

Voltage Controlled Crystal Oscillator

DCC:  E1600377

Description

The voltage controlled crystal oscillator uses a design similar to the Low Noise VCO but with the oscillator from the RF source. None of the GPS timing synchronization is implemented neither. Instead, the tune input is available at the front panel. The RF frequency is mainly determined by the installed OCXO. The frequency can be readback through a comparator/frequency counter unit from the timing system. A power monitor is available at the output of the VCXO. This signal together with a temperature reading can be accessed through 25-pin D-sub on the read panel. There is also a BNC output which has a higher bandwidth. The tune voltage is also available on the rear connector. The unit requires +/-24V and +/-16.5V.

Power Monitors

The nominal slope of the power monitor is -100 mV/dBm with a reading of 4 V at 12 dBm. The formula is

$$\text{Power Level} = 12 \text{ dBm} - 10 \text{ dBm/V} * (\text{Voltage Reading} - 4 \text{ V})$$

Conversion table:

RF power Internal	RF power External Monitors	Voltage reading
30 dBm	10 dBm	2.3V
20 dBm	0 dBm	3.2V
10 dBm	-10 dBm	4.2V
0 dBm	-20 dBm	5.2V
-10 dBm	-30 dBm	6.2V
-20 dBm	-40 dBm	7.2V
-30 dBm	-50 dBm	8.0V

The temperature readout uses the following conversion

$$\text{Temperature} = 20 \text{ }^\circ\text{C} + 50 \text{ }^\circ\text{C/V} * (\text{Voltage Reading} - 6 \text{ V})$$

Specifications

DCC: 🌐 E1700010

Frequency range:

- 5 MHz - 250 MHz minimum

Oscillator:

- Wenzel OCXO

RF output (1):

- +13 dBm, fixed
- N female

Tune input (1):

- +/-10V, 0.7 ppm/V
- bandwidth >100 kHz
- 1.6 Hz/40 Hz pole/zero pair
- TNC female

Phase noise:

Frequency	Phase noise spec
10 Hz	-110 dBc/Hz
100 Hz	-140 dBc/Hz
1 kHz	-160 dBc/Hz
10 kHz	-165 dBc/Hz

Amplitude noise:

Frequency	AM noise spec
10 Hz	-120 dBc/Hz
100 Hz	-150 dBc/Hz
1 kHz	-150 dBc/Hz
10 kHz	-150 dBc/Hz

External RF power monitors (2):

- <10 dBm
- N female