Modem 560FSM10

Application

The 560FSM10 is a modem which converts the serial data according to CCITT V.23 standard. It operates on the frequency shift keying principle (FSK). Two- or four-wire operation mode is selectable by DIP-switch. The line output is capable to drive up to 10 remote stations connected in a multi-drop line. It is functionally compatible with the 23WT23 modem for subrack mounting and can be used as a standalone unit.

Characteristics

The 560FSM10 is designed for snap-in DIN-rail mounting. All necessary configuration like two-or four-wire operation, receiver sensitivity, line termination or pre-conditioning of the transmit signal is done by DIP-switch.

The interface to the data terminal equipment (DTE) operates according to the RS232-D standard and is carried out as a RJ45 jack. It supplies the following signals:

- TxD  Transmit data
- RxD  Receive data
- RTS  Request to send
- DCD  Data carrier detected
- CTS  Clear to send
- DSR  Data set ready
- DTR  Data terminal ready

The DTR signal is not interpreted. DSR is always kept active. The state of the rest of RS232 signals is shown by LEDs on the front plate. Fig. 1 shows a block diagram of the modem.

![Logic block diagram modem 560FSM10](image)
The 560FSM10 has a built-in overvoltage protection (OVP) against transient voltages. The isolation level of the communication line is 3 kV. Additional low frequency (LF) signal transformers have to be used if higher isolation voltages are required. Fig. 2 shows the connection of these transformers in the case of a two-wire and a four-wire connection.

Fig. 2: Communication line connection by LF transformer
### Technical Data

#### General Data

| Type of modulation: | Frequency shift keying (FSK) according to CCITT V.23, with 1200 bps |
| Type of communication: | point-to-point connection or multipoint network |

#### Serial Interface

| Standard: | RS 232-D |
| Signal lines: | D1 TxD/103, D2 RxD/104, S2 RTS/105, M2 CTS/106, M1 DSR/107, M5 DCD/109, S1 DTR/108.2 |

#### Transmitter

| Transmit output level at Z_a: | -9 / -29 dBm by DIP-switch |
| Sending equalizer: | Raise upper frequency level by 20%, 40% or 60% by DIP-switch |
| Output impedance | 600 Ω non earthed and symmetrical or > 6 kΩ |

#### Receiver

| Receive level range: | 0...-47 dBm |
| Sensitivity: | -17 / -27 / -37 / -47 dBm by DIP-switch |
| Input impedance: | 600 Ω non earthed and symmetrical or > 6 kΩ |

### Overview

| Data format | Serial, binary, asynchronous | Dim
| Traffic mode | Point-to-point or multi-drop |
| Modulation type | Frequency shift keying (FSK) with carrier switch off for multi-drop networks |
| Center frequency | 1700 Hz |
| Frequencies | MARK 1300 Hz, SPACE 2100 Hz |
| nominal transmission level | -5/-25 dBm |

| Channel delay time RTS=ON to CTS=ON | Typical 1.5 ms |
| Channel delay time RTS=ON to DCD=ON | Typical 9.0 ms, Maximum 9.6 ms |
| Channel delay time RTS=OFF to DCD=OFF | Typical 1.1 ms, Maximum 2.0 ms |
| Transmission delay TxD local to RxD remote | Typical 0.7 ms, Maximum 0.73 ms |
| Transmit delay time RTS=ON to start bit | Minimum 10 ms |
| Upper identifier frequency | \( F_A = F_C + \Delta F = \text{SPACE} = \text{TxD}(D1) \) |
| Lower identifier frequency | \( F_Z = F_C - \Delta F = \text{MARK} = \text{TxD}(D1) \) |

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1. As voltage level related to 775 mV
2. without influence of the transmission channel
3. without influence of the transmission channel
4. without influence of the transmission channel
RTU500 series
Data Sheet Modem 560FSM10

Power supply
Supply: 18-72 VDC / 55 mA
Fuse: Resettable fuse 140 mA
Reverse voltage protection: Diode

Enclosure
Dimensions: 45 x 99 x 114.5 mm
Weight: 150 g

Connection type
Conductor cross section: 0.2 ... 2.5 mm² (power supply and line)

Environmental Conditions
Temperature: 0 ... 70°C
Relative humidity: 5 ... 95% (non condensing)

Electromagnetic compatibility
Static discharge: 4 kV contact, 8 kV air (IEC 61000-4-2)
Fast transient burst power supply: ±2 kV signal lines: ±2 kV (IEC 61000-4-4)
Surge immunity power supply: ±2 kV line-to-line ±1 kV lines-to-earth signal lines: ±1 kV lines-to-earth (IEC 61000-4-5)
Conducted disturbances power supply: 10 V signal lines: 10 V (IEC 61000-4-6)

Ordering information
560FSM10 1KGT019200R0001

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