Chapter 05
Gateway to IEC 60870-5-104 substation automation protocol

Gateway to IEC 60870-5-104 substation automation protocol

Properties

- Ethernet-Modbus TCP/IP to IEC 60870-5-104 Gateway
- Transfer of 60 measurement variables to IEC 60870-5-104 protocol
- Measured value read-out every 5,000 ms from the UMG measuring device
- Compares measured value change with the AZI parameter (increment)
- In case of measured value discrepancies with the preset AZI parameter, the result is sent directly to the control centre
- The Gateway is supplied with pre-settings
- Multiple service websites are available for checking or changing the settings.
- Modbus and IEC104 communication status can also be checked via onboard service websites
- The service websites are programmed in JAVA, i.e. visualisation of the websites requires a browser with JAVA plug-in
- The control centre must set the Gateway time via the IEC104 protocol (function: Time synchronisation)
- An interoperability list is available under the designation "Interoperability_104RTU-V101"
- Suitable for measuring devices UMG 604 / UMG 605 / UMG 508 / UMG 509 / UMG 511 / UMG 512 / UMG 96RM-E exclusively with the type designation TK36
- The Gateway itself supports multiple type designations (TK34, TK35 etc.)

Area of application

- The open communication standard IEC 60870-5-104 is applied in remote control, substation automation, etc.
- Permits communication between the control centre and substations via a standard TCP/IP network

Fig.: IEC 60870-5-104 Modbus-Ethernet-Gateway ICL
**Scope of supply**

- 1 x Gateway ICL-171-ETH-2TX
- 1 x SD card with Janitza UMG application
- 1 x power supply

The Gateway is supplied with complete settings. This means the IP address is set to a fixed IP. Prior to delivery the following application data is required for doing the customizing:

- IP address / Subnet Mask / Gateway for the IEC 104 Gateway
- IP address / Subnet Mask / Gateway of the UMGs (UMG 604 / UMG 605 / UMG 508 / UMG 509 / UMG 511 / UMG 512 / UMG 96RM-E)
- IP address and port of the control centre 1
- IP address and port of the control centre 2 (if required)
- ASDU address (unstructured) in decimal format for the Gateway
- AZI\*1 parameter for all measured values
- Measured value address (structured) in decimal format (MID / HIGH / LOW)

**Important:** The type identification of the measured values is TK36\*2. Prior to ordering please check that your control centre supports this type identification. Another type identification (standardised measured value or scaled measured value) is not possible.

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**Technical data**

<table>
<thead>
<tr>
<th>Gateway to IEC 60870-5-104 protocol</th>
<th>51.00.240</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Item number</strong></td>
<td>51.00.240</td>
</tr>
<tr>
<td><strong>Main power supply Uₘ (24 V)</strong>*3</td>
<td>24 V DC</td>
</tr>
<tr>
<td><strong>Nominal value</strong></td>
<td>24 V DC</td>
</tr>
<tr>
<td><strong>Tolerance</strong></td>
<td>±15 ... ±20 % (per EN 61131-2)</td>
</tr>
<tr>
<td><strong>Current consumption at rated voltage (typical)</strong></td>
<td>6 mA + 7 mA per set input</td>
</tr>
<tr>
<td><strong>Current consumption at rated voltage (maximum)</strong></td>
<td>8 A DC</td>
</tr>
<tr>
<td><strong>Connection system</strong></td>
<td>spring clamp terminals</td>
</tr>
</tbody>
</table>

**General, power supply**

Use of a power supply without fail-back characteristic required

**Interface**

<table>
<thead>
<tr>
<th>IEC 60870-5-104 Modbus-Gateway ICL</th>
<th>2 x Ethernet: 10 BASE-T and 100 BASE-T(X)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Transfer speed</strong>*4</td>
<td>10 Mbits/s (10 BASE-T), 100 Mbits/s (100 BASE-T(X)) half-duplex, full-duplex, autonegotiation</td>
</tr>
<tr>
<td><strong>Connection system</strong></td>
<td>twisted-Pair cable CAT5</td>
</tr>
<tr>
<td></td>
<td>twisted-Pair cable with a cable cross-section of 0.14 mm² to 0.22 mm²</td>
</tr>
<tr>
<td></td>
<td>8-pole RJ45 socket</td>
</tr>
</tbody>
</table>

**General data**

<table>
<thead>
<tr>
<th>Weight</th>
<th>approx. 295 g</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions in mm (H x W x D)</td>
<td>80 x 119.8 x 71.5</td>
</tr>
</tbody>
</table>

\*1 Increment. If the AZI threshold is exceeded then the actual measured value is sent to the control centre.

\*2 Measured value, short floating point value with time stamp CP56Time2a.

\*3 Externally safeguard this 24-V range. The mains adapter must be capable of delivering four times the nominal current of the external fuse, in order that an assured burning through of the fuse is guaranteed in the event of a fault.

\*4 It is not possible to set this speed manually. It is automatically set by means of autonegotiation.