Dantel

46092

TEST INTERFACE

MODULE

46092-00
TEST
INTERFACE

202 422
XMT

CX
ON
RCV
LVL
XMT

HI LOW
202
RCV
422

T N
RS-232

XMT
DATA

RCV
DATA

CD

Dantel
A11-46092-00 REV__

Table of Contents

About this Practice:

This practice has been reissued to:
• Meet ISO 9001 requirements.

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

Previous issue: March 1991

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

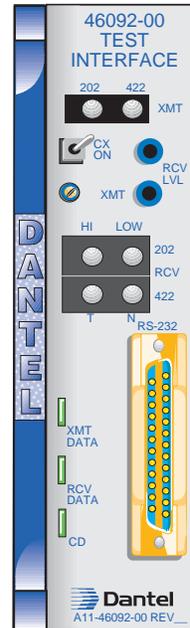| OPTION NUMBER	FEATURES
A11-46092-00	Test Interface Module

GENERAL DESCRIPTION

The 46092 Test Interface Module allows an IBM-compatible computer running Dantel's 46081 TBOS or 46094 TABS software to test TBOS or TABS equipment. The unit is designed to temporarily occupy a spare or other module's slot in a 400-type equipment shelf.

It also is used in the A15-00458-02 Test Set.

The 46092 may also be used with Dantel's 46035-01 E-System Emulator Module in the A15-00459-02 Test Set to test E-telemetry systems.

CIRCUIT DESCRIPTION

The functional schematic for the 46092 Interface Module is shown in Fig. 1. There are three main sections:

Digital Circuitry

RS-232 data received at P5 (the DB25 connector on the front panel) is converted to TTL data by the RS-232 receiver circuitry. The TTL data is then converted to RS-422 by the RS-422 driver circuitry and to 202 tones by the FSK modem IC and its associated circuitry. The output of each circuit is connected to the front panel bantam jacks. These are labeled 422 XMT and 202 XMT.

At the same time, all RS-422 and 202 data received by the module is converted to RS-232 and transmitted to P5. An LED labeled XMT DATA lights when data is transmitted through either the XMT 422 or XMT 202 jack.

RS-422 data is received at the front panel bantam jacks labeled RCV 422 and converted to RS-232 as described above. The RCV circuitry has an unterminated input, labeled N. It also has an input, labeled T, that can be terminated or unterminated with a switch S1-3. An LED labeled RCV DATA lights whenever either RCV jack receives data.

CIRCUIT DESCRIPTION

FIG. 1 - FUNCTIONAL SCHEMATIC, 46092 INTERFACE MODULE

FSK Modem IC

The FSK modem IC generates 202 tone data from the TTL data output of the RS-232 receiver circuitry. The tone data is then coupled, using an isolation transformer and an operational amplifier, to the jack labeled XMT 202 on the front panel. The output level of the tones can be adjusted by the front panel potentiometer labeled XMT.

Tones received at the bantam jacks labeled RCV 202 HI/LO are coupled to the FSK modem using isolation transformers and operational amplifiers. The modem converts the tones to TTL signals that are sent to the RS-232 driver circuitry. The jack designated as HI accepts tones in the 0 to -30 dB range while the jack designated as LO accepts tones in the -10 to -40 dB range. Switches S1-1 and S1-2 provide an additional 15 dB of gain or 15 dB or loss. This serves to bring the signal to within the proper range level if necessary.

CIRCUIT DESCRIPTION

Receive levels can be monitored by the front panel test points labeled RCV LVL.

The FSK modem generates a data carrier signal and applies it to the 202 XMT jack when the CX ON switch is closed. CX ON also enables the RS-422 driver circuitry. The switch can be used for testing purposes or when there is no control signal at P5-8. The LED labeled CD will light when there is a carrier signal received.

Regulated Power Supply

Input power to the module is applied at pins 17 (ground) and 35 (-21 to -56 VDC) of the edge connector. The on-board power supply then supplies a regulated +12, -12, and +5 VDC to the module's circuitry.

APPLICATION INFORMATION

The 46092 Test Interface Module can be used in monitor, interrogator, and responder modes with TBOS, TABS, or E-telemetry equipment.

Monitor

Both the transmit and receive paths can be monitored without interrupting system communications. Fig. 2 shows how data can be monitored within a system.

Interrogator

Fig. 3 shows how the test module and a computer can emulate a central office to interrogate parts of a system for testing or troubleshooting.
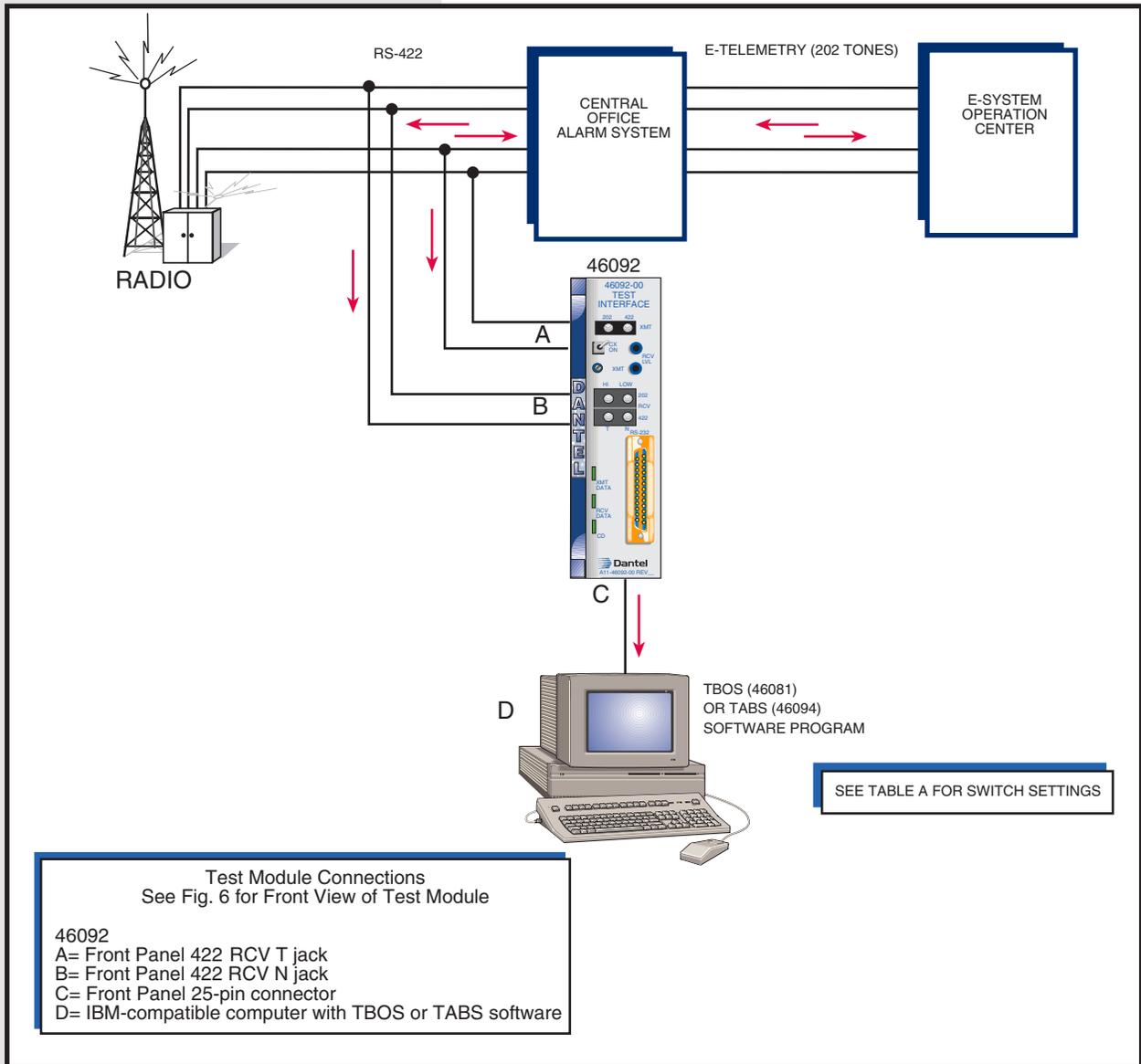
Responder

Fig. 4 depicts how the test module and a computer can be used as a responder to test or troubleshoot polling from the central office.

E-Telemetry

The 46092 can be used with the 46036-01 E-System Emulator Module to monitor E-telemetry. Refer to the 00458/00459 practice for additional application information.
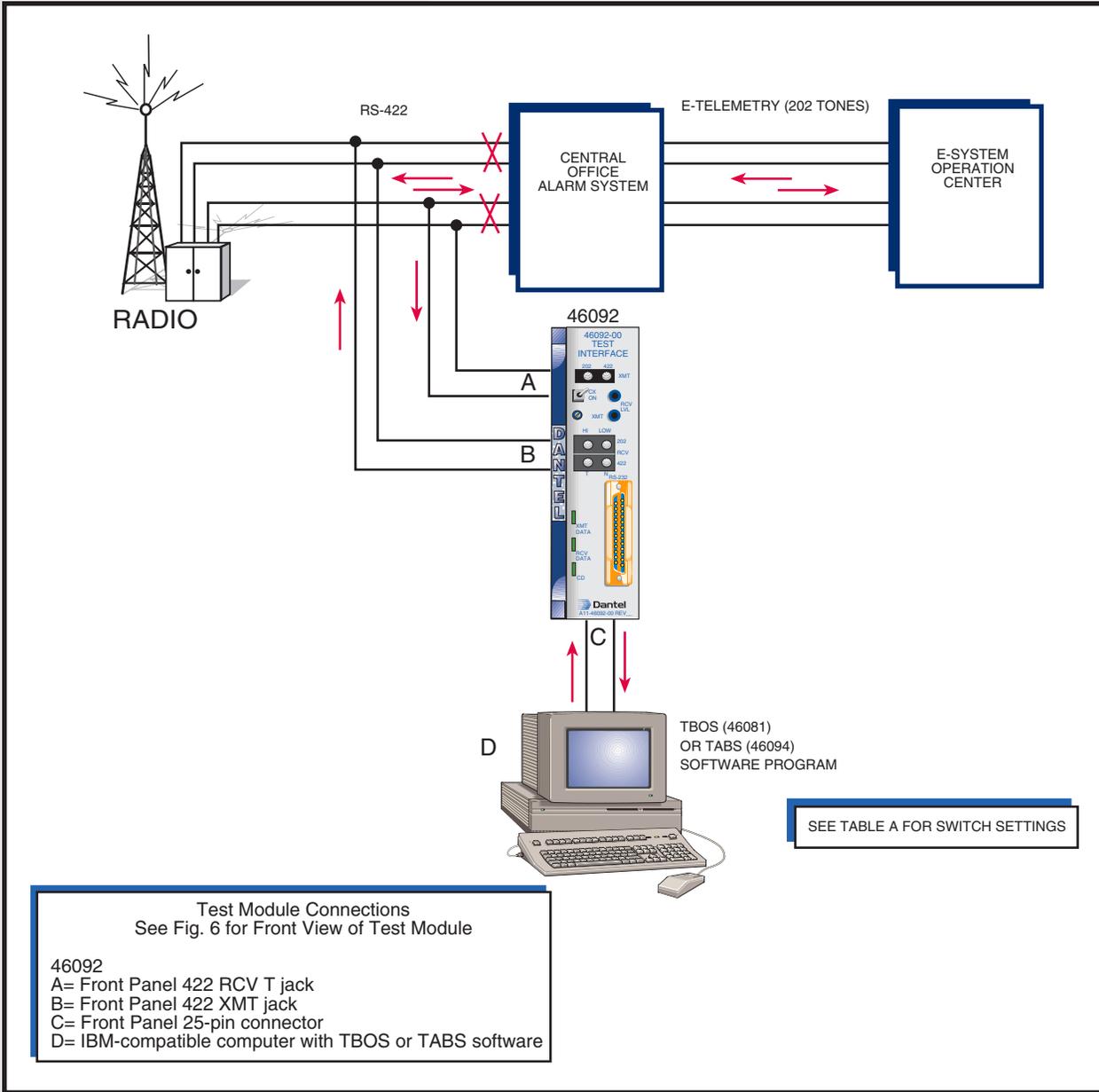
FIG. 2 - MONITOR MODE APPLICATION

RS-422

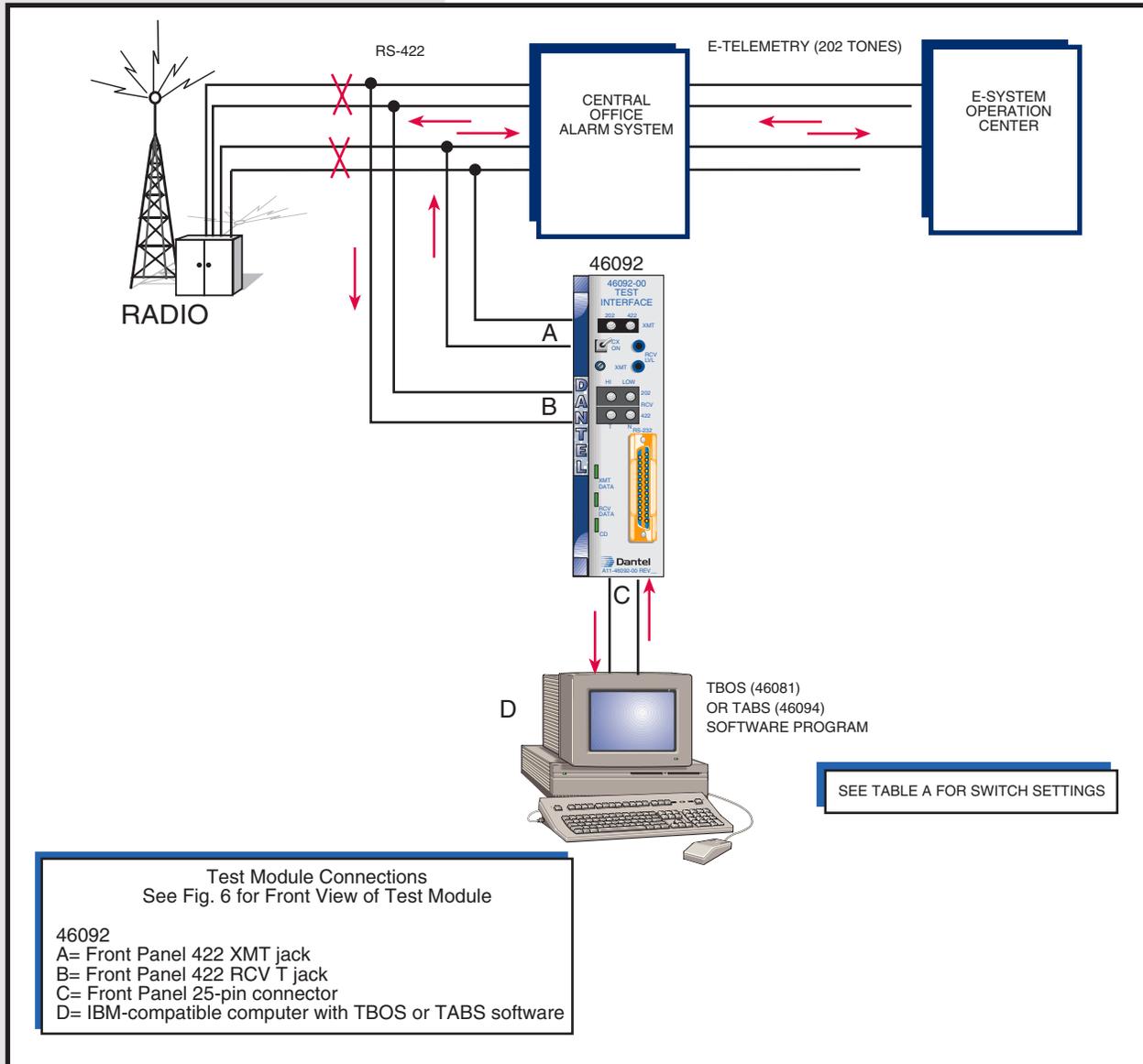E-TELEMETRY (202 TONES)

CENTRAL OFFICE ALARM SYSTEM

E-SYSTEM OPERATION CENTER

RADIO

46092

46092-00 TEST INTERFACE

A

B

C

D

TBOS (46081) OR TABS (46094) SOFTWARE PROGRAM

SEE TABLE A FOR SWITCH SETTINGS

Test Module Connections
See Fig. 6 for Front View of Test Module

46092
A= Front Panel 422 RCV T jack
B= Front Panel 422 RCV N jack
C= Front Panel 25-pin connector
D= IBM-compatible computer with TBOS or TABS software

APPLICATION INFORMATION

FIG. 3 - INTERROGATOR MODE APPLICATION

RS-422

E-TELEMETRY (202 TONES)

CENTRAL OFFICE ALARM SYSTEM

E-SYSTEM OPERATION CENTER

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46092
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FIG. 4 - RESPONDER MODE APPLICATION

RS-422

E-TELEMETRY (202 TONES)

CENTRAL
OFFICE
ALARM SYSTEM

E-SYSTEM
OPERATION
CENTER

RADIO

46092

46092-00
TEST
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A

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TBOS (46081)
OR TABS (46094)
SOFTWARE PROGRAM

SEE TABLE A FOR SWITCH SETTINGS

Test Module Connections
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46092
A= Front Panel 422 XMT jack
B= Front Panel 422 RCV T jack
C= Front Panel 25-pin connector
D= IBM-compatible computer with TBOS or TABS software

INSTALLATION

Installation consists of setting the switches on the 46092 for proper operation. Refer to Fig. 5 and Table A.

If the 46092 module is to be installed in a 400-type equipment shelf, disconnect power to the shelf and install the 46092 in any spare slot or one that is wired for -21 to -56 VDC at pin 35 and ground at pin 17. This is the standard configuration for factory-wired slots. Disregard all other connections to the edge connector. They are not used by the 46092.

If the 46092 is to be installed in a 00458 or 00459 Test Set, refer to the documentation specific to that Test Set.

FIG. 5 - SWITCH LOCATIONS, 46092 TEST INTERFACE MODULE

INSTALLATION

| FUNCTION (SWITCH) |
|---|
| **TONE LEVEL (S1-1, S1-2)** |
| Set S1-1 and S1-2 only if the RCV 202 HI or LO front panel jacks are used. S1-1 and S1-2 change the level measured (bridging) at TP-1 and TP-2. Level must be between -40 dB and 0 dB.
• Nominal Range   S1-1 ON, S1-2 OFF
• 15 dB Gain   S1-1 OFF, S1-2 OFF
• 15 dB Loss   S1-1 OFF, S1-2 ON |
| **RS-422 TERMINATION (S1-3)** |
| Set S1-3 only if the 422 RCV T jack is used.
• Not terminated   S1-3 OFF (refer to Fig. 2)
• Terminated   S1-3 ON (refer to Figs. 3 and 4) |
| **(S1-4)** |
| S1-4 is not used. |
| **CARRIER (S2)** |
| S2 turns on the 202 carrier tone and also enables the RS-422 transmit driver. S2 must be ON in all applications shown in this practice <u>except</u> Fig. 2. |

OPERATION

There are no specific operating instructions for the 46092. The module begins operation when power is applied.

Front panel LEDs labeled XMT DATA and RCV DATA indicate when the unit is transmitting or receiving RS-422 data or 202 tones. The LED labeled CD indicates the presence of a carrier signal at one of the 202 RCV jacks. CX ON enables the data carrier for the 202 transmit circuitry and also enables the RS-422 transmit driver. Refer to Fig. 6.
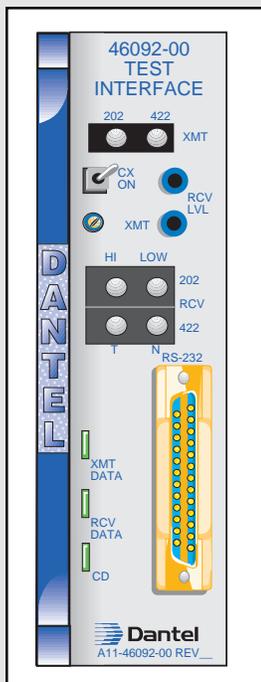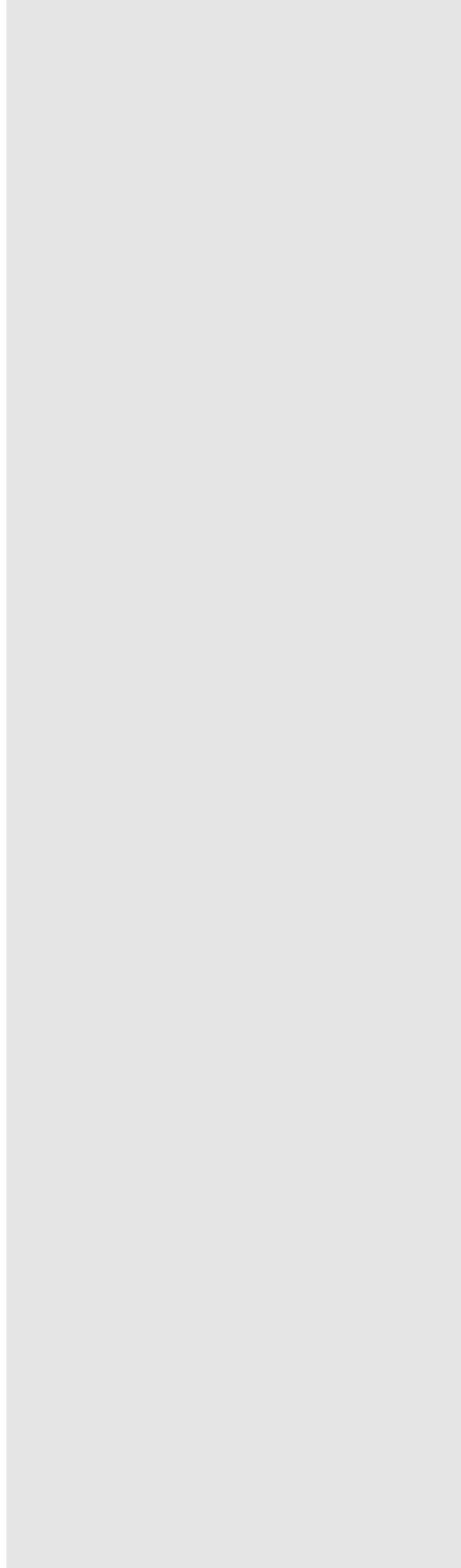
TECHNICAL SPECIFICATIONS

DESCRIPTION	VALUE
Input Voltage	-21 to -56 VDC
Input Current (±15%)	
@ -24 VDC	
Idle	110 mA
Full Load	115 mA
@ -48 VDC	
Idle	73 mA
Full Load	75 mA
Heat Dissipation (±15%)	
@ -24 VDC	
Idle	9.0 Btu/Hr
Full Load	9.4 Btu/Hr
@ -48 VDC	
Idle	12.0 Btu/Hr
Full Load	12.3 Btu/Hr
Weight	9 ounces
Physical Dimensions	1.4" x 6.0" x 5.6"
Operating Temperature Range	0° to 55° C.

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

Dantel

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