



## Features

- 10MHz to 15GHz frequency range
- Low phase noise
- Calibrated output power -20dBm to +13dBm
- Wide input voltage range: 5V~15Vdc @ 6W
- USB, Ethernet, TTL serial, interfaces.
- 12V POE (w/optional Ethernet adapter)
- External reference 5MHz to >100MHz
- Compact 3.2"x4.3"x0.485"

## Electrical Specifications

Note: The 5015 is **NOT** USB powered. You may purchase a Valon **PS6V-1** power supply kit.

### DC Input

<b>Input Voltage Range</b>	<p>Absolute Max +16V to -16V (reverse protected)</p> <p>Operational Max +15v</p> <p>Operational Min +4.5V</p> <p>+4.8 to 5.8V (output power reduced)</p> <p>+3.5V (synthesizer remains locked and serial port ok)</p> <p>16V for &gt;10sec resets the synthesizer to factory default settings</p>
<b>Input Power</b>	<p>6 Watts normal operation</p> <p>300mW Standby</p>
<b>DC Input Connector</b>	<p>Hirose DF3A-2P-2DS</p> <p>Mates with Hirose DF3-2S-2C plug and pre-crimped wire H2BXT-10112-R4 (red) and H2BXT-10112-B4 (black). Custom 20" dc cables supplied with synthesizer, additional cables available.</p>

## RF Synthesizer Specifications

<b>Frequency Range</b>	10MHz to 15GHz								
<b>Frequency Increment</b>	1Hz for frequency < 4GHz, 10Hz for frequency > 4GHz								
<b>Frequency Lock Time</b>	<p>&lt;100uS</p> <p>Lock time is from the time the frequency command is sent, or a frequency step in sweep mode, or input from User Port in List mode to a stable Lock Detector output</p>								
<b>Phase Noise</b>	<p>Typical phase noise (+6dB max)</p> <p>*Note that phase noise at &lt;100Hz offset can be improved typically &gt; 15dB with external reference.</p>								
	<b>10Hz*</b>	<b>100Hz</b>	<b>1kHz</b>	<b>10kHz</b>	<b>100kHz</b>	<b>1MHz</b>	<b>10MHz</b>		
15GHz	-35	-66	-90	-101	-104	-112	-133		dBc/Hz
13GHz	-40	-68	-91	-102	-106	-112	-134		dBc/Hz
10GHz	-50	-68	-94	-104	-107	-120	-140		dBc/Hz
8GHz	-51	-70	-95	-105	-108	-120	-141		dBc/Hz
6GHz	-50	-70	-98	-109	-112	-121	-142		dBc/Hz
4GHz	-53	-74	-102	-114	-117	-126	-144		dBc/Hz
3GHz	-58	-78	-105	-116	-120	-127	-148		dBc/Hz
2GHz	-61	-77	-108	-118	-122	-132	-150		dBc/Hz
1GHz	-70	-84	-114	-125	-127	-138	-150		dBc/Hz
0.5GHz	-75	-90	-118	-130	-132	-143	-155		dBc/Hz
<b>Harmonics</b>	The output waveform is a clipped sine wave. Harmonics are typically 12dBc. Odd harmonics are most prominent.								
<b>Spurious</b>	Non-Harmonic spurious <-60dBc								

<b>Output Return loss</b>	Min.(dB)	Typical(dB)	
10~ 100MHz	>6	10dB	
50MHz ~ 10GHz	>10	12	
10GHz ~ 15GHz	>6	8	
<b>Connectors</b>	SMA Female		

<b>RF Output Power Range</b>	Max dBm	Min dBm	
10MHz ~ 100MHz	>+10	<-30	
1GHz ~ 6GHz	>+15	<-30	
6GHz ~ 15GHz	>+13	<-30	
<b>RF Output Power Accuracy</b>	±0.7 dBm +10dBm ~-20dBm ±0.9 dBm > +10dBm or <-20dBm		

**Reference Frequency**

<b>Internal Reference</b>	Frequency	10.000MHz
	Initial Accuracy	± 2ppm (23°C) can be zeroed with reference trim command
	Temperature Stability	±0.5ppm -20°C to +70°C (case temp)
	Reference Trim Range	± 10ppm
	Reference Trim Resolution	0.02ppm
<b>External Reference</b>	Frequency Range	5MHz to 100MHz, typical max 120MHz
	Input power range	-10dBm min. to +13dBm max.
<b>External Reference Connector</b>	SMA Female 50Ω nominal impedance Note: Ext input is ac coupled to synthesizer but dc coupled to internal VCTCXO control circuit. See Operations Manual for details.	
<b>EFC</b> Electronic frequency Control at external reference input	Pulling range >±10ppm Voltage ±3V Input resistance 20kΩ Frequency response 0Hz~>5kHz	

**Interface**

<b>USB</b>	<b>Micro-B socket</b> FTDI virtual com port 9600, 8, N,1,N default, see selectable baud rates below See FTDI for drivers for your computer. Note: The Configuration Manager GUI will automatically configure the USB port and switch to 115200 baud rate.
<b>Ethernet</b>	10BASE-T/100BASE-TX compliant with IEEE 802.3. 8-pin Hirose 2mm connector or optional external RJ-45 module and cable adapter.
<b>USER PORT</b>	3.3V TTL TXD & RXD serial, 5-bit List Mode parallel, Sweep trigger in, Sweep step out, Sweep enable out. All 3.3V TTL Hi-Z input, 200 ohm output. Optional SPI control with SCL MISO MOSI SEL (custom available on request) Lock detect output. Connector: Hirose DF11-8DP-2DS Mates with Hirose DF11-8DS-2C plug and pre-crimped wireH3BXT-10112-** (Digi-Key) <b>LSW-1</b> LIST Mode switch and cable accessory is also available.
<b>Selectable Baud Rates</b>	USB, serial TTL: 9600, 19200, 38400, 57600,115200, 230400, 460800, 921600

**Environmental**

Operational full specifications:	-0°C~+60°C (case temperature, heat sink required)
No damage functional:	-20°C~+70°C (case temperature)
Humidity:	5%~95% minimal condensation allowed
IP rating:	50 No water protection.

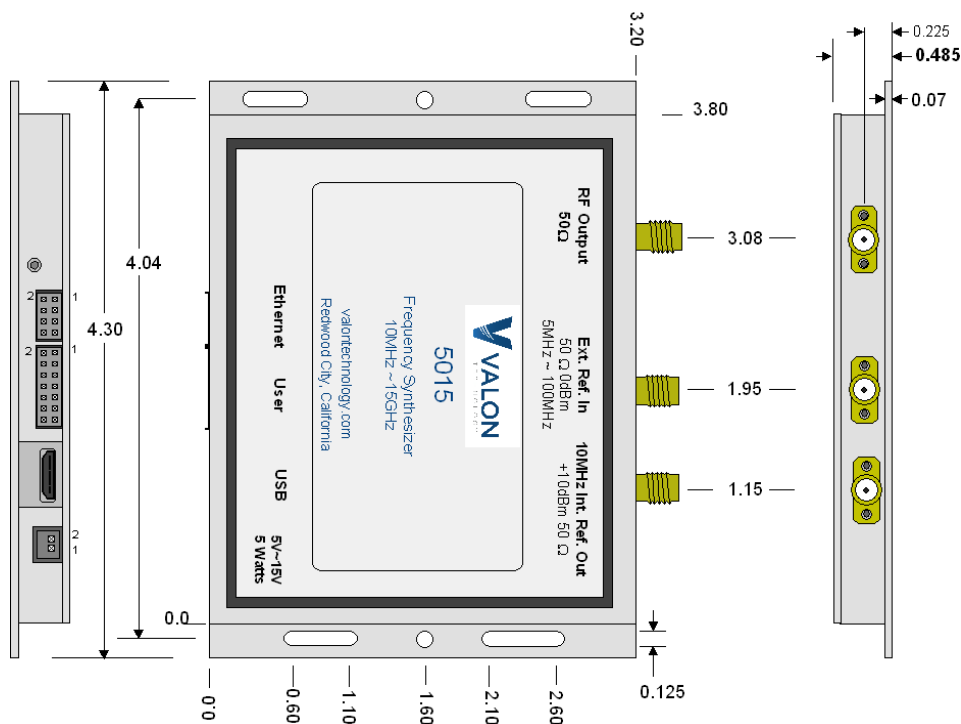
## Mechanical Dimensions

3.2"x 4.3"L x 0.485"

Weight: 0.37lbs, 165g

Material: AL-6061-T6

Finish: Clear Alodine (conductive)



### Ethernet Adapter Optional Accessory Eth-01

Provides Ethernet connectivity using standard RJ-45 connector. Allows the synthesizer module to be remotely mounted up to 8" away from Ethernet connector location. Designed for bulkhead panel mounting.

