Remote Terminal Units - Connections and settings

PT100 input 520PTD01
RTU520 product line

Application, characteristics and technical data have to be taken from the hardware data sheet:

520PTD01 Data sheet  1KGT 150 817

Operation
The module 520PTD01 is used to measure up to six inputs, that are wired with a two or four wire circuit PT100 temperature element.

Processing Functions
The micro controller controls the A/D converter and reads the digitized analog measured value ("Fig. 1: Function Block Diagram 520PTD01, connection with 4 wires"). The configuration parameters are loaded by the communication unit.

Input Signal Conversion
The input signals will be connected by the screw terminal block X 3 to X 5 ("Fig. 2: 520PTD01 position of connectors"). The input channels are not potential isolated from the internal power supply.

The 520PTD01 transmits the measured value with 1 2 bit to the CMU. Scaling to the transmission protocol presentation is done by the CMU.

Two internal measuring channels of the 520PTD01 perform an automatic zero calibration at each cycle. The result is used by the A/D converter as a rating factor.

Settings

Input Signal Range
The 520PTD01 module has a fixed input range of ± 200 °C.

Configuration of Line Frequency
Information about the line frequency is requested for the A/D conversion. The configured line frequency is valid for all six channels.

<table>
<thead>
<tr>
<th>Line frequency</th>
<th>Conversion time per input</th>
<th>Scan cycle per module</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 Hz</td>
<td>70,0 ms</td>
<td>560 ms</td>
</tr>
<tr>
<td>50 Hz</td>
<td>80,0 ms</td>
<td>640 ms</td>
</tr>
<tr>
<td>16,6 Hz</td>
<td>220 ms</td>
<td>1760 ms</td>
</tr>
</tbody>
</table>

Connections
The serial peripheral bus will be connected to X1/X2.

ADVICE
De-energize the system, before plugging or unplugging these connectors.

Factory Calibration
An on-site calibration of the A/D converter is not necessary.

The 520PTD01 is calibrated for all channels and measuring ranges at the factory.

Channel Configuration
A PT100 must also be connected to each configured channel. Configured and not connected channels can lead to a falsification of the measured values of the other channels. Channels with short circuit or line break are marked with OV. These need to be replaced immediately, as they can affect the other channels. After connecting a sensor, a restart is mandatory.

ADVICE
All channels must be configured and wired.

Signaling
The module monitors and checks its functionality as well as the communication via the peripheral bus.

Detected errors are indicated and/or transmitted by the module through:
- the red LED 'ST'
- diagnostic messages
- process signal messages (signal status)

LED 'ST'
The red LED indicates module errors, peripheral bus errors or A/D converter errors.

The LED indicates:
- module runs initialization procedure
- module is performing a cold or warm start
- module has detected a memory error (RAM or EPROM)
- micro-controller faulty
no transmission via the peripheral bus for at least 2 minutes. The module is not polled by the PBP of CMU

A/D converter faulty

Each configured measuring value will be indicated faulty by the CMU for the listed errors.

Figure 1: Function Block Diagram 520PTD01, connection with 4 wires

Figure 2: 520PTD01 position of connectors

Figure 3: 520PTD01 front plate

Figure 4: 520PTD01 connectors