



Terrasat Communications IBUC – Intelligent Block Upconverter

Quick Setup Guide



Physical Connections

IBUC

IBUC CONNECTOR SCHEDULE			
REF DESIG	FUNCTION	CONNECTOR	CONNECTOR MATE
J1	TX IN	TYPE-N, RCPT	TYPE-N PLUG
J2	M&C INTERFACE	AMPHENOL CYLINDRICAL, BOX MTG RCPT, 19S (MS3112E-14-19S)	AMPHENOL CYLINDRICAL, STRAIGHT PLUG, 19P (MS3116F-14-19P)
J3	DC POWER	CANNON MS CIRCULAR, BOX MOUNTING RCPT (MS3102R14S-6P)	CANNON MS CIRCULAR, STRAIGHT PLUG (MS3106F14S-6S)
RF OUT	Ku-Band	WR75, COVER FLANGE WITH GROOVE	WR-75 COVER FLANGE
RF OUT	C-Band	CPR137, CPRG WAVEGUIDE or N-Type (F)	CPR-137, CPRF, WAVEGUIDE or N-TYPE (M)

A mating M&C connector for J2 is included with the IBUC. A DC-input mating connector for J3 is included with 12 watts or higher units. For IBUC's with a rated power level of 10 watts and below the power for the IBUC may be through the L-band IFL supplied from the satellite modem. The IBUC can also be supplied directly through the external power connector (J3). Options are available for 24VDC and 48VDC. Refer to the label on the unit to determine which voltage is required.

For IBUC's with a rated power of 12 watts or greater, an external power supply is required. Terrasat offers a 600W outdoor PSUI (good for all power levels up to 80W C-band or 40W Ku). Power supplies have an auto-ranging AC front end that will work with both 115VAC and 230VAC. The outdoor PSUI is shipped with a DC power cable (10ft) and mating connectors for the AC mains power cable.

Transmit In J1: The TX IN connector is a Type N, female connector used to connect the IF at L-band from the modem to the IBUC. 50Ω cables should be used to connect to J1. The IBUC is designed to operate at rated power with a -30 dBm TX L-band input signal. A variable attenuator is accessible through the M&C for system gain adjustment. In addition the IBUC must have a 10MHz input signal between +3 to -8 dBm.

Once DC power and 10 MHz input signals are applied, the IBUC will function without the necessity of an M&C interface.

M&C Interface J2: The M&C Interface is a 19-pin, circular, female connector used to allow remote monitoring and control of IBUC operating parameters. Pin assignments are shown below. If the M&C port of the IBUC is going to be used the cable should be a shielded multi-conductor cable with at least two each twisted pairs. Please also see the IP cable drawing attached. An assembled IP test cable is available from Terrasat.

IBUC M&C Connector J2, Pin Assignments

IBUC J2	
PIN	FUNCTION
A	RS485 (+)
B	RS485 (-)
C	HANDHELD TERMINAL POWER (+)
D	RS232 RXD
E	RS232 TXD
F	HANDHELD TERMINAL POWER (-)
G	TCP/IP TX +
H	TCP/IP TX -
J	TCP/IP RX +
K	TCP/IP RX -
L	IBUC ALARM OUTPUT Normally Open
M	IBUC ALARM OUTPUT Common
N	IBUC ALARM INPUT
P	IBUC ALARM OUTPUT Normally Closed
R	1+1 SWITCH COMMAND A
S	1+1 SWITCH COMMAND B
T	1+1 SWITCH INDICATOR A
U	1+1 SWITCH INDICATOR B
V	1+1 Redundancy Enable

Note that pin F is the return to close the circuit for RS232

DC Power J3: Prime power is supplied to the IBUC through a 6-pin circular female connector.

IBUC Power Connector J3, Pin Assignments

IBUC J3	
PIN	FUNCTION
A	VDC -
B	VDC -
C	VDC -
D	VDC +
E	VDC +
F	VDC +

Note:

The IBUC is factory-configured for Positive Supply (+48VDC, standard) or Negative Supply (-48VDC, alternate). J3 is internally connected, as follows:

Positive Supply: VDC- is connected to Common.

Negative Supply: VDC+ is connected to Common.

Power Supply Connections

AC IN (J1): Prime power, AC, is provided via the circular, 3 –pin plus ground connector. The connector is configured as follows

PSUI AC Power Connector J1, Pin Assignments

PSUI J1	
PIN	FUNCTION
2	NEUTRAL
3	LINE
GRND	GROUND

DC OUT (J2): DC out connector is used to provide power from the PSUI to the IBUC using a 6-pin circular connector. Pin out for this connector is as follows:

PSUI DC Output Connector J2, Pin Assignments

PSUI J2	
PIN	FUNCTION
A	VDC -
B	VDC-
C	VDC-
D	VDC+
E	VDC+
F	VDC+

M&C Setup

Important Note: Some default settings for the IBUC have changed from those described in the current version of the manual (Table 6-2 M&C Command Set). Please note the following changes in default values:

RS485 Data Rate is 9600 baud

RS485/FSK Mode is 1 (Legacy Binary mode)

Default IP address is 192.168.1.21

Other (standby) BUC IP address is 192.168.1.22

IP gateway address is 192.168.1.1

Note: RS485/FSK Mode 1 is the default setting to enable compatible modems to use the "Legacy binary" mode to communicate with the IBUC.

General

Communication with the IBUC can be accomplished via any of five interfaces: TCP/IP, RS232, RS485, Handheld Terminal (HHT), and FSK Link. The first four use the M&C connection (J2) with an appropriately configured cable and terminal. FSK Link uses FSK signals between the IBUC and modem that are multiplexed on the IFL coax cable.

TCP/IP:

Communication with the IBUC via TCP/IP can be through Telnet (ASCII) or the onboard web server (HTTP). The IBUC uses a static IP addressing structure and does not support DHCP. The IBUC is factory-configured as follows:

IP Address 192.168.1.21

IP Gateway 192.168.1.1

Subnet Mask 255.255.255.0

Telnet Port 23

Note: Your computer should have a static IP address on the same subnet as the IBUC. Using a suitable cable, connect the computer to the IBUC J2 connector. Note: If an Ethernet hub is not used to connect to the IBUC, then a crossover cable must be used. An Ethernet hub will function with a straight connect cable. Please see the attached drawing.

Telnet:

On the host computer activate a command prompt window. Enter Telnet 192.168.1.21 and a cursor should appear on the left of the screen. Type the password command, CPE=1234, and the response will be IBUC>_. Commands may now be entered to access the IBUC functionality. (Please see Operation Manual, Section 6).

Web Server:

On the host computer activate a web browser window. In the address window type HTTP://192.168.1.21 and press enter. Within a few seconds you should see the login screen. On the login screen, enter 1234 in the login box and press the Login button. You will be taken to the Alarm Status page where you can select from the following web pages:

- Alarm Status
- Transmit Status
- Transmit Config
- Redundant Config
- Interface Config
- System Config

The “Status” pages enable monitoring of various IBUC parameters. Alarms are color coded with green indicating OK, orange as a warning, and red as an alarm condition.

The “Configuration” pages provide access for changing factory default settings to suit specific site or network requirements. Settings take effect when you press the “Update” button. Note that some changes in configuration will cause a loss of communication with the host computer. It will then be necessary to make the corresponding change in the host computer. For an example, here are instructions on changing a unit’s IP address (using the default settings):

Navigate to the “Interface Config” page

Change the IP address to something other than 192.168.1.21 (the factory default)

Press “Update”.

Note that IP address changes will not take effect in the IBUC until it is reset (power cycled).

In the host computer web browser type the new address and come back in through the Login page.

RS232:

No configuration of the IBUC is required for proper RS232 operation. The RS232 port uses ASCII protocol and a fixed baud rate of 9600 for communication. On the host computer set the serial port settings to the following: Baud rate to 9600, data bits to 8, parity to none, stop bits to 1, and flow control to none. The IBUC can be accessed using a terminal program on the host computer such as HyperTerminal. Hit enter several times and you should see the “IBUC>” prompt. Type CPE=1234 and the IBUC> prompt should return. The IBUC is now ready to accept commands.

Following are two examples, which use the default settings. If you need to reconfigure these settings, this describes the sequence of events:

To configure TCP/IP do the following:

```
CIA=192.168.1.21      // IP Address
CIG=192.168.1.1      // IP Gateway
CIM=24               // Subnet Mask
```

CIP=23 // Telnet Port

To configure RS485 do the following:

C4A=1 // RS485 Address

C4D=20 // RS485 Delay

C4R=9600 // RS485 Baud rate

If ASCII mode is desired type

C4M=0 // RS485 Mode (Not factory default)

If Legacy mode is desired type

C4M=1 // RS485 Mode

RS485:

Communicating with the IBUC across RS485 can be through ASCII or a proprietary binary protocol referred to as Legacy.

ASCII mode:

The default configuration is Legacy Binary mode so it will be necessary to reconfigure in order to use ASCII mode. ASCII mode can be selected via web page in TCP/IP or using HHT or RS232 to configure the 485 address (1), 485 line delay (20), 485 mode (0) and 485 baud rate (9600).

Communication through a terminal program such as HyperTerminal requires an onboard RS485 card in the host computer. In HyperTerminal type the password command: <0001/CPE=1234 followed by the enter key. Once the < prompt comes back the IBUC is ready to accept commands. In the above example <0001/ is the address of the IBUC followed by the desired command.

If an external box is used to convert RS232 to RS485, then a terminal program will not function. These boxes are designed to work with the RTS/CTS lines manually which a terminal program cannot handle. In these cases, a network management program is required to handle this handshaking requirement.

Legacy (binary) mode:

This is the default setting of the IBUC. In this mode the BUCMON program supplied on the CD accompanying the unit is the simplest method to communicate with the IBUC. Otherwise, a network management program must be provided.

HANDHELD TERMINAL (HHT):

No IBUC configuration is required to use the HHT. To activate the HHT, connect the supplied cable to the IBUC connector labeled J2 and plug the phone jack into the HHT. Once a flashing cursor is seen in the upper left part of the screen, press the decimal key on the HHT 4 times to activate the HHT. The login screen will appear. Enter the default password of 1234.

The Handheld Terminal Menu Tree is in the Operation Manual, Section 6, Figure 6.2.

FSK LINK:

Several brands of Modem have the capability to communicate with a Block Up Converter (BUC) using an FSK signal multiplexed onto the IF output connector along with the Tx IF signal and 10 MHz reference. This enables the operator to monitor and control the IBUC from the modem front panel. The IBUC default configuration is RS485/FSK Mode 1 (Legacy Binary mode) since all modems currently require this protocol for FSK links. The IBUC is also capable of FSK communication using ASCII mode but requires a modem compatible with this method. Refer to the modem manual for commands and procedures for FSK communication with the IBUC.

A Multi-function LED is mounted on the IBUC housing to provide visual indications of IBUC status. LED colors and modes are as follows:

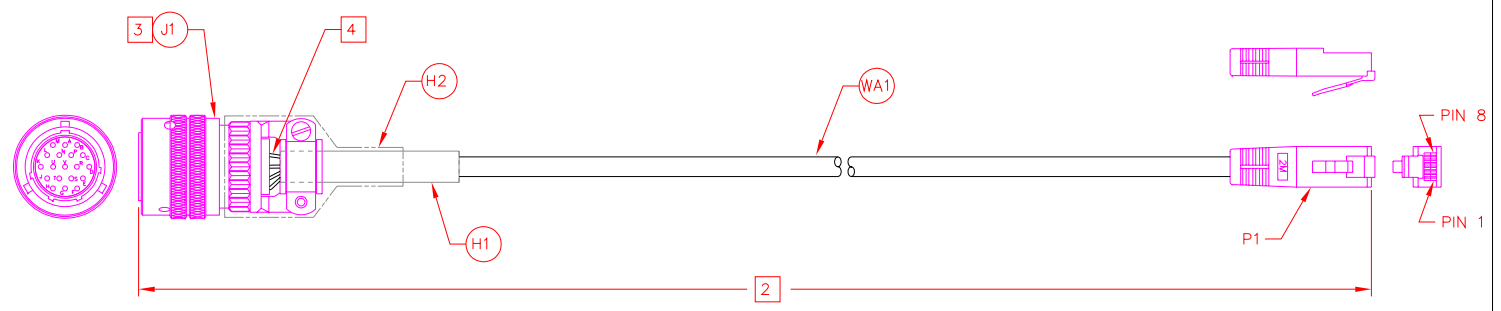
- Flashing Green - No Alarms
- Flashing Red - Minor Alarm being reported
- Steady Red - Major Alarm being reported

Major and Minor alarms are defined in the IBUC manual. Note that certain alarms are configurable giving the user the ability to define them as Major or Minor alarms.

DWG.# SH REV.

REVISIONS			
REV.	DESCRIPTION	DATE	APPROVED
1	RELEASE PER ECO# 11436	5/10/05	J. HECHT

- NOTES: (UNLESS OTHERWISE SPECIFIED)
 1. FOR ALL ITEMS, USE PART NUMBER INDICATED OR EQUIVALENT.
 2 DASH NUMBER EQUALS CABLE LENGTH IN FEET.
 3 J1, PINS (A-F & L-V) ARE NOT USED.
 4 CUT THE RJ45 CONNECTOR AT THIS END AND STRIP THE CABLE OUTER JACKET TO THE DESIRE LENGTH AND CUT THE BLUE WHITE/BLUE, WHITE/BROWN AND BROWN WIRES.



WIRING SCHEDULE (-0XXX, STRAIGHT CONNECT)		
WIRE	FROM P1	TO J1
WHT/ORG	PIN-1	PIN-G
ORG	PIN-2	PIN-H
WHT/GRN	PIN-3	PIN-J
GRN	PIN-6	PIN-K
BLU	PIN-4	NC
WHT/BLU	PIN-5	NC
WHT/BRN	PIN-7	NC
BRN	PIN-8	NC

WIRING SCHEDULE (-1XXX, CROSS CONNECT)		
WIRE	FROM P1	TO J1
WHT/ORG	PIN-1	PIN-J
ORG	PIN-2	PIN-K
WHT/GRN	PIN-3	PIN-G
GRN	PIN-6	PIN-H
BLU	PIN-4	NC
WHT/BLU	PIN-5	NC
WHT/BRN	PIN-7	NC
BRN	PIN-8	NC

H2	2.00"	557-10662-0003	TUBING, HEAT SHRINK, POLYOLEFIN, BLACK, 1.25	DABURN, DAFLEX SM278
H1	2.00"	557-10662-0002	TUBING, HEAT SHRINK, POLYOLEFIN, BLACK, 5/16	DABURN, DAFLEX SM278
WA1	1	550-10787-XXXX	CABLE ASSY,CAT5(e),RJ45,PATCH,GRAY	ASSMANN A-MCUP-80XXX
J1	1	533-10740-0001	CONN, CIRC, PLUG, MS, SHELL SIZE 14, 19P	AMPHENOL MS3116F-14-19P
ITEM#	QTY	TERRASAT PART#	DESCRIPTION	MANUF. PART#
PARTS LIST				
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ARE: XX ±.01 XXX ±.005		CONTRACT #	TERRASAT COMMUNICATIONS, INC.	
DRAWN BY: S. LOW		DATE: 5/10/05	FABRICATION DRAWING. CABLE ASSY,TCP/IP,RJ45 TO MS-19P	
APPROVED BY: J. HECHT		DATE: 5/10/05		
CHANGED BY:		DATE:		
MATERIAL	SEE NOTES	CHECKED BY:	DATE:	SIZE: B DR# FBD-10786-XXXX
FINISH	SEE NOTES	DO NOT SCALE DRAWING		
			SCALE: 1:1	REV. 1
				SHEET 1 OF 1

