WATKINS-JOHNSON

959.00

# WJ-9478-1 TUNABLE FREQUENCY CONVERTER

## FEATURES

- Five Bandwidths
- 250 kHz to 30 MHz Tuning Range
- IEEE-488 Remote Control
- Excellent Phase Linearity
- 50 dB Spur-Free Dynamic Range
- Manual/Average AGC/Pulse AGC
- Two +10 dBm Outputs

## DESCRIPTION

The WJ-9478-1 Tunable Converter provides frequency conversion of signals from 250 kHz to 30 MHz to one of five output frequencies ranging from 125 to 1600 kHz. Any of five bandwidths may be selected, either from the front panel or over the IEEE-488 remote control bus. The output center frequency depends upon the selected bandwidth and has been chosen to provide the lowest practical center frequency consistent with the bandwidth selected. This makes the WJ-9478-1 ideal for IF-to-tape conversions or as a front end for digital signal processing. All local oscillators are phase locked to the master reference. A precision frequency reference is provided internally, and there is a provision for using an external reference.

Control of the WJ-9478-1 is via the IEEE-488 bus or locally from the front panel. Tuned frequency may be entered by numeric entry on the keypad or by turning the main tuning knob. AGC modes and AGC time constants are selected from the keypad. Gain may be controlled by the front panel manual gain control. The front panel meter indicates signal strength while in AGC mode and output level while in manual gain mode. The tuned frequency is displayed on the LED numeric readout. All other settings are indicated by LEDs on the front panel. The IEEE-488 bus may be used to control all functions of the WJ-9478-1. Signal strength or output level and all control settings may be read back over the bus even if the unit is under local control.

This converter provides an adjustable gain of 15 to 60 dB. Two identical outputs at a nominal level of +10 dBm into 50 ohms are provided. All internally generated spurious signals are rejected by a minimum of 50 dB.

For Further Information Please Contact:
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Printed in U.S.A.

MARCH 1988

Third order products and harmonics are also a minimum of 50 dB down. Phase linearity has been optimized through the use of precision IF filters. The AGC circuit provides leveling of the output signal. A front panel lamp alerts the operator if the unit is tuned below the minimum frequency limit for the bandwidth selected.

## SPECIFICATIONS

| | |
|---|---|
| Frequency Range | 250 kHz to 30 MHz, lower limit depending upon selected bandwidth |
| RF Input | 1, BNC, 50 ohms, VSWR 1.5:1 maximum |
| RF Input Level | −5 to −50 dBm |
| Image Rejection | 55 dB minimum |
| Internally Generated Signal | −50 dB minimum |
| Single or Two Tone Intermod | −50 dB minimum |
| LO Leakage at RF Input | −100 dBm maximum |
| Tuning Range | Tunable from 0 to 15 MHz with the minimum usable tuned frequency depending on bandwidth. (See following table) |

Filter Bandwidths:

| Bandwidth | Minimum Tuned Input Center Frequency | Output Center Frequency |
|---|---|---|
| 2.4 MHz | 1,450 kHz | 1600 kHz |
| 1.2 MHz | 750 kHz | 800 kHz |
| 300 kHz | 400 kHz | 200 kHz |
| 150 kHz | 300 kHz | 125 kHz |
| 100 kHz | 300 kHz | 125 kHz |

| | |
|---|---|
| Phase Linearity | ± 15 degrees over 80% of selected bandwidth |
| Local Oscillator Stability | 1 part in $10^7$ |
| Tuning Resolution | 100 Hz steps |
| External Reference Input | 1, BNC, 50 ohms, 10 MHz |
| Gain Control | Manual, step size less than 0.5 dB with 45 dB of range either front panel or remote control. AGC average of AGC peak, output leveled to within 1 dB. AGC time constants: 1 ms, 3 ms, 10 ms, 30 ms, 100 ms |
| Outputs | Two, BNC, 50 ohms, VSWR 1.5:1 maximum. Output level 10 dBm nominal |
| Operating Temperature | 0 to 50°C, performance guaranteed at 25°C ±5° |
| Power Requirements | 115/230 Vac ± 10%, 50 to 400 Hz |
| Power Consumption | 65 watts, typical |
| Dimensions | 19 inches wide, 23.5 inches deep, 5.22 inches high |
| Weight | 40 pounds, approximate |