

Mini-PClexpress LTE-Lite

Low Cost 20 MHz GPSDO Module

Typical Electrical Specifications

Module Specifications	
1 PPS Timing Accuracy from GPS receiver	<10 ns to UTC RMS (1-Sigma) GPS Locked
Holdover Stability (1 week with GPS)	< ±50 µs over 3 Hour Period @ +25°C (No Motion, No Airflow)
1 PPS Output	3.3 V DC CMOS, as well as on DCD# pin of COM port for NTP/1588
Serial Port	COM Port, NMEA Output with Oscillator Status/Health sentence
GPS Frequency	L1, C/A 1574 MHz
GPS Antenna	Active or Passive (0 dB to +30 dB gain)
GPS Receiver	65 Channels, QZSS, SBAS WAAS, EGNOS, MSAS capable
Sensitivity	
Acquisition	-148 dBm
Tracking	-165 dBm
GPS TTFF	
Cold Start	<32 sec
Warm Start	1 sec
Hot Start	1 sec
ADEV	
10 s	<7E-011
10K s	<2E-012 (GPS Locked, 25°C, no motion, no airflow)
TTL Alarm Output	CMOS LOCK indicator, LOCK LED
Warm Up Time/Stabilization Time	<10 min at +25°C to better than 1E-09 Accuracy
Supply Voltage (Vdd)	Via Mini-PCle connector, 3.3 Single-Supply, +0.2 V/-0.15 V
Power Consumption	<0.2 W
Operating Temperature	-10°C to +70°C, -40°C to +85°C optional
Additional Features	Can be connected to standard USB port via adaptor, U.FI coax connectors for 1 PPS/20 MHz/LOCK-OK/GPS antenna



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Oscillator Specifications		
Frequency Output of Low Phase Noise Crystal	20 MHz CMOS 3 Vpp on U.FI coax connector	
Optional Synthesized CMOS output (Phase-Locked to 20 MHz)		
Resistor-Stuffing selectable	80 MHz/40 MHz/26.666 MHz/16 MHz/13.333 MHz/10 MHz/5 MHz	
20 MHz Retrace	±2E-08 After 1 Hour @ +25°C without GPS	
Frequency Stability Over Temperature (0°C to +60°C)	±100 ppb (without GPS)	
RF Output Amplitude	3 Vpp CMOS	
20 MHz Phase Jitter (100 Hz to 10 MHz)	<0.135 ps RMS	
Phase Noise		10 MHz TCXO
	1 Hz	<-68 dBc/Hz
	10 Hz	<-98 dBc/Hz
	100 Hz	<-122 dBc/Hz
	1 kHz	<-142 dBc/Hz
	10 kHz	<-152 dBc/Hz
	100 kHz	<-155 dBc/Hz
Connections	Connections Type	
1 PPS CMOS Output, 20 MHz CMOS Output, LOCK-OK CMOS Output, power, USB, antenna input	Mini-PCle standard (USB interface), U.FI coaxial	

Available Crystal options and optional PLL synthesized output frequencies

The RF U.FI coax connector can either be configured via resistor stuffing options for buffered TCXO output (default, 20 MHz) or to output the following synthesized frequencies as required:

FREQ_SEL	10 MHz TCXO	15.36 MHz TCXO	19.2 MHz TCXO	20 MHz (default)
111	disabled	disabled	disabled	disabled
110	5 MHz	4.608 MHz/1.024 MHz	4.8 MHz	5 MHz
101	13.33333333 MHz	10.24 MHz/2.048 MHz	9.6 MHz	10 MHz
100	16 MHz	15.36 MHz/3.072 MHz	12.8 MHz	13.33333333 MHz
011	20 MHz	23.04 MHz/5.12 MHz	15.36 MHz	16 MHz
010	26.66666667 MHz	30.72 MHz/10.24 MHz	25.6 MHz	26.66666667 MHz
001	40 MHz	46.08 MHz/30.72 MHz	38.4 MHz	40 MHz
000	80 MHz	92.16 MHz	76.8 MHz	80 MHz

NOTE: Specifications subject to change without notice.