202ST Family of Modems

Bell 202S & T Compatible

QUALITY COMMUNICATIONS PRODUCTS
Made in the U.S.A.

11-1011-005

INTRODUCTION

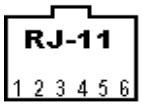
The StarComm 202ST is a Frequency Shift Keyed (FSK) modem designed for asynchronous operation up to 1800bps. The model 202ST provides asynchronous, half-duplex communication on 2-wire private line circuits and full-duplex communication on 4-wire private line circuits. All models are available in either rack mount or stand alone version.

FRONT PANEL LIGHTS

MR	Modem Ready	**TR**	Terminal Ready	**OH**	Off Hook
SD	Send Data	**RD**	Receive Data	**CD**	Carrier Detect
AA	N/A (for configuration purposes only)	**HS**	N/A (for configuration purposes only)		

BACK PANEL CONNECTORS & SWITCHES

LINE This RJ-11 connector should be used to connect the modem to a dedicated 2/4-wire leased circuit. While two wire circuits use pins 3 and 4, four wire circuits must be connected as shown in the following diagram:



Transmit Pins (TX) = Pins #3 & 4
Receive Pins (RX) = Pins #2 & 5

DUAL SWITCHES These two small switches located between the RS-232-C connector and the line connector are used to configure the modem. The top switch allows you to scroll forward through parameter addresses 0-5. The bottom switch allows you to scroll through the field of valid values for a given parameter.

RS-232-C This DB-25 connector provides a standard RS-232-C(V.24) interface between the modem and a wide range of DTE. The following signals are provided:

PIN #	SIGNAL DESCRIPTION	SOURCE	NOTES
1	Frame ground	DTE/DCE	
2	Transmit Data	DTE	(SD light on front panel)
3	Receive Data	DCE	(RD light on front panel)
4	Request To Send	DTE	
5	Clear To Send	DCE	
6	Data Set Ready	DCE	(MR light on front panel)
7	Signal Ground	DTE/DCE	
8	Carrier Detect	DCE	(CD light on front panel)
20	Data Terminal Ready	DTE	(TR light on front panel)

POWER This connector is present on all stand alone models and accepts a 9VAC or 9–14VDC power source. On rack mount versions, a different power connector is used and it provides DC voltages to the modem from the rack back plane. **CAUTION:** Several DC power options are available for special applications. Modems equipped with special power options will contain specifications that supersede the power specifications of this paragraph.

TECHNICAL DATA

DIMENSIONS & WEIGHT:

Width - 5" Length - 5" Height - 1.5"

ENVIRONMENTAL REQUIREMENTS:

Temperature - Operating: -40 to +85^{o}C
Humidity - 95% relative, non-condensation

PRIMARY POWER: The 202ST automatically adjusts to the following power sources:
AC - 9VAC, from external wall transformer
DC - Compatible with battery power systems from 9 - 14VDC

24-48 VOLT DC OPTION: The 202ST may be ordered with an optional wide range DC supply.

CONFIGURING THE 202ST

The 202ST may be configured for a wide range of applications through a combination of hardware jumpers and firmware parameters.

JUMPER SETTINGS - In order to set the appropriate hardware jumpers, it is necessary to remove the cover from the modem. Jumpers P1 and P2 select either 2-wire or 4-wire operation. Jumpers P3 and P4 select transmit level.

2-WIRE MODE:

	1	2	3
P1	*	*	*
P2	*	*	*

4-WIRE MODE: (Default)

	1	2	3
P1	*	*	*
P2	*	*	*

(The black areas in the above diagrams indicate that a jumper must be installed on those pins of P1 and P2)

TRANSMIT POWER LEVEL:

	P3	P4	
-4dBm	off	off	
-10dBm	on	off	
-13dBm	off	on	(Default)
-16dBm	on	on	

("On" indicates that a jumper should be installed. "Off" indicates that no jumper should be installed)

SETTING FIRMWARE PARAMETERS - On the front panel of the 202ST, you will find eight LEDs. During parameter configuration, the four LEDs on the left will display parameter addresses 0 - F HEX, which is 0 - 15 Decimal (sixteen possible parameters). The fifth LED, called the boundary LED, blinks to separate the address field from the parameter field. The three LEDs on the right will display the value of the parameter being addressed. To enter setup mode, you must perform the following steps:

1. Locate the 2 switches that are positioned next to the RS-232-C connector (DB25) on the back of the modem.

2. Power the modem off and then back on.

3. As the modem powers up, all LEDs on the front panel of the modem illuminate for a period of ten seconds. During this period you may press the top switch to enter configuration mode. If the switch is not pressed during this ten second period, the modem will proceed to a normal operational mode and will revert to a normal LED pattern.

When the modem enters configuration mode, the boundary LED will then begin blinking, the address LEDs will display address 0 and the value LEDs will display the value of parameter 0. (See Fig. 1)

SELECTING A PARAMETER - The top switch on the back of the unit allows you to scroll forward through addresses. In the case of the StarComm 202ST, this will be address 0 - 5. As you scroll through parameter addresses, the current value of the addressed parameter will be displayed in the value field. When you scroll past the last valid address, the unit will roll forward to the first valid address. (See Fig. 2)

SELECTING A VALUE - The bottom switch on the back of the unit allows you to scroll through the range of valid values for a given parameter. When you scroll past the last valid value, the unit will roll forward to the first valid value.

EXITING FROM CONFIGURATION MODE - The last parameter, Parameter 5, must be set to an appropriate value before the unit will exit from configuration mode. When the unit enters configuration mode, it sets this parameter to a value of 0, which locks the unit into configuration mode. To exit without saving changes to parameters, you must set parameter 5 to a value of 1. To exit and save changes to parameters, this parameter must be set to a value of 2. Once the appropriate value has been selected, press the top switch on the back of the unit. If a value of 0 has been selected, the unit will stay in configuration mode and roll forward to address 0. If a value of 1 is selected, the unit will perform a normal power-up reset. If a value of 2 is selected, the unit will save current parameter values to NV ram and then perform a normal power-up reset. While NV ram is being written, the unit will display a descending light pattern on the LEDs to indicate that this operation is in progress.

VALID PARAMETERS

PARAMETER 0 RTS TO CTS DELAY

0 = 8Msc
1 = 33Msc (Default)
2 = 59Msc
3 = 219Msc

PARAMETER 1 CARRIER CONTROL

0 = RTS controls carrier (Default)
1 = Constant carrier

(Parameter 2, 3 & 4 only active when Parameter 1 = 0)

PARAMETER 2 LOCAL COPY SQUELCH

0 = Disabled (Default)
1 = Enabled

(For 2-wire circuits. Inhibits the receiver from receiving transmission of the local transmitter.)

PARAMETER 3 TURNAROUND SQUELCH

0 = Disabled (Default)
1 = 8Msc Squelch
2 = 159Msc Squelch

(For 2-wire circuits. Disables the receiver for the selected period after the local transmitter is turned off, to guard against echoes.)

PARAMETER 4 SOFT CARRIER TURN OFF

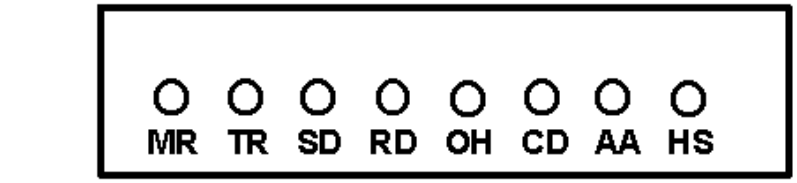
0 = Disabled (Default)
1 = 8Msc Soft Carrier
2 = 27Msc Soft Carrier

(For 2-wire circuits. When enabled, a 900Hz tone will be generated for a period of time at the end of each transmission.)

PARAMETER 5 EXIT CONFIGURATION

0 = Do Not Exit
1 = Exit Without Saving
2 = Exit and Save Parameters

(Select the appropriate value and press the top switch on the back of the unit.)



	HEX ADDRESS					PARAMETER VALUE			
	8	4	2	1		4	2	1	
0									**0**
1				X				X	**1**
2			X				X		**2**
3			X	X			X	X	**3**
4		X				X			**4**
5		X		X		X		X	**5**
6		X	X			X	X		**6**
7		X	X	X		X	X	X	**7**
8	X								
9	X			X					
10	X		X						
11	X		X	X					
12	X	X							
13	X	X		X					
14	X	X	X						
15	X	X	X	X					

Figure 1

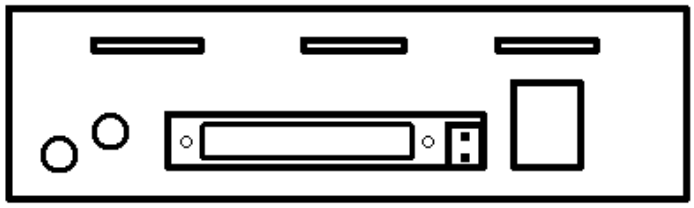


Figure 2

CERTIFICATIONS

FCC Part 68

This equipment complies with U.S. Code of Federal Regulations, Title 47, FCC Rules and Regulations Part 68. Located on the equipment is the FCC Registration Number and Ringer Equivalence Number (REN). You must provide this information to the telephone company if requested.

The Registration Number and REN will be on a label attached to the unit. The FCC requires these numbers be prominently displayed on an outside surface of the equipment.

The REN is used to determine the number of devices you may legally connect to your telephone line. In most areas, the sum of the REN of all devices connected to one line must not exceed five (5.0). You should contact your telephone company to determine the maximum REN for your calling area. The telephone company may change technical operations or procedures affecting your equipment. You will be notified of changes in advance to give you ample time to maintain uninterrupted telephone service.

If you experience trouble with this telephone equipment, please contact StarComm Products, Inc. at (714) 899 - 7855 for information on obtaining service or repairs. The telephone company may ask that you disconnect this equipment from the network until the problem has been resolved. If your equipment continues to disrupt the network, the telephone company may temporarily disconnect service. If this occurs, you will be informed of your right to file a complaint with the FCC.

This equipment may not be used on coin service provided by the telephone company. Connection to party lines is subject to state tariffs.

FCC Part 15

This equipment has been tested and complies with the limits for a Class A computing device according to U.S. Code of Federal Regulations, Title 47, FCC Rules and Regulations Part 15. Operation is subject to the following two conditions:

(1) This device may cause harmful interference, and

(2) This device must accept any interference received, including interference that may cause undesired operation.