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BLACK BOX®
NETWORK SERVICES

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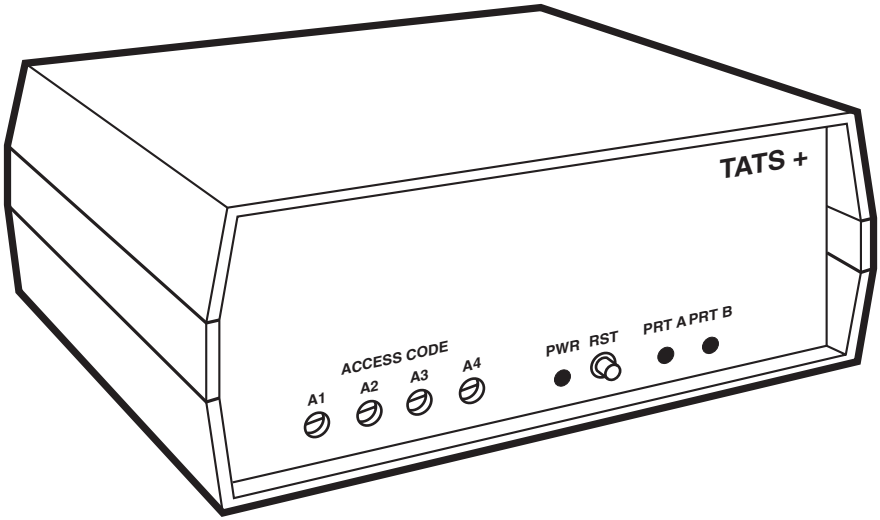
SWI060A

Tone Activated Talking Switch+ (TATS+)



CUSTOMER SUPPORT INFORMATION

Order **toll-free** in the U.S. 24 hours, 7 A.M. Monday to midnight Friday: **877-877-BBOX**
FREE technical support, 24 hours a day, 7 days a week: Call **724-746-5500** or fax **724-746-0746**
Mail order: **Black Box Corporation**, 1000 Park Drive, Lawrence, PA 15055-1018
Web site: **www.blackbox.com** • E-mail: **info@blackbox.com**

FEDERAL COMMUNICATIONS COMMISSION
RADIO FREQUENCY INTERFERENCE STATEMENT

This equipment generates, uses, and can radiate radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio communication. It has been tested and found to comply with the limits for a Class A computing device in accordance with the specifications in Subpart J of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when the equipment is operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user at his own expense will be required to take whatever measures may be necessary to correct the interference.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

TRADEMARKS USED IN THIS MANUAL

UL is a registered trademark of Underwriters Laboratories Incorporated.

Any other trademarks mentioned in this manual are acknowledged to be the property of the trademark owners.

Requirements That Must Be Met When the TATS+ Is Operated

A. The User's Responsibilities

If the telephone company asks you, you must inform them of the connection of the TATS+ to, or disconnection of the TATS+ from, the telephone line.

(If the proper jacks for making the connection are not available, you must order the type of jack to be used from the phone company). The following information must also be given to the phone company if they request it:

Manufacturer: Market Central Corporation
Model Number: TATS+
Registration Number: 2F8USA-75082-OT-N
Ringer Equivalency: 0.5 B
Jacks which may be used: USOC RJ-11C

FCC approval to attach the TATS+ to the telephone network has been obtained. The FCC Part 68 label on the bottom of the TATS+ must remain attached to the unit.

It is illegal to connect the TATS+ to any pay-telephone or party line.

B. The Telephone Company's Rights and Responsibilities

If your TATS+ causes harm to the telephone network, the phone company may discontinue your service temporarily. If possible, they will notify you of this in advance, but if advance notice is not practical, they will notify you as soon as possible. They will give you the opportunity to correct the problem that led to the discontinuance. They will inform you of your right to file a complaint with the FCC concerning the discontinuance.

The phone company may make changes to its facilities, equipment, operations, or procedures which could affect the operation of your TATS+. If they do, you will be given adequate notice, in writing, to give you an opportunity to maintain uninterrupted service.

C. Repairing Faulty Equipment

If you have trouble with your TATS+, call Black Box. The phone company may ask that you disconnect the unit from the network until the problem has been corrected or until you are sure that the TATS+ is not malfunctioning.

If you and the supplier determine that the TATS+ is faulty, it should be returned for repair, in its original packaging, if possible. (Do not attempt to repair the unit yourself, as this will violate FCC rules and might cause danger to people or to the telephone network.)

D. Direct-Connect Requirements

The TATS+ unit is an FCC-registered device which directly connects to DDD (Direct Distance Dial) networks in the United States of America. In addition to all safety requirements set by FCC Part 68, there are various connection arrangements provided by the telephone company to ensure that the signal level received at the telephone company's central office does not exceed -12 dBm.

Some of the connection arrangements that the phone company provides are standard modular data jacks. These jacks allow you to connect and disconnect the TATS+ from a DDD network without interfering with the operation of other equipment connected to the network. Different types of data jacks are identified by different Universal Service Order Code (USOC) designations, so you must specify which one you want when ordering them.

The TATS+ is designed to use the RJ-11C data jacks which establish the "permissive" connection type. These jacks provide bridged connections to the tip and ring of a telephone line.

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1. Specifications

Approvals — FCC Part 15 (Class A) and Part 68 (Registration No. 2F8USA-75082-OT-N)

Ringer Equivalency — 0.5 B (permissive-type line connection only)

Relay Contacts — Rated at 125 VAC, 0.5 A

Interfaces — Modular telco, RS-232-D

Speed — Transparent to all data speeds

Controls — (5) Front-panel: (1) Reset pushbutton, (4) 10-position rotary switches to set access code

Indicators — (3) Front-panel LEDs: (1) Power, (2) Connected Port

Connectors — (11) Total: (5) Rear-panel: (1) RJ-11 female (phone), (1) 5-pin DIN female (power supply), (3) DB25 female (data); (6) Internal: (3) RJ-11 female (data), (3) 4-wire terminal block (data)

Leads Supported — RS-232: 2 through 8, 15, 17, 20, and 22 through 25

MTBF — 12,500 hours

Operating Temperature — 32 to 158˚ F (0 to 70˚ C)

Storage Temperature — 14 to 230˚ F (-10 to 110˚ C)

Enclosure — High-impact plastic

Power — From UL® and CSA-approved wallmount power supply: Optimal input: 115 VAC, 60 Hz; Output: 17 VAC CT @ 0.6 A; Consumption: 10 VA**.** *(220-VAC power supplies are available. Call Black Box for details.)*

Size — 3"H x 7.8"W x 6.3"D (7.6 x 19.8 x 16 cm)

Weight — 2.4 lb. (1.1 kg); with power supply, 2.9 lb. (1.3 kg)

2. Introduction

The Tone Activated Talking Switch+ (TATS+) is a remotely activated switching device that gives you or other authorized people the ability to call a site from any touchtone (DTMF) phone and switch between two attached devices. TATS+ greets callers with a request to enter a 4-digit access code. When the correct code has been entered, TATS+ responds with the name of the currently selected port. It then acts as a remote AB switch: callers press "1" on their touchtone keypad to select Port A or a "2" to select Port B.

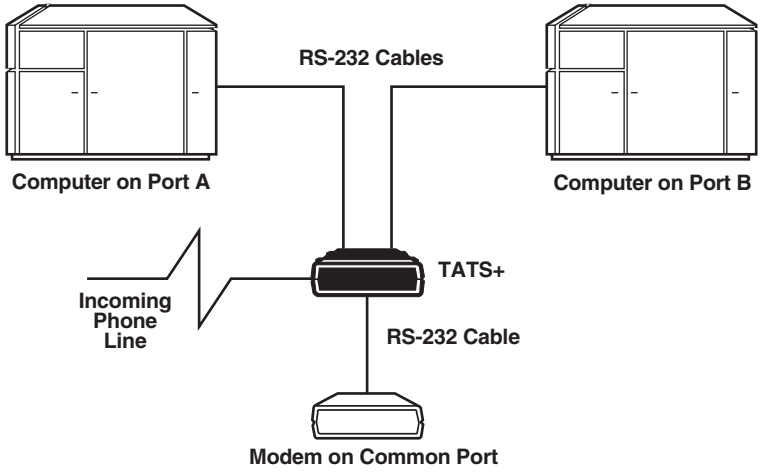


Fig. 2.1. Using TATS+ to Switch to an Alternate Computer.
When you give the signal, TATS+ switches the modem connection from Port A to Port B or vice versa.

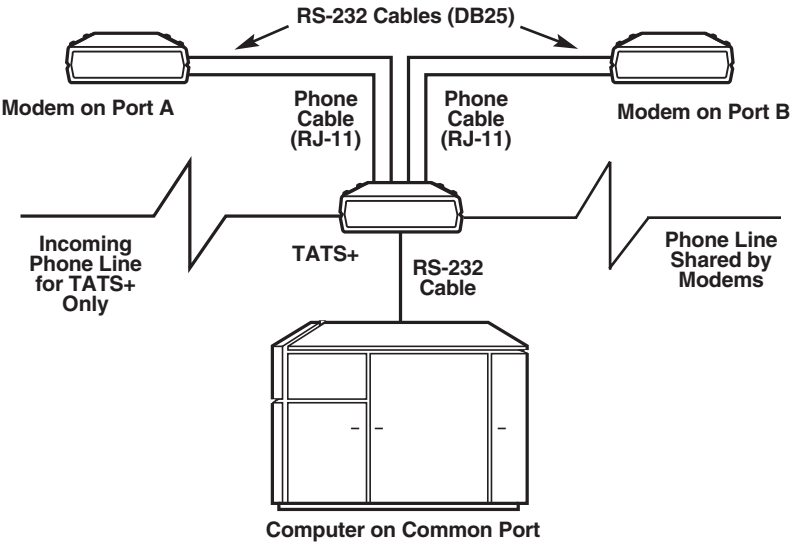


Fig. 2.2. Using TATS+ to Switch to an Alternate Modem.
When you give the signal, TATS+ switches from the current modem to a secondary unit by redirecting computer data from one RS-232 port to another. At the same time, it switches the modems' phone-line connection so that the newly selected modem can use the line.

3. Installation

To install your TATS+, you'll need a small flat-head screwdriver. Follow these steps:

1. Set your access code by using the screwdriver to rotate the four dials (rotary switches) marked "A1" through "A4," beneath the words "ACCESS CODE" on the front of the case. Each dial has a small arrow printed on it and is surrounded by the digits 0 through 9. Your TATS+ recognizes the digit that the arrow points to as the code digit. The leftmost dial (A1) governs the leading digit of your access code, the dial next to it (A2) governs the second digit, and so on.

2. Connect the RJ-11 jack on the rear panel of the TATS+ to the site's appropriate modular phone jack with a standard male-to-male RJ-11 cable.

NOTE

Place the TATS+ on its own line, not on a line shared with voice phones or other devices. On a shared line, the TATS+ has no way of distinguishing the calls it should answer from those it shouldn't.

3. Connect the appropriate cables (DB25, RJ-11, or 4-wire) to the common device and to the devices you want to be able to remotely switch, and run the cables to the TATS+.

3. For this step, refer to the layout diagram of the TATS+'s top board in **Appendix A**.

If you are using the standard DB25 ports: Connect the free ends of the DB25 cables to the DB25 female connectors on the rear of the TATS+. Looking at the rear of the TATS+ from behind the unit, Port A is the connector on the left, Port B is the connector on the right, and the Common Port (the one with the shared device) is the one in the center.

If you are using the internal RJ-11 or 4-wire terminal-block ports: Unscrew both of the screws on the bottom of the TATS+ (you will be replacing these, so keep them close by). Once the screws have been removed, you can lift the lid off of the unit; the alternative connectors will now be accessible. Pull your RJ-11 or 4-wire cables through the empty hole in the rear of the TATS+. Connect the free ends of the cables to the RJ-11 female connectors or the 4-wire terminal blocks on the TATS+'s top board. For both RJ-11 and 4-wire, looking at the inside of the TATS+ from behind the unit, Port A is the connector on the left (P6 and P7), Port B is the connector on the right (P4 and P5), and the Common Port is the one in the center (P8 and P9). Once you've made all your conections and double-checked to make sure they're secure, replace the lid of the TATS+ and screw back in the two screws you removed earlier.

4. Plug the power-supply cord's 5-pin DIN connector into the matching jack on the rear of the TATS+.

5. Recheck the *external* connections you have made in the previous three steps. If they are all tight, plug the power supply's wallmount transformer into an AC outlet. The TATS+ should light its red front-panel power LED marked "PWR."

6. Press the front-panel reset button, marked "RST," to initialize the unit's processor.

TATS+ is now ready for operation.

4. Operation

4.1 Remote Switching

Your TATS+ will set its relays as instructed by any caller who accesses it properly. To switch the TATS+, an authorized person should follow these steps:

1. Call the TATS+ from any touchtone phone. The unit will answer after the third ring and speak the words "ENTER YOUR ACCESS CODE."

2. Enter the access code (the four digits that have been set on the dials on the front of the TATS+) by pressing the appropriate number keys on the touchtone keypad.

If a caller hangs up without entering an access code, or enters an incorrect access code three times in a row, the TATS+ disconnects immediately. If a caller doesn't enter an access code but doesn't hang up either, the TATS+ disconnects after waiting 30 seconds.

NOTE

The access code of the TATS+ can not be changed remotely, over the phone. It can only be changed by resetting the four dials on the front panel of the unit as explained in Chapter 3**.**

3. If you entered the correct code, the TATS+ will read the position of its relays, pause for half a second, and then pass that information on to you by announcing either "PORT A" if Port A has access to the shared device(s) or "PORT B" if Port B has access.

4. To change the position of the TATS+'s relays, press the appropriate number key on your phone's keypad. Touchtone Digit 1 tells the TATS+ to switch to Port A and Touchtone Digit 2 tells the unit to switch to Port B. If you enter the number corresponding to the current switch position (for example, "1" when Port A is already selected), the TATS+ will do nothing except repeat the announcement it made in the previous step; if you enter the other number, the relays will be switched and the new switch position will be announced.

To verify the position of the unit's relays, press the # key on your touchtone keypad; the TATS+ will repeat the read-and-announce function of **Step 3**. To instruct the TATS+ to hang up, press the * key. (If a caller presses any touchtone key other than 1, 2, #, or *, the TATS+ will respond with "INVALID CHANNEL.")

5. When you are finished, hang up. The TATS+ will detect your disconnection and will itself hang up. (If a caller enters the correct access code but for some reason does not hang up when the call is finished, the TATS+ will hang up after waiting through 30 seconds of silence on the line.)

NOTE

You can attach devices to any two or all three of the TATS+'s connector sets (DB25, RJ-11, and 4-wire) by using the appropriate cables, but the connector sets can only be switched simultaneously, not independently. For instance, if you have cables attached to both the DB25 connectors and the 4-wire terminal blocks, a caller who enters Touchtone Digit 2 will cause the TATS+ to switch to Port B for both DB25 and 4-wire. See Fig. 2-2 on page 3 for an example of how to make this linkage work for you.

NOTE

The phrases spoken by this switch, along with the entry sequence, can be changed to suit other applications. For additional information, call Black Box.

4.2 LEDs

TATS+ is equipped with three red LEDs on its front panel. The TATS+ will light its Power ("PWR") LED when it's plugged in; this LED will remain on as long as the TATS+ is powered. The TATS+ will light either the Port A ("PRT A") or Port B ("PRT B") LED depending on which port is currently selected.

4.3 The Reset Button

There is also a reset pushbutton, marked "RST," on the front panel of the TATS+. Press this to initialize the unit's processor any time that (a) the unit comes back on after having been unplugged or without power, or (b) the positions of the unit's access-code dials have been changed.

5. Troubleshooting

5.1 Suggestions for Some Common Problems

If your TATS+ doesn't seem to be getting power (its "PWR" LED is dark), check the connections at both ends of its power supply (both where the cord plugs into the unit and where the transformer plugs into the wall). If these connections are all right, plug another device into the same outlet to make sure the outlet is delivering power. If the outlet is delivering power and all the connections are good, call Black Box.

If your TATS+ doesn't answer when you try to reach it by phone, check the connections at both ends of its phone cable. If these connections are solid, call Black Box Technical Support at 724-746-5500.

NOTE

Any time your TATS+ seems to be behaving poorly or oddly, try pressing the reset button on its front panel before taking any other action.

5.2 Calling Black Box

If your TATS+ seems to be malfunctioning and pressing the reset button doesn't help, *do not attempt to alter or repair the unit.* Not only is this unlikely to be successful, but since it constitutes an unauthorized alteration of an FCC-registered device, it is also illegal. Contact Black Box instead.

Before you do, make a record of the history of the problem. We will be able to provide more efficient and accurate assistance if you have a complete description, including:

- the nature and duration of the problem.
- when the problem occurs.
- the components involved in the problem.
- any particular application that, when used, appears to create the problem or make it worse.

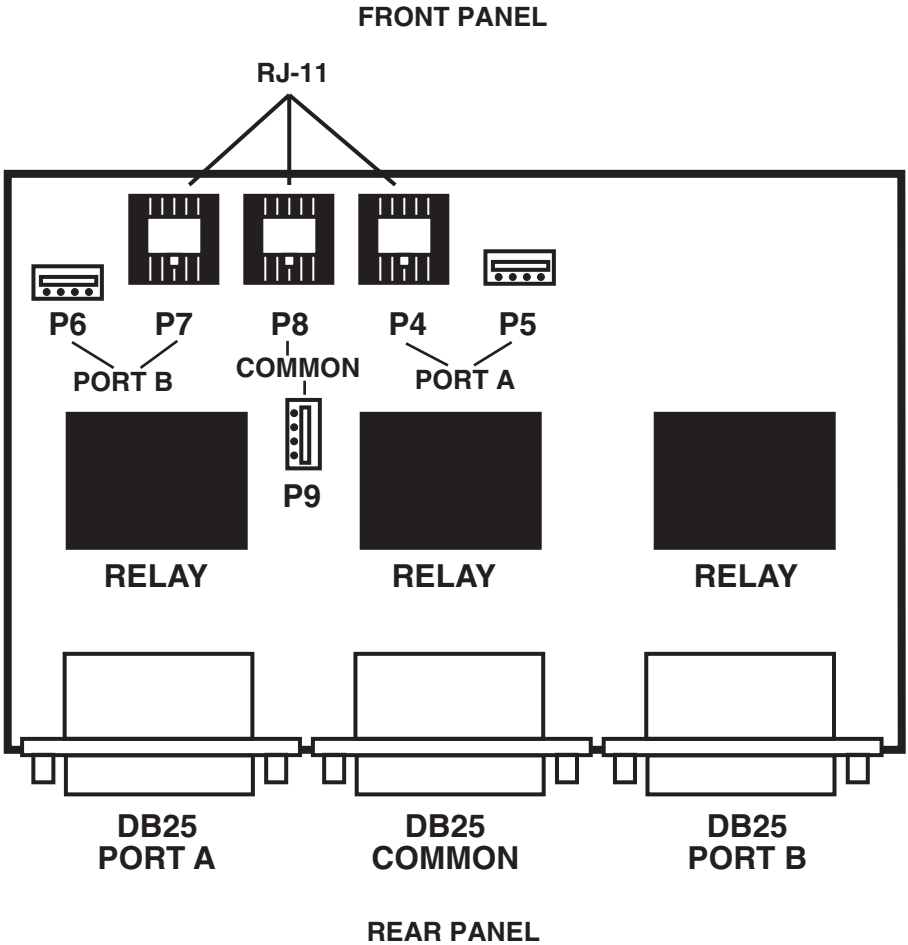
5.3 Shipping and Packaging

If you need to transport or ship your TATS+:

- Carefully package it. We recommend that you use the original container.
- If you are shipping the TATS+ for repair, make sure you include its power supply. If you are returning your TATS+, include both the power supply and this manual. Before you ship, contact Black Box to get a Return Materials Authorization (RMA) number.

Appendix A: Layout of the Top Board

The TATS+ contains two boards, one above the other. The top board, on which the alternative connectors are mounted, is shown here.



Appendix B: RS-232 Pinout

RS-232 Interface (Female)

SIGNAL DESTINATION	PIN NUMBER		PIN NUMBER	SIGNAL DESTINATION
PROTECTIVE GROUND	1		14	SECONDARY TRANSMITTED DATA
TRANSMITTED DATA	2		15	DCE TRANSMITTER SIGNAL ELEMENT TIMING
RECEIVED DATA	3		16	SECONDARY RECEIVED DATA
REQUEST TO SEND	4		17	RECEIVER ELEMENT TIMING
CLEAR TO SEND	5		18	
DATA SET READY	6		19	SECONDARY REQUEST TO SEND
SIGNAL GROUND / COMMON RETURN	7		20	DATA TERMINAL READY
RECEIVED LINE SIGNAL DETECTOR	8		21	SIGNAL QUALITY DETECTOR
+ VOLTAGE	9		22	RING INDICATOR
- VOLTAGE	10		23	DATA SIGNAL RATE SELECTOR
	11		24	DTE TRANSMITTER SIGNAL ELEMENT TIMING
SECONDARY RECEIVED LINE SIGNAL INDICATOR	12		25	
SECONDARY CLEAR TO SEND	13