Features

- Optimised for trace heating applications
- Wide-range voltage input
- Sensor monitoring
- Programmable with CodeKey
- Can be used in conjunction with Pt100 Ex for temperature regulation in explosion-protected heating circuits

Temperature control device family DPC III

DPC III Standard

DPC III Monitor

Description

The new DPC III temperature controller series currently consists of several standardised temperature controllers which are suited to (trace) heating applications.

The Digital Controller monitors measuring circuits for sensor failures, interruption or short circuit and under-range and over-range measurements in order to ensure process reliability.

The DPC III can be used universally as an ON/OFF (two-position) or PID controller. The integrated power pack with wide-range voltage allows the devices to be used practically anywhere in the world.

Assembly

Like the predecessor model DPC, the DPC III is integrated in a snap-on housing for TS 35 DIN rail mounting. Pt100 resistance thermometers and thermocouples are connected at the measuring input.

The controller is equipped with a 16 A load relay for two-position control, an 8 A group error message relay, a logical voltage output for the PID control and two settable digital inputs.

The voltage for the controller is supplied through an integrated power pack with wide-range voltage. The electrical connection is established with terminal screws operating on the screw cage clamp principle. The DPC III Controller is completely downwardly compatible with the previous DPC Controller.

Function

Changes in temperature in the Pt100 sensor are evaluated in the DPC III and are visible as temperature readings on the LED display. If a deviation from the preset level is detected, the device regulates the heating circuit of the trace heating in accordance with the pre-selected control characteristic (ON/OFF or PID).

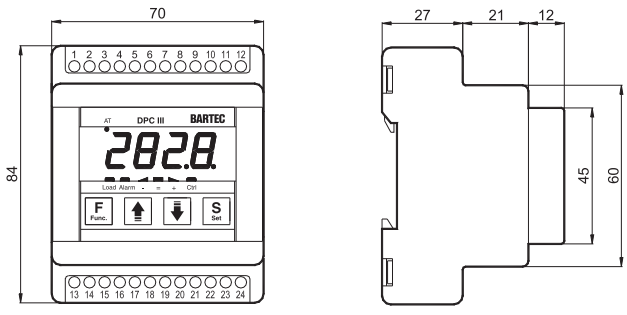
An auto-tuning function is available for the PID control and this analyses the control path (heating circuit) and automatically determines and saves the PID control parameters. The control's output power can be displayed at the touch of a button. One of the benefits of this function is the possibility of evaluating the quality of the heating circuit.

There are more factory-fitted switching points for use as alarms for too-high or too-low temperatures.

When servicing the heating circuit, the control output can be switched off at the touch of a button on the device or through digital input and there is the option of disabling the temperature alarms. The process reliability is further enhanced by the control circuit's additional monitoring functions and the connected measurement sensor. The programming interface allows the device parameters to be read out with a code key and transferred to other controllers.

For effective parameter protection a multi-stage password management system can be activated. Furthermore, the manual control or soft start functions can be activated for the system start-up.

Dimensions (mm)



DPC III Standard

Features

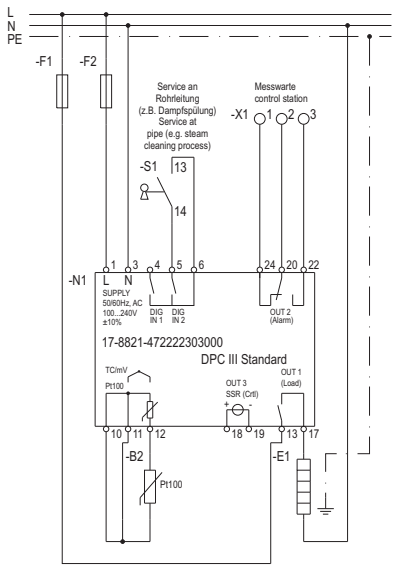
- Pre-defined parameters for two-position controller
- Can also be used as a PID controller
- Easy setup for very short commissioning times
- Load relay/alarm relay/logic output for semi-conductor relay

Description

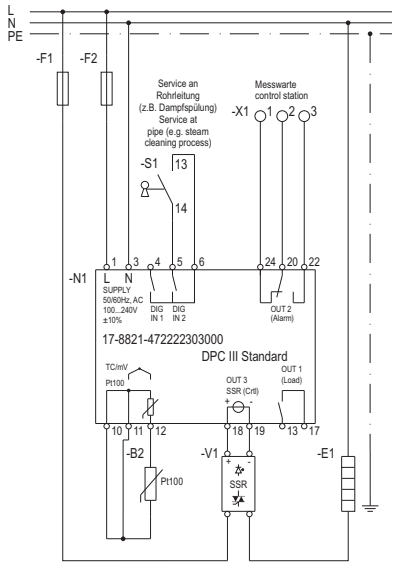
The DPC III Standard Temperature Controller is a basic controller, which in the factory setting can be used as a two-position controller with two-relay outputs for control and alarm signalling for standard applications. Due to the default basic setting only the setpoint and the alarm level(s) need to be set.

The easy start-up function makes this extremely user-friendly. As an alternative, the same device can also be used as a controller with PID control characteristics and an external semi-conductor relay.

Circuit diagram
DPC III Standard as two-position controller



Circuit diagram
DPC III Standard as PID controller



Technical data

Control characteristic
Two-position (ON/OFF), PID

Sensor input
Pt100, mV Standard signals
Thermocouple J, K, S

Inputs impedance
at mV: 1 MΩ

Measuring ranges
depending on the sensor version

Measuring accuracy
with resistance thermometers
(±0.5 % of the actual level or ±1°C; the higher level applies) ±1 digit

with thermocouples
(±0.5% of the actual level or ±1°C; the higher level applies) ±1 digit
(see additional reference junction accuracy)

Accuracy of the reference junction with thermocouple measurement
0.04 °C for each °C of the controller's operating temperature
(after 20 min. of controller operating time)

Sampling frequency at the sensor input
7.5 Hz

Ambient temperature range
0 °C to +50 °C

Weight
0.2 kg

Electrical data

Digital input
two, non-floating,
i. e. floating contact(s) required

Output 1
Relay output 1 normally open contact
(16 A - AC 1, 250 V)

Output 2
Relay output 1 change-over contact
(8 A - AC 1, 250 V)

Output 3
Logic output for SSR control
(DC 11 V/20 mA)

Electrical service life of the relay outputs
At least 100,000 switching cycles

Protection class
II

Power consumption
max. 5 SS
(depending on the output connection)

Selection chart

Supply voltage	Code no.
AC 100 up to 240 V	7
AC/DC 24 V	C

Complete order no. 17-8821-4 ☐ 22/22303000
Please enter code no. Technical data subject to change without notice.

DPC III Monitor

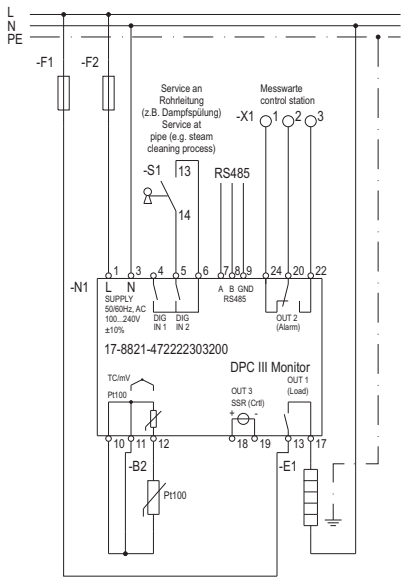
Features

- Pre-defined parameters for two-position controller
- Can also be used as a PID controller
- Easy setup for very short commissioning time
- Load relay/alarm relay/logic output for semi-conductor relay
- RS485

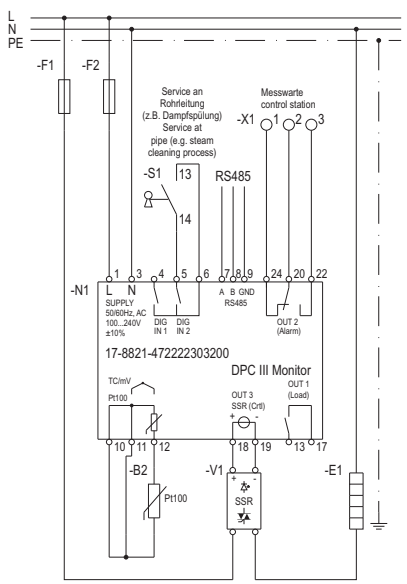
Description

The DPC III Standard Temperature Controller is a basic controller which in the factory setting can be used as a two-position controller with two relay outputs for control and alarm signalling for standard applications. Due to the default basic setting only the setpoint and the alarm level(s) need to be set. The easy start-up function makes this extremely user-friendly. As an alternative, the same device can also be used as a controller with PID control characteristics and an external semi-conductor relay. The monitor version is equipped with an RS485 interface and MODBUS protocol.

Circuit diagram
DPC III Monitor as two-position controller



Circuit diagram
DPC III Monitor as PID Controller



Technical data

Control characteristic
Two-position (ON/OFF), PID

Sensor input
Pt100, mV Standard signals
Thermocouple J,K,S

Inputs impedance
at mV: 1 MΩ

Measuring ranges
depending on the sensor version

Measuring accuracy
at resistance thermometers
(± 0.5% of the actual level or ± 1 °C; the higher level applies) ± 1 digit

with thermocouples
(± 0.5% of the actual level or ± 1 °C; the higher level applies) ± 1 digit
(see additional reference junction accuracy)

Accuracy of the reference junction with thermocouple measuring
0.04 °C for each °C of the controller's operating temperature
(after 20 min. of controller operating time)

Sampling frequency at the sensor input
7.5 Hz

Electrical data

Ambient temperature
0 °C up to +50 °C

Weight
0.2 kg

Digital input
two, non-floating,
i. e. floating contact(s) required
(Contact loadability at least 5 V, 5 mA)

Output 1
Relay output 1
normally open contact (16 A - AC 1, 250 V)

Output 2
Relay output 1 change-over contact
(8 A - AC 1, 250 V)

Output 3
Logic output for SSR control
(DC 11 V/20 mA)

Electrical service life of the relay outputs
At least 100.000 switching cycles

Protection class
II

Power consumption
Max. 5 SS
(depending on the connection of the outputs)

Interface
RS 485 (optically isolated)

Communication protocol
MODBUS RTU

Transmission speed
1200 to 38400 bauds

Selection chart

Supply voltage	Code no.
AC 100 up to 240 V	7
AC/DC 24 V	C

Complete order no. 17-8821-4 ☐ 22/22303200

Please enter code no. Technical data subject to change without notice.