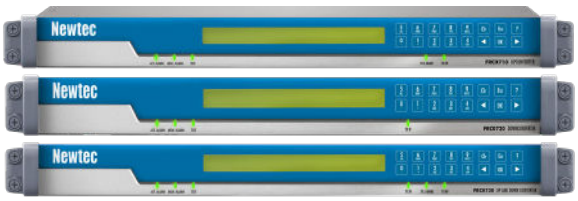
FRC0710 UPCONVERTER FRC0720 DOWNCONVERTER FRC0730 UP AND DOWNCONVERTER



The FRC0730 is a high performance synthesized up- and downconverter designed for a wide range of broadcast, telco and IP satellite applications. In its default configuration, the FRC0730 upconverts IF signals (70 or 140 MHz) to L-band (950–2150 MHz) and simultaneously downconverts L-band signals (950–2150 MHz) to IF. Optionally, the FRC0730 can upconvert IF signals to C, Ku or DBS-band.

The FRC0730 offers some advanced and unique features such as a calibrated high linearity over the entire bandwidth combined with a very high frequency stability. These features make the FRC0730 the perfect solution for a wide range of transmissions ranging from very small carriers to full transponder applications. The IF frequency is switchable from 70 MHz to 140 MHz and the L-band frequency is adjustable in steps of 48 Hz.

The high output frequency stability is provided by an internal 10 MHz reference clock. For applications requiring a very high frequency stability, such as very low data rate carriers, an optional 0.01 ppm stability reference clock can be ordered separately.

A switchable DC power supply and a reference frequency on the L-band output are also available as options, providing a compact and cost effective solution when the FRC0730 is used in combination with an outdoor RF Upconverter and/or amplifier.

Optionally, an LNB power supply, a frequency band selection signal and a 10 MHz reference frequency can be delivered to an LNB via the L-band input.

The FRC07x0 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 FRC07x0 via RMCP or SNMP.

The FRC0730 is also available as a stand-alone upconverter (model number FRC0710) or as a stand-alone downconverter (model number FRC0720).

Key Features

- Agile IF to extended L-band up- and downconverter
- Optional up-conversion to C, Ku or DBS-band
- Ultra fine frequency resolution
- IF frequency switchable between 70 MHz & 140 MHz
- Switchable spectrum inversion
- Excellent flatness over 40/80 MHz bandwidth
- Very high frequency stability
- Very low spurious characteristics
- Phase noise compliant to Intelsat IBS/ Eutelsat SMS
- Phase noise @ L-band compliant to Intelsat IESS-316
- High linearity over the entire bandwidth
- Optional 10 MHz + DC power for BUC
- Optional LNB power supply + 10 MHz

Applications

- Earth Stations
- Broadcast Direct-to-home (DTH) uplinks
- Digital Satellite News Gathering (DSNG)
- Telco and trunking satellite infrastructures
- VSAT hubs
- Generic satcom applications

Related Products

- FRC0740 L-Band Block UpConverter
- FRC0750 Active L-Band Combiner and Upconverter
- USS0202 Universal Redundancy Switch

Interfaces

Upconverter

Input Interface (IF):

Connector	BNC (F), 75 Ohm optional (FRC0710)
Return loss	19 dB minimum (70 ⊠ 20 MHz)
	17 dB minimum (140 ⊠ 40 MHz)
	20 dB minimum (70 Ohm)
Frequency range	70 MHz +/- 20 MHz
	140 MHz +/- 40 MHz (selectable)
Input level IF (typical)	-35 to +5 dBm
Input level IF (non-damage)	+15 dBm maximum

Output Interface (L-band):

Connector	SMA (F), 50 Ohm N(F), 50 Ohm with option (FA-09 and FA-10)
Return loss	>15 dB
Frequency range	950-2150 MHz
Frequency step size	48 Hz
Output level	-30 to +10 dBm

Output Interface (RF)(Optional):

Connector RF-band out	SMA (F), 50 Ohm
Return loss	18 dB minimum (C- and Ku-band)
	12 dB minimum (DBS-band)
Output level (P1 dB)	+13 dBm minimum (C-band)
	+15 dBm minimum (Ku-band)
	+10 dBm minimum (DBS-band)
Spectrum inversion	Selectable
Frequency range RF-band	
C-band	5.85 – 7.05 GHz
Ku-band	12.75 – 13.25 GHz
Ku-band	13.75 – 14.80 GHz
DBS-band	17.30 – 18.10 GHz
DBS-band	17.60 – 18.4 GHz
LO leakage	-72 dBm maximum (C-band)
	-75 dBm maximum (Ku- and DBS-band)

BUC Power and Reference Frequency (Optional):

Max. current	3 Amps
Voltage	24V, 48V
Frequency	10 MHz
Stability	⊠ 5 x 10 - 8 over 0°C to 65°C

For more information please contact your Sales Representative at sales@idirect.net.

Channel Characteristics

Gain:

Programmable IF gain	-15 to 20 dB
Programmable L-band gain	-20 to +20 dB
Programmable L-band+RF gain	-10 to +30 dB
Gain step size	0.1dB
Amplitude response over 40/80 MHz BW (L-band)	0.5 dB peak-to-peak
Amplitude response over 40/80 MHz BW (RF)	0.7 dB/40 MHz 1.5 dB/80 MHz 2.0 dB/80 MHz (14.5 - 14.8 GHz)
Level stability (typ.)	⊠1.0 dB over 0 to 50°C ⊠0.5 dB over 20 to 40°C
Gain slope (over 10 MHz minimum)	0.03 dB/MHz maximum

Linearity:

Output 1dB compression (L-band)	>+10 dBm
Output 1dB compression (RF)	>+10 dBm
Third order intermod @ 0 dBm output	<-54 dBc (C-band) <-50 dBc (Ku- and DBS-band)
Third order intercept (L-band)	>+26 dBm
Third order interception (RF-band)	>+20 dBm
AM/PM conversion	0.1°/dB maximum @ 0 dBm out

Switching:

Output switching suppression	<-80 dBm

Noise & Spurious:

Noise figure at minimum attenuation	15 dB maximum
Noise power density	- 129 dBm/Hz maximum
Spurious outputs	
Signal related (in-band)	- 65 dBc up to 0 dBm output
Signal independent	- 80 dBm maximum (C-band) - 72 dBm max. (Ku- & DBS-band)

Phase noise

	L-band	C-band/Ku-band/ DBS-band	External reference
@ 10 Hz	<-50 dBc/Hz	<-35/50/50 dBc/Hz	-120 dBc/Hz
@ 100 Hz	<-72 dBc/Hz	<-70/72/60 dBc/Hz	-150 dBc/Hz
@ 1KHz	<-81 dBc/Hz	<-80/86/75 dBc/Hz	-160 dBc/Hz
@ 10 KHz	<-90 dBc/Hz	<-80/99/85 dBc/Hz	-160 dBc/Hz
@ 100 KHz	<-95 dBc/Hz	<-100/102/95 dBc/Hz	-160 dBc/Hz

Group Delay:

	@ 80 MHz BW	@ 40 MHz BW
Linear group delay (max.)	0.02 ns/MHz	0.03 ns/MHz
Parabolic group delay (max.)	0.0004 ns/MHz⊠	0.004 ns/MHz⊠
Residual group delay (max.)	0.4 ns peak-to-peak	0.4 ns peak-to-peak