RELEASEnotes — eDAQ XR

September 2018
Version 2.6.0

Thank you for choosing HBM for your test, analysis and measurement task. This document shows the released product package of eDAQXR. Please always check whether an updated version is available at: http://www.hbm.com. Please note that the firmware has been optimized. We recommend installing the latest firmware on all existing modules.

What's new?

Modules / Firmware
- **Firmware**
    - o eDAQXR Firmware Version 2.6.0
    - o MX Module Firmware Version 4.12.20.0
        - Included in eDAQXR firmware to update from the Web Interface.
- **New Module Support**
    - o None

Software Tools / Libraries
- **Software Updates**
    - o eDAQXR Emulator v2.6.0
    - o XR Download Manager v1.2.2

Documentation
- **New Documentation**
    - o None
- **Updated Documentation**
    - o eDAQXR User Manual   Version 5.0
    - o MX Modules User Manual (English / German)   Version 6.0
    - o eDAQXR Safety Manual (English / German)   Version 2.0

Accessories
- **New Accessories**
    - o None
- **Updated Accessories**
    - o None

A complete listing of all supported modules, accessories, and documentation of the eDAQXR line is available at the end of these release notes.

Notes about the eDAQXR firmware v2.6.0

- **New Features**

    - **Vector CAN Database Editor.** CAN databases that are imported which are Vector format are now editable within the same dialog if changes to the database are necessary. This eliminates the need to change the dbc file, and reimporting it in order to make changes. The user can now make direct changes to the Vector CAN database as imported.
    - **System Information / Status Page.** A new system information and system status page has been added for technical information of the system in use.
    - **New Single Channel Editor.** The Single Channel Editor dialog has been enhanced significantly to provide user feedback on channel configurations, live data read out when performing tasks such as calibrations, shunts, and editing database parameters. Also the single channel editor has been redesigned to improve usability, and optimized for performance.
    - **Remote control mode support for Mode 2 Networking.** When running tests using Mode 2 Networking, support for the remote control mode has been added.
    - **Zero channel on every normal SIE test start.** A new feature has been added to support zeroing channels on every normal SIE test start. More information can be found in the help system.

- **Optimizations**

    - **Plotter supporting greater user customization of legends rendering.** Users now have added customizability control over the rendering of plot legends.
    - **Over Range Detector extended to support user configurable metering parameters.** The user can now configure the Over Range Detector metering parameters. See the help system for more information.
    - **Default bridge factor is set as a function of bridge type.** The default bridge factor will now be changed depending on whether the user is using a quarter bridge, half bridge, or full bridge.
    - **Remote control functionality improved.** The suspend mode has been removed as a part of the remote control test start and stop functionality.
    - **Live update start and stop extended to the test control page.** Previously the live update start and stop feature was only available in the Setup page. Now it is available in the test control page to aid the user in making changes to charts as they configure them.
    - **Usability enhancements in adding input channels.** Significant usability improvement made for adding input channels from the XR system resident SXR file set. The SXR file resident input channel can be added even when the defined connection has already been used in the open SXR file being edited. In this case, one of the channels with the duplicate connection will be red lined; however, the user can use the Change device task to reassign the connection to clear the conflict.
    - **Improved chart creation, removal, and switching of chart type.** Significant enhancements were made in how to create charts, remove charts, and switch an existing chart from one type to another type of chart.

- **Bugs Fixed / Issues Resolved**

    - **"Sava data file as" field issue with certain extensions.** Previously when attempting to put a filename with extension ".sie", the result would be an undeletable SIE file. This issue has been corrected.
    - **MX840 with Pulse or Encoder Frequency channels issue.** Fixed an issue with data spikes occurring on MX840 channels using Pulse or Encoder frequency channels. Previously, spikes would occur on MX840 channels configured as Pulse frequency or Encoder frequency channels whenever there were no pulses from the sensor for a period of

approximately 107 seconds. The magnitude of the spikes would vary and were not deterministic.

- o **EDIO input and output channel definitions issue.** Fixed an issue with the system allowing legacy EDIO input and output channels to be defined using the same pin, which resulted in either invalid input data or incorrect output behavior.
- o **Customer service package export when storage is full.** Previously when the system storage was full, it was not possible to export a customer service package. This issue has been resolved.
- o **Test issue when MX Units Parameter is empty.** Previously when a setup contained an empty Units parameter for MX units, the test would not start properly. This issue has been resolved.
- o **Burst Message Logger DataMode and test end issue.** In certain configurations when using the Burst Message Logger DataMode, there would be missing data from the trigger point to the end of the test. This issue has been resolved.
- o **Message Logger DataMode and trigger issue.** When using the Message Logger DataMode, and a trigger to instigate data collection, the test would stop on error. This issue has been resolved.
- o **Issue with filenames on systems with large numbers of SIE files.** When a large number of SIE files exist on the system by means of running cyclical tests, the SIE file names can become all the same in certain situations. This issue has been resolved.
- o **Automatic test restart issue with large number of SIE files.** Fixed a problem with Mode 1 and Mode 2 networked eDAQXR tests resetting on "Unexpected channel disconnects from test engine" errors when there were a large number of SIE files (i.e., 250 or more typically) resident across the network nodes. This problem would occur with less SIE files if there are several EBRG or EHLS layers with the Analog output hardware present.
- o **Data skew issue with CAN or GPS channels in a networked test issue.** Fixed a bug that would result in the eDAQ layer channels on a network node being out of phase with the eDAQ layer channels on other nodes in the networked system. This could occur using Mode 1 or Mode 2 networked tests. The data skew is always 0.25 seconds when this occurs. The can only happen if CAN or GPS channels are used in one or more of the network nodes. This was not a deterministic bug (i.e., for any given test this may or may not happen from one test start to another). However, in systems where some one or more of the nodes does not have CAN or GPS channels defined, this problem shows up most of the time (i.e., up to 90% likelihood based on limited testing).
- o **Requires User Action. Layer discovery, and invalid data issue with eDAQXR EBRG layer.** Fixed an issue with the eDAQXR Linux driver that resulted in two problems. First, eDAQXR layers would not always be discovered after a power cycle, firmware update, or software initiated reboot. For networked systems with many layers, this happened fairly frequently. Second and more critical, eDAQXR EBRG layers would sometimes be discovered, but would not be properly configured after a power cycle, firmware update, or software initiated reboot. The data for the layer channels would be invalid and typically just show noise around a fixed value. Physically disconnecting the sensor would not change the data generated. This has always been seen on all 16 channels in a layer. Since there was no error generated by the eDAQXR, when this occurred, it is quite possible that this has affected some SIE file data!
- o **CAN Issues with multiple channels utilizing the same CAN message ID.** Fixed a bug with the XR CAN interface which caused the system to error reset if more than 32 CAN channels have the same CAN message ID.
- o **Test restart issue when running a test with CAN channels near performance limit.** Fixed a bug that resulted in the system not automatically restarting a test that error reset due to CAN buffers overflowing. This bug was observed in a test that was running near 100% CPU load with over 1000 CAN channels and over 60 analog channels.

- **New or revised issues and advisories**

  - **Legacy eDAQ discovery after firmware update.** The legacy eDAQ layers on the eDAQXR system are not always discovered after a firmware update, power cycle, or system reboot. This has been observed to happen fairly rarely. The possibility increases with the number of layers in the system. Long term power cycle tests on a system containing 12 layers distributed across 2 network nodes resulted in this error occurring about one time in 100 power cycles. If a test is running, the system will reset and the test will be restarted.
  - **Sporadic NETDEV WATCHDOG time out error.** This error is seen very rarely after a system boot from a power cycle or software initiated reset. The system reboots on this error and will automatically restart an SIE test that was running when the initial power cycle or software initiated reset occurred.
  - **Limitation with Mode 2 networking.** Channels cannot be shared across the network nodes (i.e., channels defined on any given node cannot be used on another node for DataMode triggering, use in a computed channel, etc.). <u>The user interface does not prohibit this.</u> If the user configures as SXR test in this way, the user interface will attempt to start the test run. However, the system will reset on error.
  - **Limitations on using MX471 modules.** The MX471 can be overloaded and not able to keep up with the processing required if there are too many CAN channels assigned. This is significantly affected by the CAN bus load – specifically the broadcast rate of the CAN messages. For example, the following test scenario will result in an overload. Test using all 4 ports with 128 channel assigned to each port (using 32 CAN messages per port) broadcast at 100 messages per second. In most cases, the XR system will reset on an overload situation, but always. As such, users are strongly advised to avoid MX471 overload situations – particularly for unattended testing.
  - **Issue with renaming a Vector CAN database:** If a Vector CAN database file has been edited and has errors that are red lined, the user will not be able to edit the name of the database file. If the user attempts to edit the name, the first character typed in will be accepted; however, other characters will typically not be accepted unless the user clicks outside of the edit control box and then clicks on the edit control box again. The suggested way to proceed is to fix the errors, save the changes, and then refresh the browser.

- **Errata (advisories)**

  - **Recommended browsers.** The recommended browsers when using the eDAQXR web interface are up to date versions of Chrome and Firefox. The web interface may work on other browsers but may result in degraded or undesirable operation.
  - **Use of HTTP and HTTPS protocols and browser add-ons / extensions when connecting to the eDAQXR.** When performing a firmware upgrade and using the HTTP protocol, a CTRL+F5 refresh of your browser after the firmware update is required to ensure that new features and GUI elements are available. The same is true of the help system. If the user accesses the help system after a firmware update, a CTRL+F5 is required to ensure new help content is made available as well. The optimal performance when using the eDAQXR is realized using the HTTP protocol, inclusive of typical use, as well as download operations from the eDAQXR. Additionally, it is recommended that any browser add-ons or extensions be disabled when using the eDAQXR as their enablement has been linked to degrading performance of the GUI interface when in use.
  - **Caution when using Netgear networking interfaces.** Certain Netgear switches and routers have been known to not work reliably when connected to the Host port of the eDAQXR. The problem will manifest as the Netgear networking interface showing the eDAQXR is not connected when in fact it is. In certain situations, a power cycle of the Netgear networking interfaces can correct the problem. For these reasons, it is strongly

recommended that for any high availability or high assurance test platforms, that Netgear networking interfaces not be used to connect to the eDAQXR Host port.

o **SIE file naming conventions when using FTP upload.** Please note that file naming conventions and special character usage can affect whether the FTP server you are uploading to, will accept the file. There are characters that are illegal file name characters in Windows systems, and likewise for Linux systems. Please avoid these illegal characters when considering what operating system your FTP server is running on.

- **Errata (known issues)**

  o **Web browser exceptions.** The web browser interface will sometimes lock up or not properly reflect the actual states of the hardware or test. Refreshing the browser will usually correct this.

  o **Potential loss of data sync issue when using Firewire with MX modules.** In certain usage scenarios, MX modules can lose PTP sync when a test run is restarted after a reboot.

  o **EX23-R PTP Synchronization with MX modules using ports 5 and 6.** Using a system connected with MX modules connected to ports 5 or 6 on the EX23-R can result in the MX modules losing sync with the eDAQXR until the EX23-R is rebooted or power cycles. This can be problematic for long term unattended testing - particularly in scenarios where power is never cycled. As such, it is strongly advised that any PTP timing devices (i.e., eDAQXR or MX modules) are not connected to ports 5 or 6 in long term unattended tests. Network sources such as Axis cameras can be connected to port 6 (or port 5 when routed through a commercial PoE switch).

  o **Push notifications on iOS devices.** There is a known issue with the iOS HBM Push application, where notifications will not be pushed, but instead have to be fetched by closing or reopening the app on your iOS device, or performing a pull down refresh of the notification list.

  o **Setups utilizing multiple video channels from a multi-channel video encoder is not supported.** Although the eDAQXR will allow the user to specify multiple video streams from a multi-channel encoder, using more than one channel from a multi-channel encoder is not supported, and configuring a test with this configuration may in not as-configured results, and is at the user's own risk. It is recommended the user only use one channel on a multi-channel video encoder.

  o **Live video displays when using the Axis m7001 video encoder.** The Axis m7001 encoder can be used, but there are limitations on video display capabilities with this old and now discontinued Axis product. Video frames will be properly stored in the SIE file; however, viewing of the video frames is supported in the Hardware view only. As such, video frames cannot be displayed when the SIE test is running.

eDAQXR System Overview

The following information defines the scope of the eDAQXR system relative to the TCE/eDAQ system. Functionality that is not supported in this first release is noted.

Legacy eDAQ layers

The following legacy eDAQ layers are supported, with restrictions noted where applicable. Layers not listed are not supported.

NOTE: It is critical that you verify that the latest firmware is loaded on your existing legacy eDAQ layers before removing the legacy eDAQ processor. There is no ability to upgrade firmware with the new EXRCPU.

- **EBRG – Layer Firmware v1.3**
- **EHLS – Layer Firmware v1.12**
- **EDIO – Layer Firmware v1.10**
  - GPS port will not be supported
  - Vehicle Bus modules will not be supported
- **EITB – Layer Firmware v1.5**
- **ENTB – Layer Firmware v1.0**

EDAQXR processor "EXRCPU"

- Axis cameras are supported (limited to the officially supported list).
- Serial Bus modules are not supported.
- The following MXB modules are supported
  - MX1615 B / BR
  - MX1601 B / BR
  - MX1609 KB / KBR
  - MX840 B / BR
  - MX460 B / BR
  - MX411 BR
  - MX471 B / BR
  - MX878 B (Limited Functionality – See Help System)

Channel and Test Setup

This section lists current functional issues that TCE/eDAQ users will likely view as deficiencies. Most of these (and possibly all) will be addressed in future releases.

- There is currently no support for multiple runs. All test runs are currently treated as autonomous runs. A new SIE file is generated for every test run.
- The eDAQXR currently supports Zero and Shunt scaling tasks in an interactive mode only. The user needs to be patient and wait for all channel readings to become stable for each step in the task.
- There is currently no support for automatic zeroing before the start of a test run.
- There is currently no provision for assigning data types to channels. All legacy eDAQ and MXB channels are sourced and stored in the SIE file as 32 bit floats. All other channels are sourced and stored in the SIE file as 64 bit floats (including CAN, GPS, and digital input channels).

Networking

Networking is handled much better in the eDAQXR compared to the eDAQ. The user only needs to communicate with the Master node. There are two operational modes supported. In Mode 1 networking, the master collects channel data from the other nodes and processes it to generate a single SIE file. For more demanding test requirements, Mode 2 networking is available where all nodes process data channels into separate SIE files which are merged into a single SIE file when downloaded.

- Remote control run mode is currently only supported for Mode 1 networking.
- Mode 2 networking does not yet support the capability to share channel data streams across nodes.

Computed channels and DataModes

- Power Saver computed channel is not supported.
- Some of the other eDAQ computed channels currently have no use in the eDAQXR and are not supported (e.g., Engineering Scalar and Integer Scalar).
- Time at Level (multi-dimensional) DataMode is not supported.

Complete Listing of Modules, Accessories, Documentation and available Support Software Tools / Libraries

Modules

• eDAQXR: EXRCPU-32GB w/eDAQ adapt, lid, cables	1-EXR-E-32GB-2
• eDAQXR: EXRCPU-64GB w/eDAQ adapt, lid, cables	1-EXR-E-64GB-2
• eDAQXR: eDAQXR CPU 32GB No base, lid, cables	1-EXRCPU-32GB
• eDAQXR: eDAQXR CPU 64GB No base, lid, cables	1-EXRCPU-64GB-2
• SomatXR: Data Processor with 64 GB memory	1-CX23-R-64-2
• SomatXR: Ethernet Switch PTP	1-EX23-R
• SomatXR: Standard Amplifier	1-MX1601B-R
• SomatXR: Bridge Amplifier	1-MX1615B-R
• SomatXR: Thermo Amplifier	1-MX1609KB-R
• SomatXR: Universal Amplifier	1-MX840B-R
• SomatXR: Highly Dynamic Amplifier	1-MX411B-R
• SomatXR: CAN module	1-MX471B-R
• SomatXR: Frequency Amplifier	1-MX460B-R
• QuantumX: Measuring Amplifier / 16 channels	1-MX1601B
• QuantumX: Bridge Amplifier / 16 channels	1-MX1615B
• QuantumX: Thermocouple Type K / 16 channels	1-MX1609KB
• QuantumX: CAN Module / 4 channels	1-MX471B
• QuantumX: Analog Voltage Output	1-MX878B
• QuantumX: Digital Dynamic	1-MX460B
• QuantumX: Universal Amplifier	1-MX840B

Documentation

• eDAQXR Data Sheet (English / German)	Version 1.1
• eDAQXR Compatible Legacy eDAQ Technical Specifications	Version 1.0
• eDAQXR Quick Start Guide	Version 1.0
• eDAQXR Safety Manual (English / German)	Version 2.0
• eDAQXR User Manual	Version 5.0
• MX1601B-R Data Sheet (English / German)	Version 3.0
• MX1609KB-R Data Sheet (English / German)	Version 3.0
• MX1615B-R Data Sheet (English / German)	Version 4.0
• MX840B-R Data Sheet (English / German)	Version 1.0
• MX878B Data Sheet (English / German)	Version 2.0
• MX411B-R Data Sheet (English / German)	Version 1.0
• MX471B-R Data Sheet (English / German)	Version 1.0
• MX Modules User Manual (English / German)	Version 6.0
• MX Modules Quick Start Guide (English / German)	Version 3.0
• 1-UPX00x-2 UPS Data Sheet (English / German)	Version 2.0
• 1-SCM-R-TCX-2 Data Sheet (English)	Version 1.3
• Reference Manual For libsie	Version 1.0
• 1-SCM-R-SG120-300-1000-2 Data Sheet	Version 1.1
• 1-CON-S3005-2 Adapter Data Sheet	Version 1.1

Software Tools / Libraries

- HBM Device Manager   v1.0.0.1
- XR Download Manager   v1.2.2
- XR Emulator   v2.6.0
- libsie SIE library   v1.1.5

Accessories

- eDAQXR: eDAQXR to eDAQ adapter assembly   1-EXR-E-ADT-2
- eDAQXR: eDAQXR PWR CABLE W/REMOTE-PIGTAILS   1-EXR-PWR-IO-PT-2
- Xcode to Xcode Adapter w/Mount   1-CON-S3005-2
- Fastener CaseLink-Rug, 160mmx80mmx12mm   1-CASELINK-RUG-2
- 2 Unit Mounting System, 200mmx130mmx50mm   1-CASEMOUNT2-2
- 3/4 Unit Mounting Syst,295mmx130mmx50mm   1-CASEMOUNT3-2
- Universal Mounting Bracket   1-CASEMOUNT-UMB-2
- Voltage conditioner .3M 840BR adapter   1-SCM-R-VC60-2
- ¼ bridge 1000 .3M 840BR Adapter   1-SCM-R-SG1000-2
- ¼ bridge 350 .3M 840BR adapter   1-SCM-R-SG350-2
- ¼ bridge 120 .3M 840BR adapter   1-SCM-R-SG120-2
- K type thermal couple .3M 840BR adapter   1-SCM-R-TCK-2
- E type thermal couple .3M 840BR adapter   1-SCM-R-TCE-2
- ICP, with BNC .3M 840BR adapter   1-KAB430-0.3
- AC/DC power supply unit (24 V, 120 W)   1-NTX003-2
- Power supply cable (CX23-R to MX module)   1-KAB2110
- Power supply cable (low loss) with exposed wires   1-KAB2115
- Mounting brackets   1-CASEMOUNT
- Ethernet cable (CX23-R / EX23-R to MX module)   1-KAB2100
- Ethernet cable (CX23-R / EX23-R to PC / access point) 1-KAB2106
- Ethernet cable (CX23-R to EX23-R)   1-KAB2107
- Push-pull sensor cable   1-KAB183
- Break away sensor cable   1-KAB184
- Digital I/O cable with exposed wires   1-KAB2101
- GPS/AUX adapter (CX23-R to EGPS-5Hz)   1-KAB2102
- CAN adapter (CX23-R to SomatCR KAB292)   1-KAB2104
- GPS/AUX cable with exposed wires   1-KAB2108
- CAN cable with exposed wires   1-KAB2109
- Precision GPS Receiver-200Hz   1-EGPS-200-B-2
- Precision GPS Receiver-200Hz-PLUS   1-EGPS-200-P-2
- EGPS-200 GPS Antenna   1-EGPS-200-ANT-2
- EGPS-200 GPS Template – RTK   1-EGPS-200-TEM-2
- Trigger Cable for EGPS-200   1-SAC-GPSTRIG-2
- Cable Extensions   1-SAC-EXT-MF

Accessories (cont'd)

- Full-bridge adapter (to eDAQ M8 connector)   1-KAB2117
  (4 wire - no sense line)
- Quarter-bridge adapter (to eDAQ M8 connector)   1-KAB2118
  (3 wire - no sense line)
- Voltage adapter (to eDAQ M8 connector)   1-KAB2119
- ¼ Bridge Adapter (ODU 14 pin to M8F connector)   1-KAB2122-0.3
- CX23 + eDAQ sync cable (M12 to LEMO)   1-KAB2111-2
- GPS Receiver - 5Hz Update   1-EGPS-5HZ-2
- Pelican Case - eDAQ-lite/SXR   1-PEL1520-2
- Pelican Case - eDAQ/eDAQ-lite/SXR   1-PEL1600-2
- AC/DC Power Supply (24 V, 30 W) ODU 4p   1-NTX002
- Plug (ODU 4p push-pull)   1-CON-P1001
- Power supply (ODU, 5 m, open)   1-KAB294-5
- Connecting elements   1-CASELINK
- Carrying handle   1-CASECARRY
- 4 protective caps for ODU sensors   1-CON-A2013
- 2 protective caps for ODU system   1-CON-A2014
- FireWire ExpressCard adapter   1-IF-002
- FireWire intermodule (ODU, IP68, 2 m)   1-KAB272
- FireWire PC (ODU / FW, IP68, 3 m)   1-KAB276-3
- FireWire (module to PC, IP68, 5 m)   1-KAB293-5
- Ethernet cable (IP65/5m)   1-KAB273-5
- Connector (ODU, 14 pol, IP68)   1-CON-P1007
- Plug (ODU 14p break-away)   1-CON-P1016
- 1-wire-EEPROM DS24B33   1-TEDS-PAK
- 10 Connectors thermo mini (type K, RFID)   1-THERMO-MINI
- QuantumX: UPS   1-UPX001-2
- SomatXR Uninterruptable Power Supply   1-UPX002-2