

# InduBox PSTN III

Industrial 'unblockable' PSTN modem

*Designed by Bausch Datacom!*

The InduBox PSTN III is designed to transmit and receive –transparent- ASCII formatted data on a analogue PSTN (Public Switched Telephone Network) line in an industrial environment.

The InduBox PSTN III modem is especially conceived for 'heavy' industrial environments: the modem is tested and approved according to the TST 25-3 extended immunity requirements in the Belgian electricity market. When testing EN61000-4-3 - electromagnetical compatibility - Laborelec, the official Belgian lab creates a test environment which generates 30 V/m field strengths instead of the standard 'normal' field strength of 10 V/m (CISPR24 level = 10 V/m).

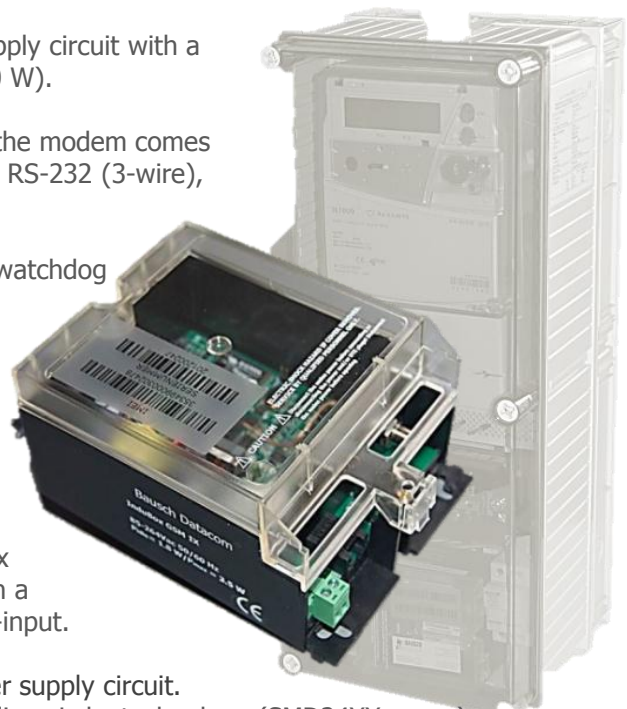
The modem has an integrated 85-264 Vac power supply circuit with a low power consumption (Pidle = 1.8 W / Pmax = 2.0 W).

Built in a sealable IP51 housing with transparent lid the modem comes with two galvanically separated serial interfaces, one RS-232 (3-wire), one RS-485 (3-wire).

An important reset feature is provided by the Atmel watchdog coprocessor of the modem. This long term watchdog microprocessor has 2 possible ways to reset the modem :

- Periodical 'hard' reset configurable between 1 and 68 hours.
- External 'hard' modem reset (by the electricity meter) triggered by the additional '+V'-connection on pin 1 of RS-232 and/or RS-485 (JP4 and/or 5 on 'Meter' position): the power supply of the InduBox modem will be disconnected during 20 seconds when a negative slope (5-25V to 0V) is detected on the '+V'-input.

Optionally the modem comes with a 10-60 Vdc power supply circuit.  
The Bausch embedded socket modem is based on Silicon Labs technology (SMD24XX range).



## Typical Applications

- Remote reading of utility meters
- Remote control
- Vending machine monitoring
- Surveillance systems
- Point of Sales
- Measurement instruments

## Product Highlights

- Industrial PSTN modem in a robust, sealable IP51 housing
- Tested and approved according to extended immunity requirements
- Configurable watchdog 'hard' reset or external reset (by the electricity meter) triggered by the additional '+V' connection
- Universal integrated 85-264 Vac power supply (optional: 10-60 Vdc)
- Standard integrated SMD2415 socketmodem (Silicon Labs based)  
Conexant based Bausch SM\_H2 socketmodem also possible



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## InduBox GSM IX hardware specifications

The InduBox PSTN III is designed to transmit and receive –transparent- ASCII formatted data on a analogue PSTN line in an industrial environment. It is built inside a IP51 wall-mountable housing with wide range AC power supply and a watchdog coprocessor allowing 'hard' reset of the modem. The modem comes with galvanically separated RS-232 & RS-485 interfaces.

### Housing

- ° Bausch IP51 InduBox bottom enclosure and sealable connector cover: ABS with self-extinguishing V0 additive
- ° Transparent sealable cover: polycarbonate with self-extinguishing V1 additive
- ° Overall dimensions with connector cover: 180 mm x 108 mm x 71 mm
- ° Overall dimensions without connector cover: 145 mm x 108mm x 71 mm

### Connectors

- ° Mains: 2-pin plug and connector terminal block with screw contacts pitch 5.08 mm and maximum wiring section: 2.5 mm<sup>2</sup>
- ° RS-232, RS-485: female RJ-45 connectors
- ° RJ-11 telephone line connector

### Environmental

- ° - 25°C / + 55°C
- ° 10% - 75% (non condensing)

### Power Supply

- ° 85 - 264 Vac 50/60 Hz
- ° Pidle = 1.8 W / Pmax = 2.0 W
- ° Optional power supply: 10-60 VDC

### Embedded modem

- ° Embedded Bausch SMD2415 Silicon Labs based socket modem
- ° Modulation and protocols: ITU-T V.92 \*, V.90; V.34, V.32bis; V.32; V.22bis\*; V.21; Bell 212A; Bell103; V.23 Reversing; V.23 half-duplex; V.29 FastPOS and V22bis fast connect; V.80 Synchronous Access Mode; V.44, V.42bis and MNP5 data compression\*; V.42 error correction
- ° Call Waiting detection \*
- ° Serial, asynchronous mode
- ° Hardware and software flow control and speed buffering
- ° Type I and Type II Caller ID detect \*, call progress, blacklisting
- ° Low power consumption TBD
- ° Integrated DAA: globally compliant line interface, extension pickup detection, digital line protection, line-in-use detection
- \* Socket modem inside can be SMD2404 (V.22bis), SMD2415 (V.32bis), SMD2434 (V.34), SMD2457 (.90) or SMD2493 (V.92). Standard a SMD-2515-3V3 is used. For other specific applications (for example SIA protocol, Contact ID, Reverse Dialing...), a SM\_H2 Bausch Conexant based Socket modem can be implemented.

### Reset

- ° By Atmel watchdog coprocessor
- . Periodical 'hard' reset configurable between 1 and 68 hours.
- . External 'hard' modem reset: disconnection of power supply in case of negative slope (5-25V to 0V) on the '+V'-input of RS-232 and/or RS-485.

### Configuration

- ° One complete RS-232 interface (TxD, RxD, DCD, DTR, RTS, CTS, RI and GND) Female RJ-45 connector

### DTE interfaces

- ° 3-wire RS-232 (RXD, TxD, GND & '+V')
- Galvanically separated Female RJ-45 connector
- ° 3-wire RS-485 (A, B, GND & '+V')
- Galvanically separated Female RJ-45 connector

### Approvals

- CE + TST 25-3 extended immunity
- 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: 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: 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: 10 V/m 890-2400 MHz, 1% freq step, 1s dwell, 50% duty, 200 Hz repetition time TST25-3: 30 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: 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: 10 pulses 1 KV 1,2/50 µs (5+ 5-) on AC mains TST25-3: 6 KV pulses
- EN61000-4-6 Electromagnetic compatibility, part 4, section 6 Conducted immunity test. CISPR24: 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 (ampere 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 (CISPR16) : 0.15 - 30 MHz
- EN55024 Performance criteria for immunity tests
- EN61000-6-3 Performance criteria for emission tests



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