Product Specification

Carrier-band IEEE 802.4

CBM-1

The CBM-1 Monitor is a diagnostic and maintenance tool for mission-critical networks * that have to operate continuously. It is used to observe network operation and measure signals while the network and the control system are active. The Monitor is a passive instrument that examines the network hut does not interfere with its operation in any way. It is a valuable management and maintenance tool for use by field personnel and does not require extensive knowledge of network technology The Monitor is used to:

- Determine which stations** are active on the network
- Measure the signal level of each station and display current and low signal values.
- Examine signal reflections that indicate damaged cabling or loose connections.
- Measure noise to determine if there is noise pick-up or grounding problems on the network.

These measurements are used to verify that the network is operating correctly or to detect deteriorating network conditions so that steps can be taken to prevent network down-time or to help determine what has failed.

* The control network is defined in the IEEE 802.4 standard and is officially called the carrierband token passing bus. Control system vendors have their own trade names for this type of network.

**Stations are also called "nodes" or "devices."

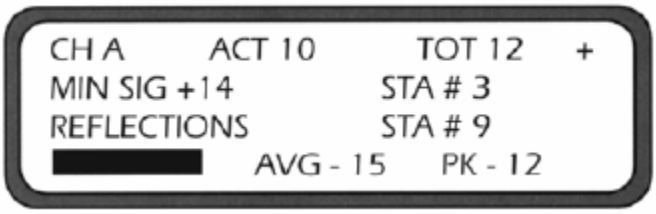
Product specifications are subject to change without notice.

2221 Yew Street
Forest Grove, Oregon 97116 USA
(503) 357-5607 or (800) 382-3765
FAX (503) 357-0491
www.relcominc.com

NETWORK MONITOR CBM-1

User Interface

The Monitor has a 20-character by 4-line display to show the Monitor's status or measurement results. The display can be backlit for better viewing in dark areas. A sample display is shown below.



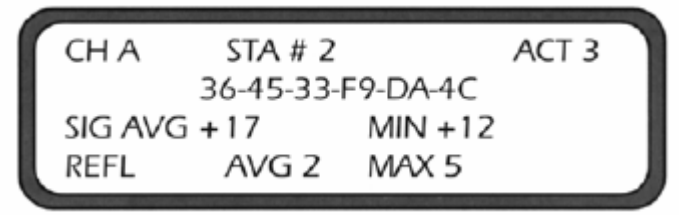
Line 1 shows the network segment being measured, channel A or channel B in dual redundant networks; the number of stations currently active in the logical ring; the greatest number of stations found on the logical ring during this measurement session and a character indicating if the network is currently active.

Line 2 shows the station with the lowest signal and its level.

Line 3 shows if the Monitor detects a significant reflection and from which station it can be best observed.

Line 4 shows the general noise level on the network wiring. This noise measurement is displayed in two ways. The bar graph shows the noise level as a moving bar The bar has a rapid attack time and a slow decay time so that noise bursts can be observed. The numbers in line 4 show the average and peak noise levels numerically.

The screen below shows information about a selected station.



Line 1 shows the network segment, A or B, the station number and the number of stations active at this time.

Line 2 shows the station's address.

Line 3 shows the present signal level and the lowest signal level recorded since the network was first scanned.

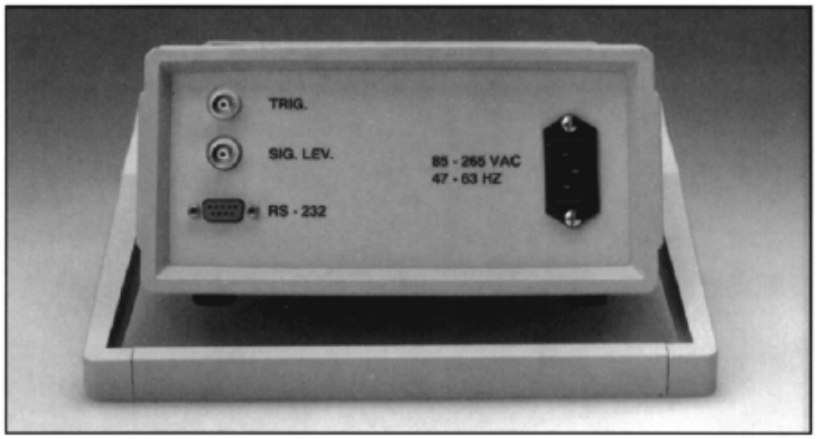
Line 4 shows the present reflection level and the highest reflection level recorded since the network was first measured.

Other displays are for prompts and for selecting Monitor options such as a display or backlighting.

Five push-button switches are used to operate the Monitor. Very little learning effort is required to use the instrument, and no extensive understanding of network technology is needed. The Operation Manual provides step-by-step instructions for the user to maintain or troubleshoot a network. Appendices provide in-depth explanations for those who are interested in more technical detail. For more information about the Monitor's operation, please call for a free copy of the CBM-1 Monitor Operation Manual.

POWER

The Monitor is powered either from 85 to 265 VAC or from its internal battery. The battery provides at least 2.5 hours of portable operation. The battery is charged when the Monitor is plugged into an AC power source.



Trouble-Shooting Features

The Monitor has a number of features that are used to locate network problems:

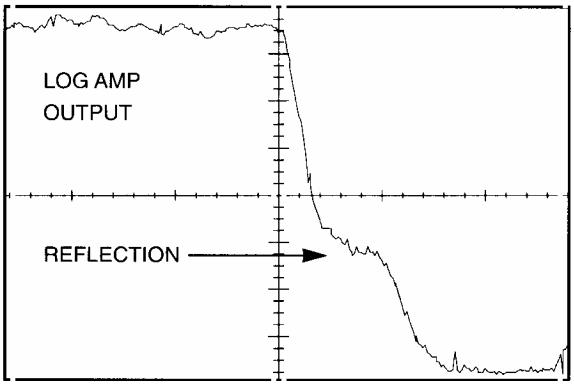
- An audio indicator sounds whenever a station enters or leaves the network. This feature is useful for finding loose connections. By shaking cables and listening to beeps, the source of the intermittent connection can be identified.

- The Monitor amplifies network signals so that they can be observed with an oscilloscope. A scope trigger is activated when a selected station's address is detected. The stations' signals can be observed in two ways:

  -The signal as it appears on the network's trunk cable.

  -The log-amp signal envelope allows noise to be observed down to -20 dBmV

These are useful for observing reflections at the end of the station’s transmission.



- The Monitor keeps a list of stations that have entered or left the network during a measurement session.

- The station addresses can be displayed in three types of user-selected formats (Ethernet type 48, 16 bit hexadecimal, or decimal addresses) to match the network documentation conventions of a particular installation.

- A stand-alone station can be measured and its address verified before it is attached to the network. This is used to determine if the new station is functional so it will not disrupt the network operation when it is attached.

PC and Remote Operation Option

The Monitor can be connected to either a local PC or through a modem to a remote PC. The Monitor PC software can control the Monitor and display the measurements on the PC screen. This capability allows the Monitor to be attached to a control network at a remote site and have it diagnosed by experts from a field office or factory location. Computer enhanced Monitor operation also allows network measurement data to be saved, incorporated into reports, or compared to previous measurements.

Accessories (Included with Monitor):

4 Probe Cables	Precision 75 Ω cables with BNC connectors, 1.5 m (5 ft.) long for connecting the Monitor to the network and to an oscilloscope.
2 Connector Adapters	BNC to F-type connector adapters.
Power Cord	IEC-325 to North America/Japan or Europe plugs.
Carrying Case	A padded nylon case with a pouch for carrying cables, other accessories and the Operation Manual.
Operation Manual	

Options:

PC Monitor Software	CBM-1S01	Software for operating the Monitor from a local or remote PC
RS-232 cable	CBM-1A001	1.5 m (5 ft.) cable with 9-pin connectors on both ends.
25-pin to 9-pin adapter	CBM-1A002	DB25 female to DB9 male.

Specifications, CBM-1:

Size	22 x 11 x 29 cm (8.75" x 4.25" x 11.25")
Weight	3.3 kg (7.25 lb)
Display	4 lines by 20 characters. Display area 7.5 x 2.5 cm. Character height 4.75 mm.
Switches	Membrane type with tactile and audio feedback
Power	85 - 265 VA, 47 - 63 Hz through IEC 325 plug, 20 W max.
Signal measurement range	+6 to +55 dBmV
Noise measurement range	-20 to +55 dBmV
Battery Operation	At least 2.5 hours from fully charged battery.
Operating Temperature	0 to 40°