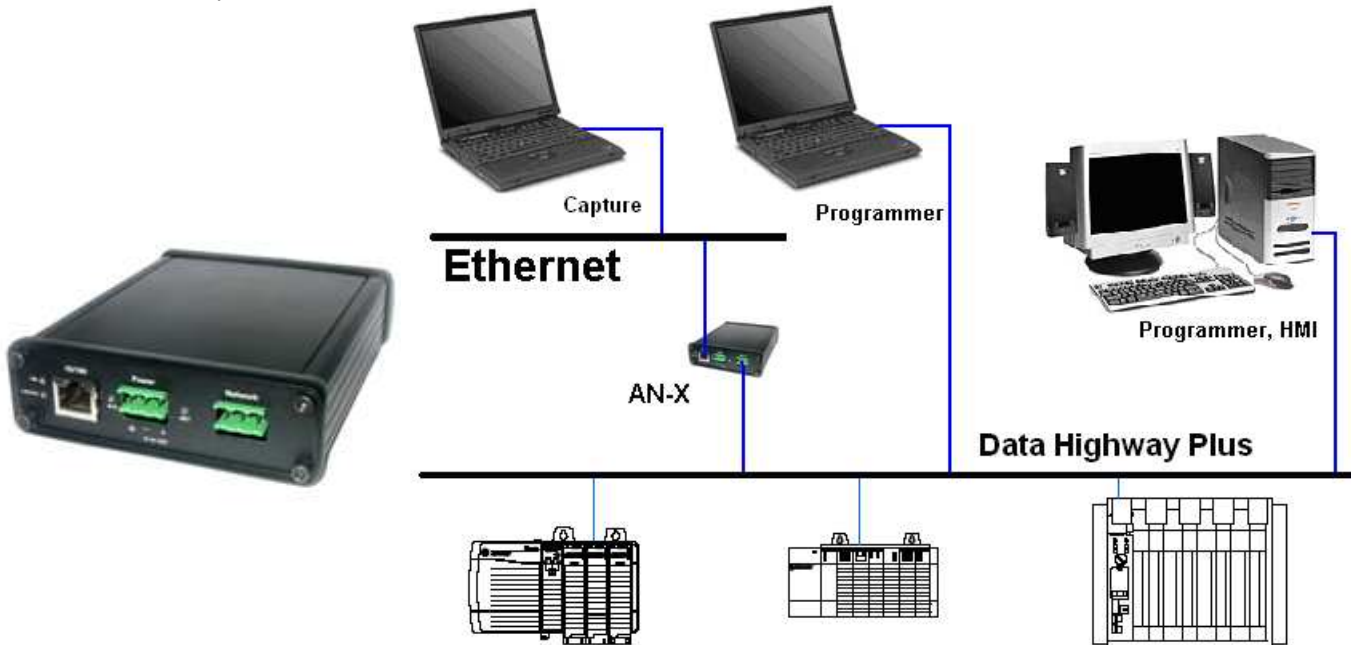


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# Automation Network X-Change

## AN-X-ABCAPT Module



The AN-X-ABCAPT module lets you capture, store and analyze network data on an Allen-Bradley Data Highway Plus or remote I/O network. Use it to examine the behavior of all stations, verify network data and timing, locate network errors and troubleshoot problems with the network and with the process.

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

The AN-X-ABCAPT 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 (depends on baud rate and network traffic).

The AN-X-ABCAPT 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 station
- frames with errors
- frames by type (messages, token passes, etc.)
- frames by message type (Cmd, Fnc, sts, etc.)
- frames 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 (FrmSts)

frame length (Len)

frame destination (DST)

frame type (CTL)

frame source (Src)

PCCC message command (Cmd)

PCCC message function (Fnc)

PCCC message status (sts)

frame data values (DataByte or DataWord)

user parameters (CmdArg)

constants, decimal, octal or hexadecimal

### Operators

Equations can contain the following operators :

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

**Example:** This equation selects frames where the PCCC message status is non-zero

(CTL & CTLMASK) = CTL\_MSG

AND

(Sts <> STSOK)

## Captured Data

You can control how captured network frames appear, including:

- format of timestamps
- 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 Data Highway Plus messages exchanged between stations 3 and 77 octal

10: a 0.785,280 d 0.016.649 077< 05^ 003> 00 0f 00 b3 06 00 00 00 01 00 00 24 4e 37 3a 30 00 65 00

20: a 0.811,456 d 0.026.712 003< 05^ 077> 00 4f 00 b3 06

23: a 0.820,895 d 0.008.439 077< 85^ 003> 00 0f 00 b4 06 01 00 00 01 00 00 24 4e 37 3a 30 00 02

30: a 0.839,751 d 0.018.856 003< 85^ 077> 00 4f 00 b4 06 65 00

36: a 0.855,881 d 0.016.666 077< 05^ 003> 00 0f 00 b5 06 00 00 00 01 00 00 24 4e 37 3a 30 00 66 00

43: a 0.874,509 d 0.018.628 003< 05^ 077> 00 4f 00 b5 06

The first frame consists of:

- a reference number (10)
- the timestamp (a 0.785,280)
- delta time, since previous frame (d 0.016.649)
- destination (077<)
- frame control, identifies the frame type (05)
- source (003)
- remote byte (00)
- PCCC Command (0f)
- PCCC status (00)
- PCCC transaction number (b3 06)
- rest of PCCC message data

The next capture shows frames with errors

6690: a25.087,248 c...000< 99^ 201>

7308: a26.850,022 cn..077< 00^

7903: a28.729,112 .n..044< 01^ 003> 077-

7904: a28.810,062 c.a.FrmLen?(2)34 81

9852: a35.141,710 c...006< 01^ 003> 201-

10188: a36.277,163 c...004< 81^ 003> 175-

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-DHP – Data Highway Plus module, for use with programming software or OPC/DDE servers

## 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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