

Meter reading communication



- Meter reading modems for industrial consumers (56→100 KVA)
- Meter reading modems for consumers (Smart Metering)
- Ethernet modems
- Secure Modem Management System (MMS)



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Smart solutions for smart meters

Bausch Datacom modems

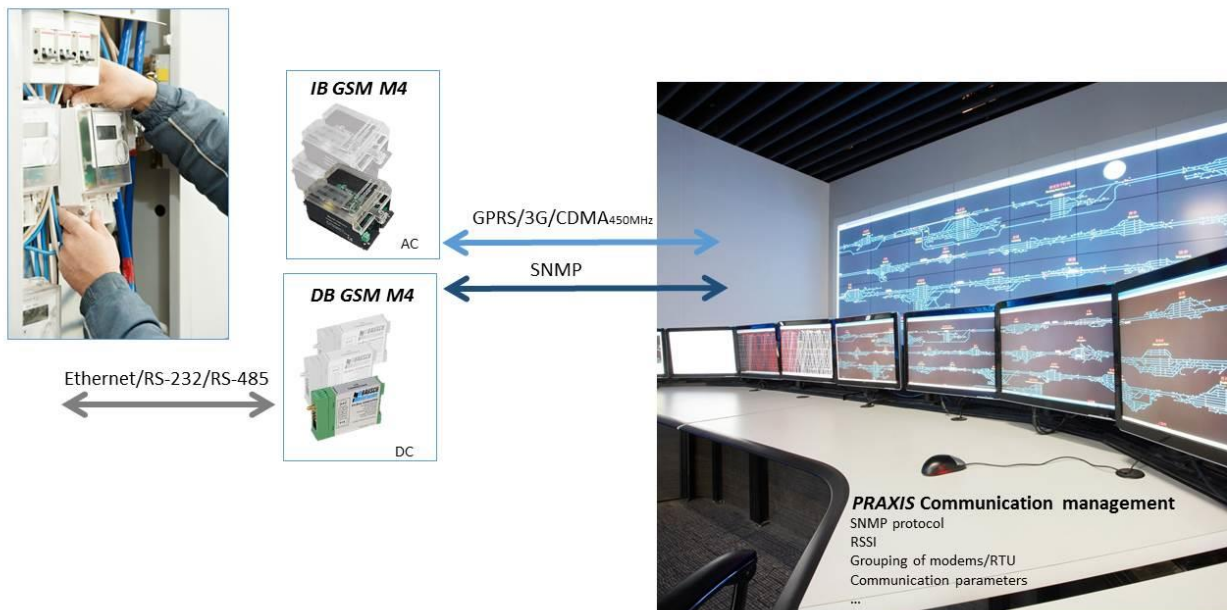
Bausch modem designs are used and approved worldwide. We offer services from the initial concept to schematics, PCB design and prototyping. Our engineering also does approval, compliance testing and coordination of production if necessary.

Next to modems the company focuses today on RTUs with RS-485 and Ethernet interface, built-in 2G/3G/CDMA 450 engine and integrated 60870-5-104 SCADA communication protocol. All development and production processes are ISO 9001:2008 quality controlled.

GSM/GPRS/3G/LTE/CDMA 450 MHz modems with RS-232 / 485 interface and Ethernet interface.

The modems can communicate on all mobile communication media using CSD data or TCP/IP connections but can also act as a perfect substitute for router applications where only routing to one device is required.

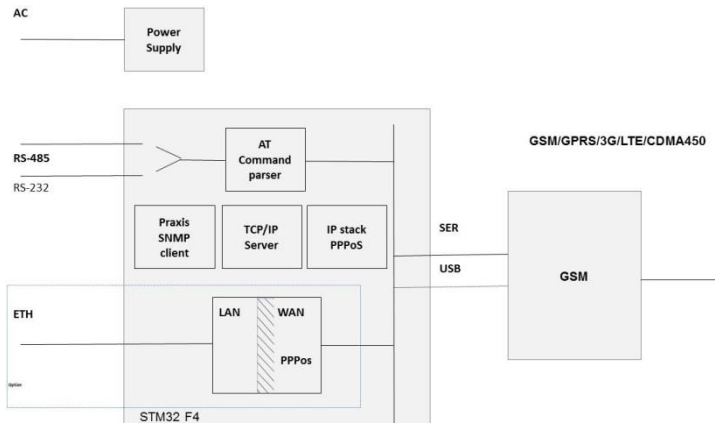
The modem infrastructure can be managed by a Modem Management System in order to group, control and log your modems and their communication parameters, like costs. Strongpoints of the Bausch modems are a watchdog, extended immunity certifications (TST 25) and a built-in power supply (220Vac).



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Smart solutions for smart meters

InduBox GSM M4



General

- Communication engine
 - GSM CSD data
 - GSM 2G (GPRS)-3G-4G (LTE)
 - [CDMA 450 MHz]
 - Quad band mobile modules
 - Automatic format and speed sensing (300 to 115.200 bps)
 - AT command set support
 - Circuit-switched 14.4 Kbps data
- Antenna
 - FME connector (SMA optional)
 - Magnetic GSM antenna included
- DTE and Ethernet interfaces
 - 1 x RS485 3-wire/galvanically separated
 - 1 x RS232 3-wire/galvanically separated
 - 1 x 10/100 MB Ethernet
- Embedded high performance ARM® Cortex®-M4 processor
- Full TCP/IP Stack
 - Full TCP/IP Stack IP, ICMP, UDP, TCP, IGMP, ARP, PPPoS, DHCP client, DHCP Server, DNS client, SNMP agent, HTTP/HTTPS server, SMTP client, SMTP client

Routing

- TCP/IP
- NAT
- Port forwarding
- [IPsec]

Upgradeability

- Firmware update
 - Locally over Ethernet
 - Remotely over the air (FOTA)

Configuration

- Serial (via RS-232 locally)
- HTML
- Telnet
- Remotely by Praxis (Modem Management System)

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InduBox GSM M4 (2)

Power Supply

- 90-253 Vac / 47-63 Hz
6.3 VA_{idle} 7.5 VA_{max}
3.5 W_{idle} 4.5 W_{max}
- Optional: 10-30 Vdc

LED's

- 10 LED indicators monitoring the status of the modem

Housing

- IP51
- Bausch Datacom InduBox bottom enclosure and sealable connector cover (with sealing screw): ABS with self-extinguishing V0 additive
- Transparent, sealable cover: polycarbonate with self-extinguishing V1 additive.
- Dimensions:
 - Overall dimensions with connector cover: 180 mm x 108 mm x 71 mm
 - Overall dimensions without connector cover: 145 mm x 108 mm x 71 mm

Environmental

- - 20°C / + 85°C: temperature in use
- 10% - 75%: humidity in use (non condensing)

Reset

- 2 possible ways to reset the modem:
 - Configurable, periodical reset (each 1 to 168 hours)
 - External reset triggered by the '+V'-connection (5-25V) in the RS-232 and RS-485 interfaces: disconnection of power supply during 20 seconds when a negative slope (5-25V to 0V) is detected on the '+V'-input. (the '+V'-connection can also be used for powering (100 mA I_{max}) an external device (+5V' out).

Connectors

- Mains 2-pin header and plug (terminal block screw connector)
pitch 5.08 mm, maximum conductor cross section: 2.5 mm²
- RJ-45 connector (RS-232, RS-485)
- Ethernet connector
- AMP 50 Ohm FME antenna connector

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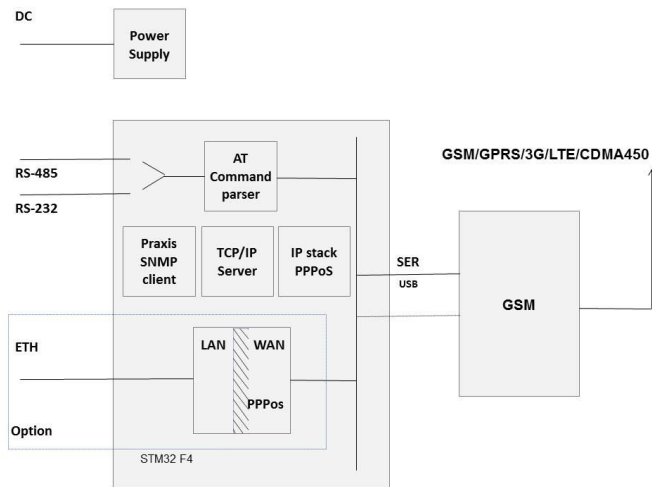
Smart solutions for smart meters

InduBox GSM M4 (3)

Approvals

- Standard CE / EMC
- TST25-3 (additional extended immunity tests) 'modems bestemd voor teleopname van metingen'
- EN61000-3-2 Electromagnetic compatibility, part 3, section 2
Limits for harmonic current emissions.
- EN61000-3-3 Electromagnetic compatibility, part 3, section 3
Limitations of voltage fluctuation and flicker.
- EN61000-4-2 Electromagnetic compatibility, part 4, section 2
Electrostatic discharge immunity test.
CISPR24 levels : 4 KV contact / 8 KV air
TST25-3 --> 8 KV contact (20 +/- contacts) / 15 KV air (20 +/- discharges)
- EN61000-4-3 Electromagnetic compatibility, part 4, section 3
Radiated fields immunity test.
CISPR24 levels : 10 V/m 80 MHz - 2000 Mhz, mod. AM 80% 1KHz
TST25-3 --> 30 V/m 80 MHz - 2000 Mhz, mod. AM 80% 1KHz
- ENV50204 Electromagnetic compatibility, Basic immunity standard, Radiated Electromagnetic field from digital radio telephones immunity test
CISPR24 levels : 10 V/m 890-2400 MHz, 1% freq step, 1s dwell, 50% duty, 200 Hz repetition time
TST25-3 --> 10 V/m 890-2400 MHz, 1% freq step, 1s dwell, 50% duty, 200 Hz repetition time
- EN61000-4-4 Electromagnetic compatibility, part 4, section 4
Electrical fast transient/burst immunity test.
CISPR24 levels : 0.5 KV and 1 KV, 5/50 ns, 5 KHz rep freq on AC mains
TST25-3 --> 2 KV and 4 KV, 5/50 ns, 5 KHz rep freq on AC mains
- EN61000-4-5 Electromagnetic compatibility, part 4, section 5
Surge immunity test.
CISPR24 levels : 10 pulses, 1 KV, 1,2/50 μ s (5+ 5-) on AC mains
TST25-3 --> 6 KV pulses
- EN61000-4-6 Electromagnetic compatibility, part 4, section 6
Conducted immunity test.
CISPR24 levels : 3 V 0.15 MHz - 80 MHz, mod. 80% at 1 KHz on mains
TST25-3 --> 10 V 0.15 MHz - 80 MHz, mod. 80% at 1 KHz on mains
Magnetic fields: applied to all accessible surfaces 1000 At (ampère turns) - 1A on 1000 turns
- EN61000-4-8 Electromagnetic compatibility, part 4, section 8
Power frequency magnetic field immunity test.
CISPR24 levels
- EN61000-4-11 Electromagnetic compatibility, part 4, section 11
Voltage dips, short interruptions and voltage variations immunity test.
CISPR24 levels
- EN61000-4-18 Oscillatory waves
1 MHz 2,5 KV, rep rate 400 Hz applied on mains in common mode
100 KHz 2,5 KV, rep rate 40Hz applied on mains in common mode
1 MHz 1KV, rep. Rate 400 Hz applied on mains in differential mode
100 MHz 1KV, rep. Rate 40 Hz applied on mains in differential mode
- EN55022 Limits and methods of measurement of radiodisturbance characteristics of ITE-equipment.
- EN55022 class B limits (AV - QP)
Radiated emission : 30 - 1000 MHz
conducted emission (CISPR 16) : 0.15 - 30 MHz
- EN55024 performance criteria for immunity tests
- EN61000-6-3 performance criteria for emission tests

DinBox GSM M4



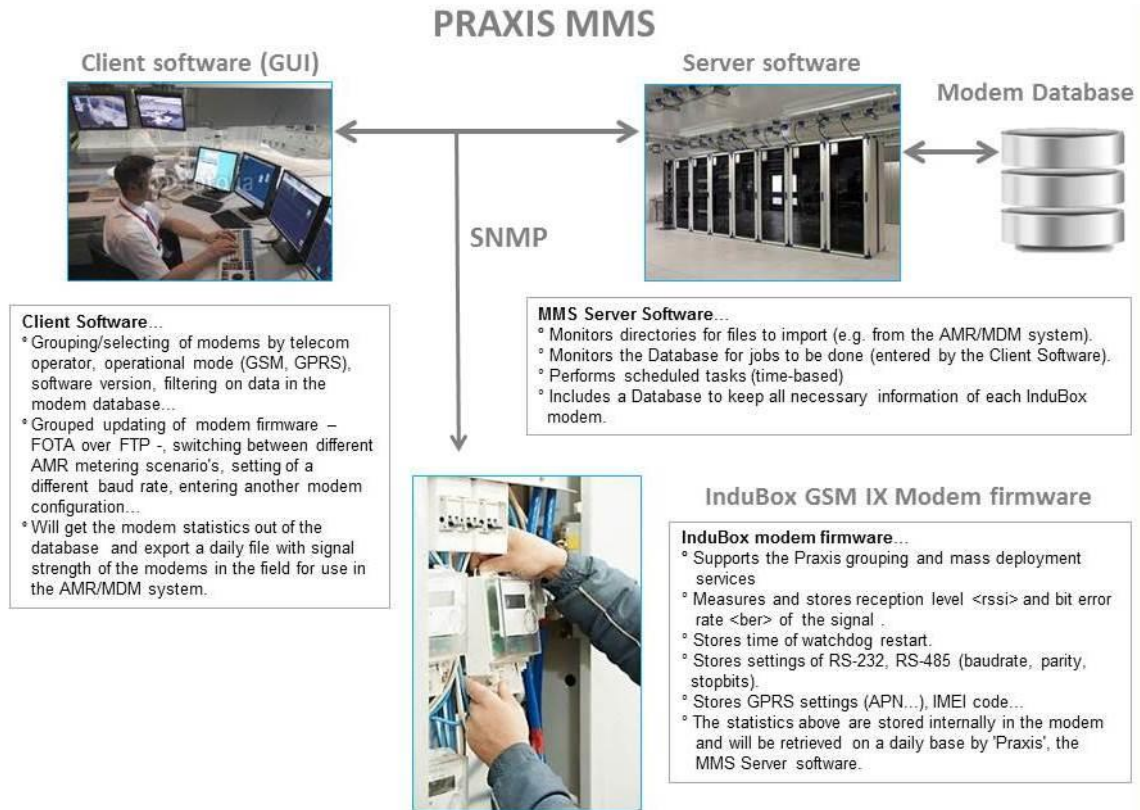
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- Environmental:
 - 20°C / + 85°C temperature in use
 - 10% - 75% humidity in use (non condensing)
- Standard IP20 DINrail housing
Dimensions: 22.5/75.0/107.5 mm
- 4 LED indicators monitoring the status of the modems
- Power supply: 10-30 Vdc
- Connectors:
 - Power connection: header and plug
 - RS-485: header and plug
 - RS-232: RJ-45 female
 - Ethernet connector
 - AMP 50 Ohm SMA antenna connector
- Reset modem:
 - Configurable, periodical reset (each 1to 168 hours)
- Routing:
 - TCP/IP, NAT, Port forwarding, [IPsec]
- Upgradeability:
 - Firmware update, locally over Ethernet or remotely over the air (FOTA)
- Configuration:
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Praxis Modem Management System



The Praxis Modem Management System is a SNMP based tool to group, configure, upgrade and log your modem infrastructure. It is a server with a database, a Windows client to manage the installed base of modems or RTUs. It allows to measure and log the communication parameters, f.i. the RSSI signal of each modem, group the modems, change the communication (from GPRS to CSD data etc.). The communication between Praxis MMS and the modems or RTUs in the field can be secured (authentication, encryption). The MMS can upgrade remotely the firmwares of the selected modems or RTUs, configure the reset parameters, store GPRS settings (APN etc.) ... The Praxis Modem Management System can be upgraded or tuned to the customers specific functionalities.

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