



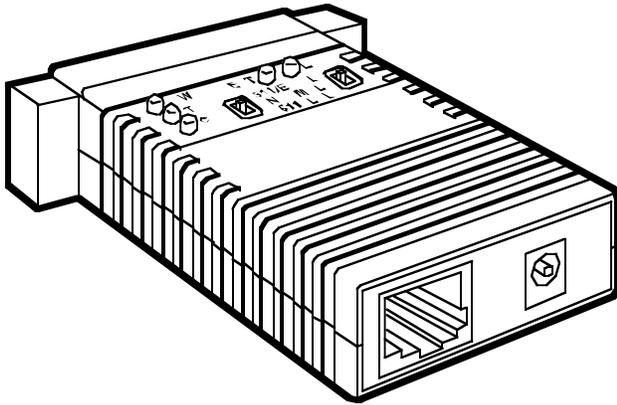
© 2003. All rights reserved.
Black Box Corporation.

BLACK BOX[®]

NETWORK SERVICES

Black Box Network Services • 464 Basingstoke Road • Reading, Berkshire, RG2 0BG • Tech Support: 0118 965 6000 • www.blackbox.co.uk • e-mail: techhelp@blackbox.co.uk

ASYNC/SYNC LINE DRIVER 56/64



*The short-range line drivers
that are long on options.*

Key Features

- ▶ **Selectable data rates of 32, 56, or 64 kbps.**
- ▶ **Half-duplex 2-wire operation or half- or full-duplex 4-wire operation.**
- ▶ **Point-to-point or multipoint operation.**
- ▶ **Two V.54 test modes and built-in V.52 BER test generator.**
- ▶ **Isolation transformers and Silicon Avalanche Diode surge suppressors.**
- ▶ **Standalone units or MicroRACK card versions available.**
- ▶ **Local analogue and remote digital loopback tests.**

If you're looking for line drivers that provide plenty of options for short-range data communication, the BLACK BOX[®] Async/Sync Line Drivers (A/SLD) 56/64 have the deployment flexibility you need.

Start with speed and operation. These drivers feature selectable data rates of 32, 56, or 64 kbps for transmission over unconditioned twisted-pair cable in either point-to-point or multipoint applications. They operate in async or sync modes, either half-duplex over 2 wires or half- or full-duplex over 4 wires.

The A/SLD units incorporate two V.54 test modes (local analogue loop and remote digital loop), and a built-in V.52 BER test generator outputs 511 and 511E bit patterns. LED indicators show you when the unit is performing the V.54 or V.52 tests.

NOTE: Async/Sync Line Drivers 56/64 must be used in pairs, with one at each end of the twisted-pair cable. In all applications, the twisted-pair wire must be between 19 and 26 AWG, unconditioned, dry, and metallic. Both shielded and unshielded cable yield favorable results. The drivers will not work with dialup analog circuits, such as those used with standard modems.

For protection against ground loops and surges, the Async/Sync Line Drivers 56/64 incorporate both isolation transformers and Silicon Avalanche Diode surge suppressors.

Standalone or modular models.

Choose from standalone and card versions of the Async/Sync Line Driver 56/64. The standalone versions feature DB25 male or female connectors for the data communications equipment (DCE) side. The card versions, which plug into the BLACK BOX[®] MicroRACK chassis, feature either DB25 female or M/34 female connectors.

The modular card, which is fabricated using the latest surface-mounted technology, comprises a main (front) module and an interface (rear) module. Both have 50-pin card-edge connectors that

mate inside one function-card slot of the MicroRACK chassis.

Only 3.5" (2U) high, each MicroRACK can hold 2, 4, 8, or 16 Async/Sync Line Driver 56/64 Cards. The rack uses mid-plane architecture that incorporates internal connectors that run down the chassis centre. Its front-facing buses accommodate the line drivers' V.35 device connectors, while the rear-facing buses receive the cards' RJ-45 line connectors. With the MicroRACK, you can hot-swap cards on the fly without shutting down your network.

A/SLD configuration and operation.

You typically connect the Async/Sync Line Drivers 56/64 to a DTE (data terminal equipment) device, such as a PC, printer, or terminal. Just plug the device into the V.35 port and tighten the connector screws. If the DTE has a DB9 male serial port, order our FA520A-R2 adapter. And, if you

(continued on page 2)

(continued from page 1)

must use a cable to connect the A/SLD to a DTE, you'll need a cable that's pinned straight through and is as short as possible (we recommend 6 ft. [1.8 m] or less).

To configure the line drivers, just toggle a series of DIP switches. These configuration devices enable you to select data rates, clocking methods, V.52 and V.54 tests, word lengths, signaling-rate range, sync or async protocol, and other options. The Standalone Async/Sync Line Driver 56/64 has two 8-position DIP switches (SW1 and SW2) mounted inside. On the card version, there's three 8-position DIP switches (SW1, SW2, and SW3), which are mounted on the circuit board of its main (front) module.

Set the switches, for instance, to determine which transmit-clock source the Async/Sync Line Driver 56/64 uses. By default, the drivers

use internal transmit clock source but can be changed to use receive-recover clock or external transmit clock sources.

You can also select carrier-control method to determine whether the carrier is "constantly ON" or "controlled by Ready to Send (RTS)." In the "controlled by RTS" setting, the A/SLD can support switched-carrier, multipoint, or hardware flow-control applications.

You also use the DIP switches to determine the amount of time the Async/Sync Line Driver 56/64 waits after it "sees" RTS before it sends CTS (Clear to Send). Possible settings are no delay, 7 ms, or 53 ms.

Once you configure each Async/Sync Line Driver 56/64 and connect the cables, you're ready to operate the units. They should operate transparently, as if there

were a standard cable connection between the two destination devices.

To monitor and troubleshoot operation, glance at the drivers' LEDs. The standalone A/SLD models feature five top-panel status LEDs, which indicate when it's receiving power, receiving data, detecting carrier, operating in loopback test mode, and when bit errors occur in 511 testing. The A/SLD card version has 11 front-panel LEDs. These include indicators for TD and RD data activity, RTS signals, detecting carrier, V.52 or V.54 tests, 511 tests, and power.

To check the operation of the Async/Sync Line Driver 56/64 units, you can perform local analogue loopback (LAL) and remote digital loopback (RDL) tests. Any data sent to the local line driver in LAL test mode will be echoed back

(returned) to the user device. For example, characters typed on the keyboard of a terminal will appear on the terminal's screen. The RDL test checks the performance of both the local and remote Async/Sync Line Drivers 56/64, and the communication link between them. Any characters sent to the remote A/SLD in this test mode will be echoed (returned) back to the originating device. For example, characters typed on the keyboard of the local terminal will appear on the local terminal's screen after having been passed to the remote Async/Sync Line Driver 56/64 and looped back.

Activating the V.52 BERT test injects a 511 test pattern into the local loop and confirms that the loop is in place.

Specifications

Approvals: FCC Part 15 Class A; DOC Class/MDC classe A; CE

Clocking: Internal, external, receive loopback

Data Format: Word length (including start bit, data bits, stop bits, and parity bit) must equal 8, 9, 10, or 11 bits (user-selectable)

Diagnostics: ITU-TSS V.54 remote digital and local analog loopbacks; ITU-TSS V.52 BERT testing

Distance (Maximum) (*):
19 AWG: 64 kbps: 5.3 mi. (8.5 km);
56 kbps: 6.8 mi. (10.9 km);
32 kbps: 9.1 mi. (14.6 km);
24 and 26 AWG will decrease distance

Flow Control: Transparent to all types of software (X-ON/X-OFF, robust X-ON/X-OFF, etc.) flow control; can be set to support hardware flow control

Line Type: (1) or (2) twisted pair

Operation: 2-wire half-duplex, 4-wire half- or full-duplex, point-to-point or multipoint

Protocol: Async or sync

Speed: 32, 56, or 64 kbps

User Controls: ME353A-M, ME353A-F: (2) toggle switches: Remote digital or local analogue loopback; 511 or 511/E V.52 diagnostics; (2) 8-position DIP switches: (1) for DTE loopback control, protocol, signaling-rate range, word length, and diagnostics; (1) for data rate, clock source, carrier control, and RTS/CTS delay;

ME356C, ME358C: (2) toggle switches: Remote digital or local analogue loopback; 511 or 511/E V.52 diagnostics; (2) 8-position DIP switches: (1) for data rate, clock

source, carrier control, and diagnostics; (1) for RTS/CTS delay, word length, signaling-rate range, protocol, and DTE loopback control; (1) jumper for 2-wire/4-wire operation; (3) frame-ground-connection jumpers: To Line Shield, DTE Shield (Protective Ground), and Signal Ground

Connectors: ME353A-M:

Device: DB25 M;
Line: RJ-45;
ME353A-F, ME356C:
Device: DB25 F; Line: RJ-45;
ME358C: Device: M/34 F;
Line: RJ-45

Indicators: ME353A-M, ME353A-F: (5) LEDs: Power, TD, CD, BERT, and LOOP;
ME356C, ME358C: (11) LEDs: (1) each for Power, Test, and Error; (2) each for TD, RD, RTS, and CD

Temperature Tolerance: ME353A-M, ME353A-F: 32 to 140°F (0 to 60°C); ME356C, ME358C: 32 to 122°F (0 to 50°C)

Humidity Tolerance: Up to 95% noncondensing

Power: ME353A-M, ME353A-F: 120-VAC, 60-Hz external power supply;
ME356C, ME358C:
From MicroRACK

Surge Protection:
Method: Silicon Avalanche Diodes;
Response Time: 1 ps;
Surge protection maximum:
600 watts dissipated after 1 ms

Size: ME353A-M, ME353A-F: 3.5"H (2U) x 2.1"W x 0.8"D (8.9 x 5.3 x 2 cm);
ME356C, ME358C:
3.1"H x 1.9"W x 5.4"D (7.9 x 4.8 x 13.7 cm)

Weight: ME353A-M, ME356A-F: 0.1 lb. (< 0.1 kg);
ME356C, ME358C: Total for main and interface modules: 0.2 lb. (0.1 kg)

* Distances shown are for two Async/Sync Line Drivers 56/64 operating under ideal conditions.

Why Buy From Black Box? Exceptional Value. Exceptional Tech Support. Period.

Recognise any of these situations?

- You wait more than 30 minutes to get through to a vendor's tech support.
- The so-called "tech" can't help you or gives you the wrong answer.
- You don't have a purchase order number and the tech refuses to help you.
- It's 9 p.m. and you need help, but your vendor's tech support line is closed.

According to a survey by Data Communications magazine, 90% of network managers surveyed say that getting the technical support they need is extremely

important when choosing a vendor. But even though network managers pay anywhere from 10 to 20% of their overall purchase price for a basic service and support contract, the technical support and service they receive falls short of their expectations—and certainly isn't worth what they paid.

At Black Box, we guarantee the best value and the best support. You can even consult our Technical Support Experts before you buy if you need help selecting just the right component for your application.

Don't waste time and money—call Black Box today.

Ordering Information

ITEM	CODE
Async/Sync Line Drivers 56/64 (V.35)	
Standalone	
DB25 Male (DCE)	ME353A-M
DB25 Female (DCE)	ME353A-F
MicroRACK Cards	
DB25 Female (DCE)	ME356C
M/34 Female (DCE)	ME358C
<i>To rackmount your line driver cards, you'll need a...</i>	
MicroRACK	
2-Port.....	RM202
4-Port.....	RM204
8-Port.....	RM208
16-Port	RM216
<i>For your MicroRACK, you'll need a power supply...</i>	
AC Power Supply.....	PS460A
48-VDC Power Supply	PS461A
<i>You may also need...</i>	
AT Adapter (Serial), DB9 Female/DB25 Male ...	FA520A-R2
GigaBase® 350 CAT5e, 350-MHz Bulk Cables, 4-Pair, 1100-ft. (335.3-m) Boxed Reel, PVC, Gray.....	EYN857A-1100
<i>If you want to connect the A/SLD to a V.35 DCE device, you'll need a special cable whose pinning will depend on your application. For more information, call Black Box Tech Support.</i>	