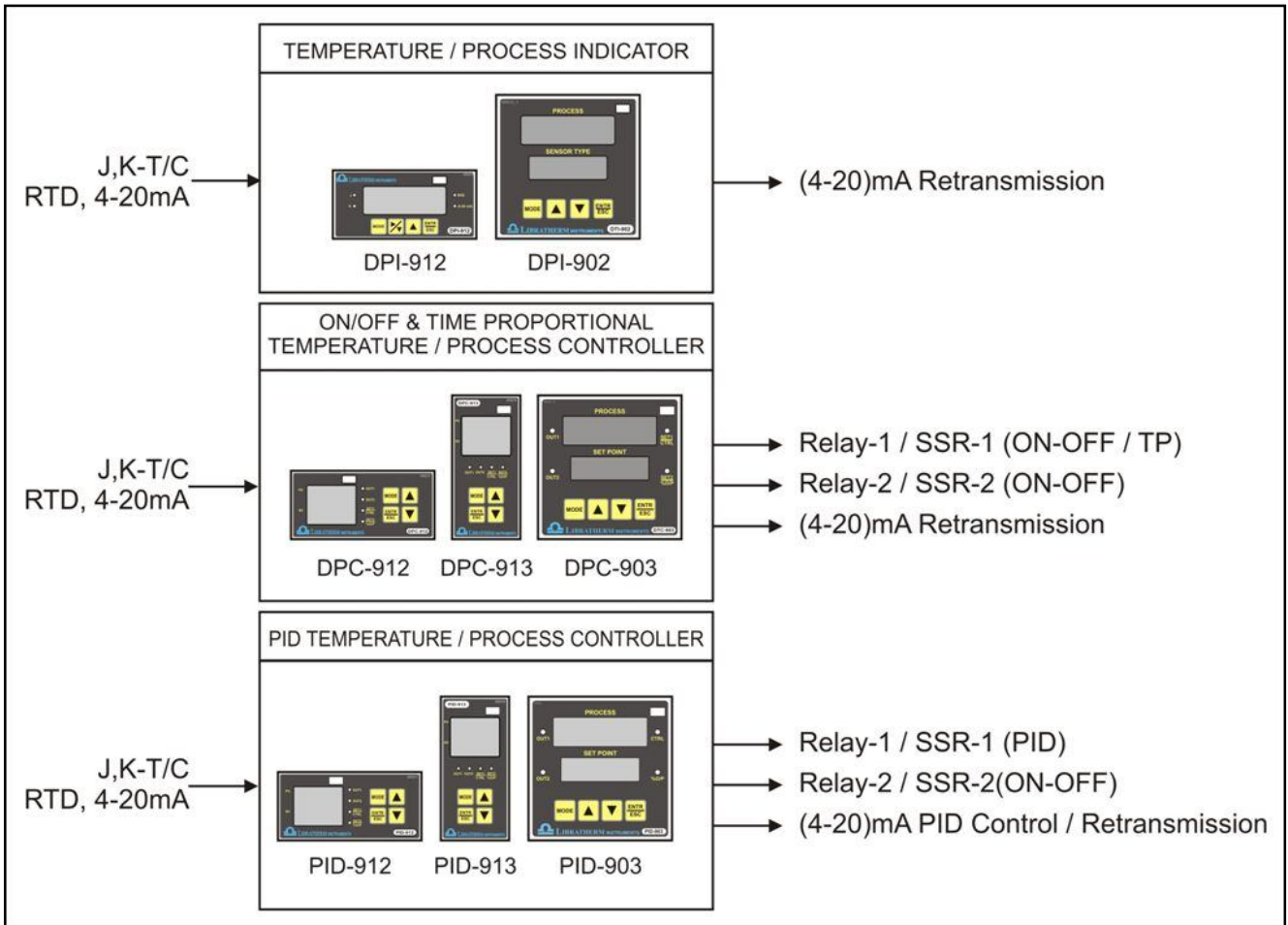


**Temperature / Process Indicator On-Off / Time Proportional and PID controller
(Eco series)**



Model Wise Description:

| Model | Product Description | Size w x h x d (mm.) |
|----------------|---|----------------------|
| DPI-902 | Temperature/Process Indicator with (4-20)mA retransmission output | 96 x 96 x 75 |
| DPI-912 | Temperature/Process Indicator with (4-20)mA retransmission output | 96 x 48 x 75 |
| DPC-903 | Temperature/Process On-Off or Time proportional controller with Relay/SSR/(4-20)mA retransmission output | 96 x 96 x 75 |
| DPC-912 | Temperature/Process On-Off or Time proportional controller with Relay/SSR/(4-20)mA retransmission output | 96 x 48 x 75 |
| DPC-913 | Temperature/Process On-Off or Time proportional controller with Relay/SSR/ (4-20)mA retransmission output | 48 x 96 x 75 |
| PID-903 | Temperature/Process PID controller with Relay/SSR/4-20mA Output | 96 x 96 x 75 |
| PID-912 | Temperature/Process PID controller with Relay/SSR/4-20mA Output | 96 x 48 x 75 |
| PID-913 | Temperature/Process PID controller with Relay/SSR/4-20mA Output | 48 x 96 x 75 |

Description:

Libratherm has contributed its 25 years of experience by designing these versatile series of microcontroller based Temperature/Process Indicators and controllers for general purpose Industrial usage.

These are developed and manufactured to suit varied industrial temperature and process indication and control applications where precise indicating and controlling accuracy.

The Indicator series **DPI-912 and DPI-902** offers Universal or fixed input of J, K or any other thermocouple, RTD(Pt-100) and 4-20mA linear signal. For temperature measurement 1oC/0.1oC Indicating accuracy is guaranteed using software linearization algorithm and with linearized retransmission output. Please see details specification sheet as given below.

The controller series **DPC-903, DPI-912 and DPI-913** in 1/8DIN and 1/4DIN cut out sizes, offers both on-off and time proportional control logic and can be used for heating/cooling or any process control application with high/low configurable alarm relays. Linearized 4-20mA retransmission output is the added facility. Please see details specification sheet as given below.

The PID controller series **PID-903, PID-912 and PID-913** in 1/8DIN and 1/4DIN cut out sizes, offers both on-off and linear or switching PID control logic and can be used for heating or any process control application with high or low configurable alarm relays. Linear PID control output can be used to control heating power through external Thyristor power regulator or through linear proportional valves in direct or reverse action or same 4-20mA can be used as linearized retransmission output. Please see details specification sheet as given below.

Features:

- ❖ Latest and high speed 8-bit microcontroller based design
- ❖ 12-bit ADC and 12 bit DAC (4000 or +/-2000 counts)
- ❖ Fixed or User selectable input type
- ❖ 2 Relays or 2SSR driver and single 4-20mA analogue output
- ❖ On-Off, Time Proportional or PID (Direct/Reverse) control action
- ❖ Elegant looks and very user friendly operation.
- ❖ Light weight and low depth of just 75 mm.
- ❖ Operates on 12VDC/24VDC/230VAC / 90-240VAC

Applications:

- ✓ Electrical heater control in Boiler, Hot Air generator, heat exchanger etc....
- ✓ Furnace and Oven control
- ✓ Deep freezer, chiller compressor control
- ✓ Any process control such as %Rh, Ph, ORP, Conductivity, Level etc. with High/Low Alarms

General Technical Specifications:

| | |
|-------------------------------|---|
| Input | Thermocouple type J, K, or RTD(Pt-100) 2 or 3-wire or 4-20mA linear signal (User selectable) |
| Range | For K type: 0 to 1372oC For J type: 0 to 760oC For Pt-100: -199.9 to 200.0oC or 0.0 to 400.0oC or 0 to 600oC (3 user selectable ranges) For 4-20mA: -1500 to 2000 or 0 to 3500 counts (With programmable decimal point) |
| Resolution | 0.1/1oC / UOM Subject to the specified input and range |
| Accuracy | Better than ± 0.2% of the specified range |
| Display | 4digit 0.5"/0.3" Red 7-segment LED display for process value 4digit 0.5"/0.3" Red/green 7-segment LED display for set value |
| Automatic CJC | Built-in using separate external IC sensor from 0 – 50°C. |
| Open sensor indication | Fault message is displayed and outputs are turned off for fail safe operation. |
| Control Action | <ul style="list-style-type: none"> • On-Off with programmable hysteresis and Time Proportional P I control (DPC-912, DPC-912 and DPC-903) • Linear PID and Switching PID with PWM output (PID-912, PID-913 and PID-903) • Programmable Proportional Band- Prb, Integral Time - Int, Derivative – dEr, Cycle time - CYC, Power Limit –PL and Ramp Time rt values. |
| Relay Outputs | Two Relays, configurable for High, Low, Deviation and Off mode. |

| | |
|---|---|
| Control outputs | DC Pulse (0-12VDC PWM), Relay, Triac, 4-20mA or 0-5VDC linear |
| Output indication | Front panel LED indication for Outputs and Selected set point. |
| Retransmission Output | 4-20mA proportional to displayed range of the selected input. RLmax = 300 Ohms (when not used as PID control output) |
| Key board settings | Front panel membrane key pad for parameter settings. |
| Supply | 90-240VAC or 12VDC or 24VDC (to be specified) |
| Normal Operating Environment | 0 to 40°C (max.50°C) and max. 90% RH (non condensing) |
| Size(whd) / Panel Cutout (mm) / Weight | DPI-912/DPC-912 /PID-912 / 96 x 48 x 75 / 92 X 44 DPC-913/PID-912 / 48 x 96 x 75 / 44 x 92 DPI-902/DPC-903/PID/903 / 96 x 96 x 75 / 92 x 92 Approx. weight: less than 500 grams. |

(specifications are subject to revision due to continuous product upgradation)

Ordering Information for Model: DPI-912 / DPI-902

| MODEL | A- INPUT AND RANGE | B- Retransmission output | D- Supply Voltage |
|-----------|---|--------------------------|--------------------------------------|
| DPI-912-U | A1- K T/C – 0 to 1372°C J T/C – 0 to 760°C Pt-100 – 0.0 to 400.0 °C | B1- (4-20) mA | D1- 90-240VAC |
| DPI-902-U | Pt-100 – (-199.9 to 200.0) °C 4-20mA – (-1500 to 2000) counts 4-20mA – 0 to 3500 counts | 00 -None | D2- 24VDC D3- 12VDC |
| DPI-912-F | A2 – R T/C - 0 to 1768°C A3 – S T/C - 0 to 1768°C | | |
| DPI-902-F | A4 – B T/C - 200 to 1820°C A5 - Any other please specify | | |

Please note: User can specify for any other desired 2 types of thermocouple inputs.

For example: Instead of J and K type t/c, we can offer K and R type T/C or R and B type T/C or R and S type T/C.

Ordering Information for Model: DPC-912 / DPC-913 / DPC-903

| MODEL | A- INPUT AND RANGE | B- OUTPUT-1 OUTPUT -2 | C- OUTPUT-3 (Retransmission) | D - Supply Voltage |
|-----------|--|---|---|---|
| DPC-912-U | A1- K T/C – 0 to 1372°C J T/C – 0 to 760°C Pt-100 – 0.0 to 400.0°C Pt-100 – (-199.9 to 200.0) °C 4-20mA – (-1500 to 2000) counts | B1- (Both DC Pulse and Relays) B2- (Both DC Pulse and Triac/ACSSR) B3- Dc pulse + (Triac1 and Relay 2) | C1- 4-20mA C2- 0-5VDC 00- None | D1 – (90-240) VAC D2 – 12VDC D3- 24VDC |
| DPC-913-U | | | | |
| DPC-903-U | | | | |
| DPC-912-F | A2 – R T/C - 0 to 1768°C A3 – S T/C - 0 to 1768°C A4 – B T/C - 200 to 1820°C A5 – If any other please specify | | | |
| DPC-913-F | | | | |
| DPC-903-F | | | | |

Ordering Information for Model PID-912 / PID-913 / PID-903

| MODEL | A- INPUT AND RANGE | B- OUTPUT-1 | C- OUTPUT-2 | D - Supply Voltage |
|-----------|--|---|---|--|
| PID-912-U | A1- K T/C – 0 to 1372°C J T/C – 0 to 760°C Pt-100 – 0.0 to 400.0°C Pt-100 – (-199.9 to 200.0) °C 4-20mA – (-1500 to 2000) counts | B1- (DC Pulse + Triac) B2- (DC Pulse + Relay1) B3- (DC Pulse + 4-20mA) B4- (Dc pulse + 0-5VDC) B5 – Relay + (4-20)mA B6 – Relay + (0-5)VDC | C1- Relay2 C2- 4-20mA retransmission output 00- None (C2 is applicable when only B1 and B2 is specified) | D1 – (90-240)VAC D2 – 12VDC D3- 24VDC |
| PID-913-U | | | | |
| PID-903-U | | | | |
| PID-912-F | A2 – R T/C - 0 to 1768°C A3 – S T/C - 0 to 1768°C A4 – B T/C - 200 to 1820°C A5 - Any other please specify | | | |
| PID-913-F | | | | |
| PID-903-F | | | | |

Example:

| MODEL | A- INPUT AND RANGE | B- OUTPUT-1 | C- OUTPUT-2 | D- Supply Voltage |
|-----------|--------------------|-------------|-------------------|-------------------|
| PID-903-U | A1 | B2 | C1 | D1 |
| PID-903-F | A1 | B1 | C2 (PID-903-R) | D3 |

| Example | Ordering Code | Description |
|---------|------------------------|--|
| 1 | PID-903-U-A1-B2-C1-D1 | Model PID-903 with user selectable input type J, K and Pt-100 with DC pulse and 4-20mA PID output, Alarm Relay and working on 90-240VAC. |
| 2 | PID-903-F -A2-B1-C2-D1 | Model PID-903 with R T/C with DC pulse and Triac/ACSSR output and 4-20mA retransmission output, working on AC supply of 90-240VAC. |