R400-10
USER'S MANUAL

PRELIMINARY

R400 User's Manual
A01637 Rev. A

Proprietary Data

GDI COMMUNICATIONS, LLC
879 Deming Way
Sparks, NV 89431-6403
Phone: 775-345-8000
FAX: 775-345-8010
www.sgdi.com

PRELIMINARY

PRELIMINARY

TABLE of CONTENTS

GLOSSARY **1**
GENERAL DESCRIPTION **2**
GENERAL CHARACTERISTICS **1**
INSTALLATION **2**

GLOSSARY

Anti-Streaming – A function on GDI modems that prevents a Host from transmitting continuously.

DCD – Data Carrier Detect. An EIA RS-232D control signal that can be used to gate RXD to a DTE.

DCE – Data Communications Equipment. A device that converts data from a DTE to a transport stream. For example. The GDI model 400 modem is a DCE that converts RS232 data from a controller to a FSK Telco system.

DTE – Data Terminal Equipment. A device that initiates communication over RS232 lines.

CTS – Clear To Send. An EIA RS-232D control signal that can be used to gate TXD data from a DTE.

Full duplex – A communication system where data can be transmitted in both directions at the same time.

Half duplex - A communication system where data can be transmitted in only one direction at a time.

FSK – Frequency Shift Keying. Communication protocol where data is encoded into binary format and represented by different frequencies.

Host – Any DTE device.

MARK – Signal state of a FSK system that represents a logical "1" value.

Private wire – Telco communication hardware that is leased for private use.

SPACE – Signal state of a FSK system that represents a logical "0" value

0 dBm – Represents the signal level required to produce 1mw in a 600Ω load.

Soft carrier – Signal transmitted at the end of data to quiet the lines and turn the receiver off.

Surface mount parts – Electronic parts that are designed to be soldered to pads instead of vias.

RXD – Receive Data. An EIA RS-232D data signal that transfers information in form of binary data to a DTE.

RTS – Request To send. An EIA RS-232D control signal that can be used to gate TXD to a DTE. The DTE asserts RTS and then waits for the DCE to respond with CTS.

TXD Transmit Data - An EIA RS-232D data signal that transfers information in form of binary data from a DTE.

GENERAL DESCRIPTION

GENERAL DESCRIPTION

The R400-10 is a 10-position rack for type 170 modems. Power is provided by a dual output linear power supply. A redundant power supply provides continuous operation should one power supply fail. Front panel indicators provide visual confirmation that the power supplies are on.

External connection to the Modems are provided on the back panel. DB25 (female) connectors are used for the RS-232 signals and Terminal Blocks are used for the FSK signals.

While each modem has a separate DB25 connector , there are two FSK channels per terminal block. The following channels share a terminal block: 1/2, 3/4, 5/6, 7/8, and 9/10.

The DB-25 connectors use Latch blocks that accommodate both spring latch and thumbscrew retainers.

The R400-10 Rack is made from aluminum for corrosion resistance and lightness. The front panel is hinged for easy access to the modems. The R400-10 is designed to fit into a standard 19" rack and uses 7" of vertical space.

POWER SUPPLIES

The R400-10 uses two dual output linear power supplies. Each power supply can source 1.7 Amps from each voltage. With a fully populated rack, each modem can use up to 150ma from both the +12 and –12 outputs. Linear Supplies are used so that switching noise does not interfere with the performance of the modems or other nearby equipment.

During normal operation, the primary (top) power supply is supplying current to the Rack and the secondary (bottom) power supply is idling.

If the primary supply fails, the secondary supply will take over.

Each supply uses about 50W at 115vac.

Banana jacks on the front panel provide access to the power supply outputs. LEDs indicate whether the output voltage is at least 10.5 Volts on each of the 4 supplies. Each power supply is fused separately with the fuse mounted on the front panel for easy replacement.

GENERAL CHARACTERISTICS

Overall Dimensions: 19”x 7” x 11.5”

FORM FACTOR: 19” Rack x 7” vertical space

Material: Aluminum

ELECTRICAL

Input Power: 120vac ±10% at 60Hz, 50W

ENVIRONMENTAL:

Temperature -37 to +74o C
Humidity 95% non-condensing

INSTALLATION

The R400-10 has been designed to fit into a standard 19" Rack and uses 7" of vertical space. Power to the rack is supplied through a standard 120vac power cord with a three prong plug.

Use 4, number 10, screws to mount the R400-10.

The RS-232 serial data cables are connected to the R400-10 on the back panel. It is recommended that spring latches or thumbscrews be used to retain the connectors.

The DB25 connectors for are labeled for modem channels 1 to 10. The pinout for the connectors are shown in the interconnect table.

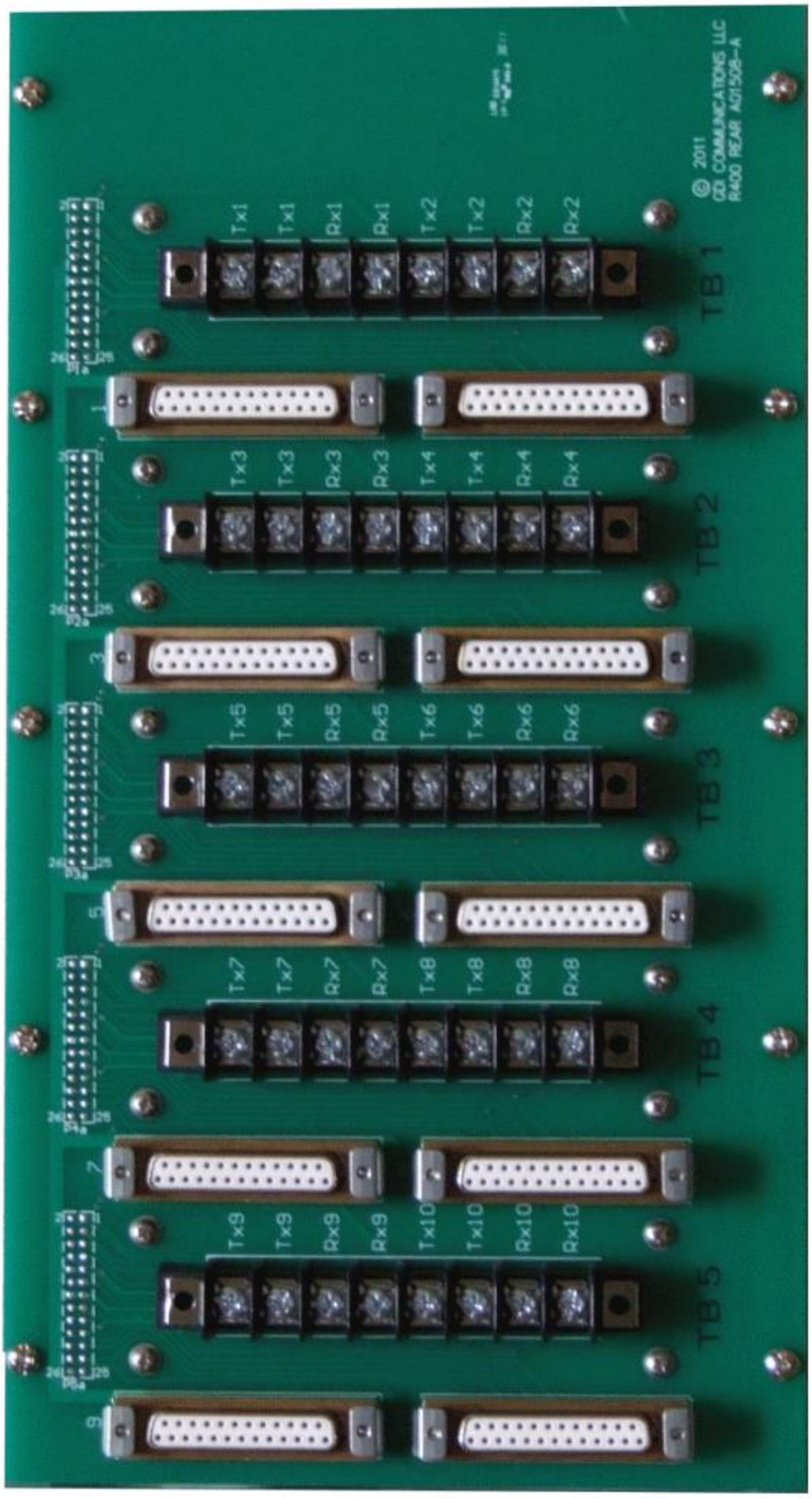
The Audio (FSK) signals are available on the 8 position terminal blocks labeled TB1 to TB5. Each terminal block has two channels of FSK signals. The terminals labeled Tx are the audio output terminals and the terminals labeled Rx are the audio inputs to the modems. Use #6 Spade or ring lugs for connecting to the terminal blocks.

Insert the modems into the card guides and firmly seat them in the connectors on the main PC board. The 1" space between slots will fit modems built to CALTRANS specifications. The number 1 slot is to the left (nearest to the power supply) and the number 10 slot is to the right.

The power supplies do not need any adjustment. The output of the supplies can be verified with a voltmeter at the front panel jacks. The voltages for the primary supply are set at the factory to 12.05 Volts and the secondary supplies are set to 11.90 Volts. The voltage measurement on the front panel will be slightly highr than the actual voltage level at the modem.

If the power supply does require adjusting, measure the voltage at the modem while adjusting the level. Make sure that the primary supply is .7vdc higher than the secondary supply. Its best to remove the fuse of the supply that is not being adjuested.

If the voltages are not within 0.5vdc of nominal, determine if a modem is the cause by removing each modem one at a time. If it's not a modem problem, the supply should be replaced.


TB1
TB2
TB3
TB4
TB5
Tx1
Rx1
Tx2
Rx2
Tx3
Rx3
Tx4
Rx4
Tx5
Rx5
Tx6
Rx6
Tx7
Rx7
Tx8
Rx8
Tx9
Rx9
Tx10
Rx10
© 2011
CDI COMMUNICATIONS LLC
R400 REAR A01508-A

PRELIMINAY

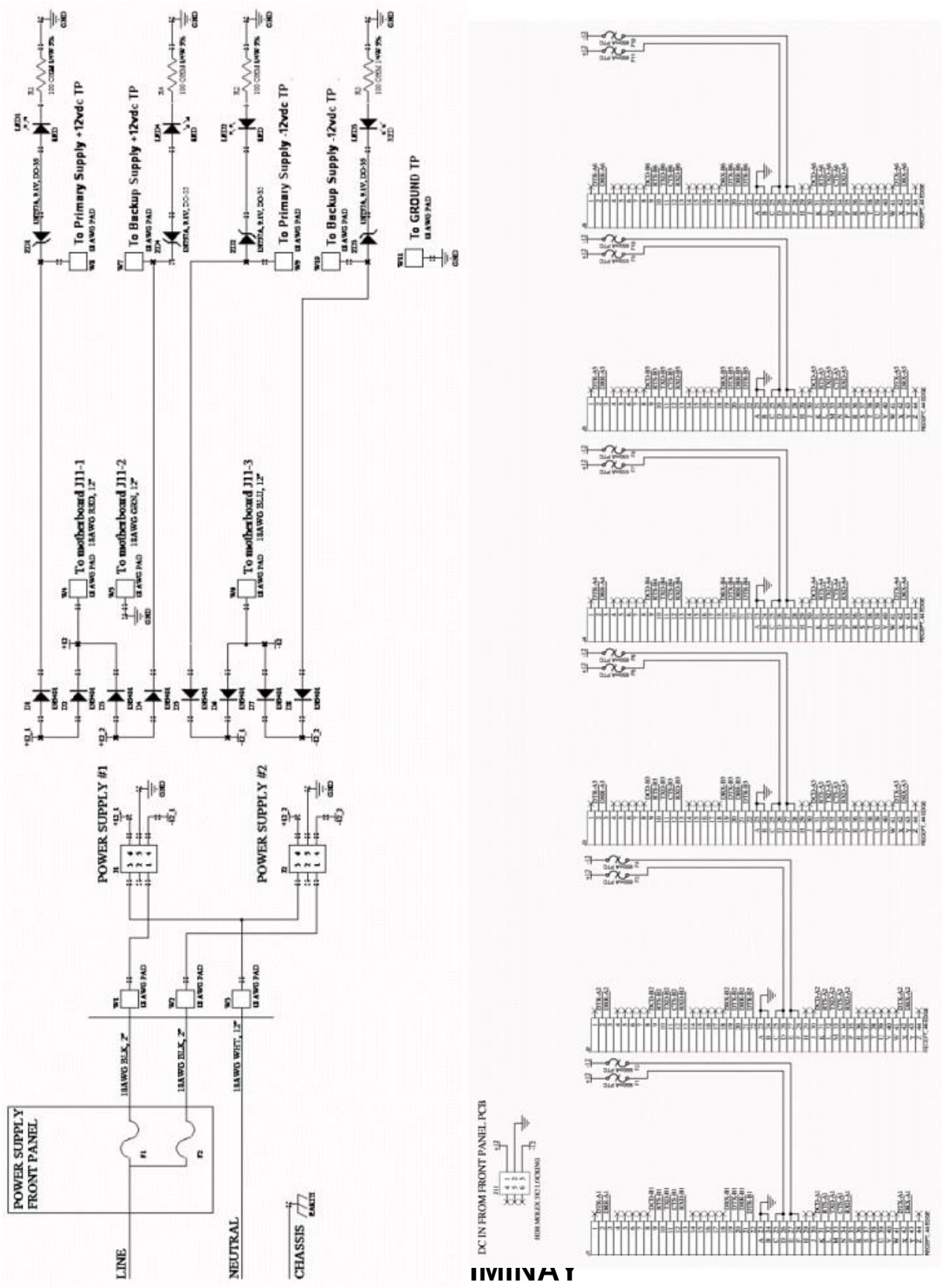
SIGNAL CONNECTION TABLE

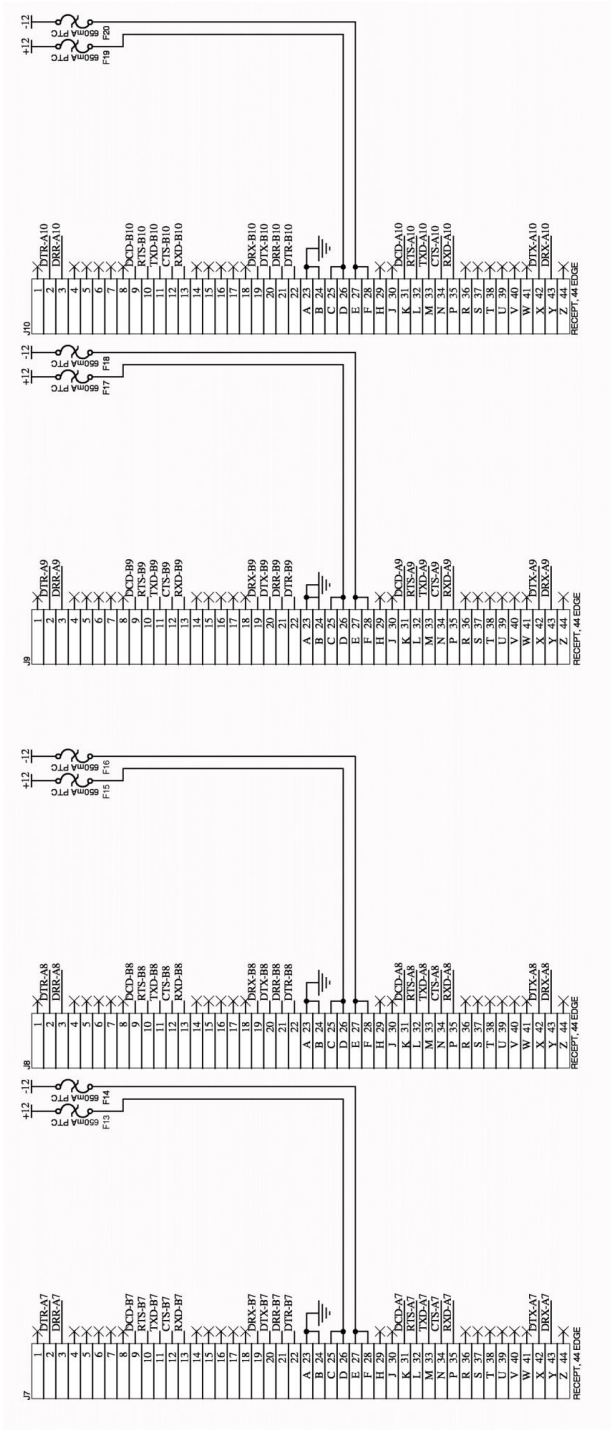
SLOT 1					
FUNCTION	J1	P1a	DB1	TB1	DESCRIPTION
RTS	L (32)	4	4		Request To Send
CTS	N (34)	6	5		Clear To Send
TXD	M (33)	5	2		Transmint Data
DTX	X (42)	8		2	Audio Out +
DRX	Y (43)	9		1	Audio Out -
DTR	2	1		4	Audio In +
DRR	3	2		3	Audio In -
DCD	K (31)	3	8		Data Carrier Detect
RXD	P (35)	7	3		Receive Data
SLOT 2					
	J2	P1a	DB2	TB1	DESCRIPTION
RTS	L (32)	19	4		Request To Send
CTS	N (34)	23	5		Clear To Send
TXD	M (33)	21	2		Transmint Data
DTX	X (42)	25		6	Audio Out +
DRX	Y (43)	26		5	Audio Out -
DTR	2	17		8	Audio In +
DRR	3	18		7	Audio In -
DCD	K (31)	20	8		Data Carrier Detect
RXD	P (35)	24	3		Receive Data
SGND		10/22			
+12VDC		11/12			
-12VDC		15/16			

This table is for the first pair of modem slots. All slots are wired the same. The columns labeled J1 and J2 are the first two slot's 44 pin connectors on the main board.

P1a is the connector that connects the Main board to the Back Panel. DB1 and DB2 are the DB-25 connectors on the Back Panel and TB1 is the eight position barrier strip.

POWER DISTRIBUTION





GDI COMMUNICATIONS, L.L.C.

TRAFFIC EQUIPMENT MANUFACTURER ♦ SPECIALIZING IN COMMUNICATIONS

879 Deming Way
SPARKS, NEVADA 89439
TELEPHONE: 775-345-8000 FAX: 775-345-8010

PRELIMINAY