

# Newtec

## FRC0740 L-BAND BLOCK UPCONVERTER FRC0750 ACTIVE L-BAND COMBINER AND UPCONVERTER



### Description

The FRC0740 L-band Block Upconverter is a High Performance frequency Block Upconverter designed for a wide range of Broadcast, Telco and IP satellite applications. The FRC0740 translates frequencies from L-band to a wide range of RF frequencies such as C-, Ku- and DBS-band.

The FRC0740 guarantees the best signal quality thanks to a very high frequency stability and very low spurious characteristics.

The FRC0740 is the ideal solution when the Block Upconverter cannot be included in the modulator.

The FRC0740 has a 30-dB variable gain control on one L-band input and one L-band monitoring output. There is a second input with fixed 10-dB gain. The signals on the two L-band inputs can be combined inside the unit before being up-converted.

The high output frequency stability is provided by an internal 10 MHz reference clock. For applications requiring a very high frequency stability (such as for very low data rate carriers), an optional very high stability reference clock can be ordered.

The FRC0750 Active L-band Combiner and Block Upconverter is primarily designed to bring together several L-band carriers in a single satellite channel. To equalize the level of the incoming signals, each input has its own amplifier/attenuator. The FRC0750 can also be used as an active switching device for signal routing purposes or redundancy switching operations.

In its default configuration, the FRC0750 combines up to four different L-band signals into one L-band signal. As an option it is possible to combine up to eight different L-band signals within the same unit.

Newtec's range of Frequency Converters consists of a **complete portfolio** for broadcast, telco and IP satellite applications. It contains easy to operate and monitor Upconverters, Downconverters, Up & Down-converters, L-band Upconverters and Combiners.

These Up & Downconverters offer the **highest signal quality**, thanks to the high frequency stability, very low spurious characteristics and high linearity over the entire bandwidth; as well as extensive coverage of all transponder frequencies (IF, L, C, Ku and DBS band).

A DC power supply and a reference frequency are also available on the L-band output, providing a compact and cost effective solution when the FRC0750 is used in combination with an outdoor RF upconverter and/or amplifier.

The FRC0750 can be delivered with an integrated block upconverter as an option. In this configuration, the FRC0750 converts the L-band output signal of the combiner to C-, Ku- or DBS-band.

Both the FRC0740 and FRC0750 are easy to operate and monitor. All control and monitoring parameters are available locally on the front panel and remotely through a web interface. It is also possible to control or monitor the FRC0750 via Newtec's proprietary RMCP protocol or via SNMP.

# SPECIFICATIONS

## Key Features

### FRC0740

- Wide choice of RF frequency ranges covering C, Ku and DBS-bands
- Converts Extended L-band (950-2150 MHz) to Extended C-band (5,85-7,05 GHz)
- Very high frequency stability
- Very low spurious characteristics
- Two L-band inputs and one L-band output
- One L-band input with 30dB variable gain range
- Integrated signal combiner
- Very high linearity
- Very good gain flatness over the entire bandwidth

### FRC0750

- Up to eight L-band inputs
- Each input is switchable and gain adjustable
- Optional upconversion to C-, Ku- or DBS-band
- Optional 10 MHz +DC power for BUC
- Optional 10 MHz reference input/output
- Advanced monitoring and control

## Applications

- Broadcast primary distribution
- Broadcast contribution
- Direct-To-Home (DTH) uplinks
- Telco and trunking satellite infrastructures
- VSAT hubs
- Generic satcom applications

## Our Professional Equipment

Care Pack Basic and Care Pack Enhanced are the Newtec service and support packages protecting your Newtec equipment over a three-year period.

## Related Products

- M6100 Broadcast Satellite Modulator
- MDM6100 Broadcast Satellite Modem
- MDM6000 Satellite Modem

- FRC0710 Upconverter
- FRC0720 Downconverter
- FRC0730 Up and Down Converter

- USS0202 Universal Redundancy Switch

## FRC0740

### Interfaces

#### INPUT INTERFACE UPCONVERTER (L-BAND):

- Connector SMA (F), 50 ohms
- Return loss >18dB
- Maximum input power for no damage +13 dBm

#### SECONDARY INPUT INTERFACE UPCONVERTER (L-BAND):

- Connector SMA (F), 50 ohms
- Return loss >12dB
- Maximum input power for no damage +13 dBm

#### OUTPUT INTERFACE (L-BAND MONITORING):

- Connector SMA (F), 50 ohms
- Return loss >12 dB
- Gain follows RF output gain

#### OUTPUT INTERFACE (RF):

- Connector RF-band out SMA (F), 50 ohms
- Return loss >15dB

#### 10 MHZ REFERENCE INPUT / OUTPUT

- Connector BNC (F), 50 ohms
- Input level -3dBm up to 7dBm
- Output level +7dBm +/- 2dB

## Channel characteristics (L-band to RF-band)

Output Frequency ranges	Input freq (MHz)	Output freq (GHz)	LO freq (MHz)
C-band:	950-2150	5.85 - 7.05	4900
Ku-band:	950-1450	12.75 - 13.25	11800
Ku-band:	950-2000	13.75 - 14.80	12800
DBS-band:	950-1750	17.30 - 18.10	16350
DBS-band:	950-1750	17.60 - 18.40	16650

• Gain	0 to 30dB	
• Gain step size	0.1dB	
• Gain stability/day	±0.25dB	
• Gain stability/temperature	±1dB (0-40°C)	
• Amplitude response/RF band	±1dB	
• Gain flatness	±0.35dB/72MHz max	
• Output @1dB compression		
DBS-band	>+10dBm	
C- and Ku-band	>+13dBm	
• 3rd order IMD	<-50dBc @ 0dBm	
• Noise figure @ maximum gain	15dB	
• Noise spectral density	<-82dBm/4kHz	
• In-band spurious		
Non signal related	<-75dBm	
Signal related for @ 0dBm output		
DBS-band (for rate >200Kbaud)	<-66dBc/4KHz	
C- and Ku-band	<-65dBc	
• RF output mute	>60dBc	
• Phase noise		
@ 10 Hz	DBS-band <-30 dBc/Hz	C- and Ku-band <-50 dBc/Hz
@ 100 Hz	<-60 dBc/Hz	<-70 dBc/Hz
@ 1 KHz	<-75 dBc/Hz	<-80 dBc/Hz
@ 10 KHz	<-85 dBc/Hz	<-90 dBc/Hz
@ 100 KHz	<-95dBc/Hz	<-100 dBc/Hz

- Residual group delay 1 ns peak-to-peak

**FRC0740**



**FRC0750**



**FRC0750**

**Interfaces**

**INPUT / OUTPUT INTERFACE: L-BAND**

- Connector SMA (F), 50 ohms
- Return loss (50 ohms) >14dB
- Frequency range 950 to 1750 MHz
- Max input power -10 dBm

**OUTPUT INTERFACE: RF, (OPTIONAL)**

- Connector RF-band out SMA (F), 50 ohms
- Return loss >12dB

**OUTPUT L-BAND MONITORING (WITH UPCONVERTER OPTION)**

- Connector SMA (F), 50 ohms
- Return loss >12 dB
- Gain 0 dB

**10 MHZ REFERENCE INPUT / OUTPUT (OPTIONAL)**

- Input level -3dbm up to 7dBm
- Output level +7 dBm ± 2 dB
- Connector BNC (F) - 50 ohms

**BUC POWER AND REFERENCE FREQUENCY (OPTIONAL)**

- Connector N(F) - 50 ohms
- Max. current 4 A
- Voltage 24V, 48V
- Frequency 10MHz
- Stability see Internal Reference Frequency

**L-band channel characteristics**

- Gain -30 to 10dB
- Output 1dB compression +10dBm
- Gain flatness over 36MHz <± 0.25 dB
- Gain flatness over L-band <± 1dB
- Spurious(@-10dBm output power) <-65 dBc/4KHz
- L-band output mute >60 dBc
- Crosstalk >60 dBc

**L-band to RF-band channel characteristics**

- Frequency range RF-band
  - C-band : 5.85 - 6.65 GHz
  - Ku-band : 12.75 - 13.25 GHz
  - Ku-band : 13.75 - 14.50 GHz
  - DBS band : 17.30 - 18.10 GHz
  - DBS band : 17.60 - 18.4 GHz
- Gain (over temperature and frequency) -20 to +20 dB
- Output 1dB compression Ku-band >+13dBm
- Output 1 dB compression C and DBS >+10dBm
- Gain flatness ±0.45dB/36MHz max
- In-band spurious
  - Non signal related <-80dBm
  - Signal related for rate >200 kbaud (up to 0dBm output) <-66dBc/4kHz

- RF output mute >60dBc
- Phase noise
 

	DBS-band	C- and Ku-band
@ 10 Hz	<-30 dBc/Hz	<-50 dBc/Hz
@ 100 Hz	<-60 dBc/Hz	<-70 dBc/Hz
@ 1 KHz	<-75 dBc/Hz	<-80 dBc/Hz
@ 10 KHz	<-85 dBc/Hz	<-90 dBc/Hz
@ 100 KHz	<-95 dBc/Hz	<-100 dBc/Hz
- Residual group delay 1 ns peak-to-peak

**FRC0740 & FRC0750**

**Internal Reference frequency**

- High Stability
 

Stability	±5x10-8 over 0°C to 70°C
Ageing	± 15 ppb/day
	± 300 ppb/year
- Very High Stability (optional)
 

Stability	±2x10-9 over 0°C to 65°C
Ageing	± 0.5 ppb/day
	± 500 ppb/10 year

**Generic**

**MONITOR AND CONTROL INTERFACES**

- Web based GUI
- Diagnostics report, alarm log
- RMCP over TCP-IP/UDP and RS232/RS485
- SNMP v2c

**ALARM INTERFACE**

- Electrical dual contact closure alarm contacts
- Connector 9-pin sub-D (F)
- Logical interface and general device alarm

**AVAILABLE ALARMS (FRC0740)**

- 10 MHz alarm
- Power supply alarm
- Temperature alarm
- Synthesizer out-of-lock

**Physical**

- 1RU, width: 19", depth 51 cm, <6 kg
- Power supply: 90-130 & 180-260 Vac, 105 VA, 47-63 Hz
- Temperature
  - Operational: 0°C to 40°C
  - Storage: -40 to +70°C
- Humidity: 5% to 85% non-condensing
- CE label

Newtec FRC0740 L-band Block Upconverter		Ordering n°
<b>Default configuration</b>		
L-band to RF, SNMP 10MHz reference In/Out: High stability		FRC0740
<b>Configuration Options Category</b>		
Select 1 option		
Output frequency	C-band (5,850 GHz - 7,05 GHz)	FA-12
	Ku-band ( 12,75 - 13,25 GHz )	FA-13
	Ku-band ( 13,75 - 14,80 GHz )	FA-14
	DBS-band (17,30-18,10 GHz)	FA-07
	DBS-band (17,60-18,40 GHz)	FA-08
Select 1 option		
10MHz reference In/Out	High stability	Default
	Very high stability	GR-02
<b>Services Category</b>		
Max. 1 option per category		
Support	Care Pack 3 Basic	GA-08
	Care Pack 3 Enhanced	GA-09

Newtec FRC0750 Active L-band Combiner and Upconverter		Ordering n°
<b>Default configuration</b>		
4-Input L-band combiner, SNMP Output interface: 950 - 1750MHz		FRC0750
<b>Configuration Options Category</b>		
Select 1 option		
Input interface	4-Input L-band	Default
	8-Input L-band	FE-02
Select 1 option		
Output interface	L-band (950 - 1750 MHz)	Default
	L-band + 10MHz for BUC	FA-02
	L-band + 10MHz + 24Vdc for BUC	FA-09
	L-band + 10MHz + 48Vdc for BUC	FA-10
	L+C-band (5,85 - 6,65 GHz)	FA-11
	L+Ku-band ( 12,75 - 13,25 GHz )	FA-13
	L+Ku-band ( 13,75 - 14,50 GHz )	FA-14
	L+DBS-band (17,30-18,10 GHz)	FA-07
L+DBS-band (17,60-18,40 GHz)	FA-08	
<b>Additional Options Category</b>		
Max. 1 option per category		
10MHz reference In/Out	High stability	GR-01
	Very high stability	GR-02
<b>Services Category</b>		
Max. 1 option per category		
Support	Care Pack 3 Basic	GA-08
	Care Pack 3 Enhanced	GA-09

Contact your sales representative for details (sales@newtec.eu).

The details contained in this document, including product and feature specifications, are subject to change without notice and shall not bind Newtec in any way. This brochure is provided for information purposes only.

**Newtec**

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**Europe**  
Tel: +32 3 780 65 00  
Fax: +32 3 780 65 49

**North-America**  
Tel: +1 203 323-0042  
Fax: +1 203 323-8406

**South-America**  
Tel: +55 11 2092 6220  
Fax: +55 11 2093 3756

**Asia-Pacific**  
Tel: +65 6777 22 08  
Fax: +65 6777 08 87

**China**  
Tel: +86 10-823 18 730  
Fax: +86 10-823 18 731

**MENA**  
Tel: +971 4 443 60 58  
Fax: +971 4 368 67 68