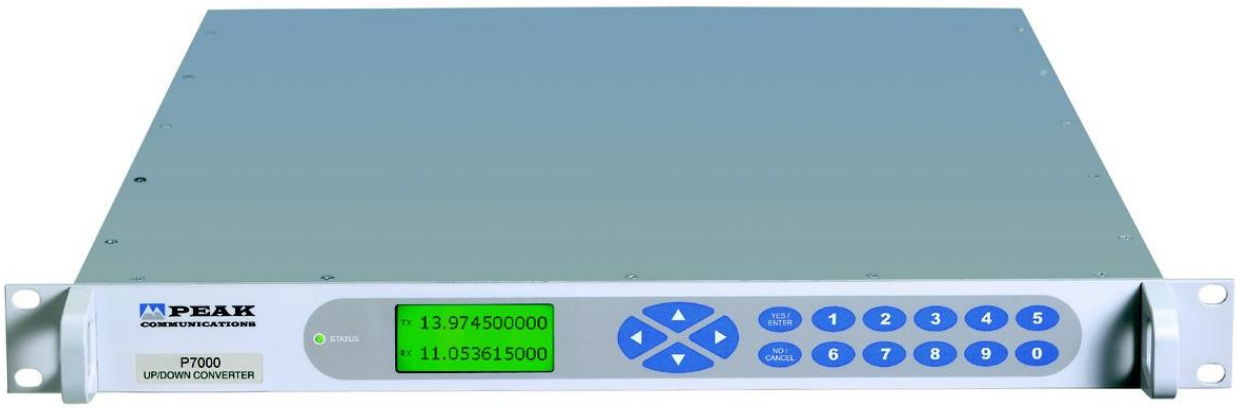
P7020

Combined, S-Band Up and Down Converter



The **P7020** is a next generation fully synthesised combined S-Band up and down converter which provides a low-cost solution for systems requiring an IF interface at 70MHz ±18MHz or 140MHz ±36MHz. The unit incorporates a graphics display module, membrane keyboard and features a clear and intuitive control and configuration menu fully utilising the unique graphics display.

For redundancy the **P7020** uses a simple CANBUS® interface and has an integral redundancy controller for 1+1 & 2+1 operation (for use with external **TR1000L**, **TR2000L** switch units), for N+1 systems a separate stand-alone control and switch unit is provided (**RCU1000 series**).

Note; separate stand-alone control and switching units can also be provided for 1+1 & 2+1 systems, please consult the factory.

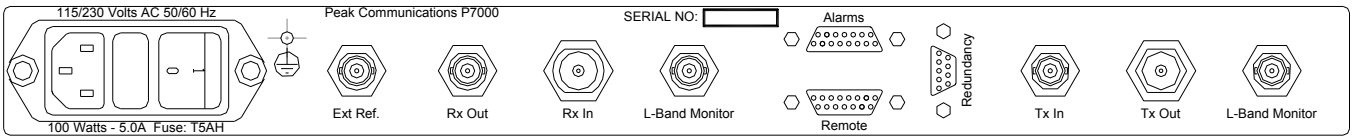
The **P7000 series** of converters are designed to meet the phase noise, spurious, level and frequency stability requirements of Intelsat IBS/ Eutelsat SMS specifications and is compliant with IESS308/ 309. The product is suitable for high order modulation schemes and both very high & low data rates associated with digital TV signals.

The unit has a highly stable internal reference source and will automatically detect and lock to an external 10MHz signal, when applied.

Peak Features

- Compliant with IESS308/ 309 requirements
- Suitable for use with latest high order modulation schemes in excess of 100Mbits/sec
- Integral 1+1 & 2+1 CANBUS® redundancy control & N+1 switch system available
- Software selectable spectrum inversion on down converter
- Software trimming of internal primary frequency reference

Rear panel view (sample)



P7020 - Typical Specification

Up Converter

IF Input

Frequency	70 ±18MHz
Option 1a;	140 ±36MHz
Connection	50Ω, BNC (f)
Option 3a;	75Ω, BNC (f)

S-band Output

Frequency	2025-2120MHz
Connection	50Ω, N-type (f)

Note; for other frequency band coverage please contact the factory.

Transfer Characteristics

Conversion gain	+20dB ±1dB
Attenuation	0 to 30dB, stepped 0.5dB
1 dB GCP	Input -10dBm, output +10dBm
Gain stability	±0.5dB from 0 to 40^{0}C, ±0.1dB per week (constant temp)
Gain flatness	±1.0dB full band ±0.5dB across any 36MHz in band
Synth resolution	1Hz

RF Performance

Phase noise	-75dBc/Hz at 10Hz -85dBc/Hz at 100Hz -85dBc/Hz at 1kHz -85dBc/Hz at 10kHz -97dBc/Hz at 100kHz -108dBc/Hz at 1MHz
Harmonics	Better than -50dBc
Spurious	<-60dBm (in band, non-carrier related) <-60dBc (in band, carrier related)
Group delay	Linear 0.025ns/MHz Ripple 1ns p-p Parabolic 0.015ns/MHz^2
Noise figure	15dB nominal at maximum gain
Mute isolation	>80dB at minimum gain setting

Down Converter

S-band Input

Frequency	2200-2300MHz
Connection	50Ω, N-type (f)

Note; for other frequency band coverage please contact the factory.

IF Output

Frequency	70 ±18MHz
Option 1b;	140 ±36MHz
Connection	50Ω, BNC (f)
Option 3b;	75Ω, BNC (f)
Spectrum sense	Invert switchable (from front panel)

Transfer Characteristics

Conversion gain	+30dB ±1dB
Attenuation	0 to 30dB, stepped 0.5dB
1 dB GCP	Input -10dBm, output +10dBm
Gain stability	±0.5dB from 0 to 40^{0}C, ±0.1dB per week (constant temp)
Gain flatness	±1.0dB full band ±0.5dB across any 36MHz in band
Synth resolution	1Hz

RF Performance

Phase noise	-60dBc/Hz at 10Hz -70dBc/Hz at 100Hz -75dBc/Hz at 1kHz -80dBc/Hz at 10kHz -90dBc/Hz at 100kHz -110dBc/Hz at 1MHz
Harmonics	Better than -50dBc
Spurious	<-60dBm (in band, non-carrier related) <-60dBc (in band, carrier related)
Group delay	Linear 0.025ns/MHz Ripple 1ns p-p Parabolic 0.015ns/MHz^2
Noise figure	15dB nominal at maximum gain

LNA Drive (Option 10)

DC supply	+22.5 volts regulated at 0.5 amps
Connection	Fed on S-band cable
Control	Switchable from front panel

General

S-Band Monitors (Option 11)

Connections	50Ω, BNC (f)
Level	-20dBc ±3dB

External Reference Input (with automatic detection & locking)

Frequency	Factory selectable 5 or 10MHz
Connector	50Ω, BNC (f)
Level	0dBm ±5dB
Required phase noise	to be better than 50dBc/Hz of output phase noise

Internal Reference

Frequency	10MHz
Adjustment	±0.45ppm, software stepped 0.01ppm

Standard Stability

Allan deviation	<5 x 10^{-12} over 1s
Ageing	<±3 x 10^{-10}/day, <±3 x 10^{-9}/month, <±3 x 10^{-8}/year
Temp stability	<±2 x 10^{-9} over operating range

High stability (Option 8)

Allan deviation	<2 x 10^{-12} over 1s
Ageing	<±2 x 10^{-10}/day, <±2 x 10^{-9}/month, <±2 x 10^{-8}/year
Temp stability	<±1.5 x 10^{-9} over operating range

Mechanical

Width	19", standard rack mount
Height	1U (1.75")
Depth	534mm (21"), plus connectors
Construction	Stainless steel chassis
Weight	Approx. 9.5kgs (21lbs)

Environmental

Operating temp	-10^{0}C to +50^{0}C
EMC	ETSI EN 301 489-1: V2.2.1 & ETSI EN 300 673: V1.2.1
Safety	IEC/EN 62368-1:2014 (second edition)

Power supply

Voltage	90-264VAC
Frequency	47-63Hz
Power	100 Watts max.

Control System

Remote control	RS232/ 485 port
Option 9;	Ethernet; embedded web server & SNMP network management support
Redundancy	CANBUS® interface for N+1 system In-built 1+1 & 2+1 controller
Alarms	LO lock failure PSU failure External alarm inputs Summary failure relay (form C)

Options

1a) 140MHz IF input
1b) 140MHz IF output
2) Front panel with custom logo and colours
3a) 75Ω IF input
3b) 75Ω IF output
4) Lightweight Aluminium chassis
8) High stability internal reference option
9) Ethernet interface with embedded web server & SNMP
10) LNA DC supply option
11a) S-Band monitor for down converter
11b) S-Band monitor for up converter

Notes; other 'P7000 series' options do not apply to these products.
The addition of options can modify the typical specification, for details please consult the factory.

PEAK COMMUNICATIONS

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