



## Low Power IBUCs

This note pertains to IBUCs with power levels from 5-10W C-band and 4-8W Ku-band.

### Description and Application

The Intelligent Block Upconverter (IBUC) accepts an L-band input from any satellite modem and converts it to a frequency within the satellite uplink Ku or C-band. The uplink frequency is determined by the modem frequency. For Ku-band, add the modem IF frequency to the IBUC Local Oscillator (L.O.) frequency. For C-band, subtract the modem IF frequency from the IBUC L.O. frequency. The IBUC is designed so that an input level of  $-30$  dBm yields the rated output level of P1 dB as a minimum at any frequency across the operating temperature range. Output level is selected by varying the input level through modem adjustment or IBUC gain attenuation through the M&C interface.

The composite L-band input must also include a 10 MHz reference signal between  $-8$  and  $+3$  dBm and 24 or 48 VDC. An FSK communication channel with M&C information is often provided from the modem for Monitor and Control of the IBUC.

### Connectors

The IBUC output interface is a WR75 UG cover with groove waveguide flange for Ku-band. For C-band the factory-select options are a CPR-137G waveguide flange or Type N female connector. Terrasat provides a waveguide kit that includes gaskets and screws. For C-band radios we provide both a half gasket and full gasket. The IF input connector is a Type N female. The mating connector is customer-furnished as part of the IFL cable assembly.

Terrasat provides a mating connector for the circular multi-pin M&C connector. Pin assignments for wiring this connector for Ethernet, RS485, or RS232 are provided in the manual.

### IFL Cable

The transmit inter-facility-link cable must be a 50 ohm cable with double shielding. Various manufacturers make this type cable including Belden, and Times

Microwave. Times Microwave LMR-400 is a popular choice. A TCP/IP IFL cable can be fabricated using the supplied M&C connector and customer-furnished, outdoor-rated category 5 cable with RJ-45 connector.

Receive IFL cables are dependent on the type of LNB chosen. There are different models of LNBS; some with 50 ohm Type N connectors and others with 75 ohm f-type connectors. Select a double-shielded cable of the correct impedance for the installation.

### Mounting the IBUC

The IBUC is typically suspended from the antenna feed arm support by the optional mounting bracket. Selection of mounting method is a customer choice based on the antenna type and design preference. Several major antenna manufacturers provide mounting hardware designed for Terrasat BUCs.

Terrasat's mounting bracket is provided with cap screws for attachment to the IBUC. It can be attached to the feed arm support by two U-bolts of up to 4 1/2" (customer-furnished).

The mounting bracket can be ordered from Terrasat. Note that a second mounting bracket is required for the outdoor power supply. The bolt-hole patterns are identical.

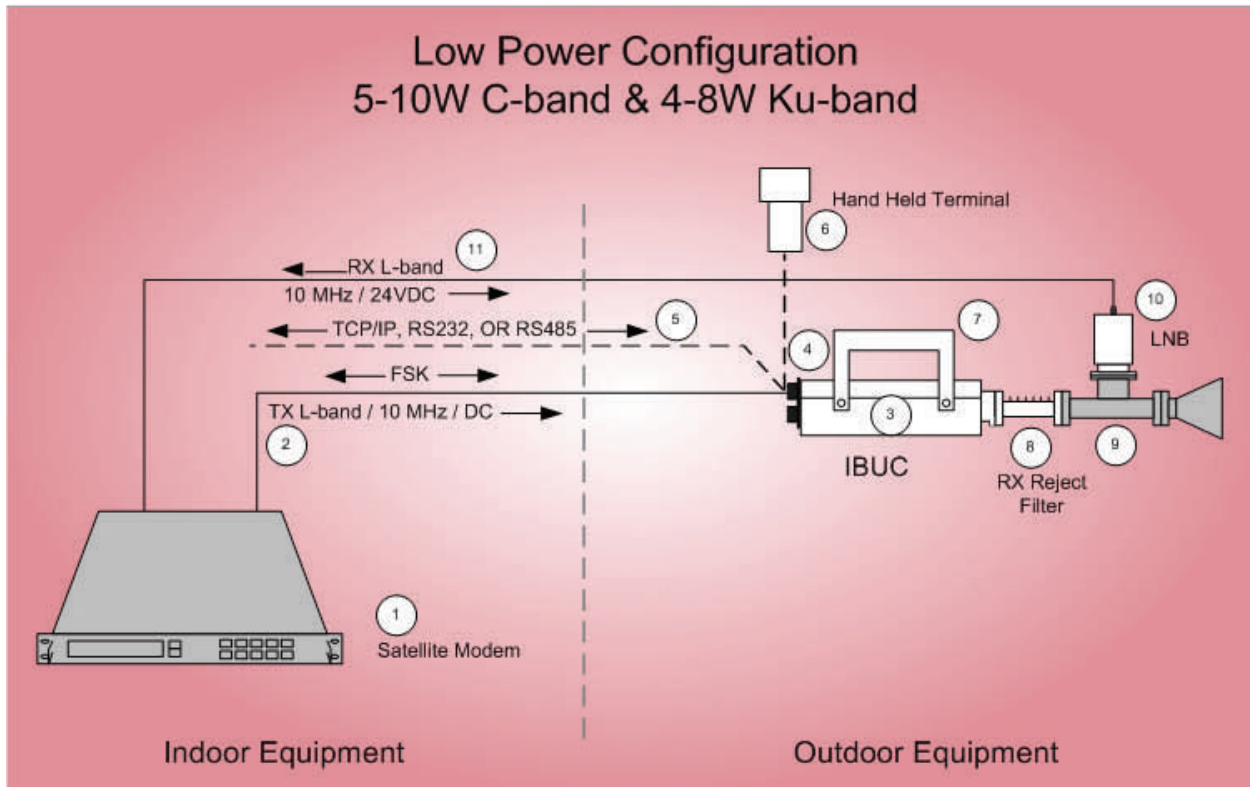
A flexible waveguide or Type N jumper cable is typically required to connect the IBUC output to the antenna OMT/feed and is not included.

### Management & Control

In addition to the FSK interface to the modem, there are several interface protocol options for M&C of the IBUC. These include TCP/IP, RS485, and RS232.

An M&C connector is provided with the IBUC and can be wired according to instructions in the manual for the various interface protocols. A customer-furnished IFL cable is required for TCP/IP, RS485, and RS232. The cable should be properly rated for the environment in which it is used. Terrasat can supply a cable as an optional item.

The command line structure is detailed in the owner's manual for integration with the customer's NMS.



### System Elements

Numbers in the drawing correspond to the description given below. CFE=Customer Furnished Equipment. Part numbers are provided where items are available from Terrasat.

1. L-band modem with 10 MHz reference (CFE). Note that the ODU power supply option IS required in the modem. 24V and 48V options are available for 5/10W C-band and 4W Ku-band IBUCs. The 8W Ku-band IBUC is available with 48VDC only. Please consult the individual IBUC data sheets for maximum current consumption and compare with the capacity of power supplies available from the modem vendor.
2. Transmit IFL cable (CFE). 50 Ohm with double shielding, Type N male connector mates with IBUC Type N female.
3. IBUC.
4. M&C interface connector, included. Select pins for TCP/IP, RS485 or RS232. See manual. PN 533-10740-0001
5. M&C cable (CFE). TCP/IP cable available from Terrasat on special order. TCP/IP test cables are available from Terrasat in a standard 7 ft. (2m) length. For connection to an Ethernet hub order a

straight cable, PN 550-100786-0005. For connection directly to a PC order Crossover cable PN 550-10786-1005.

6. Handheld controller with 7 ft. (2m) cable, PN 700-10544-0001. Useful for initial setup, and local M&C.
7. Mounting bracket, ordered separately, PN340-10522-0001 supports any model IBUC. Accommodates U-bolts up to 4 1/2 inch (CFE).
8. Receive reject filter, ordered separately. Typically not required for low power systems. C-band PN 340-10775-0001, standard Ku-band PN 340-10775-0002. Included with wideband Ku IBUCs, PN 340-10775-0003.
9. Ortho-mode Transducer, OMT (CFE).
10. Externally referenced LNB. Available option from Terrasat.
11. Receive IFL cable (CFE).

#### Not pictured:

Flexible waveguide from IBUC to feed assembly or OMT. Available option from Terrasat in 1m length:

- C-band PN 577-10520-0001
- Ku-band PN 577-10519-0001