System Interface Products

MOM - Master Oscillator Module

orbital RESEARCH

10MHz Oscillator and Mux/Tee, in one package

How to order a Master Oscillator Module (MOM)

Module
MOM - Master Oscillator Module

10MHz Precision Oscillator Connectors
J1: DC in to power Oscillator
J2: Primary 10 MHz out for BUC or LNB
J3: DC out to power BUC or LNB (MuxTee)
J4: Secondary in-phase 10MHz Out
(Always SMA to SMA. jumper included)

MOM -BSBS-NNBS

Mux/Tee Connectors
J5: To LNB, BDC or BUC
J6: To Receiver or modem
J7: DC in (from Oscillator - option)
J8: 10 MHz in (from Oscillator)

Connectors available:

J5, J6: L-Band: To LNB/BUC & Rx/Modem
F - F, 75Ω
N - N, 50Ω
S - SMA, 50Ω

J2, J4, J8: 10MHz
B - BNC (industry standard)
S - SMA (recommended for outdoor use)
N - N

J1, J3, J7: DC Supply
B - BNC (preferred)   T - TNC
S - SMA   N - N
ft - feedthru

BNC-to-pigtail adapters and BNC-to-binding post adapters for DC sold separately. See SIP price list for part number and price.

MOM Features

Oscillator
- Great phase noise: -147 dBc/Hz @ 1 kHz
- Excellent stability, long and short term
- Sine wave purity, low harmonic content

Mux/Tee
- Highpass filtered L band,
  rolloff below 900 MHz, flat 950 thru 2900 MHz
- Low thru loss from 10 MHz input to LNB
- Lowpass filtered DC, 4.0 Amp maximum
- Any in, Any out Impedance transforms (eg. 75 Ω in, 50 Ωout)
- DC block to Rx port and 10 MHz port
- Very low bandpass ripple
- Very low L band through loss
- Very high Rx to 10MHz port isolation, no leakage back to rx
- Superior Input and Output VSWR
- Protects phase noise performance
- Exceptionally low insertion loss

Functional
- Will operate with LNBs, BDCs, VSATs, BUCs, and Modems

Structural
- Machined from solid aluminum billet for strength and stability
- Anodyzed finish for corrosion protection and excellent RF shielding/grounding
- Connectors are 'O' ring sealed for weather resistant operation
- Jumpers for DC and 10MHz between Oscillator and secondary module provided by Orbital
- RoHS & REACH compliant

Oscillator and Power Supply

Orbital advises that a power supply for the Oscillator must be of good quality otherwise extraneous signals will be transferred to the Oscillator, which can degrade its performance.

Orbital provides 2 DC connectors on the Oscillator so that the input power can power the Oscillator and then is fed through to the other connector on the Oscillator, which powers the secondary device, if necessary. But when using this option, the customer must still adhere to the 15 to 24 VDC restriction of the Oscillator.
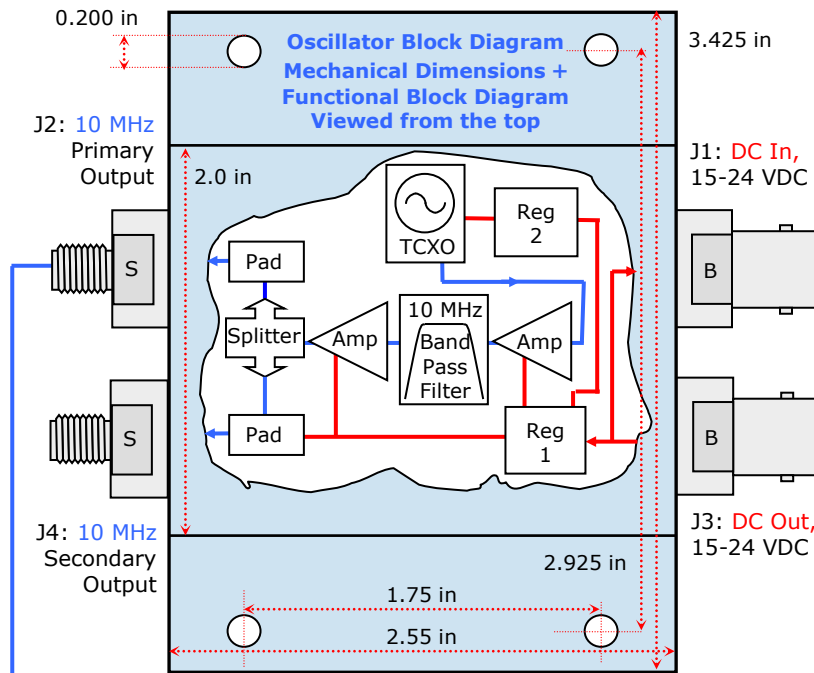
Sales contact:

David Zuvic 604 419-8585 ext 837,
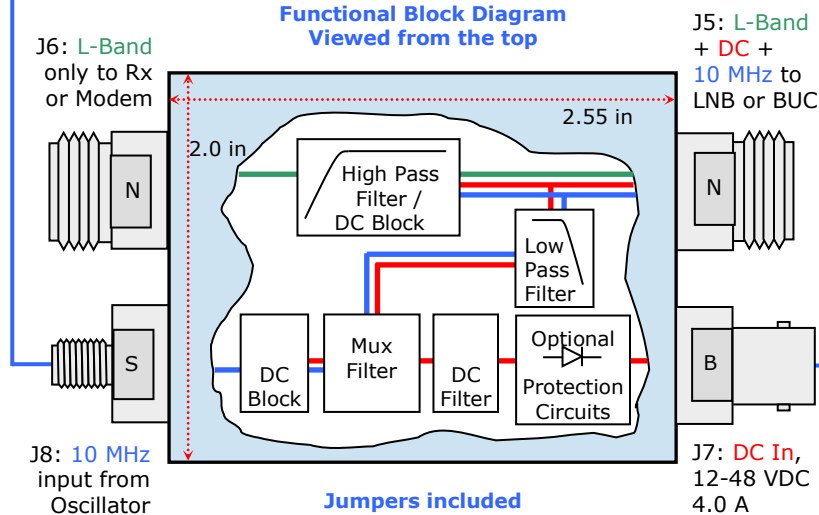dzuvic@orbitalresearch.net

Trevor Hiebert 604-419-8585 ext 836
thiebert@orbitalresearch.net

System Interface Product: MOM - Specifications

**Master Oscillator Module
Mechanical Dimensions +
Functional Block Diagram
Viewed as if dismantled**

0.200 in

**Oscillator Block Diagram
Mechanical Dimensions +
Functional Block Diagram
Viewed from the top**

3.425 in

J2: 10 MHz
Primary
Output

2.0 in

J1: DC In,
15-24 VDC

S

B

S

B

J4: 10 MHz
Secondary
Output

J3: DC Out,
15-24 VDC

2.925 in

1.75 in

2.55 in

**Orbital Mux / Tee
Mechanical Dimensions +
Functional Block Diagram
Viewed from the top**

J6: L-Band
only to Rx
or Modem

J5: L-Band
+ DC +
10 MHz to
LNB or BUC

2.55 in

2.0 in

N

N

S

B

J8: 10 MHz
input from
Oscillator

J7: DC In,
12-48 VDC
4.0 A

Jumpers included

Mux/Tee

L Band
Bandpass:	900 to 2100 MHz
Thru Loss:	0.5 dB maximum
Ripple:	±0.3 dB maximum
Input VSWR:	1.3 : 1 maximum
Output VSWR:	1.3 : 1 maximum

10 MHz
Passband:	1-100 MHz (3 dB down)
Thru Loss:	0.1 dB 10 MHz to LNB port
Isolation:	>90 dB 10 MHz to Rx port

DC
Filtering:	Hash filter, low pass filter
Resistance:	0.132 ohms (average)

10 MHz Oscillator

Frequency:	10 MHz
Output Level:	J2: +2 dBm
	J4: +2 dBm (for splitters)
Stability:	$\pm 1.5 \times 10^{-7}$, +10 to +40°C
Aging:	$\pm 1 \times 10^{-6}$ per day after 30 days
	$\pm 5 \times 10^{-6}$ per year after 180 days
Phase Noise:	100Hz -130 dBc/Hz
	1kHz -147 dBc/Hz
	10kHz -148 dBc/Hz
	100kHz -148 dBc/Hz

Power Specifications

Oscillator
Input DC Voltage:	+15 to +24 V supplied via DC input connector
Current Drain:	Approximately 100mA

Mux/Tee
Input DC Voltage:	+12 to +48 VDC
Current Capacity:	4.0A

Mechanical Specifications

Measurements:	Tolerance ±.005 in.
Size (case):	3.425l x 2.55w x 1.62h in.
Size (with conn):	3.425l x 3.8w x 1.62h in.
Weight:	10 oz
Paint / Colour:	Blue Anodyzed finish
Mounting holes:	0.200" (5mm) Accepts standard rackmounting screws: 10/32 or 10/34

RoHs & REACH Compliant

Environmental Specifications

Operating Temp:	+10 to +40° Celsius
Relative Humidity:	Up to 100% condensation and frost

Power Supply (not included with MOM)

See: PS1 brochure for North America - LNB
       PS2 brochure for Global – LNB/BUC