Inmarsat Downconverter
Narrowband Downconverter

These narrowband converters are designed to meet the requirements of specific applications where often single conversion is sufficient as the required bandwidth coverage is quite narrow and the difference of the input and output frequency is not large. They are mainly based on the same proven core modules as used in the standard satellite upconverters and downconverters.
Additional special functions can be included:

- Application specific filtering.
- Automatic level control. The output level is kept constant, independent of the strength of the input signal with adjustable control characteristics.
- Additional PLO output.
- DC bias tee included at signal input to provide DC power to LNAs or LNBs.

For Inmarsat downconverters also a combination with a satellite single band downconverter, resulting in a dual channel unit, is possible.

High signal integrity
The extreme low phase noise of the oscillators guarantees a very good signal quality. Low spurious emissions allow to use the converters also in environments with demanding requirements, like high power video uplinks. Sophisticated temperature compensation guarantees gain stability over a very wide temperature range.

Operating and control
Converters can be operated via the push buttons on the front panel using self-explanatory display menus or via remote control (RS232, RS422/485, TCP/IP over Ethernet). Detailed monitoring of the system status and a summary alarm output (dual change over switch contacts) are provided. For the remote control, either ASCII string based commands as well as addressable packet based commands are provided.

Housing options
Converters normally are delivered without fans and can be operated in environments where a minimum 1 RU space for natural ventilation is available above each unit. This eliminates the fan as a potential point of failure. For rack installations without any space in between the units a fan within the converter unit is recommended, which forces an airflow from the right side to left side of the units.

Level 14, 350 Collins Street, Melbourne 3000 Victoria Australia ACN 102 832 495
Tel +61 3 9604 6900 Fax +61 3 9604 6999 Email info@drawcom.com.au www.drawcom.com.au

Inmarsat Downconverter (Indoor Version)

L-Band to 70/140 MHz, Single or Dual Channel Downconverter

S-Type (standard version), H-Type (MIL version, extended temperature range)

Specifications

Downconverter Type	**HCD-Lx / SCD-Lx or HCD-LxLx / SCD-LxLx**
RF-Input Frequency	L1: 1525,0…1559,0 MHz (single band) L2: 1626,5…1660,5 MHz (single band) L: 1525,0…1559,0 MHz or 1626,5…1660,5 MHz (single band, input band front panel selectable) L1L1: 1525,0…1559,0 MHz and 1525,0…1559,0 MHz (dual channel) L2L2: 1626,5…1660,5 MHz and 1626,5…1660,5 MHz (dual channel) LL: 1525,0…1559,0 MHz or 1626,5…1660,5 MHz (dual channel, input band front panel selectable)
Conversion Scheme	Single down conversion, no frequency inversion
LO-Frequency	L1: 1402,0 MHz, L2: 1503,5 MHz
RF-Input Characteristics	Impedance: 50Ω Return Loss: >18 dB RF-Connector: SMA female Max. Input Level: -20 dBm @ IP3 < -60 dBc (operation) -10 dBm @ IP3 < -30 dBc (operation) +10 dBm (damage level) IIP3: 0 dBm Cross Talk: Unit 1 to IF out @ unit 2: < -80 dB (only dual channel)
IF-Output Characteristics	Frequency: 140 ± 17 MHz Impedance: 50 or 75 Ω Return Loss: >18 dB 1 dB Compression Point: >10 dBm, 13 dBm typical Output Muting: >60 dB (by command or sense input or by alarm condition) IF-Signal Monitor: -12 dB of IF-output IF-Connector: SMA female
Transfer Characteristics	Max. Conversion Gain: 35 dB Attenuation Range: 0…30 dB, Step 0.1 dB (Conversion Gain 35…5 dB) Gain Accuracy: ± 1 dB Level Stability: ± 0.25 dB/day (constant temperature) Amplitude Response: ± 0.5 dB / 10 MHz Noise Figure: <16 dB
Equalizer (Gain Slope)	± 2.5 dB / 40 MHz (programmable)
Intermodulation (3rd Order)	-60 dBc max (Δf_{in} : 5 MHz, P_{in} : 2 x –40 dBm, P_{out} : 2 x –10 dBm)
Phase Noise	10 Hz - 55 dBc/Hz 100 Hz - 75 dBc/Hz I kHz - 85 dBc/Hz 10 kHz - 95 dBc/Hz 100 kHz - 100 dBc/Hz[1] I MHz - 120 dBc/Hz[1] [1]) 0°C to 50°C, outside this temperature range degraded by max 5 dB
Spurious Outputs	Signal related: < - 60 dBc (Δf < 1 MHz), < -70 dBc (Δ≥f ≥1 MHz) Signal independent: < - 76 dBm (< - 80 dBm typical)
Frequency Stability	± 1 x 10^{-7}, 0°C to 50°C ± 2 x 10^{-8}, 0°C to 50°C (after 30 min warm up) ± 5 x 10^{-9} per day (fixed temperature after 24 h warm up)

Level 14, 350 Collins Street, Melbourne 3000 Victoria Australia ACN 102 832 495
Tel +61 3 9604 6900 Fax +61 3 9604 6999 Email info@drawcom.com.au www.drawcom.com.au

Inmarsat Downconverter (Indoor Version)

L-Band to 70/140 MHz, Single or Dual Channel Downconverter

S-Type (standard version), H-Type (MIL version, extended temperature range)

Specifications *(cont.)*

Downconverter Type	**HCD-Lx / SCD-Lx or HCD-LxLx / SCD-LxLx**
Reference Input	Frequency: 10 MHz or 5 MHz Level: -5…10 dBm Modes: internal, external, auto (senses reference input) Connector: SMA female
Reference Output	Frequency: 10 MHz Impedance: 50Ω Return Loss: >15 dB Level: 0 ± 3 dBm Connector: SMA female
Reference Output: with Option: -PLO	Frequency: 187.20 MHz (other frequencies on request) Impedance: 50Ω Return Loss: > 15 dB Harmonics: < -40 dBc Level: 5 ± 1 dBm Connector: SMA female
Monitoring and Control Interface	RS232 or RS422/RS485 (Connectors DSUB09 female) (selectable by customer), TCP/IP over Ethernet, 10/100 Base-T (RJ45 connector)
Alarm Interface Mute Input	Two potential free contacts (DPDT) Mute Input: TTL logic input with internal pull up Connector DSUB09 female)
Temperature Range	HCU : -30°C to 60°C operating (10 minutes warm up at -30°C, the LCD display is operational: -20°C to 60°C) SCU : 0°C to 50°C operating - 30°C to 80°C storage
Relative Humidity	< 95 % non condensing
User Interface	SCU: LCD-Display 2 x 40 characters, 4 cursor keys, 4 function keys HCU: VFD-Display 2 x 40 characters, 4 cursor keys, 4 function keys
Power Supply	85…264 V AC, 40…70 Hz, 0.9 A max
DC Power to external LNA with Option DC (DC bias tee included at Signal input)	DC Voltage : 15 V (other voltages on request) Current max. 0,4 A (each output) Switchable: ON / OFF Protection: Short circuit protection
Dimension and Weight	483 x 44 x 500 mm³, 1 RU (19“) approx. 8.6 kg

Other Information

HCD-[RF Band(s)]-[IF Band in MHz]-[IF Imp in @]-[Options]
SCD-[RF Band(s)]-[IF Band in MHz]-[IF Imp in @]-[Options]
Possible Options are:

FAN (internal Fan)
VFD (VFD display, standard with HCD-type converters)
DC15 (DC bias tee on signal input with 15 V DC output)
PLO187 (additional 187 MHz reference signal output)
ALC-BW (Automatic level control- Filter bandwidth, see product: Automatic Level Control)

Examples:
HCD-L1-140-50
SCD-L2L2-140-75-FAN-DC15-PLO187
HCD-LL-140-50-FAN-DC15
SCD–LC-140-50-FAN

Combination with of L-Band (Narrowband) Downconverter and C-Band Satellite Downconverter) with Fan -

Level 14, 350 Collins Street, Melbourne 3000 Victoria Australia ACN 102 832 495
Tel +61 3 9604 6900 Fax +61 3 9604 6999 Email info@drawcom.com.au www.drawcom.com.au