



## Ultra Low-Noise C-Band Synthesizer CSYN5053-ULN

This extremely low-noise C-Band synthesizer covers the frequency range from 5.04GHz to 5.34GHz in 1Hz steps, generating a very stable and pure signal with +13dBm output power. Referred to the reference frequency (100MHz), its phase noise is lower than that of many crystal oscillators.

The provided reference input must be connected to a high grade 100MHz reference to leverage the full potential of the synthesizer.

Besides low phase noise and fine frequency resolution, the employed technology, in principle, also allows for high switching speeds in the microseconds range.

Frequency setting can either be done manually with limited resolution (100kHz) via four BCD switches or electronically with full resolution via a galvanically isolated (optocouplers) 3-wire interface. Other interfaces are available on request.

A status signal (TTL-level) monitors important modules of the frequency generating chain, signalling the lock-state of the synthesizer.

+5V and +15V supply voltages are required with power consumption of less than 6 Watt.

**Technical Data:**

<b>Frequency Range:</b>	5,04GHz - 5,34GHz in 1Hz Steps (100kHz via BCD-Switches)		
<b>Output Power:</b>	+13dBm		
<b>Output Power Variation:</b>	typ. < ±0,5dB (max. < ±1dB)		
<b>Harmonic Distortion:</b>	typ. > 40dB (min. > 35dB)		
<b>Discrete Spurious Tones:</b>	typ. > 70dB (min. > 60dB)		
<b>Switching Time:</b>	ca. 3mSec		
<b>Phase Noise *):</b>	Offset		
	100Hz	< - 95dBc/Hz	typ. -100dBc/Hz *)
	1kHz	< -115dBc/Hz	typ. -125dBc/Hz *)
	10kHz	< -125dBc/Hz	typ. -130dBc/Hz *)
	100kHz	< -130dBc/Hz	typ. -135dBc/Hz *)
	1MHz	< -135dBc/Hz	typ. -140dBc/Hz *)
<b>Lock Detect Alarm:</b>	locked/unlocked +5V/0V (TTL-level)		
<b>Supply Voltages:</b>	+ 5V / ca. 1100mA +15V / ca. 35mA		
<b>Temperature Range:</b>	0° .. +50°C		
<b>Connectors:</b>	2 x SMA (100MHz-Input, RF-Output) 14pol. Header for Supply Voltages, Ground, 3-Wire Interface and Lock Detect Alarm		
<b>Mechan. Dimensions:</b>	100 x 73 x 24mm (incl. Baseplate, Connectors and Control-PCB)		

\*) The indicated typical phase noise values are measured with a high grade 100MHz reference whose phase noise of -135dBc/Hz at 100Hz offset determines the synthesizer's noise at that offset. At all higher offsets the reference must fulfil the phase noise requirements below, in order not to degrade the synthesizer's performance by more than 3dB.

<b>Phase noise requirements for the 100MHz reference:</b>	@	100Hz	<-135dBc/Hz
		1kHz	<-160dBc/Hz
		10kHz	<-165dBc/Hz
		100kHz	<-170dBc/Hz

**Typical Phase Noise Plot:**

