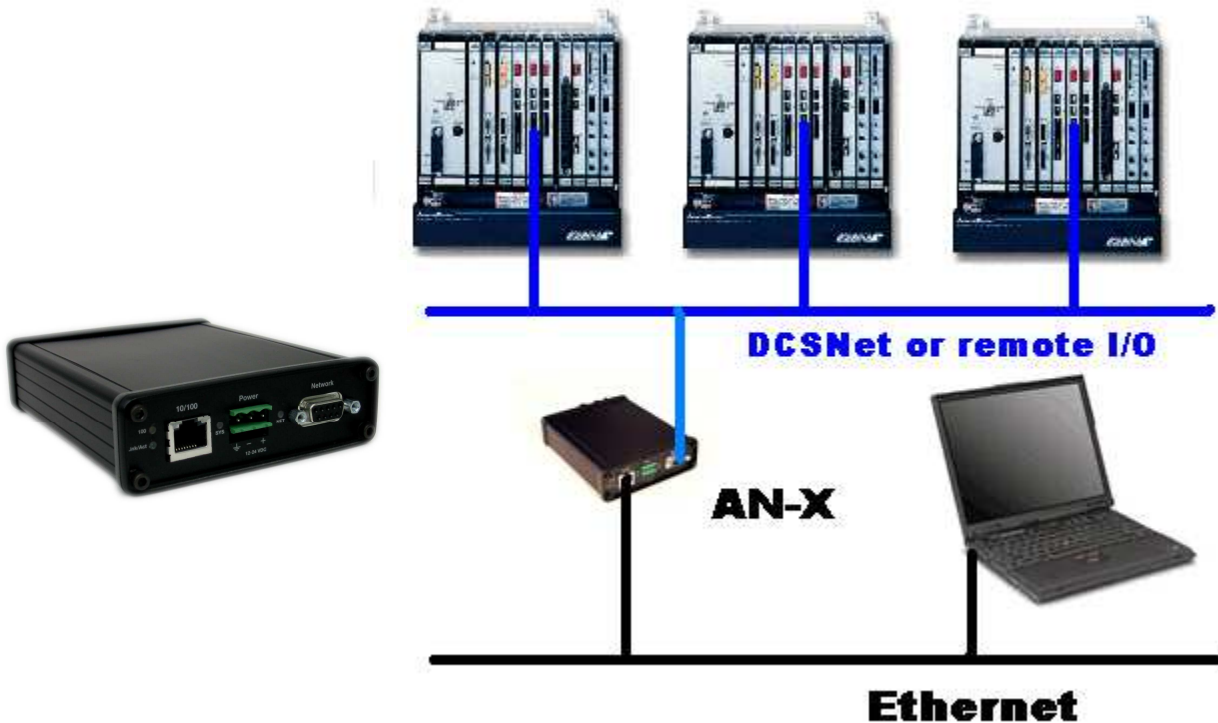


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Automation Network X-Change

AN-X-AMXCAPT Module



The AN-X-AMXCAPT module lets you capture, store and analyze network data on a Reliance AutoMax DCS or remote I/O network. Use it to examine the behavior of all drops, verify network data and timing, locate network errors and troubleshoot problems with the network and with the process.

The AN-X-CAPT module does not occupy a drop on the network or affect existing network traffic in any way.

The AN-X-AMXCAPT module:

- captures and stores ALL network frames, with timestamps to microsecond precision
- uses post-capture filtering to select frames of interest for further analysis

This approach ensures that everything leading up to an event of interest is preserved. The alternative approach, pre-filtering and saving only certain messages, might cause you to lose key information.

There are two operating modes:

- continuous, captures all frames until stopped
- ring-buffer, preserves frames from a user-specified number of minutes before stopped. At the end of each minute, a new file is created and the file older than the keep time is deleted.



Typical capture file size is 2.5 megabytes/minute, 150 megabytes/hour, 3.6 gigabytes /day.

The AN-X-AMXCAPT module is field upgradeable. The AN-X operating system and firmware can be upgraded over Ethernet.

Filtering

The filtering is extremely flexible. For example, you can select frames:

- to and from a single drop
- with errors
- by type (I/O updates, directed messages, etc.)
- with specific data values

You create an equation that defines the criteria used to select frames of interest. The equation consists of data values and operators.

Data values

Equations can contain the following data values:

frame status (STS)

frame length (Len)

frame type (CTL)

frame destination (DST)

frame drop (Drop)

frame data values (DataByte or DataWord)

user parameters (CmdArg)

constants, decimal or hexadecimal

Operators

Equations can contain the following operators :

<> != <= >= == = && AND || OR & | ^ * / % + - < > ! ~ ()

Example: This equation selects frames where the first broadcast data register has a value between 12000 and 12100

CTL & 0x0F

AND

(DataWord[0] >= 12000 AND DataWord[0] <= 12100)

Example: The following equation selects frames with errors

STS <> 0

Captured Data

You can control how captured network frames appear, including:

- format of timestamps
- format of data – hexadecimal, unsigned or signed integer, binary
- timing information – values and text graphs of time between frames and time from the start of one selected frame and the start of the next
- display of frame CRCs
- detailed status information for frames

The following capture shows updates for drop 1 on a DCS network. Frames have been truncated for clarity. The variations in the update time result from the fact that drop 1 is also being used to send programming software messages.

Ref	Timestamp	Delta time and graph	Frame data
103:	a 0.181,628 d	5.478 d.....	255< 06^ 1- 0000 0000 0000 0000...
106:	a 0.187,119 d	5.491 d.....	255< 06^ 1- 0000 0000 0000 0000...
109:	a 0.192,617 d	5.498 d.....	255< 16^ 1- 0000 0000 0000 0000...
116:	a 0.201,783 d	8.702 d.....	255< 06^ 1- 0000 0000 0000 0000...
119:	a 0.206,277 d	5.494 d.....	255< 06^ 1- 0000 0000 0000 0000...
124:	a 0.213,124 d	6.847 d.....	255< 06^ 1- 0000 0000 0000 0000...
127:	a 0.219,628 d	5.504 d.....	255< 06^ 1- 0000 0000 0000 0000...
130:	a 0.224,143 d	5.515 d.....	255< 06^ 1- 0000 0000 0000 0000...

The capture also shows a text graph, shown as a series of dots, of the delta time, the time from the start of the previous selected frame to the start of the current frame.

The next capture shows frames with errors

Ref	Timestamp	Error	Frame data
1705:	a 0:07.154,800	c.a.255< 05^	1- 00 00 00 00
1706:	a 0:07.479,070	cn..255< 00^	
1707:	a 0:07.481,057	c...219< 01^	78-

The capture shows the cause of the error, c for CRC error, n for noise error, a for abort error, and v for overrun.

Specifications

- Power requirements: 12 - 24 VDC, 4 watts typical
- Dimensions: 107 mm X 126 mm x 34 mm (4.18" x 4.97" x 1.33"), not including connectors
- Desktop use or DIN mountable

Related Products

- AN-X-DCSNet – master or slave on DCSNet, supports AutoMax programming software
- AN-X-AMXRIO – scanner for AutoMax remote I/O

The AN-X Product Family

Automation Network X-change (AN-X) is a product family designed by Quest Technical Solutions as a flexible platform for connecting to and monitoring automation networks.

A computer or other device (PLC, etc.) connects to AN-X via Ethernet, using one of a number of supported protocols.

The AN-X hardware consists of two parts:

- the main board that contains the processor, RAM, FLASH memory, FPGA and Ethernet hardware. This board is common to all versions of AN-X.
- a network-specific daughterboard that contains the hardware required to access the automation network

QTS is continually adding support for other networks. Contact us for information on the availability of an AN-X module for your network.

About QTS

Quest Technical Solutions is a provider of industrial communication hardware and software. Quest employees have many years combined experience in developing industrial communications solutions.

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