

OPERATIONS MANUAL

DATA BROADCAST UNIT WITH INTERNAL FALLBACK SWITCH

DBU-V.11/FB With AC & DC Fallback Power Supplies

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FOR TECHNICAL SUPPORT CALL:

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User Manual
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SAFETY WARNING

Always observe standard safety precautions during installation, operation and maintenance of this product. To avoid the possibility of electrical shock, be sure to disconnect the power cord from the power source before you remove the IEC power fuses or perform any repairs.

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This manual has been compiled and checked for accuracy. The information in this manual does not constitute a warranty of performance. E.C.D. reserves the right to revise this publication and make changes from time to time in the content thereof. E.C.D. assumes no liability for losses incurred as a result of out-of-date or incorrect information contained in this manual.

EMISSIONS REQUIREMENTS

FCC CLASS A

NOTE: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING: Charges of modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

CANADIAN EMISSIONS

This digital apparatus does not exceed the Class A limits for noise emissions from a digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la Class A prescrites dans le Reglement sur le brouillage radioelectrique edicte par le ministere des Communications du Canada.

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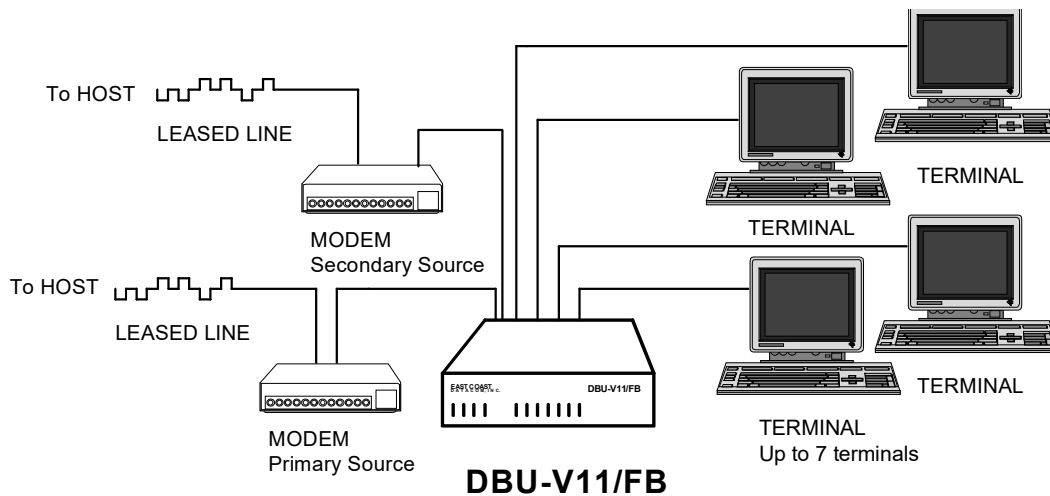
CHAPTER 1 - DESCRIPTION

The DBU-V11/FB is designed for use in receive only data broadcast applications while allowing redundant data feeds. The DBU-V11/FB continuously broadcasts receive data, receive timing and Indicate (any user defined control signal from the main input data source may be used). The input signals are split with the internal circuitry and broadcast out on the seven output ports. An additional dedicated cascade port is provided for cascading DBU-V11 units without losing a subchannel port.

The DBU-V11/FB utilizes an ITU V.11 (X.21) balanced interface with a maximum data rate of up to 13Mbps. Additionally, V.11 can support data transmissions at far greater cable distances than RS-232 signal levels. The unit can support an unlimited amount of receive only terminals simultaneously.

The DBU-V11/FB's input data ports have tandem DB-15 female connectors. This allows a dedicated input port and an additional input port as the fallback port. The integral fallback switch supports switching modes of automatic or manual. The unit will monitor data, clock or Indicate control signals for switching.

The unit is housed in a sturdy aluminum enclosure and is supplied with an internal AC or DC power supply. The unit has a 110/220 VAC rotary select switch located on the rear of the housing. The unit can operate on standard AC power found in all countries.



TYPICAL APPLICATION

CHAPTER 2 - BASIC OPERATION

The DBU-V11/FB has two input ports marked PRIMARY and BACKUP. Operation of the DBU-V11/FB is as simple as plugging the users Data Communication Equipment(DCE) *primary* data/clock source into the female DB-15 **PRIMARY PORT** on the back panel. The users secondary DCE data/clock source is plugged into the **BACKUP** port on the DBU-V11/FB. Ports 1 - 7 are the units output ports and the user may attach up to seven Data Terminal Equipment(DTE) devices. Data, Clock and Indicate are received on the Master Port and are broadcast out simultaneously on ports 1 - 7. The following table shows the pin-out for the Master and sub-channel ports.

DB-15, X.21 PORT PIN OUTS

DB-15 FEMALE OR MALE CONNECTORS	
PIN NUMBER	PIN NAME
1	SHIELD
4	RECEIVE DATA (A+)
5	INDICATE (A+)
6	SIGNAL TIMING (A+)
8	GROUND
11	RECEIVE DATA (B-)
12	INDICATE (B-)
13	SIGNAL TIMING (B-)

FRONT PANEL LED INDICATORS

Located on the front of the DBU-V11/FB are six green LED's and three yellow LED's. The Power indicator, marked **AC & DC** illuminates when AC & DC voltage is applied to the box. Three adjacent LED indicators illuminate in conjunction with *Receive Data (RXD)*, *Receive Clock (CLK)* and the control signal *Indicate*, which is marked **IND**. The *DATA* and *CLOCK* LED's will flash on and off at a constant rate regardless of the user's clock and data rate. The *INDICATE* LED will be illuminated when and if the user defined control signal is present.

The unit has LED's for the Fallback Switch function marked PRIMARY ON, PRIMARY FAULT for the primary input source function and BACKUP ON, BACKUP FAULT for the backup input source function.

Additionally, the unit has a **FAULT** LED when AC or DC power is not present.

FRONT PANEL SWITCHES

There are 2 pushbutton switches for Data Input/Backup.

The switch on the left selects Auto/Manual mode of fallback selection. In Auto mode, the processor senses a fault of the currently active port and automatically switches according to the parameters selected (conditions and delay). In Manual mode, the user can manually choose the Primary/Backup port with the second pushbutton switch.

The unit is in AUTO mode when the left hand pushbutton switch is **pushed IN** and in MANUAL mode when the switch is in the **OUT position**.

When the unit is set to MANUAL mode of operation and the right hand pushbutton switch is in the IN position, the DBU-V11/FB accepts data/clock from the PRIMARY port. When the switch is out, data/clock is accepted from the BACKUP port.

NOTE: There is one push button switch to Enable or Disable the Audible Alarm.

FALLBACK DATA SWITCH FUNCTION

LED's FUNCTIONS

PRIMARY ON and **BACKUP ON** - these 2 green LED's are mutually exclusive and together provide a positive indication of the selection state of primary or backup (coincides with state of latching relays)

PRIMARY FAULT - indicates that a fault has been detected at the primary port (yellow)

BACKUP FAULT - indicates that a fault has been detected at the backup port (yellow)

The conditions for switching that may be selected are Data, Clock, and Indicate. There will be 3 dipswitches, one for each signal. To be considered OK, a port must have all selected signals within norms which means activity on the data and clock leads and Indicate ON. If only one or two are selected, the other(s) have no affect on the decision to switch. If a port is not OK it will be displayed in the corresponding FAULT indicator.

When the Primary port is selected in AUTO mode, a fallback switch to the Backup will occur when a PRIMARY FAULT is detected only if there is no BACKUP FAULT.

When the Backup port is selected in AUTO mode, a return to the Primary port will occur when the PRIMARY FAULT has been corrected.

Whenever both ports have FAULT conditions in AUTO mode, the port selection will remain in the last state and will monitor the conditions of both ports and will switch to the first port to be corrected.

In MANUAL mode, port selection will always follow the state of the Primary/Backup toggle switch regardless of the fault conditions on the ports (PRIMARY FAULT & BACKUP FAULT will still reflect the selected fault conditions).

In AUTO mode, the decision to switch from one port to another will always occur after a delay to prevent switching due to spurious noise, contact bounce, and long data strings. The user may select the delay time period in the dipswitches, of which there are four options of 20mS, 60mS, 200mS, 800Ms - (these delays may be changed for a minimal factory charge).

If the unit is set to 800Ms for fallback and the unit switches to the BACKUP port, the unit will also wait 800Ms to switch back to the PRIMARY port when the fault condition clears. This is true for each time delay function set.

The DBU-V11 has latching relays that function to provide signals from the selected data/clock port to the Cascade port in the absence of power, and to provide retention of the Fallback state for when power is returned. In the case of lost power to the unit or unit failure, the DBU-V11/FB will continue passing data/clock from the active input port through the cascade port. Ports 1 - 7 will not function if the unit experiences a power loss.

REDUNDANT AC / DC POWER FUNCTION

The unit has two internal power supplies for AC and -DC power. The primary power is 90-240V AC voltage and the fallback power is -18 to -75V DC voltage. During normal operation, both AC and -DC power must be applied to the unit for operation. The unit will use the AC power for normal operation and -DC as standby power. In the event of AC power failure, the unit will switch to -DC power for operation. When the AC power source returns, the unit will switch back to AC power as the primary power source. During the AC to -DC or -DC to AC power switching, no data is lost during the switch over in either direction due to the usage of a unique power switching circuit.

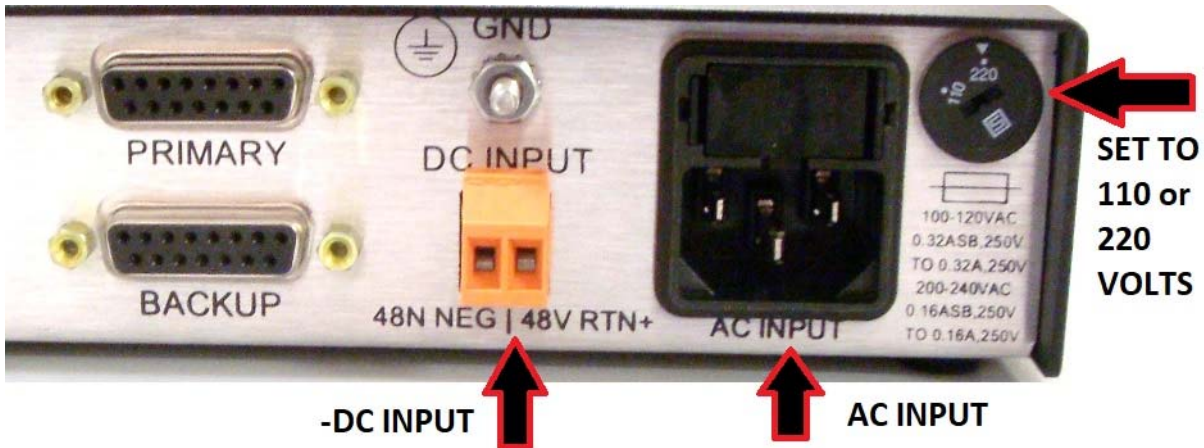
RS-232 FAULT PORT

The unit has a single RS-232 port located on the rear panel. This port will send out a HEX data signal in the event of loss of AC or -DC power. The unit will output HEX 04 41 if the unit loses AC or -DC power.

CHAPTER 3 - SETUP AND INSTALLATION

POWER CONNECTION: AC & -DC (Connect Both AC & DC)

It is **very** important to check that the unit is set to the correct voltage setting for your application before applying AC power. Located on the rear of the unit you will find a rotary 110/220 VAC switch. Using a coin or small screwdriver, *gently* turn the switch to the appropriate power position as required for your installation (110 or 220 VAC).



INTERNAL DIP SWITCH

Located inside the unit is an 8-position **DIP SWITCH** marked **S3** on the printed circuit card. The dip switch is for user set-up of the integral fallback switch.

DB-V.11 / FB Strapping Chart

Switch S3	S8	S7	S6	S5	S4	S3	S2	S1
	-- unused --			Switch Timer	Signal Monitor			
							V	
							off	- clock signal is not monitored
							on	- clock signal activity is monitored
							V	
							off	- receive data signal is not monitored
							on	- receive data signal activity is monitored
							V	
							off	- indicate signal is not monitored
							on	- indicate signal level is monitored
				V				
				off	off			- Approx. 20 mS detected condition required to switch
				off	on			- Approx. 60 mS detected condition required to switch
				on	off			- Approx. 200 mS detected condition required to switch
				on	on			- Approx. 800 mS detected condition required to switch

TERMINATION RESISTORS

The DBU-V11/FB has termination resistors for the PRIMARY port and the BACKUP port. If the user has long cable lengths(30 feet or longer) or high data rates(2mbps or higher) it is recommended to use the termination resistors.

Located on the Printed Circuit Card(PCB) are a series of jumpers.

To terminate the **PRIMARY** port connect jumpers **J6**, **J7** and **J8** to positions 1 and 2. To bypass the termination resistors, connect to positions 2 and 3.

To terminate the **BACKUP** port connect jumpers **J9**, **J10** and **J11** to positions 1 and 2.

To bypass the termination resistors, connect to positions 2 and 3.

EQUIPMENT GROUNDING

Jumper **J13** provides for grounding interconnection in those systems requiring a connection between Pin #1 (*frame ground*) and Pin # 8 (*signal ground*). Normal operation for **J13** is position **1** and **2** connected(frame to chassis no connect).

To connect *frame ground* to *chassis ground* connect **J13** positions **2** and **3** together.

FORCED INDICATE

Jumper **J12** provides for forcing the state of the Indicate control signal. Jumper **J12**, positions **1** and **2** allow for the Indicate broadcast signal to follow the input. Jumper **J12** position **2** and **3** will force the *Indicate control signal high* or a **ON** condition.

CABLING CONNECTIONS

Connect the main input data feed source into the **PRIMARY** port DB-15 female connector. Connect the secondary data feed source into the **BACKUP** port. The output ports are marked **PORT 1** through **PORT 7**. Connect from one to seven DTE V.11 (X.21) compliant devices into the sub-channels ports on the back of the DBU-V11/FB.

CASCADING

The DBU-V11/FB has a dedicated cascade port marked, "**CASCADE**". If more than one DBU-V11/FB units are to receive Data, Clock and Indicate from the same data source, a shielded DB-15 one-to-one extension cable with a male DB-15 on one end and a female DB-15 on the other end can be used to link the DBU-V11's together.

High quality shielded cables are recommended for box to box cascading. The cabling should be twisted pair with a wire mesh shield. All signal pairs should be kept together for clean quality signals. We recommend Beldon 9833 or equivalent cable with metal hoods.

DB-V.11 / FB Strapping Chart

Switch	S8	S7	S6	S5	S4	S3	S2	S1
S3	-- unused --			Switch Timer	Signal Monitor			
								V
								off - clock signal is not monitored
								on - clock signal activity is monitored
								V
								off - receive data signal is not monitored
								on - receive data signal activity is monitored
								V
								off - indicate signal is not monitored
								on - indicate signal level is monitored
								V
								V
								off off - Approx. 1 Second detected condition required to switch
								off on - Approx. 5 Seconds detected condition required to switch
								on off - Approx. 10 Seconds detected condition required to switch
								on on - Approx. 15 Seconds detected condition required to switch

Jumper J6,J7,J8 Pos.1 - 120 ohm resistive termination is incorporated on PRIMARY Port RD, Indicate, and Clock circuits respectively
Pos.2 - Resistive terminations on PRIMARY Port above are bypassed

Jumper J9,J10,J11 Pos.1 - 120 ohm resistive termination is incorporated on BACKUP Port RD, Indicate, and Clock circuits respectively
Pos.2 - Resistive terminations on BACKUP Port above are bypassed

Jumper J12 Pos.1 - Indicate broadcast signal follows input
Pos.2 - Indicate broadcast signal is forced ON

AUDIBLE ALARM

Located on the front panel of the DBU-V11/FB is an AUDIBLE ALARM PUSH SWITCH. When set to **ON**, the alarm will sound when a loss of **CLOCK**, **DATA** or **INDICATE** event takes place(If enabled on the Dip Switch). The alarm will sound as long as the selected **CLOCK**, **DATA** or **INDICATE** are not present on the Input Ports. When the **CLOCK**, **DATA** or **INDICATE** signals return, the alarm will stop.

To disable the alarm, set the switch opposite of **OFF**.

The Alarm will also sound if the event of loss of AC or -DC power.

TECHNICAL SPECIFICATIONS

Application

Multiple Synchronous Broadcasting of Data, Clock and optional control signal to multiple devices with redundant data feeds

Fallback Switch

Automatic or manual modes
Allows switching on Data, Clock or Indicate control signals with selectable times of 20, 60, 200 or 800Ms

Capacity

Seven broadcast Subchannels per unit
One or two data input ports
One dedicated cascade port

Interface

ITU-V.11 compliant, pinned to X.21.
Compatible with RS-530, RS-422/449, V.35 and RS-485

Data Rates

Up to 20Mbps

Data Format

Data transparent at all data rates

Subchannel Connection

15 pin Female D-Sub connectors

Master Port Connection

15 pin Female D-sub connectors

Cascade Port Connection

15 pin Male D-sub connectors

Power Source, AC/DC

100-220VAC @10%, 50/60Hz, 0.16/0.08A,
external 110/220 volt select switch, IEC Power Inlet, (2) 5mm Fuses, -DC power -18 to -75

Front Panel

Indicators....Power, Receive Data, Clock and Indicate, Primary and Backup data sources

Switches....Primary or Manual backup

Environmental

Operating Temperature....32° to 122° F (0° to 50° C)

Relative Humidity.....5 to 95%

Non-Condensing

Altitude.....0 to 10,000 feet

Dimensions

Height 1.75 inches (4.44 cm)

Width 17.00 inches (43.18 cm)

Length 9.00 inches (22.86 cm)

Weight

4.50 pounds (2.1 Kg)

Warranty

Three Years, Return To Factory

ORDERING INFORMATION

Model: DBU-V11/FB_AC&DC

Description: 7 Port Data Broadcast Unit with integral fallback switch

INCLUDED WITH EACH UNIT:

- 1) Operations Manual
- 2) U.S.A. Grounded Power Cord, Part # 713015
- 3) Optional Power Cords
 - A) United Kingdom, Part # 713016
 - B) Continental Europe, Part # 713017
 - C) Other: Specify Country on Purchase Order

OPTIONAL ACCESSORIES

- 1) Spare Data Center Fuses
 - A) 160ma Fuse, Qty (2) Part # 714000
 - B) 80ma Fuse, Qty (2) Part # 714001