GÍNA™

USER'S MANUAL

Model : 2000-64K

GRE™

GINA MODEL 2000-64K

Overview

GINA Model 2000-64K is a stand-alone, high frequency data transceiver using spread spectrum technology. GINA 2000-64K capabilities include synchronous data transmission at speeds to 64 Kbps at the data port with EIA 562/ RS-232, EIA530/RS-530, and V.11 (V.35) interfaces. GINA 2000-64K receives and transmits data in the frequency range of 2.404 - 2.478 Ghz at air speeds of up to 186 Kbps. Communicating at this speed allows GINA 2000-64K to be a full (TDD) duplex link. GINA can be configured to be used as a point-to-point communication device. GINA 2000-64K contains a packet controller module with a custom communication protocol that provides communications handshaking, cyclic redundancy checking (CRC), packet sequencing, and flow control.

Figure 6-1. GINA 64K Transceiver

Operation

This section contain operating instructions for the GINA transceiver, including controls and indicators, DTE requirements, channel selection, and voice operation.

Controls and Indicators

Front Panel

As shown in Figure 6-2, operating indicators, a voice handset jack, and the command data port are located on the front panel and consists of:

1. PWR LED (Light Emitting Diode). This LED is lit when power is applied to the transceiver.

2. TX LED. Indicates that a signal is being transmitted by GINA.

3. RX LED. Indicates a receiving condition on GINA.

4. ST LED. When green, GINA is receiving good data. When red, data has errors, GINA is receiving bad data, or the GINA units are not synchronizing.

5. Voice Handset Jack. Standard RJ22 telephone jack for the GINA handset.

6. RS-232 Command Control Data Port. Used for programming during GINA setup. This port communicates at 9600 kbps asynchronous **only.**

NOTE: GINA **only** operates with the handset supplied with the unit. **Do not attempt** to use a standard telephone handset.

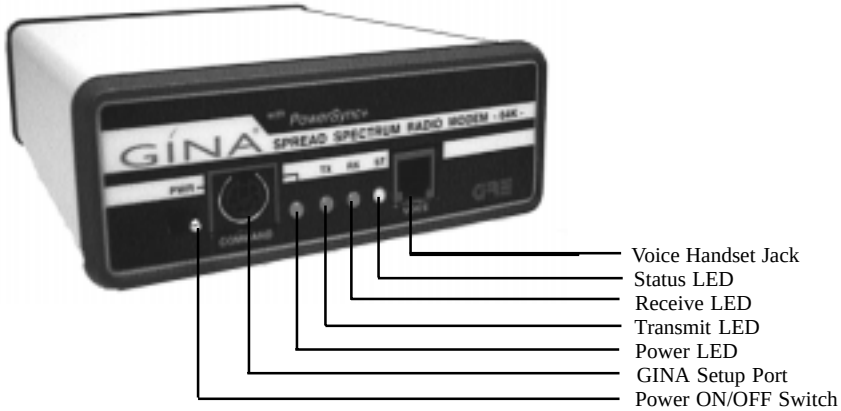


Figure 6-2. GINA Transceiver Front Panel

Rear Panel

As shown in Figure 6-3, the rear panel contains three connectors:

1. The GINA antenna jack (reverse SMA type).

2. Data Connector (DB-25).

3. 12 VDC. Power connector for the GINA AC to DC power converter. The center connector is 12 VDC positive; the outside is grounded.

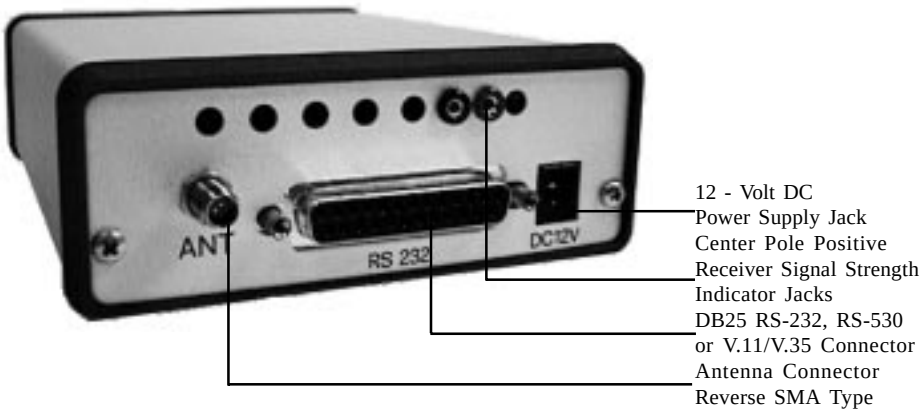


Figure 6-3. GINA Transceiver Rear Panel

GRE GINA Interface Board Commands

Cyclic Redundancy Check

CK=00	Disable cyclic redundancy check.
CK=01	Enable cyclic redundancy check.

Master / Slave

One radio must always be in control of the transmit and receiver timing.

MS=00	Slave
MS=01	Master (control unit)

Data Filter Selection

FL=01 FL=02 FL=03 FL=04
Factory Set to FL=02

RF Channel Selection

Channel selection should be the same on both slave and master.

CH=01~12

Transmit Key ON

TX=00	This setting is for normal operation.
TX=01	10 sec transmit - test purposes only

Transmit Clock Selection

CS=00	Internal transmit clock
CS=01	External transmit clock
CS=02	Loop back command (slave only). This means clock and data lines are looped back. txd=rxd, ctxc=rxc

Data Speed Selection

DR=01	9.6	Kbps Synchronous
DR=02	19.2	Kbps Synchronous
DR=03	38.4	Kbps Synchronous
DR=04	56	Kbps Synchronous
DR=05	64	Kbps Synchronous. This setting is also used to allow asynchronous data communication automatically at speeds of 1.2 to 19.2 Kbps.

Revision of Software

This is factory set but may be determined by checking the Display Status. The correct settings must be used.

RV=15

Display Status

Follows any carriage return. Examples:

GINA LOCAL STATUS =

CD=00 CK=00 CH=01 CS=00 DR=05 DV=01 HF=00
ID=01 IN=01 MS=01 PO=01 FL=02 RV=15 TX=00
ELAPSED SECONDS = 000000060
ERRORED SECONDS = 000000000

GINA REMOTE STATUS:

CD:00 CK:00 CH:01 CS:00 DR:05 DV:01 HF:00
ID:02 IN:01 MS:00 PO:01 FL=02 RV:15 TX:00
ELAPSED SECONDS = 000000120
ERRORED SECONDS = 000000001

Data or Voice

DV=00	Voice mode, data flow is de-activated. Voice is full-duplex through the handset.
DV=01	Data mode, voice operation is de-activated.

Radio Transmit Hardware Flow

HF=00	Transmit and receiver are automatic.
HF=01	RTS high activates transmit and receive.

Transmit Clock Interface

IN=01	RS-232
IN=02	RS-449/V.11(.35)

This must be set in programming to operate, but specified at time of order for hardware. Hardware is factory configured only.

Carrier Detect

CD=00	Carrier detector activates immediately every error occurrence. This setting causes the CD line to drop immediately if there is a dropout in the GINA to GINA link up.
CD=01	Carrier detector holds 2 seconds every error occurrence. This allows the CD link not to drop unless the GINA link fade persists longer than 2 seconds.

RE Reset Command

RE=01 TWICE TYPE	Resets unit to factory default settings. This command must be entered twice. The re-set must then be followed by configuring the channel using the CH command.

After reset:

RC=03	For 2.4 Ghz GINA

Transmitter Power Code

The Transmitter Power Code command is operational and is slated for future product development. It should be se to 01.

01 = Full Power 03 = 6db down
02 = 3db down 04 = 20db down

Remote Status

Allows over the air configuration of the remote's status. Type the command to change and use a colon (:) instead of an equal sign (=). For example: To change the Carrier Detect Code, type: CD:01

Identification Code

The ID command is non-operational and is slated for future product development. It should be set to 01.

Frame Errors Per Second Counter

Indicates path and data integrity of the link.

ZC=00	To hide
ZC=01	To display
ZC=02	To clear and reset

Operations

1. User must confirm all commands as shown above by using a computer connected to the command control data port at 9600 Kbps with a terminal emulation program.

2. To change a parameter, type the command letters, an "=" symbol, and then both digits of the desired numerical value. Example: to change the Master/Slave configuration to Slave, type MS=00 then click on return.

3. You must set up your terminal emulation program so that it does not automatically add a line feed (LF) after every carriage return (CR). The only command format that works is CMD CR not CMD CRLF.

4. Command MS has to be determined for slave or master.

5. Select RF Channel - Between 01~12 on the 2000-64K

6. The RF Channel must be the same between master and slave.

7. Select transmit clock internal or external depending on your application.

8. When the power is turned on, the master transmits. The slave follows the master. When you have a green LED on the ST, you have a good quality data link between the GINA units. When both GINA's link, the transmit and receiver LED's flash continuously at approximately 10 flashes per second.

Voice Operation

1. Both master and slave must have DV command to 00 for voice option. Data is not active when voice is in use.

2. Connect the handsets to the RJ22 Jack (on the front of GINA) to both the slave and master. When the voice command mode is set, you can use the handsets to talk duplex over the link (325 to 4000Hz).

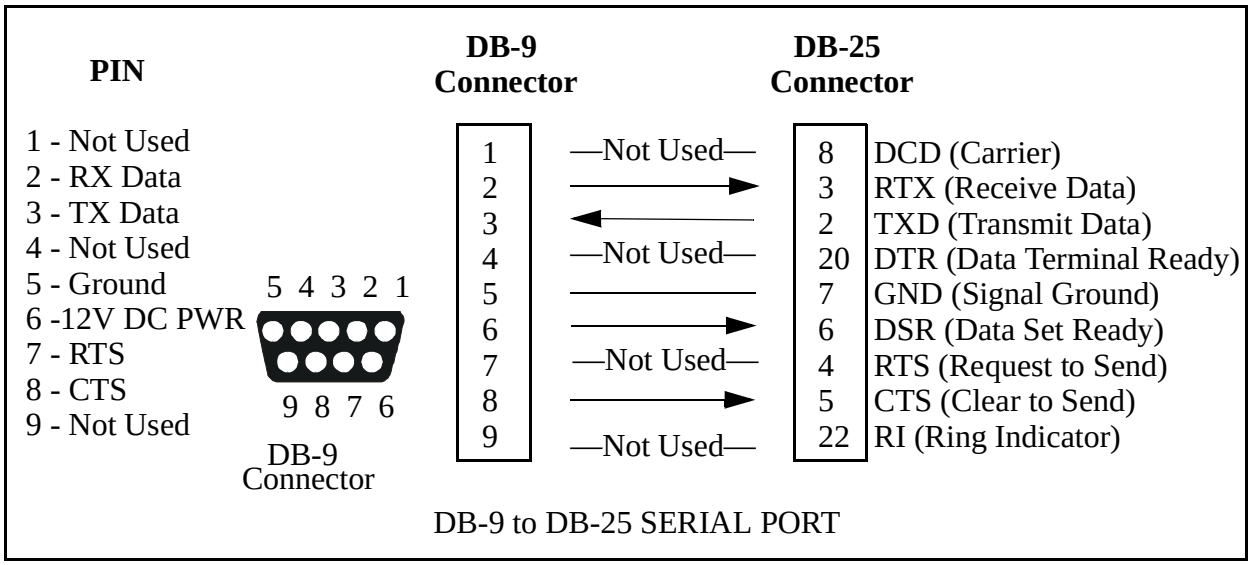
Channel Frequency Tables

CHANNEL CODE SWITCH SETTINGS FOR GINA MODEL 2000-64K	
CHANNEL	**FREQUENCY (GHz)**
1	2410
2	2415
3	2420
4	2425
5	2430
6	2435
7	2440
8	2445
9	2450
10	2455
11	2460
12	2465

2000-64K SPECIFICATIONS	
Adjacent Channel Rejection	-40dB = 10MHz
Baud Rate Asynchronous	1.2 to 19.2 Kbps Duplex TDD -RS-232 (DB25F)
Baud Rate Synchronous	9.6 to 64 Kbps, Full Duplex TDD (DB25F)
Channels	12 Programmable
Control	CTS, RTS, DTR, DSR, TC, RC, external TC
Data Format	8 bits, no parity, 1 stop, for command port
Dimensions	(1.52"H) x (4.17"W) x (5.0"D) (38.6mm) x (105.9mm) x (127mm)
Dynamic Range	-100 dBm ~ -30 dBm
Frequency Range	2.404 to 2.478 Ghz
Indicators	PWR, TxD, RxD, DQ
Modulation	Bi-Phase Shift Keying (BPSK)
PN	11 Chip
PN Rate	5. 5 MHz
Operating Mode	Point -to-Point
Operating Temperature	-20 to +60 Degrees C
Data Filter	4 selectable FL=01 ~ FL=04
Power Consumption	10 Watt Maximum
Power Requirements	8 to 13.8 VDC
Radio Technique	Spread Spectrum Direct Sequence
Range Nominal	800+feet
Range Indoor	500 to 1500+feet
Range Outdoor	18+ Miles - Direct Line-of-Sight FCC Compliant
Relative Humidity	0-90% Non-Condensing
Systems Gain	119 dB
Transmission Delay	5mSec.
Voice Option Interface	RJ22
Turn around Time	80mSec.
Weight	16 oz.

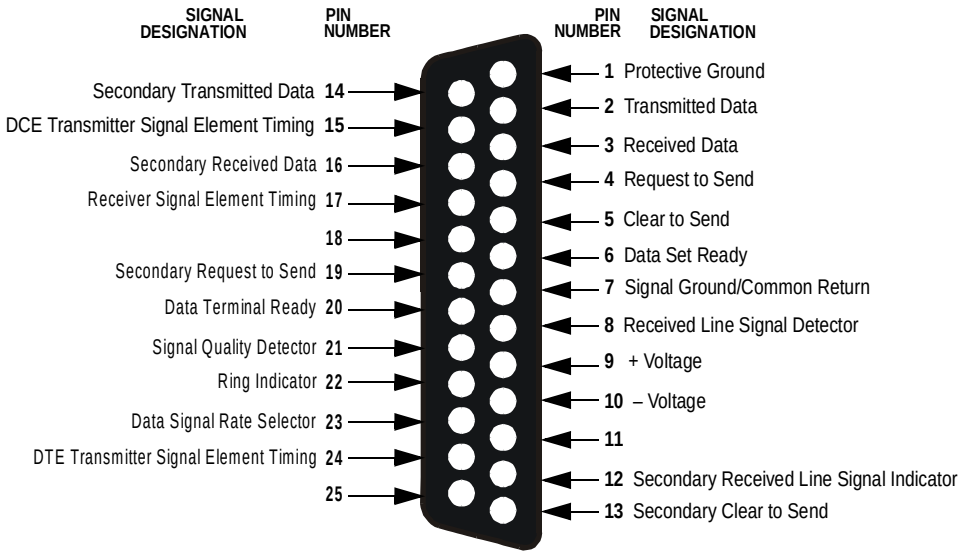
2000-64K SPECIFICATIONS	
TRANSMITTER	
Carrier Frequency Stability	25 KHz
Power Consumption	800mA @ 12VDC
Spurious Output	FCC Part 15, meets 15.245 & 15.247
Output Power	800mW (29dBm)
RECEIVER	
Bit Error Rate	10-8@ -93dBm, 10-6@ -96dBm
Local Oscillator Stability	25 KHz
Sensitivity Threshold	-100 dBm
Stand-by Power	300mA@ 12VDC
Signal Acquisition	<0.2mSec.
Spurious Rejection	-50 dB

Appendix A: RS-232 Configuration Data

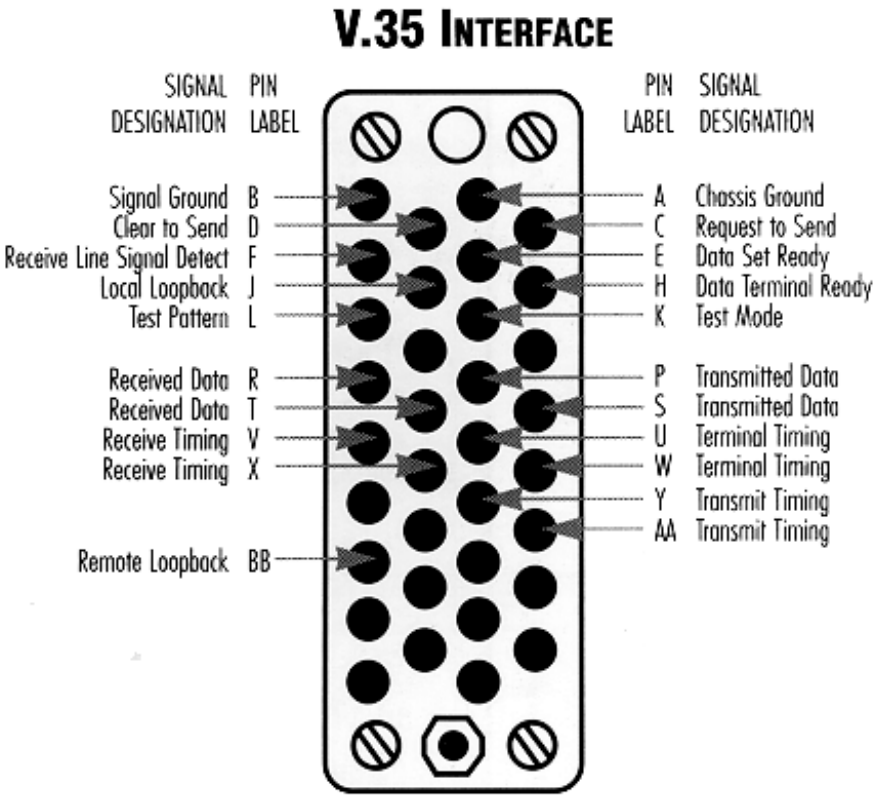


DB-9 to DB-25 SERIAL PORT

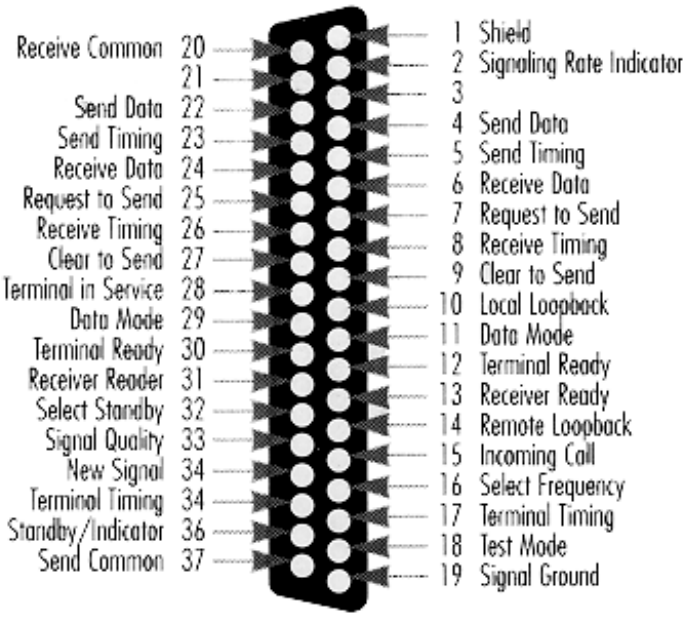
RS-232 Interface



Appendix A: RS-232 Configuration Data



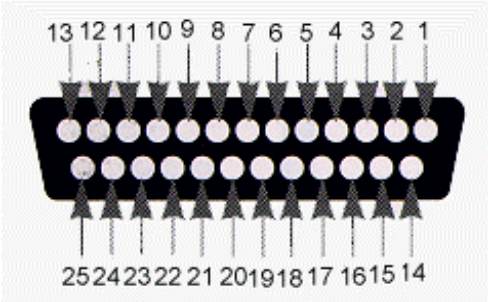
RS-449 INTERFACE



GINA DB-25F Connector Pin-Out Information

DB-25 PIN #	DB-25 PIN-OUT for RS-232	DB-25 PIN-OUT for RS-449	DB-25 PIN-OUT for V.11 (V.35)
1	Shield	Shield	Shield
2	Transmitted Data	Transmitted Data (A)	Transmitted Data (A)
3	Received Data	Received Data (A)	Received Data (A)
4	Request to Send	Request to Send (A)	Request to Send
5	Clear to Send	Clear to Send (A)	Clear to Send
6	DSR	DSR (A)	DSR
7	Signal Ground	Signal Ground	Signal Ground
8	DCD	DCD (A)	DCD
9		RXC (B)	RXC (B)
10		DCD (B)	
11		TX EXT CLK (B)	TX EXT CLK (B)
12		TX CLK (B)	TX CLK (B)
13		Clear to Send (B)	
14		TXD (B)	TXD (B)
15	TX CLK	TXC (A)	TXC (A)
16		RXD (B)	RXD (B)
17	RX CLK	RXC (A)	RXC (A)
18			
19		RTS (B)	
20	DTR	DTR (A)	DTR
21			
22		DSR (B)	
23		DTR (B)	
24	EXT TX CLK	TX EXT CLK (A)	TX EXT CLK (A)
25	Call Pulse (5V DC<=10mA)	Call Pulse (5V DC<=10mA)	Call Pulse (5V DC<=10mA)

GINA DB-25F Pin-Out Numbering



Note: GINA is DCE.

Warranty

Introduction

This section contains user information about GRE's limited warranty.

Limited Warranty

General

GRE America, Inc. warrants all parts of each new product to be of sound design, good material and workmanship, and will repair or exchange any parts proven to be defective under normal use at no charge for a period of 12 months from the date of sale to the end user.

Defects will be corrected by GRE America. There will be no charge for labor for a period of 12 months from the date of original sale, except as provided below. Overtime premiums and/or expedited handling and shipping costs must be paid by the owner.

Warranty Limitations

This warranty does not apply to equipment or parts that have been subject to accident, abuse, incorrect service, alterations, service by non-authorized service personnel, misuse, or on units upon which the warranty seal has been removed, altered, or mutilated.

A copy of the warranty certificate or purchase receipt must be supplied to GRE America when requesting service.

Equipment must be sent to GRE America at the owner's expense and will be returned via surface carrier at no cost to the owner.

This warranty is strictly limited to the terms indicated herein, and no other warranties or remedies thereunder, express or implied, shall be binding on GRE America.