

Intelligent Time Code Distribution Amplifier IBU-160i

Operation and Maintenance Manual

P/N: 90000152 REV A

For Brandywine Communications products with the following Part Numbers: 01900100X



Safety Warnings

WARNING:

This unit contains lethal AC voltages. Disconnect the unit from the AC supply before removing the cover.

WARNING:

This unit contains dual power supplies. Isolate BOTH power supplied from AC Power before removing the top cover.

WARNING:

The lightning flash with an arrowhead inside of an equilateral triangle is intended to alert the user to the presence of un-insulated "dangerous voltage" within the product's enclosure. The "dangerous voltage" may be of sufficient magnitude to constitute a risk of electrical shock to people. Do not attempt to repair the unit without first unplugging it.

CAUTION: The exclamation point inside of an equilateral triangle is intended to alert the user to the presence of important operation and maintenance instructions in the user guide. Only qualified personnel should repair this unit. Several board assemblies contain static sensitive devices. Appropriate procedures must be used when handling these board assemblies.



Revision History:

Revision	Date
А	04/22/2016



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1 Introduction

The IRIG Distributor Unit (IBU-160i) provides 16 isolated modulated time code outputs based on a selected input reference. The code output is always the same as the input. The IBU-160i provides reference selection, isolation and individual amplitude adjustment.

The IBU-160i is contained in a compact IU rack-mount chassis. The IBU accepts two sets of inputs, comprising the reference IRIG input and status from the source. The IBU provides automatic changeover should one of the on-line source inputs fail. Manual source select override is available on the front panel, or through the Ethernet interface.

A variety of status indicators are located on the front panel for instant visual feedback, together with manual controls for source selection.

A 10/100 base T Ethernet interface provides full control over the functionality of the system, including reference selection and output amplitude (on a per channel basis).

User control of the unit is via a built-in Web Browser with user-friendly graphical interface, or via SNMP for system applications.

Applications for the IBU-160i include test ranges, satellite control centers, shipboard time distribution, airports, rail terminals, and any system requiring highly reliable time code distribution.

2 Unpacking the IBU-160i

Remove the IBU-160 from the shipping carton. The following items should be included in the shipment:

1 x IBU-160i 2 x Power supply cables 1 x Quick Start Guide

2.1 Installation

2.1.1 Mounting

The IBU-160i can be installed into a 19" rack mount cabinet either using rack slides or only using the front panel flanges. For static applications, the short depth and lightweight of the IBU-160i ensures that the front panel is not stressed when only the front panel is used for support.

If the IBU-160i is installed on a mobile platform and must survive shock and vibration, the use of slides is required. Slides are installed using 10-32 UNF-2B hardware. Optional Rack Mount Slides:

P/N 002000123, SLIDE, RACK, 24", 21" TRAVEL, 85 LB IBU-160i Intelligent Time Code Distribution Amplifier – Operation and Maintenance Manual P/N 900000152 REV A



P/N 002000150, SLIDE, RACK, 28", 27" TRAVEL, 80 LB

Original Manufacturer: General Devices Chassis Trak Type C300.

2.1.2 Power

Insert the power cord of the IBU-160i into an electrical socket to power up the unit. The Power LED indicator will illuminate green.

If dual redundant power is required, connect both power sources to independent power sources

2.1.3 Ethernet

Connect one end of an Ethernet patch cable to the IBU-160i Ethernet port J21. Connect the other end of the Ethernet cable to the network with an Ethernet hub or switch.

2.1.4 Time Code Inputs

Connect a time code input sources to the time code input connectors J17 and/or J18. Channel A Input is J18, and Channel B is J17.

2.1.5 Time Code Outputs

Connect the time code outputs J1 through J16 to the coaxial infrastructure.

2.1.6 Console Port

Connect a DB-9F cable to port J20 in order to enable RS-232 access to the unit. (Straight, pin3 is RX pin2 is TX)

2.1.7 Alarm Output Port

Connect a DB-9M cable to port J19 to access the alarm output port. Please see the following diagram for the pin out of the connector:



Figure 1 - Alarm output pinout



3 Setting up the IBU-160i

Power on the system by flipping switches SW1 and SW2 on the rear of the unit to the on position. The system will display its power-on cycle on the front panel. The system will use LED lamps D7 through D17 to indicate each octet of the device's IP Address, Network Mask, and Gateway address.

Write these values down and keep them in a safe place.

To display the IP address again, the front panel can be reset by pressing the RESET switch (SW2) on the front panel.



Figure 2 - IBU-160i Showing IP Address



4 Accessing the IBU-160i's Network Interface

Connect to the IBU-160i by entering the unit's IP address into the address bar of the web browser on a PC, Smartphone or Tablet.



Figure 3 - IBU-160i Web Page Interface

Use the dropdown menu to select different functions of the IBU-160i to view the status of the system and to adjust different functions of the unit.

4.1 Accessing Functions on the IBU-160i

To access different functions of the IBU-160i management web page, select the button labeled "MENU" in the top left hand corner of the web page.



4.1.1 Viewing the Current Status of the IBU-160i system

From the "MENU" button, select "General" from the status menu. This shows information such as the current output time, UTC time, up time, the current input reference, the current output format, current system state, and alarm status.

GENERAL S	STATUS V
Local Time:	Thu Jan 1 00:05:33 1970
UTC Time:	Thu Jan 1 00:05:33 1970
Up Time:	0000:000:03:48
Hour Meter:	167
Reference:	AUTO
Input Units:	Vp-p
Input ChA:	2.83
Input ChB:	NO INPUT
System Alarms:	FAILED
Output Units:	Vp-p
Output J1:	2.84
Output J2:	3.31
Output J3:	3.20
Output J4:	2.87
Output J5:	3.25
Output J6:	2.98
Output J7:	3.17
Output J8:	3.21
Output J9:	3.20
Output J10:	3.16
Output J11:	5.79
Output J12:	7.60
Output J13:	6.68
Output J14:	7.60
Output J15:	6.27
Output J16:	3.60



Output Time: The current time of day being displayed or being output by the IBU-160i **UTC Time**: The current time of day from the GPS constellation in Universal Time Coordinate (UTC)

Up Time: The length of time that the IBU-160i has been powered on

Hour Meter: This is the accumulated number of operating hours since the IBU-160i was first built.

Reference: The current reference input being used by the IBU-160i

System Alarms: If the system is currently displaying any alarms

Output Units: The current unit the system is using



5 Changing the Settings on the IBU-160i

DEFERENCE	OFTTING					
REFERENCE	SETTING	5 •				
- Reference -						
Select Reference:	Auto	٥				
Submit	Reset Form to (Current \$	System Settin	gs		
Reference Sw	vitch Mode					
Select Reference	Switch Mode:	Revers	sionary	٥		
Reversionary	Delay					
Reversionary Dela	y (1-3600s):	20				
	(Dubarit)	Dent				
	Submit	Heset	Form to Curre	ent System S	ettings	
Input Voltage	e Units					
,		Units:	dBm ᅌ			
Innut Thresh	old					
Channel A minimu	m Input Three	hold	7.000000			
Channel R minimu	Transfer Three	held	7.00000			
channer 6 minimu	m input inres	mona:	7.00000			
	s	ubmit	Reset Form	to Current S	ystem Set	tings

Figure 5 - Reference Settings Page

5.1 Selecting a Reference

From the menu, select "Reference" from the settings submenu. From the "Select Reference" dropdown menu, select between reference sources A (J18) or B (J17).



5.1.1 Changing the reference switch mode.

From the dropdown labeled, "Select Reference Switch Mode," select which mode the unit uses to switch references in the event of a problem. The available modes are listed below.

- Non-Reversionary: If the primary reference source fails or is out of threshold, the system will automatically switch over to the secondary reference source, and continue to use the secondary until manually switched back to the primary source, or the secondary source fails and the system automatically switches back to the primary.
- **Reversionary:** The system will switch to the secondary source automatically if the primary source fails or is out of threshold, however once the primary source is restored, the unit will immediately switch back
- **Reversionary with Delay:** The system will automatically switch to the secondary source in the event the primary source fails or is out of threshold. Once the primary source is restored, it will automatically switch back after waiting for a user-specified delay. This setting is useful for helping the unit deal with intermittent problems on a primary time code source.

5.1.1.1 Adjusting the reversionary delay.

The text box "Reversionary Delay" is used to set the delay time in seconds used when the system is set to the "Reversionary with Delay" Reference Switch mode.



5.2 Adjusting the Output Settings

OUTPUT SETTINGS ▼	
J1 - J16 Output Level Settings	
Output Voltage Units = Vp-p	
J1	
Output Setting:	2.5
Alarm Threshold:	1.5
.12	
Output Settina:	2.5
Alarm Threshold:	0.2
J3	
Output Setting:	2.5
Alarm Threshold:	1.5
\sim	\sim
J14	
Output Setting:	2.5
Alarm Threshold:	1.5
J15	
Output Setting:	2.5
Alarm Threshold:	1.5
J16	
Output Setting:	2.5
Alarm (hreshold:	1.0
Submit	Reset Form to Current System Settings

Figure 6 - Output Settings

From the main menu, select "Output" from the settings submenu. This lets the user change the Output levels of each individual time code output.



5.3 Changing the IP Address

From the main menu, select "IP" from the settings submenu. From here, the IP Address, Subnet Mask, and Gateway address of the unit can be selected. In addition, it is possible to enable DHCP, however this action is not recommended.

IP SETTINGS	
Port-1 IP Address:	192.168. 1.105
Port-1 Subnet Mask:	255.255.255. 0
Port-1 Gateway:	192.168. 1. 1
Port-1 DHCP Enabled:	Ø
Submit	Reset Form to Current System Settings

Figure 7 IP Address Settings



5.4 Changing SNMP Settings

From the main menu, select "SNMP" from the settings submenu. From here the Read Community, Write Community, and Trap IP Address can be set.

	192.168.1.230 C +				
MENU 5	MENU III				
	▼ SNMP SETTINGS ▼				
Read Community:	public				
Write Community: Trap IP 1 Address:	0.0.0.0				
Trap IP 2 Address: Download MIB File:	0.0.0.0 IBU160i.mib				
Submit Reset Form to Current System Settings					
brandywine					

Figure 8 - SNMP Settings

5.4.1 Monitoring the IBU-160i using SNMP

To monitor the IBU-160i via Simple Network Management Protocol (SNMP), download a MIB file from the Support Downloads section of the Brandywine Communications website. (http://www.brandywinecomm.com/product-support/downloads)



5.5 Changing The Location Setting

From the main menu, select "Location" from the settings submenu. This setting tells the user where the unit is physically located within a facility. (e.g. Room 102)

MENU 55			
▼ LOCATION SETTINGS ▼			
Location:			
Submit Reset Form to Current System Settings			
brandywine			

Figure 9 - Location Setting Screen



5.6 Changing The Access Password

From the main menu, select "Password" from the settings submenu. From here the access password for the unit to prevent other users from changing settings can be set. The current Username and Password are required in order to reset the existing username and password.

The factory default login credentials are: **Username**: BRANDYWINE **Password**: BRANDYWINE

MENU 55		
▼ PASSWORD SET	TINGS V	
Current Username: Current Password:		
New Username: New Password: Confirm New Password:		
	Submit	
brandywine		

Figure 10 - Password Settings



6 Alternate Access

If the unit is in an area where it cannot be accessed over the network, but physical access to the device is still possible, the IBU-160i can still be accessed and controlled via RS-232 over the serial port.

6.1.1 User Commands and Responses

The IBU-160i Serial port (115200,8,1,1,no parity) provides status and setting data on request from the user.

The user can obtain information from the IBU160i by sending HELP command terminated by CR. The IBU160i will display the HELP MENU as below:

	IBU160i System Setup - (925000120) 1.01.05 Jul 9 2013 SN# 36770 - Hardware Ver: A
COMMAN	D Description
HELP IPADDR IPMASK IPGATE MACADD FACT	Show this screen IP Address (set to 0.0.0.0 to enable DHCP) (192.168.1.121) IP Mask (255.255.255.0) WAY IP Gateway (192.168.1.1) R MAC Address (00-21-34-00-02-EB) Factory Reset to Defaults Setting
RESET Enter	Reset System a menu command:

The IBU-160i user commands are described in the table below.

COMMAND	FUNCTION	COMMENTS
HELP	Show Help	Show Help Menu
		Example:
		HELP <cr></cr>
		Displays the above Help Menu.
IPADDR	Set IP Address	Set the IP Address (decimal number) IP4, IP3, IP2,
		IP1 and Store into NVM.



		Example: IPADRR <cr> New Setting:192.168.1.121<cr> Sets the IP address to 192.168.1.121 and displays the above Help Menu. To enable DHCP enter IP address 0.0.0.0<cr></cr></cr></cr>
IPMASK	Set IP Mask Address	Set/Get the IP Mask Address (decimal number) IP4, IP3, IP2, IP1 and Store into NVM. Example: IPMASK <cr> New Setting:255.255.255.0<cr> Sets IP Mask and displays the above Help Menu.</cr></cr>
IPGATEWAY	SetGateway Address	Set/Get the Gateway Address (decimal number) Gateway4, Gateway 3, Gateway 2, Gateway 1 and Store into NVM. Example IPGATEWAY <cr> New Setting:192.168.1.1 Sets IP Gateway and displays the above Help Menu.</cr>
MACADDR	Set MAC Address	Set/Get the Mask Address (decimal number) Mask4, Mask 3, Mask 2, Mask 1 and Store into NVM. Example: MACADDR <cr> New Setting: 00-21-34-00-02-EB<cr> Sets MAC address and displays the above Help Menu.</cr></cr>
FACT	Recall Factory defaults	Recall all factory default settings Example: FACT <cr></cr>



		Are you sure you want to continue (Y/N)? Y Resets to factory default and displays the above Help Menu.
RESET	Reset the Unit	Reset the Unit Example: RESET <cr> Are you sure you want to continue (Y/N)? Y Reset System Resets the unit and displays the above Help Menu.</cr>
	Upgrade Application	 Use PIC32 Boot loader Application program to upgrade main application through Ethernet. Follow the below commands: Run the PIC32UBL.exe Check the Ethernet Enable checked box. Make sure the IP Address = 192.168.254.100. Hit the "Load Hex File". Browse to "IBU- 160i.hex" to send the hex file. Hit the "Upload" button. Wait for the progression bar starting before recycle the power supply so that the program jump to bootloader section. The status should display the bootloader firmware version such as "V1.1".

Table 2



7 Troubleshooting

Problem	Solution
The IBU-160i Does not power on	Please ensure that the system is correctly
	plugged in to power, and that both power
	supplies are connected.
The IBU-160i powers on, the lights flash	The system firmware is not properly
briefly, and then nothing.	loaded. Please contact Brandywine
	Communications for support
The IBU-160i powers up correctly, but the	The system does not have a valid input
lights flash erratically once it's powered on.	reference from either input connection.
	Please double-check the input connectors.

8 Support Information

All Brandywine Communications products come with a one-year warranty.

If the unit is still exhibiting problems not covered by the above troubleshooting guide, please contact us for technical support at support@brandywinecomm.com or call us at 714-755-1050.

If it becomes necessary to return the unit to the factory for repairs, please call us at 714-755-1050 extension 113 to arrange an RMA.



9 Front Panel View





10 Rear Panel View

