

BRÜEL&KJÆR[®] Data Acquisition Hardware

LAN-XI Open API

LAN-XI data acquisition hardware is a versatile system of modular hardware that can be used as a stand-alone, single-module front end, as part of a distributed module setup, or collected in 5- or 11-module frames. Every module has a rugged industrial design that is well-suited for use in the field, and with interchangeable front panels, the module can be easily reconfigured with different connectors. Battery and wireless modules allow for portable measurement tasks.

LAN-XI is the front-end hardware to use with Brüel & Kjær's measurement and analysis software platforms, BK Connect® and Test for I-deas. In order to benefit from the reliability and versatility of LAN-XI when controlling LAN-XI from third-party software, use LAN-XI Open Application Protocol Interface (API).

Uses

- Programmer's interface to LAN-XI modules for customised remote control and access to real-time data
 For example, create custom software to:
 - Set up one or more LAN-XI modules as a single data acquisition front end, using a variety of synchronisation methods, including PTP
 - Configure the module(s), including the number of channels to use, bandwidth, filter settings, CCLD and polarization voltage
 - Stream 24-bit samples in real time, or record to SD card in BKC or WAV format
 - Manage generator outputs and CAN functionality in modules that support this
 - Perform TEDS detection and read back the results

Features

- Control the LAN-XI measurement process with your own code
- Live-stream data from LAN-XI into your application. Alternatively fetch files recorded on the SD card
- Live-stream data to LAN-XI generator outputs or use waveform generators in the module
- Use a single LAN-XI module or multiple PTP-synchronised modules together

Benefits

- Use modern Web-type REST and JSON libraries from any modern programming language
- · Works with all standard operating systems



What is the LAN-XI Open API?

The Open API interface is a wire protocol based on REST and JSON – technologies known from the Web. This allows you to use it from your own programs. Through HTTP commands (GET, PUT and POST) you control settings in the module and set up TCP sockets that stream data to and from your program. Use languages like C#, Objective-C, Python® or C/C++. A user guide with a description of the commands is included and samples are available at GitHub® (mostly in C#).

Access to the API

LAN-XI modules running firmware version 2.10.0.344 or higher have access to LAN-XI Open API.

Open API comprises BZ-5951-L-N01 (input channel streaming), BZ-5952-L-N01 (output channel streaming) and BZ-7848-A (stand-alone recorder). These three licences will appear as permanently installed on the module's Licences web page.

BZ-7848-A LAN-XI stand-alone recorder	Permanent
BZ-5951-L-N01 LAN-XI input channel streaming	Permanent
BZ-5952-L-N01 LAN-XI output channel streaming	Permanent
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Add

Input Streaming - BZ-5951-L-N01

Raw data is received as streamed 24-bit integers from the LAN-XI module. The application receiving the data should scale it according to the sensitivity of the sensors used. If TEDS (Transducer Electronic Data Sheet, IEEE 1451.4) is used, the sensitivity can be read programmatically. By default, samples from all active channels are received in blocks in a single socket. It is, however, possible to set up LAN-XI to deliver each channel in a separate socket.

Output Streaming - BZ-5952-L-N01

Raw data can be streamed from your program as 24-bit integers. Alternatively, use one of the waveforms supported by the built-in generator. These features are only available with LAN-XI modules with generators.

LAN-XI Notar Stand-alone Recorder

Notar BZ-7848-A allows you to record time data to an SD memory card in a LAN-XI module. This makes the LAN-XI a small and rugged data recorder. The recorder is set up through the module's home page. This means that any PC, PDA or smartphone with a browser can be used (may require wireless access point or 3G modem).

Specifications - LAN-XI Open API

Supported All LAN-XI modules are supported, except 4-ch. Input/HS-LAN-XI Modules Tacho + 8-ch. Aux. Module LAN-XI 51.2 kHz Type 3056 Client LAN-XI Open API can be used by any client such as PC, Requirements Mac®, smartphone, tablet, etc. Use any programming language with libraries that support sockets and preferably Web (HTTP) · LAN-XI Open API is a tool for programmers and as such programming skills are required to use it LAN-XI is controlled via Ethernet and TCP/IP. Connection Commands and data can be routed over the Internet All tests are done using IPv4. IPv6 works in principle, but is not tested The LAN-XI module (server) supports multiple clients. This allows you to set up the module from one client and subscribe to data from another. NOTE: At the highest sample rate, the module can only stream to an SD card or an external client (for example, a PC) All input channels in a module are sample-synchronous. Synchronization Multiple modules may be set up to use PTPv2 (IEEE1588). With a good PTP switch in a starconfiguration, the jitter between any two input channels in the system will be less than 50 ns Output channels are similarly synchronised NOTE: LAN-XI Light modules do NOT support PTP TEDS All LAN-XI modules support TEDS - IEEE 1451.4. Sensitivity read by this is available on the API Generators Each generator output connector can either receive a stream of raw data from the client, or a sum/multiplication of two internally generated signals from the following list: DC, sine, square, lin/log sweep, random, pseudo-random Samples are available at Github/hbk-world/LAN-XI-Open-Code Samples API-Examples. Use Git to clone or fetch as zip file

Synchronisation

Multiple modules can be set up to run sample-synchronously. This requires a few extra programming steps. This is not possible with LAN-XI Light modules (Types 3676 and 3677).

Debugging

Since standard Web technology is used, with all commands written in JSON, debugging is relatively straightforward. Use standard tools, like Postman® for testing commands and Wireshark® for monitoring the communication.

Technical Support

Customers who purchase M1S-5959-L-N01 have access to telephone and email technical support by an application engineer. The agreement covers all API-enabled LAN-XI modules at one site, so if you have, for example, 10 LAN-XI modules at a site, you will only need one M1S-5959-L-N01 support agreement. It is not obligatory to purchase M1S-5959-L-N01 if technical support is not required.

Ordering Information

Contact your local Brüel & Kjær sales representative for more information

TECHNICAL SUPPORT

M1S-5959-L-N01

 Annual Software Support Location Agreement for LAN-XI Open API (support agreement subscription, does not cover maintenance)

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