SIP-3
Encapsulation & Protocol conversion

Serial to IP encapsulation and 104–101 Gateway functionality

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.

✓ 1 or 2 Fast Ethernet (optical/electrical) ports
✓ 1 or 3 serial ports
✓ Cellular 2G, 3G or 4G interface
✓ 1 service serial port
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 (isolated) or multirange (36–360V, 88–265V) isolated.
- Maximum power consumption at 48 V: 4.3 W.
- Maximum power consumption at 230 V: 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 B11.
  - Class 3 (+24dBm +1/-3dB) for UMTS 900, WCDMA FDD B0.
  - 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 (+32dBm ±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/-33dB) 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).