



## DPC<sub>front</sub> Temperature control device family

### Features

- Dual display (setpoint/actual value display)
- 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

### DPC<sub>front</sub> Standard

- Pre-parameterisation as two-position controller
- Also usable as a PID controller
- Pt100, mV standard signals, thermocouples

### DPC<sub>front</sub> Komfort

- Pre-parameterisation as a PID controller
- Also usable as a two-position controller
- Pt100, mV standard signals, thermocouples
- Process-value feedback through 4 - 20 mA analog output

### DPC<sub>front</sub> Monitor

- Pre-parameterisation as a PID controller
- Monitor version with heating current monitoring
- Universal measuring input
- Process-value feedback through 4 - 20 mA analog output
- RS485-interface/Modbus RTU

### Description

The new DPC<sub>front</sub> temperature control device series currently consists of three standardised temperature control devices that are adapted to the (trace) heating applications.

Thanks to the use of a dual display the two important temperature readings (setpoint and actual value) can be seen at a glance. At the touch of a button, the regulation's output power is displayed. This function allows an evaluation of the heating circuit quality.

The control devices can function as two-point ON/OFF control devices or PID control devices. If desired, the autotuning function in all devices will automatically determine the optimum (PID) adjusting parameters for the control path. In all models the regulation can be switched off for maintenance work by pressing a button.

On account of the wide-range voltage input the devices can be used almost everywhere in the world.

### Assembly

The control device is fitted into the front panel. The compact dimensions of the front (48 x 48 mm) allow a space-saving control cabinet design. The electrical connection is set up through terminal screws on the rear.

### Function

Temperature alterations in the sensor being used are evaluated in the DPC<sub>front</sub> and shown as temperature readings on the top LED display. If the reading falls short of or exceeds the temperature value that can be seen in the bottom LED display, the output being used will automatically switch itself on or off or set the manipulated variable to the required value. To monitor the temperature, a high & low alarm function is pre-programmed.

The devices detect malfunctioning at the sensor and in the control circuit and report these as faults. Each type of alarm is signalled as a group alarm via a relay.

### Technical data

**Operating temperature range**  
0 °C up to +50 °C

**Storage temperature**  
-10 °C up to +60 °C

**Dimensions** (length x width x depth)  
48 mm x 48 mm x 108 mm

**Installation**  
Front panel  
(Cut-out 45.5 mm x 45.5 mm)

**Weight**  
180 g

**Protection class**  
IP 54 or IP 65 with installation sealing

**Terminals**  
Terminal screws 2 x 1.5 mm<sup>2</sup>

**Enclosure material**  
Plastic UL 94 V0

### Electrical data

**Nominal voltage**  
AC 100 V to AC 240 V +/- 10 %  
50/60 Hz



## DPC<sub>front</sub> Monitor

### Features

- Monitor version with heating current monitoring
- Process-value feedback over 4 to 20 mA analog output
- Logic output for SSR
- Universal measuring input
- Pre-parameterisation as PID control devices
- Interface
- Very good measuring accuracy

### Description

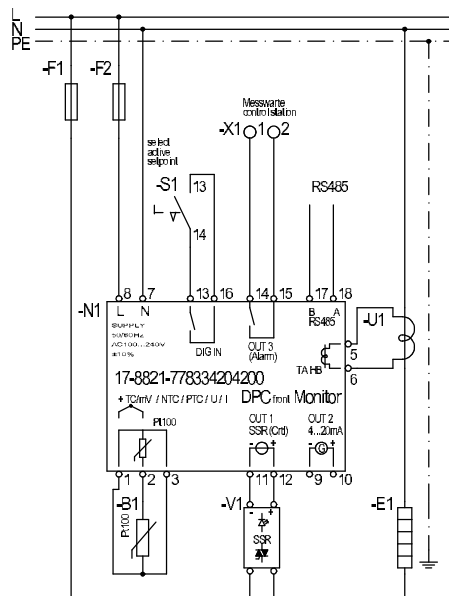
The DPC<sub>front</sub> Monitor temperature control device is designed as a control device with special functions: heating current monitoring, external setpoint switching and communication through RS 485. It works in the factory setting as a PID control device with a logic output and a relay output.

As an alternative, the same device can also be used as a ON/OFF control device. The device is used to regulate a logic output for solid state relays. The relay output is used for alarm signalling. In addition a digital input can be used to choose between different setpoints.

The functions high and low alarm, sensor monitoring, heating circuit monitoring and heating current monitoring offer additional safety for temperature regulation.

When using the device with the factory setting, a simple setup is used for putting into operation for the first time. For example the setpoint, analog output limits, heating currents, low alarm, and if desired, the high alarm must be set.

### Circuit diagram



### Technical data

**Control characteristics** PID; alternatively two-position (ON/OFF)

**Sensor input** Pt 100, NTC, PTC  
Standard signals 4 to 20 mA;  
0/1 to 5 V , 0/2 to 10 V  
Standard signals 0 to 50 mV, 0 to 60 mV,  
12 to 60 mV  
Thermocouple J, K, S (etc.)

**Input impedance** at 4 to 20 mA 51 Ω  
at mV 1 MΩ

**Measuring ranges** depending on the sensor version

**Measuring accuracy with resistance thermometers**  
± 0.15 % of actual value or ± 1 °C  
the higher value applies ± 1 digit

**Measuring accuracy with thermocouples**  
± 0.15 % of actual value or ± 1 °C  
the higher value applies ± 1 digit  
(see in addition reference junction accuracy)

**at standard signals**  
± 0.15 % of actual value ± 1 digit

**Accuracy of the reference junction with thermocouple measurements**  
0.04 °C for each °C of the control device's operating temperature (20 min. of the control device's operating time)

**Sampling frequency at the sensor input** 7.5 Hz

**Current transformer input** max. 50 mA

**Digital input** on-floating, i. e. floating contact required

**Output 1** Logic output for SSR control  
(DC 20 V/20 mA)

**Output 2** Analog output 4 to 20 mA,  
maximum load: 300 Ω

**Output 3** Relay output 1 normally open contact  
(5 A - AC 1, 250 V)

**Output auxiliary supply** DC 12 V/max. 20 mA

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

**Interface** RS485 (optically isolated)

**Communication protocol** Modbus RTU

**Transmission speed** 1200 to 38400 bauds

**Protection class** II

**Power consumption** max. 9 SS  
(depending on connection of outputs)

**Weight** 0.2 kg

➔ **Order no. 17-8821-7783/34204200**