# RTX600 - KDEPlus - KDWPlus - ECPlus
## DIN controllers for cabinets and cold rooms
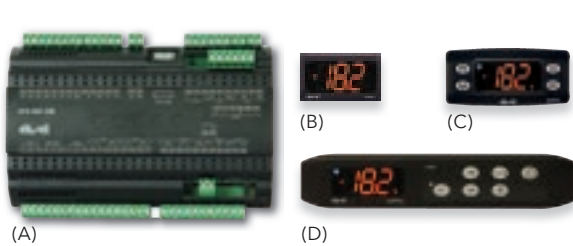
| Codes | | Description |
|---|---|---|
| **RTX5HBM0S2H00** | (A) | RTX600 |
| **KDE400E004000** | (C) | KDEPlus |
| **KDW6004004080** | (D) | KDWPlus |
| **EH000050V4000** | (B) | ECPlus |

(A)   (B)   (C)   (D)

## Applications

**RTX600** (Environmentally Optimised, optimised for the environment) is an electronic device specifically designed for plug-in applications, with thermostatic valve. The RTX600 controller can be interfaced with the KDEPlus, KDWPlus keyboards and the ECPlus display module.
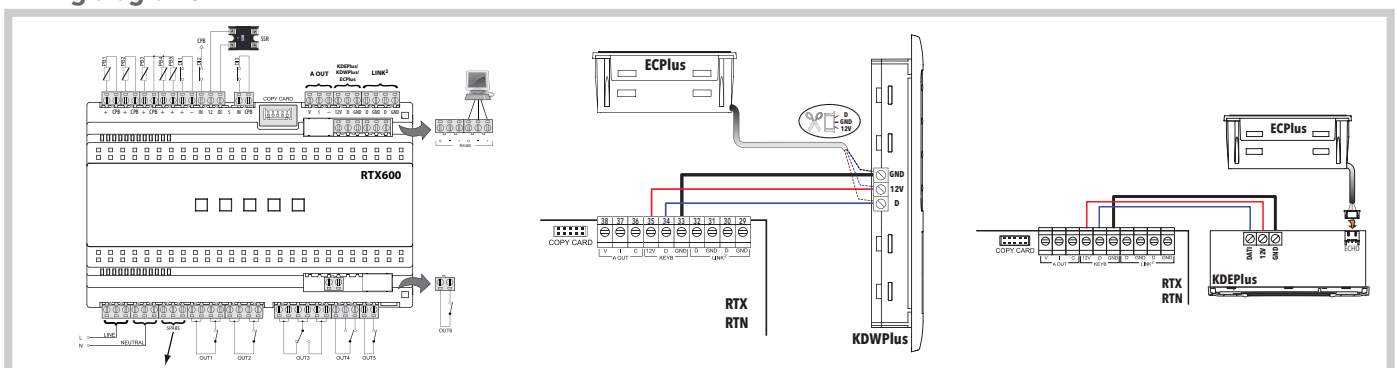
## Features

| | |
|---|---|
| Relay of up to **2HP** for direct control of loads. | Control of heating elements of frames / anti-mist resistances |
| Removable terminals and customised quick connections | Rapid synchronisation of remote and island cabinets with **Link²** plug-n-play |
| Intelligent defrosting (with clock) to **save energy** and preserve food better | Compatible with NTC, Pt1000, PTC probes |

## Technical data

| | RTX600 | KDEPlus | KDWPlus | ECPlus |
|---|---|---|---|---|
| Casing: | PC+ABS resin casing, UL94 V-0 | PC+ABS UL94 V-0 resin casing, polycarbonate window, thermoplastic resin keys | PC+ABS UL94 V-0 resin casing, polycarbonate window, thermoplastic resin keys | Body and window in polycarbonate |
| Dimensions: | 10 DIN modules | front panel 74x32 mm, depth 30 mm | front panel 180x37 mm, depth 23mm | front panel 48x28.6 mm, depth 15mm |
| Mounting: | on DIN Omega bar support | panel-mounting, with 71x29mm (+0.2/-0.1 mm) drilling template | panel mounting with 150x31mm (+0.2/-0.1mm) drilling template | panel mounting with 45.9x26.4 mm (+0.2/-0.1 mm) drilling template |
| Display: | - | with decimal point ° 3 digits + sign | with decimal point ° 3 digits + sign | with decimal point ° 3 digits + sign |
| Display range: | • NTC: -50.0°C...+110°C;  • PTC: -55.0°C...+150°C;  • Pt1000: -60°C...+150°C | see power board | see power board | see power board |
| Analogue/digital inputs: | 5 NTC/PTC/Pt1000/D.I.*  3 D.I.* voltage-free | - | - | - |
| Connections: | • 1 voltage serial for keypad  • 1 voltage serial for LAN  • 1 RS-485 for connection to Televis**System** or Modbus  • 1 TTL for connection to Unicard/DeviceManager (via DMI) | • screw terminals for connection to power board  • JST for connection to ECPlus display | • screw terminals for connection to power board  • JST for connection to ECPlus display | • JST for connection to KDWPlus user terminal or KDEPlus |
| Digital outputs: | 1 SPST 2HP max 240V~  1 SPST + 1 SPDT 1HP max 250V~  1 SPDT 8(4)A max 250V~  2 SPST 8(4)A max 250V~  1 O.C. 12V⎓ 20mA | - | - | - |
| Analogue outputs: | 1 D.A.C. 0...10V/4...20mA | - | - | - |
| Accuracy: | better by 1.0% | - | - | - |
| Resolution: | 1 or 0.1°C | - | - | - |
| Power supply: | SMPS 100...240V~ ±10% 50/60 Hz | from power board | from power board | from power board |
| Power consumption: | 7.5W max | - | - | - |
| Ambient operating temperature: | -5...+55°C | -5...+55°C | -5...+55°C | -5...+55°C |
| Ambient storage temperature: | -30...+85°C | -30...+85°C | -30...+85°C | -30...+85°C |
| Ambient operation and storage humidity: | 10...90% RH (non-condensing) | 10...90% RH (non-condensing) | 10...90% RH (non-condensing) | 10...90% RH (non-condensing) |

* selectable by parameter  ° selectable by parameter (from power board)

## Wiring diagrams

# EEV Pulse SYSTEM

EEV system for retrofit

| Codes | Description | Details |
|-------|-------------|---------|
| **EVD2A43BSC000** | V800/P1 | see model table |
| **EVD2A53BSC000** | V800/P3 | see model table |
| **ID34DR4SCDH00** | ID985 /V | see model table |
| **WK1400100N000** | IWK /V | see model table |
| **EVK2A43BXC010** | Standard kit | see kit table |
| **EVK2A43BXC020** | Starter kit | see kit table |
| **DMI100x002000** | Device Manage Interface | see accessories table |

## Applications

The Electronic Expansion Valve (EEV) is designed to maximise the energy saving and performance potential of refrigerated cabinets in retail applications. The complete Eliwell solution consists of the EEV V800 driver, which can be connected to the IWK/V remote display device, and the ID 985/V electronic controller.
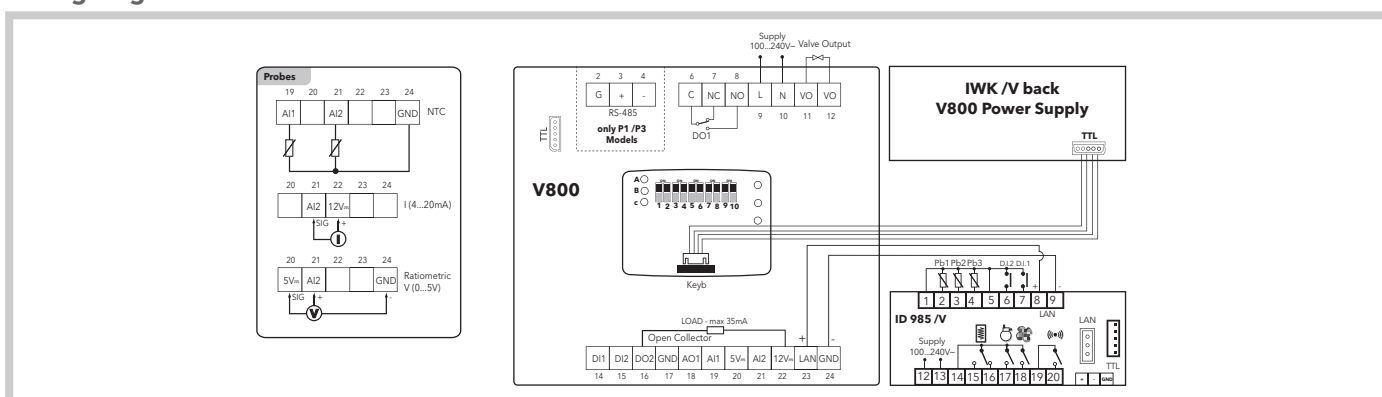
## Features

| Container | PC+ABS UL94 V-0 plastic resin casing | Ambient operation and storage humidity | 10...90% RH (non-condensing) |
|-----------|--------------------------------------|----------------------------------------|------------------------------|
| **Operating temperature** | -5...55°C | | |
| **Storage temperature** | -20...85°C | | |

## Technical data

| | **V 800** | **ID 985/V** | **IWK/V** |
|---|-----------|--------------|-----------|
| Dimensions: | front panel 70.2x87mm, depth 61.6mm | front panel 74x32mm, depth 60mm | front panel 74x32mm, depth 30mm |
| Mounting: | on DIN Omega bar support | panel mounting with 71x29mm drilling template | panel mounting with 71x29mm drilling template |
| Display: | - | no decimal point * 3 and a half digits + sign | no decimal point * 4 and a half digits + sign |
| Display range: | - | -55...140°C | -55...140°C |
| Analogue inputs: | 1 NTC/4-20mA/0-5V* <br> 1 NTC/4-20mA* | 3 NTC/PTC* | - |
| Digital inputs: | 2 voltage free | 2 voltage free | - |
| Connections: | •TTL port for connection to CopyCard and Televis**System** <br> • TTL port for connection to USB Copy Card and IWK/V <br> • LAN port for connection to ID 985/V <br> • RS-485 serial port: **Models/P1/P3** | •TTL port for connection to CopyCard and Televis**System** <br> - <br> • LAN port for connection to V800 <br> • RS-485 serial port | - <br> - <br> • TTL port for connection to V800 <br> - <br> - |
| Digital outputs: | 1 SPDT N.O. 5A 250V~, N.C. 2A 250V~ <br> 1 open collector max current 35mA | 1 SPDT 5(2)A 1/4 HP 250V~ <br> 3 SPST 3A 250V~ | - |
| Analogue outputs: | 1 0...10V max current 20mA | - | - |
| Accuracy: | better than 0.5% of end of scale +1 digit | better than 0.5% of end of scale +1 digit | better than 0.5% of end of scale +1 digit |
| Resolution: | 1 or 0.1°C | 1 or 0.1°C | 1 or 0.1°C |
| Power supply: | 100...240V~ ±10% 50/60Hz | 100...240V~ ±10% 50/60Hz | from V800 |
| Power consumption: | 3W max | 2.5W max | <1W |
| User interface: | 10-way DipSwitch | LED display | LED display |

* (selectable by parameter)

## Wiring diagrams

# EEV Pulse SYSTEM

**EEV system for retrofit**

| Codes | Description | Details |
|---|---|---|
| **EVD2A43BSC000** | V800/P1 | see model table |
| **EVD2A53BSC000** | V800/P3 | see model table |
| **ID34DR4SCDH00** | ID985 /V | see model table |
| **WK1400100N000** | IWK /V | see model table |
| **EVK2A43BXC010** | Standard kit | see kit table |
| **EVK2A43BXC020** | Starter kit | see kit table |
| **DMI100x002000** | Device Manage Interface | see accessories table |

## Applications

The Electronic Expansion Valve (EEV) is designed to maximise the energy saving and performance potential of refrigerated cabinets in retail applications. The complete Eliwell solution consists of the EEV V800 driver, which can be connected to the IWK/V remote display device, and the ID 985/V electronic controller.

## Model

| Code | Description | Details |
|---|---|---|
| EVD2A43BSC000 | V800/P1 | 230V~ valve control. on-board RS485 |
| EVD2A53BSC000 | V800/P3 | 230V = valve control. on-board RS485 |
| ID34DR4SCDH00 | ID 985 /V | Electronic controller with V800 driver control via LAN serial port |
| WK1400100N000 | IWK /V | Remote terminal for parameter config., displ. I/O, alarms, etc. |

## Kit

| Code | Description | Details |
|---|---|---|
| EVK2A43BXC010 | Standard Kit | Includes:<br>• 1 x ID 985 /V<br>• 1 x V800/P2<br>• 1 x 'FAST' NTC probe (SN8P0X3002):<br>• 1 x ratiometric probe (TD420030) |
| EVK2A43BXC020 | Starter Kit | Includes:<br>• 1 x ID 985 /V<br>• 1 x V800/P2<br>• 1 x 'FAST' NTC probe (SN8P0X3002):<br>• 1 x ratiometric probe (TD420030)<br>• 1 x USB Copy Card (CCA0BUI02N000)<br>• 1 x Device Manager CD (DMP1000002000)<br>• 1 x Device Manager Interface - DMI |

## Accessories

| Code | Description | Details |
|---|---|---|
| DMI100x002000 | Device Manager Interface | Hardware interface<br>x=1: End User<br>x=2: Service<br>x=3: Manufacturer |

## Refrigerant compatibility

R404A - R22 - R410A - R134A - R744 ($CO_2$) - R507A - R717 ($NH_3$)

## PULSE* valve compatibility

| Model | Brand |
|---|---|
| PXV | Eliwell manufactured by Castel |
| AKV10 | Danfoss |
| AKV15 | Danfoss |
| AKV20 | Danfoss |
| AKVA ($NH_3$) | Danfoss |
| EX2 | Alco |
| HP130 | Parker |
| DS1120 | Parker |

*if using other valves, contact Eliwell Technical Support

# PXV
**Electronic pulse expansion valve**



## Applications

The PXV solenoid operated expansion valve controls the flow of refrigerant to the evaporator by modulating the opening time of the valve element, allowing a wide range of power variation. Highly precise and reliable control of refrigerant flow increases the efficiency of the entire system. Nine interchangeable orifices are available, with power rating from 1 kW to 24 kW. This valve must be piloted by a V800 electronic driver. The typical application is in refrigeration systems, especially refrigerated counter displays of the kind used in supermarkets.

## Technical data

| | PXV |
|---|---|
| Voltage tolerance (V~): | +6/-10% |
| IEC Enclosure rating: | IP65; IP68 |
| Operating principle: | Pulse Width Modulation |
| Maximum operating time: | 6 seconds |
| Minimum operating time: | 1 second |
| Capacity (R404A): | 15 kW |
| Adjustment range (capacity range): | 10...100% |
| Braze welded connections: | 3/8" – 1 / 2", 10mm - 12mm, 1 / 2" – 5/8", 12mm – 16mm |
| TS temperature: | - 40°C - 100°C |
| Ambient temperature: | - 40°C - 50°C |
| Leakage from valve seat: | <1cc/min |
| | <0.003 of kv value |
| Minimum open pressure differential minOPD: | 0 bar |
| Maximum open pressure differential MOPD: | 18 bar |
| Maximum operating pressure: | 45 bar |
| Burst Pressure: | 330/250 bar |
| Certifications: | 97/23/EC |
| PED: | Category II art.3.3 |

## Coils

| Type of Coil | Eliwell part number | Voltage (V~) | Tolerance voltages (%) | Frequency (Hz) | Power (W) | Power consumption Start (50Hz) | Power consumption Operation (50Hz) | Class of insulation - | Maximum Temperature Convolutions (°C) | Maximum Temperature Environment (°C) | Electrical connections | Level of protection |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PXV | PXVB0ARA20000 | 24 | +10 / -10 | 50/60 | 8 | 1490 | 700 | F | 110 | 50 | connector DIN 43650 code PXVB0AR020000 | standard IP65 (for IP68 contact the commercial office) |
| PXV | PXVB0ARA60000 | 220 / 230 | +6 / -10 | 50/60 | 8 | 162 | 76 | F | 110 | 50 | | |
| PXV CO$_2$ | PXVE0ARA60000 | 220 / 230 | +6 / -10 | 50/60 | 22 | 190 | 110 | F | 110 | 50 | | |

## Dimensions
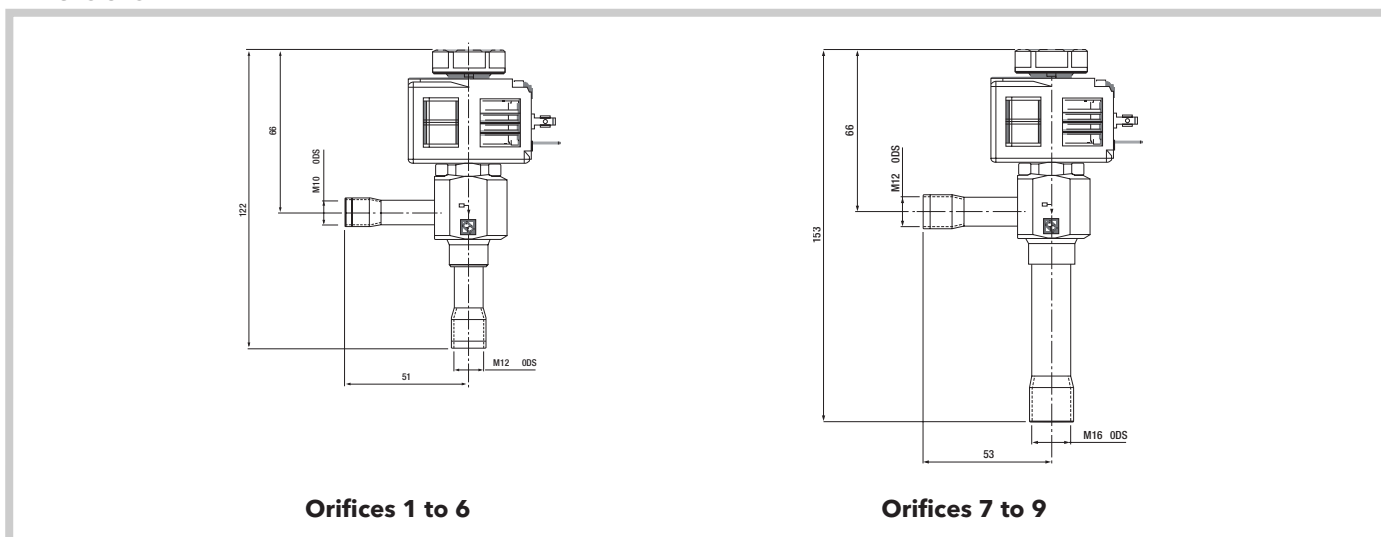


**Orifices 1 to 6**

**Orifices 7 to 9**

# PXV
**Electronic pulse expansion valve**



## General specifications and cooling capacities of valves (common refrigerants)

| Code | Type of orifice | Orifice hole (mm) | ODS connections | | | | Flow factor Kv (m3/h) | Cooling capacity (kW) | | | | |
| | | | (inches) | | (mm) | | | Refrigerant | | | | |
| | | | IN | OUT | IN | OUT | | R22 | R134a | R404A - R507 | R407C | R410A |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PXVB03S010000 | 1 | 0.5 | 3/8" | 1/2" | - | - | 0.010 | 1.0 | 0.9 | 0.8 | 1.1 | 1.3 |
| PXVBM10S01000 | | | - | - | 10 | 12 | | | | | | |
| PXVB03S020000 | 2 | 0.7 | 3/8" | 1/2" | - | - | 0.017 | 1.9 | 1.7 | 1.6 | 2.0 | 2.4 |
| PXVBM10S02000 | | | - | - | 10 | 12 | | | | | | |
| PXVB03S030000 | 3 | 0.8 | 3/8" | 1/2" | - | - | 0.023 | 2.5 | 2.0 | 1.9 | 2.4 | 3.0 |
| PXVBM10S03000 | | | - | - | 10 | 12 | | | | | | |
| PXVB03S040000 | 4 | 1.1 | 3/8" | 1/2" | - | - | 0.043 | 3.9 | 3.2 | 2.9 | 3.8 | 4.8 |
| PXVBM10S04000 | | | - | - | 10 | 12 | | | | | | |
| PXVB03S050000 | 5 | 1.3 | 3/8" | 1/2" | - | - | 0.065 | 6.7 | 5.6 | 5.1 | 6.7 | 8.4 |
| PXVBM10S05000 | | | - | - | 10 | 12 | | | | | | |
| PXVB03S060000 | 6 | 1.7 | 3/8" | 1/2" | - | - | 0.113 | 9.2 | 7.7 | 7.0 | 9.1 | 11.4 |
| PXVBM10S06000 | | | - | - | 10 | 12 | | | | | | |
| PXVB04S070000 | 7 | 2.3 | 1/2" | 5/8" | - | - | 0.200 | 14.7 | 12.2 | 11.3 | 15.3 | 18.2 |
| PXVBM12S07000 | | | - | - | 12 | 16 | | | | | | |
| PXVB04S080000 | 8 | 2.5 | 1/2" | 5/8" | - | - | 0.230 | 17.4 | 14.7 | 13.5 | 17.7 | 21.6 |
| PXVBM12S08000 | | | - | - | 12 | 16 | | | | | | |
| PXVB04S090000 | 9 | 2.7 | 1/2" | 5/8" | - | - | 0.250 | 19.3 | 16.3 | 15.0 | 19.6 | 24.1 |
| PXVBM12S09000 | | | - | - | 12 | 16 | | | | | | |

Rated cooling capacities refer to: Evaporating temp. Tevap = +5°C • Condensing temp. Tcond = +32°C • Temp. of valve input liquid Tliq = +28°C
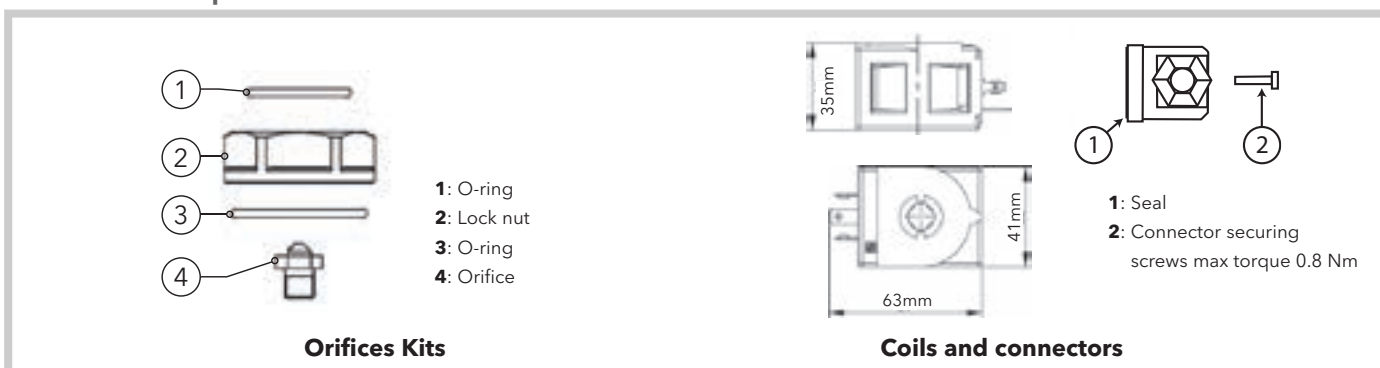
## PXV valves orifice kits

| Code | Description | Refrigerants |
|---|---|---|
| PXVB0AR630000 | N° 1 orifice kit | |
| PXVB0AR640000 | N° 2 orifice kit | |
| PXVB0AR650000 | N° 3 orifice kit | |
| PXVB0AR660000 | N° 4 orifice kit | R22, R134a, |
| PXVB0AR670000 | N° 5 orifice kit | R404A, R407C, |
| PXVB0AR680000 | N° 6 orifice kit | R410A, R507 |
| PXVB0AR690000 | N° 7 orifice kit | |
| PXVB0AR780000 | N° 8 orifice kit | |
| PXVB0AR790000 | N° 9 orifice kit | |

## Coils and connectors

| Code | Description | Refrigerants |
|---|---|---|
| PXVB0ARA60000 | EEV Coil 220/230V~ | R290, R22, R134a, R404A, R407C, R410A, R507 |
| PXVB0ARA20000 | EEV Coil 24V~ | R290, R22, R134a, R404A, R407C, R410A, R507 |
| PXVB0AR020000 | IP65 connector for EEV coil | All |

## Dimensions and specifications



1: O-ring
2: Lock nut
3: O-ring
4: Orifice

1: Seal
2: Connector securing screws max torque 0.8 Nm

**Orifices Kits**

**Coils and connectors**

# PXV
**Electronic pulse expansion valve**

## General specifications and cooling capacities of $CO_2$ valves (R744)

| Code | Type of orifice | Orifice hole (mm) | ODS connections | | | | Flow factor Kv (m3/h) | Cooling capacity (kW) |
|------|------|------|------|------|------|------|------|------|
| | | | (inches) | | (mm) | | | Refrigerant |
| | | | IN | OUT | IN | OUT | | R744 ($CO_2$) |
| PXVE03S010000 | 1 | 0.5 | 3/8" | 1/2" | - | - | 0.010 | 3.10 |
| PXVEM10S01000 | | | - | - | 10 | 12 | | |
| PXVE03S020000 | 2 | 0.7 | 3/8" | 1/2" | - | - | 0.017 | 6.20 |
| PXVEM10S02000 | | | - | - | 10 | 12 | | |
| PXVE03S030000 | 3 | 0.8 | 3/8" | 1/2" | - | - | 0.023 | 8.20 |
| PXVEM10S03000 | | | - | - | 10 | 12 | | |
| PXVE03S040000 | 4 | 1.1 | 3/8" | 1/2" | - | - | 0.043 | 12.40 |
| PXVEM10S04000 | | | - | - | 10 | 12 | | |
| PXVE03S050000 | 5 | 1.3 | 3/8" | 1/2" | - | - | 0.065 | 21.70 |
| PXVEM10S05000 | | | - | - | 10 | 12 | | |
| PXVE03S060000 | 6 | 1.7 | 3/8" | 1/2" | - | - | 0.113 | 34.10 |
| PXVEM10S06000 | | | - | - | 10 | 12 | | |
| PXVE03S070000 | 7 | 2.3 | 1/2" | 5/8" | - | - | 0.200 | 62.00 |
| PXVEM10S07000 | | | - | - | 12 | 16 | | |

Rated cooling capacities refer to: Evaporating temp. Tevap = -35°C • Condensing temp. Tcond = 0°C • Temp. of valve input liquid Tliq = -31°C

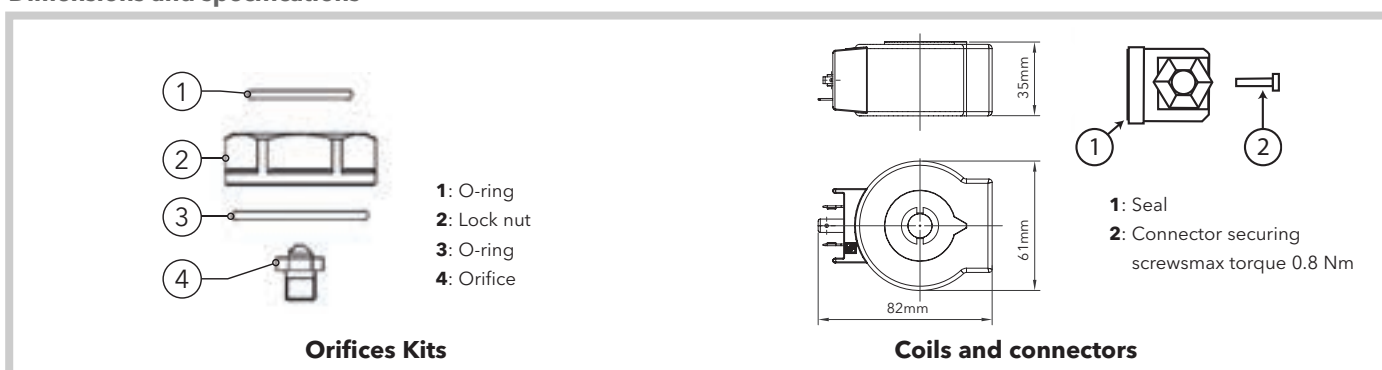## PXV valves orifice kits

| Code | Description | Refrigerants |
|------|------|------|
| PXVE0AR630000 | $CO_2$ orifice KIT N°.1 | |
| PXVE0AR640000 | $CO_2$ orifice KIT N°.2 | |
| PXVE0AR650000 | $CO_2$ orifice KIT N°.3 | |
| PXVE0AR660000 | $CO_2$ orifice KIT N°.4 | R744 |
| PXVE0AR670000 | $CO_2$ orifice KIT N°.5 | |
| PXVE0AR680000 | $CO_2$ orifice KIT N°.6 | |
| PXVE0AR690000 | $CO_2$ orifice KIT N°.7 | |

## Coils and connectors

| Code | Description | Refrigerants |
|------|------|------|
| PXVE0ARA60000 | EEV Coil $CO_2$ 220/230V~ | R744 |
| PXVB0AR020000 | IP65 connector for EEV coil | All |

## Dimensions and specifications

1: O-ring
2: Lock nut
3: O-ring
4: Orifice

**Orifices Kits**

35mm
61mm
82mm

1: Seal
2: Connector securing screwsmax torque 0.8 Nm

**Coils and connectors**

# PXV

**Electronic pulse expansion valve**



## General specifications and cooling capacities of R290, R600, R600a valves

| Code | Type of orifice | Orifice hole (mm) | ODS connections | | | | Flow factor Kv (m3/h) | Cooling capacity (kW) |
| | | | (inches) | | (mm) | | | Refrigerant |
| | | | IN | OUT | IN | OUT | | R290, R600, R600a |
|---|---|---|---|---|---|---|---|---|
| PXVV03S010000 | 1 | 0.5 | 3/8" | 1/2" | - | - | 0.010 | 0.7 |
| PXVVM10S01000 | | | - | - | 10 | 12 | | |
| PXVV03S020000 | 2 | 0.7 | 3/8" | 1/2" | - | - | 0.017 | 1.4 |
| PXVVM10S02000 | | | - | - | 10 | 12 | | |
| PXVV03S030000 | 3 | 0.8 | 3/8" | 1/2" | - | - | 0.023 | 1.9 |
| PXVVM10S03000 | | | - | - | 10 | 12 | | |
| PXVV03S040000 | 4 | 1.1 | 3/8" | 1/2" | - | - | 0.043 | 2.9 |
| PXVVM10S04000 | | | - | - | 10 | 12 | | |
| PXVV03S050000 | 5 | 1.3 | 3/8" | 1/2" | - | - | 0.065 | 5.0 |
| PXVVM10S05000 | | | - | - | 10 | 12 | | |
| PXVV03S060000 | 6 | 1.7 | 3/8" | 1/2" | - | - | 0.113 | 7.9 |
| PXVVM10S06000 | | | - | - | 10 | 12 | | |
| PXVV04S070000 | 7 | 2.3 | 1/2" | 5/8" | - | - | 0.200 | 14.3 |
| PXVVM12S07000 | | | - | - | 12 | 16 | | |
| PXVV04S080000 | 8 | 2.5 | 1/2" | 5/8" | - | - | 0.230 | 16.4 |
| PXVVM12S08000 | | | - | - | 12 | 16 | | |
| PXVV04S090000 | 9 | 2.7 | 1/2" | 5/8" | - | - | 0.250 | 17.9 |
| PXVVM12S09000 | | | - | - | 12 | 16 | | |

Rated cooling capacities refer to: Evaporating temp. Tevap = +5°C • Condensing temp. Tcond = +32°C • Temp. of valve input liquid Tliq = +28°C
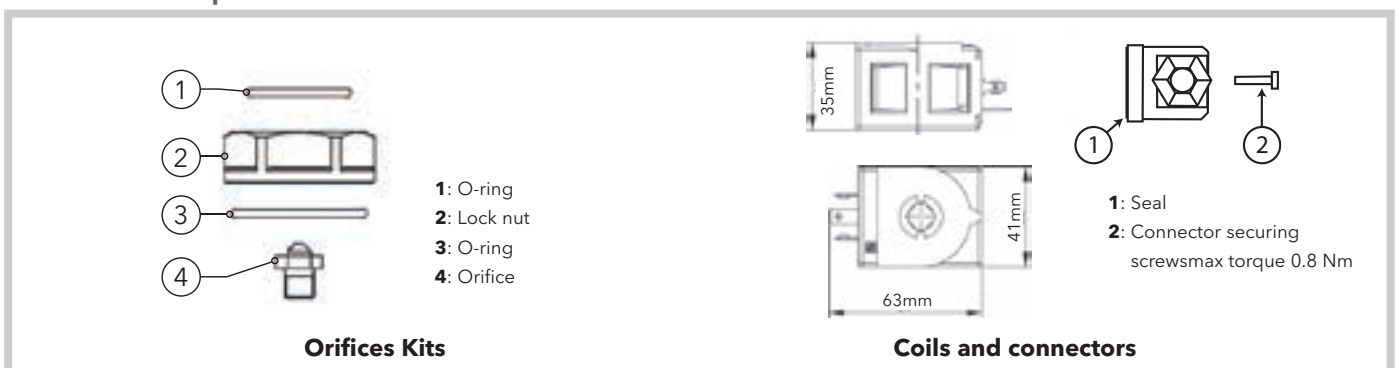
## PXV valves orifice kits

| Code | Description | Refrigerants |
|---|---|---|
| PXVV0AR630000 | R290 orifice kit N°1 | |
| PXVV0AR640000 | R290 orifice kit N°2 | |
| PXVV0AR650000 | R290 orifice kit N°3 | |
| PXVV0AR660000 | R290 orifice kit N°4 | |
| PXVV0AR670000 | R290 orifice kit N°5 | R290 |
| PXVV0AR680000 | R290 orifice kit N°6 | |
| PXVV0AR690000 | R290 orifice kit N°7 | |
| PXVV0AR780000 | R290 orifice kit N°8 | |
| PXVV0AR790000 | R290 orifice kit N°9 | |

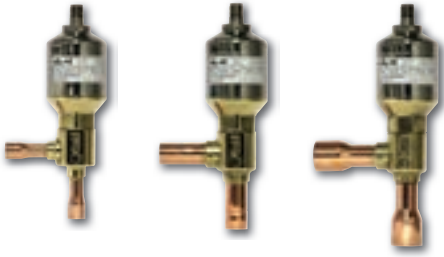## Coils and connectors

| Code | Description | Refrigerants |
|---|---|---|
| PXVB0ARA60000 | EEV Coil 220/230V~ | R290, R22, R134a, R404A, R407C, R410A, R507 |
| PXVB0ARA20000 | EEV Coil 24V~ | R290, R22, R134a, R404A, R407C, R410A, R507 |
| PXVB0AR020000 | IP65 connector for EEV coil | All |

## Dimensions and specifications



1: O-ring
2: Lock nut
3: O-ring
4: Orifice

**Orifices Kits**

1: Seal
2: Connector securing screwsmax torque 0.8 Nm

**Coils and connectors**

# EEV Stepper system

EEV stepper system

| Codes | Description |
|---|---|
| XVD420H485000 | XVD 420H RS-485 |
| SKP1000000000 | SKP10 Configuration Keyboard |
| DMI100x002000* | Device Manager Interface (Hardware interface) |
| TF111205 | Transformer 230V~/24V~ 35VA |

*x=1: End User; x=2: Service; x=3: Manufacturer

## Applications

The driver for the proportional motorised valve XVD is designed to optimize energy efficiency and the refrigerated utilities performance.
Its wide compatibility with refrigerants and with the valves on the market, whether unipolar or bipolar, makes this product particularly flexible.
In addition, the availability of the service keyboard SKP10 and of the USB interface allows easy and fast set-up of the system.

## Specifications

| Container | PC+ABS UL94 V-0 plastic resin casing | Ambient operation and storage humidity | 10...90% RH (non-condensing) |
|---|---|---|---|
| Operating temperature | -5...+55°C | | |
| Storage temperature | -20...+85°C | | |

## Technical data

| | XVD 420H 485 | SKP10 |
|---|---|---|
| Dimensions: | front panel 70.2x87 mm, depth 61.6 mm | front panel 74x32mm, depth 60mm |
| Mounting: | on DIN Omega bar support | panel mounting (71x29mm drilling template) |
| Display: | - | 3 and a half digits + sign |
| Display range: | - | -55...140°C |
| Analogue inputs: | 2x NTC/Pt1000/4...20mA/0-5V⎓/0-10V⎓* | - |
| | 2x NTC/Pt1000 | - |
| Digital inputs: | 2 voltage free | |
| Connections: | • TTL (Keyb) for connection to Unicard/MFK/DMI | • Lan port for connection to XVD |
| | • TTL for Televis/Modbus connection | |
| | • RS485 for connection Televis/Modbus | - |
| Digital outputs: | 1 SPST: N.O. 5A 250V~ | |
| | 1 Open Collector 12V⎓ max 100mA | better than 0.5% of end of scale |
| Accuracy: | better than 0.5% of end of scale | 1 or 0.1°C |
| Resolution: | 0.1°C | 100...240V~ ±10% 50/60Hz |
| Power supply: | 24V~/⎓ ±10% 50/60 Hz | <1W |
| Power consumption: | 30VA / 25W | LED display |
| Interface: | - | |

* (selectable by parameter)

## STEPPER valve compatibility*

| Model | Brand |
|---|---|
| SXVB 24V Bipolar | Eliwell - manufactured by Castel |
| ETS50 12V Bipolar, ETS100 12V Bipolar | Danfoss |
| EX5 24V Bipolar, EX6 24V Bipolar, EX7 24V Bipolar, EX8 24V Bipolar | Alco |
| E2V, E3V, E4V, E5V, E6V, E7V 12V Bipolar | Carel |
| SER(I) G, J, K, B, C, D 12V Bipolar | Sporlan |
| SER 1.5 TO 20 12V Bipolar | Sporlan |
| SEI-30 12V Bipolar, SEI-50 12V Bipolar | Sporlan |
| SEH 12V Only bipolar model | Sporlan |
| DPF(Q)/DPF(T01) 12V Unipolar | Sanhua |
| EXM246/EXL246 12V Unipolar | Alco |

*if using other valves, contact Eliwell Technical Support

## Wiring diagrams

# SXVB

**Bipolar 'stepper' expansion valve**



## Applications

The bipolar expansion valve series SXVB regulates the flow of refrigerant to the evaporator by proportionally modulating its opening and closing, allowing a wide range of power variation.

Highly precise and reliable control of refrigerant flow increases the efficiency of the entire system.

There are two valve bodies and five orifices to meet power ratings ranging from 28kW (R404) to 121 kW (R410).

| Technical data | SXVB |
|---|---|
| Type of actuator: | Bipolar stepper motor with permanent magnet |
| Type of Control: | Full Step (advised) |
| Stroke / Steps for complete closing: | 8.5mm / 195 Step |
| Rated power: | from 28.5 kW to 121 kW depending on the refrigerant and flow direction |
| Rated power operating conditions: | evapoating temperature = +5°C |
| | condensing temperature = +32°C |
| | sub-cooling= +4°C |
| | overheating = +7°C |
| Adjustment range: | 10...95% |
| Refrigerant: | R22, R407c, R404a, R134a, R410A (R744 and hydrocarbons on request) |
| MOPD: | see cooling capacity table |
| Maximum operating pressure: | 45 bar |
| TS temperature: | -40 / +105°C |
| Protection: | IP 67 |
| Driver: | **Eliwell XVD, Eliwell V910** |
| | |
| Connections and geometry: | braze welded tube, angled |
| Operation: | Bidirectional |
| Sight glass: | not available |
| Certifications: | CE |
| Possible operating angles | 360° |
| Motor: | removable and replaceable |
| Step angle: | 15°± 15% |
| Step: | 0.042mm |
| Rated speed: | 0-20 mm/s (500 step/s max) |
| | advisable 0.8 mm/s (20 step/s) |
| Contact current | 100% Duty Cycle |
| | |
| Steps between 10% and 95% of effective stroke | >500 million steps |
| N° of cycles tested between 10% and 95% of effective stroke | ~5 million cycles |
| Maximum overstroke steps | 150.000 cycles of 190 steps each |
| Rated voltage | 24 V |
| Rated phase current | 200 mA |
| Connector | 4-way - M12 4G 3mt (available from 1.5 to 15m, standard 3m) |

## Valve body dimensions



**Body 2 -** example model 262270040          **Body 3 -** example model 263440090
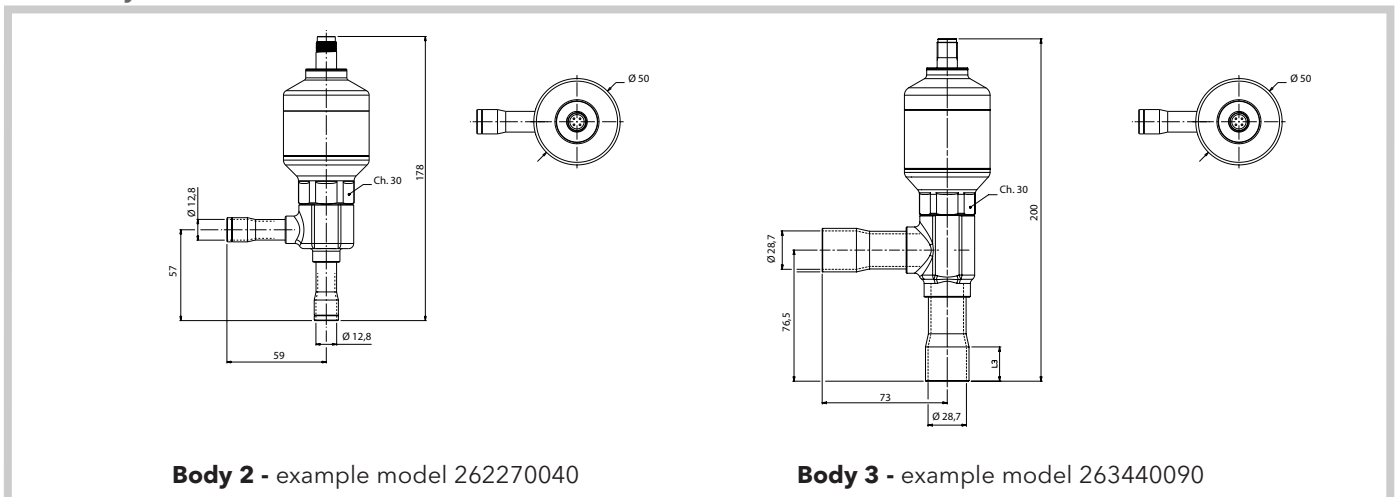
# SXVB
**Bipolar 'stepper' expansion valve**
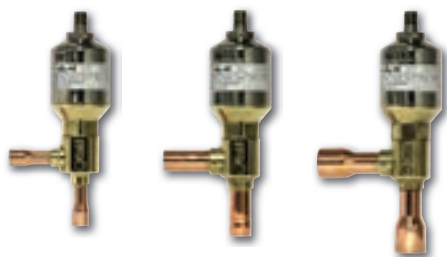


## General specifications and cooling capacities of valves

| Code | Body | Orifice hole (mm) | ODS connections | MOPD (bar) | Inlet | Refrigerant cooling capacity (kW)* | | | |
|------|------|------|------|------|------|------|------|------|------|
| | | | | | | R410A | R407C | R404A | R134a |
| SXVB262270040 | 2 | 2.7 | 1/2" | 40 | side | 47.6 | 41.3 | 28.5 | 29.1 |
| | | | | 40 | under | 46 | 40.6 | 28.5 | 28.6 |
| SXVB262270050 | | | 5/8" | 40 | side | 47.6 | 41.3 | 28.5 | 29.1 |
| | | | | 40 | under | 46 | 40.6 | 28.5 | 28.6 |
| SXVB262270070 | | | 7/8" | 40 | side | 47.6 | 41.3 | 28.5 | 29.1 |
| | | | | 40 | under | 46 | 40.6 | 28.5 | 28.6 |
| SXVB26227M120 | | | 12mm | 40 | side | 47.6 | 41.3 | 28.5 | 29.1 |
| | | | | 40 | under | 46 | 40.6 | 28.5 | 28.6 |
| SXVB262320040 | 2 | 3.2 | 1/2" | 40 | side | 59 | 51.2 | 35.3 | 36 |
| | | | | 40 | under | 54 | 47.6 | 32.8 | 35.6 |
| SXVB262320050 | | | 5/8" | 40 | side | 59 | 51.2 | 35.3 | 36 |
| | | | | 40 | under | 54 | 47.6 | 32.8 | 35.6 |
| SXVB262320070 | | | 7/8" | 40 | side | 59 | 51.2 | 35.3 | 36 |
| | | | | 40 | under | 54 | 47.6 | 32.8 | 35.6 |
| SXVB26232M120 | | | 12mm | 40 | side | 59 | 51.2 | 35.3 | 36 |
| | | | | 40 | under | 54 | 47.6 | 32.8 | 35.6 |
| SXVB263360070 | 3 | 3.6 | 7/8" | 40 | side | 85.1 | 73.9 | 51 | 52 |
| | | | | 40 | under | 78.1 | 68 | 47.5 | 51.4 |
| SXVB263360090 | | | 1 1/8" | 40 | side | 85.1 | 73.9 | 51 | 52 |
| | | | | 40 | under | 78.1 | 68 | 47.5 | 51.4 |
| SXVB263400070 | 3 | 4.0 | 7/8" | 40 | side | 85.1 | 73.9 | 51 | 52 |
| | | | | 30 | under | 78.1 | 68 | 47.5 | 51.4 |
| SXVB263400090 | | | 1 1/8" | 40 | side | 85.1 | 73.9 | 51 | 52 |
| | | | | 30 | under | 78.1 | 68 | 47.5 | 51.4 |
| SXVB263440070 | 3 | 4.4 | 7/8" | 35 | side | 121 | 105 | 73 | 74 |
| | | | | 23 | under | 111 | 98 | 67 | 73 |
| SXVB263440090 | | | 1 1/8" | 35 | side | 121 | 105 | 73 | 74 |
| | | | | 23 | under | 111 | 98 | 67 | 73 |

"Rated cooling capacities refer to:
Evaporation temp. Tevap = +5°C • Condensation temp. Tcond = +32°C • Sub-cooling 4°C • Overheating 7°C

## Cable

| Code | Description |
|------|-------------|
| SXVB2624VC300 | 3m cable |

## Tightening torque - Connector



**1** Brown
**2** White
**3** Blue
**4** Black

**Connector valve**

**Connector Cable**

➔ Min = 31,5 Nm
➔ Max = 35 Nm
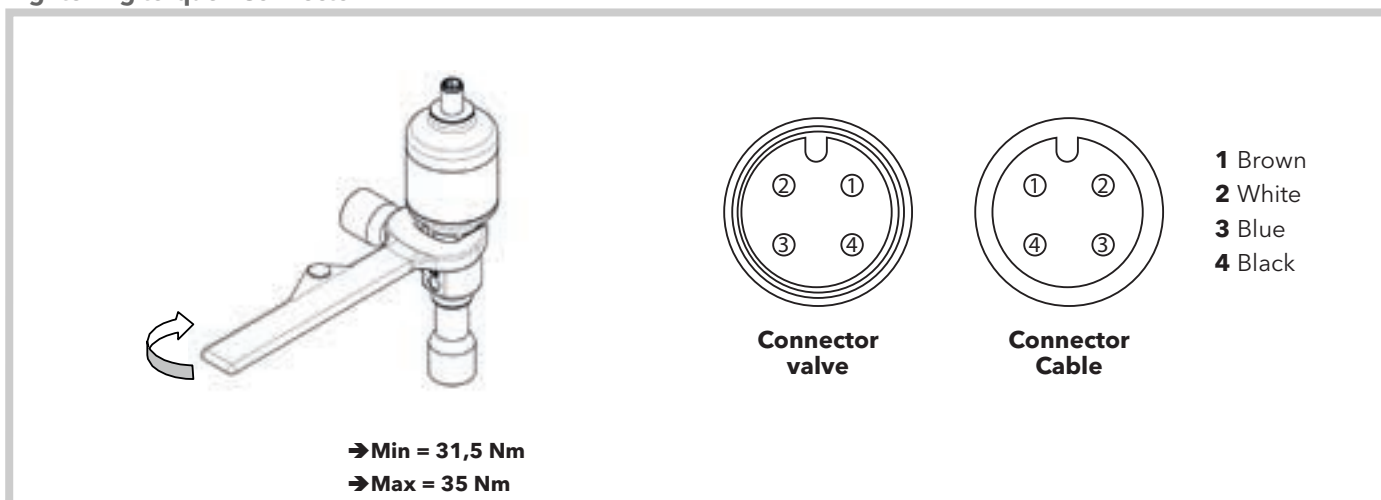
# EWCM 8900 - 9100 EO

DIN controllers for compressor racks

| Codes | Description | Details |
|---|---|---|
| EM32AG2*0GH00 | EWCM 8900 EO | 13 DIN |
| EM32BH2*0GH00 | EWCM 9100 EO | 13 DIN |
| EMK0000B0G000 | spare keyboard ENG/ITA | |
| CO000029 | 3m cable keyboard-base | |
| CCA0BUI02N000 | USB Copy Card | |

*The letter in this position indicates the languages available for the code:

in A: ITA/ENG; B: ENG/ITA; C: FRA/ENG; D: ESP/ENG; F: GER/ENG; O: RUS/ENG; Q:TUR/ENG
Keyboard included.

## Applications

The new series of controllers EWCM EO (Environmentally Optimised) for compressor racks provides a single solution to temperature control in refrigeration systems. The external keyboard with graphic LCD and the rapid parameter setting menu give greater accessibility and make it easier for the operator to configure parameters and access data. Energy saving is guaranteed thanks to the dedicated control algorithms.

•   Sub-critical $CO_2$ management, glycol, R290 and R427 rooms
•   Rooms managed in cascade by plug&play V910 module
•   Advanced management of rooms with inverter
•   Rapid configuration tool for PC DeviceManager

Updates for glossaries, applications, and the always updated list of compatible refrigerants are available in the reserved area of www.eliwell.com.
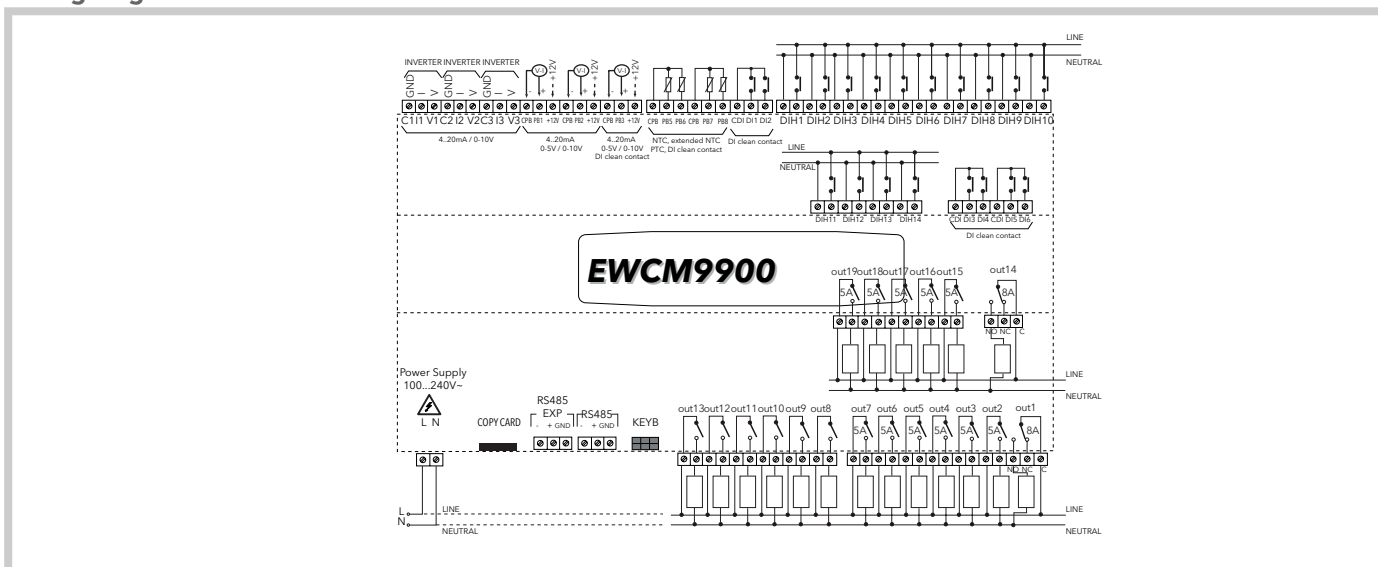
## Common features

| Insulation Class | 2 |
|---|---|
| Operating temperature | -5...55°C |
| Storage Temperature | -30...85°C |
| Ambient humidity of use and storage | 10...90% RH (non-condensing) |

| Connector for base-keyboard connection | rapid 6-way connector |
|---|---|
| Compatible refrigerants | R22, R134a, R502, R404A, R407C, R507, R717 (Ammonia), R410A, R417a, R744 (CO2), R407A, 407F, R290 (Propane), R427, R600A (Isobutane), R23 |

## Technical data

| | EWCM 8900 | EWCM 9100 |
|---|---|---|
| Container | PC+ABS UL94 plastic resin casing V-0 13 DIN modules (227.5x110x60mm) | PC+ABS UL94 plastic resin casing V-0 13 DIN modules (227.5x110x60mm) |
| Mounting: | on DIN Omega bar support | on DIN Omega bar support |
| Analogue inputs: | 4 NTC/NTC extended/PTC/D.I.+ 2 high precision current (4...20mA / 0...5V / 0...10V) | 4 NTC/NTC extended/PTC/D.I.+ 2 high precision current (4...20mA / 0...5V / 0...10V) |
| Digital inputs | 6 voltage (100...240V~) | 10 voltage (100...240V~) + 4 configurable voltage-free. |
| Analogue outputs: | 2 voltage/current (0...10V/4...20mA) | 2 voltage/current (0...10V/4...20mA) |
| Digital outputs: | 6 SPST 5(2)A 250V~ + 1 SPDT 8(3)A 250V~ | 11 SPST 5(2)A 250V~ + 2 SPDT 8(3)A 250V~ |
| Connections: | •TTL port for connection to CopyCard USB • RS-485 for connection to Televis**System** and systems based on the ModBus protocol • RS-485 EXP for connection to pulse/stepper (V800/V910) driver | • TTL port for connection to CopyCard USB • RS-485 for connection to Televis**System** and systems based on the ModBus protocol • RS-485 EXP for connection to pulse/stepper (V800/V910) driver |
| Display: | LCD on external keyboard | LCD on external keyboard |
| Functions: | inverter control both in suction and delivery | inverter control both in suction and delivery |
| Clock: | present | present |
| Power consumption: | 20W | 20W |
| Power supply: | 100...240V~ ±10% 50/60Hz | 100...240V~ ±10% 50/60Hz |

## Wiring diagrams

# EWCM 9900 EO

## DIN controllers for compressor racks

| Codes | Description | Details |
|---|---|---|
| EM83CI3*0GH00 | EWCM 9900 EO | 18 DIN |
| EMK0000B0G000 | spare keyboard ENG/ITA | |
| CO000029 | 3m cable keyboard-base | |
| CCA0BUI02N000 | USB Copy Card | |

*The letter in this position indicates the languages available for the code:
in A: ITA/ENG; B: ENG/ITA; C: FRA/ENG; D: ESP/ENG; F: GER/ENG; O: RUS/ENG
Keyboard included.

## Applications

The new series of controllers EWCM EO (Environmentally Optimised) for compressor racks provides a single solution to temperature control in refrigeration systems. The external keyboard with graphic LCD and the rapid parameter setting menu give greater accessibility and make it easier for the operator to configure parameters and access data. Energy saving is guaranteed thanks to the dedicated control algorithms.

*   Sub-critical $CO_2$ management, glycol, R290 and R427 rooms
*   Rooms managed in cascade by plug&play V910 module
*   Advanced management of rooms with inverter
*   Rapid configuration tool for PC DeviceManager

Updates for glossaries, applications, and the always updated list of compatible refrigerants are available in the reserved area of www.eliwell.com.

## Common features

| Insulation Class | 2 |
|---|---|
| Operating temperature | -5...55°C |
| Storage Temperature | -30...85°C |
| Ambient humidity of use and storage | 10...90% RH (non-condensing) |

| Connector for base-keyboard connection | rapid 6-way connector |
|---|---|
| Compatible refrigerants | R22, R134a, R502, R404A, R407C, R507, R717 (Ammonia), R410A, R417a, R744 (CO2), R407A, 407F, R290 (Propane), R427, R600A (Isobutane), R23 |

## Technical data

| | EWCM 9900 |
|---|---|
| Container | PC+ABS UL94 plastic resin casing<br>V-0 18 DIN modules (315x110x60mm) |
| Mounting: | on DIN Omega bar support |
| Analogue inputs: | 4 NTC/NTC extended/PTC/DI + 2 high precision current/voltage (4...20mA / 0...5V / 0...10V) + 1 current/voltage (4...20mA / 0...5V / 0...10V) |
| Digital inputs | 14 voltage (100...240V~) + 6 configurable voltage-free. |
| Analogue outputs: | 3 voltage/current (0...10V/4...20mA) |
| Digital outputs: | 17 SPST 5(2)A 250V~ + 2 SPDT 8(3)A 250V~ |
| Connections: | • TTL port for connection to CopyCard USB<br>• RS-485 for connection to Televis**System** and systems based on the ModBus protocol<br>• RS-485 EXP for connection to pulse/stepper (V800/V910) driver |
| Display: | LCD on external keyboard |
| Functions: | inverter control both in suction and delivery |
| Clock: | present |
| Power consumption: | 20W |
| Power supply: | 100...240V~ ±10% 50/60Hz |

## Wiring diagrams

# Subcritical CO$_2$ cascade system

## Motorised electronic valve control
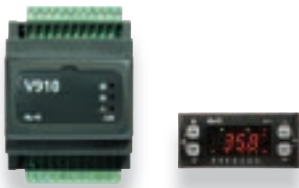
| Codes | Description | Details |
|-------|-------------|---------|
| **EVD4A31BSH100** | V910 EEVD step valve 24V~ RS485 | EEV driver module with dual PID controller |
| **SKP1000000000** | SKP10 – Configuration keyboard | Keyboard for configuration |
| **DMI100x002000*** | Device Manager Interface | |

*x=1: End User; x=2: Service; x=3: Manufacturer

## Applications

The V910 driver for the control of motorised valves is designed for the optimised control of the heat exchanger in CO$_2$ sub-critical cascade systems. Thanks to its flexibility it also finds application in the control of hot gas bypass systems, compressor delivery temperatures / pressure limitation and liquid sub-cooling.
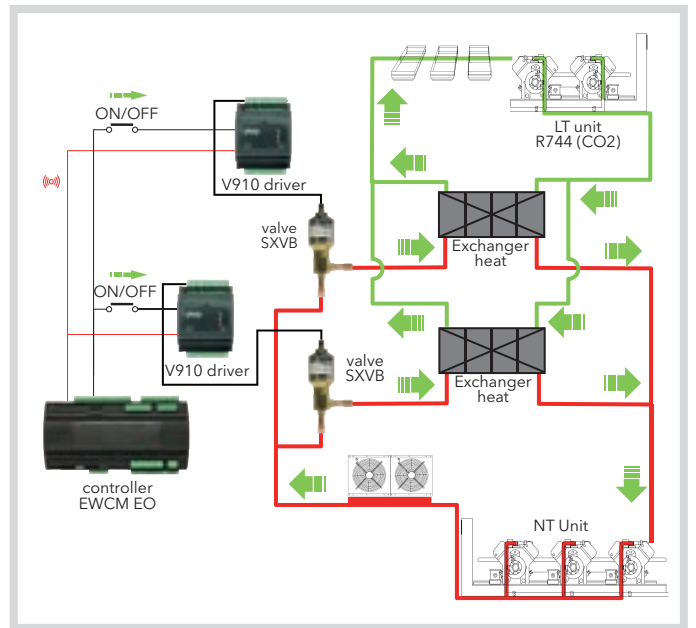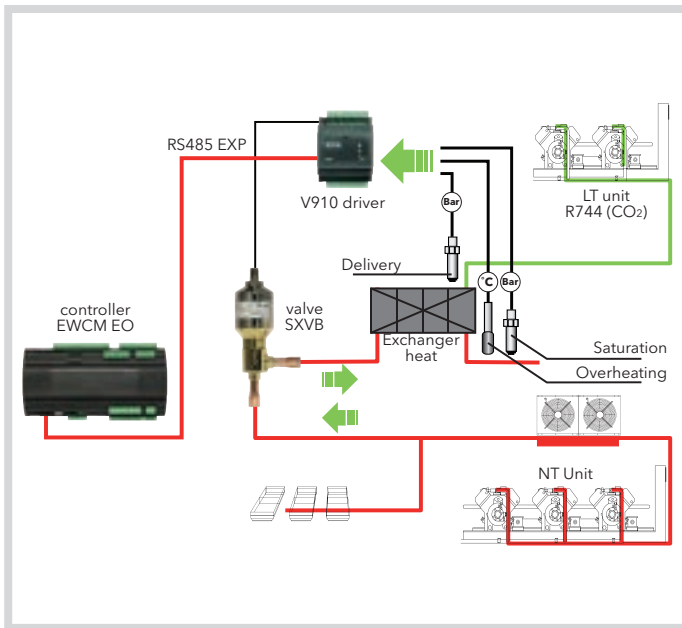


## Solution integrated with EWCM 8/9000 EO

The high-precision PID control of the V910 module is integrated with the EWCM 8/9000 EO series controllers through the serial port dedicated to share real-time configuration and the heat exchanger control status, also through the Televis supervision system.

## Solution for dual heat exchanger

V910 is designed also for operation independent from the central controller, thus providing the option for configurations with multiple heat exchangers in series or parallel to provide better power modulation and greater safety thanks to a redundant configuration.

## Wiring diagram
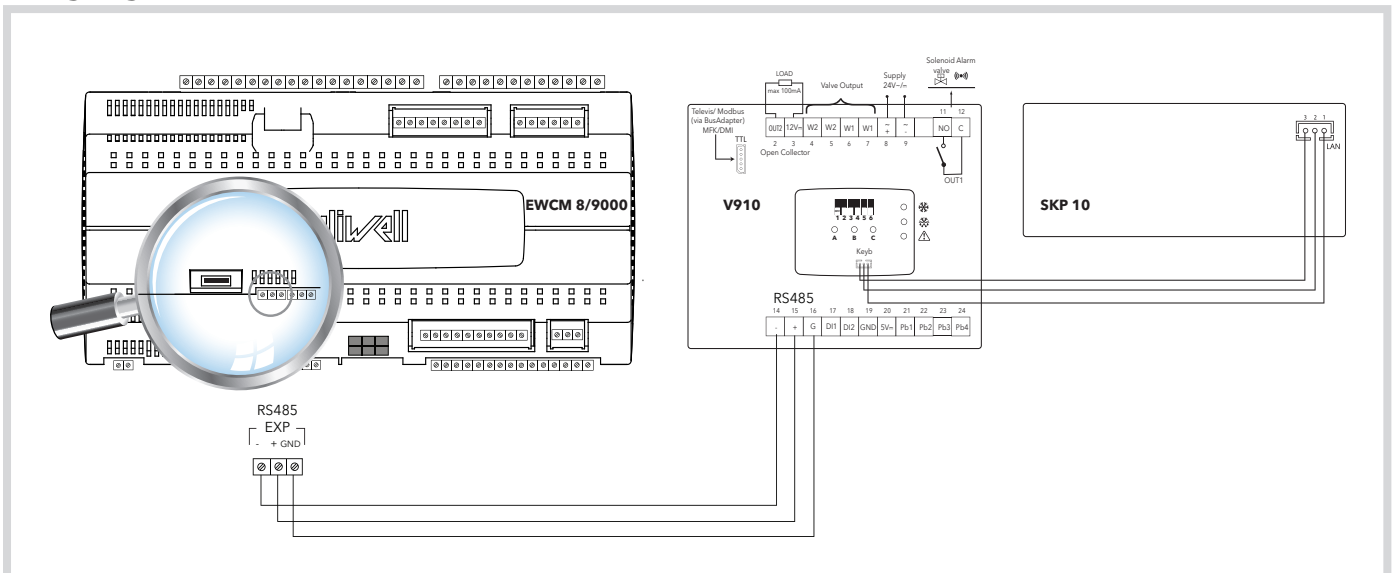
# TelevisGo

## Monitoring and maintenance systems via web

| Codes | Description | Applications |
|---|---|---|
| **TGOAXE101E00K** | KIT Televis**Go** 10* | up to 10 controllers |
| **TGOAXE301E00K** | KIT Televis**Go** 30* | up to 30 controllers |
| **TGOAXE601E00K** | KIT Televis**Go** 60* | up to 60 controllers |
| **TGOAXE2H1E00K** | KIT Televis**Go** 224* | up to 224 controllers |

*contains No.1 **Serial**Adapter + 1.5m serial cable

| Codes | Description | Applications |
|---|---|---|
| **TGOAXE101ER0K** | KIT Televis**Go** 10* | up to 10 controllers |
| **TGOAXE301ER0K** | KIT Televis**Go** 30* | up to 30 controllers |
| **TGOAXE601ER0K** | KIT Televis**Go** 60* | up to 60 controllers |

LE versions do not include the Algorithms function

*contains No.1 **Serial**Adapter + 1.5m serial cable

## Applications

Televis**Go** is a family of devices to monitor, control and manage installations from remote.
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 signaling 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**

### Web connectivity

- All Televis**Go** 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 Televis**Go** is included (configuration, updating, restarting of the device)
- Televis**Go** 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

# 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 signalled by e-mail, SMS and configurable priorities

• distance access via web for diagnostics and control

• dedicated maintenance tools: parameters instruments, controls, detailed diagnostics and recording of all operational status

• system fully updatable via web: software, languages, driver controllers

• instruments for off line configuration and fast 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:
  - data sent periodically (push function)
  - sending on occurrence of data and alarms
  - acquisition of real-time data
  - interrogation of historical data and alarm base
  - execution of commands / modification of controller parameters in remote mode
  - SOCKS protocol integrated for routing of TCP and UDP communications

## Technical Data

| Technical Data | TelevisGo 10 / 30 / 60 / 224 |
|---|---|
| User interface: | from web browser |
| Browsers supported: | • Internet Explorer 7 or later |
| | • Mozilla Firefox 3.5 or later |
| | • Google Chrome 16.0.x or later |
| User language interfaces pre-loaded: | IT – EN – FR – DE – ES – PT – PL – NL – RU – CN |
| Operating System: | MS Windows XP Embedded |
| Power supply: | 12V⎓ with external power supply |
| | 100...240V~ ±10% |
| Power consumption: | 10W max |
| Connections: | 6 USB port |
| | 2 RS-232 ports (for analogue modem or GSM) |
| | 2 RS-232 ports (for **Serial**Adapter) |
| | 1 Ethernet port (LANRJ45) |
| | VGA monitor connection |
| | PS2 keyboard connector |

## Connectivity



**Wireless**

**RadioAdapter**

**BusAdapter**

**RTX600 /V**

**EWCM EO**

**ModBus**

**RS485**

**SerialAdapter**

**x2**

**TelevisGo**

**RS-485**

**Ethernet**

**Ethernet**

**RS485**

**LanAdapter**

**RS485**

**LanAdapter**

**ModBus**

**ModBus**
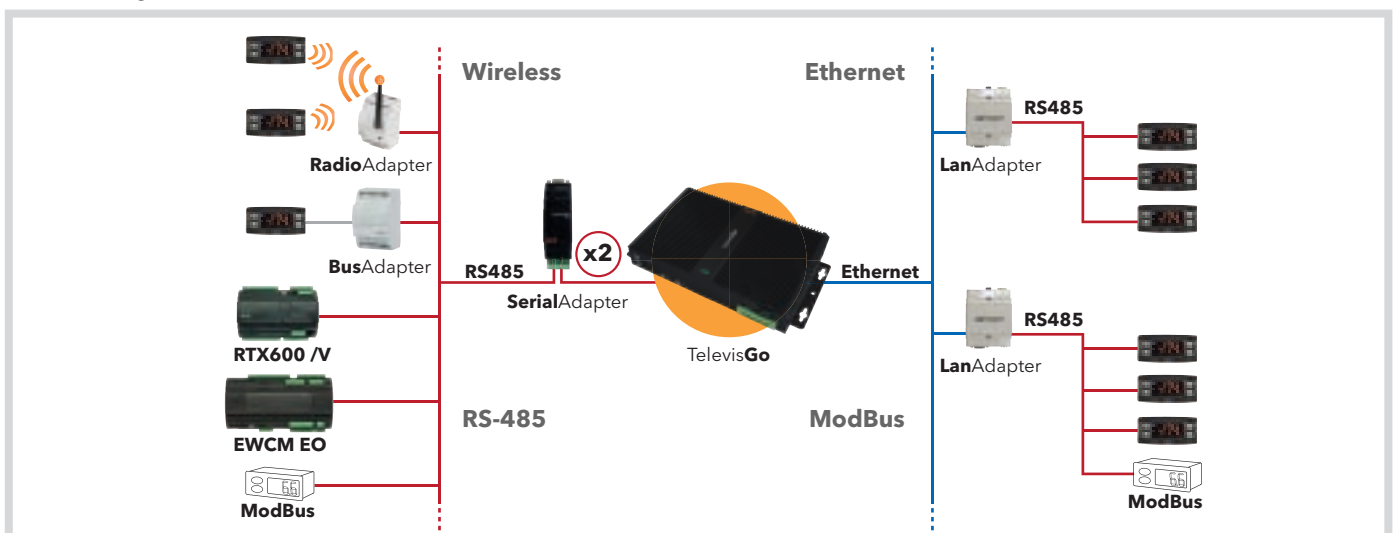
# TelevisIn / TelevisOut

## Data acquisition modules and actuators

| Codes | Description | Power supply |
|---|---|---|
| **TAMID152RS700** | Televis**In** | 100...240V~ |
| **TAMOD602RS700** | Televis**Out** | 100...240V~ |

## Applications

Televis**In** and Televis**Out** are data acquisition, alarm signalling and user control modules which can be connected to Televis systems or third-party systems, thanks to the ModBus protocol that can be selected from the relevant parameter. The Televis**In** controller, connected to specific probes, enables the acquisition of temperature, humidity and pressure data, and digital signals. It will also calculate dew points. Televis**Out** 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, managing 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: | • NTC probe: -50.0...110.0 °C<br>• PTC probe: -55.0...140.0 °C<br>• Pt1000 probe: -55.0...400.0 °C<br>• Vin probe: 0-1V, 0-5V and 0-10V<br>• Ain probe: 0..20mA and 4...20mA | • NTC probe: -50.0...110.0 °C<br>• PTC probe: -55.0...140.0 °C<br>• Pt1000 probe: -55.0...400.0 °C<br>• Vin probe: 0-1V, 0-5V and 0-10V<br>• Ain probe: 0...20V and 4...20mA |
| Analogue inputs: | 3 NTC/PTC/Pt1000/DI inputs +1 V (0-1V / 0-5V / 0-10V) input + 1 I (0...20mA / 4...20mA) 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 250V~ | 2 (SELV) Open Collector: PWM<br>3 SPST 2A 250V~<br>1 SPDT 2A 250V~ |
| Connectivity: | • 1 RS-485 for connection to Televis**System** monitoring and systems based on ModBus protocol<br>• 1 TTL to connect to Eliwell Unicard USB, Copycard and DMI interface for **Device**Manager | • 1 RS-485 for connection to Televis**System** monitoring and systems based on ModBus protocol<br>• 1 TTL to connect to Eliwell Unicard USB, Copycard and DMI interface for **Device**Manager |
| Connectors: | Removable screw terminals | Removable screw terminals |
| Applications: | **AP1**=Temperature; **AP2**=Analogue Inputs; **AP3**=Digital Inputs; **AP4**=Dew Point; **AP5...8**=Free | **AP1**=Alarm signalling;<br>**AP2...8**=Free |
| Power consumption: | 5W | 5W |
| Power supply: | SMPS 100...240V~ ±10% 50/60Hz | SMPS 100...240V~ ±10% 50/60Hz |

## Wiring diagrams
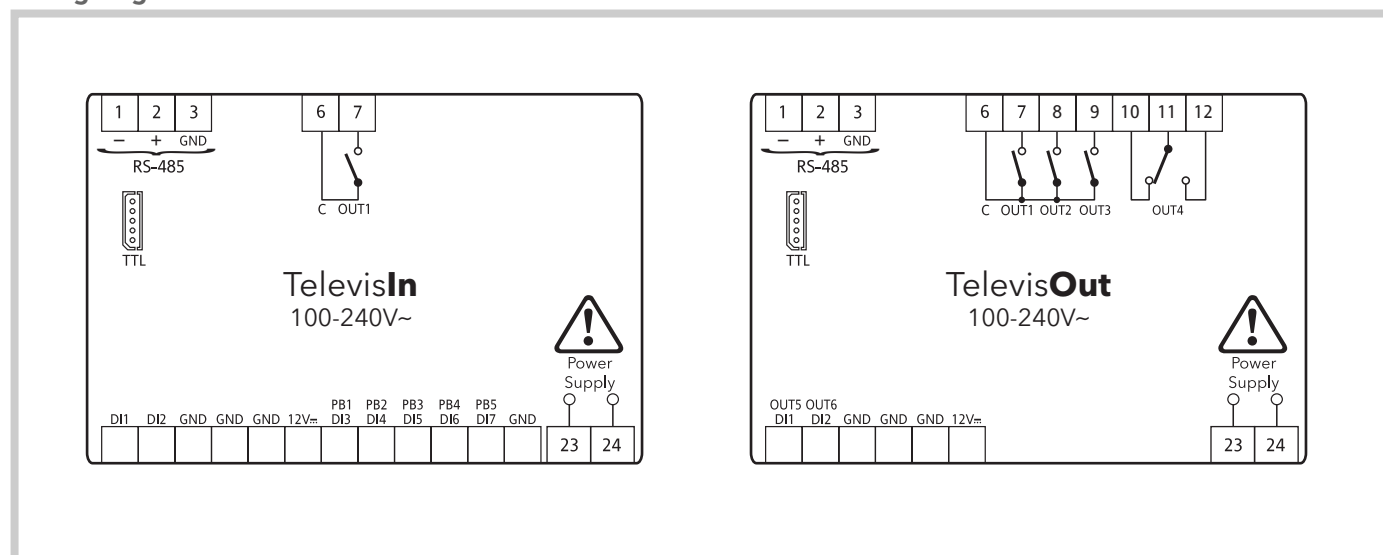
# LKD

## Detection and indication of refrigerant leaks

| Codes | Description | Power supply |
|---|---|---|
| LKD41CO2XR400 | LKD 110 CO2 | 12/24V |
| LKD41xxxxR400 | LKD 100 | 12/24V |
| LKD66CO2XR400 | LKD 210 CO2 | 12/24V |
| LKD66xxxxR400 | LKD 200 | 12/24V |
| LKDSG00000000 | LKD Splash Guard | - |

xxxx = R134 / R404 / NH3X / R290 / R507 / R600
according to the type of compatible refrigerant.

## Applications

The state-of-the-art **LKD** series gas sensors can detect a wide range of gases and refrigerants according to the model: R134a, R404a, NH3, R290, R507a, R600a, $CO_2$.
The gas sensors of LKD series can be used alone to control a buzzer, siren, etc., or integrated with Eliwell or third party remote management systems, thanks to a RS485 ModBus on board.
The main applications are: LT or NT cold rooms, refrigerated cabinets, compressor racks.

## Common features

| Compatible with Televis and third-party systems. | Suitable for refrigerants: R134a, R404a, NH3, R290, R507a, R600a, CO2 |
|---|---|
| Available versions **SC** (semiconductor) and **IR** (infrared) | |

## Technical data

| Technical data | LKD 100/110 | LKD 200/210 |
|---|---|---|
| Dimensions | 86x142x53mm | 175x165x82mm |
| Enclosure rating | IP41 (NT applications) | IP66 (LT applications) |
| Mounting | wall-mounted, height suitable to the type of refrigerant | wall-mounted, height suitable to the type of refrigerant |
| Analogue outputs | 0-5 V, 1-5 V, 0-10 V, 2-10 V, 4-20 mA | 0-5 V, 1-5 V, 0-10 V, 2-10 V, 4-20 mA |
| Digital outputs | 1 1A - 24V⎓/~ relay Settable delay: 0, 1, 5, 10 minutes | 1 relé 1A - 24V⎓/~ Settable delay: 0, 1, 5, 10 minutes |
| Connectivity | 1 RS485 for connection to supervisor Modbus (depending on model) | 1 RS485 for connection to supervisor Modbus (depending on model) |
| Measurement range | **SC**: 10-1.000ppm - **IR**: ppm - % | **SC**: 10-1.000ppm - **IR**: ppm - % |
| Temperature range | -20...+50°C | -40...+50°C |
| Humidity range | 0...95% (non-condensing) | 0...95% (non-condensing) |
| Sensor service life | **SC**: 5-8 years - IR: 8-10 years | **SC**: 5-8 years - IR: 8-10 years |
| T50 alarm threshold | **SC**: 76 sec (filtered) - **IR**: 25 sec | **SC**: 76 sec (filtered) - **IR**: 25 sec |
| T90 alarm threshold | **SC**: 215 sec (filtered) - **IR**: 90 sec | **SC**: 215 sec (filtered) - **IR**: 90 sec |
| Recovery time | **SC**: 600 sec - **IR**: 210 sec | **SC**: 600 sec - **IR**: 210 sec |
| On-site alarm | light (red LED) / acoustic (buzzer) | light (red LED) / acoustic (buzzer) |
| Consumption (at 12 V) | **SC**: 153mA - **IR**: 136 mA | **SC**: 153mA - **IR**: 136 mA |
| Power supply | 12-24V⎓/~ ±20% 50/60Hz | 12-24V⎓/~ ±20% 50/60Hz |

## Dimensions
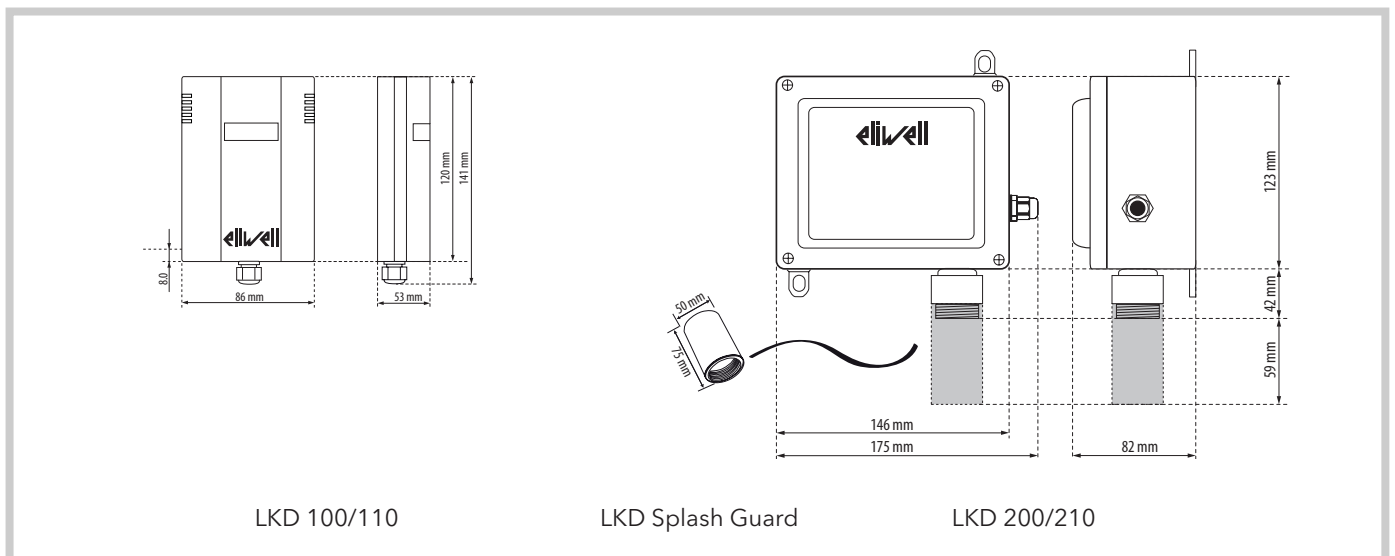


LKD 100/110          LKD Splash Guard          LKD 200/210

# Memory 1000

## Temperature recording and printing

| Codes | Description | Temperature input |
|-------|-------------|-------------------|
| **M1K04N03D1X00** | MEMORY 1040 F* | 4 |
| **M1K04N03D0X00** | MEMORY 1045 F | 4 |
| **M1K08N03D1X00** | MEMORY 1080 F* | 8 |
| **M1K08N03D0X00** | MEMORY 1085 F | 8 |
| **M1K26N03D1X00** | MEMORY 1080 F 2AI* | 8 |
| **M1K26N03D0X00** | MEMORY 1085 F 2AI | 8 |
| **M1K26N03D1X00** | MEMORY 1180/15 F 2AI* | 8 |
| **M1K26N03D0X00** | MEMORY 1185/15 F 2AI | 8 |
| | | |
| **RC444444** | 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: | Manages all aspects of network controller alarms |
| • fast data download on SD CARD, without using the PC | 12 months+ data logging capacity |
| • soft key to enter the report printing menu directly | A wide range of models to fit all application requirements |
| Compatible with RadioAdapter wireless networks | Up to 10 digital and analogue inputs |

## Technical data

| 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 | • max 8 NTC / 4 NTC based on model<br>• max 2 4...20 mA (**only for models 2AI**) | • max 8 NTC / 4 NTC based on model<br>• max 2 4...20 mA (**only for models 2AI**) |
| 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 250V~ | 1 SPDT 5(2)A 250V~ |
| Connectivity | 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 | 230V~ ±10% 50/60Hz | 230V~ ±10% 50/60Hz |
| Printer | Integrated thermal printer | - |

## Accessories

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

## Wiring diagrams
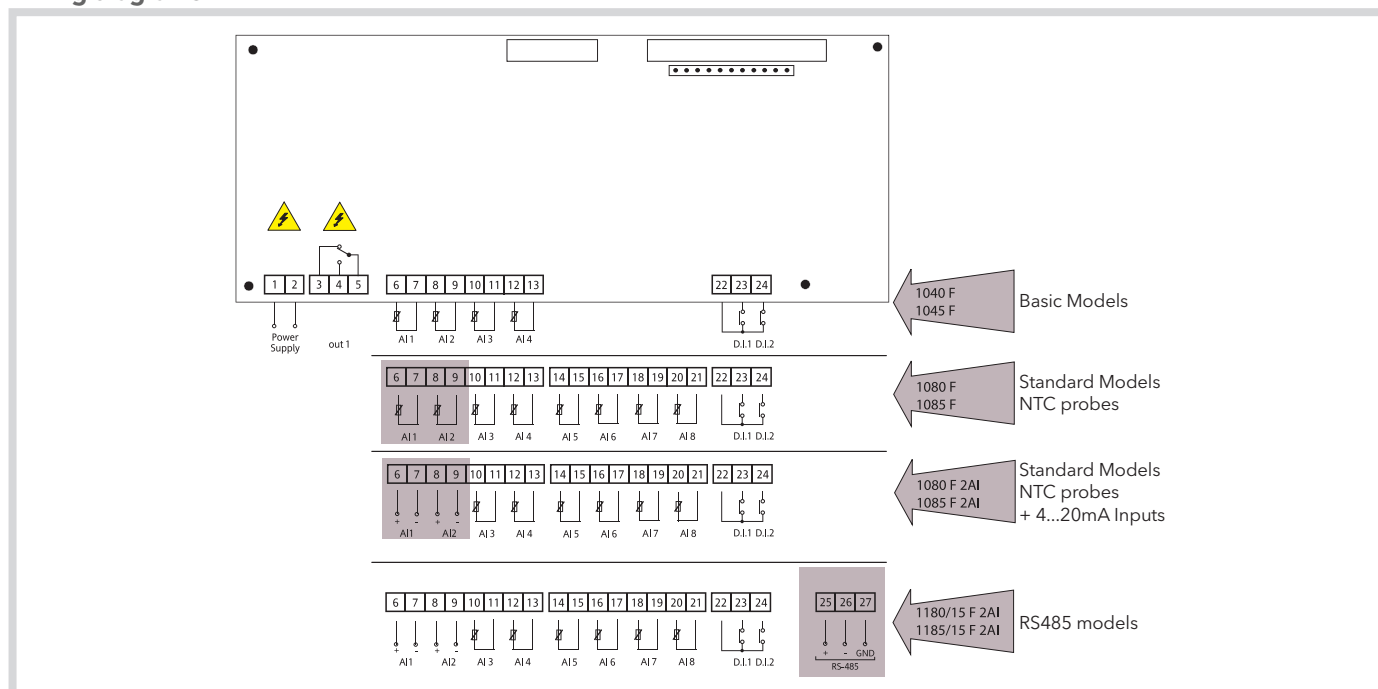
# SerialAdapter - LanAdapter Ethernet - LanAdapter WiFi

**Connectivity modules for monitoring systems**

| Codes | Description |
|---|---|
| SAT1AMM100000 | **Serial**Adapter 232 |
| LA0ET00X700 | **Lan**Adapter Ethernet |
| LA0WF00X700 | **Lan**Adapter WiFi |

## Applications

**Serial**Adapter is a galvanically isolated RS-232/RS-485 adapter to be used on networks with Televis**Go**.
**Lan**Adapter is an Ethernet/RS-485 (or TTL) interface module enabling communication between a LAN and a network of instruments compatible with the Televis protocol. In this way, the LAN network monitoring system can manage data, alarms and connected instrument network functions.
The **Lan**Adapter can be configured via web pages accessible from any PC belonging to the LAN the **Lan**Adapter is connected to.

## Specifications

| | |
|---|---|
| RS-232, Ethernet and WiFi connectivity | Multiple networks using existing LAN infrastructures |
| Up to 2 SerialAdapter networks with TelevisGo | Televis and ModBus protocol compatibility |

| General technical specifications | SerialAdapter | LanAdapter Ethernet | LanAdapter WiFi |
|---|---|---|---|
| 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: | 12V⎓ through Televis**Go** serial port | 100-240V~ ±10% 50/60Hz | 100-240V~ ±10% 50/60Hz |
| Power consumption: | - | 4W max | 4W max |
| Insulation class: | - | II | II |
| Ambient operating temperature: | -5...+55°C | 0...+55 °C | 0...+55 °C |
| Storage ambient 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$^2$ (one connector per terminal). | screw terminal to connect electric cables with a section of max. 2.5 mm$^2$ (one wire per terminal). RJ-45 connector for connection to Ethernet network | screw terminal to connect electric cable with a section of max. 2.5 mm$^2$ (one wire per terminal). Antenna (external) |
| Connectivity: | • RS-485 port for connection to Televis**System** | • RS-485 port for connection to Televis**System** <br> • TTL port for connection to instruments <br> • LAN 10/100 MBps | • RS-485 port for connection to Televis**System** <br> • TTL port for connection to instruments <br> • Standard: IEEE 802.11b <br> • Frequency band: ISM 2,400 GHz...2,485 GHz (<100mW e.i.r.p.) <br> • Selection of channel: manual/ automatic |

## Connectivity



**Radio**Adapter

**Bus**Adapter

RS485

**Serial**Adapter

x2

Televis**Go**

Internet

Switch/ Access point

Ethernet

RS485

**Lan**Adapter Ethernet

ModBus

RS485

**Lan**Adapter WiFi

ModBus
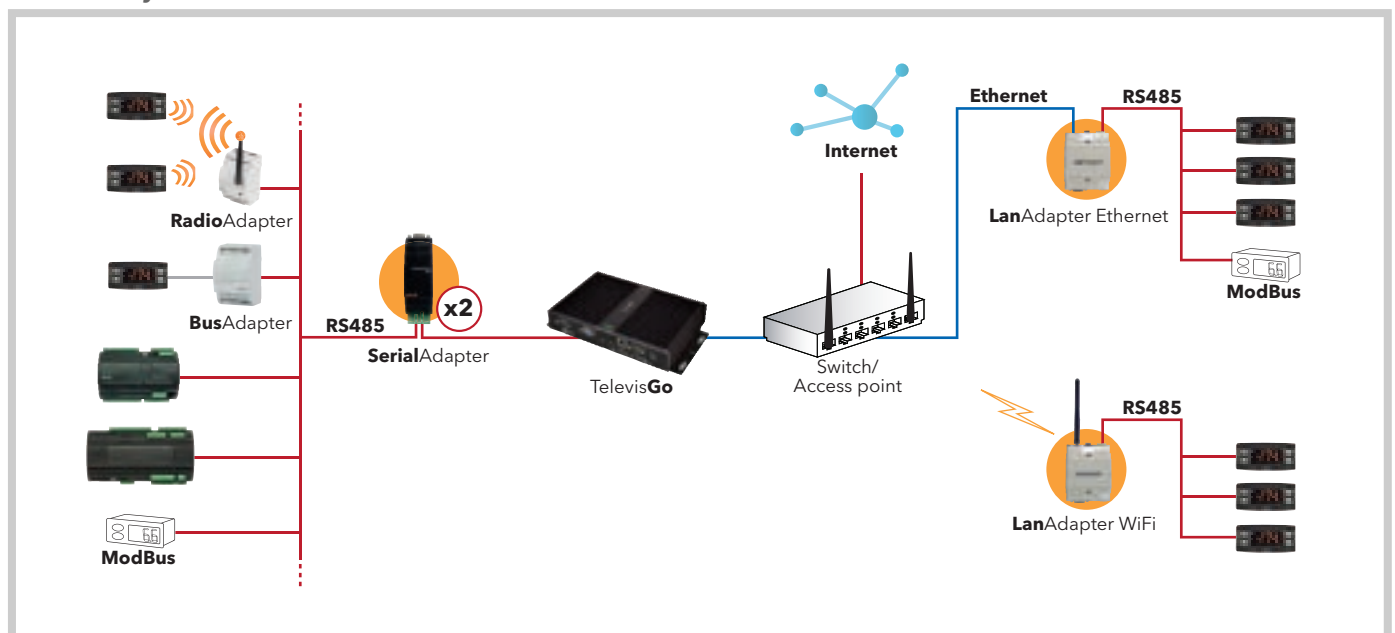
# RadioAdapter - RadioAdapter (/S) EXT - RadioKey

**Wireless connectivity modules**

| Codes | Description |
|-------|-------------|
| **BARF0TT00NH00** | **Radio**Adapter V2.0 |
| **BARF0DT00NH00** | **Radio**Adapter/S V2.0 |
| **BARF0TT20NH00** | **Radio**AdapterEXT V2.0 |
| **BARF0DT20NH00** | **Radio**Adapter/S EXT V2.0 |
| **CCA0B0T01T000** | RadioKey (Televis) |
| **CCA0B0T01Mx00** | 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

**Radio**Adapter provides a cost-effective, reliable way of building communication networks between monitoring systems and controllers by replacing cables or extending existing networks.
**Radio**Key is a device needed to configure the network.

## Common features

| | |
|---|---|
| Frequency band ISM 2.400 GHz…2.485 GHz | Ability to act as a repeater for adjacent nodes |
| MESH communication technology with automatic directory selection | EC certification for European market |
| Extensive surface coverage | FCC certification for American market |

| General technical specifications | RadioAdapter RadioAdapter/S | RadioAdapter EXT 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...240V~ ±10% 50/60Hz | 100...240V~ ±10% 50/60Hz | - |
| Power consumption: | 2W | 2W | - |
| Insulation class: | II | II | - |
| Ambient operating temperature: | -5...+60 °C | -5...+60 °C | - |
| Storage ambient 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: | 800msec max. | 800msec max. | - |
| Connectivity: | TTL port for connection to RS-485 serial port devices - **just models /S** | TTL port for connection to RS-485 serial port devices - **just models /S** | - |
| Antenna: | 2 x 4GHz integrated, multi-directional | external - not included (see Accessories) | |
| Accessories/notes: | - | External antenna kit + SMA 90° connector + 1m cable. To be ordered separately | needed for network configuration. Available for Televis or ModBus RTU networks |

## Wiring diagrams
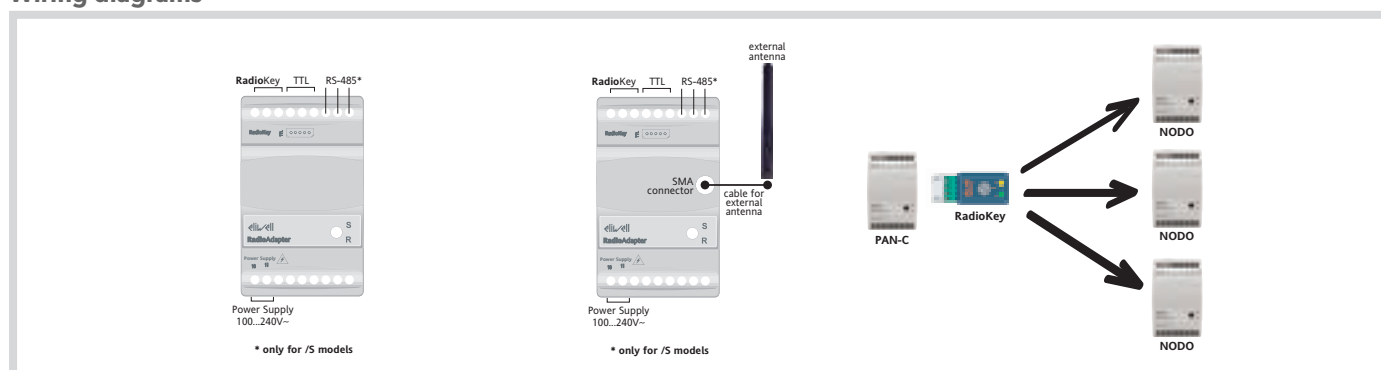
# BusAdapter 130 - 150

**RS-485 opto isolator connectivity modules**

| Codes | Description | Details |
|-------|-------------|---------|
| **BA11250N3700** | BusAdapter 130 | 1.5 m cable |
| **BA10000R3700** | 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.
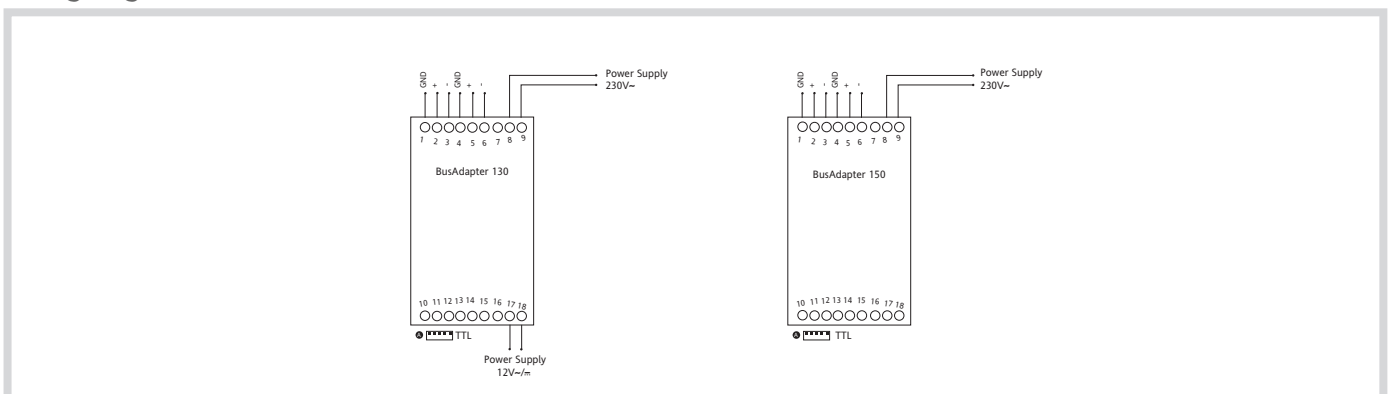
## Specifications

| | |
|---|---|
| **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 terminal to connect electric cables of 2.5 mm$^2$ maximum cross-section (one wire per terminal in the case of power connections) | screw terminal to connect electric cables of 2.5 mm$^2$ maximum cross-section (one wire per terminal in the case of power connections) |
| Connectivity: | • double RS-485 port for connection to Televis**System** <br> • TTL port for connection to instruments | • double RS-485 port for connection to Televis**System** <br> • TTL port for connection to instruments |
| Baud rate: | 2400...9600 Baud | 2400...9600 Baud |
| Auxiliary output: | 12V~ / C ±10% 50/60Hz | / |

## Wiring diagrams

# Modem GSM/GPRS

**Modems**

| Codes | Description |
|---|---|
| **SAMGPRS35AL00** | GSM/GPRS W/ANT PSU MODEM KIT |
| | Includes: power supply unit (European |
| | 10A plug) + antenna with 1.5m cable |

## Applications

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

## Technical Data

| Modem GSM/GPRS | |
|---|---|
| Case: | Metal |
| Dimensions: | 91x58.5x22 mm (BxHxD) |
| Weight: | 195g |
| Frequency bands: | EGSM900/GSM1800MHz, GSM850/900/1800 |
| GSM standard: | GSM phase 2/2+ |
| GPRS standard: | class 10 - 85.6Kbps |
| Transmission power: | GSM850/900: <33dBm; |
| | GSM1800: <30dBm |
| Reception sensitivity: | <-107dBm |
| Connections: | • DB9 port RS-232 serial port, with 15KV ESD protection |
| | • SMA 50 Ohm antenna connection, female connector |
| | • connector powering 3-pole jack with protection for overvoltages and inverted polarity |
| | • SIM/USIM 3V/1.8V slot with 15KV ESD protection |
| Power supply: | 5...35V⎓ 12V |
| Power consumption: | <200mA (12V) |
| Serial configuration: | Speed 110 ... 230400 bps |
| | 5, 6, 7, 8 data bit |
| | 1, 1.5, 2 stop bit |
| | 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



Unit of Measure: mm
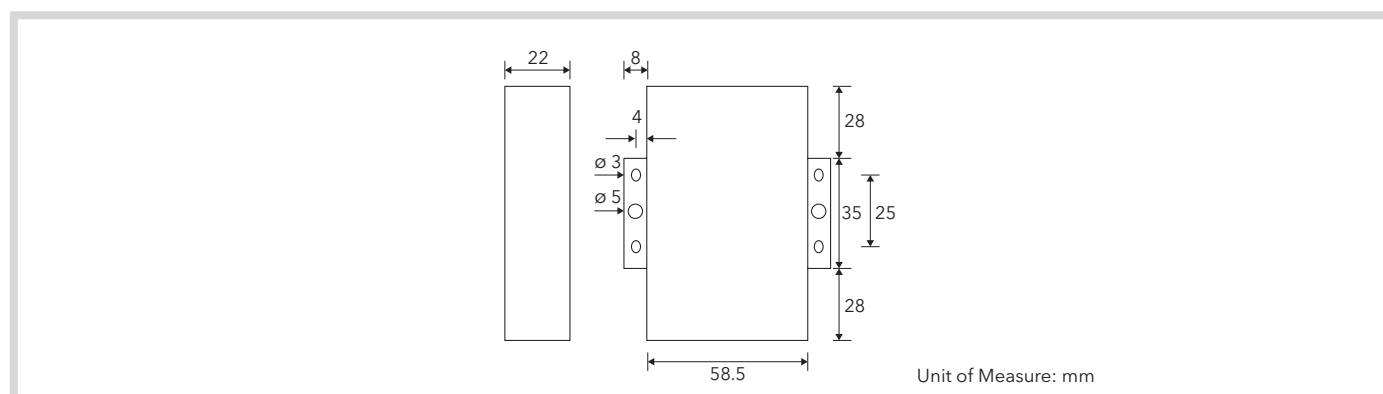
# ELECTROMECHANICAL ACCESSORIES AND COMPONENTS

Eliwell supplies a number of accessories to complete its line of instruments.

Temperature, humidity, pressure probes, power supply units, a wide range of transformers, on to memory devices like Unicard to transfer parameters quickly and update controller firmware.

Devices designed to give the user all those instruments enabling greater work quality and productivity.

# DeviceManager
**Controller configuration software**

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

## Applications

**Device**Manager is a Windows software tool used to manage and for the first installation of Eliwell devices. The software can be used to create and save parameter mapping and transfer it to and from the controller with a few clicks.

**Device**Manager needs the USB communication interface **Device**Manager Interface (DMI) to communicate with controllers directly and is compatible with Unicard USB and Multi Function Key to transfer maps, parameters and controller firmware updates. For information on compatibility and functions available with each controller family, please check the compatibility table in the restricted area of **www.eliwell.com**

## Specifications

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

| Minimum system requirements | DeviceManager |
|---|---|
| Operating system: | • Windows XP Pro SP2, Italian and English.<br>• Windows XP Home SP2, Italian and English.<br>• Windows 2000 Professional SP4, Italian and English.<br>• Windows 7 Premium, Windows 7 Professional, Windows 7 Ultimate, versions 32bit, Italian-English |
| Software components required besides operating system: | • .NET Framework 2.0 |
| Minimum hardware: | • graphics resolution 1024x768<br>• 700MHz CPU<br>• 256MB RAM<br>• HD 1GB<br>• Mouse or equivalent navigation system |
| Space required on disk: | Approx. 500 MB for normal installation (2 languages, 50 models) |

## Accessories

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

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

**Memory stick for fast configuration and updating of controllers**



(A)  (B)  (C)  (D)
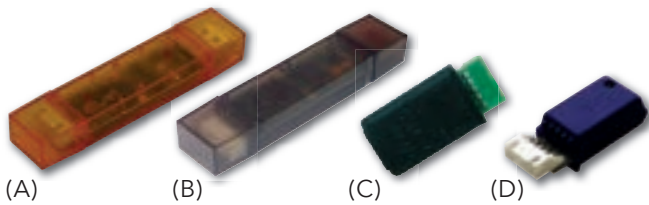
| Codes | | Description |
|---|---|---|
| **CCA0BHT00UU00** | (A) | UNICARD USB/TTL |
| **CCA0BUI02N000** | (B) | USB Copy Card |
| **COLV000016200** | | Extension lead for USB Copy Card |
| **CC0S00A00M000** | (C) | Standard Copy Card |
| **MKF100T000000** | (D) | Multi Function Key 100 |

## 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 **Device**Manager software from the **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 **Device**Manager to transfer maps, parameters and controller firmware updates.

## Common features

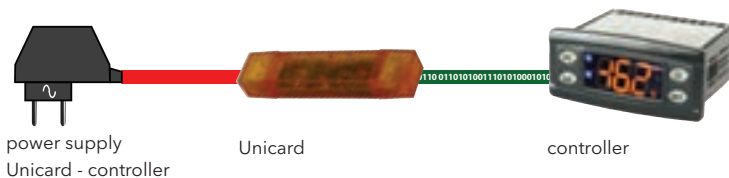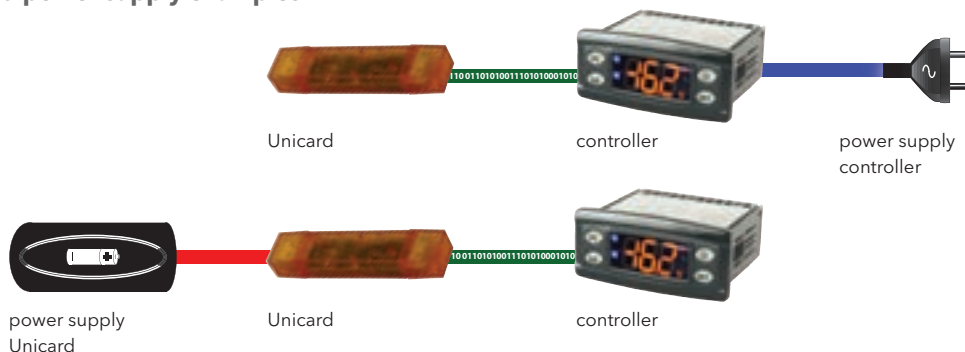| | |
|---|---|
| Unicard has a **standard USB port** for connection to the most widely-used power supply units and adapters on the market (mains-powered, machine-powered, battery-powered, etc.). | Updating device firmware/applications |
| | Downloading parameter values from the instrument |
| | Downloading alarm log from the instrument |
| Updating device parameter values | |

## Use

| Use | Copy Card | Multi Function key | Unicard | USB Copy Card |
|---|:---:|:---:|:---:|:---:|
| IDPlus series | • | - | • | - |
| EW - EWPlus (EO LVD) series | • | - | • | - |
| IC series | • | - | - | - |
| ID series | • | - | - | - |
| EM300 Series | • | - | - | - |
| DR 4020 - DR4022 | • | - | • | - |
| EW4820 - EW4822 | • | - | - | - |
| EW 7220 - EW 7222 | • | - | - | - |
| EWTS 950 LX - EWTS 990 LX | • | - | - | - |
| EWRC 300 - EWRC 500 series | • | - | • | - |
| EWDR series | • | - | - | - |
| IWC series | • | - | - | - |
| IWP 750 | • | - | • | - |
| Televis**In** - Televis**Out** | • | - | • / 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 | • | • | - | - |

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

## Counter power supply examples



power supply
Unicard - controller

Unicard

controller

## Field power supply examples



Unicard

controller

power supply
controller



power supply
Unicard

Unicard

controller

# NTC probes
**NTC semi-conductor temperature probes**

### NTC co-moulded with double insulation

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

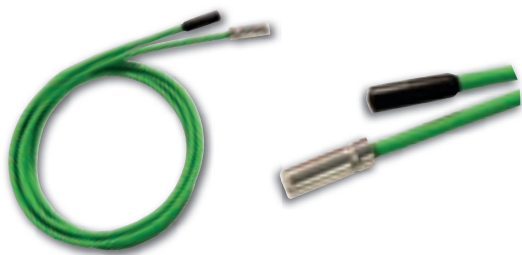### NTC co-moulded with double insulated cable

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

### NTC special versions

| Codes | Description | Capsule Material | Dimensions of capsule mm (ØxL) | Cable type | Level of protection | Dielectric strength | Operating range | Length probe |
|---|---|---|---|---|---|---|---|---|
| SN8DEB21502C0 | NTC clamp-on | Thermoplastic rubber | 6x20 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP68 | 2000V | -50...+110°C | 1.5m |
| SN8DEB23002C0 | NTC clamp-on | Thermoplastic rubber | 6x20 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP68 | 2000V | -50...+110°C | 3.0m |
| SN8DNB11502A0 | NTC clamp-on probe IP67 Fast response | Copper | 4x16 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP67 | 1500V | -50...+110°C | 1.5m |
| SN8DAC11502AV | NTC probe Fast response | AISI 304 | 4x40 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP67 | 2000V | -50...+110°C | 1.5m |
| SN8DAC13002AV | NTC probe Fast response | AISI 304 | 4x40 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP67 | 2000V | -50...+110°C | 3.0m |
| SN8DEP15002C0 | NTC Probe product simulation | Thermoplastic rubber | Ø 110 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP68 | 2000V | -50...+110°C | 5.0m |

# Pt100 - Pt1000 probes

**Pt100 - Pt1000 thermo-resistive temperature probes**



## Pt100

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

## Pt1000

| Codes | Description | Capsule Material | Dimensions of capsule mm (ØxL) | Cable type | Level of protection | Dielectric strength | Operating range | Length probe |
|---|---|---|---|---|---|---|---|---|
| SN9S0A2500 | Pt1000 with two wires | AISI 304 | 6x40 | Silicone | IP67 | 2000V | -50...+200 °C | 2.5m |
| SN9DAE11502C6 | Pt1000 co-moulded with double insulated cable | AISI 304 | 6x20 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP68 | 2000V | -50...+110 °C | 1.5m |
| SN9DAE13002C6 | Pt1000 co-moulded with double insulated cable | AISI 304 | 6x20 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP68 | 2000V | -50...+110 °C | 3.0m |
| SN9DED11502C6 | Pt1000 co-moulded with double insulated cable | Thermoplastic rubber - | 5x20 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP68 | 2000V | -50...+110 °C | 1.5m |
| SN9DED13002C6 | Pt1000 co-moulded with double insulated cable | Thermoplastic rubber - | 5x20 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP68 | 2000V | -50...+110 °C | 3.0m |

# PTC - TC probes

**PTC semi-conductor temperature probes, TC thermocouples**



## Applications

Temperature probes, available in various models, 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%

## PTC

| Codes | Description | Capsule Material | Dimensions of capsule mm (ØxL) | Cable type | Level of protection | Dielectric strength | Operating range | Length probe |
|---|---|---|---|---|---|---|---|---|
| SN7T6A1502 | PTC co-moulded with double insulated cable | AISI 304 | 6x40 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP68 | 2.000 | -50...+110°C | 1.5m |
| SN7DAE11502C0 | PTC co-moulded with double insulated cable | AISI 304 | 6x20 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP68 | 2000 | -50...+110°C | 1.5m |
| SN7DAE13002C0 | PTC co-moulded with double insulated cable | AISI 304 | 6x20 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP68 | 2000 | -50...+110°C | 3.0m |
| SN7DED11502C0 | PTC co-moulded with double insulated cable | Thermoplastic rubber - | 5x20 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP68 | 2000 | -50...+110°C | 1.5m |
| SN7DED13002C0 | PTC co-moulded with double insulated cable | AISI 304 | 6x20 | Thermoplastic rubber (Outer) Polypropylene (Inner) | IP68 | 2000 | -50...+110°C | 3.0m |
| 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 | 3.0m |

## TCK

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

## TCJ

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

# EWPA 007 - 030 - 050

**Pressure transducers**

## Applications

EWPA pressure transducers are sensors with a current 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...32V | 8...32V | 8...32V | 8...32V |
| Accuracy | ± 0.5 % FS max (linearity, hysteresis, repeatability) | ± 0.5 % FS max (linearity, hysteresis, repeatability) | ± 0.5 % FS max (linearity, hysteresis, repeatability) | ± 0.5 % FS max (linearity, hysteresis, repeatability) |
| Compensated temperature | 0...50 °C | 0...50 °C | 0...50 °C | 0...50 °C |
| Electrical connections | 2 m cable, wired 2 m cable with Packard connector | 2 m cable, wired 2 m cable with Packard connector | 2m cable, wired 2m cable with Packard connector | 2 m cable, wired 2m cable with Packard connector |
| Mechanical connections | male connector/ female connector ¼ SAE (7/16"-20UNF) | male connector/ female connector ¼ SAE (7/16"-20UNF) | male connector/ female connector ¼ SAE (7/16"-20UNF) | male connector/ female connector 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%) < 5ms | (0...99%) < 5ms | (0...99%) < 5ms | (0...99%) < 5ms |
| Material in contact | AISI 316L | AISI 316L | AISI 316L | AISI 316L |
| with the environment | Viton outer seal | Viton outer seal | Viton outer seal | Viton outer seal |
| Enclosure rating | Packard: IP67 Cable: IP54 | Packard: IP67 Cable: IP54 | Packard: IP67 Cable: IP54 | Packard: IP67 Cable: IP54 |

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

# EWPA 010 - 030 - 050

**Ratiometric pressure transducers**



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

## Applications

EWPA ratiometric pressure transducers are sensors capable of transmitting a signal by way of a voltage 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...4.5V | 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 | 5.0V⎓ ± 0.5V | 5.0V⎓ ± 0.5V | 5.0V⎓ ± 0.5V |
| Accuracy | ± 0.25 % FS max (linearity, hysteresis, repeatability) | ± 0.25 % FS max (linearity, hysteresis, repeatability) | ± 0.25 % FS max (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 ¼ SAE (7/16"-20UNF) | female connector ¼ SAE (7/16"-20UNF) | female connector 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%) < 5ms | (0...99%) < 5ms | (0...99%) < 5ms |
| Material exposed to environment | AISI 316L Viton outer seal | AISI 316L Viton outer seal | AISI 316L 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

| | |
|---|---|
| **Ambient humidity:** | 0...100% RH |
| **Air maximum speed** | 20m/s |
| **Polarity inversion protection:** | 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...28Vm | 9...30Vm | 15...40Vm or 12...28V- |
| Power consumption | 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 the humidity measurement | 4 (0%)...20mA (100%) | 4 (0%)...20mA (100%) | 4 (0%)...20mA (100%) |
| Response time to constant conditions (63%) to 23°C | 60 sec | typically 10 sec | typically 10 sec |
| Recovery time from saturation | 360 sec | depending on air flow rate | depending on air flow rate |
| Temperature for storage | -20...70°C | -50...70°C | -50...70°C |
| Measurement accuracy of moisture (at 23°C) | ±5% RH (in the range 15...90% RH) | ±2% RH (in the range 10...95% RH) ±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) |
| Output current of the temperature measurement | - | - | 4 (-30 °C)...20mA (70 °C) |
| Accuracy of temperature measurement (at 0 °C and 23 °C) | - | - | ±0.3K |
| Compensation for temperature | - | with NTC | with Pt100B |
| Connection cable | 1m or 3m | - | - |
| Maximum load | 250 Ohm | 0 Ohm at 6V= and 5V~ 500Ohm at 15V= and 12V~ | 0 Ohm at 6V= and 5V~ 500Ohm at 15V= and 12V~ |
| Code | EWHS284 - 1m cable:   SN5PPN116I3M0 EWHS284-3 3m cable:  SN5PPN131I3M0 | EWHS304:   SN5NPM1A6I4M0 | EWHS314:   SN0NPM1A6I4M0 |

# 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 |

# EW BOX - INOX BOX
**EW BOX - INOX BOX**

## Applications
EW Boxes and INOX Boxes are a range of plastic and stainless steel containers for the wall mounting of instruments designed for panel mounting.

| Code | Description |
|---|---|
| SM000000 | EW box without front panel |
| SM000005 | Front panel without holes in ABS for EW box |
| SM000010 | Front panel in ABS for EW vertical box with one hole for standard instrument 32x74 and two holes for switch |
| SM000013 | Front panel in ABS for EW horizontal box with one hole for standard instrument 32x74 and one hole for switch |
| SM000020 | Front panel in ABS for EW vertical box with two holes for standard instrument 32x74 and two holes for switch |
| SM000030 | Front panel in ABS for EW horizontal box with two holes for standard instrument 32x74 and two holes for switch |
| SM111111 | INOX Box with one hole for standard instrument 32x74 |
| SM111112 | INOX Box with two holes for standard instruments 32x74 |

# TF Transformers

**Transformers**
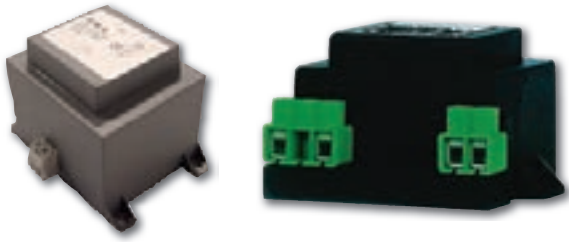


## Applications

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

| Code | Model | 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 or 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 |

# OEM PRODUCTS

Eliwell supplies a wide range of products and solutions that stand out for high quality and reliability. This is the result of 25 years experience and know how acquired collaborating with the main commercial refrigeration equipment manufacturers.

For manufacturers (OEM) Eliwell supplies a series of standard and customisable products. These are based on consolidated, easy-to-adapt platforms.

Controllers for OEM are only supplied in industrial packaging, with electronic documentation and in minimum lots depending on product type.

OEM controller customisation may go from definition of a customised parameter map, to including a logo or creation of specific functions.

The following pages list the main controller families for OEM where standard solutions are available for manufacturers. Kindly contact an Eliwell agent to assess the specific solution for your needs.

# nEW series

**Solutions for refrigerated counters with compressor on board**



- Easy installation with quick connectors
- Front panel and connections protected from water

## Applications

The **nEW** series is the standard Eliwell solution for large production volumes.
Thanks to the flexibility of the platform and the library of available functions, **nEW** is the best solution for manufacturers who are looking for an innovative solution with the advantages of electronic control and at the same time easy to install and use.

## Common features

| | |
|---|---|
| Direct control of loads up to 2 HP | Use of faston/screw connectors for quick, versatile hookup |
| Universal power supply switching from 100 to 240Vac 50/60Hz in a single model | Copy cards which can be used for quick programming |

| Model | Application | Notes |
|---|---|---|
| **nEW 961** | Static units | 2Hp power relay for compressor piloting |
| **nEW 971** | Ventilated units | 2Hp relay, 1 defrost output |

# EWPlus series

**Solutions with icon display**



- Display with large digits and coloured icons, to easily understand operating status
- Simple, intuitive menus for fast learning
- Suited for applications with hydrocarbons
- ENEC/UL/NSF Certifications (check on the device label)

## Applications

The **EWPlus** series includes flexible, modern design controllers for plug-in refrigerated counters.
Thanks to platform versatility and a library of available functions, Eliwell is the best answer for manufacturers seeking custom solutions for energy saving requirements and simplification of production processes.

## Common features

| | |
|---|---|
| Direct load management up to 2Hp and power supply of 230V~ or 115V~ | Unicard USB for customizing even small lots |
| Use of removable/faston/screw connectors for quick, versatile hookup | Industrial packaging 60 pieces |

| Model | Application | Notes |
|---|---|---|
| **EWPlus 902** | Positive temperatures | Change-over contact relay |
| **EWPlus 961** | Static units | 2 Hp power relay |
| **EWPlus 971** | Ventilated units | 2Hp relays, 1 configurable output (defrost/fans/lights/alarm/stand-by) |
| **EWPlus 974** | Ventilated units | 2Hp relays, 2 configurable outputs (defrost/fans/lights/alarm/stand-by) |

# EWPlus EO series

**High energy saving solutions**

- Advanced control algorithms contribute to **energy saving up to 39%**\* with no modification of counter structure needed
- Adaptive Energy Saving functions depending on the conditions of use of the cooler
- Compressor **voltage protection** assured, increasing duration
- The product is **compatible with the new ecological refrigerants R290, R600**, in compliance with IEC 60079-15-2005
- Optimized temperature management when switching from night to day mode
- No supplementary sensors needed thanks to the **virtual door switch**
- Voluntary certification: ENEC/UL (check on the device label)
- **4 easily selectable configurations** pre-loaded in a single controller

*energy saving certified by the independent laboratory INTERTEK

## Applications

The **EWPlus EO** series controllers are designed to combine high energy savings with maximum ease of installation and use, easily applicable also if replacing prior series controllers.
Thanks to platform versatility and a library of available functions, Eliwell can design custom solutions for energy saving requirements and simplification of production processes.
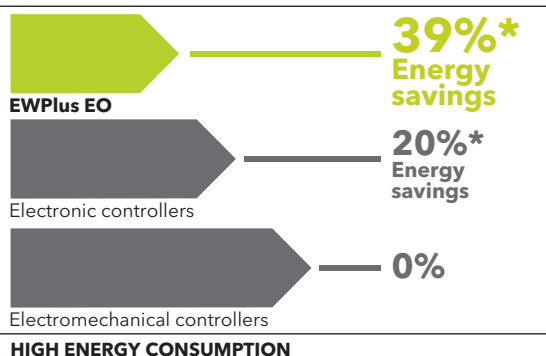
## Common features

| | |
|---|---|
| Direct load management up to 2 Hp and power supply of 230V~ or 115V~ | Use of removable/faston/screw connectors for quick, versatile hookup |
| Integrated protection of loads against voltage fluctuations controllable by parameter | Unicard USB for customizing even small lots |
| | Industrial packaging 60 pieces |

| Model | Application | Notes |
|---|---|---|
| **EWPlus 961 EO** | Static units | 2Hp power relay |
| **EWPlus 971 EO** | Ventilated units | 2Hp relays, 1 configurable output (defrost/fans/lights/alarm/stand-by) |
| **EWPlus 974 EO** | Ventilated units | 2Hp relays, 2 configurable outputs (defrost/fans/lights/alarm/stand-by) |

**LOW ENERGY CONSUMPTION**

**EWPlus EO** — **39%\*** Energy savings

Electronic controllers — **20%\*** Energy savings

Electromechanical controllers — **0%**

**HIGH ENERGY CONSUMPTION**

**Longer-lasting components**

- Protection of compressor against voltage fluctuations thanks to incorporated low and high voltage detector LVD (patent in the registration process).
- Advanced control algorithms for long-lasting performance with no need to modify counter structure.

**EWPlus EO**

# EWPlus 961 - 971 EO Dispenser

**Solutions for refrigerated dispensers / beer taps**

- Electronic temperature control
- Electronic control of ice level with single and double sensor
- Ice sensor sensitivity configurable by parameter
- Compatible with hydrocarbon applications (R290, R600a)

## Applications

**EWPlus 961 EO Dispenser** is a controller designed to offer a compact, efficient solution to control the refrigeration of drink dispensers, such as beer and soft drinks. Thanks to platform versatility and a library of available functions, Eliwell has integrated control of temperature and ice level into a single controller that can be parameterized from the keyboard to adapt to the various application configurations easily.

## Common features

| | |
|---|---|
| Configurable inputs for temperature and single or double ice level sensor | Unicard USB for customizing even small lots |
| 230V~ power supply | Industrial packaging 60 pieces |

| Model | Application | Notes |
|---|---|---|
| **EWPlus 961 EO Dispenser** | Dispenser | Ice level control |
| **EWPlus 971 EO Dispenser** | Dispenser | Water pump control |
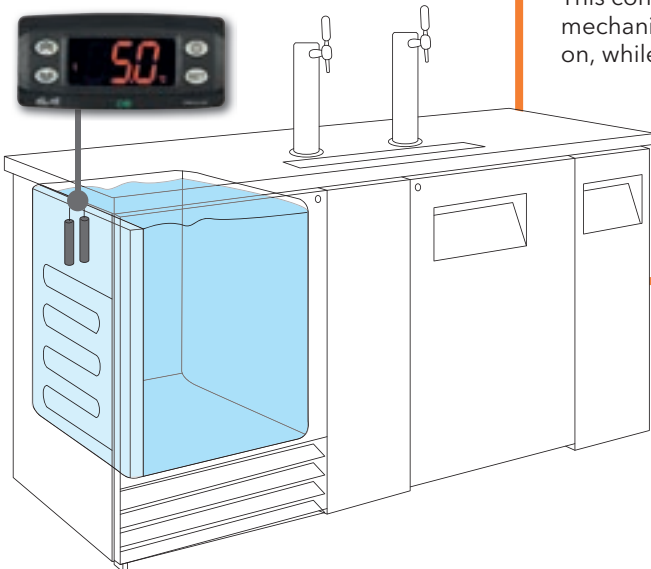
**Energy saving**

The double ice sensor configuration gives users considerable energy and reliability benefits.

This configurations allows you to set a hysteresis on the formation of ice mechanically decreasing the number of times the compressor comes on, while reducing the need for maintenance and increasing duration.

## EWPlus 961 EO Dispenser

# EWPlus 978

**Solutions for double evaporator and double compressor**

- Solution for combined counters, double evaporator or double compressor
- Compact solution for control of small mono-blocks
- Suited for applications with hydrocarbons

## Applications

The **EWPlus 978** series controllers are designed to combine high energy savings with maximum ease of installation and use, easily applicable also if replacing prior series controllers.

Thanks to platform versatility and a library of available functions, Eliwell can design custom solutions for energy saving requirements and simplification of production processes.

## Common features

| | |
|---|---|
| 4 configurable output relays for double compressor control and single or double defrost | 12V power supply |
| | Unicard USB for customizing even small lots |

| Model | Application | Notes |
|---|---|---|
| **EWPlus 978** | Combined counters | Single or double compressor |
| | Mono-blocks | Single or double evaporator |

**Application examples**

In a combined cold cabinet, **EWPlus 978** can manage the double compressor with:

- delayed ignition
- ignition based on differentiated temperature threshold and delay

In this case, the controller can manage the set sequence or rotation between two compressors.

It can also manage double defrosting:

- delayed
- with independent defrost end temperatures
- with common defrost time-out

## EWPlus 978

# IWP 750

**Solutions for mono-blocks**

- • Specific solution for mono-blocks with keyboard to be panel mounted with custom polycarbonate
- • Faston type connection for all loads and screw for all signals
- • Keyboard can be set for a distance of up to 100m
- • Board for RS-485 connectivity optional plug-in

## Applications

**IWP 750** controllers are designed to combine high energy savings with maximum ease of installation and use, easily applicable also if replacing prior series controllers.

Thanks to platform versatility the product can be configured in various relay combinations to adapt to the mono-block better.

## Common features

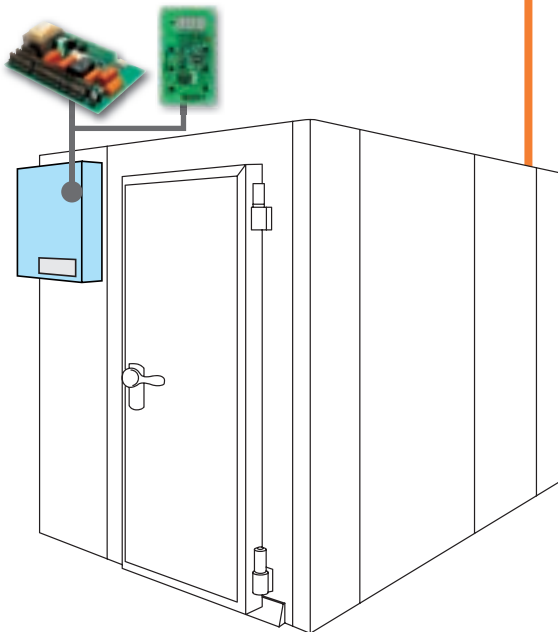| | |
|---|---|
| Power boards and bare keyboard, for panel mounting | Compressor control up to 2Hp |
| 3 temperature probes and 3 configurable digital inputs | SMPS 100…240V~ power supply |
| 5 configurable relay outputs | |

| Model | Application | Notes |
|---|---|---|
| **IWP 750** | Mono-blocks | Power boards with 5 relays |
| **IWK Open** | | Bare keyboard from panel |
| | | Can be set for a distance of up to 100m |

### Environmental sustainability

The IWP devices offer a wide range of machine configuration options, predominantly thanks to the vast array of relays, available with power levels of up to 2Hp and used to control two separate compressors directly.

### Easy to use

The minimised wiring with on-board power relay, quick connections, simple, intuitive remote user interface and support tools allow for straightforward customisation, even on the production line. The IWK remote keypad is available in reduced depth format so that its can even be used in areas where installation conditions are particularly limited.

## IWP 750 - IWK

# IWC 700 series

## Controllers for professional applications / catering

- Solutions for professional counters, normally used to store fresh and frozen foods
- Can be connected to remote ECHO display based on model
- Models managing double temperature Set points available

## Applications

**IWC 720-730** controllers are suitable for applications on ventilated refrigeration units for normal or low temperatures

**IWC750 Twin** is designed specifically to control dual independent temperature refrigeration systems, normally used for the preservation of fresh and frozen foods.

**IWC730/E Twin** with two set points is ideal for catering applications, and can be connected to the Echo remote display.

## Common features

| **Container** | PC+ABS UL94 V-0 resin plastic casing, polycarbonate display window, switch keys with adhesive polycarbonate film | **Dimensions** | front panel 180x37mm, depth 69mm |
| --- | --- | --- | --- |
| | | **Installation** | panel mounting with 150x31mm (+0.2/-0.1mm) drilling template |

| Model | Application | Notes |
| --- | --- | --- |
| **IWC 720** | ventilated refrigeration unit (medium or low temperature) | 2 configurable relays |
| **IWC 730** | ventilated refrigeration unit (medium or low temperature) | 3 configurable relays |
| **IWC 730/E TWIN** | catering applications | 3 configurable relays can be connected to Echo display |
| **IWC 740** | ventilated refrigeration unit (medium or low temperature) | 4 configurable relays can be connected to Televis monitoring system |
| **IWC 740 COMMON LINE** | refrigerators for the preservation and processing of foods/pastry | 4 configurable relays |
| **IWC 750** | ventilated refrigeration unit (medium or low temperature) | 5 configurable relays can be connected to Televis monitoring system |
| **IWC 750 COMMON LINE** | refrigerators for the preservation and processing of foods/pastry | 5 configurable relays |
| **IWC 750 TWIN** | dual independent temperature refrigerators | 5 configurable relays management of double temperature set points |

### Application examples

In a catering counter, the **IWC 750 TWIN** controller can be set with two separate preservation temperatures, thanks to its double integrated regulator.

Using the **IWC 730/E TWIN** model, temperatures can also be displayed on the front of the refrigeration counter, thanks to the remote Echo display.
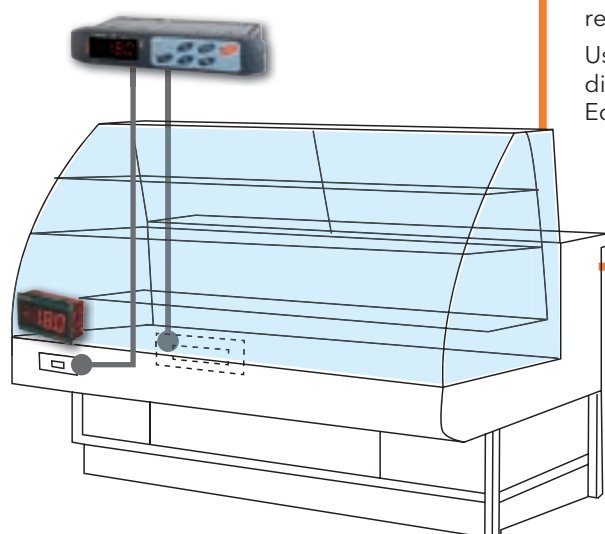
# IWC 700 series

# RTX600/V - RTD600/V series

**Controllers for supermarket cabinets**

- Specific solutions for high efficiency remote cabinets
- Integrated control of all refrigeration counter functions
- Energy savings with electronic valve control
- Plug-n-play LINK[2] synchronisation for island and remote cabinets

## Applications

**RTX600/V** and **RTD600/V** are electronic controllers for remote high efficiency refrigeration cabinets with pulse electronic valve control.

They combine optimised defrost cycle management, dewpoint-based heating and anti-condensation element modulation and cold room Set point modulation, with automatic identification of open/closed operational time bands.

Configuration has been simplified by introducing pre-set profiles for 8 separate applications that can be easily selected through the **KDEPlus** and **KDWPlus** user terminals.

## Specifications

| | |
|---|---|
| Power boards in plastic boxes (RTX), or mounted on DIN Rail (RTD) | AC and DC pulse electronic valve control |
| 3 temperature probes and 3 configurable digital inputs | SMPS 100…240V~ power supply |
| 6 configurable relay outputs | |

| Model | Application | Notes |
|---|---|---|
| **RTX600/V** | Supermarket counters | Version in plastic box |
| **RTD600/V** | Supermarket counters | Open version mounted on DIN bar and vertical removable terminals |
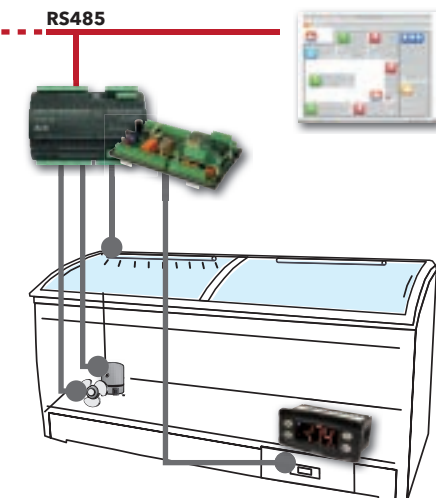
**RS485**

**Application examples**

RTX600/V and RTD600/V can be used for different applications.

In a **plug-in cabinets**, for example, RTX600/V or RTD600/V are used to control compressor, lights and fan connected to the monitoring system via RS-485 network.

In a **remote cabinet**, RTX600/V or RTD600/V can be used for high efficiency control of the electronic pulse expansion valve; several instruments connected via LINK[2] network for efficient synchronisation of defrosting and lights.

The system can be monitored via RS-485 network.

# RTX600/V - RTD600/V

**RS485**

**LINK[2]**
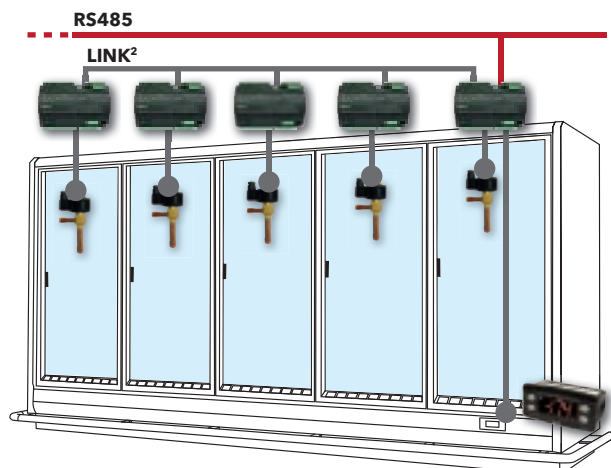
# RTX600 - RTN600 series

**Controllers for supermarket cabinets**



> • Compact (10 DIN) unit and direct control of loads up to 2HP
> • Compressor and fan load protection
> • Optimised defrosting (Intelligent Electric defrosting, advanced clock and temperature management)
> • Quick and easy to install and configure

## Applications

Electronic controllers **RTX600** and **RTN600** have energy-saving functions for use in supermarkets and commercial food distribution and storage applications.
RTX600 and RTN600 combine optimised defrost cycle management, dewpoint-based heating and anti-condensation element modulation and cold room set point modulation, with automatic identification of open/closed operational time bands.
Configuration has been simplified by introducing preset profiles for 8 separate applications that can be easily selected through the **KDEPlus** and **KDWPlus** user terminals.
The remote **ECPlus** display can be used to view displayed data from up to 100m away, differentiating it from the data displayed on KDEPlus and KDWPlus terminals.

## Specifications

| | |
|---|---|
| Power boards in plastic boxes (RTX), or bare board (RTN) | 6 configurable outputs with direct control of loads up to 2HP |
| 3 temperature probes and 3 configurable digital inputs | SMPS 100…240V~ power supply |

| Model | Application | Notes |
|---|---|---|
| **RTX600** | Supermarket counters | Version in plastic box |
| **RTN600** | Supermarket counters | Bare board for panel-mounting |
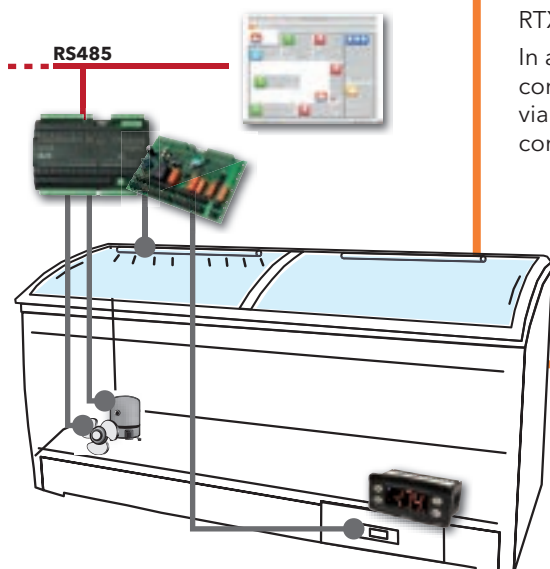


> **Application examples**
> RTX600 and RTN600 can be used for different applications.
> In a **plug-in cabinets**, for example, RTX600 or RTN600 are used to control compressor, lights and fan connected to the monitoring system via RS-485 network. With RTN600 you need the optional RS-485 connectivity board.

**RS485**

# RTX600 - RTN600

# RTN400 series

**Controllers for supermarket cabinets**

- Single or dual compressor control
- Advanced resistance defrost
- Evaporator fan control in Night&Day mode
- Fixed duty-cycle frame heater control
- Pre-programmed, easy-to-select configurations.

## Applications

**RTN400** are compact controllers for plug-in and remote cabinets with thermostatic valve control

RTN400 controllers are compact and stand out for the high-performance and high flexibility they offer through energy-saving algorithms and the direct control of compressor and fans.

**RTN400** for energy saving in supermarkets and in commercial food distribution and preservation applications. It combines optimised defrost cycle management, dewpoint-based heating and anti-condensation element modulation and cold room Set point modulation, with automatic identification of open/closed operational time bands.

**RTN400** controllers can be interfaced with **KDEPlus** and **KDWPlus** keyboards and with the **ECPlus** display module.

## Specifications

| | |
|---|---|
| Power boards in compact bare box (121x92mm) | 4 configurable output relays with direct control of loads up to 2HP |
| 5 temperature probes and 1 configurable digital input | SMPS 100…240V~ power supply |

| Model | Application | Notes |
|---|---|---|
| RTN400 | Supermarket counters | Bare board with fast power connections, faston type |
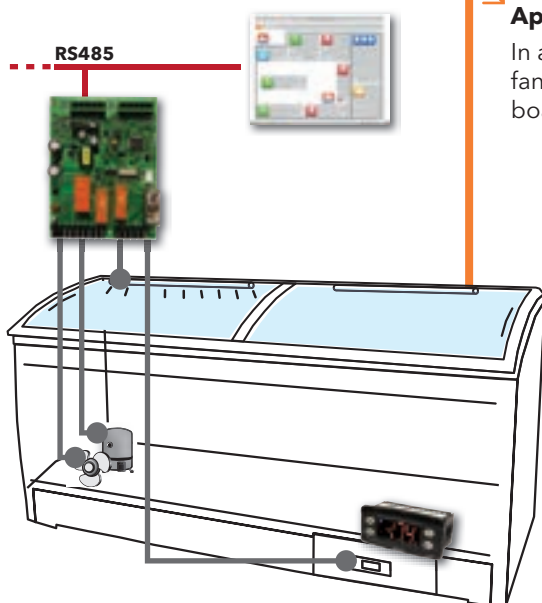
RS485

**Application examples**

In a **plug-in cabinet**, RTN400 is used to control compressor, lights and fans connected to a monitoring system via RS-485 network (the optional board is needed for RS-485 connectivity).

RTN400

# KD - ECPlus series user interfaces

**User interfaces for RT family**

ECPlus            KDEPlus

KDWPlus

KDT

- **ECPlus**, **KDEPlus**, **KDWPlus**: compatible with controllers in the RT series (RTX, RTD, RTN)
- **KDT**: keyboard with touch technology, compatible with controllers in the RT series (RTX, RTD, RTN) and IWP750
- **KDT**: customisable for OEM solutions

## Applications

**KDEPlus** and **KDWPlus** are user terminals for full display and programming of controllers for remote and plug-in refrigerated cabinets.
Each power board can be connected to a single KDWPlus keyboard and if required to an ECPlus module for remote display by means of the special connector.
The remote **ECPlus** display can be used to view displayed data from up to 100m away, differentiating it from the data displayed on KDEPlus and KDWPlus terminals.

The **KDT** keyboard, made using backlit screen-printed plexiglass, can be used to carry out all procedures currently offered by membrane and standard 32x74 keyboards, but with a perfectly smooth and easy to clean surface, combined with a modern look and the natural feeling of touch-sensitive keys with light and sound feedback. The special construction of the keyboard, with its glued-on installation option, offers reduced installation times, precise positioning and a protection rating of IP65. The simplicity of the KDT keyboard is the result of Eliwell's experience in the study of solutions for design and installation simplification.

| Technical data | KDT | KDEPlus | KDWPlus | ECPlus |
|---|---|---|---|---|
| Casing: | Polymethylmethacrylate (PMMA) front panel | PC+ABS UL94 V-0 resin casing, polycarbonate window, thermoplastic resin keys | PC+ABS UL94 V-0 resin casing, polycarbonate window, thermoplastic resin keys | Body and window in polycarbonate |
| Dimensions: | front panel 87x135mm, depth 1.5mm | front panel 74x32 mm, depth 30 mm | front panel 180x37mm, depth 23mm | front panel 48x28.6 mm, depth 15mm |
| Mounting: | panel mounting, can be set for a distance of up to 100m, with 67x120mm drilling template | panel-mounting, with 71x29mm (+0.2/-0.1 mm) drilling template | panel mounting with 150x31mm (+0.2/-0.1mm) drilling template | panel mounting with 45.9x26.4 mm (+0.2/-0.1 mm) drilling template |
| Display: | 3 digits + sign, 8 coloured icons optional colour: amber/red/blue/white 6 capacitive touch keys | with decimal point° 3 digits + sign | with decimal point° 3 digits + sign | with decimal point° 3 digits + sign |
| Display range: | | see power board | see power board | see power board |
| Connectivity: | | • screw terminals for connection to power board • JST for connection to ECPlus display | • screw terminals for connection to power board • JST for connection to ECPlus display | • JST for connection to KDWPlus user terminal or KDEPlus |
| Power supply: | | from power board | from power board | from power board |
| Power consumption: | | - | - | - |
| Ambient operating temperature: | | -5...+55°C | -5...+55°C | -5...+55°C |
| Ambient storage temperature: | | -30...+85 °C | -30...+85 °C | -30...+85 °C |
| Ambient operation and storage humidity: | | 10...90% RH (non-condensing) | 10...90% RH (non-condensing) | 10...90% RH (non-condensing) |

* selectable by parameter
° selectable by parameter (from power board)

# FREE Way

**Programmable platform**



## Applications

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

**FREE Way** is the new range of programmable controllers which consists of the software Suite **FREE Studio**, of **FREE Smart**, **FREE Panel** and **FREE Evolution**.

**Free Studio** software suite, simple and flexible, is compatible with the 5 standard programming languages (**IEC 61131-3**), 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 Studio

**Programmable platform**
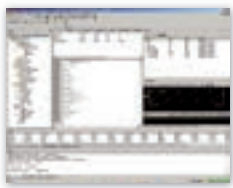


| Application | Device | Connection | User Interface | Simulation |

## Applications

**FREE Studio** software suite is compatible with all 5 standard programming languages (**IEC61131-3**).
Each project can be made up of several programmes.
The developer can 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**

**LD** — **Ladder**

**SFC** — **Sequential Function Chart**

**FBD** — **Functional Block Diagram**

**IL** — **Instruction List**

### FREE Studio features
• Quick and easy programming
• Single software suite
• Complete and effective online Help
• Advanced debugging and simulation options
• Protection of applications and different use levels
• Application revision log
• Customisable interface

| **Application** | **Device** | **Connection** | **User Interface** | **Simulation** |
|---|---|---|---|---|
| Component for software developers to allow them to develop and modify applications in the 5 standard programming languages. | Component specifically for less experienced users, allowing them to manage parameters, download applications, run field tests, etc. | Configuration component for both field and open networks, for integration with other systems. | Component for developing and personalizing the graphic interface of the user terminal | Component for simulating the application on a PC. |

# FREE Smart

**Programmable platform**

It is the smallest programmable controller on the market, combining high performance and efficiency in very compact dimensions.
In the 32x74 mm dual format for panel mounting and DIN rail mount version, Smart allows easy programming, significant savings in wiring time and reduction of the cabinets dimensions up to 50%.
Thanks to the complete autonomy and configurability of all inputs and outputs, Smart is perfectly adaptable to any system.



### 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); available in versions 100...240V~
- Can be connected to RS-485, Modbus RTU Slave
- Can be connected to standard Eliwell peripherals and user interfaces.

# FREE Panel

**Programmable platform**

It combines in a single device comprising a programmable user terminal with graphics and a controller with advanced connectivity, for remote resource and distributed control management.
Used in combination with other FREE Smart and Evolution controllers, it ensures high performance in terms of memory, connectivity and user interface, easy programmability, maintenance and service.



### FREE Panel features

- **FREE Panel EVP** system controller, with gateway functions and backlit LCD graphic display
- High connectivity: can be integrated in industrial systems and BMS
- Connects to standard Eliwell and third-party peripheral devices
- Can be panel or wall-mounted

# FREE Evolution

**Programmable platform**

It represents the top range of programmable controllers, designed to handle the most demanding applications in the HVAC/R field; available in format suitable for 8 DIN rail mounting, with disconnectable screw terminals for quick and easy installation.



### 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 and BMS using dedicated plug-in modules.
- Connects to standard Eliwell peripheral devices (including **FREE Smart**)
- Connects to standard third-party peripheral devices

# Temperature Probe Tables

**Appendices**

## NTC probe table

| Ambient temperature (°C) | Resistance (KOhm) 103AT |
|---|---|
| -50 | 329.50 |
| -45 | 247.70 |
| -40 | 188.50 |
| -35 | 144.10 |
| -30 | 111.30 |
| -25 | 86.43 |
| -20 | 47.77 |
| -15 | 53.41 |
| -10 | 42.47 |
| -5 | 33.90 |
| 0 | 27.28 |
| 5 | 22.05 |
| 10 | 17.96 |
| 15 | 14.69 |
| 20 | 12.09 |
| 25 | 10.00 |
| 30 | 8.313 |
| 35 | 6.940 |
| 40 | 5.827 |
| 45 | 4.911 |
| 50 | 4.160 |
| 55 | 3.536 |
| 60 | 3.020 |
| 65 | 2.588 |
| 70 | 2.228 |
| 75 | 1.924 |
| 80 | 1.668 |
| 85 | 1.451 |
| 90 | 1.266 |
| 95 | 1.108 |
| 100 | 0.9731 |
| 105 | 0.8572 |
| 110 | 0.7576 |

## NTC probe table - Extended range

| Ambient temperature (°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 | 99454 |
| -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 | 33260 |
| 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

| Ambient temperature (°C) | (°F) | Temperature coefficient (%/K) | KTY82-121 Resistance (Ohm) Minimum | Standard | Maximum | Error - temp. |
|---|---|---|---|---|---|---|
| -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 (°C) | Resistance (Ohm) | Temp. environment (°C) | Resistance (Ohm) | Temp. environment (°C) | Resistance (Ohm) | Temp. environment (°C) | Resistance (Ohm) | Temp. environment (°C) | Resistance (Ohm) |
|---|---|---|---|---|---|---|---|---|---|
| -200 | 18.52 | 20 | 107.79 | 230 | 186.84 | 440 | 260.78 | 650 | 329.64 |
| -190 | 22.83 | 30 | 111.67 | 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 | 353.67 |
| -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 (°C) | Resistance (Ohm) | Temp. environment (°C) | Resistance (Ohm) | Temp. environment (°C) | Resistance (Ohm) | Temp. environment (°C) | Resistance (Ohm) | Temp. environment (°C) | Resistance (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 | 222.400 | 22.952 | 23.504 | 24.059 | 243610 | 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 | 14.1293 | 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 | 26.623 | 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 | - | - |

# IDPlus vs EW and ID, ICPlus vs IC compatibility

**Compatibility tables**

| IDPlus models | IC - ID | EWPC - EWTC - EWPX | EW - EWPlus* |
|---|---|---|---|
| **IDPlus 902**<br>Outputs: 8A SPDT | IC 901<br>IC 902<br>ID 961<br>ID 961LX | EWPC 901<br>EWPC 902<br>EWPC 961<br>EWTC 101<br>EWPX 161 | EW 902<br>EWPlus 902 |
| **IDPlus 961**<br>Outputs: 2Hp SPST | IC 901<br>IC 902<br>ID 961<br>ID 961LX | EWPC 901<br>EWPC 902<br>EWPC 961<br>EWTC 101<br>EWPX 161 | EW 961<br>EWPlus 961 |
| **IDPlus 971**<br>Outputs: 2Hp + 8A | ID 961/A<br>ID 970<br>ID 970LX<br>ID 971<br>ID 971LX | EWPC 970<br>EWPC 971<br>EWPX 161AR<br>EWPX 170<br>EWPX 171 | EW 971<br>EWPlus 971 |
| **IDPlus 974**<br>Outputs: 2Hp + 8A + 5A | ID 974<br>ID 974 LX | EWPC 974<br>EWPX 174 | EW 974<br>EWPlus 974 |
| **IDPlus 978**<br>Outputs: 1.5Hp + 8A + 5A | ID 975LX<br>ID 983<br>ID 985<br>ID 983LX (no C/K/S)<br>ID 985LX (no C/K/S) | EWPX 174AR<br>EWPX 174AX<br>EWPX 185<br>EWPX 190 | EWPlus 978 |

| ICPlus models | IC | EWPC - EWTC |
|---|---|---|
| **ICPlus 902/A** | IC 901/A | - |
| **ICPlus 902** | IC 901<br>IC 902<br>IC 912 (no LX)<br>IC 912LX V/I | EWPC 901<br>EWPC 902<br>EWTC 101 |
| **ICPlus 915** | IC 912LX (no V/I)<br>IC 915<br>IC 915LX | EWPC 905 |

**\*NB -** Controllers in the series for OEM EW / EWPlus include a connection between power supply and loads that is not found in the IDPlus series. Thus a bridge is needed between controller load line and power supply, see example shown:
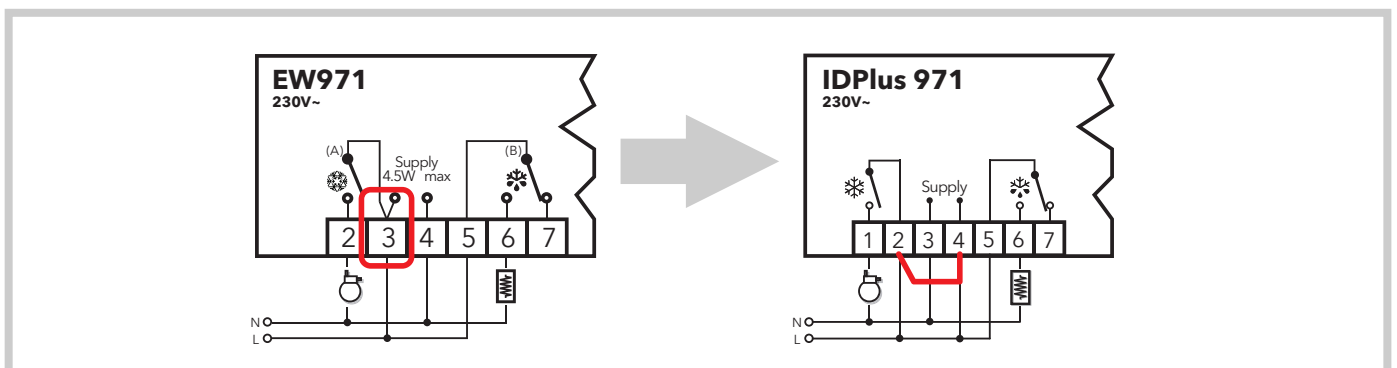
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The type approval marks associated with each individual instrument are present for certain specific part numbers only. Check details and availability with sales department.

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