



## **Application Brief – IBUC Diagnostics**

L-band Block Upconverters have evolved from “dumb” BUCs used in VSATs for best-effort communications into intelligent replacements for 70 MHz transceivers in mission-critical applications. With the exception of intelligent BUCs, like the IBUC, the customer lacks tools to determine if the BUC is operating properly. Our experience has been that there is a strong tendency to misdiagnose system failures as BUC malfunctions. The net result is needless downtime and lost revenue.

### **Installation**

The ability to set up a link rapidly and with as few pieces of test equipment as possible has called for the incorporation of self-diagnostics into an intelligent BUC. Terrasat's IBUC leads the industry with a complete set of diagnostic tools built into the Block Upconverter. Diagnostics are available on a standard TCP/IP interface, displayed as web pages that are embedded in the IBUC. Using a web browser, the installer establishes a connection to the BUC and is presented with six web pages including those shown in this document.

### **Monitoring**

Monitoring of terminal performance enables local and remote operators to verify performance and may enable them to spot deteriorating links prior to an outage. In networks with performance/availability guarantees and service fee rebates, this can provide vital data about link status. For smaller networks the web page display may provide adequate information without the expense of a Network Management Software (NMS) package. For larger networks the IBUC supports RS232 and RS485 protocols, delivering the same M&C command set.

### **Troubleshooting**

In the event of a failure at a site, it is possible to monitor the satellite modem and virtually all premise equipment – except for a dumb BUC. After the technician has eliminated every other potential cause, he must take the BUC off line and either replace it and take the suspect unit back to the lab, or set up a test bed to confirm that the BUC has indeed failed. If the technician on site could easily confirm or eliminate the BUC as the source of the failure he would save substantial time and effort. On-board diagnostics in the IBUC bring this to reality.

A few screen shots on the following pages demonstrate the IBUC web page interface.

# Alarm Status Screen Shot



## IBUC M&C Webpage

### Menu Options:

**Alarm Status**

Transmit Status

Transmit Config

Interface Config

System Config

Alarm Config

*This page generated: Mon Apr 11 11:12:09 GMT-0700 (Pacific Standard Time) 2005*

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<i>Serial Number</i>	TE0000002
<i>Model Number</i>	IBUC058064-148010
<i>Firmware Version</i>	IBUC v0.75, Wed Apr 6 2005 22:42:43
<i>Power Class</i>	10 W (40 dBm)
<i>Frequency Band</i>	C-Band Standard
<i>Temperature (Internal)</i>	57 °C
<i>Fan Status</i>	Ok
<i>10 MHz Detector</i>	Ok
<i>Supply Voltage</i>	48.6 V
<i>Current Consumption</i>	1.7 A
<i>Power Consumption</i>	82.5 W
<i>PLDRO Lock Voltage</i>	7.71 V
<i>PLDRO Lock</i>	Ok
<i>ALC Range</i>	N/A
<i>AGC Range</i>	N/A
<i>TX Input Level</i>	Ok
<i>TX Output Level</i>	Ok
<i>Alarm History</i>	<input type="button" value="Clear"/> View history

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From the Alarm Status page the technician has an immediate view of potential causes of alarm conditions. He can check for unusual conditions from both internal and external sources. Common errors such as loss of 10 MHz reference or low input level are readily viewed without the need for test equipment. It is not necessary to take the unit out of service for troubleshooting and the source of the problem can be isolated very quickly.

# Transmit Status Page Screen Shot



## IBUC M&C Webpage

### Menu Options:

Alarm Status

**Transmit Status**

Transmit Config

Interface Config

System Config

Alarm Config

*This page generated: Mon Apr 11 11:13:02 GMT-0700 (Pacific Standard Time) 2005*

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<i>Serial Number</i>	TE0000002
<i>Model Number</i>	IBUC058064-148010
<i>Firmware Version</i>	IBUC v0.75, Wed Apr 6 2005 22:42:43
<i>Power Class</i>	10 W (40 dBm)
<i>Frequency Band</i>	C-Band Standard
<i>TX Output</i>	<b>Enabled</b>
<i>TX Frequency</i>	5850 MHz
<i>TX Gain Mode</i>	<b>ALC</b>
<i>TX Gain Control</i>	<b>0.1</b>
<i>TX Attenuation</i>	8.0
<i>TX Input Level</i>	<b>-31.14 dBm</b>
<i>TX Output Level</i>	<b>31.83 dBm</b>
<i>TX Input Threshold Low</i>	<b>Ok</b>
<i>TX Input Threshold High</i>	<b>Ok</b>
<i>TX Output Threshold Low</i>	<b>Ok</b>
<i>TX Output Threshold High</i>	<b>Ok</b>
<i>Power Read Mode</i>	CSM
<i>TX Powerup Delay</i>	0 sec
<i>TX Powerup State</i>	<b>Enabled</b>
<i>High Temp Shutdown</i>	<b>Enabled</b>
<i>Simulate TX Fault</i>	Disabled
<i>Suppress TX Fault</i>	Disabled

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The Transmit Status page offers additional information about the condition of the IBUC. This page helps the technician to confirm desired settings and track down clues during troubleshooting.

# Transmit Configuration Screen Shot



## IBUC M&C Webpage

### Menu Options:

- Alarm Status
- Transmit Status
- Transmit Config**
- Interface Config
- System Config
- Alarm Config

This page generated: Mon Apr 11 11:10:22 GMT-0700 (Pacific Standard Time) 2005

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<b>Serial Number</b>	TE0000002
<b>Model Number</b>	IBUC058064-148010
<b>Firmware Version</b>	IBUC v0.75, Wed Apr 6 2005 22:42:43
<b>Power Class</b>	10 W (40 dBm)
<b>Frequency Band</b>	C-Band Standard

<b>Update TX Settings</b>	<input type="button" value="Update"/>
<b>TX Output</b>	<input type="button" value="Enabled"/>
<b>TX Frequency</b>	<input type="text" value="5850"/> MHz
<b>TX Powerup State</b>	<input type="button" value="Enabled"/>
<b>TX Powerup Delay</b>	<input type="text" value="0"/> sec
<b>High Temp Shutdown</b>	<input type="button" value="Enabled"/>
<b>Power Read Mode</b>	<input type="button" value="CSM"/>
<b>Burst Threshold</b>	<input type="text" value="20.00"/> dBm
<b>Burst Count</b>	<input type="text" value="8"/>
<b>Update TX Alarm Settings</b>	<input type="button" value="Update"/>
<b>TX Gain Mode</b>	<input type="button" value="ALC"/>
<b>TX Attenuation</b>	<input type="text" value="8.0"/>
<b>Simulate TX Fault</b>	<input type="button" value="Disabled"/>

<b>Update TX Alarm Settings</b>	<input type="button" value="Update"/>
<b>TX Input Threshold Low</b>	<input type="text" value="-60.00"/> dBm
<b>TX Input Threshold High</b>	<input type="text" value="-15.00"/> dBm
<b>TX Output Threshold Low</b>	<input type="text" value="20.00"/> dBm
<b>TX Output Threshold High</b>	<input type="text" value="41.00"/> dBm
<b>Suppress TX Fault</b>	<input type="button" value="Disabled"/>

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The Transmit Configuration page is useful in initial setup of the IBUC and subsequent remote or local reconfiguration. It provides the ability to change configuration settings such as power up state, AGC/ALC, and additional gain. And from it the customer can set alarm thresholds. Access is password protected.