

The **"BLACK BOX"** <sup>TM</sup> Catalog

OF DATA COMMUNICATION DEVICES



© 1977 EXPANDOR INCORPORATED  
612 BEATTY ROAD • MONROEVILLE, PA. 15146 • (412) 373-0300

ALL RIGHTS RESERVED



## EXPANDOR INCORPORATED

612 BEATTY ROAD • MONROEVILLE, PA. 15146 • (412) 373-0300

Dear Data Communicator:

This is the maiden issue of The BLACK BOX™ Catalog. The purpose of this new & novel catalog is to put user & inventor together to resolve common problems, add flexibility, save costs or enhance a system through the use of unique products offered at reasonable prices.

Also in The BLACK BOX™ Catalog are stock items (bread & butter items) that are available elsewhere, but are hard to find or inconvenient to order.

You will be receiving new product releases regularly. We hope you will interleaf them in this catalog. A new catalog will be issued annually.

When you need to solve a problem, — look in the BLACK BOX. "If you don't see it — ask for it."

We welcome your phone calls and suggestions.

Sincerely,

E. R. (Gene) Yost, President

Richard C. (Dick) Raub, Vice-President

### TO ORDER:

You may place an order by phone or mail. Please give us a purchase order number. If we need credit information, we'll get back to you.

### TO RENT:

You may rent any item in this catalog for 80% of the purchase price for the first year, and 10% per year thereafter. We will bill annually. The exact same warranties apply to rent and purchase.

#### MONEY BACK GUARANTEE

Products shipped by Expander have a 30 day money back guarantee.

#### WARRANTY

Products supplied by Expander will be replaced free of charge during the products published warranty period.

*(Abuse or Misuse Cancels All Product Warranties)*

#### AFTER WARRANTY REPAIR

Expander maintains an equipment exchange program at a published flat rate charge. Exchange products will be shipped, on call, by the fastest available means.

Prices and Specifications Subject To Change Without Notice

**BLACK BOX Terms: Net 30    Freight: Pre-paid & Added**

If you have (or know of) a product that meets the following criteria, please contact us: The product must be data communications oriented, innovative, and fulfill a specific need. It must be in present operation (with references) and economically priced. The inventor or designer must furnish models for evaluation, testing and production planning.

## CONTENTS

	Page
Acoustic Couplers	
300 Baud	10
1200 Baud	11
Abort Timers	
Port or Terminal	7
Auto Answer/Disconnect	16
Cables, EIA	5
Enclosures	12
Furniture	12
Interface & Adapters	
Asynchronous/Synchronous Interface	14
Asynchronous/Synchronous Adapter	14
EIA/Loop Interface — Active/Passive	2
EIA/Loop Interface — Passive only	2
Port Server	3
Terminal/Line Sharing Interface	15
Modems, Limited Distance	
Asynchronous	16
Synchronous	17
Modem Eliminator	
Asynchronous	8
Synchronous	7
Port/Terminal Devices	
Asynchronous Modem Eliminator	8
Asynchronous/Synchronous Adapter	14
Asynchronous/Synchronous Interface	14
EIA/Loop Interface	2
Limited Distance Modem	17
Port Server	3
Short Haul Modem	16
Synchronous Modem Eliminator	7
Printers	6
Racks, Equipment	13
Switches, EIA	
ABC Switch	4
CRT/Printer	5
Terminal/Line Sharing	4, 5
Terminal & Line Sharing Devices	
EIA Switches	15
Port Server	3
Terminal/Line Sharing Interface	15
Telco Hubbing/Bridging (Port Server)	3
Testers	9
Tools of the Trade	8, 9
Weather, In House	11

## COMING ATTRACTIONS

Watch for the following items that will be announced in the near future (or ask about them now by phone):

- Response time monitor with visual display and print option
- IBM 2741 to ASCII code converter/interface
- Other code converters
- Buffered EIA interface
- Speed converters
- Protocol converters
- Programmable port controller
- EIA/parallel interface



EXPANDO INCORPORATED  
6712 BEATTY ROAD • MONROEVILLE, PA. 15146 • (412) 373-0300



## No Other Product Like This MODEL 101-1 EIA/Loop Interface

- Two units in one — active or passive
- Adds System Flexibility
- Diversified uses

The BLACK BOX Model 101-1 Interface is a self contained unit that is designed to enable the interconnection of a current loop interface with an RS 232 interface. Coupling is provided for both transmit data and receive data. Flexibility in application is provided by the Model 101-1's self contained power supply and switch selectable options.

### Features:

Half duplex or full duplex operation — switch selectable.  
Operates in active or passive current loop configurations.  
Data rates to 9600 bps.  
20 — 60 ma loop.

### Specifications:

**EIA/CCITT interface —**  
Conforms to EIA RS 232 C & CCITT V-24. 25 pin EIA female connector provided.  
**Current loop interface —**  
Operates within active or passive, 20 — 60 ma system.  
Connector provided is AMP 8 pin MATE-N-LOK.  
**Power —** 105-125 VAC, 50-60 Hz.  
**Size —** 6" x 6" x 3-1/2".  
**Weight —** 1-1/2 lbs.

WARRANTY — One Year DELIVERY — 30 Days ARO

**BLACK BOX Price: \$185.00**



## WE CAN USE YOUR IDEAS

"Little black boxes" are our business. We solicit your ideas on what should be in this catalog. What is it that you find "hard-to-find"? What little black boxes would solve your problems? Would you like to see more "stock" (bread & butter) items in the catalog? Do you need more tools of the trade? Do you think we should publish a news letter? Would you contribute?

## "SPARE IN THE AIR"

BLACK BOX products that need replacement during warranty, or after warranty, are replaced by a "spare in the air". Call us, we will get a spare in the air on the way to you as fast as humanly possible. You will, of course, return the faulty product to us for repair.

## Inexpensive Solution MODEL 101-2 EIA/LOOP INTERFACE



- Compact
- Easy to Install
- Fast Delivery

The BLACK BOX 101-2 EIA/Loop interface is a self contained unit that enables the connection of a terminal containing a 20 Ma loop interface to a device (modem, etc.) that has an RS 232 interface. Coupling for full or half duplex is provided.

Model 101-2 is mechanically designed to clamp into the mounting space of a TTY pedestal. However, it may also be used with other low speed terminals in a stand-alone black box.

### Features:

20 Ma operation.  
Full or half Duplex  
Compact in size.  
Easy to install — instructions provided with shipment.

### Specifications:

**EIA interface —** conforms to EIA RS 232 C.  
**Current loop interface —** operates within passive 20 Ma systems, required 5 conductor cable provided.  
**Power —** 115 VAC, 60 Hz.  
**Size —** 6-1/4" x 2-5/8" x 2-3/4".  
**Weight —** 2 lbs.

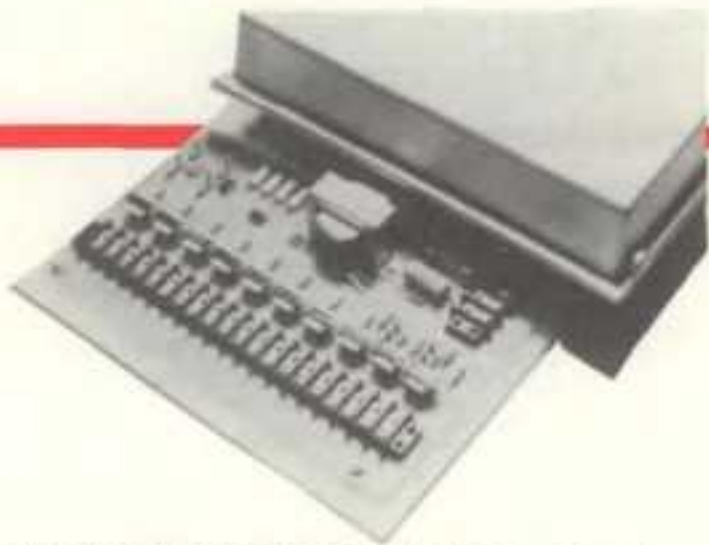
WARRANTY — One Year DELIVERY — 30 Days ARO

**BLACK BOX Price: \$97.50**



# PORT SAVER 4

- Reduces Downtime
- Adds Flexibility
- Cuts Costs



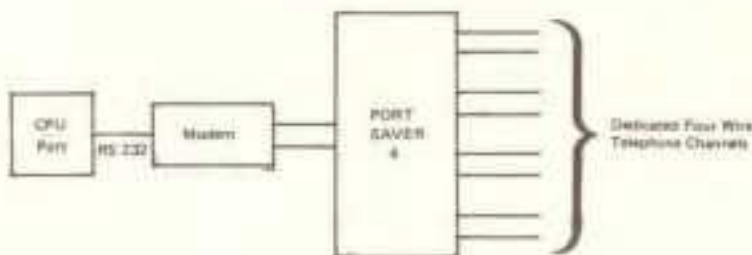
Port Saver 4 is an "active bridge" that enables data communication users to transmit and receive data over multiple telephone channels (four wire) utilizing only one computer port and a single modem. Multiple terminals can use Port Saver 4 to share a single telephone channel.

## PORT SAVER 4 REDUCES COST AND DOWNTIME WHILE ADDING FLEXIBILITY

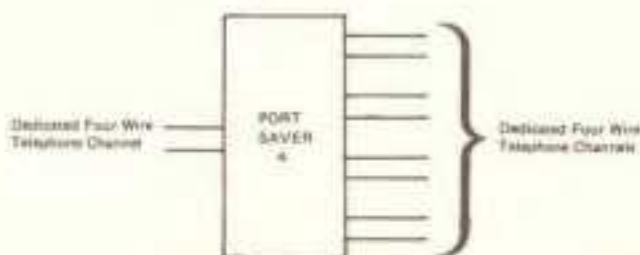
- Port Saver 4 saves money by allowing up to four telephone channels to be connected to one modem and one CPU port.
- Port Saver 4 reduces downtime by providing the ability to:
  - a. Reconfigure your network to effect repairs.
  - b. Provide dial back-up in the event of channel outage without changing ports or modems.
- Port Saver 4 adds flexibility to your data communication system:
  - a. Delete or add "drops" in a multi-point polled network without disturbing active terminals.
  - b. Reconfigure or balance your network to attain desired traffic efficiency.
- Port Saver 4 can "drive" additional Port Saver 4s if more than 4 telephone channels are to be connected to one modem and one CPU port.
- Port Saver 4 may also be used as a "hub" at a remote location to drive a terminal as well as three additional telephone channels.
- Port Saver 4 can be used with multiple terminals to share a single channel.
- Port Saver 4 may be used as a remote amplifier where poor line conditions exist.

### Here's How It Works!

PORT SAVER 4 SYSTEM DIAGRAM



PORT SAVER 4 AS A "HUB"



### Specifications:

Size: 12" x 8" x 3"  
Weight: Approx. 5 lbs.  
Power: 115 vac, 60 Hz, 10 watts max.  
Operating Temp.: 0 to 70° C  
Line Impedance: 600 ohm, transformer coupled  
Transmit Level with 0 dbm Input: 0 dbm (strap option for attenuation)  
Receive Level: No attenuation of normal receive levels (strap option for 16 dbm amplification)  
Operating Mode: Four wire, full duplex  
Telephone Line Connection: Screw type terminal strip for up to 4 telephone channels

GEM Version, Port Saver 4A, available for internal mounting without power supply and cabinet.

WARRANTY: One Year • DELIVERY: From Stock

**BLACK BOX** price **\$239.00**



EXPANDOR INCORPORATED  
810 SEATTY ROAD • MONROEVILLE, PA. 15146 • (412) 373-0300





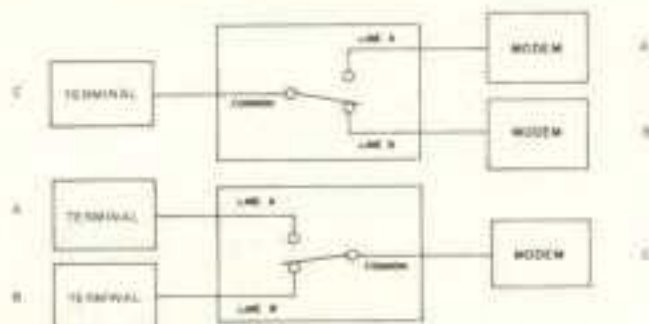
## Easy as "ABC" THE BLACK BOX EIA —ABC SWITCH

- Saves changing cable connections
- Cleans up messy cable-switch conditions
- Saves time — frustration
- Place in any convenient location

The BLACK BOX ABC Switch enables the user to switch a terminal from one modem to another, e.g. 300 to 1200 bps, without changing cable connections. A = 300 Baud B = 1200 Baud C = Terminal

OR — use the ABC Switch to permit two terminals to share one modem without changing cable connections. A = xx CRT B = yy Keyboard C = Modem (any type or speed)

By using the rotary A-B switch, change modems or change terminals. The "C" position of A-B-C is the "common" — the shared terminal or the shared modem. EIA connectors are engraved A B & C for easy installation.



### Features:

One A-B rotary switch — Extremely simple  
All 25 pin positions are switched  
Three female 25 pin EIA connectors.  
Solid construction — flat top.  
Switch is front panel mounted  
Code and speed transparent

### Specifications:

Three EIA connectors — all 25 pins wired  
Switch — rotary, self wiping  
Size — 2 1/4" x 5" x 7"  
Weight — 1 lb.

WARRANTY — One Year DELIVERY — From

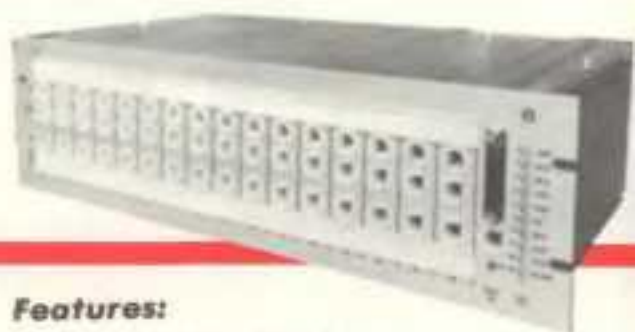
**BLACK BOX Price — \$95.00**

## Tech control at its best BLACK BOX DIGITAL PATCHING (DP)

- Fast, flexible, built-in testing
- Easy installation
- Positive indications

The BLACK BOX Digital Patching Unit satisfies the basic interface and patching requirements between computer ports and communications modems. You have 16 full-duplex channel patching capability in each unit. Each channel has 12 circuits with EIA RS 232 terminations. Rapid and sure testing is provided by individual channel monitor outputs plus a continuous monitoring LED test module.

Two colored LEDs give a positive assessment of the operation of control circuits. A red indicates the "on" level (+3 to +25 volts), and a green signal means the level is "off" or negative (-3 to -25 volts). Open, shorted or circuits not providing EIA threshold level of  $\pm 3$  volts are signified by no light.



### Features:

Handles 16 full duplex channels  
Operate each channel with full 12 EIA circuits, (i.e. PROT, GND, XMT, RCV, RTS, CTS, DSR, SIG GND, CF, SCT, SCR, DTR, RI/NSI)  
Bridge any data channel for testing or monitoring without interruption of data transfer  
Establish standard connections without patch cords or loop plugs  
Monitor any channel using built-in LEDs  
See both positive and negative EIA levels using two-color LEDs  
Detect open and shorted faults easily

### Specifications:

25 pin EIA connectors: Female for computer, male for modem  
Testing control circuits — ten 2 colored LEDs, test set connector provided  
Standard arrangement is "normal-through", no patch cords required  
19" wide, 7-1/4" high, 10" deep  
110 VAC, 20 watts (required for LED display)

WARRANTY: One Year

DELIVERY: 30 days

**BLACK BOX Price: \$1,595.00**



## BLACK BOX EIA CABLES



## Clean Up Your Equipment Rack With BLACK BOX EIA RIBBON CABLES

The BLACK BOX offers EIA Cables for interconnecting Data Communication Devices. The cable offered has all 25 pins of each connector wired, and comes complete with hoods and screw locks. BLACK BOX Cables may be ordered in male to male, male to female or female to female connector combinations.

Standard stocked lengths and pricing is as follows:

1' to 5'	10'	15'	20'	25'
\$19.50	\$22.50	\$25.50	\$28.50	\$31.50
30'	35'	40'	45'	50'
\$34.50	\$37.50	\$40.50	\$43.50	\$46.50

Cables ordered in sizes other than those listed are priced at:

\$19.50 plus \$.60 per foot each.

Specify length of cable and connector combination desired when ordering.

WARRANTY: One Year

DELIVERY: One Week

- Eliminate congestion
- Probing positions
- All 25 pins wired

Help to eliminate congestion in equipment cabinets and racks that is caused by using EIA connecting cables that are "too long" and difficult to "trace."

Add a trouble shooting aid by providing probing positions on the connectors for each pin.

### THAT'S WHAT HAPPENS WHEN YOU USE THE BLACK BOX EIA RIBBON CABLE.

- All 25 positions of RS232 connectors are wired.
- Connectors (with probing positions) available in the combination of your choice (male/male, female/female, male/female).
- Available in lengths of 1 foot increments to any length.
- The Expander normal 30 day money back guarantee applies.
- Shipped from stock

WARRANTY: 90 days DELIVERY: 2-4 weeks

#### BLACK BOX Price:

2 ft.	3 ft.	4 ft.	5 ft.	6 ft.
\$17.50	\$18.50	\$19.50	\$20.50	\$21.50

## Don't Inhibit Your Printer CRT — PRINTER SWITCH (CP Switch)

- Use "anybody's" printer
- Flexible interface
- Switches EIA lines
- Print reports without CRT restrictions
- Print local — switch controlled
- Control leads strap selectable

Use the BLACK BOX CP Switch to effect a hook-up between any CRT and any serially interfaced printer. The CP Switch shares the modem with both the CRT and the Printer. The CP Switch has two EIA "Ports": a transmit and receive (normally the CRT port) and a receive only (normally the printer port). Switches on the CPS enable the user to:

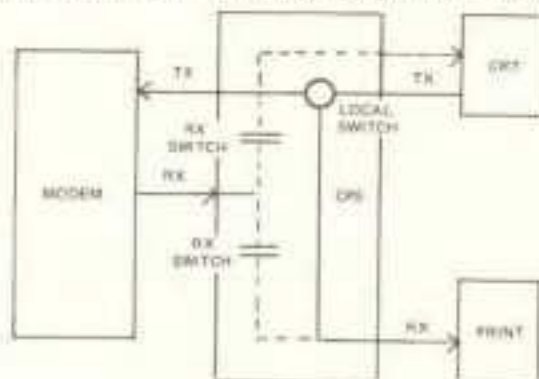
Disengage the printer and use the CRT normally.

Engage the printer only when appropriate (eliminate preliminary sign-on etc).

Engage the printer for printing reports too wide for the CRT Screen

Engage the printer on local for printing CRT Screen images.

NOTE: Other RS 232 terminals may be substituted for the printer and the CRT.



#### Features:

- Local control — maintains host communications
- Switching (on-off) receive control
- Small — Smart design
- Trouble free circuit board construction
- Code and speed transparent
- Control leads strap selectable

#### Specifications:

- Three female EIA (25 pin) connectors provided
- Size — 2-1/2" x 5" x 7"
- Weight — 1 lb.

WARRANTY: One Year DELIVERY: From Stock

**BLACK BOX Price \$125.00**



EXPANDER INCORPORATED  
612 BEATTY ROAD • MONROEVILLE, PA 15146 • (412) 373-0300



Call for information on  
**TALLY MODEL  
 T-1602 PRINTER**

- 160 characters per second
- Optimized bi-directional printing
- Self-test feature
- Handles continuous data stream at 1200 baud

The Tally Model T-1602 is a 160 character per second dot matrix serial printer that offers the added feature of faster throughput speeds by means of optimized bi-directional printing.

Augmenting left to right and right to left printing, an internal microprocessor "looks" ahead to compute the shortest path to the next print position. Depending on the format on the form, increases in throughput can range up to 300% or better. The model T-1602 slews forms at 8.5 inches per second and moves the print head at an accelerated rate when not printing. Even though throughput speeds are dramatically increased, the print head is still printing at 160 CPS so there is no degradation in wear, reliability or MTBF.

**Features:**

96 character set	132 column print positions
6 lines/inch	10 characters per inch
7 x 7 dot matrix	Double width characters
Forms length selector	Paper out alarm
4" to 15" form width	Original plus four copies
Continuous loop fabric ribbon	Quiet - 55 dBA
Table top - stand optional	

	<b>BLACK BOX</b> Purchase Price	Rent/1 year (Includes Maintenance)
T-1602 with parallel interface	<b>\$3595.00</b>	<b>\$180.00/Month</b>
T-1602 with serial 1-K buffered interface	<b>\$3955.00</b>	<b>\$195.00/Month</b>

**Specifications:**

105-140 VAC, 60 HZ  $\pm$  2% 200 watts  
 25.5" wide, 19.5" deep, 8.7" high  
 64 pounds

WARRANTY: (Purchase) - 90 days

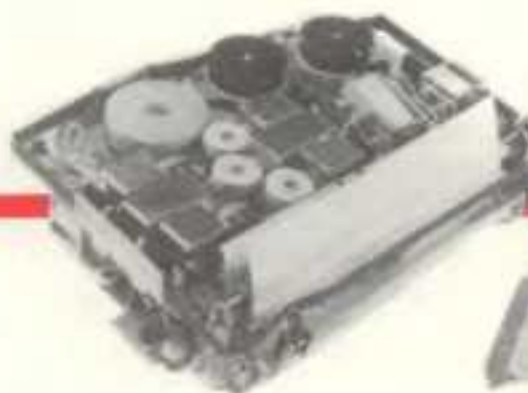
DELIVERY: 90 Days



The printer to play with  
**MODEL 123P  
 BLACK BOX PRINTER**

- 10 Characters per second, 80 columns wide
- Impact printing - uses standard typewriter ribbon
- 8 bit parallel interface included
- 64 character ASCII Code set
- Sprocket or friction fed paper
- Small size - light weight
- Compatible with PortaCom
- Optional cover \*\*

Model 123P BLACK BOX Printer is a small, versatile, quiet, lightweight impact printer, that may be used with its parallel interface to effect printed copy for a micro processor, mini computer, or any other device equipped with a parallel port. Print 64 characters ASCII on 8 1/2" paper using a minimum of printer space. Printing is accomplished by a character print cylinder that is positioned by intelligence solenoids and a striking hammer. Each character is visible immediately after printing as the printed line is unobstructed at a normal typewriter viewing angle. Up to 5 copies possible.



**Specifications:**

2.75" high, 12" wide, 9" deep, 9.75 pounds (excluding cover)  
 Power Print - 115VAC, 60 Hz, 1.5 amps  
 Power logic - Parallel interface requires external +8 to +10 VDC

WARRANTY: 90 days

DELIVERY: 60 days

**BLACK BOX Price \$296.00**  
 Optional Cover - \$ 29.95



EXPANDO INCORPORATED  
 8151 BEATTY ROAD • MONROEVILLE, PA 15146 • (412) 373-0300





One unit replaces two

## SYNCHRONOUS MODEM ELIMINATOR (SME)

- Eliminates Synchronous Modems
- Frees telephone circuits
- Conserves space
- Strapable options
- Easy plug-in installation

The BLACK BOX Synchronous Modem Eliminator (SME) is designed to connect two synchronous devices together over short distances — typically about 100 feet. Connection is made by two EIA RS 232 cables made to the desired length (available from the BLACK BOX). The most common use for SME is in-house communications between a synchronous computer port and a synchronous terminal. ONE SME provides all the required clocking and interface protocol necessary, thereby eliminating TWO costly synchronous modems.



### Features:

Data rates - 2400, 4800, 9600 or 19,200, bps, strap selectable.  
Single stand-alone enclosure - a space saver.  
RTS/CTS - 0, 8.5 or 50 ms delay, strap selectable.  
Controlled or continuous carrier.  
Transparent to data.  
Easy to install - two connections and an AC plug.

### Specifications:

Interface - conforms to EIA RS 232 C.

Physical connection —

Two female 25 pin EIA connectors provided.

Use EIA cable to length from sync device to SME & SME to sync device.

Power - 115VAC, 60 Hz.

Size - 5-5/8" x 11-1/16" x 1-5/8"

Weight - 1-1/2 pounds

WARRANTY: One Year

DELIVERY: From Stock

**BLACK BOX PRICE: \$295.00**

## The Big Hang-up ABORT TIMER

- Increase Port & Terminal Efficiency
- Eliminate Manual "Resets"
- Reduce Troublesome Phone Calls.
- Improve Modem Throughput
- Maximize In-Wats Usage

The BLACK BOX Abort Timer (or "Hang-up") is designed to continuously monitor dial-up (DDD) modems for receive data traffic. If, after a call is established, data is not received within a pre-set (adjustable) period of time, the abort timer will disconnect (hang-up) the call making the modem available for additional users. This unique little BLACK BOX may be used with either a terminal/modem or a computer port/modem.

Use of the abort timer will provide lower telephone toll costs and a more efficient utilization of computer resources.



The automatic disconnect takes effect if:

1. Non data calls are established, e.g. wrong numbers.
2. Data is not received during the pre-set time interval.
3. The communications path is broken.
4. Data calls are not terminated properly.

### Features:

Small in size.

Easy installation — just plug in.

Adjustable timing sequence.

No external power required.

### Specifications:

Interface — EIA RS 232 C.

Connectors — 1 male & 1 female RS 232 connectors provided with all 25 pins connected.

Timing interval — adjustable from 30 seconds to 5 minutes.

Size — 1-1/2" x 2-1/2" x 3-1/2".

Weight — 1 lb.

WARRANTY: One Year

DELIVERY: From Stock

**BLACK BOX Price — \$89.95**



Not From Sweden

## RS 232 SEX CHANGER (SC)



- Permits Hook-up of Mismatched (wrong sex) Connectors.
- Adds Monitoring Capabilities.
- Interconnection of Multiple Devices
- Excellent "Tool of the Trade"

The RS 232 Sex Changer is designed to enable data communication users to interconnect EIA cables regardless of the sex of the individual cable connector. The Sex Changer is a PC board with four RS 232 connectors. All 25 pins of each connector are wired and made available in parallel. Up to four devices may be interconnected for simultaneous use. Monitoring of connected equipment is made easy by plugging in a test device to an unused connector. Probe points may also be found on any unused connector.

### Features:

- PC board mounted — no maintenance.
- Two male and two female connectors.
- All 25 pin positions of each connector are "wired" in parallel.
- Small in size — fits in the shirt pocket.
- Ideal for testing and trouble shooting.

### Specifications:

- Connectors — 2 female & 2 male RS 232, 25 pin.
- Size — 3" x 5" x 1/2".
- Weight — 4 ounces.

WARRANTY — 30 Days DELIVERY — From Stock

**BLACK BOX Price: \$49.50**

## "TOOLS OF THE TRADE"

## MEET AME!



### ASYNCHRONOUS MODEM ELIMINATOR

- Eliminates modems
- Saves money
- Conserves space
- Frees telephone circuits

This little BLACK BOX replaces 2 modems when connecting asynchronous devices together over short distances. It's the smallest and most economical modem eliminator in town! Fits into your shirt pocket: 2-3/8" x 2-1/8" x 1/2". Operates within EIA RS 232C specifications.

Applications: Terminal-to-computer communication, terminal-to-terminal communications, terminal-to-printer or plotter, terminal or computer port testing.

*"AME" is a **MUST** for every technician's tool kit! Let "AME" assist you in determining... Is it the modem?... Is it the terminal? Know in minutes!*

WARRANTY: One Year

DELIVERY: From Stock

**BLACK BOX Price: \$35.00**

## Design it using the — BLACK BOX RS232 UNIVERSAL BREADBOARD (UB)



...Then Market it In The BLACK BOX Catalog

- Assists in designing
- Helps "work out" problems
- Compact and easy to use

The BLACK BOX RS 232 Universal Breadboard is the "experimenter's" or "trouble shooters" answer for interface problems or the development of new ideas. UB is housed in a compact metal chassis and provides "the needed parts" to accomplish the job. No more looking for connectors, jury rigging, or improvising (paper clips are not needed). This easy to use, small module makes it almost fun to search out problems. It is a natural for the designer.

### Features:

- Regulated power supply — + 5 VDC, 100 Ma
- ± 12 VDC, 30 Ma
- UL Approved external transformer
- PC board with standard IC grid
- 2 each RS 232 female connectors (all 25 pins wired)
- Power buss
- Silk screened lead identification on cover
- Thumb-screw full cover

### Specifications:

- Power — 115 VAC (external 117/24 VAC transformer)
- Size — 4-1/4 x 7-5/8 x 1-1/2 inches
- Weight — 16 ounces

WARRANTY: 30 days DELIVERY: Stock to 4 weeks

**BLACK BOX Price: \$99.00**

## An Inside Look RS 232 "FANOUT"



- Great For Experimenting
- Monitoring Capabilities
- Excellent "Tool of the Trade"

The RS 232 "Fanout" is a unique BLACK BOX device that is constructed with 2 RS 232 connectors on a printed circuit board. All 25 pin positions or leads are exposed. Use of the fanout enables data communication users to monitor probe or jumper any or all RS 232 pin positions. These pin positions are available via eyelets along the bottom edge of the PC board.

### Features:

- All 25 positions available for monitoring, probing, or jumping.
- "Plug in" ease of installation.
- Small and easily carried.
- Excellent for diagnostics or development.

### Specifications:

- Connectors — 1 female & 1 male 25 pin; RS 232, all points wired.
- Probe positions — PC board plated through eyelets
- Power — not required.
- Size — 2 1/2" x 4 1/2" x 1/2"
- Weight — 3 ounces

WARRANTY — 30 Days DELIVERY — From Stock

**BLACK BOX Price: \$38.00**



EXPANDER INCORPORATED

612 BEATTY ROAD • MONROEVILLE, PA 15146 • (412) 373-0300



## "TOOLS OF THE TRADE"

A New Industry Standard

# BLACK BOX EIA INTERFACE TEST SET (ITS)

- Rugged - compact size - hand held
- Unequalled features
- Human engineered



The BLACK BOX EIA Interface Test Set (ITS) permits monitoring and testing of EIA RS 232 interface leads. This compact tester is inserted between data terminal equipment and data transmission equipment (normally the modem). It is equipped with eleven (11) LEDs that continuously monitor the most commonly used interface signals. Two additional LEDs permit monitoring of either positive or negative interface signals on any line. Twenty four (24) switches are provided to interrupt and isolate all signals (except line # 1 -- frame ground) for monitoring or patching. Pins are provided on both sides of the switches to permit cross connecting interface signals.

### Specifications:

Interface signals continuously displayed:

Pin # 2	BA	Transmit data
Pin # 3	BB	Receive data
Pin # 4	CA	Request to send
Pin # 5	CB	Clear to send
Pin # 6	CC	Data set ready

Pin # 8	CF
Pin # 15	DB
Pin # 17	DD
Pin # 20	CD
Pin # 21	CG
Pin # 22	CE

### Features:

- Sturdy plastic case with aluminum extrusion at hinges - positive catch on lid
- Self contained - battery operated
- 9 LEDs continuously monitor commonly used interface signal levels
- 2 LEDs indicate clock activity rather than level only.
- LEDs mounted in normal number sequence of connector
- LEDs are on the signal source side of the switches

- Carrier detect
- Transmission signal element time
- Receive signal element time
- Data terminal ready
- Signal quality detect
- Ring indicator

Additional displays: 2 LEDs - plus test & minus test Indicator input threshold:  $\pm 3$  volts  
Indicator input impedance: 30K ohm Power: 2-1.5 volt AA batteries Size: 5-1/2" x 3-3/4" x 2"  
Weight: 15 ounces

WARRANTY: One Year DELIVERY: Stock to 7 weeks

BLACK BOX Price: **\$199.00**

## A Quick Test With BLACK BOX VF LEVEL TEST SET (VF)

- Quick, accurate testing of line level
- Portability - small - light weight
- Ease of use

The BLACK BOX VF Level Test Set allows the data communication user to "take a quick reading" of receive levels over dedicated or dial channels -- or directly from modem output. Use of VF can quickly establish whether proper levels are present. This small, inexpensive, easy-to-use test set is ideal for monitoring receive levels at remote communication sites.

### Features:

- Test dedicated or dial lines • Can be used by unskilled personnel • Hand held, battery operated • Solid state circuitry • Battery status light • Battery recharge circuit (recharger not included) • Push-to-read button -- conserves battery life

### Specifications:

- Measurement range -- -50 to +3 dBm
- Accuracy --  $\pm 1/2$  dB
- Termination -- 600 ohm or 900 ohm
- Bridging -- 20 K ohm
- Power -- 9 volt, Mallory MN1604 or equivalent
- Size -- 3"x4.5"x1.5"
- Weight -- Less than 1 pound



WARRANTY: 90 Days DELIVERY: Stock to 4 weeks

BLACK BOX Price: **\$132.50**



## BLACK BOX Acoustic Telephone Coupler

- One Year Warranty — Performance Guaranteed
- Asynchronous 0 to 300 Baud Transmission
- Full or Half Duplex Operation
- EIA (RS232) or 20 Ma Interfaces
- Acoustic or Manual DAA Coupling



The BLACK BOX Acoustic Coupler is designed with the latest microcircuit technology. It is completely compatible with the Bell System 103/113 datasets or equivalents and may be interfaced with EIA RS232-C or 20Ma current-loop data terminal systems. The unique design provides immunity from telephone line noise, room noise, and mechanical vibrations. The coupler allows remote terminal devices to access time-sharing computer from any location where a standard telephone is available. Simply by dialing the number of a computer and placing the handset in the rubber receptacles, the user can acoustically transmit and/or receive information over standard telephone lines.

### Specifications:

Operating Mode: Originate, half/full duplex  
 Receiver frequencies: 2225Hz (mark), 2025Hz (space)  
 Transmit frequencies: 1270Hz (mark), 1070Hz (space)  
 Sensitivity: 45 dbm  $\pm$  2  
 Carrier detect delay: 1.5 sec (on); 150 ms (off)  
 Data rate: 0 to 30 characters per second (300 bps)

EIA interface: RS-232C compatible  
 Current loop: 20Ma  
 Power input: 115VAC  $\pm$  20v, 60Hz  
 Size: 10 1/2" x 6 1/4" x 4 1/2"  
 Weight: 2.5 pounds

WARRANTY: One Year

DELIVERY: From Stock

**BLACK BOX Price \$199**

THE BLACK BOX ALSO OFFERS 300 BAUD STANDALONE AND RACK MOUNT MODEMS. THESE UNITS ARE EXCELLENT COMPANIONS TO THE ACOUSTIC COUPLER ABOVE AND ARE AVAILABLE IN AUTO ANSWER OR ORIGINATE MODELS

### Modem

113B Auto answer, rack ..... \$ 230  
 113B Auto answer, standalone ..... \$ 305  
 113A Originate, rack ..... \$ 200  
 113A Originate, standalone ..... \$ 275  
 103F Private line, rack ..... \$ 220

103F Private line, standalone ..... \$ 25  
 Enclosure, 16 channel, rack ..... \$ 30  
 Power supply, rack ..... \$ 50  
 Cable, 8 ft. modem/DAA ..... \$ 1

WARRANTY: One Year DELIVERY: From stock to 30 days

### ATTENTION — INVENTORS AND DESIGNERS

*We are always looking for new products for The BLACK BOX Catalog. We will issue a new catalog at least once a year — with other product releases between printings. If you have, or know of, an innovative data communications device that has market potential, — give us a call. You can build it, — or we will build it for you. However, we require prototypes for testing and evaluation, user references, and a history of service performance. If it is patentable, we will assist you with the patent office.*



EXPANDOR INCORPORATED

612 BEATTY ROAD • MONROEVILLE, PA. 15146 • (412) 973-0300

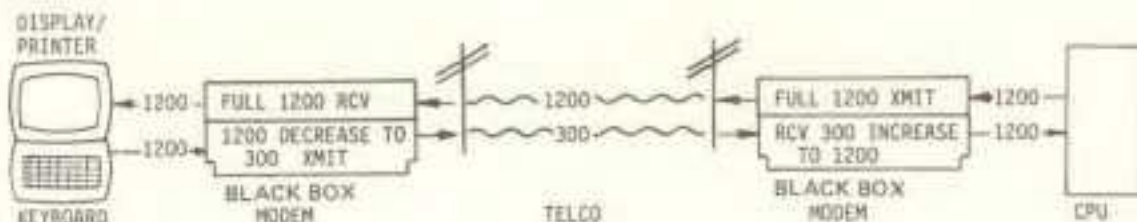




# Acoustically Coupled 1200 Baud BLACK BOX 1200 MODEM ACOUSTIC TELEPHONE COUPLER



- 1200 Baud Conversational
- Standard 103/113 Communication Protocol
- Selectable Operating Modes
- Built-In Diagnostics



The BLACK BOX 1200 Conversational Modem provides two-wire, full duplex, asynchronous data transmission. A switch is provided for selection of 1200 bps or 300 bps. When operating in the 1200 mode, the terminal transmit data rate (keyboard rate) is not to exceed 30 characters per second.

Both RS 232C and 20 Ma interfaces are provided. Interface format and handshaking are identical to the 103/113 series modems.

Full duplex 1200 bps transmission is provided via acoustic coupling, Telco DDD, or lease line modes. The basic unit provides for all three modes, and changes are made by simple interconnect cable changes. A separate Acoustic Pad is provided for the acoustic mode of operation. Auto-Answer controls are provided for CBT or CBS Data Access Arrangements.

Peripheral devices can be accommodated via two auxiliary connectors. One connector provides for 1200 bps full duplex conversational transmission and the other connector is a full 1200 bps receive only.

## Features:

Stand-Alone and Rack Mounted Configurations  
Conversational 2-wire full duplex operation at 1200 bps  
300 bps operation - operator switch selectable  
EIA RS 232C and 20 Ma Interface  
Standard 103/113 Communication Protocol  
Selectable Operational Modes/

1. Acoustic Coupling
2. Originate - Manual DAA
3. Auto Answer - CBT/CBS Compatible
4. Leased Line

Auxiliary I/O connectors for Peripheral Devices  
Diagnostic Data Indicators - Remote Testing

WARRANTY: One Year DELIVERY: From Stock

**BLACK BOX Price: \$495.00**

Originate or Auto Answer

Acoustic Pad + \$0.00

## A New Idea

# IN-HOUSE WEATHER (IHW)

- Reduce telephone message units
- Employee Convenience
- Employer Savings

The BLACK BOX In-House Weather is a weather broadcasting system that may be connected to IN-HOUSE extension phones to avoid accumulation of telephone message units that ARE presently being incurred by employees. IHW may be connected to up to four extension phones for simultaneous broadcast, to extension callers, of the National Weather Service Frequency.

Dialing of the assigned extensions causes an automatic answer and a direct connection to the IHW System.

## Specifications:

**Interconnection** — Connection of the IHW is via Telco Coupler Model RDMZR. One coupler is required per extension.

**Interface Chassis** — Size: 2 1/2" x 5 1/2" x 7" Weight: 10 oz.

WARRANTY — One Year DELIVERY: 30 Days

**BLACK BOX Price: \$105.00** (Radio Not Included)

## ?? NEED MORE THAN ONE BLACK BOX ??

*If there are others on your staff that should receive their own copy of The BLACK BOX Catalog — either add them to the mailing list, or ask us to send you xx copies of the catalog as we make a mailing, or as we make releases. Then you can distribute the extra copies. We know that you know better than we know who should receive copies in your organization.*



EXPANDO INCORPORATED

512 BEATTY ROAD • MONROEVILLE, PA. 15146 • (412) 373-0300

## Top Quality TERMINAL EQUIPMENT STAND



- Sturdy
- Cantilever Construction — Tip proof
- Variety of uses
- Modern Design
- Hundreds installed

This exceptionally well constructed equipment stand is of a strong cantilever construction to withstand vibration & accidental tipping. Lots of leg room for operating CRT or other keyboard terminals. Plenty strong for any serial printer. Available in widths up to 72 inches.

### Specifications:

- Top Size: 24" x 36" — walnut formica finish
- Height: Standard & comfortable keyboarding height of 26"
- Base: Steel, finished in black and chrome
- Weight: Shipping weight 82 lbs.

WARRANTY — One Year DELIVERY — From Factory Stock  
**BLACK BOX Price: Walnut top \$140.00**

## The hard to find PAPER REFOLD TRAY



- Efficient
- Economical
- Sturdy
- Easy to Use

The Expander "Paper Refold Tray" is NOW available to refold continuous forms for any low or medium speed printer (up to 300 LPM). It's constructed of chrome plated steel and is 18 inches wide, 12 inches deep and 10 1/2 inches in height.

Expander's 30 day money back guarantee applies.

WARRANTY: One Year DELIVERY: From Stock  
**BLACK BOX Price \$39.00**

## Bought a stand? Get a companion posture chair THE BLACK BOX WORK CHAIR



This secretarial posture chair permits freedom of movement in all types of work situations. It creates a high degree of postural security and stimulation that motivates the user in day long tasks. It quickly and easily adjusts to fit a full range of body shapes, sizes, and movements. Exceptional spinal support. A modern chair with modern design — a fine chair good for your body.

WARRANTY: One Year DELIVERY: From factory stock

### BLACK BOX PRICE:

Painted, vinyl covered — \$166.00 Fabric — \$186.00  
Chrome, vinyl covered — \$194.00 Fabric — \$214.00

## The Search Has Ended For Those LITTLE BLACK BOXES (LBB) (and orange, and blue, and grey)



- For the experimenter
- For production
- For storage
- Easy punching or drilling

Little BLACK BOXES, molded in ABS plastic are available in five sizes and sizes, four colors. These little boxes are perfect for the experimenter (or producer) to house electronic gadgets and use as enclosure for PC boards.

### Features:

Five sizes, four colors • Molded in ABS plastic Provided with 3 mm slotted head screws, countersunk into the lid and threaded into integral brass bushings • Interlocking flange on lid • Internal slots on 0.2" center hold 0.62" PC cards. • Average wall thickness 0.062" • Colors — black, orange, blue, grey

WARRANTY: Per specifications upon receipt DELIVERY: Stock to 30 c

### BLACK BOX PRICE:

(10 per carton - Minimum order 1 carton, same model)

Model	Length"	Width"	Depth"	Price/10
A	4.00	2.00	1.00	\$13.50
B	4.40	2.44	1.22	\$14.50
C	4.75	2.56	1.56	\$19.50
D	6.00	3.15	2.00	\$22.50
E	7.50	4.33	2.38	\$31.50





## Organize Your Equipment Room With BLACK BOX MODULAR RACKS



A convenient organized method of storing your "Little Black Boxes", as well as other communications and computer equipment, with full operational access. BLACK BOX racks are available in a variety of standard sizes with numerous optional accessories (all modular, of course).

Start your installation with our basic rack modules and add as your requirements dictate. There's no installation too small or too large.

- Modular all welded 14 ga. formed steel frame with open sides.
- Removable louvred rear door, on concealed pin hinges with flush keyed lock.
- Rack and dress panels have a modern angular appearance.
- May be joined to companion units with six bolts (supplied) to form sturdy equipment housings.
- One pair of vertical 10 ga. panel rails drilled and tapped for 10-32 screws on EIA rack spacing of .5 x 1.25" are fully adjustable on horizontal Amhal struts.
- One pair adjustable 12 ga. Z rails mounted on Amhal struts.
- Two .5 x .75" conduit knockouts provided in flange below rear door.
- Cut out in bottom 9.5 x 11.5" for cable or conduit entrance with bolted coverplate.
- Standard ASA 61 grey baked enamel finish.
- Two stainless steel vertical dress trims covering panel screws.
- One set of 8 wiring clips — 4 each front and rear.

Cat. No.	Panel Width	Panel Space E	DIMENSIONS			Ship Wt. Lb.	BLACK BOX PRICE	DRESS PANELS		CORNER CABINET	
			Outside Width A	Outside Depth B	Outside Height C			Cat. No.	Price	Cat. No.	Price
A1	19	49.0	22.5	17.5	52.5	100	A1 \$201	A1Q	\$43	A1K	\$201
B1	19	61.25	22.5	17.5	64.7	120	B1 \$214	B1Q	\$45	B1K	\$214
A2	19	49.0	22.5	24.0	52.5	120	A2 \$214	A2Q	\$45	A2K	\$214
B2	19	61.25	22.5	24.0	64.7	135	B2 \$238	B2Q	\$45	B2K	\$238
C2	19	70.0	22.5	24.0	73.5	160	C2 \$251	C2Q	\$48	C2K	\$251
E2	19	80.5	22.5	24.0	84.0	180	E2 \$261	E2Q	\$50	E2K	\$261
F2	19	85.75	22.5	24.0	90.0	195	F2 \$298	F2Q	\$54	F2K	\$298

For Use With Cabinet	FRONT DOORS			EXTRA PAIRS RAILS			GROUND BUS STRIPS			ALUMINUM TRIM STRIP	
	Solid Cat. No.	Ship Wt. Lb.	Price	Panel Rail Cat. No.	Z Rail Cat. No.	Ship Wt. Lb.	Cat. No.	Length	Price	Cat. No.	Price
A1, 2	A1S	25	\$43	AP	AZ	11	AGB	49.0	\$14	A1T	\$52
B1, 2	B1S	31	\$48	BP	BZ	14	BGB	61.2	\$17	B1T	\$57
C2	C1S	36	\$52	CP	CZ	16	CGB	70.0	\$19	C1T	\$62
E2	E1S	40	\$57	EP	EZ	19	EGB	80.5	\$20	E1T	\$67
F2	F1S	43	\$76	FP	FZ	20	FGB	85.7	\$21	F1T	\$67

### WRITING SHELF AND UTILITY DRAWER

Cat. No.	Overall Dimensions			Working Area		Price
	W	D	H	W	D	
S19	19	15.5	3.5	16.7	10.2	\$48



### OPTIONAL ACCESSORIES

Also Available: Blank Panels, Ventilating Panels, Switch Panels, Panel Adapters, Blowers, Wired Receptable Strips and Other Rack Enclosures.

(Contact Expando For Quotation)

### EQUIPMENT SHELF

Cat. No.	W	D	Panel Height	Price
T19	17.2	15.0	8.75	\$22
V19	17.2	15.0	10.5	\$24
X19	17.2	15.0	12.25	\$25



WARRANTY: One Year DELIVERY: 30 Days From Factory Stock



EXPANDO INCORPORATED  
612 BEATTY ROAD - MONROEVILLE, PA 15146 - (412) 373-0300



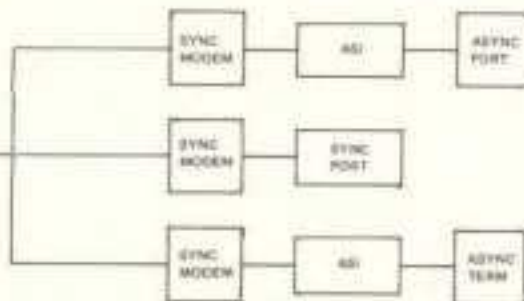
## EXPANDED USEAGE FOR ASYNCHRONOUS TERMINALS USE THE BLACK BOX'S ASI (Asynchronous/Synchronous Interface)

- Use async terminals at sync speeds
- Broaden your selection of terminals
- Operate asynchronous terminals at speeds of 2400, 4800, or 9600 bps over polled, DDD, or dedicated networks.



"ASI" provides an interface between an asynchronous terminal and a synchronous modem. Placed into the communication system, ASI provides the proper interconnection to allow the async terminal to operate within the timing control of the sync modem clock. The data format is that of the asynchronous terminal, i.e. ASCII (a start bit, eight intelligent data bits and a stop bit interval of one or more bits).

ASI may also be used between a synchronous modem and a asynchronous computer port.



WARRANTY: One year DELIVERY: From Stock

**BLACK BOX Price: \$293.00**

## No Modems or Telephone Channels Required

## ASYNCHRONOUS/SYNCHRONOUS ADAPTER (ASA)

- Use Async Terminals at Sync Speeds
- No Modems Required
- No Telephone Channels Required

"ASA" permits the interconnection of an asynchronous terminal and a synchronous computer port over short distances normally within the computer center. The use of ASA requires NO modems and NO telephone channels. The connection is made by using standard EIA cables (available from the BLACK BOX) direct from computer port to ASA and from ASA to the terminal. Asynchronous terminals capable of data rates above those rates supported by asynchronous ports may therefore be utilized. The data format is that of the asynchronous terminal; i.e. ASCII (a start bit, eight intelligent data bits and a stop bit interval of one or more bits).

ASYNCHRONOUS/SYNCHRONOUS ADAPTER



### Features:

Data rates of 2400, 4800, or 9600 bps - strap selectable.  
Transparent to data and format.  
Clocking is provided by ASA to the synchronous port.  
RS 232 interface control signals are provided.  
Easy to install - two connectors and an AC plug.

### Specifications:

Interface - conforms to RS 232 C.

Physical connection -

Two female 25 pin connectors are provided for the connection of an async terminal to ASA & a sync port to ASA. Use standard EIA cable to desired length.

Power - 115 VAC, 60 Hz.

Size - 5-1/2" x 8-3/4" x 1-1/2".

Weight - 1-1/2" lbs.

WARRANTY: One Year DELIVERY: From Stock

**BLACK BOX Price - \$275.00**



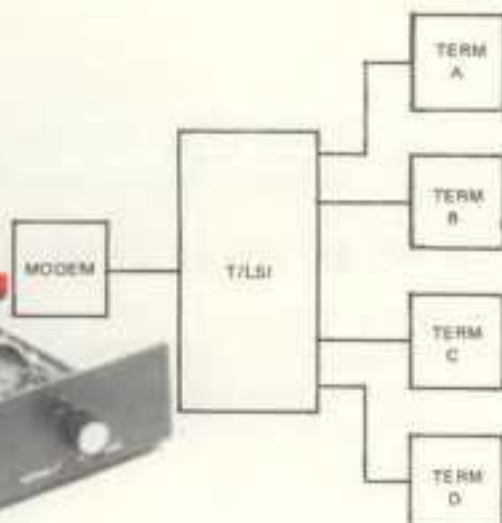
EXPANDOR INCORPORATED  
612 BEATTY ROAD • MONROEVILLE, PA. 15146 • (412) 373-0300





# TERMINAL/LINE SHARING INTERFACE (T/LSI)

- Modem Sharing Device
- RS 232 Splitter
- Modem Interface Splitter
- Port Sharing Interface
- Line Saving Device
- Terminal Cluster Interface
- Port Rotary Selector



This member of the BLACK BOX family is ALL of the above. Regardless of the name it's called, the purpose of the Terminal/Line Sharing Interface (T/LSI) is to allow the connection of up to four terminals to one modem. Built-in switchable options provide versatility in application.

- **SIGNIFICANT SAVINGS IN SYSTEMS COST:**  
Operate four or more (the T/LSI may be "pyramided") terminals from one modem.
- **CONTENTION IS A BUILT IN FEATURE:**  
T/LSI sequentially scans interconnected terminals for a "Request to Send". Upon selection, the Send Data, Receive Data and Carrier Detect leads are switched and dedicated to the requesting terminal only.
- **BROADCAST/POLLING MODE:**  
An internally mounted switch is provided which allows all interconnected terminals to monitor Receive Data and Carrier Detect. This option is used when terminals are operating within a communication system that requires all terminals to respond to polls or receive broadcasted data.
- **POWER REQUIRED:**  
115 VAC, 5 watts Size: 12" x 8" x 2-1/4" high

- **DISPLAY PANEL:**  
Six light emitting diodes are displayed on the front panel of T/LSI to indicate which terminal has control of the modem, Modem Carrier Detect and Modem Clear to Send.
- **TRANSPARENT TO DATA:**  
T/LSI is totally transparent to data and control signals; may be utilized in either an asynchronous or synchronous system and will operate at rates up to 50 KB.
- **DEDICATED TERMINAL OPTION:**  
An external switch is available which disables T/LSI's scanning sequence and unconditionally dedicates the modem to terminal number one.
- **SIMPLE INSTALLATION:**  
Five 25 pin female connectors as specified in EIA RS 232 C are provided for connection of up to four terminal devices and one modem.

WARRANTY: One year DELIVERY: From stock

**BLACK BOX Price: \$425.00**

## "IF YOU DON'T SEE IT — ASK FOR IT"

We have frequent contact with "inventor-designers" in our industry. We have products in the process of evaluation, testing, or early production. We know of other supplier's plans. We know of products that we do not intend to put in the BLACK BOX. We know designers who are willing to work on individual problems.

Consequently, if you don't see it here — ask us about it.

## PRE-PAID RETURN POST CARDS

Use the pre-paid return post cards in The BLACK BOX Catalog to:

- Order equipment
- Inquire about equipment
- ADD NEW NAMES to the catalog mailing list.

If you have a friend or an associate who should be on the list (or is always borrowing your catalog) — jot his name down on one of the attached cards, check the block that says "Please add me to the mailing list" and drop it in the mail. We will send a catalog that will include all the latest releases.



EXPANDOR INCORPORATED  
6022 BEATTY ROAD • MONROEVILLE, PA 15146 • (412) 373-0300

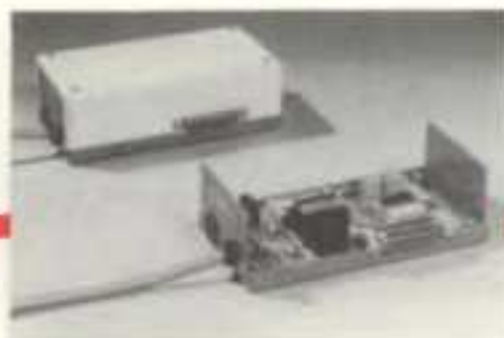
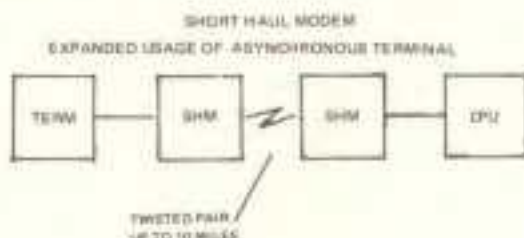


## Speed + Economy

# SHORT HAUL MODEM (SHM) (ASYNCHRONOUS)

- High Speed Asynchronous Transmission
- Asynchronous Transmission up to 9600 bps
- Point-to-Point, up to 10 miles
- Compact - easy to install - no adjustments

SHM is a short haul modem intended for asynchronous transmission over distances up to 10 miles. SHM may be used in a full duplex system allowing local communication between computers, displays, printers or any devices that are equipped with an RS 232 C or CCITT V24 interface. This compact unit is a natural for an in-plant or local building complex data communication system.



### Features:

- Data rates to 9600 bps
- Operates on twisted pair
- 2 wire, simplex or 4 wire, full duplex

### Specifications:

Interface — EIA RS-232 and CCITT V24

Transmission — asynchronous, full duplex

Speed — 0 to 9600 baud

Line — one twisted pair for simplex, two twisted pairs for full duplex

Current Loop — 10 ma

Max Distance —

9600	4800	2400	1200	600	baud
2	3	5	10	10	miles

(Shielded Cable — reduce distances by factor of 10)

Isolation — optical couplers

Test Voltage — 1.5 Kv

Power — 115 VAC, 60 hz, 0.1 A

Dimensions — 3.2 x 5 x 2 inches

Weight — 1 lb.

WARRANTY: One Year DELIVERY: From S

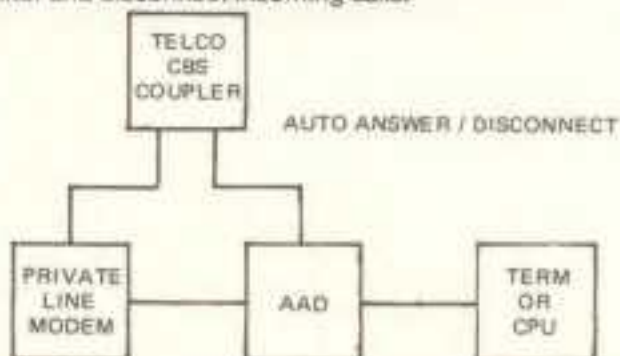
**BLACK BOX Price: \$165.00**

## New Use For Old Modems

# AUTOMATIC ANSWER/DISCONNECT (AAD)

- Use private line modems on DDD Network
- With Auto Answer
- With Auto Disconnect
- Save money - Add flexibility

The BLACK BOX Auto Answer/Disconnect permits the data communicator to utilize private line modems as auto answer modems over the dial network (DDD). AAD provides the proper connection between a terminal or computer port, a private line modem and a auto answer Telco coupler (CBS). AAD (which has a built-in abort timer) activates all the necessary functions to answer, monitor and disconnect incoming calls.



### Features:

Makes private line modems useful for auto answer DDD network.

Transparent to data and data rates.

Easy installation — Just plug in

Monitors for no data (wrong numbers), loss of data & loss of line.

Variable time-out sequence.

No external power required.

### Specifications:

Interface — Conforms to EIA Specification RS 232 C.

Coupler required — Telco CBS auto answer.

Connectors —

1 male & 1 female RS 232 connectors provided with all 25 pins connected.

2 wires for connection to coupler "RI" & "OH".

Time out interval — variable 30 seconds to 5 minutes.

Size — 1-1/2" x 2-1/2" x 3-1/2".

Weight — 1 lb.

WARRANTY: One Year DELIVERY: 30 days ARO

**BLACK BOX Price — \$96.50**



EXPANDER INCORPORATED  
510 SEATTY ROAD • MONROEVILLE, PA. 15146 • (412) 373-0000





Don't use a cross country modem  
for a local job . . . use the

## BLACK BOX LIMITED DISTANCE MODEM (LDM)

(Synchronous)



- Recoup your investment in 6 months or less
- Synchronous rates from 1800 to 19,200 bps - selectable
- Error free performance — one year warranty
- Built-in diagnostics
- Synchronous operation up to 19 miles

The BLACK BOX Limited Distance Modem (LDM), unlike across the country modems, is designed to provide synchronous, error free data communications over unloaded, metallic cable systems. LDM's unique design allows for data transmission within a local private cable system or within a telephone-company-supplied local exchange loop system. LDM offers high performance at high data rates with an "unlimited" savings.

### Features:

Conforms to Bell PUB 43401 (up to 9600 bps)  
Data rates up to 19.2 K bps  
Point to point or polled  
Synchronous transmission to 19 miles (see chart)  
Full duplex (4 wire) or half duplex (2 wire)  
Digital synchronization  
Internal or external clock

### Specifications:

Size: 2-3/8" x 10-1/4" x 13-5/8"  
Weight: 5-1/2 pounds  
Power: 115 VAC ±10%, 47-63 Hz.

### Diagnostics:

Analog loopback  
Digital loopback  
Remote loopback  
Test pattern generator  
L.E.D. monitoring (4)

WARRANTY: One Year DELIVERY: Stock to three weeks

**BLACK BOX Price: \$695.00**

LIMITED DISTANCE MODEM



Data Rate (bps)	Range (Feet)			
	No. 19 Wire	No. 22 Wire	No. 24 Wire	No. 26 Wire
1800	100,000	80,000	60,000	48,000
2400	100,000	80,000	60,000	45,000
3600	90,000	68,000	50,000	44,000
4800	80,000	60,000	45,000	30,000
7200	75,000	45,000	35,000	25,000
9600	70,000	44,000	30,000	22,000
14,200	62,000	38,000	26,000	18,000
19,200	52,000	22,000	22,000	15,000

### (Little black boxes)

Our logo of the black box came about because "the age of the black box is back." Remember years ago when everyone was looking for "that little black box?" (e.g. connect a key-punch to a typewriter?) Then, for a spell, the black box went out in favor of buying everything from one vendor (even if they didn't give you everything you wanted).

Now, with technology changing so rapidly, with com-

puters and data communications growing so rapidly, with terminals having baby after baby, — the age of the black box is back.

So we designed a logo to indicate that — and have dedicated a catalog to letting you know which black boxes are back. (Besides, maybe we can save a lot of people from re-inventing the wheel).



EXPANDOR INCORPORATED

612 BEATTY ROAD • MONROEVILLE, PA 15146 • (412) 373-0300



**EXPANDOR INCORPORATED**

612 Beatty Road Monroeville, Pa. 15146



Bulk Rate  
U.S. Postage:

**PAID**

Pittsburgh, PA  
Permit #2411