**Remote Terminal Units - Data sheet**

**560AIR02**

**Analog input, 8 channels**

- AD converter resolution: 16 bit
- Measuring ranges: +/-2 mA; +/-5 mA; +/-10 mA; +/-20 mA; +/-40 mA

**Application**

The 560AIR02 module records up to 8 analog measured values.

The module 560AIR02 is able to process the following types of signals:

- Analog measured values (AMI)
- Measured floating point information (MFI)

Following measurement ranges can be configured:

- ± 2 mA
- ± 5 mA
- ± 10 mA
- ± 20 mA
- ± 40 mA

Other effective ranges and live zero signals become generated out of these ranges through conversion of the communication unit (CMU).

**Characteristics**

**Analog inputs**

Basic signal checks and cyclic processing functions are already be done locally in order to unburden the communication unit. The module transmits relevant changes as event via the RTU I/O bus.

The 8 differential inputs are not galvanic isolated against the power supply.

Single-ended or differential input values are resolved by up to 4096 steps (12 bit plus sign) for 100 % measurement amplitude.

The differential inputs are protected against static and dynamic over-voltages by a protection circuit. A low-pass filter suppresses unwanted frequency components.

The internal high resolution of the AD converter (16 bit) allows to scan all measuring ranges with the same resolution. An additional measurement channel is used for automatic zero calibration. This compensates the longterm drift of the components.

For elimination of tolerances a calibration is done during production.

The synchronization of the scan cycle with the line frequency is used to increase the line frequency interference suppression of the DC input signal.
<table>
<thead>
<tr>
<th>Frequency</th>
<th>Conversion time per channel</th>
<th>Scan cycle time (same for all channels)</th>
</tr>
</thead>
<tbody>
<tr>
<td>60 Hz</td>
<td>54 ms</td>
<td>486 ms</td>
</tr>
<tr>
<td>50 Hz</td>
<td>54 ms</td>
<td>486 ms</td>
</tr>
<tr>
<td>16.7 Hz</td>
<td>155 ms</td>
<td>1395 ms</td>
</tr>
</tbody>
</table>

**Power supply input**

The required power for the module is supplied via the RTU560 backplane.

**I/O controller (IOC)**

The micro-controller on the module processes all time critical tasks of the parameterized processing functions. Moreover it carries out the interactive communication with the RTU I/O bus. All configuration data and processing parameters are loaded by the communication unit via the RTU I/O bus.

The module is equipped with a serial interface to the RTU560 I/O bus on the backplane.

The analog input unit can execute the following processing functions on the measured values:
- Scan cycle and line frequency interference suppression
- Zero value supervision and switching detection
- Smoothing
- Threshold value monitoring on absolute value or with accumulation
- Periodic transmission and background cycles

During initialization and operation the module carries out a number of tests. If a fault occurs it is reported to the communication unit. All fault conditions impairing the function of the module are displayed as common fault signal by a red LED. A failure of the module is detected by the communication unit.
Technical data
In addition to the RTU500 series general technical data, the following applies:

Analog input channels 560AIR02
Inputs 8 differential inputs
Configurable measuring range
• ± 2 mA
• ± 5 mA
• ± 10 mA
• ± 20 mA
• ± 40 mA
Input impedance 50 Ω @ ±2 mA and ±5 mA, ±10 mA, ±20 and ±40 mA
Max. load 80 mA continuous @ ±10, ±20 and ±40 mA, 2 mA and 5 mA
Resolution 12 bit + sign
11 bit + sign @ ±2 V DC
AD converter resolution 16 bit
Accuracy at 25 °C ≤ 0.1 %
Linearity error at 25 °C ≤ 0.1 %
Temperature drift ≤ 100 ppm/K (0... 70 °C)
Max. common mode input voltage ±150 V DC (electrical limit)
±8 V DC (functional limit)
Max. differential input voltage ± 4 V DC (current input)
Common mode rejection > 70 dB @ 25 °C
> 60 dB @ 0... 25 °C
Configurable line frequency f_N
• 16.7 Hz
• 50 Hz
• 60 Hz
Line frequency interference suppression > 100 dB @ f_N ±2 %
> 45 dB @ f_N ±10 %

Current consumption for power supplied via RTU560 backplane
5 V DC 75 mA
24 V DC --

Signaling by LEDs
ERR (red) Common fault information for the module

Mechanical layout
Dimensions 160 mm x 100 mm, 3HE euro card format
4R (20 mm) front panel
Housing type Printed circuit board
Mounting for mounting in RTU560 racks
Weight 0.3 kg

Connection type
RTU560 backplane connector 48 pole type F DIN 41612

Immunity test
Electrostatic discharge IEC 61000-4-2 8 kV air / 6 kV contact (level 3)
Performance criteria A
Radiated radio-frequency Electromagnetic field IEC 61000-4-3 Performance criteria A
Electrical fast transient / Burst IEC 61000-4-4 Performance criteria A
Surge IEC 61000-4-5 Performance criteria A
Conducted disturbances, induced by radio-frequency fields IEC 61000-4-6 Performance criteria A

Environmental conditions - climatic
Nominal operating temperature range EN 60068-2-14 -25 °C... 70 °C
Start up EN 60068-2-1 -40 °C
Max. operating temperature, max. 96h EN 60068-2-2 +85 °C
Relative humidity EN 60068-2-30 5... 95 % (non condensing)

Ordering information
560AIR02 R0001 1KGT037500R0001