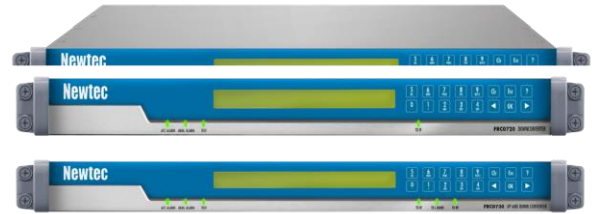


# FRC0710 UPCONVERTER FRC0720 DOWNCONVERTER FRC0730 UP AND DOWNCONVERTER



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 <sup>-8</sup> over 0°C to 65°C |

## 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<br>1.5 dB/80 MHz<br>2.0 dB/80 MHz (14.5 - 14.8 GHz) |
| Level stability (typ.)                        | ±1.0 dB over 0 to 50°C<br>±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)<br><-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)<br>-72 dBm max. (Ku- & DBS-band) |

### Phase noise

|           | L-band      | C-band/Ku-band/<br>DBS-band | External refer-<br>ence |
|-----------|-------------|-----------------------------|-------------------------|
| @ 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             |
| @ 1 KHz   | <-81 dBc/Hz | <-80/86/75 dBc/Hz           | -160 dBc/Hz             |
| @ 10 KHz  | <-90 dBc/Hz | <-90/99/85 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 <sup>2</sup> | 0.004 ns/MHz <sup>2</sup> |

For more information please contact your Sales Representative at [sales@idirect.net](mailto:sales@idirect.net).