

# **Installation and Operating handbook**

## **F1200 Up/Down Converter**

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**EN 55022 CLASS B**  
**EN 50082-1**  
**EN 60950**



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**IMPORTANT NOTE: THE INFORMATION AND SPECIFICATIONS  
CONTAINED IN THIS DOCUMENT SUPERCEDE ALL PREVIOUSLY  
PUBLISHED INFORMATION CONCERNING THIS PRODUCT**

PEAK COMMUNICATIONS Ltd maintains a continuing programme of product improvement and therefore reserves the right to change specifications without notice

## INTRODUCTION

The F1200 Up/Down Converter is a high grade unit which can be applied to many situations where good stability and phase noise is required.

The unit is housed in 19 inch 1'U' high chassis, suitable for rack mounting, is 400 mm deep and may be fitted with rack slides if required.

## SPECIFICATION

Note that the product which this manual accompanies may differ from this specification depending on configuration and contract requirements

### RX

#### L-Band Input

Frequency	1200 ± 20 MHz
Connection	50 Ohm N Type (f)
Return loss	>15dB

#### IF Output

Frequency	70 ± 18 MHz or option 140 ± 36MHz
Connector	50Ω BNC (f)
Return loss	>15dB
1 dB GCP	+ 0dBm

#### RF Performance

Phase noise	-73dBc/Hz at 100Hz -76dBc/Hz at 1kHz -85dBc/Hz at 10kHz -93dBc/Hz at 100kHz -110dBc/Hz at 1MHz
Spurious	<-60dBm (in band non-carrier related) <-60dBc (in band carrier related)

### TX

#### IF Input

Frequency	70 ± 18 MHz or option 140 ± 36MHz
Connection	50 Ohm BNC
Return loss	>15dB

## **L-Band Output**

Frequency	1200 ± 20 MHz
Connection	50 Ohm N Type (f)
Return loss	>15dB

## **RF Performance**

Phase noise (dBc/Hz)	-73dBc/Hz at 100Hz -76dBc/Hz at 1kHz -85dBc/Hz at 10kHz -93dBc/Hz at 100kHz -110dBc/Hz at 1MHz
Spurious	<-60dBm (in band non-carrier related) <-60dBc (in band carrier related)

## **Transfer Characteristics**

Conversion type	Single conversion
Conversion gain	0dB ±0.5dB at band centre
Gain flatness	± 0.5 dB across 36MHz. ± 1.0 dB across 72MHz
Group delay	Linear 0.025nS, Parabolic 0.015nS/MHz <sup>2</sup> , Ripple 1nS p-p.
Conversion gain	Zero
1 dB comp. point	0 dBm
Reference frequency	Internal 10 MHz

## **Standard Internal Reference**

Stability	1 second <5 x 10 <sup>-11</sup>
Temperature Stability	<±5 x 10 <sup>-8</sup> (0 to +50°C)
Ageing	<7.5 x 10 <sup>-8</sup> per yr

## **Mechanical**

Width	19" standard rack mount
Height	1U (1.75")
Depth	~400mm (15.7"), plus connectors
Construction	Aluminium chassis
Weight	4.5 kgs (10lbs)

## **Environmental**

Operating temp.	-10°C to +50°C
EMC	EN 55022 part B & EN 50082-1
Safety	EN 60950

## **Power Supply**

Voltage	110-240VAC
Frequency	50/60Hz
Power	50 Watts max.

## **Control System Interface**

Alarms	LO lock fail, PSU fail, AMP fail.
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## **EMC AND SAFETY**

### **EMC**

The F1201 IF Band Converter has been designed to comply with the following standards;

Emissions : EN 55022 Class B; Limits and methods of measurement of radio interference characteristics of Information Technology Equipment.

Immunity : EN 50082 Part 1; Generic immunity standard, part 1: Domestic, commercial and light industrial environment.

The equipment must be operated with its lid on at all times. If it is necessary to remove the lid for routine servicing or fault finding then it is essential that the lid is fitted back correctly before normal operation.

For the Alarm and Remote Control data interfaces all 'D' type connectors must have grounding fingers on the plug shell to guarantee continuous shielding. The back-shells must comply to the requirements of VDE 0871 and FCC 20708, providing at least 40 dB of attenuation from 30 MHz to 1 GHz.

Connecting cables must be of the shielded type

**Operation of the equipment in a non standard manner will invalidate compliancy to these standards.**

### **Safety**

To ensure safety of operator the F1201 Converter unit has been designed to comply with the following safety standard;

EN 60950 Safety of information technology equipment, including electrical business machines.

Before operation the user must ensure that the installation complies with the information given.

The equipment is designed to operate in a static 19 inch rack system conforming to IEC 297-2. Operation of the equipment in transportable vehicles equipped with the means of providing a stable environment is permissible. Operation of the equipment on board vehicles, ships or aircraft without means of environmental conditioning will invalidate the safety compliancy; please contact the factory for further advice. Operation of the equipment in an environment other than that stated in the specifications will also invalidate the safety compliancy. The equipment must not be operated above 2000 metre altitude, extremes of temperature; excessive dust, moisture or vibration; flammable gases; corrosive or explosive atmospheres.

### **Installation**

The equipment is classified in EN 60950 as a pluggable equipment class A for connection to the mains supply, as such it is provided with a mains inlet cord suitable for use in the country of operation. In normal circumstances this will be of an adequate length for installation in the rack. If the mains cord proves to be too short then any replacement must have a similar type fuse (if fitted) and be manufactured to similar specification: check for HAR, BASEC or HOXXX-X ratings on the cable. The connector ends should be marked with one of the following : BS1636A (UK free plug 13 amp); BSI, VDE, NF-USE, UL, CSA, OVE, CEBEC, NEMKO, DEMKO, SETI, IMQ, SEV and KEMA-KEUR for the IEC 6 amp free socket. Schuko and North American free plugs must have similar markings.

The installation of the equipment and the connection to the mains supply must be made in compliance to local or national wiring regulations for a category II impulse over voltage installation. The positioning of the equipment must be such that the mains supply socket outlet for the equipment should be near the equipment and easily accessible or that there should be another suitable means of disconnection from the mains supply.

The equipment is designed to operate from a TN type power supply system as specified in EN 60950. This is a system that has separate earth, line and neutral conductors. The equipment is not designed to operate with an IT power system which has no direct connection to earth.

## UNIT DESCRIPTION

### Front panel indicators

The F1200 Up/Down Converter front panel has 1 indicator light as follows

STATUS Normally lit GREEN

An Internal alarm is caused by Power failure, Internal AMP disconnected or Unit out of lock.

### F1200 Rear panel connections

RX INPUT Input at L Band in the frequency range  $1200 \pm 18$  MHz. (option  $\pm 36$ MHz) Composite maximum input power should not exceed 0dBm. At powers greater than 0dBm the spuri will exceed specified levels

RX OUTPUT Output in the frequency range  $70 \pm 18$  MHz. (option  $140 \pm 36$ MHz)

TX INPUT Input at  $70 \pm 18$  MHz. (option  $140 \pm 36$ MHz)  
Maximum input ideally should not exceed -0dBm

TX OUTPUT Output at  $1200\text{MHz} \pm 18$  MHz. (option  $\pm 36$ MHz) at same power level as input power

EXT INTERFACE Digital interface with the following signals

Ground	1	9	PSU OK - N/Closed
PSU Common	2	10	LO OK - N/Closed
LO Common	3	11	AMP OK - N/Open
AMP Detect common	4	12	Unit select input
Not used	5	13	Not used
Not used	6	14	Not used
Not used	7	15	Not used
Ext Ref detect	8		

## **OPERATION**

On switching on the unit the STATUS indicator on the front of the unit should turn GREEN if all is OK.

If an alarm condition shows check alarm conditions on the rear panel

Connect the signal in to the RX/TX INPUT connectors taking note of the power of the signal being input. Care should be taken if the equipment connected to this socket has any DC present.

Output from the unit at IF is from the outputs marked RX/TX OUTPUT.

### **Internal adjustments**

1. Internal frequency reference adjust (factory set) is potentiometer on the PCB