



QM1014 | LO1 / LO2 Synthesizer and Distribution Unit for QM1013

Typical Applications

- Frequency Conversion
- Laboratory Test Equipment
- Digital Receiver Exciter (DREX) Systems
- Digital RF Memory (DRFM) Kernel
- Communication systems, SATCOM
- EW, ELINT, SIGINT, DF
- Wideband systems
- Phased array antenna systems
- Radar systems



QM1014, 1U 19" Rack-Mount. Connector locations may vary from locations shown here

Tunable LO1 Frequency Range

10.0 – 16.0 GHz

Fixed LO2 Frequency Range

12.5 GHz

Number of Channels

4

Features

- Tunable LO1 and Fixed LO2
- Internal high-isolation divider (8 channels)
- High-quality low-phase noise LO tuners
- Signal level suitable for direct connection to QM1013

Form-Factor

- 1U 19" Rack module

General Description

The QM1014 provides the LO1 and LO2 external local oscillator signals suitable for the QM1013 upconverter. The LO distribution unit is intended for phase-synchronized MIMO applications.



Electrical Specifications
Internal Synthesizers

Parameter	Min.	Typ.	Max.	Units
Number of LO1 Output Channels		4		
Number of LO2 Output Channels		4		
Tunable LO1 Output Frequency Range	10.0		16.0	GHz
Tunable LO1 Output Power	-10	0	+10	dBm
Fixed LO2 Output Frequency Range		12.5		GHz
Fixed LO2 Output Power	-10	0	+10	dBm
Tuning Frequency Resolution (Option 101)		0.001		Hz
Tuning Speed (Option 101)			50	us
LO1 (Tunable) Phase Noise @ 10 kHz		-115	-110	dBc/Hz
LO2 (Fixed) Phase Noise @ 10 kHz		-110		dBc/Hz
LO2 (Fixed) Phase Noise @ 100 kHz		-120	-114	dBc/Hz

Internal 100 MHz Reference

Parameter	Min.	Typ.	Max.	Units
Frequency Stability vs Temp (0 to 50 degC)		+/- 5		ppb
Frequency Stability vs Internal Regulated Supply Voltage		+/- 20		ppb
Warm-Up @ 25 degC (< 3 minutes)		+/- 100		ppb
Daily Aging (after 30 days)		+/- 1		ppb
Yearly Aging		+/- 100		ppb
10-year Aging		+/- 500		ppb
Ref Phase Noise @ 1 Hz		-90		dBc/Hz
Ref Phase Noise @ 10 Hz		-120		dBc/Hz
Ref Phase Noise @ 100 Hz		-135		dBc/Hz
Ref Phase Noise @ 1 kHz		-145		dBc/Hz
Ref Phase Noise @ 10 kHz		-150		dBc/Hz
Ref Phase Noise @ 100 kHz		-150		dBc/Hz
Ref Phase Noise @ 1 MHz		-150		dBc/Hz

For price, delivery, and to place orders, please contact Quonset Microwave:
315 Commerce Park Road, Unit 3, North Kingstown, RI 02852 Phone: 401-295-0062



Additional External Electrical Specifications

Parameter	Min.	Typ.	Max.	Units
Operating Voltage		+15		VDC
Current Draw			5	Amps
External Reference Input	10		100	MHz
External Reference 1 Output		100		MHz
External Reference 2 Output		10		MHz

Environmental Specifications

Parameter	Min.	Typ.	Max.	Units
Operating Temperature	0		50	degC
Storage Temperature	-20		70	degC
Operating Humidity, Non-Condensing	10		90	%

QM1014 System Block Diagram

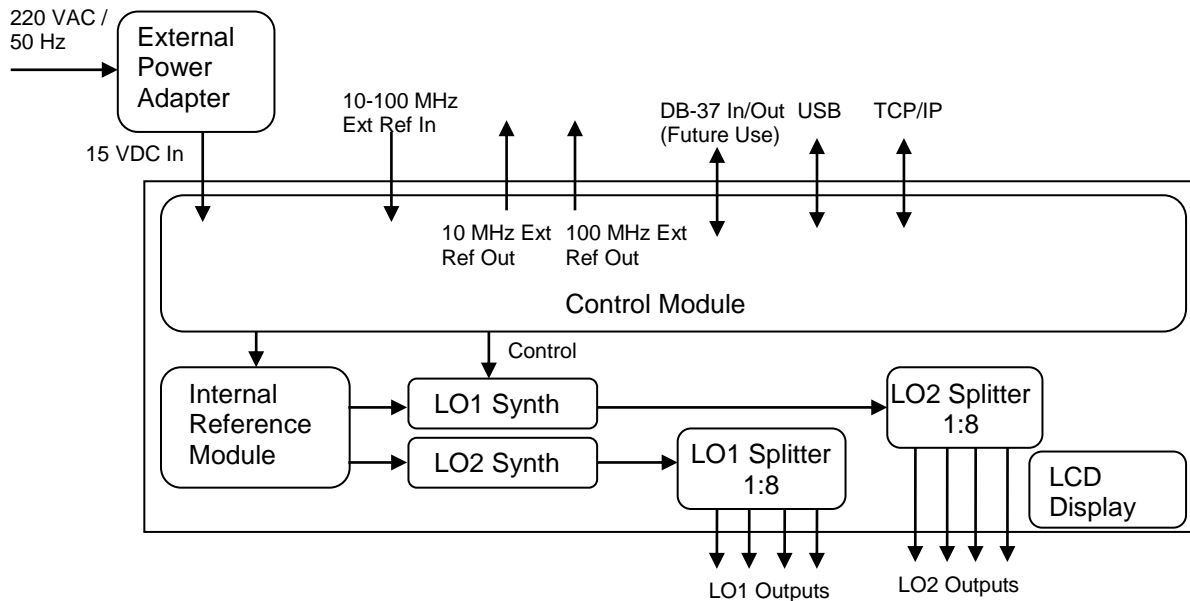


Figure 1. QM1013 block diagram – Option 101 with Internal LO

RF Signal Chain

The block diagram for the QM1014 LO distribution unit is shown in Figure 1.

Controlling QM1014 Synthesizer

The QM1014 Rack Mount Synthesizer and Distribution Unit has been designed to be VISA and USBTMC compliant. VISA drivers are provided by many Test and Measurement companies, including Agilent Technologies, National Instruments, and Tektronix. USB and TCP/IP communication and command structure is discussed in detail in the frequency conversion programming manual. A lightweight GUI, supported in Windows®, will be provided for units with internal LOs, providing control of all commonly used commands.

Interface Connections

The necessary front and back panel input/output connections on a QM1014 synthesizer is summarized in Table 1. The front-panel connections are shown in Figure 2 while the rear-panel connections are shown in Figure 3.



Figure 2. Front panel connections to QM1014 (figure is only representative, there will be slight changes).

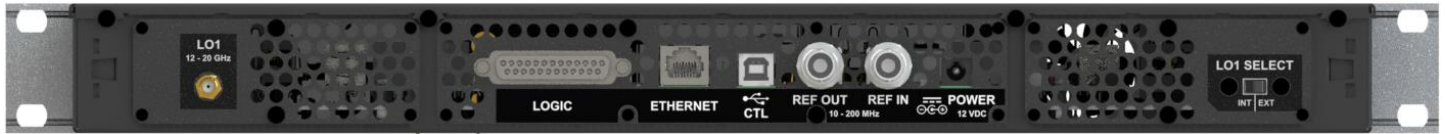


Figure 3. Rear-panel connections to QM1014 (figure is only representative, there will be slight changes).

Table 1. Input and output connections for QM1014 (19" Rack-Mount Form-Factor)

Parameter	Connector Style	Type	Location
Reference Input (10-100 MHz)	BNC	Female	Rear Panel
Reference 1 Output (100 MHz)	BNC	Female	Rear Panel
Reference 2 Output (10 MHz)	BNC	Female	Rear Panel
LO1 Output (10-16 GHz)	SMA – 4x	Female	Front Panel
LO2 Output (12.5 GHz)	SMA – 4x	Female	Front Panel
Int/Ext Ref Switch	Toggle	SPDT Switch	Rear Panel
USB	Micro-USB	Female	Rear Panel
TCP/IP	RJ-45	Female	Rear Panel
Power Jack	2.5 mm ID, 5.5mm OD Barrel	Male	Rear Panel
TTL Input (Frequency Tuning, Attenuation Control, Lock Status)	DB-37	Female	Rear Panel

Power Interface

The QM1014 LO Synthesizer Distribution Unit requires a DC input voltage of 15V applied at the power jack (2.5mm ID, 5.5mm OD barrel) on the back panel of the instrument. An AC-DC power adapter is supplied with the unit.

Absolute Maximums

Operating Temperature	+50 °C
RF Input Power	+20 dBm



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Ordering Information

QM1014-[Options]