the signal to the measurement instruments they are connected to.

| Technical data                           | EWPA 007                                                   | EWPA 010                                                   | EWPA 030                                                             | EWPA 050                                                   |
|------------------------------------------|------------------------------------------------------------|------------------------------------------------------------|----------------------------------------------------------------------|------------------------------------------------------------|
| Operating range:                         | -0.5...7.0 bar (relative)                                  | 0...10 bar (relative)                                      | 0...30 bar (relative)                                                | 0...50 bar (relative)                                      |
| Output signal:                           | 2 wires 4...20 mA                                          | 2 wires 4...20 mA                                          | 2 wires 4...20 mA                                                    | 2 wires 4...20 mA                                          |
| Overload:                                | 2 times pressure range                                     | 2 times pressure range                                     | 2 times pressure range                                               | 2 times pressure range                                     |
| Power supply:                            | 8...32 Volts                                               | 8...32 Volts                                               | 8...32 Volts                                                         | 8...32 Volts                                               |
| Accuracy:                                | ± 0.5% FS max<br>(linearity, hysteresis, repeatability)    | ± 0.5% FS max<br>(linearity, hysteresis, repeatability)    | ± 0.5% FS max<br>(linearity, hysteresis, repeatability)              | ± 0.5% FS max<br>(linearity, hysteresis, repeatability)    |
| Compensated temperature:                 | 0...50°C                                                   | 0...50°C                                                   | 0...50°C                                                             | 0...50°C                                                   |
| Electrical connections:                  | 2 m cable, wired<br>2 m cable with PACKARD connector       | 2 m cable, wired<br>2 m cable with PACKARD connector       | 2 m cable wired<br>2 m cable with PACKARD connector<br>mPm connector | 2 m cable, wired<br>2 m cable with PACKARD connector       |
| Mechanical connections:                  | male connector/<br>female connector<br>¼ SAE (7/16"-20UNF) | male connector/<br>female connector<br>¼ SAE (7/16"-20UNF) | male connector/<br>female connector<br>¼ SAE (7/16"-20UNF)           | male connector/<br>female connector<br>¼ SAE (7/16"-20UNF) |
| Operating temperature:                   | -40...100°C                                                | -40...100°C                                                | -40...100°C                                                          | -40...100°C                                                |
| Global error at T 0...50°C:              | max. ± 1.0% FS                                             | max. ± 1.0% FS                                             | max. ± 1.0% FS                                                       | max. ± 1.0% FS                                             |
| Global error at T -10...80°C:            | max. ± 1.5% FS                                             | max. ± 1.5% FS                                             | max. ± 1.5% FS                                                       | max. ± 1.5% FS                                             |
| Response time:                           | (0...99%) < 5 ms                                           | (0...99%) < 5 ms                                           | (0...99%) < 5 ms                                                     | (0...99%) < 5 ms                                           |
| Material in contact with the environment | AISI 316L<br>Viton outer seal                              | AISI 316L<br>Viton outer seal                              | AISI 316L<br>Viton outer seal                                        | AISI 316L<br>Viton outer seal                              |
| Enclosure rating:                        | Packard: IP67<br>Cable: IP54                               | Packard: IP67<br>Cable: IP54                               | Packard: IP67<br>mPm plug: IP65<br>Cable: IP54                       | Packard: IP67<br>Cable: IP54                               |

| Codes    | Description | Connector      | Electric connection              | IP |
|----------|-------------|----------------|----------------------------------|----|
| TD220030 | EWPA 030    | 1/4 SAE MALE   | 2 m cable                        | 54 |
| TD240030 | EWPA 030    | 1/4 SAE MALE   | 2 m cable with Packard connector | 67 |
| TD250030 | EWPA 030    | 1/4 SAE MALE   | mPm connector                    | 65 |
| TD320030 | EWPA 030    | 1/4 SAE FEMALE | 2 m cable                        | 54 |
| TD340030 | EWPA 030    | 1/4 SAE FEMALE | 2 m cable with Packard connector | 67 |
| TD220050 | EWPA 050    | 1/4 SAE MALE   | 2 m cable                        | 54 |
| TD240050 | EWPA 050    | 1/4 SAE MALE   | 2 m cable with Packard connector | 67 |
| TD320050 | EWPA 050    | 1/4 SAE FEMALE | 2 m cable                        | 54 |
| TD340050 | EWPA 050    | 1/4 SAE FEMALE | 2 m cable with Packard connector | 67 |
| TD220007 | EWPA 007    | 1/4 SAE MALE   | 2 m cable                        | 54 |
| TD240007 | EWPA 007    | 1/4 SAE MALE   | 2 m cable with Packard connector | 67 |
| TD320007 | EWPA 007    | 1/4 SAE FEMALE | 2 m cable                        | 54 |
| TD340007 | EWPA 007    | 1/4 SAE FEMALE | 2 m cable with Packard connector | 67 |
| TD320010 | EWPA 010    | 1/4 SAE FEMALE | 2 m cable                        | 54 |
| TD340010 | EWPA 010    | 1/4 SAE FEMALE | 2 m cable with Packard connector | 67 |

# EWPA 010 - 030 - 050

## Ratiometric pressure transducers



| Codes           | Description | Connector      | Electric connection              |
|-----------------|-------------|----------------|----------------------------------|
| <b>TD420010</b> | EWPA 010    | 1/4 SAE FEMALE | 2 m cable with Packard connector |
| <b>TD420030</b> | EWPA 030    | 1/4 SAE FEMALE | 2 m cable with Packard connector |
| <b>TD420050</b> | EWPA 050    | 1/4 SAE FEMALE | 2 m cable with Packard connector |

### Applications

EWPA ratiometric pressure transducers are sensors capable of transmitting a signal by way of a current output to the measuring instruments with which they are connected. They offer accurate performance across a wide temperature range.

| Technical data                   | EWPA 010                                                 | EWPA 030                                                 | EWPA 050                                                 |
|----------------------------------|----------------------------------------------------------|----------------------------------------------------------|----------------------------------------------------------|
| Operating range at 0.5...4.5 V:  | 0...145 psi / 0...10 bar                                 | 0...515 psi / 0...35 bar                                 | 0...667 psi / 0...46 bar                                 |
| Output signal:                   | 3 wires 0.5...4.5 V ratiometric                          | 3 wires 0.5...4.5 V ratiometric                          | 3 wires 0.5...4.5 V ratiometric                          |
| Overload:                        | 2.5 times pressure range                                 | 2.5 times pressure range                                 | 2.5 times pressure range                                 |
| Power supply:                    | 5.0 V <sub>DC</sub> ± 0.5 V                              | 5.0 V <sub>DC</sub> ± 0.5 V                              | 5.0 V <sub>DC</sub> ± 0.5 V                              |
| Accuracy:                        | ± 0.25% FS max<br>(linearity, hysteresis, repeatability) | ± 0.25% FS max<br>(linearity, hysteresis, repeatability) | ± 0.25% FS max<br>(linearity, hysteresis, repeatability) |
| Energy consumption:              | 8 mA max                                                 | 8 mA max                                                 | 8 mA max                                                 |
| Load resistance:                 | > 5KΩ                                                    | > 5KΩ                                                    | > 5KΩ                                                    |
| Electrical connections:          | 2 m cable with PACKARD connector                         | 2 m cable with PACKARD connector                         | 2 m cable with PACKARD connector                         |
| Mechanical connections:          | female connector<br>¼ SAE (7/16"-20UNF)                  | female connector<br>¼ SAE (7/16"-20UNF)                  | female connector<br>¼ SAE (7/16"-20UNF)                  |
| Operating temperature:           | -40...125°C                                              | -40...125°C                                              | -40...125°C                                              |
| Global error at T 0...50°C:      | max. ± 1.0% FS                                           | max. ± 1.0% FS                                           | max. ± 1.0% FS                                           |
| Global error at T -10...80°C:    | max. ± 1.5% FS                                           | max. ± 1.5% FS                                           | max. ± 1.5% FS                                           |
| Response time:                   | (0...99%) < 5 ms                                         | (0...99%) < 5 ms                                         | (0...99%) < 5 ms                                         |
| Material exposed to environment: | AISI 316L<br>Viton outer seal                            | AISI 316L<br>Viton outer seal                            | AISI 316L<br>Viton outer seal                            |
| Enclosure rating:                | IP67                                                     | IP67                                                     | IP67                                                     |

# EWHS 284 - 304 - 314

## Humidity probes

**EWHS284**

**EWHS304**

**EWHS314**


### Applications

Humidity probes of the EWHS284-304-314 series are intended for connection to humidity and humidity/temperature measuring instruments of superior dependability.

### Common features

|                                       |             |
|---------------------------------------|-------------|
| <b>Ambient humidity:</b>              | 0...100% RH |
| <b>Maximum air speed:</b>             | 20m/s       |
| <b>Polarity inversion protection:</b> | diode       |

| Technical data                                          | EWHS284                                                              | EWHS304                                                                                         | EWHS314                                                                                         |
|---------------------------------------------------------|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Enclosure rating                                        | IP54                                                                 | IP65                                                                                            | IP65                                                                                            |
| Installation                                            | Use the clip supplied with the probe                                 | via 2 external slots                                                                            | via 2 external slots                                                                            |
| Electrical connections                                  | PVC two core cable                                                   | Screw terminals                                                                                 | Screw terminals                                                                                 |
| Dimensions                                              | 103X25mm                                                             | 80X80X52mm                                                                                      | 80X80X52mm                                                                                      |
| Power supply                                            | 9...28V <sub>m</sub>                                                 | 9...30V <sub>m</sub>                                                                            | 15...40V <sub>m</sub> or 12...28V <sub>-</sub>                                                  |
| Current draw                                            | 20mA max                                                             | 20mA max                                                                                        | <50mA max                                                                                       |
| Ambient temperature                                     | -10...60°C                                                           | -40...60°C                                                                                      | -40...60°C (-40...140°F)                                                                        |
| Humidity sensor                                         | resistive                                                            | HygroMer* IN-1                                                                                  | HygroMer* IN-1                                                                                  |
| Humidity measurement range                              | 15...90% RH                                                          | 0...100% RH                                                                                     | 0...100% RH                                                                                     |
| Output current of humidity measurement                  | 4 (0%)...20mA (100%)                                                 | 4 (0%)...20mA (100%)                                                                            | 4 (0%)...20mA (100%)                                                                            |
| Response time in steady state (63%) at 23 °C            | 60 secs                                                              | typically 10 secs                                                                               | typically 10 secs                                                                               |
| Recovery time from saturation                           | 360 secs                                                             | depending on air flow rate                                                                      | depending on air flow rate                                                                      |
| Storage temperature                                     | -20...70°C                                                           | -50...70°C                                                                                      | -50...70°C                                                                                      |
| Accuracy of humidity measurement (at 23°C):             | ±5% RH (in the range 15...90% RH)                                    | ±2% RH (in the range 10...95% RH)<br>±3% RH (for values <10% or >95% RH)                        | ±2% RH                                                                                          |
| Number of wires per connection                          | 2 (blue: power; brown: output)                                       | 2                                                                                               | 4                                                                                               |
| Air filter                                              | metal wire mesh                                                      | polyethylene                                                                                    | polyethylene                                                                                    |
| Temperature sensor                                      | -                                                                    | -                                                                                               | Pt100B                                                                                          |
| Temperature range                                       | -                                                                    | -                                                                                               | -40...60°C (-40...140°F)                                                                        |
| Temperature measurement output current                  | -                                                                    | -                                                                                               | 4 (-30°C)...20mA (70°C)                                                                         |
| Accuracy of temperature measurement (at 0 °C and 23 °C) | -                                                                    | -                                                                                               | ±0,3K                                                                                           |
| Temperature compensation                                | -                                                                    | with NTC                                                                                        | with Pt100B                                                                                     |
| Connection cable                                        | 1m or 3m                                                             | -                                                                                               | -                                                                                               |
| Maximum load                                            | 250 Ohm                                                              | 0 Ohm at 6V <sub>m</sub> and 5V <sub>~</sub><br>500Ohm at 15V <sub>m</sub> and 12V <sub>~</sub> | 0 Ohm at 6V <sub>m</sub> and 5V <sub>~</sub><br>500Ohm at 15V <sub>m</sub> and 12V <sub>~</sub> |
| Part Number                                             | EWHS284 1m cable: SN5PPN11613M0<br>EWHS284-3 3m cable: SN5PPN13113M0 | EWHS304: SN5NPM1A614M0                                                                          | EWHS314: SN0NPM1A614M0                                                                          |

# Temperature probe tables

## Appendices

### NTC probe table

| Temp. environment<br>(°C) | Resistance (Ohm) |        |        |        |        |        |
|---------------------------|------------------|--------|--------|--------|--------|--------|
|                           | 102AT            | 202AT  | 502AT  | 103AT  | 203AT  | 503AT  |
| -50                       | 24,46            | 55,66  | 154,60 | 329,50 | 1253   | 3168   |
| -45                       | 18,68            | 42,17  | 116,50 | 247,70 | 890,50 | 2257   |
| -40                       | 14,43            | 32,34  | 88,91  | 188,50 | 642,00 | 1632   |
| -35                       | 11,23            | 26,96  | 68,19  | 144,10 | 465,80 | 1186   |
| -30                       | 8,834            | 19,48  | 52,87  | 111,30 | 342,50 | 872,80 |
| -25                       | 6,998            | 15,29  | 41,21  | 86,43  | 253,60 | 646,30 |
| -20                       | 5,594            | 12,11  | 32,44  | 47,77  | 190,00 | 484,30 |
| -15                       | 4,501            | 9,655  | 25,66  | 53,41  | 143,20 | 364,60 |
| -10                       | 3,651            | 7,763  | 20,48  | 42,47  | 109,10 | 277,50 |
| -5                        | 2,979            | 6,277  | 16,43  | 33,90  | 83,75  | 212,30 |
| 0                         | 2,449            | 5,114  | 13,29  | 27,28  | 64,88  | 164,00 |
| 5                         | 2,024            | 4,188  | 10,80  | 22,05  | 50,53  | 127,50 |
| 10                        | 1,684            | 3,454  | 8,840  | 17,96  | 39,71  | 99,99  |
| 15                        | 1,408            | 2,862  | 7,267  | 14,69  | 31,36  | 78,77  |
| 20                        | 1,184            | 2,387  | 6,013  | 12,09  | 24,96  | 62,56  |
| 25                        | 1,000            | 2,000  | 5,000  | 10,00  | 20,00  | 50,00  |
| 30                        | 0,8486           | 1,684  | 4,179  | 8,313  | 16,12  | 40,20  |
| 35                        | 0,7229           | 1,424  | 3,508  | 6,940  | 13,06  | 32,48  |
| 40                        | 0,6189           | 1,211  | 2,961  | 5,827  | 10,65  | 26,43  |
| 45                        | 0,5316           | 1,033  | 2,509  | 4,911  | 8,716  | 21,59  |
| 50                        | 0,4587           | 0,8854 | 2,137  | 4,160  | 7,181  | 17,75  |
| 55                        | 0,3949           | 0,7620 | 1,826  | 3,536  | 5,941  | 14,64  |
| 60                        | 0,3446           | 0,6587 | 1,567  | 3,020  | 4,943  | 12,15  |
| 65                        | 0,3000           | 0,5713 | 1,350  | 2,588  | 4,127  | 10,13  |
| 70                        | 0,2622           | 0,4975 | 1,168  | 2,228  | 3,464  | 8,482  |
| 75                        | 0,2285           | 0,4343 | 1,014  | 1,924  | 2,916  | 7,129  |
| 80                        | 0,1999           | 0,3807 | 0,8835 | 1,668  | 2,468  | 6,022  |
| 85                        | 0,1751           | 0,3346 | 0,7722 | 1,451  | 2,096  | 5,105  |
| 90                        | 0,1536           | 0,2949 | 0,6771 | 1,266  | 1,788  | 4,345  |
| 95                        | -                | -      | 0,5961 | 1,108  | 1,530  | 3,712  |
| 100                       | -                | -      | 0,5265 | 0,9731 | 1,315  | 3,185  |
| 105                       | -                | -      | 0,4654 | 0,8572 | 1,134  | 2,741  |
| 110                       | -                | -      | 0,4128 | 0,7576 | 0,9807 | 2,369  |

### NTC probe table - Extended range

| Temp. environment<br>(°C) | Resistance (KOhm) |          |         |
|---------------------------|-------------------|----------|---------|
|                           | Minimum           | Standard | Maximum |
| -40                       | 321,654           | 333,562  | 345,877 |
| -35                       | 233,032           | 241,072  | 249,364 |
| -30                       | 170,611           | 176,082  | 181,710 |
| -25                       | 126,176           | 129,925  | 133,773 |
| -20                       | 94,221            | 96,807   | 99,454  |
| -15                       | 71,015            | 72,809   | 74,640  |
| -10                       | 54,004            | 55,253   | 56,525  |
| -5                        | 41,419            | 42,292   | 43,179  |
| 0                         | 32,028            | 32,640   | 33,260  |
| 5                         | 24,962            | 25,391   | 25,824  |
| 10                        | 19,601            | 19,902   | 20,205  |
| 15                        | 15,504            | 15,713   | 15,924  |
| 20                        | 12,348            | 12,493   | 12,639  |
| 25                        | 9,900             | 10,000   | 10,100  |
| 30                        | 7,962             | 8,055    | 8,150   |
| 35                        | 6,444             | 6,530    | 6,616   |
| 40                        | 5,247             | 5,325    | 5,403   |
| 45                        | 4,296             | 4,367    | 4,438   |
| 50                        | 3,537             | 3,601    | 3,665   |
| 55                        | 2,928             | 2,985    | 3,042   |
| 60                        | 2,436             | 2,487    | 2,538   |
| 65                        | 2,037             | 2,082    | 2,127   |
| 70                        | 1,711             | 1,751    | 1,792   |
| 75                        | 1,444             | 1,480    | 1,516   |
| 80                        | 1,224             | 1,256    | 1,288   |
| 85                        | 1,042             | 1,070    | 1,099   |
| 90                        | 0,890             | 0,916    | 0,941   |
| 95                        | 0,764             | 0,786    | 0,810   |
| 100                       | 0,658             | 0,678    | 0,699   |
| 105                       | 0,569             | 0,587    | 0,605   |
| 110                       | 0,493             | 0,510    | 0,526   |
| 115                       | 0,429             | 0,444    | 0,459   |
| 120                       | 0,375             | 0,388    | 0,402   |
| 125                       | 0,328             | 0,340    | 0,353   |
| 130                       | 0,289             | 0,299    | 0,310   |
| 135                       | 0,254             | 0,264    | 0,274   |
| 140                       | 0,224             | 0,234    | 0,243   |
| 145                       | 0,199             | 0,207    | 0,215   |
| 150                       | 0,177             | 0,184    | 0,192   |

### PTC probe table

| Temperature environment |      | Temperature coefficient<br>(%/K) | KTY81-121 / KTY82-121 |          |         | Error - temperature |
|-------------------------|------|----------------------------------|-----------------------|----------|---------|---------------------|
| (°C)                    | (°F) |                                  | Resistance (Ohm)      |          |         |                     |
|                         |      |                                  | Minimum               | Standard | Maximum |                     |
| -55                     | -67  | 0,99                             | 471                   | 485      | 500     | ±3,02               |
| -50                     | -58  | 0,98                             | 495                   | 510      | 524     | ±2,92               |
| -40                     | -40  | 0,96                             | 547                   | 562      | 576     | ±2,74               |
| -30                     | -22  | 0,93                             | 603                   | 617      | 632     | ±2,55               |
| -20                     | -4   | 0,91                             | 662                   | 677      | 691     | ±2,35               |
| -10                     | 14   | 0,88                             | 726                   | 740      | 754     | ±2,14               |
| 0                       | 32   | 0,85                             | 794                   | 807      | 820     | ±1,91               |
| 10                      | 50   | 0,83                             | 865                   | 877      | 889     | ±1,67               |
| 20                      | 68   | 0,80                             | 941                   | 951      | 962     | ±1,41               |
| 25                      | 77   | 0,79                             | 980                   | 990      | 1000    | ±1,27               |
| 30                      | 86   | 0,78                             | 1018                  | 1029     | 1041    | ±1,39               |
| 40                      | 104  | 0,75                             | 1097                  | 1111     | 1125    | ±1,64               |
| 50                      | 122  | 0,73                             | 1180                  | 1196     | 1213    | ±1,91               |
| 60                      | 140  | 0,71                             | 1266                  | 1286     | 1305    | ±2,19               |
| 70                      | 158  | 0,69                             | 1355                  | 1378     | 1402    | ±2,49               |
| 80                      | 176  | 0,67                             | 1447                  | 1475     | 1502    | ±2,80               |
| 90                      | 194  | 0,65                             | 1543                  | 1575     | 1607    | ±3,12               |
| 100                     | 212  | 0,63                             | 1642                  | 1679     | 1716    | ±3,46               |
| 110                     | 230  | 0,61                             | 1745                  | 1786     | 1828    | ±3,83               |
| 120                     | 248  | 0,58                             | 1849                  | 1896     | 1943    | ±4,33               |
| 125                     | 257  | 0,55                             | 1900                  | 1950     | 2000    | ±4,66               |
| 130                     | 266  | 0,52                             | 1950                  | 2003     | 2056    | ±5,07               |
| 140                     | 284  | 0,45                             | 2044                  | 2103     | 1462    | ±6,28               |
| 150                     | 302  | 0,35                             | 2124                  | 2189     | 2254    | ±8,55               |

# Temperature probe tables

## Appendices

### Pt100 probe table

| Temp. environment | Resistance | Temp. environment | Resistance | Temp. environment | Resistance | Temp. environment | Resistance | Temp. environment | Resistance |
|-------------------|------------|-------------------|------------|-------------------|------------|-------------------|------------|-------------------|------------|
| (°C)              | (Ohm)      | (°C)              | (Ohm)      | (°C)              | (Ohm)      | (°C)              | (Ohm)      | (°C)              | (Ohm)      |
| -200              | 18,52      | 20                | 107,79     | 230               | 186,84     | 440               | 260,78     | 650               | 329,64     |
| -190              | 22,83      | 30                | 11,67      | 240               | 190,47     | 450               | 264,18     | 660               | 332,79     |
| -180              | 27,10      | 40                | 115,54     | 250               | 194,10     | 460               | 267,56     | 670               | 335,93     |
| -170              | 31,34      | 50                | 119,40     | 260               | 197,71     | 470               | 270,93     | 680               | 339,06     |
| -160              | 35,54      | 60                | 123,24     | 270               | 201,31     | 480               | 274,29     | 690               | 342,18     |
| -150              | 39,72      | 70                | 127,08     | 280               | 204,90     | 490               | 277,64     | 700               | 345,28     |
| -140              | 43,88      | 80                | 130,90     | 290               | 208,48     | 500               | 280,98     | 710               | 348,38     |
| -130              | 48,00      | 90                | 134,71     | 300               | 212,05     | 510               | 284,30     | 720               | 351,46     |
| -120              | 52,11      | 100               | 138,51     | 310               | 215,61     | 520               | 287,62     | 730               | 354,53     |
| -110              | 56,19      | 110               | 142,29     | 320               | 219,15     | 530               | 290,92     | 740               | 357,59     |
| -100              | 60,26      | 120               | 146,07     | 330               | 222,68     | 540               | 294,21     | 750               | 360,64     |
| -90               | 64,30      | 130               | 149,83     | 340               | 226,21     | 550               | 297,49     | 760               | 363,67     |
| -80               | 68,33      | 140               | 153,58     | 350               | 229,72     | 560               | 300,75     | 770               | 366,70     |
| -70               | 72,33      | 150               | 157,33     | 360               | 233,21     | 570               | 304,01     | 780               | 369,71     |
| -60               | 76,33      | 160               | 161,05     | 370               | 236,70     | 580               | 307,25     | 790               | 372,71     |
| -50               | 80,31      | 170               | 164,77     | 380               | 240,18     | 590               | 310,49     | 800               | 375,70     |
| -40               | 84,27      | 180               | 168,48     | 390               | 243,64     | 600               | 313,71     | 810               | 378,68     |
| -30               | 88,22      | 190               | 172,17     | 400               | 247,09     | 610               | 316,92     | 820               | 381,65     |
| -20               | 92,16      | 200               | 175,86     | 410               | 250,53     | 620               | 320,12     | 830               | 384,60     |
| -10               | 96,09      | 210               | 179,53     | 420               | 253,96     | 630               | 323,30     | 840               | 387,55     |
| 0                 | 100,00     | 220               | 183,19     | 430               | 257,38     | 640               | 326,48     | 850               | 390,48     |
| 10                | 103,90     |                   |            |                   |            |                   |            |                   |            |

### Pt1000 probe table

| Temp. environment | Resistance | Temp. environment | Resistance | Temp. environment | Resistance | Temp. environment | Resistance | Temp. environment | Resistance |
|-------------------|------------|-------------------|------------|-------------------|------------|-------------------|------------|-------------------|------------|
| (°C)              | (Ohm)      | (°C)              | (Ohm)      | (°C)              | (Ohm)      | (°C)              | (Ohm)      | (°C)              | (Ohm)      |
| -200              | 185,281    | 20                | 1077,936   | 230               | 1868,465   | 440               | 2608,235   | 650               | 3297,246   |
| -190              | 228,327    | 30                | 1116,731   | 240               | 1904,843   | 450               | 2642,196   | 660               | 3328,790   |
| -180              | 271,029    | 40                | 1155,411   | 250               | 1941,106   | 460               | 2676,042   | 670               | 3360,219   |
| -170              | 313,408    | 50                | 1193,976   | 260               | 1977,254   | 470               | 2709,773   | 680               | 3391,533   |
| -160              | 355,484    | 60                | 1232,426   | 270               | 2013,287   | 480               | 2743,389   | 690               | 3422,731   |
| -150              | 397,277    | 70                | 1270,961   | 280               | 2049,205   | 490               | 2776,889   | 700               | 3453,815   |
| -140              | 432,903    | 80                | 1308,981   | 290               | 2085,007   | 500               | 2810,275   | 710               | 3484,783   |
| -130              | 480,081    | 90                | 1347,085   | 300               | 2120,695   | 510               | 2843,545   | 720               | 3515,637   |
| -120              | 521,127    | 100               | 1385,075   | 310               | 2156,267   | 520               | 2876,701   | 730               | 3546,375   |
| -110              | 561,954    | 110               | 1422,949   | 320               | 2191,725   | 530               | 2909,741   | 740               | 3576,998   |
| -100              | 602,578    | 120               | 1460,709   | 330               | 2227,067   | 540               | 2942,666   | 750               | 3607,506   |
| -90               | 643,012    | 130               | 1498,353   | 340               | 2262,294   | 550               | 2975,476   | 760               | 3637,899   |
| -80               | 683,267    | 140               | 1535,882   | 350               | 2297,406   | 560               | 3008,171   | 770               | 3668,177   |
| -70               | 723,355    | 150               | 1573,296   | 360               | 2332,403   | 570               | 3040,751   | 780               | 3698,340   |
| -60               | 763,286    | 160               | 1610,595   | 370               | 2367,285   | 580               | 3073,216   | 790               | 3728,387   |
| -50               | 903,068    | 170               | 1647,779   | 380               | 2402,052   | 590               | 3105,565   | 800               | 3758,320   |
| -40               | 842,71     | 180               | 1684,848   | 390               | 2436,703   | 600               | 3137,800   | 810               | 3788,137   |
| -30               | 882,218    | 190               | 1721,801   | 400               | 2471,240   | 610               | 3169,919   | 820               | 3917,840   |
| -20               | 921,6      | 200               | 1758,640   | 410               | 2505,661   | 620               | 3201,924   | 830               | 3847,427   |
| -10               | 960,859    | 210               | 1795,363   | 420               | 2539,968   | 630               | 3233,813   | 840               | 3876,899   |
| 0                 | 1000       | 220               | 1831,972   | 430               | 2574,159   | 640               | 3265,587   | 850               | 3906,256   |
| 10                | 1039,025   |                   |            |                   |            |                   |            |                   |            |



# Temperature Probe Tables

## Appendices

### TCJ probe table

| Temp.  | 0°C    | -10°C  | -20°C  | -30°C  | -40°C  | -50°C  | -60°C  | -70°C  | -80°C  | -90°C  |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| -200°C | -7,890 | -8,095 | -      | -      | -      | -      | -      | -      | -      | -      |
| -100°C | -4,633 | -5,037 | -5,426 | -5,801 | -6,159 | -6,500 | -6,821 | -7,123 | -7,403 | -7,659 |
| 0°C    | 0,000  | -0,501 | -0,995 | -1,482 | -1,961 | -2,431 | -2,893 | -3,344 | -3,786 | -4,215 |
|        | 10°C   | 20°C   | 30°C   | 40°C   | 50°C   | 60°C   | 70°C   | 80°C   | 90°C   | 100°C  |
| 0°C    | 0,000  | 0,507  | 1,019  | 1,537  | 2,059  | 2,585  | 3,116  | 3,650  | 4,187  | 4,726  |
| 100°C  | 5,269  | 5,814  | 6,360  | 6,909  | 7,459  | 8,010  | 8,562  | 9,115  | 9,669  | 10,224 |
| 200°C  | 10,779 | 11,334 | 11,889 | 12,445 | 13,000 | 13,555 | 14,110 | 14,665 | 15,219 | 15,773 |
| 300°C  | 16,327 | 16,881 | 17,434 | 17,986 | 18,538 | 19,090 | 19,642 | 20,194 | 20,745 | 21,297 |
| 400°C  | 21,848 | 22,400 | 22,952 | 23,504 | 24,059 | 24,610 | 24,164 | 25,720 | 26,276 | 26,834 |
| 500°C  | 27,393 | 27,953 | 28,516 | 29,080 | 29,647 | 30,216 | 30,788 | 31,362 | 31,939 | 32,519 |
| 600°C  | 33,102 | 33,689 | 34,279 | 34,873 | 35,470 | 36,071 | 36,675 | 37,284 | 37,896 | 38,512 |
| 700°C  | 39,132 | 39,755 | 40,382 | 41,012 | 41,645 | 42,281 | 42,919 | 43,559 | 44,203 | 44,848 |
| 800°C  | 45,494 | 46,141 | 46,786 | 47,431 | 48,074 | 48,715 | 49,353 | 49,989 | 50,622 | 51,251 |
| 900°C  | 51,877 | 52,500 | 53,119 | 53,735 | 54,347 | 54,956 | 55,561 | 56,164 | 56,763 | 57,360 |
| 1000°C | 57,953 | 58,545 | 59,134 | 59,721 | 60,307 | 60,890 | 61,473 | 62,054 | 62,634 | 63,214 |
| 1100°C | 63,792 | 64,370 | 64,948 | 65,525 | 66,102 | 66,679 | 67,255 | 67,831 | 68,406 | 68,980 |
| 1200°C | 69,553 | -      | -      | -      | -      | -      | -      | -      | -      | -      |

### TCK probe table

| Temp.  | 0°C    | -10°C  | -20°C  | -30°C  | -40°C  | -50°C  | -60°C  | -70°C  | -80°C  | -90°C  |
|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| -200°C | -5,730 | -6,035 | -6,158 | -6,262 | -6,344 | -6,404 | -6,441 | -6,458 | -      | -      |
| -100°C | -3,554 | -3,852 | -4,138 | -4,411 | -4,669 | -4,913 | -5,141 | -5,354 | -5,550 | -5,730 |
| 0°C    | 0,000  | -0,392 | -0,778 | -1,156 | -1,527 | -1,889 | -2,243 | -2,587 | -2,920 | -3,243 |
|        | 10°C   | 20°C   | 30°C   | 40°C   | 50°C   | 60°C   | 70°C   | 80°C   | 90°C   | 100°C  |
| 0°C    | 0,000  | 0,397  | 0,798  | 1,203  | 1,612  | 2,023  | 2,436  | 2,851  | 3,267  | 3,682  |
| 100°C  | 4,096  | 4,509  | 4,920  | 5,328  | 5,735  | 6,138  | 6,540  | 6,941  | 7,340  | 7,739  |
| 200°C  | 8,138  | 8,539  | 8,940  | 9,343  | 9,747  | 10,153 | 10,561 | 10,971 | 11,382 | 11,795 |
| 300°C  | 12,209 | 12,624 | 13,040 | 13,457 | 13,874 | 14,293 | 14,713 | 15,133 | 15,554 | 15,975 |
| 400°C  | 16,397 | 16,820 | 17,243 | 17,667 | 18,091 | 18,516 | 18,941 | 19,366 | 19,792 | 20,218 |
| 500°C  | 20,644 | 21,071 | 21,497 | 21,924 | 22,350 | 22,776 | 23,203 | 23,629 | 24,055 | 24,480 |
| 600°C  | 24,905 | 25,330 | 25,755 | 26,179 | 26,602 | 27,025 | 27,447 | 27,869 | 28,289 | 28,710 |
| 700°C  | 29,129 | 29,548 | 29,965 | 30,382 | 30,798 | 31,213 | 31,628 | 32,041 | 32,453 | 32,865 |
| 800°C  | 33,275 | 33,685 | 34,093 | 34,501 | 34,908 | 35,313 | 35,718 | 36,121 | 36,524 | 36,925 |
| 900°C  | 37,326 | 37,725 | 38,124 | 38,522 | 38,918 | 39,314 | 39,708 | 10,101 | 40,490 | 40,885 |
| 1000°C | 41,276 | 41,665 | 42,053 | 42,440 | 42,826 | 43,211 | 43,595 | 43,978 | 44,359 | 44,740 |
| 1100°C | 45,119 | 45,497 | 45,873 | 46,249 | 46,623 | 46,995 | 47,367 | 47,737 | 48,105 | 48,473 |
| 1200°C | 48,838 | 49,202 | 49,565 | 49,926 | 50,286 | 50,644 | 51,000 | 51,355 | 51,708 | 52,060 |
| 1300°C | 52,410 | 52,759 | 53,106 | 53,451 | 53,795 | 54,138 | 54,479 | 54,819 | -      | -      |

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#### ITALIA - HEADQUARTERS

##### Eliwell Controls Srl

Via dell' Industria, 15 Z. I. Paludi  
32010 Pieve d' Alpago (BL) - Italy

T +39 0437 986 111

##### Sales

T +39 0437 986 100 (Italy)

T +39 0437 986 200 (other countries)

E saleseliwell@schneider-electric.com

##### Technical Support

T +39 0437 986 300

E techsuppeliwell@schneider-electric.com

#### SPAIN

**Eliwell Iberica S.A.** - Valencia

T +34 (0) 96 313 42 04

E info@eliwell.es

**www.eliwell.es**

#### GERMANY

**Eliwell Deutschland** - Nürnberg

T +49 (0) 911 56 93 430

E eliwelldeutschland@schneider-electric.com

**www.eliwell.de**

#### FRANCE

**Eliwell France** - Paris

T +33 (0) 1 41 47 71 71

E contact@eliwell.fr

**www.eliwell.fr**

#### RUSSIA

Moscow, 115230

T +7 499 611 79 75

**www.eliwell.com**

#### CHINA

Shanghai

T +39 0437 986 200

E eliwell.china@schneider-electric.com

**www.eliwell.cn**

#### UNITED STATES

Chicago, IL

##### Sales

T +1 (855) 574 - 9214

##### Technical Support

T +1 (855) 574 - 9484

**www.eliwell.com**

#### BRAZIL

Campinas SP

T +55 19 3112 5333

vendas.eliwell@schneider-electric.com

**www.eliwell.com**

#### OTHER COUNTRIES

T +39 0437 986 111

##### Sales

T +39 0437 986 200

E saleseliwell@schneider-electric.com

##### Technical Support

T +39 0437 986 300

E techsuppeliwell@schneider-electric.com

**www.eliwell.com**



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