

DFM 10N radio modem

The DFM 10N radio modem is a small multichannel transceiver for digital radio data transmission in the licence-free 433 MHz ISM band. The RF interface can have either a BNC or an SMB socket for connecting a $\lambda/4$ flag pole antenna (50 Ω impedance), which can be obtained as accessories from digades. It should be noted that the device may only be used with a $\lambda/4$ antenna with a connection that fits the antenna socket. Other antennas, especially antennas with greater antenna gain may not be connected for technical radio licensing reasons.

The modem is controlled via an RS232 interface with TTL level. The DFM 10N radio modem is to the greatest possible extent compatible with the earlier model DFM 10 with regard to both radio and control aspects. This modem's module character enables the user to incorporate it in existing devices or devices being designed with little effort.

It is official radio approval in accordance with the R&TTE guideline and can therefore be used in almost all EU countries and those countries that have signed up to the R&TTE guideline agreement without having to be registered. In accordance with this guideline a duty cycle of maximum 10% is approved. Since the DFM 10N does not have an implemented duty cycle limitation the user must ensure that the transmission time of his application does not exceed this value. The order of transmission and pause times must be in accordance with the rules of ETSI Recommendation 70-03. Before the DFM 10N can be used the user is instructed to ascertain that it fulfils all the valid approval regulations of the countries it will be used in.

Application Examples

Due to the above features of this radio modem, applications on any areas of mobile data collection are possible:

- Logistics
 - Acquisition of stock changes
 - Stock taking
- Gastronomy
 - Tele-ordering
 - Confirmatory information
- Electronic Cash
 - Radio transmission from cash terminals to the central computer
 - Higher flexibility of cash terminals
- Mobile Measuring Technology
 - No reading off on site, no manual entries
 - Difficult-to-reach measuring points are accessible
- Safety Equipment
 - Components of alarm systems
- Industrial Control Systems
 - Substitution of cabling for plant control systems
 - Plant state monitoring

and many more.



Technical Features

This radio modem is suitable for transmitting and receiving of short data blocks. The length of one data block may be up to 63 bytes and should be terminated by ETX (03H, Ctrl C). Then, automatic changing into the transmitter mode takes place, and the data block is transmitted. For data security, an SDLC protocol with automatic CRC check is used.

The application of frequency synthesizer technology facilitates the operation frequency to be set between 433,25 MHz and 434,60 MHz over 28 channels within 50 kHz spacing.

Functional Description

The DFM 10N radio modem should be connected to a TTL level serial interface port and to the 5 V power supply. "Receiving" on channel 01 is the basic condition. After the "ETX" end-of-block code is recognized, the transmitting condition is established for the data transfer period.

The output of data received can be enabled or discontinued through the RTS control line.

The operating frequency is controlled through a given format, which implements the tuning on one of the 28 different channels.

00#FxxETX

(xx = channel number from 01 to 28)

This control sequence represents a complete data set is reserved for frequency changing. The data to be transferred should be entered as ASCII characters.

Wireless Standard Solutions

Specifications:

Operating frequency:	433,25 MHz to 434,60 MHz 28 channels at 50-kHz spacing
Frequency preparation:	Synthesizer technology
Adjacent channel attenuation:	40 dB
Operating voltage:	+5,0 V DC \pm 10%
Current consumption:	Transmitter < 55mA Receiving < 40mA
Transmitting power:	typ. +9dBm e.r.p. (~8 mW)
Receiver sensitivity:	typ. -108 dBm at BER 10 ⁻³
Range:	typ. 1,000m in open space
Operational readiness:	approx. 300ms after switch on VCC
Switch-over time between transmitting and receiving:	typ. 5 ms (after completion of data transmission)
Channel switch-over time:	typ. 15 ms (ETX until new channel is valid)
Data rate on HF channel:	4,800 Baud
Transmission report:	biphase coding, CRC
Interface:	RS 232 with TTL level RXD; TXD; CTS (labelled with RTS) ASCII characters max. 63 Byte+ETX
Interface format:	9,600 Baud 8 Bit; 1 Stopbit; no parity
Antenna connector:	BNC- or SMB-socket
Be used with:	$\lambda/4$ antennas with a connection that fits the antenna socket
Dimensions:	42 mm x 68 mm x 14 mm (without antenna connection and antenna)
Operating temperature range:	from -20°C to +70°C

Pin Assignment



RTS	= Data output enable (LOW-active)
TXD	= Modem data output
RXD	= Modem data input
GND	= Ground
+5V	= Power supply

Mounting Template

