

R800-16RJ45 MANUAL

16 Position Dual Slot Rack



GDI Communications, LLC
Verdi, Nevada

R800-16RJ45 RACK MANUAL

REV. A

GDI Communications, LLC

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775-345-8000

This Manual applies to units with serial numbers 00000 and above

Drawing Number: A00720

APPROVED:

Engineering _____ Date _____

Manufacturing _____ Date _____

Marketing _____ Date _____

Release Date: 1-09-03

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GENERAL DESCRIPTION

The R800-16RJ45 Rack will hold 16 dual modems that meet the type 400 form factor. This includes all of the 800 series of dual modems and the SM24000 series of dual Modems. Standard single rack mount modems can also be used in this rack. This includes the 400 series and the FLD2 and FLD3 fiber optic transceivers. The R800-16 Card Cage is designed to mount in a standard 19" Rack.

The R800-16 Rack must be used with the PSR800 Power Supply which also mounts in the 19" Rack above or below the R800-16. The PSR800 supplies the ± 12 Volts needed by the Modem Modules. The PSR800 connects to the R800-16 through a 9 pin circular connector mounted on the back panel.

The Mother Board for the R800-16 Rack has 16 slots spaced 1" apart. Each slot has a Polyfuse (solid state automatically resettable fuse) on each power connection. This limits the current that a slot can draw from the card cage and prevents a bad modem from bringing down the whole card cage. The Polyfuses will reset automatically when the excess load is removed.

The connectors in each slot are keyed so that you cannot insert the modem upside down. The keying is as specified by the CALTRANS TEES for the type 400 modem and the modem slot on the 170 Controller. The Dual modem slots are wired the same as the Dual Modem slots on the 170 E.

The R800-16RJ45 uses the 50 pin AMP Champ series of connectors for the AUDIO IN and the AUDIO OUT signals. Four of these connectors are used to tie to the 32 total

modems that the Rack is capable of Handling.

40 pin Flat ribbon cable headers are used for the RS-232 signals. The pin out of these connectors conforms to pin out of CONNECT TECH Inc's., XTREME/104 Multi-port Serial Communication Adapter.

The Mother Board and the Back Panel are connected through miniature ribbon cables that can be removed and replaced if needed. The Mother Board and the Back Panel form an assembly that can be removed from the metal card cage by removing 14 screws on the back panel. The Back Panel also has two power supply monitor LEDs that indicate that ± 12 Volts is being supplied by the PSR800 power supply and it is within 2 Volts of its nominal value.

SPECIFICATIONS

SIZE.....8"h x 13.5"d x 18.75"w

WEIGHT.....8 lbs

SLOTS.....16

Maximum Modems.....32

Power..... ± 12 V @ 5 Amps

Form Factor.....Type 400 (CALTRANS)

CONNECTORS:

AUDIO.....50 pin AMP CHAMP

RS-232.....RJ-45

POWER.....9 pin Plastic circular

CARD Edge.....44 pin 0.15

CONNECTOR PINOUTS

Table 1, Power Connector

PIN #	FUNCTION
1	+12 V
2	+12 V
3	+12 V Sense
4	-12 V
5	-12 V
6	-12 V Sense
7	Ground
8	Ground
9	Equipment Ground*

* This pin can also be Ground or Ground Sense depending on whether it is desired for the chassis to be tied to Equipment Ground (Chassis Ground) or Signal Ground. Equipment Ground is standard as supplied from the factory.

Table 2, Motherboard and back panel connections

FUNCTION	44 pin	RJ-45	50 Pin Conn
SLOT 1 (Right most)			
Audio In Modem 1	2		J3 1 J3
Audio In Modem 1	3		26
Audio Out Modem 1	X		2
Audio Out Modem 1	Y		27
DCD modem 1	K	J8	2
RTS modem 1	L		8
TXD modem 1	M		6
CTS modem 1	N		7
RXD modem 1	P		5
+12V	C, D		
-12V	E, F		
Ground	A, B		4
Audio In Modem 2	21		4
Audio In Modem 2	22		29
Audio Out Modem 2	19		5
Audio Out Modem 2	20		30
DCD modem 2	9	J1	2
RTS modem 2	10		8
TXD modem 2	11		6
CTS modem 2	12		7
RXD modem 2	13		5
Ground			4

FUNCTION	44 pin		RJ-45	50 Pin Conn
SLOT 2				
Audio In Modem 3	2			7
Audio In Modem 3	3			32
Audio Out Modem 3	X			8
Audio Out Modem 3	Y			33
DCD modem 3	K	J12	2	
RTS modem 3	L		8	
TXD modem 3	M		6	
CTS modem 3	N		7	
RXD modem 3	P		5	
+12V	C, D			
-12V	E, F			
Ground	A, B		4	
Audio In Modem 4	21			10
Audio In Modem 4	22			35
Audio Out Modem 4	19			11
Audio Out Modem 4	20			36
DCD modem 4	9	J14	2	
RTS modem 4	10		8	
TXD modem 4	11		6	
CTS modem 4	12		7	
RXD modem 4	13		5	
SLOT 3			4 (gnd)	
Audio In Modem 5	2			13
Audio In Modem 5	3			38
Audio Out Modem 5	X			14
Audio Out Modem 5	Y			39
DCD modem 5	K	J19	2	
RTS modem 5	L		8	
TXD modem 5	M		6	
CTS modem 5	N		7	
RXD modem 5	P		5	
+12V	C, D			
-12V	E, F			
Ground	A, B		4	
Audio In Modem 6	21			16
Audio In Modem 6	22			41
Audio Out Modem 6	19			17
Audio Out Modem 6	20			42
DCD modem 6	9	J21	2	
RTS modem 6	10		8	
TXD modem 6	11		6	
CTS modem 6	12		7	

FUNCTION	44 pin		RJ-45	50 Pin Conn
RXD modem 6	13		5	
SLOT 4			4 (gnd)	
Audio In Modem 7	2			19
Audio In Modem 7	3			44
Audio Out Modem 7	X			20
Audio Out Modem 7	Y			45
DCD modem 7	K	J26	2	
RTS modem 7	L		8	
TXD modem 7	M		6	
CTS modem 7	N		7	
RXD modem 7	P		5	
+12V	C, D			
-12V	E, F			
Ground	A, B		4	
Audio In Modem 8	21			22
Audio In Modem 8	22			47
Audio Out Modem 8	19			23
Audio Out Modem 8	20			48
DCD modem 8	9	J28	2	
RTS modem 8	10		8	
TXD modem 8	11		6	
CTS modem 8	12		7	
RXD modem 8	13		5	
SLOT 5			4 (gnd)	
Audio In Modem 9	2			J15 1 J15
Audio In Modem 9	3			26
Audio Out Modem 9	X			2
Audio Out Modem 9	Y			27
DCD modem 9	K	J45	2	
RTS modem 9	L		8	
TXD modem 9	M		6	
CTS modem 9	N		7	
RXD modem 9	P		5	
+12V	C, D			
-12V	E, F			
Ground	A, B		4	
Audio In Modem 10	21			4
Audio In Modem 10	22			29
Audio Out Modem 10	19			5
Audio Out Modem 10	20			30
DCD modem 10	9	J44	2	
RTS modem 10	10		8	
TXD modem 10	11		6	

FUNCTION	44 pin	RJ-45	50 Pin Conn
CTS modem 10	12		7
RXD modem 10	13		5
SLOT 6		4 (gnd)	
Audio In Modem 11	2		7
Audio In Modem 11	3		32
Audio Out Modem 11	X		8
Audio Out Modem 11	Y		33
DCD modem 11	K	J42	2
RTS modem 11	L		8
TXD modem 11	M		6
CTS modem 11	N		7
RXD modem 11	P		5
+12V	C, D		
-12V	E, F		
Ground	A, B		4
Audio In Modem 12	21		10
Audio In Modem 12	22		35
Audio Out Modem 12	19		11
Audio Out Modem 12	20		36
DCD modem 12	9	J43	2
RTS modem 12	10		8
TXD modem 12	11		6
CTS modem 12	12		7
RXD modem 12	13		5
SLOT 7		4 (gnd)	
Audio In Modem 13	2		13
Audio In Modem 13	3		38
Audio Out Modem 13	X		14
Audio Out Modem 13	Y		39
DCD modem 13	K	J32	2
RTS modem 13	L		8
TXD modem 13	M		6
CTS modem 13	N		7
RXD modem 13	P		5
+12V	C, D		
-12V	E, F		
Ground	A, B		4
Audio In Modem 14	21		16
Audio In Modem 14	22		41
Audio Out Modem 14	19		17
Audio Out Modem 14	20		42
DCD modem 14	9	J33	2
RTS modem 14	10		8

FUNCTION	44 pin		RJ-45	50 Pin Conn
TXD modem 14	11		6	
CTS modem 14	12		7	
RXD modem 14	13		5	
SLOT 8			4 (gnd)	
Audio In Modem 15	2			19
Audio In Modem 15	3			44
Audio Out Modem 15	X			20
Audio Out Modem 15	Y			45
DCD modem 15	K	J31	2	
RTS modem 15	L		8	
TXD modem 15	M		6	
CTS modem 15	N		7	
RXD modem 15	P		5	
+12V	C, D			
-12V	E, F			
Ground	A, B		4	
Audio In Modem 16	21			22
Audio In Modem 16	22			47
Audio Out Modem 16	19			23
Audio Out Modem 16	20			48
DCD modem 16	9	J30	2	
RTS modem 16	10		8	
TXD modem 16	11		6	
CTS modem 16	12		7	
RXD modem 16	13		5	
SLOT 9			4 (gnd)	
Audio In Modem 17	2			J22 1 J22
Audio In Modem 17	3			26
Audio Out Modem 17	X			2
Audio Out Modem 17	Y			27
DCD modem 17	K	J48	2	
RTS modem 17	L		8	
TXD modem 17	M		6	
CTS modem 17	N		7	
RXD modem 17	P		5	
+12V	C, D			
-12V	E, F			
Ground	A, B		4	
Audio In Modem 18	21			4
Audio In Modem 18	22			29
Audio Out Modem 18	19			5
Audio Out Modem 18	20			30
DCD modem 18	9	J47	2	

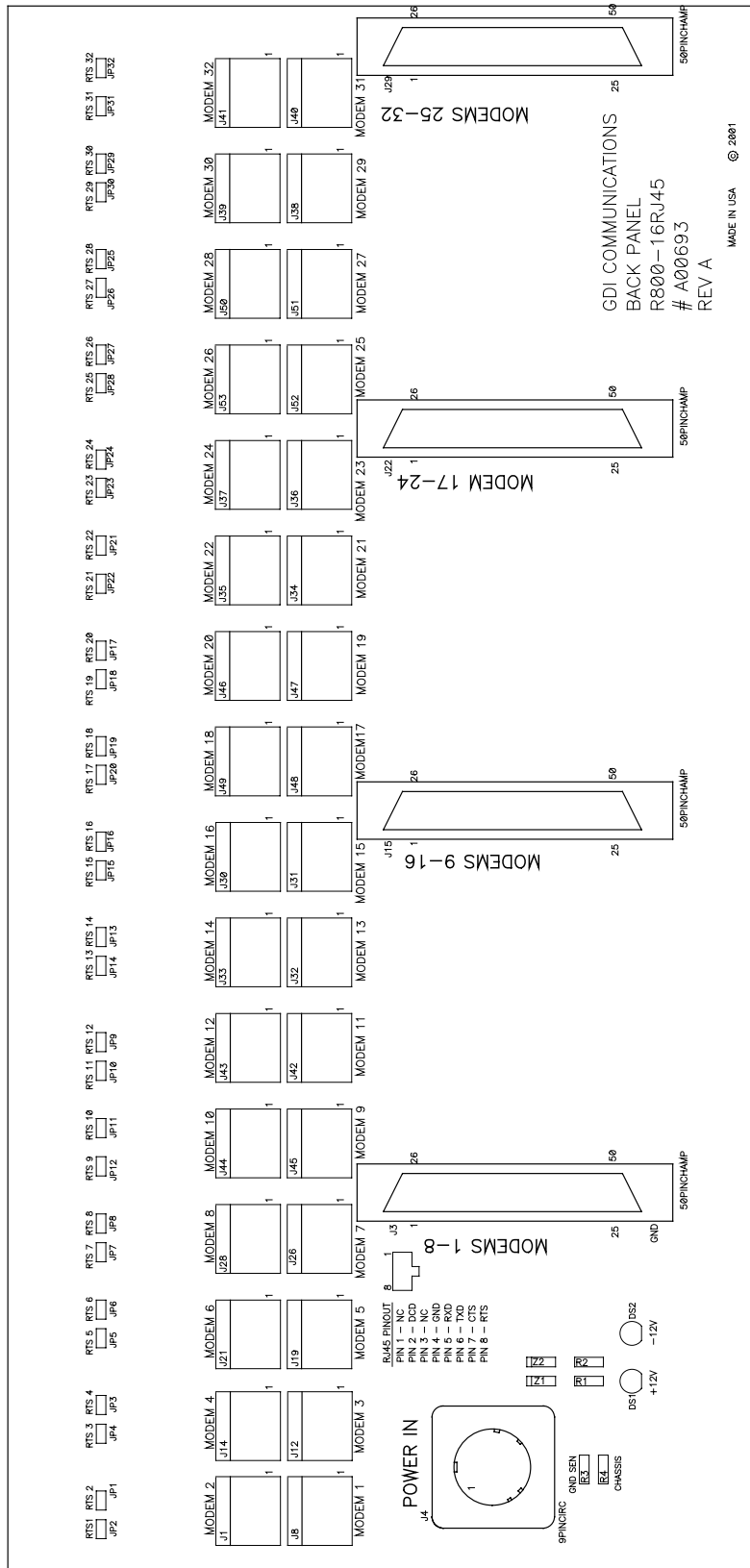
FUNCTION	44 pin	RJ-45	50 Pin Conn
RTS modem 18	10		8
TXD modem 18	11		6
CTS modem 18	12		7
RXD modem 18	13		5
SLOT 10		4 (gnd)	
Audio In Modem 19	2		7
Audio In Modem 19	3		32
Audio Out Modem 19	X		8
Audio Out Modem 19	Y		33
DCD modem 19	K	J47	2
RTS modem 19	L		8
TXD modem 19	M		6
CTS modem 19	N		7
RXD modem 19	P		5
+12V	C, D		
-12V	E, F		
Ground	A, B		4
Audio In Modem 20	21		10
Audio In Modem 20	22		35
Audio Out Modem 20	19		11
Audio Out Modem 20	20		36
DCD modem 20	9	J46	2
RTS modem 20	10		8
TXD modem 20	11		6
CTS modem 20	12		7
RXD modem 20	13		5
SLOT 11		4 (gnd)	
Audio In Modem 21	2		13
Audio In Modem 21	3		38
Audio Out Modem 21	X		14
Audio Out Modem 21	Y		39
DCD modem 21	K	J34	2
RTS modem 21	L		8
TXD modem 21	M		6
CTS modem 21	N		7
RXD modem 21	P		5
+12V	C, D		
-12V	E, F		
Ground	A, B		4
Audio In Modem 22	21		16
Audio In Modem 22	22		41
Audio Out Modem 22	19		17
Audio Out Modem 22	20		42

FUNCTION	44 pin		RJ-45	50 Pin Conn
DCD modem 22	9	J35	2	
RTS modem 22	10		8	
TXD modem 22	11		6	
CTS modem 22	12		7	
RXD modem 22	13		5	
SLOT 12			4 (gnd)	
Audio In Modem 23	2			19
Audio In Modem 23	3			44
Audio Out Modem 23	X			20
Audio Out Modem 23	Y			45
DCD modem 23	K	J36	2	
RTS modem 23	L		8	
TXD modem 23	M		6	
CTS modem 23	N		7	
RXD modem 23	P		5	
+12V	C, D			
-12V	E, F			
Ground	A, B		4	
Audio In Modem 24	21			22
Audio In Modem 24	22			47
Audio Out Modem 24	19			23
Audio Out Modem 24	20			48
DCD modem 24	9	J37	2	
RTS modem 24	10		8	
TXD modem 24	11		6	
CTS modem 24	12		7	
RXD modem 24	13		5	
SLOT 13			4 (gnd)	
Audio In Modem 25	2			J29 1 J29
Audio In Modem 25	3			26
Audio Out Modem 25	X			2
Audio Out Modem 25	Y			27
DCD modem 25	K	J52	2	
RTS modem 25	L		8	
TXD modem 25	M		6	
CTS modem 25	N		7	
RXD modem 25	P		5	
+12V	C, D			
-12V	E, F			
Ground	A, B		4	
Audio In Modem 26	21			4
Audio In Modem 26	22			29
Audio Out Modem 26	19			5

FUNCTION	44 pin		RJ-45	50 Pin Conn
Audio Out Modem 26	20			30
DCD modem 26	9	J53	2	
RTS modem 26	10		8	
TXD modem 26	11		6	
CTS modem 26	12		7	
RXD modem 26	13		5	
SLOT 14			4 (gnd)	
Audio In Modem 27	2			7
Audio In Modem 27	3			32
Audio Out Modem 27	X			8
Audio Out Modem 27	Y			33
DCD modem 27	K	J51	2	
RTS modem 27	L		8	
TXD modem 27	M		6	
CTS modem 27	N		7	
RXD modem 27	P		5	
+12V	C, D			
-12V	E, F			
Ground	A, B		4	
Audio In Modem 28	21			10
Audio In Modem 28	22			35
Audio Out Modem 28	19			11
Audio Out Modem 28	20			36
DCD modem 28	9	J50	2	
RTS modem 28	10		8	
TXD modem 28	11		6	
CTS modem 28	12		7	
RXD modem 28	13		5	
SLOT 15			4 (gnd)	
Audio In Modem 29	2			13
Audio In Modem 29	3			38
Audio Out Modem 29	X			14
Audio Out Modem 29	Y			39
DCD modem 29	K	J38	2	
RTS modem 29	L		8	
TXD modem 29	M		6	
CTS modem 29	N		7	
RXD modem 29	P		5	
+12V	C, D			
-12V	E, F			
Ground	A, B		4	
Audio In Modem 30	21			16
Audio In Modem 30	22			41

FUNCTION	44 pin	RJ-45		50 Pin Conn
Audio Out Modem 30	19			17
Audio Out Modem 30	20			42
DCD modem 30	9	J39	2	
RTS modem 30	10		8	
TXD modem 30	11		6	
CTS modem 30	12		7	
RXD modem 30	13		5	
SLOT 16			4 (gnd)	
Audio In Modem 31	2			19
Audio In Modem 31	3			44
Audio Out Modem 31	X			20
Audio Out Modem 31	Y			45
DCD modem 31	K	J40	2	
RTS modem 31	L		8	
TXD modem 31	M		6	
CTS modem 31	N		7	
RXD modem 31	P		5	
+12V	C, D			
-12V	E, F			
Ground	A, B		4	
Audio In Modem 32	21			22
Audio In Modem 32	22			47
Audio Out Modem 32	19			23
Audio Out Modem 32	20			48
DCD modem 32	9	J41	2	
RTS modem 32	10		8	
TXD modem 32	11		6	
CTS modem 32	12		7	
RXD modem 32	13		5	
			4 (gnd)	

Figure 1, Rear Panel Connections



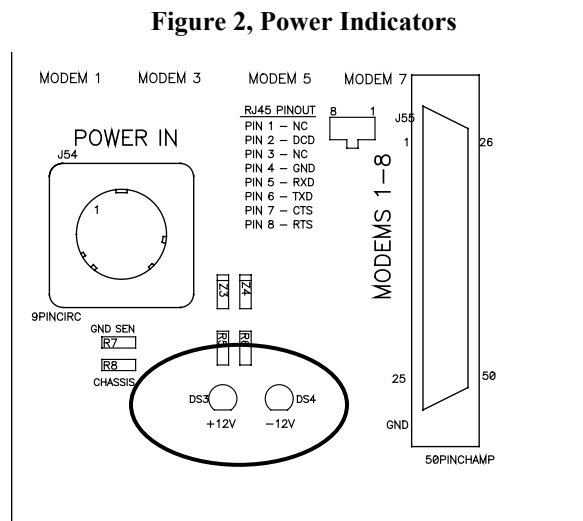
INSTALLATION

Note: *The following steps should be done prior to inserting any cards into the card cage.*

Installation of the system involves mounting the card cage (R800-16RJ45) using four 10-32 screws, and power supply (PSR800) also using four 10-32 screws in a suitable 19" Rack. *The power supply should be mounted directly above or below the card cage in order to allow ample service loop in the power supply cable.*

Apply AC power to the PSR800, and verify the indicators are all lit, indicating proper operation.

Connect the power supply cable between the PSR800 and the card cage, and verify that the +12V and -12V power supply indicators on the rear of the card cage are lit (see Figure 2, Power Indicators).



If either is not lit, this indicates a problem with the card cage. Please contact GDI for instructions.

If both indicators are lit, remove power from the PSR800 and wait for a minute before

installing modem cards into the card cage.

After installing the desired cards, reapply power to the power supply and once again check that the card cage indicators are both lit.

Rear Panel Cabling

The connectors for the RS-232 signals and the FSK (Audio) signals are labeled to show modem locations. The RJ-45 connectors are wired as shown, viewed from the rear of the rack:

Figure 3, RJ-45 Pinout

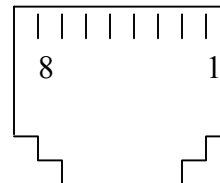


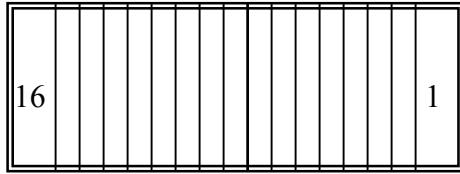
Table 3, RJ-45 Pinout

Pin	Function
1	NC (DSR)
2	DCD
3	NC (DTR)
4	GND
5	RXD
6	TXD
7	CTS
8	RTS

The wire bails on the 50 pin audio connectors should always be used to prevent the connectors from falling off unexpectedly.

Card installation

When facing the front of the card cage, Slot 1 is located on the far right, and Slot 16 is on the far left.



The component side of the modems face to the left, and additionally, the slots are keyed to prevent inserting the modems upside down. The key slots in the edge connector of the modem should be located toward the top of the board.

It is recommended that the power be OFF when inserting or removing the cards from the R800-16RJ45. If power must be kept on, try to seat the card in one swift motion.

The jumpers on the top edge of the Back Panel allow you to pull up the RTS signal on the particular modem **IF YOUR SIGNAL SOURCE DOES NOT PROVIDE THE RTS SIGNAL**. Most FSK modems require the RTS signal to operate and the jumper allows you to turn on modem transmitter continuously. The jumper connects +12V to RTS so make sure that RTS is not connected at your computer or Master before using this jumper.

Each Slot can have two modems associated with it. Therefore you can have a total of 32 in the card cage (16 dual Modems such as the Model 800). If single modems are used (400 types) half of the positions in the connector will not be used (even numbered modems will not be used).

The top and bottom vents of the R800-16RJ45 card cage should not be blocked. The vents allow air to circulate around the

boards to dissipate the heat generated by the boards. Mounting the PSR800 power supply above the R800-16 Card Cage is recommended so that heat generated by the power supply does not add additional heat to the boards.

Grounding

Pin 9 of the power connector is the Equipment Ground pin. On the card cage side, it normally ties to the chassis through the jumper labeled *Chassis* (R4).

On the mating connector that attaches to the PSR800, pin 9 attaches to earth ground via the green wire of the AC power cord.

Pin 9 can be reconfigured in several ways. It can be tied to the signal ground in the power supply instead of the equipment ground, used as Ground Sense, or can be disconnected completely from the Chassis by removing the jumper labeled *Chassis* (R4).

Unless the installation specifically requires a different configuration, it is highly recommended to use the card cage as supplied from the factory.



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