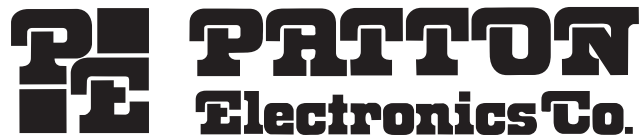


Doc #: 138001UA
Part #: 07M3046-A



DIGITAL DATA SERVICE MULTIPLEXER

3046/V24 & 3046/V35

(CTS DDS-MUX)

INSTALLATION AND OPERATIONS MANUAL

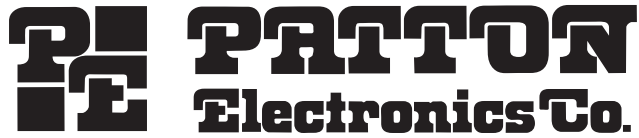
May 24, 2000



An ISO-9001
Certified Company

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Doc #: 138001UA
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DIGITAL DATA SERVICE MULTIPLEXER

3046/V24 & 3046/V35

(CTS DDS-MUX)

INSTALLATION AND OPERATIONS MANUAL



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Certified Company

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tel: (301) 975-1007;

email: support@patton.com;

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NOTE: Packages received without an RMA number will not be accepted.

Patton Electronics' technical staff is also available to answer any questions that might arise concerning the installation or use of your Patton MSDs. Technical Support hours: 8AM to 5PM EST, Monday through Friday.

Contents

CHAPTER 1 - OPERATION

Channel Selection Modes	1-1
Channel Clocking	1-1
Channel Interface	1-1
Front Panel LEDs	1-2
Front Panel LCD and Push Buttons	1-2
Loopback Selection	1-2
Power Supply	1-2
Installation Options	1-2

CHAPTER 2 - SETUP AND INSTALLATION

Power Connection	2-1
Factory Configuration Switch Settings	2-1
Disassembly	2-1
Installation	2-2
Push Buttons	2-2
LCD SYSTEM STATUS Display	2-3
Composite Link Configuration	2-3
<i>Speed</i>	2-4
<i>Mode</i>	2-5
<i>Remote Digital Loopback</i>	2-6
Channel Configuration	2-7
<i>Speed</i>	2-7
<i>Mode</i>	2-8
<i>Character Length</i>	2-8
<i>CTS Delay</i>	2-9
<i>DCD Source</i>	2-9
<i>Local Digital Loopback</i>	2-10

APPENDIX

Typical Application	A-1
Channel Interface Pins Supported	A-1
TECHNICAL SPECIFICATIONS	A-2
Command Tree	A-3

CHAPTER 1 - OPERATION

The Patton 3046 (CTS DDS-MUX) is a network enhancement accessory intended for use on a high speed synchronous Digital Data Service (DDS) circuit or high speed modem, utilizing Time Division Multiplex (TDM) techniques to share the provided bandwidth. The 3046 (CTS DDS-MUX) is configured at the factory for high speed 64K/56K bps composite operation or low speed 9.6K/14.4K/19.2K bps composite operation. The modem/DDS link is shared by up to six point to point terminal devices.

Channel Selection Modes

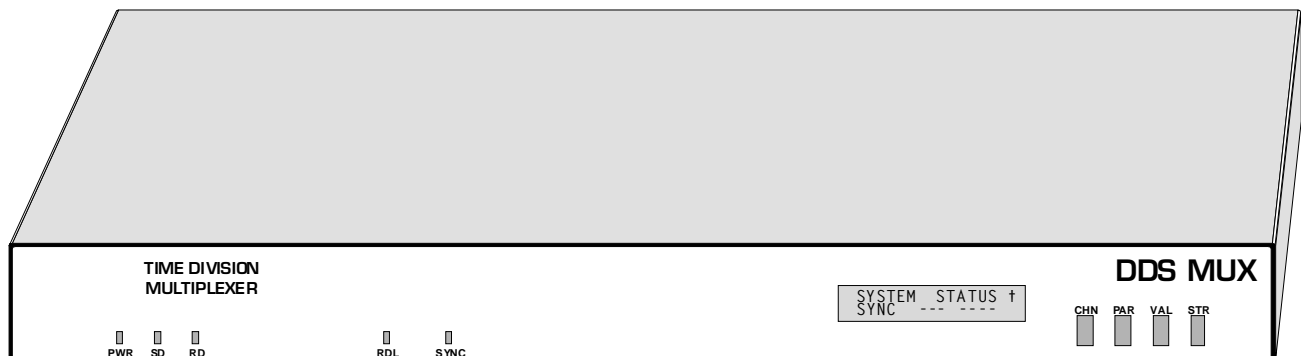
The Patton 3046 (CTS DDS-MUX) is protocol transparent in synchronous mode and selectable for element length and number of stop bits in asynchronous mode. Each channel is individually selected for sync or async operation. The only requirement is that the channel be configured identically on either side of the circuit.

Channel Clocking

Low Speed composite data rates of 9.6kbps, 14.4kbps, 19.2kbps or high speed data rates of 56Kbps, 64Kbps are selectable from the front panel. Each channel is individually selectable from 1.2Kbps to 9.6Kbps (19,200bps for HS version) as outlined in the rate selection section of this manual. The total of the channel rates cannot exceed the composite rate.

Channel Interface

The 3046 (CTS DDS-MUX) has six DB-25 (V.24 / RS-232) female connectors located on the rear of the unit to attach the terminal devices and a DB-25 (V.24 / RS-232) or M-34 (V.35) female connector to connect to the DDS network (DSU/CSU) or modem. The following interface leads are implemented on all DB-25 connectors: Chassis (1), TXD (2), RXD (3), RTS (4), CTS (5), DSR (6), Sig Gnd (7), DCD (8), TXC (15), RXC (17), DTR (20).



The V.35 version of the 3046 (CTS DDS-MUX) has the following interface leads implemented on the M34 connector: Chassis (A), TXD (P,S), RXD (R,T), RTS (C), CTS (D), DSR (E), Sig Gnd (B), DCD (F), TXC (Y,AA), RXC (V,X), DTR (H).

Front Panel LEDs

Front panel LEDs are provided to indicate power is applied, Send Data (SD), Receive Data (RD), In-Sync (SYNC) condition between the two DDS-MUX's and Remote Digital Loopback indication (RDL).

Front Panel LCD and Push Buttons

An LCD display and four push button controls are provided to configure the 3046 (CTS DDS-MUX). The CHNL (Channel) push button selects which channel to configure. The PAR (Parameter) push button selects what parameter to configure on a channel. The VAL (Value) push button selects the Value to set the parameter to. The STR (Store) push button stores the new configuration and sets all the channels and composite port to those values. Current conditions set into the 3046 (CTS DDS-MUX) are indicated on the LCD with an Asterisk (*).

Loopback Selection

Each channel can be individually looped back upon itself locally for diagnostics of the communication system. In addition, the composite can be forced into remote loopback. All loopbacks are commanded via the LCD/Pushbutton interface. The RDL LED is illuminated on the 3046 (CTS DDS-MUX) that receives the remote loopback command as an indication of the loopback condition.

Power Supply

A linear power supply is located internally, with an external 110/220VA switch located on the rear of the unit. Approvals granted are MET, c-MET and CE.

Installation Options

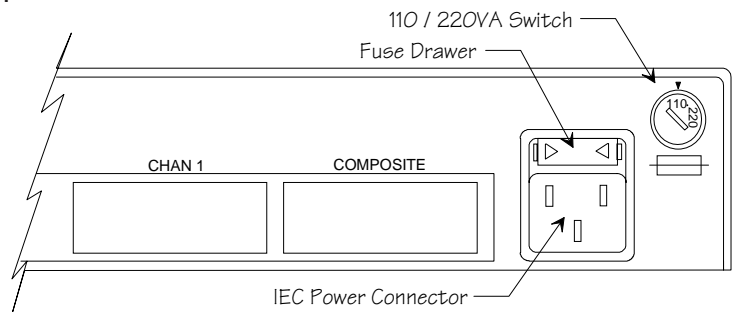
The 3046 (CTS DDS-MUX) is supplied in an attractive textured aluminium enclosure that will blend in with other data accessories when used as a standalone unit on a desktop. The unit can also be installed in either a 19" or 23" cabinet, by simply installing the supplied Rackmount hardware.

Caution: Disconnect the POWER Before Removing The Cover
Vorsicht: Befor Deckung Abnehmen Mach Strom Zu.

CHAPTER 2 - SETUP AND INSTALLATION

Power Connection

Before connecting the 3046 (CTS DDS-MUX) to a AC power source the top cover must be installed and secured with the supplied #8-32 screws. The unit is supplied with a 110/220VAC voltage switch. Turn the switch with a coin or screw driver to the appropriate voltage for your country. **EXAMPLE:** In the United States of America, set to 110VAC. The unit is supplied with a IEC power connector next to the voltage select switch. Plug the power cord into the connector until it is firmly seated. You may now connect the power cord into your AC outlet.



Factory Configuration Switch Settings

The 3046 (CTS DDS-MUX) is configured prior to shipment with the switches set to the following default positions:

COMPOSITE:	if Low Speed, SPEED (19.2), MODE (3), LP-BK (DIS) if High Speed, SPEED (64K), MODE (3), LP-BK (DIS)
CHAN 1 thru CHAN 3:	SPEED(4800), MODE (SYN), CTS-DL (0), CD-SEL (SYN), LP-BK (DIS)
CHAN 4 thru CHAN 6:	SPEED(1200), MODE (SYN), CTS-DL (0), CD-SEL (SYN), LP-BK (DIS)

If the system application requires one or more of the default settings to be changed, use the LCD and push button switches to change the configuration of the 3046 (CTS DDS-MUX) as needed.

The 3046/V24 (CTS DDS-MUX-V24) is factory set to low speed (E2 Installed), the 3046/V24 (CTS DDS-MUX-V.35) is factory set to high speed (E2 Removed).

Disassembly

Removal of the cover is not required for operation or configuration of the 3046/V24 (CTS DDS-MUX). Only a factory trained, qualified service technician should ever attempt to remove the cover.

Installation

Select an appropriate location accessible to and within six feet of an AC power outlet. The outlet must have a ground pin receptacle for product warranty. The cabling between each attached device and the 3046 (CTS DDS-MUX) should be "Straight Through", shielded and terminated with male connectors. Channels are marked PORT 1 through PORT 6: the Master Port is marked, COMPOSITE. Secure other terminals to be serviced to the remaining "PORT" connectors. Connect the DSU/CSU or modem to the connector designated "COMPOSITE".

Push Buttons

All configuration is performed with the four front panel push buttons and the front panel LCD display.

The **CHN** push button cycles the first field on the LCD display in the following sequence:

SYSTEM STATUS → COMP → CH1 → CH_n → SYSTEM STATUS

NOTE: "CH_n" is the highest channel number allowed based on the current MODE selected for the COMPOSITE link. Factory default for mode is 3, so the highest channel number will be CH6 if the configuration has not been modified.

The **PAR** push button cycles the second field on the LCD display in the following sequence:

SPEED → MODE → CHR-LEN → CTS-DL → CD-SEL → LP-BK → SPEED

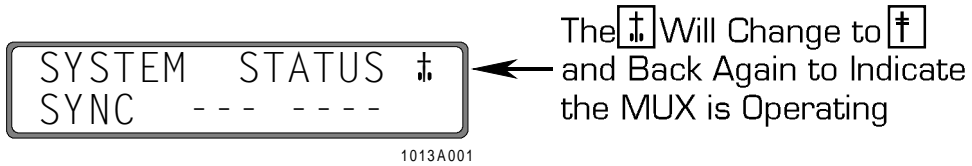
The CHR-LEN is only displayed when the selected channel is in asynchronous mode. CTS-DL and CD-SEL are only displayed for channels not for the composite port.

The **VAL** push button cycles the third field on the LCD display to select the value to assign to each of the modes for each channel.

The **STR** push button stores the selected values and re-configures the 3046 (CTS DDS-MUX) as displayed in the LCD. The LCD and push buttons can be used to cycle through all menus without disturbing the operation of the 3046 (CTS DDS-MUX). The value displayed will only be activated when the STR push button is pushed. If it is desired not to affect a change to the configuration, simply return to the SYSTEM STATUS display without pushing the STR push button. The displayed values will be returned to the last stored value after 10 minutes.

LCD SYSTEM STATUS Display

During normal operation the 3046 (CTS DDS-MUX) will be in the SYSTEM STATUS display. This display indicates synchronization with the remote end by the SYNC message



If the two 3046s (CTS DDS-MUX) are not in sync, the display will indicate this by displaying dashes where the SYNC message is.



When the 3046 (CTS DDS-MUX) is in sync it can receive a loopback command from the remote end of the link. This Remote Digital Loopback command is indicated on the LCD in the Middle of the SYSTEM STATUS display as RDL.

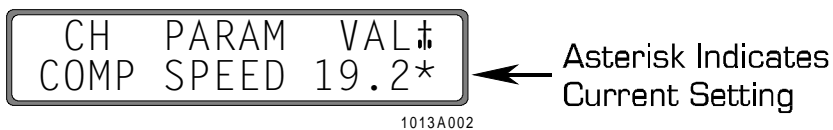


If any channel is looped back within the 3046 (CTS DDS-MUX), an indication is displayed in the last position of the SYSTEM STATUS display, indicating that some loopback condition exists at the originating end with the LOOP message.



Composite Link Configuration

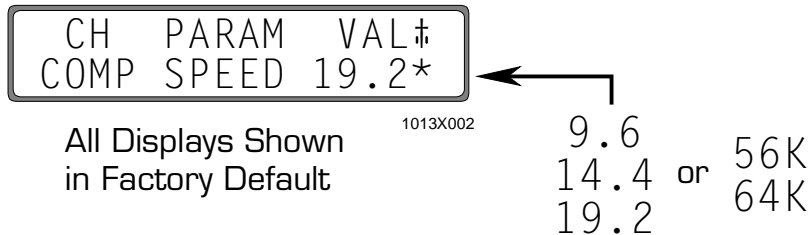
The composite configuration allows the selection of DDS rate and number of active channels provided by the 3046 (CTS DDS-MUX). The current setting is identified by an asterisk next to the values in the shown on the bottom line in the last position.



Speed

If a mode is selected that does not support the currently configured value or a parameter available in the current configuration, an asterisk will not appear on any value for that particular mode.

To select a composite SPEED from the SYSTEM STATUS display, press the **CHN** push button once and the **PAR** push button until the following LCD display appears:



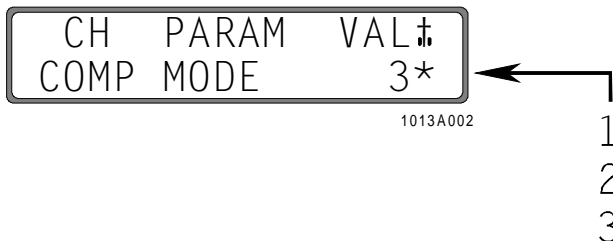
Press the **VAL** push button until the desired value appears. Press **STR** to configure the 3046 (CTS DDS-MUX) or **CHN** and **PAR** to select additional configuration parameters. Changing any Parameter value and pressing the **STR** for the composite port **WILL** cause loss of data for all channels.

Mode

The mode parameter selects the number of active channels and the maximum speed each active channel can operate. The following chart outlines the rates/channels available for each of the modes. (E2 installed 9.6K,14.4K & 19.2K, E2 Removed 56K & 64K)

Composite Speed 9.6K						
Mode	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6
1	4.8	2.4	1.2	Not Available	Not Available	Not Available
2	2.4	2.4	2.4	1.2	Not Available	Not Available
3	2.4	1.2	1.2	1.2	1.2	1.2
Composite Speed 14.4K						
Mode	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6
1	9.6	2.4	1.2	Not Available	Not Available	Not Available
2	4.8	4.8	1.2	1.2	Not Available	Not Available
3	2.4	1.2	1.2	1.2	1.2	1.2
Composite Speed 19.2K						
Mode	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6
1	9.6	4.8	2.4	1.2	Not Available	Not Available
2	4.8	4.8	4.8	2.4	1.2	Not Available
3	4.8	4.8	4.8	1.2	1.2	1.2
Composite Speed 56K						
Mode	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6
1	19.2	19.2	9.6	4.8	Not Available	Not Available
2	19.2	9.6	9.6	9.6	4.8	Not Available
3	9.6	9.6	9.6	9.6	9.6	4.8
Composite Speed 64K						
Mode	CH 1	CH 2	CH 3	CH 4	CH 5	CH 6
1	19.2	19.2	9.6	9.6	Not Available	Not Available
2	19.2	9.6	9.6	9.6	9.6	Not Available
3	9.6	9.6	9.6	9.6	9.6	9.6

To select composite MODE from the SYSTEM STATUS display, press the **CHN** push button once and the **PAR** push button until the following LCD display appears:

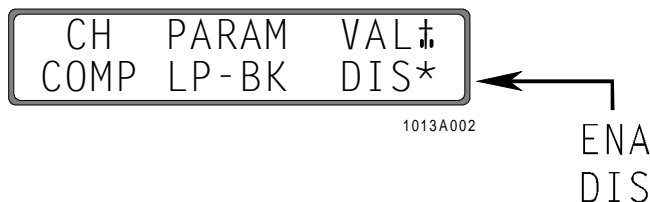


Press the **VAL** push button until the desired value appears. Press **STR** to configure the 3046 (CTS DDS-MUX) or **CHN** and **PAR** to select additional configuration parameters. Changing any Parameter value and pressing the **STR** for the composite port **WILL** cause loss of data for all channels.

Remote Digital Loopback

The Remote Digital Loopback parameter directs the 3046 (CTS DDS-MUX) at the remote site to loopback its master channel to the attached DSU/CSU. This is a testing mode and will cause data from all channels to be looped back at the same time.

To select composite LP-BK (Remote Digital Loopback) from the SYSTEM STATUS display, press the **CHN** push button once and the **PAR** push button until the following LCD display appears:



Press the **VAL** push button until the desired value appears. Press **STR** to configure the 3046 (CTS DDS-MUX) or **CHN** and **PAR** to select additional configuration parameters. Changing any Parameter value and pressing the **STR** for the composite port **WILL** cause loss of data for all channels.

When enabled, the *Remote* 3046 (CTS DDS-MUX) will go into digital loopback and display:



The local 3046 (CTS DDS-MUX) will display as follows when returned to the SYSTEM STATUS display:



Channel Configuration

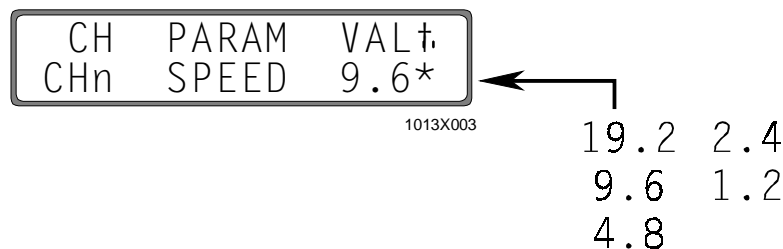
The channel configuration menus allow the selection of channel speed, mode, number of bits per element in asynchronous mode, CTS delay, Carrier Detect function and Local loopback function. Only channels that are active based on the selected mode in the composite configuration will be displayed. The current setting is identified by an asterisk next to the values shown on the bottom line in the last position in an identical fashion to the composite configuration.

If a mode is selected that does not support the currently configured value or a parameter is unavailable in the current configuration, an asterisk will not appear on any value for that particular mode.

Speed

The Channel Speed parameter is used to set the baud rate of each individual channel. The maximum rate available for each channel is set with the composite mode selection. Any speed at or below the maximum for the composite mode can be selected with this parameter.

To select a channel **SPEED** from the **SYSTEM STATUS** display, press the **CHN** push button until the desired channel appears and the **PAR** push button until the following LCD display appears:

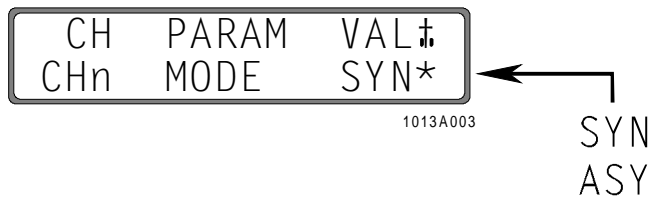


Press the **VAL** push button until the desired value appears. Press **STR** to configure the 3046 (CTS DDS-MUX) or **CHN** and **PAR** to select additional configuration parameters. Changing any Parameter value and pressing the **STR** for the channel port **WILL** cause loss of data for that channel.

Mode

The Channel Mode parameter is used to select Synchronous or Asynchronous operation for the channel. Each channel is individually selected for sync / async. Channels must be configured identically on both sides of the link. If Channel 1 is async on the local end, Channel 1 must also be async on the remote end.

To select a channel MODE from the SYSTEM STATUS display, press the **CHN** push button until the desired channel appears and the **PAR** push button until the following LCD display appears:



Press the **VAL** push button until the desired value appears. Press **STR** to configure the 3046 (CTS DDS-MUX) or **CHN** and **PAR** to select additional configuration parameters. Changing any Parameter value and pressing the **STR** for the channel port **WILL** cause loss of data for that channel.

Character Length

Async character length is selected by using the CHR-LEN parameter. As with mode, both sides of the link must be configured the same. When selecting an element length, the parity bit, start and stop bits must be considered as part of the data. If 7 bits, even parity, one stop is desired then CHR-LEN of 10 should be selected (1-start, 7-data, 1-parity, 1-stop).

To select a channel CHR-LEN from the SYSTEM STATUS display, press the **CHN** push button until the desired channel appears and the **PAR** push button until the following LCD display appears:



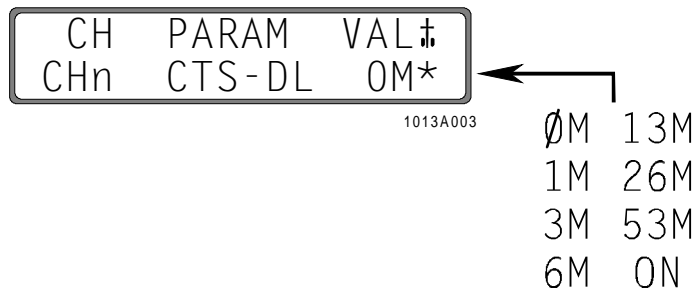
This parameter is only available if the channel is configured as asynchronous.

Press the **VAL** push button until the desired value appears. Press **STR** to configure the 3046 (CTS DDS-MUX) or **CHN** and **PAR** to select additional configuration parameters. Changing any Parameter value and pressing the **STR** for the channel port **WILL** cause loss of data for that channel.

CTS Delay

The CTS Delay parameter is used to control the amount of delay to the CTS after the RTS is raised. If 0N is selected, CTS is constantly active. If 0M is selected CTS becomes active immediately after RTS becomes active. Any other option is the time in milliseconds after RTS becomes active for CTS to become active.

To select a channel CTS-DL (Clear to Send Delay) from the SYSTEM STATUS display, press the **CHN** push button until the desired channel appears and the **PAR** push button until the following LCD display appears:

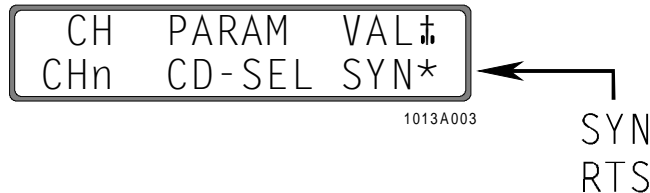


Press the **VAL** push button until the desired value appears. Press **STR** to configure the 3046 (CTS DDS-MUX), or **CHN** and **PAR** to select additional configuration parameters. Changing any Parameter value and pressing the **STR** for the channel port may cause loss of data for that channel.

DCD Source

The DCD Select parameter is used to select the source of the local Carrier detect interface lead for each channel. Setting the option to SYN will force DCD (pin 8) to follow the status of the link sync signal. If the link is established and in sync the DCD will be active, otherwise it will be inactive. The other option, RTS will force the local channel DCD to follow the remote channel RTS (pin 4). This allows for switched carrier operation on a channel by channel basis.

To select a channel CD-SEL (Carrier Detect Source Select) from the SYSTEM STATUS display, press the **CHN** push button until the desired channel appears and the **PAR** push button until the following LCD display appears:

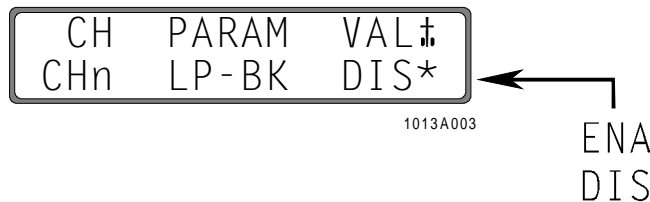


Press the **VAL** push button until the desired value appears. Press **STR** to configure the 3046 (CTS DDS-MUX) or **CHN** and **PAR** to select additional configuration parameters. Changing any Parameter value and pressing the **STR** for the channel port may cause loss of data for that channel.

Local Digital Loopback

The Loopback parameter is used to select the local loopback test function. If loopback is enabled, the data that arrives at the channel connector is looped back to the terminal to verify continuity of the data path to the 3046 (CTS DDS-MUX).

To select a channel LP-BK (Local Loopback) from the SYSTEM STATUS display, press the **CHN** push button until the desired channel appears and the **PAR** push button until the following LCD display appears:

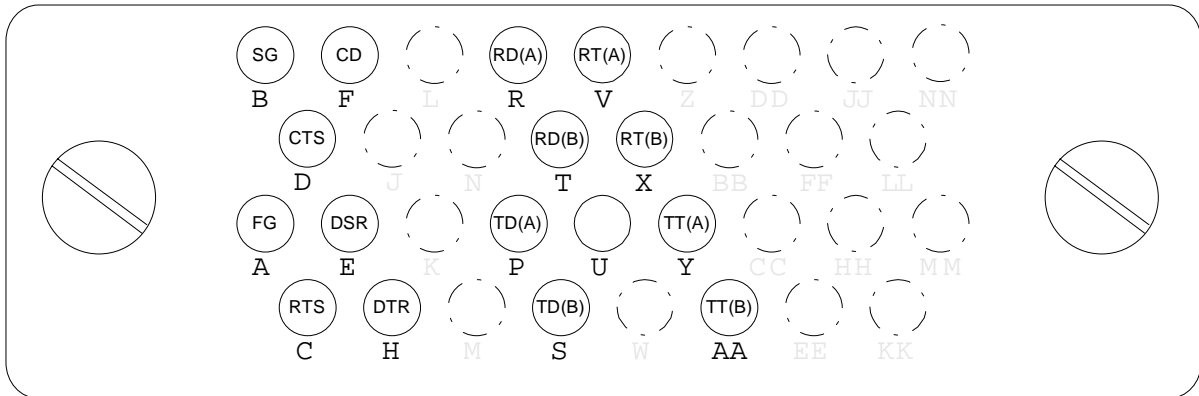


Press the **VAL** push button until the desired value appears. Press **STR** to configure the 3046 (CTS DDS-MUX), or **CHN** and **PAR** to select additional configuration parameters. Changing any Parameter value and pressing the **STR** for the channel port **WILL** cause loss of data for that channel.

When any channel is in loopback the local 3046 (CTS DDS-MUX) will display as follows when returned to the SYSTEM STATUS display:

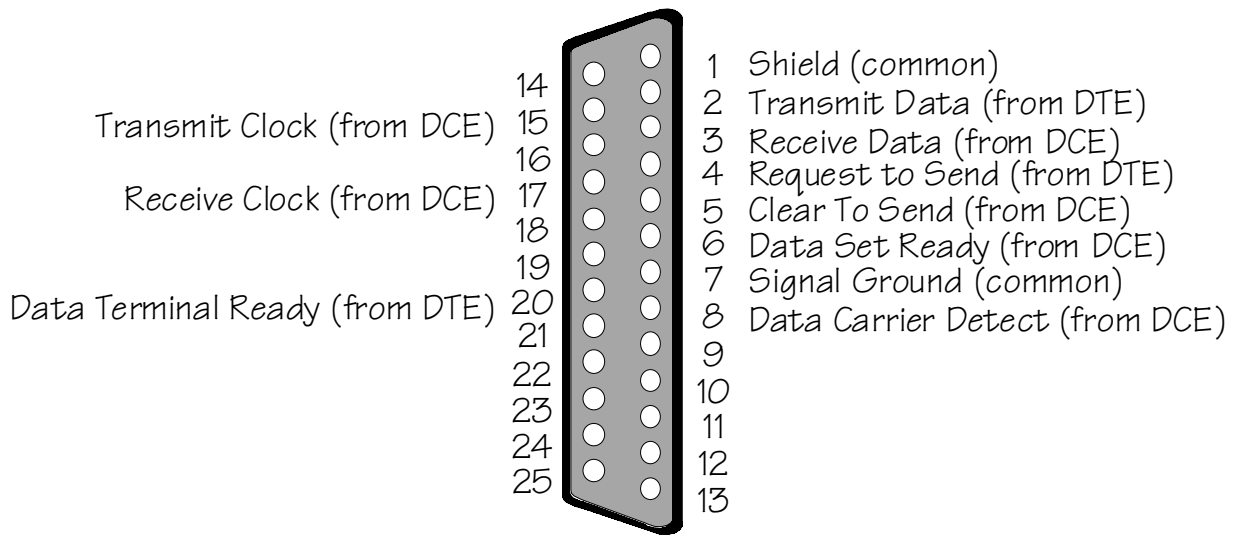


APPENDIX



M-34 / V.35 Composite Interface Pins Supported

DB-25 RS-232



Channel Interface Pins Supported

TECHNICAL SPECIFICATIONS

Applications

Multiple Sync or Async Terminals sharing one DSU/CSU or modem link

Capacity

Six RS-232 Sync/Async DTE devices
One RS-232 or V.35 DCE Master Channel

Data Format

Data transparent at all data rates

Composite Data Rates

9.6K, 14.4K, 19.2K or 56K, 64Kbps

Sub-channel Data Rates

1.2K thru 9.6Kbps (19.2K HS)

Sub-channel Interface

Channels: RS-232 (DB25) Female connectors

Modem Interface

Composite: RS-232 (DB-25) Female Connector or V.35 (M34)

Front Panel

Indicators: .. Power, Send Data, Receive Data, Remote Digital Loop, Sync, Configuration LCD

Switches: ... Channel, Parameter, Value, Store

Power Source

100-120/200-240 Vac, 50 to 60 Hz, 0.16/0.08 A, Switch Selectable

Environmental

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

Relative Humidity: .. 5 to 90% non-condensing

Altitude: 0 to 10,000 feet

Certifications

MET, c-MET & CE

Dimensions

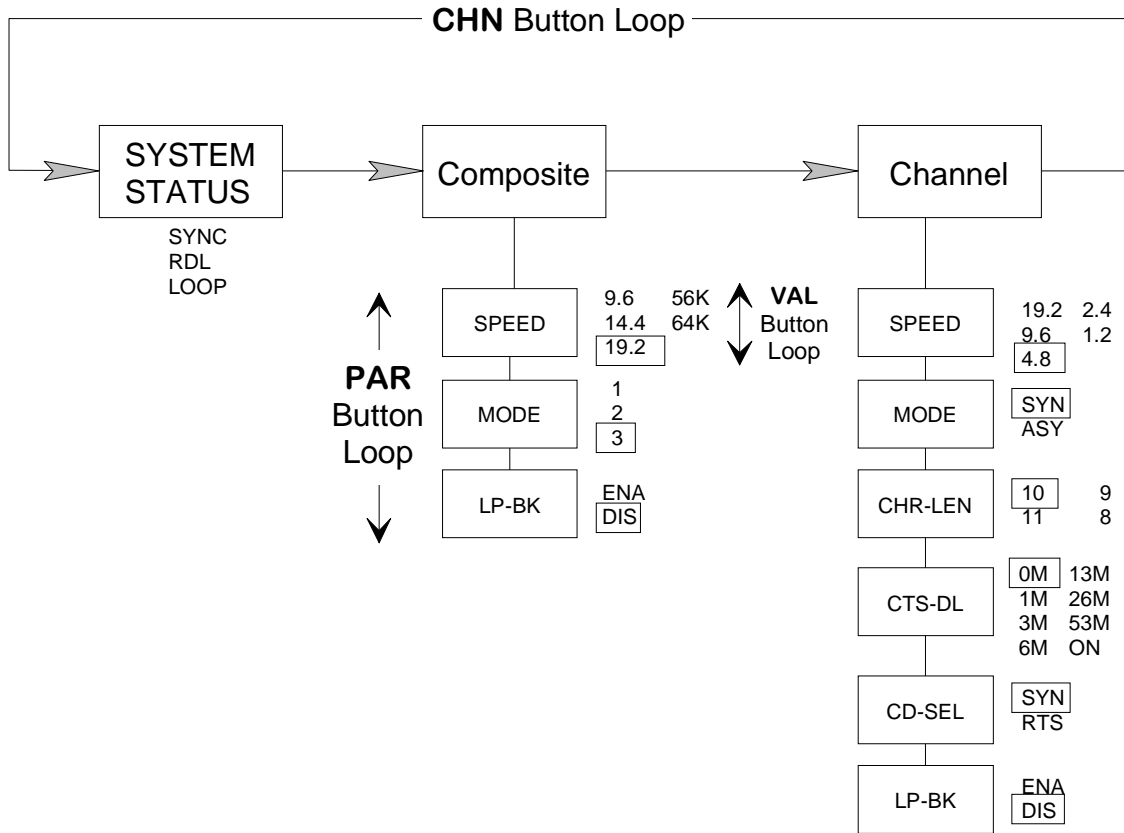
Height: ... 1.75 inches (4.44 cm)

Width: 17.00 inches (43.18 cm)

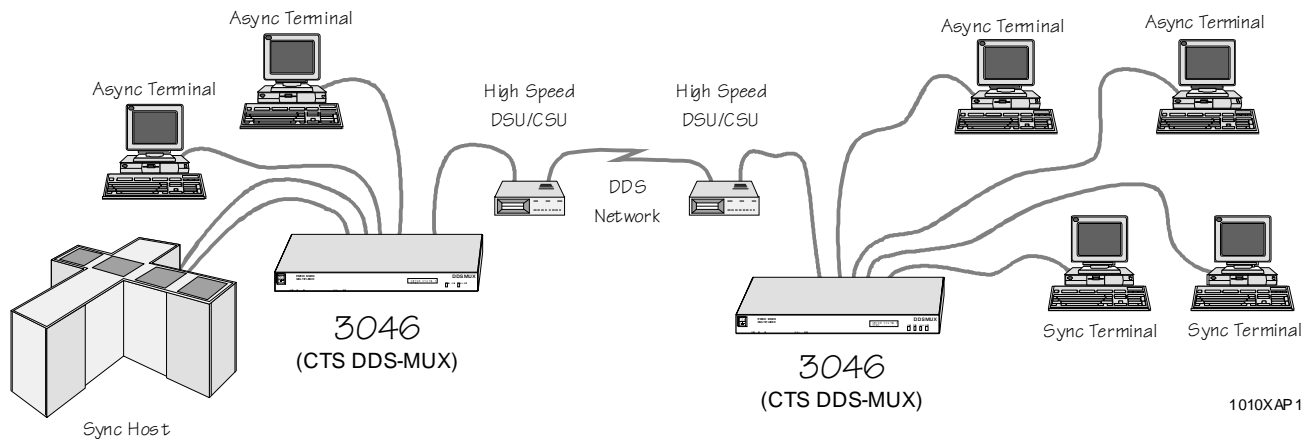
Length: ... 11.00 inches (18.93 cm)

Weight

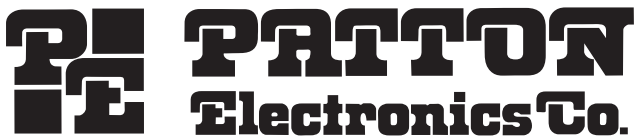
4.5 lbs (2.1 Kg)



Command Tree



Typical Application



7622 Rickenbacker Drive
Gaithersburg, MD 20879

Sales: 301 975-1000 Support: 301 975-1007
Web Address: www.patton.com