**Description**
The ARC DETECT offers sophisticated ARCNET network analysis in a compact, handheld unit and is a valuable tool in maintaining an ARCNET local area network (LAN). The operator can determine which devices are connected to the network, the content of messages being sent, who caused a reconfiguration, and network performance. Using a backlit LCD display, the operator can scroll through the analyzer’s data buffer in order to study network traffic.

ARC DETECT consists of a handheld terminal with a 40 key membrane keyboard along with a 4 line by 20 character LCD display. A microprocessor and ARCNET communications controller are dedicated to capturing and storing the ARCNET traffic present on the network. Power is derived from a wall-mounted UL approved transformer. ARC DETECT is available for both coaxial and EIA-485 twisted-pair networks. The coaxial bus transceiver (-CXB) is used with bus networks. For star networks simply add a BNC tee and terminator which are included with the unit. The twisted-pair transceivers (-485) and (-485X) are used on EIA-485 DC coupled and EIA-485 transformer isolated networks respectively.

ARC DETECT is transparent to the network under test since it never joins the network (never participates in the token pass) yet it can examine all other nodes on the network. Since it can examine all nodes, complete traffic on the network can be analyzed including the content of packets. Using a unique filter option, only selected messages can be acquired allowing the operator to key on a particular event of significance. Because ARC DETECT is a real-time device, token rotation time can be displayed and other events can be time stamped as they occur.

**Benefits**
- Low cost network analyzer
- Simple to use and understand
- Rugged compact handheld design
- ARCNET compatible
- Extensive diagnostic capability
- Easy to read backlit LCD display
- Directly supports coaxial star and bus and twisted-pair AC or DC coupled EIA-485
- Carrying case for convenient storage
- Transparent operation to the network under test
- Ideal for field troubleshooting

**Applications**
- Plant floor troubleshooting
- Desktop network analysis
- Product development
- Network management

**Ten Diagnostic Functions**

**HELP**—ARC DETECT offers the operator an on-line help mode for each of the function keys. Simply depressing the “help” key, followed by the desired function key, will yield information about that function to be displayed on the screen. Help can be accessed at any time.

**NET MAP**—Network Map
All active node addresses on the network are displayed. An active node is one that participates in the token pass. Nodes that are added to the network are identified with a (+) sign beside the address.

Similarly, as a node leaves the network a (-) sign is appended to the address. Nodes that leave and enter networks may be the result of communication problems that degrade system performance. These problems are extremely difficult to detect, but ARC DETECT provides the clue.
RECON—Reconfiguration
A reconfiguration occurs when a node enters a network by first generating a reconfiguration burst that disrupts the normal token passing sequence. Although an inherent feature of ARCNET, excessive reconfigurations could be the result of a marginal network. ARC DETECT counts reconfigurations and displays the changes in the network map after a reconfiguration occurs.

TOKEN TIME—Token Rotation Time
The time it takes for any one node to pass the token and receive it again is called the token rotation time. ARC DETECT determines the actual token time and displays the result continuously. The maximum token rotation time is also displayed thereby indicating the worst-case response of the network. Token rotation time is an indication of the real-time performance of the network.

LOAD FACTOR—Network Performance
Network performance can be measured using three parameters: packets/sec, bytes/sec and bits/sec. All three are displayed dynamically with the maximum amount stored and displayed along with the current value.

PACKET ASCII—Packets Displayed in ASCII
The contents of the acquired packets are displayed in ASCII format. ASCII control characters that cannot be displayed are represented by a (.). Displayed with the data are the source node address, destination node address, and packet size in either hexadecimal or decimal form depending upon the HEX/DEC selection.

PACKET HEX—Packets Displayed in Hexadecimal
The contents of the acquired packets are displayed in hexadecimal format. Also displayed with the data are the source node address, destination node address, and packet size in either hexadecimal or decimal form depending upon the HEX/DEC selection.

PACKET COUNT—Packet Count
ARC DETECT counts the number of packets transmitted or received by each node. Messages are comprised of packets and by knowing the amount of packets sent, the operator can determine which nodes are creating the most network traffic.

PACKET SIZE—Packet Size
ARCNET allows for variable length packets and ARC DETECT records the minimum and maximum length packets sent from each node. This information is handy in determining if network traffic is occurring as expected. The average length packet is displayed as an indication of throughput.

SET FILTER—Set Capture Parameters
In order to avoid the acquisition of superfluous data, data can be filtered based upon capture parameters selected by the operator. When this mode is selected, various parameters are displayed with an "XXX" designation alongside. By changing the designations to desired values, only that data that corresponds to the designated parameters will be acquired. A particular parameter is ignored if the designation field is left as an "XXX." Parameters that can be assigned and their ranges are as follows:

<table>
<thead>
<tr>
<th>Parameters</th>
<th>Symbol</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Source node address</td>
<td>SID</td>
<td>1-255</td>
</tr>
<tr>
<td>Destination node address</td>
<td>DID</td>
<td>0-255</td>
</tr>
<tr>
<td>Packet size</td>
<td>CNT</td>
<td>1-508</td>
</tr>
<tr>
<td>Buffer offset</td>
<td>BUFOFF</td>
<td>1-508</td>
</tr>
<tr>
<td>Data</td>
<td>VALUE</td>
<td>00-FF (hex)</td>
</tr>
</tbody>
</table>

Parameter values can be entered in either hexadecimal or decimal form depending upon the mode selected.

For example, to view all broadcast messages, set the DID to 0 and only broadcast messages will be captured. By setting the SID to 255 and DID to 0, only those broadcast messages from node 255 (decimal) will be captured. Other capture constraints are possible using this very flexible format.
F1, F2, F3—User Functions
Three function keys have been reserved for future features or for special tests. Contact factory with any special requirements.

Five Indicators
There are five LED indicators that depict ARC DETECT’s modes of operation.

**MODE—located above SNAP SHOT**
Indicates that a single event acquisition is taking place.

**MODE—located above CONT UPDATE**
Indicates that the unit is continuously acquiring data.

**BASE—located above HEX/DEC**
Indicates that ARC DETECT is in hexadecimal mode.

**TIME—located above ABS/DELTA**
Indicates that the absolute mode has been selected.

**ERROR—located above CONFIG/SETUP**
Indicates an error has occurred.

**SNAP SHOT—Single Event**
When this mode is selected, ARC DETECT immediately acquires data for the function selected. Once the data changes for any reason, acquisition stops; however, the display will indicate the changed data. This mode is useful when the operator desires to capture a single event. Depressing the mode button again results in another event being captured. This mode is applicable to PACKET ASCII, PACKET HEX, NET MAP and RECON functions.

**CONT UPDATE—Continuous Update**
In this mode, data is continuously acquired until this mode is exited. This is the normal operating mode where the display is continuously updated with the acquired data. Depressing this mode button suspends acquisition so that the operator can analyze the readings. Depressing the mode button again resumes acquisition.

**ABS/DELTA—Absolute or Relative Time Stamp**
When packets are being monitored, their reception is time stamped relative to the beginning of acquisition. This is called the absolute (ABS) mode. If it is desired to display the time between packets, the relative (DELTA) mode is selected. Each representation is displayed by simply toggling this mode key.

**CONFIG SETUP—Configuration and Setup**
Depressing the configuration key allows the operator to view ARC DETECT’s current configuration. Newer ARCNET technology allows for variable network speeds and ARC DETECT can be configured for different data rates. Available data rates are 2.5 Mbps, 1.25 Mbps, 625 kbps, 312.5 kbps, and 156.25 kbps. The different data rates are only applicable to EIA-485 transceivers.
### Specifications

**Carrying Case**
- **Functional:** Charcoal gray textured case with latches, handle, and inside foam protection
- **Material:** High density polyethylene
- **Dimensions:** 4"H x 15.5"W x 13.31"D
  (101 mm x 393 mm x 338 mm)

**Shipping Carton**
- **Dimensions:** 4 1/2"H x 15.75"W x 14.25"D
  (114 mm x 400 mm x 361 mm)
- **Shipping Weight:** 6 lbs. (2.7 kg)

**Power Supply**
- **Functional:** Wall-mount plug-in, 2 prong
- **Dimensions:** 2.95"H x 2.72"W x 1.93"D
  (74 mm x 69 mm x 49 mm)
- **Material:** Impact resistant black thermoplastic
- **Electrical:** Input 105-129 VAC 60Hz 0.15A
  Output +5VDC 0.5A
- **Cord:** 7' (2 m) long with molded plug
- **Temperature:** 0–40°C operating
- **Agency Approval:** UL

**Handheld Unit**
- **Material:** Case is ABS. Plastic display window and keypad overlay are a polyester-polycarbonate blend.
- **Keypad:** 40 key embossed legend over steel snap dome
- **Display:** 4 line x 20 characters backlit supertwist LCD
- **Case color:** Grayhound 3501
- **Connectors:** ARCNET via BNC
  Power via Switchcraft #712A jack
- **Agency Approval:** FCC Part 15 Class A

### Ordering Information

Included with the ARC DETECT are a wall-mount power supply, 10' (3 m) RG-62/u coaxial cable, BNC tee connector and 93 ohm terminator. Order by the following numbers:

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARCDETECT-CXB</td>
<td>ARCNET network analyzer—coax bus</td>
</tr>
<tr>
<td>ARCDETECT-485</td>
<td>ARCNET network analyzer—DC coupled EIA-485</td>
</tr>
<tr>
<td>ARCDETECT-485X</td>
<td>ARCNET network analyzer—AC coupled EIA-485</td>
</tr>
<tr>
<td>ARCDETECT-HOL</td>
<td>wall-mounted holster</td>
</tr>
</tbody>
</table>

### Connecting ARC DETECT to a Network

ARC DETECT is available with a coaxial bus transceiver (-CXB) and is primarily intended for hubless systems, although it can function with active hubs. Connect a BNC tee connector and terminator (included with the unit) to the top of the ARC DETECT. Remove the terminator at one end of the bus segment and connect a 10' coaxial cable between the ARC DETECT and the port where the terminator was removed. ARC DETECT can also be inserted in the middle of a bus segment but without the terminator. The -CXB version can still be used with an active hub. Using the BNC tee connector and terminator, connect the 10' coaxial cable to an unused coaxial port on the hub. The -CXB version is not recommended for use with passive hubs.

The ARCDETECT can also be used with EIA-485 networks, cabling rules are similar to coaxial bus systems and an RJ-11 tee connector and terminator are provided with the (-485) and (-485X) models.

Active hubs such as Contemporary Controls' MOD HUB and AI are required for monitoring networks with either twisted-pair or fiber optic segments. Simply connect the ARCDETECT-CXB to an unused coaxial baseband port following the rules stated above.

For hubless systems, connect the ARCDETECT-CXB to either end of the bus segment along with a terminator. No terminator is used for connection within the segment.