

## **DOWNCONVERTER 1+1**



Downconverter with 1+1 redundancy is designed to convert signals from L-band to 70 MHz IF for further signal processing on this IF. It is used in satellite communication systems of L, S, C, X and Ku bands.

Downconverter with 1+1 redundancy from L-band to 70 MHz IF is a basic chassis on which are located: frequency converter module, controller board and indicator.

Automatic hot redundancy of the downconverter and power supplies are provided according to the 1+1 redundancy scheme. Therefore the design of the downconverter provides automatic switching to the spare (redundant) block in case of failure of one of the blocks and allows quick replacement of the failed block without interrupting the service of the spare block which is included in the delivery kit.

For adjusting the gain of downconverter it is applied the variable 30dB step attenuator in the radio frequency path.

### **KEY FEATURES:**

- The signal in the receiver part of downconverter passes through three stages of filtering.
- There is provided the automatic hot standby of the converter blocks and power supplies according to the 1+1 scheme to ensure a high degree of reliability (readiness of the step-down converter block).
- Includes removable units – frequency converters with double conversion L-band / 2400 MHz / 70 MHz.

- Replacement units (in addition to frequency converter modules) also include network switching power supplies (AC/DC converters) and detector modules.
- Detector module of removable units has LED indicators (on the rear panel) for RF input and IF output signal levels.
- Downconverter parameters can be controlled using the front panel buttons and can be always checked on front LCD.
- Downconverter with 1+1 redundancy can be installed in a standard 19" rack. The height of downconverter is 1U.

## MAIN FUNCTIONS:

- Frequencies converting into L-band when operating in the satellite communication and television L, S, C, X and Ku-bands systems to the standard 70 MHz IF signal for further processing on this IF.
- Automatically turns on the backup (redundant) unit when one of the units fails and allows a quick replacement without users interrupting the maintenance of the failed block to the spare one.
- The circuit that generates the ALARM signal analyzes four input signals: the RF level, the IF level, and the two loop lock signals of the first and second conversion stages.
- ALARM signals are generated in the detector modules which are fed to the backup board on the base chassis to decide which of the replacement blocks is currently active.
- To adjust the gain factor of the downconverter module it's applied the variable step attenuator in the radio frequency path with a control depth of 30 dB. Attenuation adjustment is made by either keys on the front panel or remotely.

Parameter name, units	Nominal value, tolerance
<b>Input frequency range</b> , MHz	from 950 to 2150
<b>Frequency tuning step</b> , kHz	1
<b>Frequency instability</b> , ppm	0.01

<p><b>The spectral density of phase noise power, dBc/Hz, when detuned from the carrier by:</b></p> <p><b>100 Hz</b></p> <p><b>1 kHz</b></p> <p><b>10 kHz</b></p> <p><b>100 kHz</b></p> <p><b>1 MHz</b></p>	<p>-70</p> <p>-90</p> <p>-95</p> <p>-95</p> <p>-100</p>
<b>Channel bandwidth, MHz</b>	36
<b>The maximum allowable input signal level, dBm</b>	– 20
<b>Output power level with 1dB compression (P1dB out), dBm, not less than</b>	0
<b>The IMD3 value with two output signals of -13dBm, dBm, not more than</b>	– 40
<b>Conversion gain, dB, not less than</b>	40
<b>Gain adjustment depth, dB, not less than</b>	– 30
<b>Gain adjustment step, dB</b>	1.0
<b>Input impedance, Ohm</b>	50
<b>Input return losses, dB</b>	– 18
<b>Control and monitoring mode</b>	Local and remote
<b>Remote mode interface</b>	Ethernet 10/100 Base T
<b>Impedance of radio frequency output, Ohm</b>	50
<b>VSWR radio frequency output</b>	1.8:1

