SIP-3

Encapsulation & Protocol conversion

Serial to IP encapsulation and 104–101 Gateway functionality

- ✓ **1 or 2 Fast Ethernet (optical/electrical) ports**
- ✓ **1 or 3 serial ports**
- ✓ **Cellular 2G, 3G or 4G interface**
- ✓ **1 service serial port**

Main functions

– **Basic encapsulation function:**
  point-to-point connection between two serial devices over TCP/IP networks.

– **104-101 Gateway function:**
  conversion between 60870-5-104 protocol (control center side) and 60870-5-101 protocol (RTU side).

Main applications

– Serial to IP encapsulation on wired interface.

– Serial to IP encapsulation on GPRS network.

– Cellular IP router for access to an IEC 60870-5-104 RTU.

– Gateway via WAN interface for access to an IEC 60870-5-101 RTU.

– Gateway via Ethernet interface for access to an IEC 60870-5-101 RTU.

Equipment interfaces

– One or two 10/100Base-Tx ports (RJ-45) or one 10/100Base-Tx port (RJ-45) & one 10/100Base-Fx multimode port (MT-RJ or LC).

– 1 asynchronous serial port (COM1) with female DB9 standard connector (DCE) configurable for RS-232 or RS-485 (2-wire or 4-wire) interface.

– 2 additional asynchronous serial ports (COM2 & COM3) with female DB9 standard connector (DCE) configurable for RS-232 interface.

– 1 optional 2G, 3G & 4G cellular interface with up to two external for Mini Sim (2FF) cards.

– 1 service serial port (DCE) with female DB9 standard connector.

104-101 Gateway characteristics

– Coexistence of connections from multiple 104 control centers in the same 101 RTU.

– Selection of the operation parameters of the APCI layer, according to IEC 60870-5-104 standard.

– Explicit filtering of the control centers (CC) allowed for the management of the RTU.

– Selection of 101 profile operation parameters, according to IEC 60870-5-3 standard.

– Operation of the IEC 60870-5-2 protocol in balanced mode.

– Selection of the operation mode of the 101 interface with the RTU.

– Selection of the direction of communication of the 101 interface with the RTU.

– Optional simple digital object, which reflects the status changes of the 101 link. For a 104 control center this digital object will belong to the database of the RTU connected to the 104-101 Gateway.

– Programmable automatic time synchronization of the RTU by the SIP-3.

– Optional ASDU queue per RTU.

Management system

Local and remote management through a console (115200 bit/s) or a built-in web server (HTTP/HTTPS), SSH and Telnet server.

Additional services

– SNMP v1, v2c, v3, DHCP, NTP & TACACS+.

Technical Information

Mechanical characteristics	➢ DIN rail or wall mounting. ➢ DIN-rail model: Height: 127.5 mm; Width: 36.5 mm; Depth: 147 mm. ➢ Wall-mount model: Height: 138.5 mm; Width: 164 mm; Depth: 36.5 mm. ➢ Weight: 549 g.
Operating conditions	➢ 10.5–72V_{DC} (isolated) or multirange (36–360V_{DC}, 88–265V_{AC}) isolated. ➢ Maximum power consumption at 48 V_{DC}: 4.3 W. ➢ Maximum power consumption at 230 V_{CA}: 9.8 W. ➢ Temperature range: -25°C to +70°C
Encapsulation protocols	➢ IEC 60870-5 101/102/103 (the first two with the variants to support link addresses of 1 or 2 bytes). ➢ DLMS, GESTEL, MODBUS, DNP 3.0, SAP20, PROCOME, Pid1, Twc.
WAN interface characteristics	
UMTS (3G)	Dual band UMTS/HSPA+: 900/2100MHz. ➢ Class 3 (+24dBm +1/-3dB) for UMTS 2100, WCDMA FDD Bdl ➢ Class 3 (+24dBm +1/-3 dB) for UMTS 900, WCDMA FDD BdVIII HSPA+ data up to 14.4 Mbit/s (downlink) and 5.76 Mbit/s (uplink). Dual band GSM/GPRS/EDGE: 900/1800MHz. ➢ Class 4 (+33dBm ±2dB) for EGSM900 ➢ Class 1 (+30dBm ±2dB) for GSM1800 ➢ Class E2 (+27dBm ±3dB) for GSM 900 8-PSK ➢ Class E2 (+26dBm +3/-4dB) for GSM 1800 8-PSK EDGE data up to 237kbit/s (downlink) and 237kbit/s (uplink). GPRS data up to 85.6kbit/s (downlink) and 85.6kbit/s (uplink).
LTE (4G)	Penta Band LTE: 800/900/1800/2100/2600MHz. ➢ Class 3 (+23dBm ±2dB) for LTE LTE data up to 100Mbit/s (downlink) and 50Mbit/s (uplink). Tri Band UMTS/HSPA+: 900/1800/2100MHz. ➢ Class 3 (+24dBm +1/-3 dB) for UMTS HSPA+ data up to 42Mbit/s (downlink) and 5.76Mbit/s (uplink). Dual Band GSM/GPRS/EDGE: 900/1800MHz. ➢ Class 4 (+33dBm ±2dB) for EGSM900 ➢ Class 1 (+30dBm ±2dB) for GSM1800 ➢ Class E2 (+27dBm ±3dB) for GSM 900 8-PSK ➢ Class E2 (+26dBm +3/-4dB) for GSM 1800 8-PSK EDGE data up to 237kbit/s (downlink) and 237kbit/s (uplink). GPRS data up to 85.6kbit/s (downlink) and 85.6kbit/s (uplink).

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