Modem 560FSM11

Application
The 560FSM11 is a modem for transmitting serial data at rates up to 9600 bps. 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 23WT24 modem for subrack mounting and can be used as a standalone unit.

Characteristics
The 560FSM11 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.

Fig. 1: Logic block diagram modem 560FSM11
The 560FSM11 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**
RTU500 series
Data Sheet Modem 560FSM11

Technical Data

General Data

Type of modulation: Frequency shift keying (FSK) with 9600 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

Overview

Data format Serial, binary, asynchronous
Traffic mode Point-to-point or multi-drop
Modulation type Frequency shift keying (FSK) with carrier switch-off for multi-drop networks
Center frequency 13600 Hz
Frequencies
MARK 9200 Hz
SPACE 18000 Hz
nominal transmission level -9/-29 dBm
Channel delay time RTS=ON to CTS=ON Typical 1.5 ms
RTS=ON to DCD=ON Typical 1.8 ms
Channel delay time RTS=OFF to DCD=OFF Typical 0.16 ms
Transmission delay TxD local to RxD remote Typical 0.085 ms
Transmit delay time RTS=ON to start bit Minimum 3 ms
Upper identifier frequency \( F_A = F_C + \Delta F = \text{SPACE} = \text{TxD(D1)} \)
Lower identifier frequency \( F_Z = F_C - \Delta F = \text{MARK} = \text{TxD(D1)} \)

Transmitter

Transmit output level at \( Z_A \): -5 / -25 dBm by DIP-switch
Sending equalizer: Raise upper frequency level by 20%, 40% or 60% by DIP-switch
Output impedance 130 \( \Omega \) + 150 nF || 931 \( \Omega \) non earthed and symmetrical or > 6 \( k\Omega \)

Receiver

Receive level range: 0...-47 dBm
Sensitivity -17 / -27 / -37 / -47 dBm by DIP-switch
Input impedance: 130 \( \Omega \) + 150 nF || 931 \( \Omega \) non earthed and symmetrical or > 6 \( k\Omega \)

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 560FSM11

Power supply
Supply: 18-72 VDC / 65 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
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
560FSM11 1KGT019300R0001

Note:
We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents - in whole or in parts - is forbidden without prior written consent of ABB AG.

Copyright© 2013 ABB
All rights reserved