DPC III Monitor Temperature control

Function

The temperature value measured at the Pt100 sensor is shown on the LED display. Depending on the control deviation compared to the setpoint, the unit controls the heating circuit of the trace heating according to the preselected control characteristic (ON/OFF or PID). An auto-tuning function is available for the PID control, analysing the controlled system (heating circuit) and automatically determining and saving the PID control parameters. The power output of the control can be displayed at the push of a button. This function simplifies, for instance, a qualitative evaluation of the heating circuit. Additional switching points as over- and/or under-temperature alarms are provided by the default settings. For service purposes on the heating circuit, the control output can be switched off by pressing a button either on the unit or via the digital input, and temperature alarms can be suppressed. The monitoring functions of the control circuit and the connected sensor increase process reliability. Via the programming interface, the unit parameters can be read out with a code key and transferred to other controllers. For effective parameter protection, a multi-level password management can be activated. In addition, the manual control or SoftStart function can be activated for system start-up. The DPC III Monitor is equipped with an RS485 interface and MODBUS protocol.

– Optimised for trace heating applications
– Universal power supply
– Sensor monitoring
– RS 485 Modbus
– In connection with Pt100 Ex for temperature control of of explosion protected heating circuits

The DPC III series of temperature controllers currently consists of several standardised temperature controllers designed for (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 or PID controller. The integrated wide-range voltage input allows the devices to be used practically anywhere in the world.
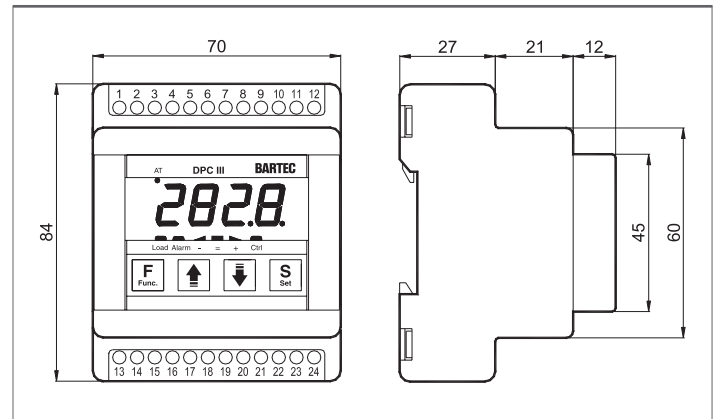
Dimensions (mm)

Structure

The DPC III is a temperature controller for the TS 35 DIN rail. Pt100 resistance thermometers and thermocouples are connected at the measuring input. The controller is equipped with a 16 A load relay for ON/OFF control, an 8 A group error message relay, a logical voltage output for the PID control and two programmable digital inputs. Due to the wide voltage input, the devices may be used almost anywhere in the world. Screw terminals are used for the electrical connection.

Technical data

Control characteristics	ON/OFF, PID
Sensor input	Pt100, mV Standard signals Thermocouple J, K, S
Input impedance	at mV: 1MΩ
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
Measuring accuracy 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
Service temperature range	0 °C 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 VA (depending on the connection of the outputs)
Interface	RS485 (optically isolated)
Communication protocol	Modbus RTU
Transmission speed	1200 to 38400 bauds

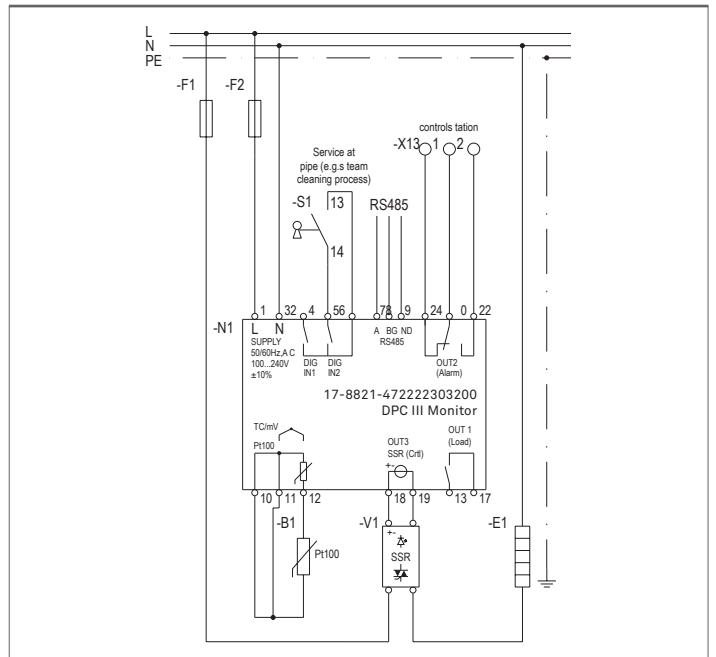## Circuit diagram
DPC III Monitor as ON/OFF controller
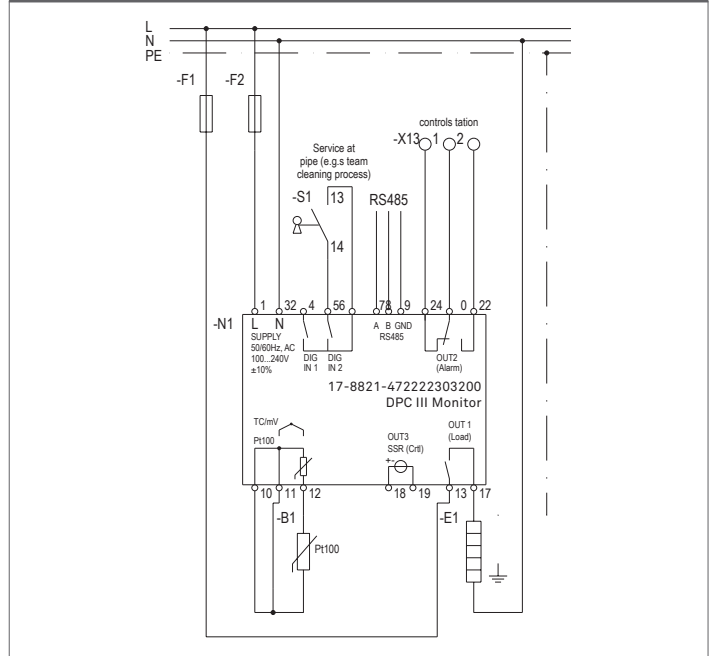
Circuit diagram
DPC III Monitor as PID Controller

Ordering information

Supply voltage	Order no.
AC 100 to 240 V	17-8821-4722/22303200
AC/DC 24 V	17-8821-4C22/22303200