WATKINS-JOHNSON

952.00

WJ-9472 TWO-CHANNEL FSK DEMODULATOR SYSTEM

FEATURES

- FSK or OOK Demodulation
- Frequency shifts in 1 Hz increments from less than 10 Hz to greater than 9000 Hz
- Multipole Baud Rate Matched Filters, 10 to 4000 Baud
- Microprocessor Control for Operational Flexibility
- Modular Construction for Easy Maintenance

OPTIONAL FEATURES

- Oscilloscope Tuning Display With WJ-9472/SMU Plug-In
- DFSK or Diversity Demodulation With WJ-9472/DDU Plug-In
- IEEE-488 or RS-232 Control With WJ-9472/488 or WJ-9472/232

DESCRIPTION

The WJ-9472 Two-Channel FSK Demodulator System provides a maximum of flexibility in a minimum of space. The basic WJ-9472 System consists of one WJ-9472/CRF Control Rack Frame and two WJ-9472/DU Plug-In FSK Demodulator Units.

The WJ-9472/CRF will accept and provide power for the two WJ-9472/DU Demodulator Units as well as the optional WJ-9472/SMU Plug-In Oscilloscope Tuning Display and the optional WJ-9472/DDU Plug-In DFSK/Diversity Unit. The WJ-9472/CRF contains the control and display circuitry to operate the basic system. This control is exercised through front panel switches which are interpreted by the system microprocessor.

All of the signal parameters for each of the two WJ-9472/DU Plug-In FSK Demodulator Units can be set independently. Front panel controls allow selection of input source, signal sense, and mode, i.e.: FSK (Frequency Shift Keying) or OOK (On-Off Keying).

Mark and space frequencies may be entered independently in the 200 to 9999 Hz range with 1 Hz resolution; alternately, the frequencies can be entered in terms of center frequency and shift. The optimal sixth order mark and space filters are electronically matched to the signal by entering the keying speed in baud from 10 to 4000 baud or by entering the element length in milliseconds.

The analytical capability of the WJ-9472 may be enhanced with the addition of the WJ-9472/SMU Signal Monitor Unit. This unit provides seven signal display formats which allow the operator to quickly determine the signal type, achieve proper tuning and parameterize the signal. With the WJ-9472/SMU it is possible to determine frequency shifts to better than 1 Hz accuracy.

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SPECIFICATIONS

WJ-9472/CRF

Number of Inputs	2
Input Frequency Range	200 Hz to 9.999 kHz
Input Impedance	600 Ω BNC input standard. Other inputs available
Input Level	−40 dBm to +10 dBm into 600 Ω without performance degradation. +30 dBm into 600 Ω without damage. Other levels available
Remote Control	RS-232 or IEEE-488 interfaces optional
Local Control	
Channel Select	
Source Select	
Mode Select	
Normal/Inverted Sense Select	
Data On/Off	
Tuning Rate	
Space and Mark Frequency or Center Frequency and Shift Select	
Keying Speed or Element Length Select	
Local/Remote Select	
Power On/Off	
Outputs:	
Digital	Bipolar keyed data, EIA RS-232C or MIL-STD-188C; or monopolar, MOS/TTL compatible, 50 Ω nominal impedance
Analog	Translated and filtered mark and space IF outputs, 50 kHz at −10 dBm nominal into 50 ohms
Power Requirements	115/220 Vac ±10%, 48-420 Hz
Power Consumption	50 watts approximately, with all modules installed
Dimensions	5.22 inches high, 19 inches wide, and 18 inches deep

WJ-9472/DU

Input	As supplied from the WJ-9472/CRF
Input Frequency Range	200 Hz to 9.999 kHz
Demodulation Modes	FSK and OOK
FSK Mode:	
Demodulation Method	Independent mark and space detection with sixth order, baud rate matched filters
Tone Frequencies	Mark/space frequencies from 200 Hz to 9999 Hz in 1 Hz steps
Tuning Mode	Tone selection by specifying either mark and space frequencies or center frequency and shift
Baud Rate	Less than 10 to greater than 4000 baud
Threshold	Automatic adaptive threshold selection
OOK Mode:	
Demodulation Method	Sixth order, baud rate matched filter
Tone Frequency	200 Hz to 9999 Hz in 1 Hz steps
Baud Rate	Less than 10 to greater than 4000 baud
Threshold	Automatic adaptive threshold selection

OPTIONS

WJ-9472/SMU

Display	1" x 3" CRT
Front Panel Controls	
On/Off, Intensity	Variable
Focus	Variable
Sweep Range	0.2, 0.5, 1, 2, 5, and 10 ms/Division
Variable Sweep	Vernier, pull for triggered sweep

FM Filter	Varies the bandwidth of the low pass FM display post detection filter
Gain	Variable
Channel Select	One of two
Function Select	
FM Display	
Tone Amplitude Vector Display	
Phasor Diagram Display	
Raw Data	
Square Data	
Dual Data (chopped display)	
DFSK Tone Amplitude Vector Display	
Outputs	X and Y for external display. Output impedance is 50 ohms nominal. Typical open circuit output level to 900 millivolts peak-to-peak (X output) and to 300 millivolts peak-to-peak (Y output)

WJ-9472/DDU

This DFSK/Diversity Unit accepts the input from the two WJ-9742/DU basic Demodulator Units and provides four (4) operating modes:

1. Split – The two demodulator channels operate independently.
2. Selection Diversity – The stronger of the two demodulator inputs is automatically selected.
3. Combination Diversity – The output of the two demodulators is summed and detected.
4. DFSK – Demodulates DFSK (four frequency FSK) providing two digital data channels out, with synchronous or asynchronous operation to greater than 2500 baud and with front panel selection of the decoding rule (all 24 permutations).

WJ-9472/232 RS-232 Remote Interface Option

The RS-232 rear panel connector links the Demodulator with any remote RS-232 compatible terminal or modem. All Demodulator settings can be controlled and monitored remotely.

WJ-9472/232-1 "Daisy Chain" Option

With the WJ-9472/232-1 "Daisy Chain" option the Demodulator can be connected in a series chain allowing one remote controller to address up to 16 Demodulator Systems.

WJ-9472/488 IEEE-488 Remote Interface Options

The IEEE-488 connector links the Demodulator with any remote IEEE-488 compatible unit. All Demodulator settings can be controlled and monitored by remote control.

WJ-9472/CRF-1 Current Driver Option

Modified version of the WJ-9472/CRF Control Rack Frame. Provides additional outputs for driving two independent current loop loads at 20 to 60 mA monopolar (single current) or bipolar (double current). Used chiefly for older style mechanical magnet driven teleprinters.