

# 46035-01

## CONVERTER MODULE



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#### About this Practice:

This practice has been reissued to:

- Incorporate addendum into **Application Information** section.

**Reissued Practices:** Updated and new content can be identified by a banner in the outside margin.

**Issue date:**

UPDATED

### CAUTION

- Install or remove modules from the shelf only when the power is off. If you install a module in the shelf with the power on, the internal circuitry may suffer damage and the product warranty will be void.
- Remove and install circuit boards only in a static-safe environment (use antistatic wrist straps, smocks, footwear, etc.).
- Keep circuit boards in their antistatic bags when they are not in use.
- Do not ship or store circuit boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.
- For more complete information on electrostatic discharge safety precautions, refer to Bellcore™ Technical Reference # TR-NWT-000870.

# ORDERING INFORMATION

**NOTE:** This section lists the different options available for this product. To order any of the available options, contact Dantel Inside Sales through our toll-free number, **1-800-432-6835**.

OPTION NUMBER	FEATURES
A11-46035-01	Converter Module

## GENERAL DESCRIPTION

The 46035 Converter Module provides a means of transmitting and receiving RS-232 and RS-422/485, converting it to/from TTL, and applying it to a data communications subassembly. It can then be transmitted and received using whatever interface that subassembly uses. The table below lists Dantel's most common communications subassemblies.

SUBASSEMBLY	INTERFACE
49008	RS-422/485
49009 & 49029	RS-232
49012 & 49013	202 Tone

The 46035 also provides external input/output of the intermediate TTL data.

The 46035 is a plug-in printed circuit board that fits into any Dantel 400-type or similar equipment shelf. The module operates on -21 to -56 VDC input power. The front panel includes transmit and receive LEDs for each port.

Strapping and switch setting of the module configures it for RS-232, RS-422, or RS-485, RTS always ON, and terminated or bridging RS-422/485 input.

The 46035 normally functions with other components of Dantel's 460 Alarm and Control System (460ACS) to form a distributed remote type alarm and control system. Refer to the **Application Information** section of this manual.

# CIRCUIT DESCRIPTION

Fig. 1 shows a functional schematic for the 46035 Converter Module. The circuit consists of:

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## Data Input/Output and Conversion Logic

The data input/output and conversion logic changes the data input/output from its RS-232, RS-422 or RS-485 format to TTL. The TTL data input/output is then applied to the communications subassembly, edge connector pins, and integrated circuits that drive data-indicating LEDs.

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## RTS Control Circuit

The RTS control circuit is an NPN transistor acting as a switch. With the RTS switch (S1-4) in the ON position, the transistor's collector is shunted directly to the emitter, which is grounded, and grounds the RTS (pin 42 of the module and pin P5-12 of the subassembly). When the RTS switch is OFF, the transistor's base receives an RTS signal or external CA input, which activates the RTS output.

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## Transmit and Receive Indicating LEDs and Drivers

The two front panel LEDs indicate transmission and receipt of RS-232, RS-422 or RS-485 data. The transmit LED, labeled XMT, is green. The receive LED, labeled RCV, is yellow. Integrated circuits that are an integral part of the data input/output conversion logic drive both LEDs.

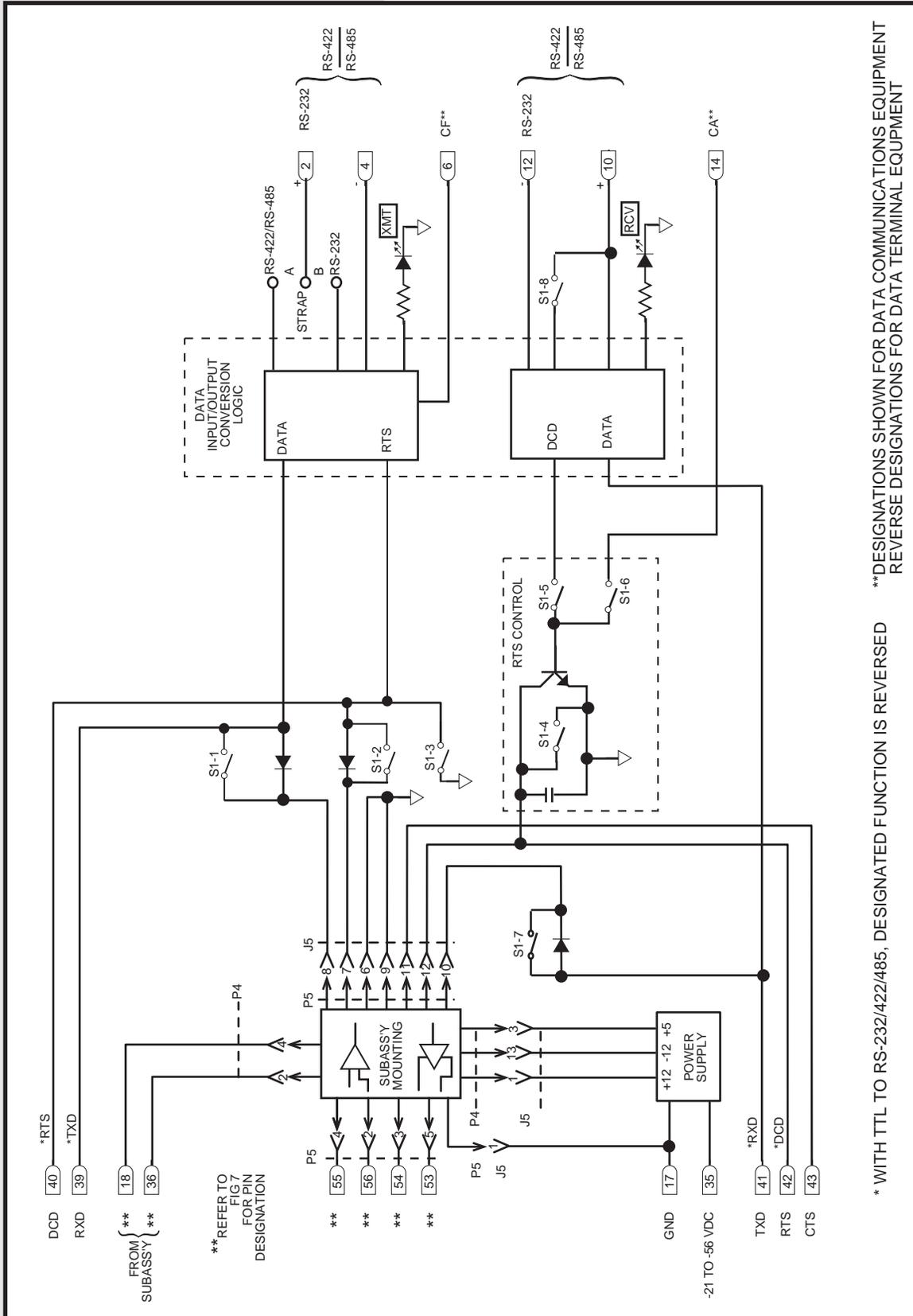
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## A Power Supply

The power supply uses -21 to -56 VDC input power which supplies +5 VDC and  $\pm 12$  VDC operating power for the module's circuits and an on-board subassembly.

# CIRCUIT DESCRIPTION

Fig. 1 - FUNCTIONAL SCHEMATIC, 46035-01



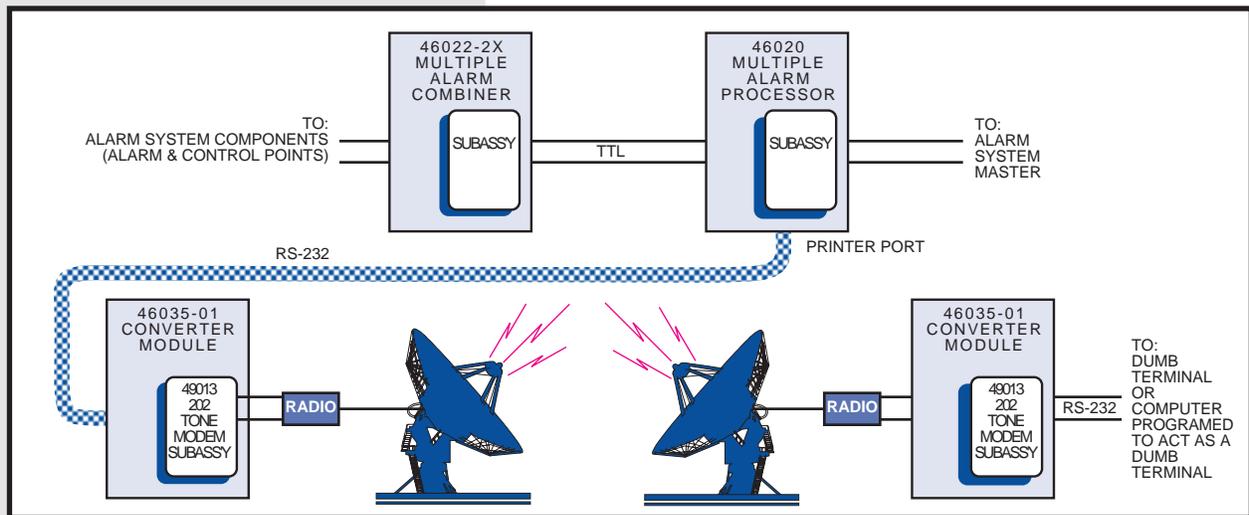
\*\* DESIGNATIONS SHOWN FOR DATA COMMUNICATIONS EQUIPMENT  
 REVERSE DESIGNATIONS FOR DATA TERMINAL EQUIPMENT

\* WITH TTL TO RS-232/422/485, DESIGNATED FUNCTION IS REVERSED

# APPLICATION INFORMATION

Fig. 2 shows a 46035 Converter Module interfacing a 46020 Multiple Alarm Processor (MAP) printer port to a radio or land-line data transmission system using a 49013 202 Tone Modem Subassembly. This allows service personnel to access an alarm system with a dumb terminal, or a computer acting as a dumb terminal, from a remote service location. The alarm system interfaces to the service site with a second 46035 Converter Module.

FIG. 2 - APPLICATION DIAGRAM, RADIO INTERFACE



The 46035 is also used to interface the printer port (RS-232) of the MAP to an E2A remote polling TBOS. Refer to Fig. 3. Also shown is the 46035 being used to interface a remotely located alarm shelf.

Fig. 4 shows parallel wiring of two 46035 Converter Modules. When two or more 46035 Converter Modules are wired in parallel using RS-232 interfacing, handshaking must be used to control the RS-485 signaling to the 46022-12 Multiple Alarm Combiner. The CA to CF handshaking lines provide a true RS-485 tri-state condition and prevent the Converter Modules from interfering with each other.

Normally the MAP would have a 49008 RS-422/485 Current Loop Interface Subassembly to interface its master port to the RS-422 port (TBOS) of the E2A remote. By using a 46035 Converter Module with a 49008 subassembly, the printer port of the MAP can also be interfaced to the E2A remote. This allows expanded display reporting.

The 46035 is also used to interface two remote site equipment shelves to a central location. Refer to Fig. 5.

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# APPLICATION INFORMATION

FIG. 3 - APPLICATION DIAGRAM, EXPANDED MAP INTERFACE

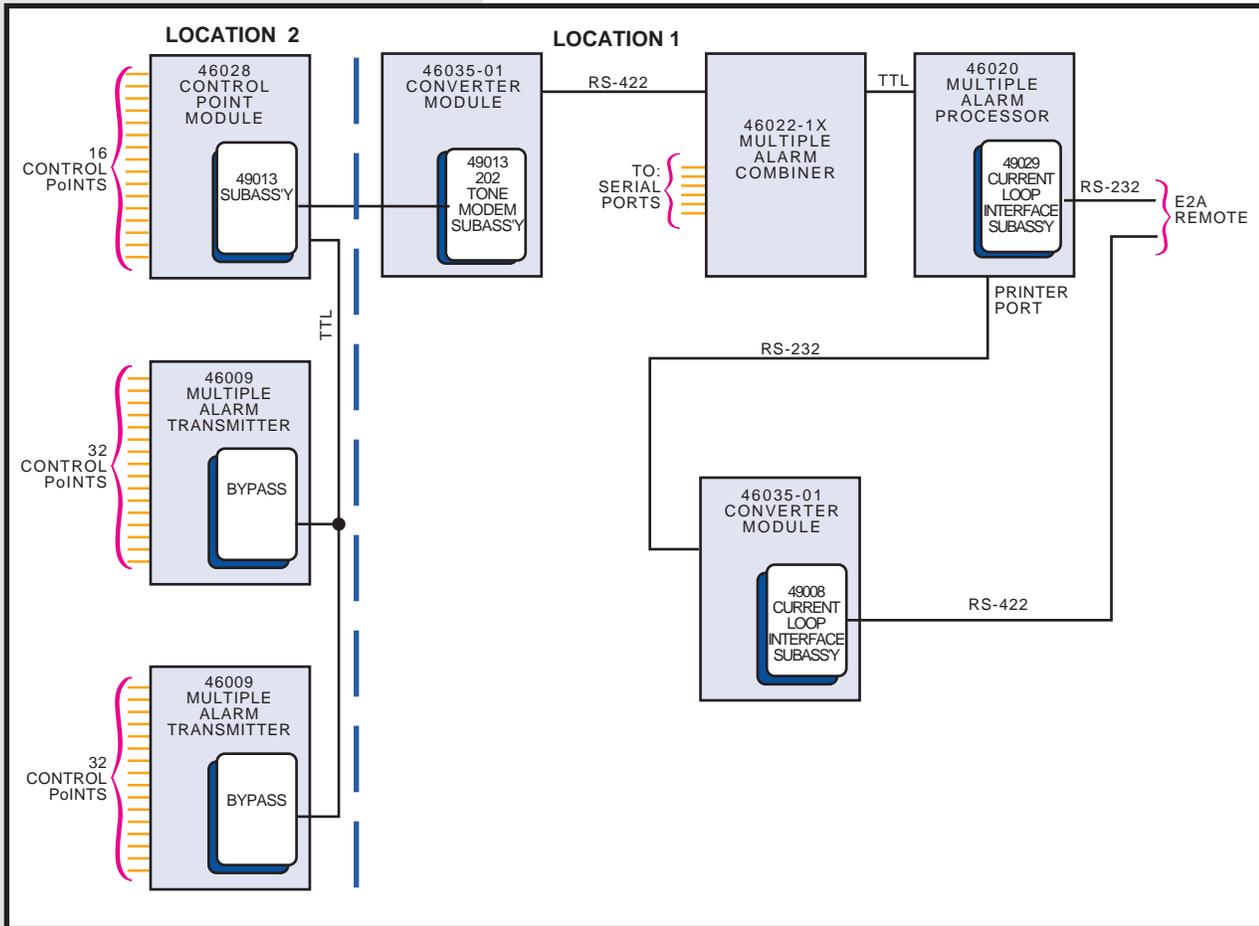
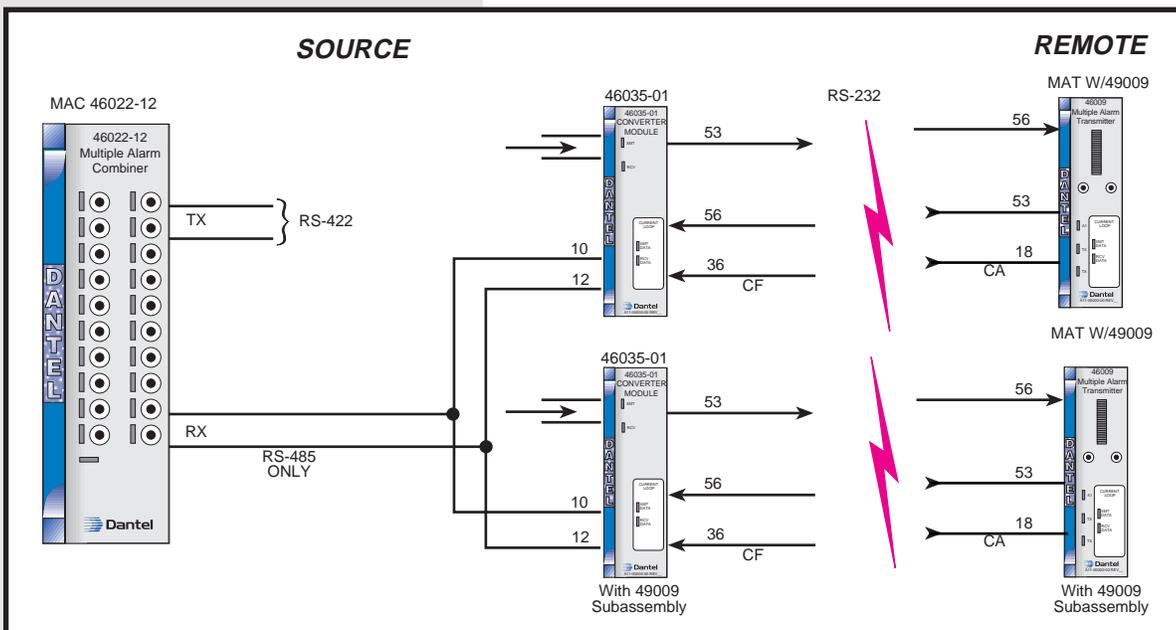


FIG. 4 - APPLICATION DIAGRAM, PARALLEL 46035s



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# INSTALLATION

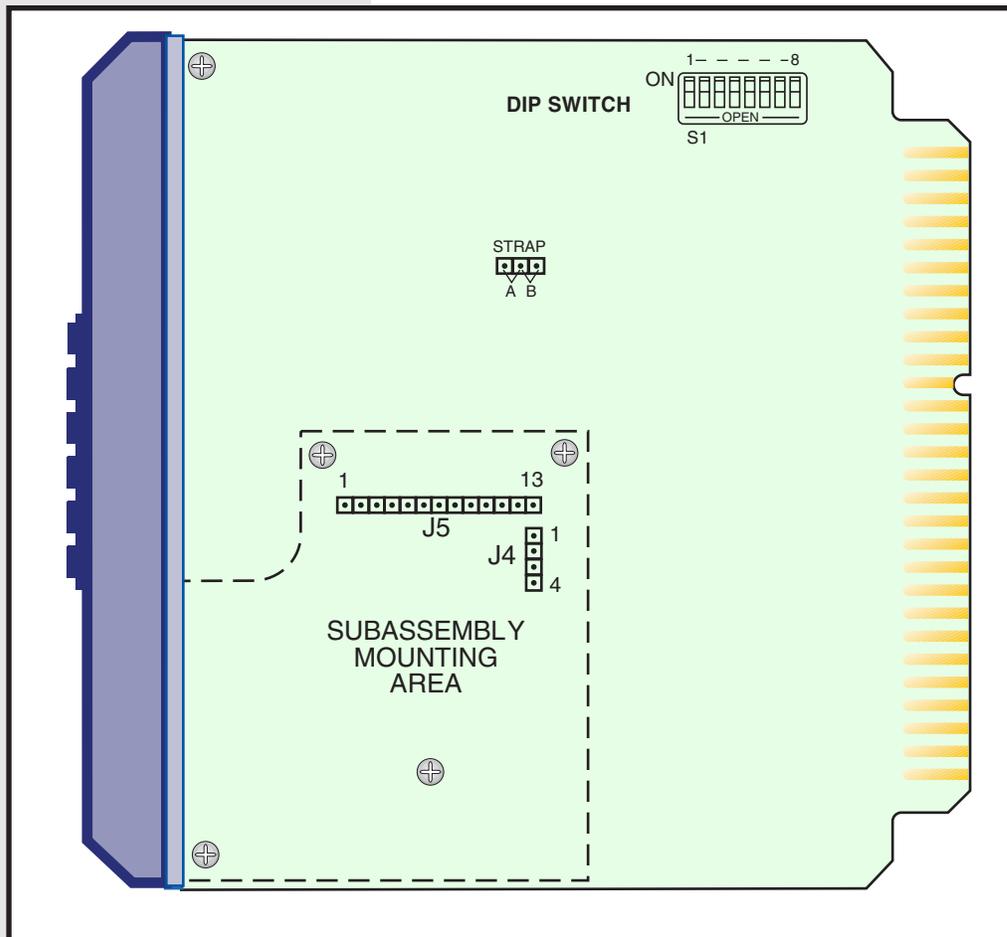
Installation consists of setting the strap and switches, installing a subassembly, installing the module in the shelf, aligning the subassembly, and checkout.

## 1. Set the strap and switches.

Refer to Fig. 6 and Tables A and B. The 46035 Converter Module has an eight switch mini-DIP that configures the unit for different applications. Configure the unit for:

- ◆ RS-232, RS-422 or RS-485 data communications interfacing,
- ◆ RS-232 bridging, or RS-422/485 bridging or terminated.
- ◆ Configuring the subassembly RTS for always ON or under input control.

FIG. 6 - SWITCH AND STRAP LOCATIONS, 46035-01



# INSTALLATION

**TABLE A - SWITCH AND STRAP OPTIONS, 46035-01**

SWITCH	POSITION	DESIGNATION
S1-1	ON	For TTL to Subassembly TXD.
	OFF	All other modes.
S1-2	ON	For TTL to Subassembly RTS.
	OFF	All other modes.
S1-3	ON	For RS-422/RS-232.
	OFF	TTL or subassembly control for RS-485.
S1-4	ON	RTS always ON to subassembly.
	OFF	RTS under input control. (RS-232)
S1-5	ON	Allows RTS derived from RS-485 input.
	OFF	Disables RTS from RS-485 input.
S1-6	ON	CA input control.
	OFF	Disables CA input control.
S1-7	ON	Bypasses isolating diode to allow through communication of RXD to subassembly.
	OFF	Allows signal combining of subassembly and RS-232/422/485 port.
S1-8	ON	Provide 180 ohm termination for RS-422/485 input.
	OFF	Provides bridging for the RS-422/485 input.
Strap	A	Selects RS-422/485 interface output.
	B	Selects RS-232 interface output.

**TABLE B - POSSIBLE INTERFACE COMBINATIONS**

	SOURCE *	DESTINATION *	S1-1	S1-2	S1-3	S1-4	S1-5	S1-6	S1-7	S1-8	STRAP
1	-00*	TTL and RS-232	OFF	OFF	ON	OFF	OFF	ON	ON	OFF	B
2	-00	TTL and RS-422	OFF	OFF	ON	OFF	ON	OFF	ON	ON	A
3	-00	TTL and RS-485	OFF	OFF	OFF	OFF	ON	OFF	ON	ON	A
4	TTL	-01* and RS-232	ON	ON	ON	OFF	OFF	ON	OFF	OFF	B
5	TTL	-01 and RS-422	ON	ON	ON	OFF	ON	OFF	OFF	ON	A
6	TTL	-01 and RS-485	ON	ON	OFF	OFF	ON	OFF	OFF	ON	A
7	RS-232	-00 and TTL	OFF	OFF	ON	OFF	OFF	ON	ON	OFF	B
8	RS-422	-00 and TTL	OFF	OFF	ON	OFF	ON	OFF	ON	ON	A
9	RS-485	-00 and TTL	OFF	OFF	OFF	OFF	ON	OFF	ON	ON	A

**\* NOTES:**

1. The "source" is where the poll comes into the 46035.
2. The "destination" is where that poll exits the 46035 on its way to the remote equipment.
3. "-00" is a Dantel communications subassembly with a -00 part number.
4. "-01" is a Dantel communications subassembly with a -01 part number.
5. Option 8 is the most common application.

# INSTALLATION

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## 2. Install a subassembly, if necessary.

To install or change a subassembly, follow these steps:

1. If there is a hole plug in the front panel of the module, remove the plug.
2. Remove the three screws from the subassembly standoffs (refer to Fig. 6).
3. Take the subassembly off the board.
4. Place the new subassembly on the board:
  - ◆ Insert P4 into J4 and P5 into J5.
  - ◆ Make sure each connector pin goes straight into the socket.
  - ◆ Make sure the subassembly fits closely on the standoffs.
5. The front panel of the subassembly should be straight in the opening in the front panel of the module.
6. Replace the three screws in the standoffs.

Refer to the subassembly manual for strapping information.

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## 3. Install the module in the proper slot in the equipment shelf.

In most cases, the shelf will be pre-wired for the 46035 Converter Module. If necessary, refer to Fig. 7 for module pin designations.

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## 4. Align the modem subassembly, if installed:

The modem must be connected to another modem at the other end of the communications line.

1. Apply power.
2. Place the front panel switch in the TEST position.
3. Verify that the front panel CD (Carrier Detect) LED at the distant end indicates data transmission activity.
4. With a dB meter (bridging), check the signal level at the XMT test points. Adjust the XMT LVL to obtain the level required for your application.
5. With a dB meter (bridging), check the incoming signal level at the RCV test points. The signal level should be 0 to -40 dBm, depending on your application. There is no field adjustment for this circuit.

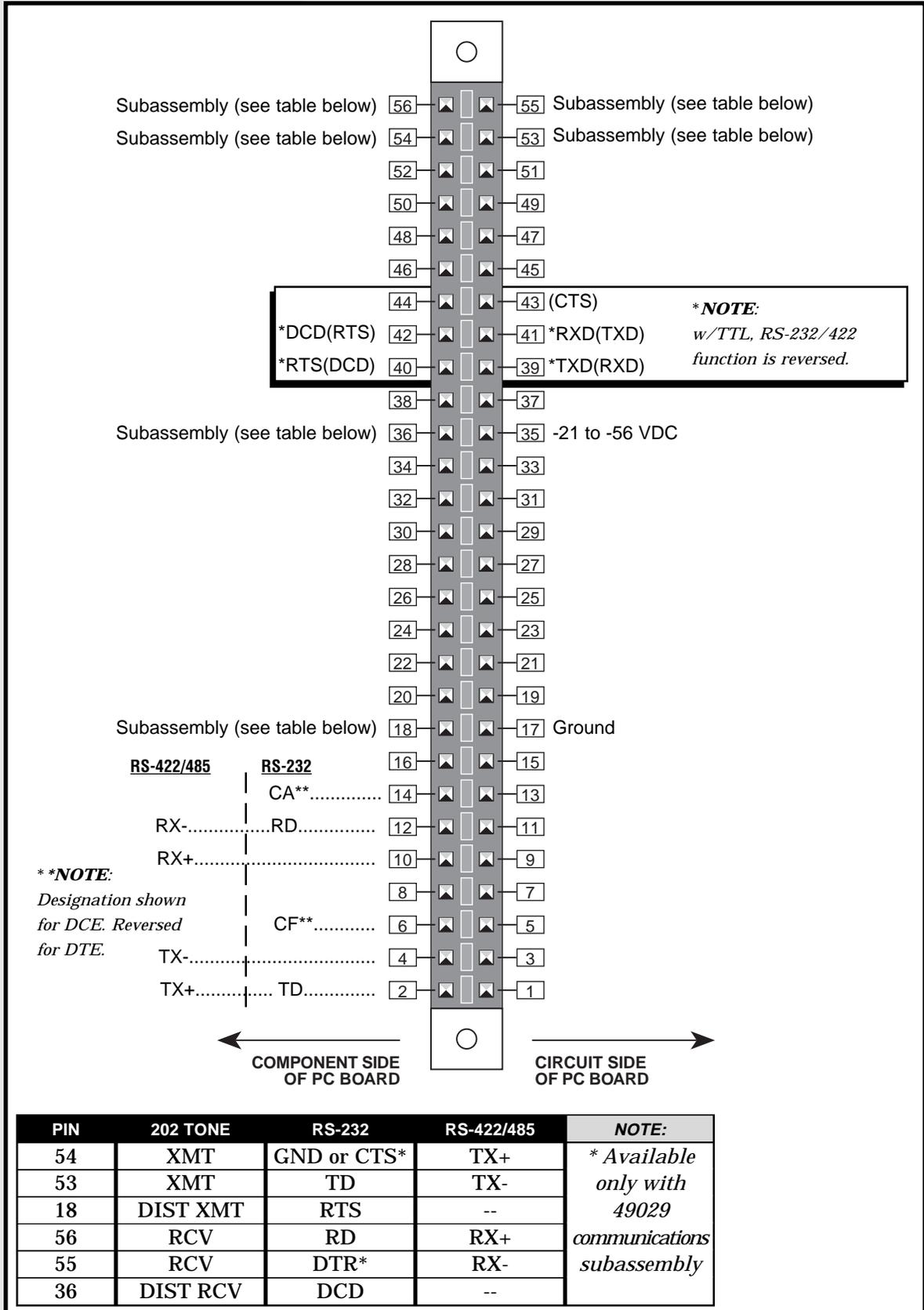
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## 5. Checkout

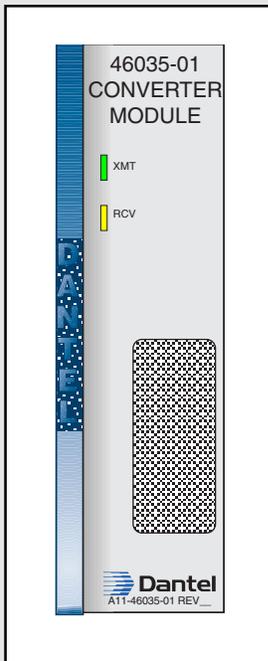
Checkout consists of monitoring the unit's front panel LEDs to verify data is being transmitted and received.

# INSTALLATION

FIG. 7 - PIN DESIGNATIONS, 46035-01 CONVERTER MODULE



# OPERATION



Once the 46035 Converter Module is installed, simply observe the LEDs on the front panel of the module and subassembly for data activity.

There are no specific operating instructions for the 46035 Converter Module. The module starts operation when the power is applied.

The 46035 Converter Module has two front panel LED indicators. The green LED, labeled XMT, flashes when data is transmitted. The yellow LED, labeled RCV, flashes when data is received.

# TECHNICAL SPECIFICATIONS

DESCRIPTION	VALUE
Input Power	-21 to -56VDC
Input Current	
@ -21VDC	70 mA
@ -56VDC	50 mA
Heat Dissipation	
@ -21VDC	5.1 Btu/Hr.
@ -56VDC	9.6 Btu/Hr
Operating Temperature Range	0° to 55° C.
Physical Dimensions	1.4" x 6.0" x 5.6"
Weight	6.25 ounces

# NOTES

# WARRANTY

## LIMITED WARRANTY

The Seller warrants that the standard hardware products sold will be free from defects in material and workmanship and perform to the Seller's applicable published specifications for a period of 18 months for hardware, and 3 months for software, from the date of the original invoice. The liability of the Seller hereunder shall be limited to replacing or repairing, at its option, any defective products which are returned F.O.B. to the Seller's plant, (or, at the Seller's option, refunding the purchase price of such products). In no case are products to be returned without first obtaining permission and a customer return authorization number from the Seller. In no event shall the Seller be liable for any consequential or incidental damages.

Equipment or parts which have been subject to abuse, misuse, accident, alteration, neglect, unauthorized repair or installation are not covered by warranty. The Seller shall make the final determination as to the existence and cause of any alleged defect. No warranty is made with respect to custom equipment or products produced to the Buyer's specifications except as specifically stated in writing by the Seller in the contract for such custom equipment.

This warranty is the only warranty made by the Seller with respect to the goods delivered hereunder, and may be modified or amended only by a written instrument signed by a duly authorized officer of the Seller and accepted by the Buyer.

Warranty and remedies on products not manufactured by the Seller are in accordance with warranty of the respective manufacturer. THE SELLER MAKES NO OTHER WARRANTY OF ANY KIND WHATSOEVER, EXPRESSED OR IMPLIED; AND ALL IMPLIED WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE WHICH EXCEEDS THE AFORESAID OBLIGATIONS IS HEREBY DISCLAIMED BY THE SELLER.

## IN CASE OF DIFFICULTY

If you experience difficulty with this equipment, check the following, as appropriate:

1. Switch settings
2. Signal levels
3. Software configuration
4. Connections between Dantel's equipment and your equipment.

If there is still a problem, substitute equipment that is known to be good. For additional assistance, call Dantel's Technical Field Service Department weekdays, 6 A.M. to 5 P.M. pacific time:

**1-800-4DANTEL (1-800-432-6835).**

If a thorough checkout shows a piece of equipment has malfunctioned, you may return it to the factory. For repairs and emergency replacements, obtain a Return Material Authorization (RMA) number from the Customer Service Representative at **1-800-4DANTEL (1-800-432-6835)**.

To ensure expedient processing of your order, provide a purchase order number and shipping and billing information when requesting an RMA number. Also, when the units are returned to Dantel, include a description of the failure symptoms for each unit returned. Send defective equipment to:

**Dantel, Inc. • 2991 North Argyle Avenue • Fresno, California 93727-1388**

