

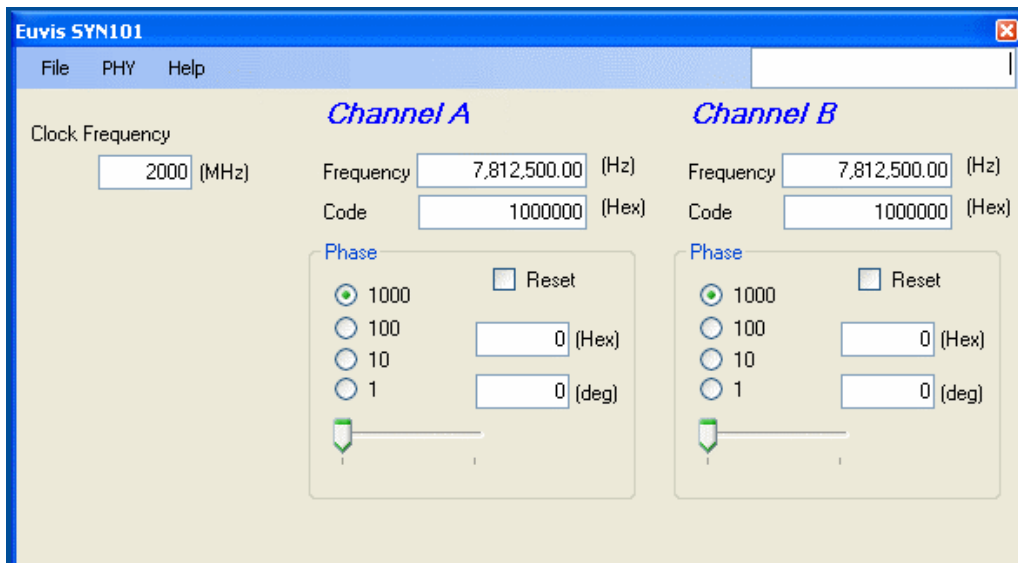
## SYN101 – Digitally Delayed Clock Frequency Synthesizer

### PRODUCT DESCRIPTION

The *SYN101* modules generate two CW sinusoidal waveforms at frequencies up to 1 GHz with programmable delay. The *SYN101* can be controlled by a PC via a USB interface. The module comprises two direct digital synthesizers (DDS), *DS875*, which have 30-bit frequency resolution and 11-bit phase resolution. Each DDS provides an independent RF channel with adjustable frequency from DC up to 1 GHz and adjustable phase from  $0^\circ \sim 360^\circ$  in 11-bit resolution. The *SYN101* is equipped with an on-board 2-GHz PLL clock source and powered by a 12V wall-mount AC adapter.

### KEY FEATURES

- Two independently controlled channels (A and B) with differential analog outputs
- Adjustable frequency 0 ~ 1 GHz in 30-bit resolution
- Adjustable phase  $0^\circ \sim 360^\circ$  in 11-bit resolution
- On-board clock source; there is no need of external clock
- Friendly control by graphical user interface (GUI)
- Companion API for embedded system development
- USB 2.0 compliant interface (other interfaces available upon request)
- 10.6 W power consumption with +12V DC power supply
- +12V wall-mount power supply included



**ELECTRICAL SPECIFICATIONS**

Parameter	Symbol	Min	Typical	Max	Unit
Operating Temperature	$T_o$		25		°C
Output Frequency	$F_{out}$	0		1	GHz
Frequency Resolution	$Df$		1		Hz
Adjustable Phase	$f_{out}$	0		360	deg
Phase Adjustment Resolution	$Df$		0.18		deg
Output Level	$V_{out}$	-635		0	mV
Output Power	$P_{out}$	-4		0	dBm
Output Residue Phase Noise <sup>1</sup>	$N_f$		-145		dBC/Hz
Clock Port Return Loss	$RL_{CK}$		10		dB
Output Port Return Loss	$RL_{RF}$		15		dB
Power Supply	+12V		+12		V
	$I_{+12}$		880		mA

<sup>1</sup>10 KHz offset

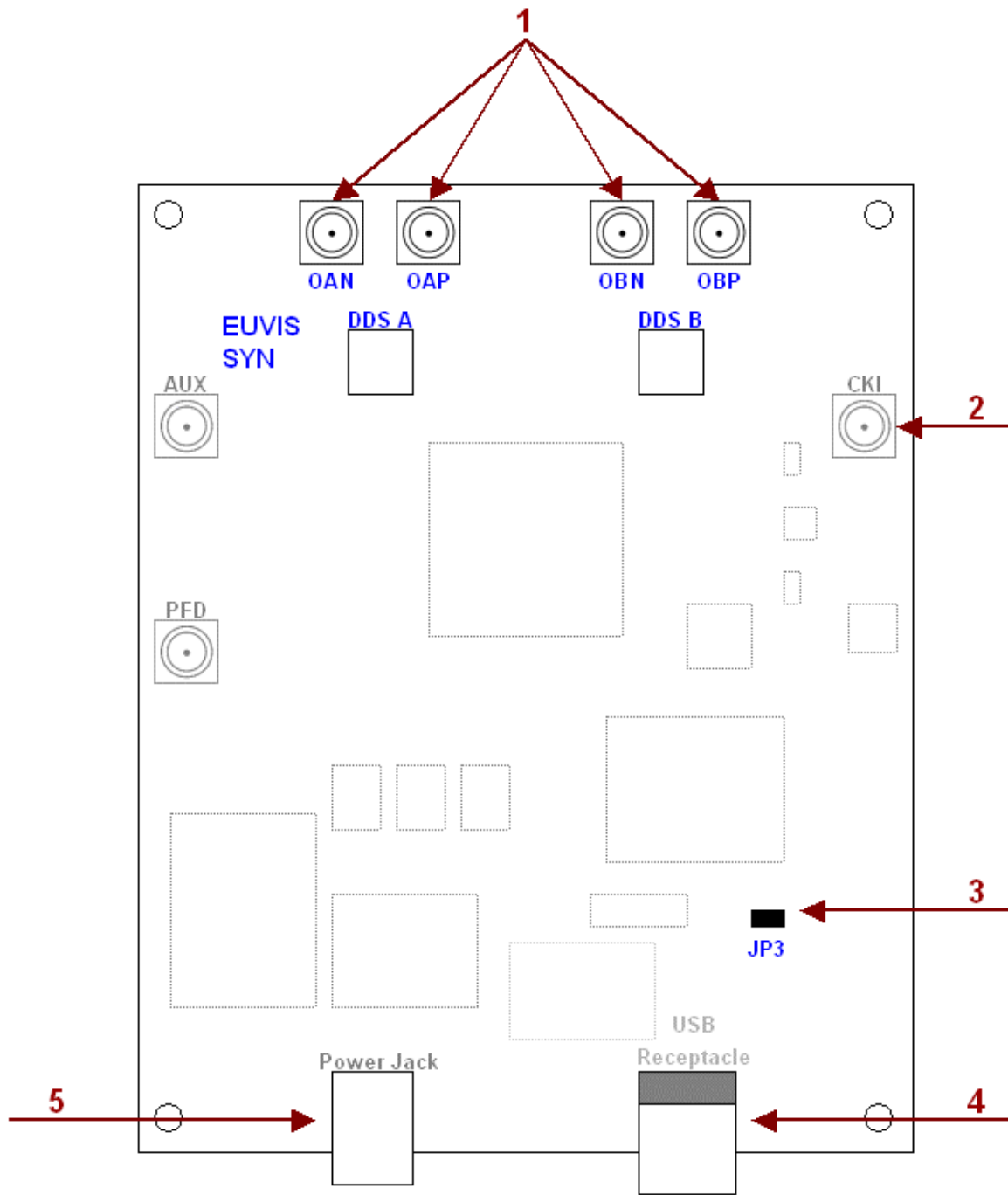
**TERMINAL DESCRIPTION**

Name	Function	I/O	Signal
GND	Ground		DC
+12V	Power, +12 V		DC
OAP	Channel A Waveform Output Positive	O	RF
OAN	Channel A Waveform Output Negative	O	RF
OBP	Channel B Waveform Output Positive	O	RF
OBN	Channel B Waveform Output Negative	O	RF

**DETAILED SPECIFICATIONS**

<b>General</b>	
Output Frequency Resolution	30 bits
User Interface	Windows XP Graphical User Interface, USB 2.0
<b>Output</b>	
Type	Differential, 50-Ω terminated
Connector Type	SMA
Output Sampling Rate	2 GSPS
Frequency Range	DC to 1 GHz
Output Level <sup>1</sup>	-600 mV ~ 0 V at DC
Output Power	-4 dBm to 0 dBm
Output Phase Noise	-145 dBc/Hz at 10 KHz
Output Return Loss	15 dB
<b>Options</b>	
On board PLL clock generator	
Programmable Startup Waveforms	

**BOARD DIAGRAM**



**DIMENSIONS AND MOUNT HOLE LOCATIONS**

Length	5 inches
Width	4 inches
Height	1.75 inches with heat sink (0.6 inches without heat sinks)
Weight	Less than 1 lb
4 Mount Hole Locations (mils. Origin is lower left corner)	250, 250 250, 3875 4750, 250 4750, 4750

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**Ordering Information:**Email to: [Sales@euvis.com](mailto:Sales@euvis.com)

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