



## NM-COMM-0880

## VHF Telecommand Transmitter

### KEY FEATURES AND BENEFITS

- Supports several modulations FSK, GFSK, 4-FSK, MSK, GMSK, ASK, AFSK, FM
- Supports data-rate from 0.1kbps to 38.4kbps
- Supports several protocols HDLC, AX.25 and SYNCWORDMATCH
- Supports GFSK and GMSK of 0.3 and 0.5 Time products (BT) respectively
- In-built temperature protection, voltage Standing Wave Ratio (VSWR) protection
- Forward and reverse power, fan failure, VSWR failure and fault indications
- Ethernet interface to PC/server
- 19" rack mountable 3U case
- Doppler frequency compensation by estimation
- User interface : Front panel with LCD display, keypad and LED status indication

### APPLICATIONS

- CUBESAT telecommand



### DESCRIPTION

The NM-COMM-0880 module is a configurable modulator with an operating data rate of 0.1kbps to 38.4kbps and supports modulation schemes with the frequency range of 144MHz to 148MHz. It is used for telecommand signal modulation and high power generation.

### BLOCK LEVEL EXPLANATION

#### FRONT PANEL

The VHF Telecommand Transmitter has a front panel which contains the numerical and navigation keys for configuration, Light Emitting Diodes (LED's) for status indication and Liquid Crystal Display (LCD) for displaying the status and other information. The forward power, reverse power and other health status of the module is monitored continuously using the front-panel LCD display and LED indications. It is operated on 88V AC to 264 V AC power supply and has in-built antenna polarization switch drive.

#### ETHERNET

The telecommand data is received through Ethernet communication. The modulation, framing and all other parameters of a telecommand transmitter are configurable. It supports forward error correction for the HDLC protocol and CRC support for all protocols.

#### POWER SUPPLY

The module supports configurable output power from 4W to 60W (230V AC to 13V DC) with in-built temperature and high reverse power protection circuits.

#### MODULATOR

The signal received from the signal processing unit is modulated by this section and converted to VHF frequency.

#### SIGNAL PROCESSING UNIT

The signal processing unit receives the input through the external interface and sends to the modulator. All front panel applications of DP-COMM-8008 module are controlled by this unit.

#### ISOLATOR

A high power isolator in between the bidirectional coupler and the power amplifier protects the power amplifier during open conditions of the antenna.

**SPECIFICATIONS**

<b>ELECTRICAL SPECIFICATIONS</b> Frequency range: 144MHz to 148MHz Spurious response: <60dB (Second harmonics <35dB) Modulations: FSK, GFSK, 4-FSK, MSK, GMSK, ASK, AFSK and FM Data-rate: 0.5kbps to 38.4kbps (AFSK 1.2kbps only) Protocols: HDLC, AX.25 and SYNC WORD MATCH Error correction: Viterbi (1/2) for HLDC Frequency stability: <3 ppm Scrambler: K9NG/G3RUH Encoding schemes: NRZ, NRZI with scrambler Supply current( Max.): 2.0A (230V) Polarity switch control: RHCP / LHCP		<b>INTERFACE</b> Interface: Ethernet User interface: Front panel with LCD display, keypad and LED status indication	
<b>POWER</b> Supply voltage: 88V AC ~ 264V AC (47Hz ~ 43Hz) Output power: 4W to 60W (Max.)		<b>MECHANICAL</b> Weight: 11kg Size: 19" rack mountable 3U case	
<b>CONNECTOR</b> Output connector: N - type (Female)		<b>ENVIRONMENTAL</b> Temperature range: 0°C to +35°C	
		<b>AVAILABLE PRODUCT OPTIONS</b> Maximum data rate: Upto 115.2kbps for FSK, 4-FSK, GFSK, GMSK, MSK and ASK except AFSK (1.2 kbps only) and FM modulations Custom frequency: 27MHz to 525MHz, 800MHz to 1050MHz (10MHz bandwidth) Encryption: AES 128 or 256	

**BLOCK DIAGRAM OF NM-COMM-0880**

