



Description

RT-436-502 is a frequency shift keyed (FSK) and quadrature amplitude modulation (QAM) modem for asynchronous and synchronous data transmission in 300-3400 Hz voice band. It is highly immune to interference and noise and permit extensive voice-band communication link utilization.

The modem supports several international standards ITU V.21, V.23, R.35, R.37, R.38A, R.38B, V.29, Bell 103, Bell 202 and proprietary Cegelec 1200/600Bd and Indactic 33 communication standards.

The modem can operate in half or full-duplex, point-to-point or point-to-multipoint mode. When using FSK modulation receive and transmit channels may be independently set.

The modem employs advanced DSP technology, thus offering high service flexibility through programmable features. Software configuration is performed via Hayes AT command set. AT commands can be initiated from any terminal application using ITU CCITT V.24 & V.28 (EIA RS-232C) communication interface. Additionally, for easy firmware upgrade a bootstrap loader is provided.

Features

- ▶ A programmable modem for SCADA or power utility communication network
- ▶ Multi-standard support: ITU R.35, R.37, R.38A, R.38B, V.21, V.23, V.29, Bell 103 and 202
- ▶ Fully programmable via Hayes AT command set
- ▶ Specialized Line, Power Line Carrier or radio communication
- ▶ Half or full-duplex operating mode

Application

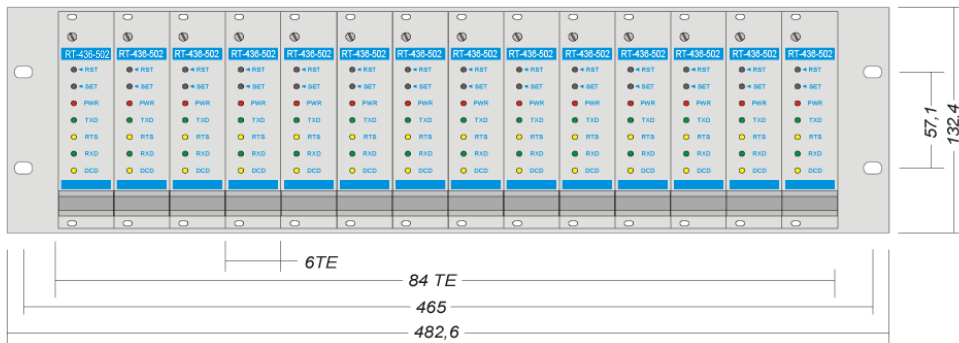
RT-436-502 is designed for use in SCADA systems mainly based upon power utility communication networks. Depending of modulation standard it can communicate through specialized, private or leased lines, radio links and power lines (PLC).

Mounting Types

RT-436-502 is available as a desktop modem or in two different types of standard 19" rack:

- 1U rack with 1, 2 or 3 modems per rack;
- 3U rack with 10,12 or 14 modems per rack, and additional blank front plates covering unused slots.

All connectors at the rear side are accessible at the back openings.



3U rack version with 14 modems per rack

Specifications

| Operation | |
|-----------|--------------------------------------------------------------------------------------------------------------------------------|
| Type | Data transmission on audio frequency analog medium. |
| Media | Leased line, Radio, PLC |
| Modes | - Asynchronous or synchronous, Point-to-point, multipoint, 2-wire or 4-wire - Support for synchronous Indactive 33 protocol |

| Standards | | | | | |
|-------------------|-----------------------|---------------------|-----------------------------|-----------------------------------------------------|-------------|
| FSK | Transmission rate | Frequency deviation | Channel spacing (bandwidth) | Channel mean frequency adjustable in steps of 120Hz | |
| | Bd | Hz | Hz | Lowest Hz | Highest Hz |
| ITU R.35 | 50 | ± 30 | 120 | 420 | 3300 |
| ITU R.37 | 100 | ± 60 | 240 | 480 | 3120 |
| ITU R.38B | 200 | ± 90 | 360 | 540 | 3060 |
| ITU R.38A | 200/300 | ± 120 | 480 | 600 | 3480 |
| ITU V.21 | 300 | ± 100 | 400 | 1080 / 1750 | |
| ITU V.23 /0 /1 /2 | 600/1200 | ± 200 / 400 | 800 / 1600 | 2850 / 1500 / 1700 | |
| Bell 103 | 300 | ± 100 | 400 | 1170 / 2125 | |
| Bell 202 | 1200 | ± 500 | 2000 | 1700 | |
| QAM | Transmission rate Bps | Symbol rate | Constelation points | Carrier frequency Hz | Mode |
| | | | | | |
| ITU V.29 | 4800 | 2400 | 4 | 1700 | Half duplex |
| | 7200 | 2400 | 8 | 1700 | Half duplex |
| | 9600 | 2400 | 16 | 1700 | Half duplex |

| Interfaces | |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DTE interface | <ul style="list-style-type: none"> - ITU CCITT V.24 & V.28 (EIA RS-232C), DB9 (female) connector - Signals: DCD, RD, TD, DTR, SG, DSR, RTS, CTS, RI - Character length: 5-9 data bits, 1 start, 1 stop - RTS/CTS delay: adjustable by 1ms step within range of 40-6825ms - Option to switch on fail relay if DCD off - Option to transmit on RTS - Configuration: AT command set |
| Analog line | <ul style="list-style-type: none"> - DB15 (female) connector; - 600Ω or high impedance with return loss < 0.2; - Transmission level: 0 to -32dBm, programmable by 1dB step - Receive level: 0 to -40dBm, programmable by 1dB step, sensitivity min. - 48dBm - Radio control: half-duplex control and squelch detection |
| Power supply | 2-position screw plug type (for 2-2.5mm ² wire) |

| General | |
|-------------------|--------------------------------------------------------------------------------------------------------------|
| LED indication | PWR, TXD, RXD, RTS, DCD |
| Power supply | 9-18VDC, 9-12VAC, model -12 18-36VDC, 14-23VAC, model -24 36-72VDC, 25-50VAC, model -48 |
| Isolation | Transformer up to 1500V |
| Immunity to noise | - Peak pulse noise: 100V Peak - Effective interference at 50 Hz: 80V rms |
| Temperature | Operation and storage: -10° to +50 °C |
| Dimensions | - desktop: aluminium enclosure 112x30x170mm - 19" rack: EUROCARD PCB, 160x100mm 3HE, 6T in 1U and 3U rack |

