

# NTC3475/AB

## L-band to 70–140 MHz Agile Frequency Converter Board

### OEM Product

#### Description

The NTC/3475/AB is a state-of-the-art synthesized frequency downconverter board that enables flexible frequency conversion from any L-band frequency (950 - 2150 MHz) to  $70 \pm 20$  MHz or  $140 \pm 40$  MHz IF frequency. Available to third party manufacturers under OEM agreement, the high performance of the NTC/3475/AB allows an easy and cost effective interfacing with 70 or 140 MHz IF frequency based installations or equipment.

The output frequency is switchable between 70 MHz and 140 MHz. Both input and output are MCX connectors for further internal wiring in the chassis.

The board has a very wide gain range and a low noise figure which makes it suitable for the conversion of narrowband and broadband L-band signals to 70-140 MHz.

The gain can be adjusted over a range of 50 dB in 0.1 dB steps.

The design of the NTC/3475/AB Frequency Converter allows frequency conversion with or without spectrum inversion.

For low bit-rate applications, the NTC/3475/AB Frequency Converter can be locked to an external 10 MHz reference.

The NTC/3475/AB Frequency Converter board can be controlled via an asynchronous serial link with a comprehensive range of monitoring and control functions.

#### Key features

- Agile L-band to 70–140 MHz Downconverter
- High Gain
- Output frequency switchable between 70 and 140 MHz
- Ultra fine L-band frequency resolution (48Hz)
- High linearity over the entire bandwidth
- Low noise figure
- Spectrum inversion is selectable
- Wide input / output level range
- Entire L-band frequency range ( 950 – 2150 MHz)
- Can be locked to an external 10 MHz reference
- Very low group delay variation
- Wide band frequency flatness covering more than 72 MHz
- Low in-band and out-band spurious
- High reliability and modular flexibility
- CE-label

#### Main advantages

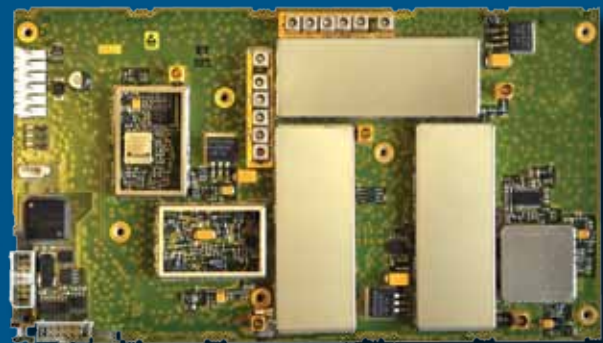
- Reduce time to market
- Easy integration
- High compactness
- Low cost

#### Applications

- IP trunking
- Cellular backhauling
- Distribution
- Contribution
- Government
- Data broadcast

#### Related Documents

NTC/3474/AB 70-140 MHz to L-band Agile Frequency Converter Board



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# Specifications – NTC3475/AB

## Input interface

### Input interface (L-band):

- Connector MCX (F), 50 ohms
- Return loss >15dB
- Frequency range 950 to 2150 MHz
- Input level Max composite -20dBm

### Output interface (IF):

- Connector MCX (F), 50 ohms
- Return loss >15dB
- Frequency range 70 ± 20MHz or 140 ± 40MHz (switchable)
- Output level ≤ 0 dBm typical

### 10 MHz reference input

- Connector MCX (F), 50 ohms
- Input level -3dbm up to 7dBm

## Transfer characteristics

### Gain

- Programmable Gain 0 to 50 dB
- Gain step size 0.1 dB
- Gain variation over 36/72 MHz BW 1.2 dB peak-to-peak
- Gain variation over T°(+20 to +40°C) ± 0.5 dB

### Linearity

- IF Output 1dB compression +10dBm
- AM/PM conversion 0.1°/dB max@0dBm Output

### Switching

- Spectrum inversion Selectable
- Output switching suppression >80 dB

### Noise

- In band spurious (signal related) <-60 dBc (Pin/Pout: -25/0 dBm)
- Non signal related spurious <-70dBm
- Image rejection -60dBc
- Noise figure <15 dB at max gain
- Phase noise
  - @ 10 Hz <-50 dBc/Hz
  - @ 100 Hz <-70 dBc/Hz :
  - @ 1KHz <-80 dBc/Hz
  - @ 10 KHz <-85 dBc/Hz
  - @ 100 KHz <-95 dBc/Hz

### Group delay

- |                       | @ 72 MHz BW                | @ 36 MHz BW              |
|-----------------------|----------------------------|--------------------------|
| Linear group delay    | 0.05 ns/MHz                | 0.03 ns/MHz              |
| Parabolic group delay | 0.0035 ns/MHz <sup>2</sup> | 0.01 ns/MHz <sup>2</sup> |
| Residual group delay  | 1 ns pk-to-pk              | 1 ns pk-to-pk            |

## Internal 25 MHz reference

### Stability

- ± 5ppm at 23 deg C ± 2 deg C
- ± 2ppm 0 to 70 deg C
- ± 1ppm / year
- ± 5ppm / 10 years

## Generic

### Monitor and control interfaces

Newtec RMCP protocol over RS485

### Available controls

70 or 140 MHz output band  
Forced 36 MHz BW for 140 MHz IF  
Input frequency  
Conversion gain  
Spectrum inversion  
Reference Clock internal / external  
Output IF frequency  
Frequency offset  
Output On/off

### Available Alarms & Monitoring

Synthesizer out of lock  
Input overload warning (adjustable threshold)  
Input power low indication (adjustable threshold)  
Output power

### Power consumption

+12V 600mA  
-12V 50mA  
+5.2V 300mA

### Voltage accuracy

+5.2V 5.15V to 5.25V  
+12V 11.25V to 13V  
-12V -13V to -11V

### Peak to peak ripple and noise voltage requirement

for +5.2V is less than 50mV, for +/-12 V is less than 120mV which is measured by a 15MHz bandwidth limited oscilloscope.

## Physical

- Mechanical Single PCB, 210 x 118 mm
- Temperature
  - Operational 0°C to 50°C
  - Storage -40 to +70°C
- Humidity 5% to 85% non-condensing
- CE label

## Ordering information

NTC/3475/AB L-band to 70-140 MHz Agile Frequency	Order n°
<b>Default configuration</b>	
NTC/3475/AB L-band to 70-140 MHz	NTC/3475/AB.A

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