

MON4000

Dual-channel, Multi-band Down-converter

Features

- Covers all common cellular frequency bands
- Frequency range 400 MHz to 4000 MHz
- Wide IF bandwidth
- Excellent dynamic range
- VITA-49 output over dual GbE streams
- Two independently tuned or phase coherent receivers on a single Eurocard
- Reconfigurable decimation filtering

Description

The MON4000 is a multi-band radio frequency (RF) front-end device (FED). It provides two independent channels of RF-to-bits conversion for up to six selectable RF bands. These bands are chosen at time of manufacture from any of the bands allocated to cellular radio signals and for which appropriate 3x3 mm surface acoustic wave (SAW) filters are available. Output data are provided on two gigabit Ethernet (GbE) ports in VITA-49 format for direct compatibility with many signal processing platforms.

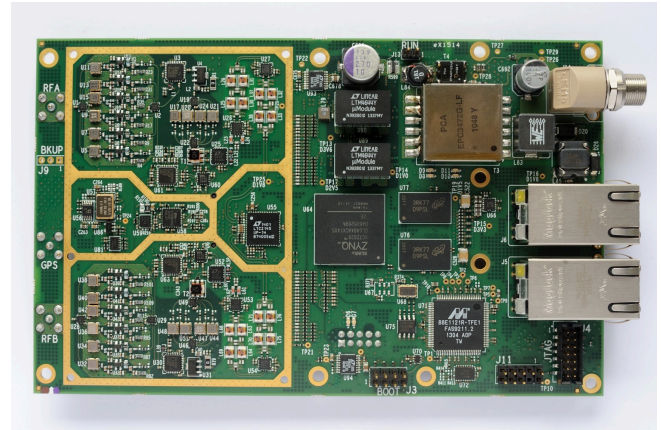
To minimise cabling the MON4000 operates from a power-over-Ethernet (PoE) supply. Alternatively it can be powered by a 12 V auxiliary supply.

An on-board GPS receiver provides time stamping for the sampled signals and is also used to stabilise the on-board reference oscillator to provide excellent frequency accuracy and stability.

The high-IF sampling capability of the MON4000 permits the use of a single stage down-converter, whilst maintaining good RF performance, which in turn minimises the design complexity and reduces size and power consumption. A wide range of gain control is available to tailor the down-converter to the prevailing signal conditions; high gain provides the best noise figure, whilst reducing the gain improves the 1 dB compression point.

The two receiver channels may be independently tuned or, with an external link, may share the same local oscillator for phase-coherent operation. Multiple cards may also be synchronised to form larger phase-coherent arrays.

Digitised signals are digitally filtered and decimated by a flexible and reconfigurable baseband processor. The standard build makes provision for a range of output rates to suit the signals of interest, but many

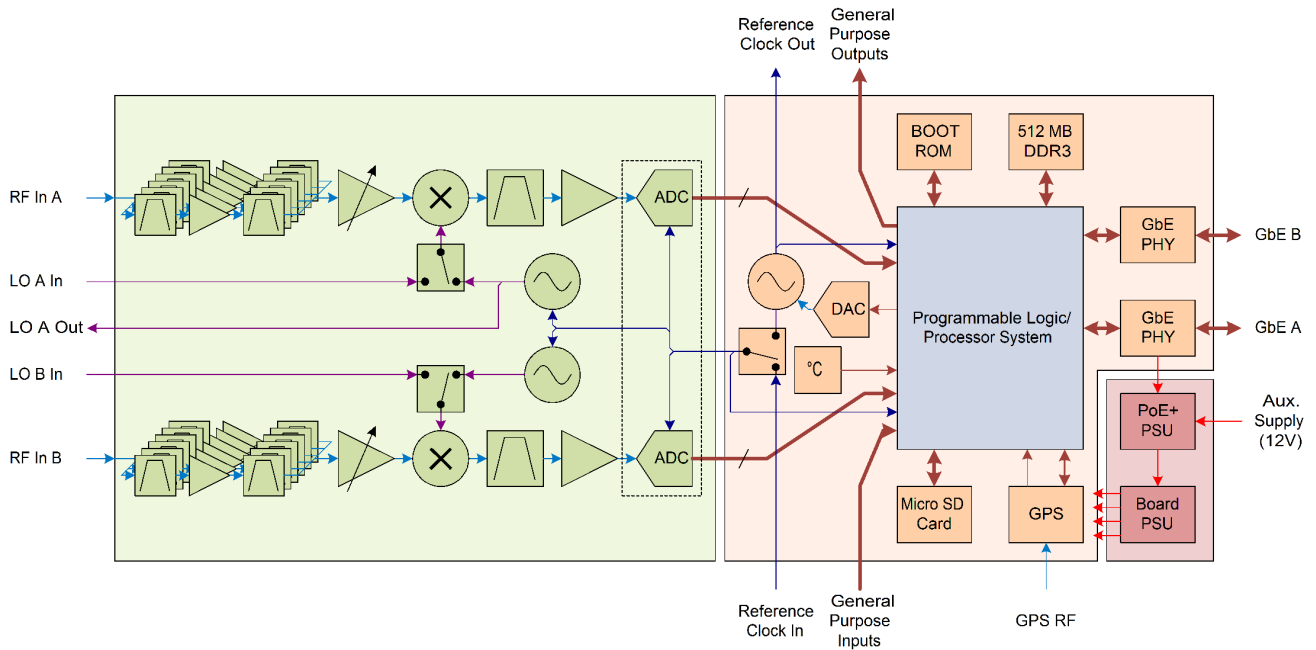


other custom options are possible. The decimated signals are packaged in standard VITA-49 frames for transport to the host computer or signal processor.

Specification

Parameter	Value
Rx input frequency range	400 to 4000 MHz
IF Bandwidth	> 25 MHz
Rx noise figure (max gain)	< 6 dB
Rx gain control range	> 40 dB
Phase noise @ 2000 MHz	
10 kHz offset	-85 dBc/Hz
100 kHz offset	-90 dBc/Hz
1000 kHz offset	-120 dBc/Hz
Input gain compression	
Max gain	> -40 dBm
Min gain	> -10 dBm
IF ripple (compensated)	± 1 dB
Image rejection (band dependent)	Min 30 dB Max >70 dB
IF rejection	> 60 dB
Reference frequency	102.4 MHz
Power consumption (typ)	14 W
Size	160 x 100 mm

MON4000 Block Diagram



Available Frequency Bands

The most common frequency bands are listed in the table below (all values in MHz). Others are available, if your band of interest is not shown, please contact MAC Ltd to discuss your requirements.

Band	System	Min	Max
A	LTE DL	791	821
B	LTE UL	832	862
C	GSM UL	880	915
D	GSM DL	925	960
E	GSM UL	1710	1785
F	GSM DL	1805	1880
G	UMTS UL	1920	1980
H	UMTS DL	2110	2170
I	ISM/WiFi	2400	2483
J	LTE UL	2500	2570
K	LTE DL	2570	2620
L	LTE TDD	2620	2690

Output Sample Rates

The standard output rates that will be supported by the MON4000 are shown in the table below, together with the signal bandwidth carried at each rate.

Rate (MSps)	BW (MHz)
30.72	20
22	16
20	17
7.68	5
6.4	5

Further Information

The information in this data sheet is subject to change without notice. For further information, to place an order or to discuss custom firmware development please contact MAC Ltd at the address below.



www.mac ltd.com

Multiple Access Communications Limited
Delta House, Southampton Science Park
Southampton, SO16 7NS
United Kingdom

Tel: +44 23 8076 7808
Fax: +44 23 8076 0602
Email: enquiries@mac ltd.com