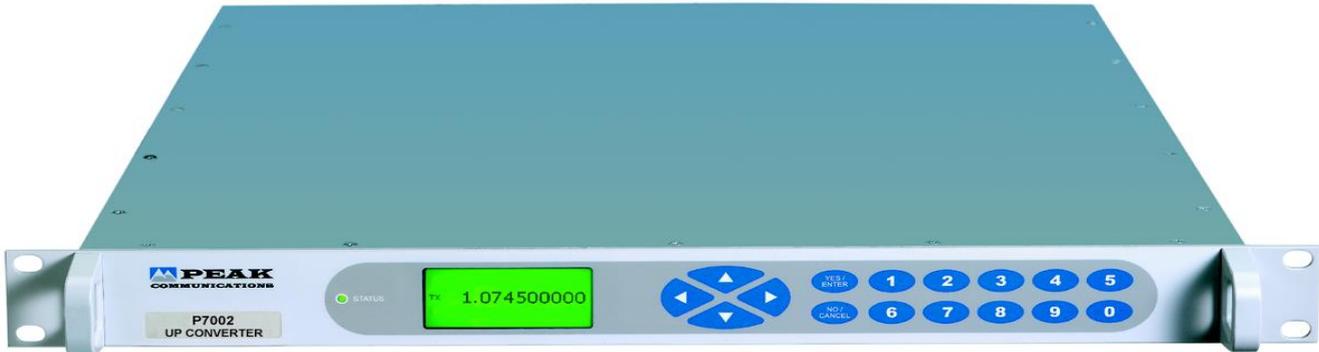


## P7022 Series

### Fully Synthesised, IF to S-Band, Up Converters



### High Grade Up Converter Products;

<b>P7022A</b>	2025 - 2120MHz
<b>P7022B</b>	2200 - 2400MHz
<b>P7022C</b>	2000 - 2400MHz

For other non-standard frequency requirements please contact the factory.  
For equivalent remote mount units, please see P7022R series.

The **P7022 series** are next generation fully synthesised S-Band up converters which provide a low-cost solution for systems requiring an IF interface at 70MHz  $\pm$ 18MHz or 140MHz  $\pm$ 36MHz. The units incorporate a graphics display module, membrane keypad and feature a clear and intuitive control and configuration menu, fully utilising the unique graphics display.

For redundancy the **P7022 series** utilise a simple CANBUS® interface and have an integral redundancy controller for 1+1 & 2+1 operation (for use with external **T1000L**, **T2000L** 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 are 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 100Mbps/sec
-  Integral 1+1 & 2+1 CANBUS® redundancy control & N+1 switch system available
-  Software trimming of internal 10MHz reference



# P7022 series – Typical Specification

## IF Input

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

## S-band Output

Frequency	2025-2120MHz
<b>P7022A</b>	2200-2400MHz
<b>P7022B</b>	2000-2400MHz
<b>P7022C</b>	2000-2400MHz
Connection	N-type (f), 50Ω

## Transfer Characteristics

Conversion gain	+20dB ±1dB
Attenuation	0 to 30dB, stepped 0.1dB
1 dB GCP	Input -10dBm, output +10dBm
Gain stability	±0.5dB from 0 to 40°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 <sup>2</sup>
Noise figure	15dB nominal at maximum gain
Mute isolation	>80dB at minimum gain setting

## S-Band Monitor (Option 11b)

Connection	Rear panel, BNC (f), 50Ω
Level	-20dBc ±3dB

## IF Monitor (Option 11g)

Connection	Rear panel, BNC (f), 50Ω
Level	-20dBc ±3dB

## External Reference Input (with automatic detection & locking)

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

## Internal Back-up Reference

Frequency	10MHz
Adjustment	±0.45ppm, stepped 0.01ppm

## Standard Stability

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

## High stability (Option 8)

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

## Mechanical

Width	19", standard rack mountable
Height	1U (1.75")
Depth	534mm (21"), plus connectors
Construction	Stainless steel chassis
Weight	Approx. 9kgs (20lbs)

## Environmental

Operating temp	-10°C to +50°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	60 Watts
Option 17;	Redundant PSU; provides a 1+1 redundant PSU configuration with separate prime power inputs

## Control System

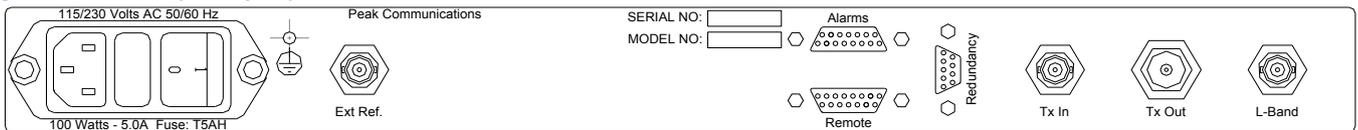
Remote control	RS232/ 485 port
Option 9;	Ethernet; embedded web server & SNMP network management support
Redundancy	CANBUS® interface for N+1 system
Alarms	In-built 1+1 & 2+1 controller
	LO lock failure
	PSU failure
	External alarm inputs
	Summary failure relay (form C)
Output mute	TTL input active low,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

## Options

- 1a) 140MHz IF input
- 2) Custom front panel logo and colour
- 3a) 75Ω IF input
- 4) Lightweight Aluminium chassis
- 8) High stability internal reference option
- 9) Ethernet interface with embedded web server & SNMP
- 11b) S-Band rear panel monitor port
- 11g) IF rear panel monitor port
- 17) Redundant power supplies

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.

## Rear panel view (sample)



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