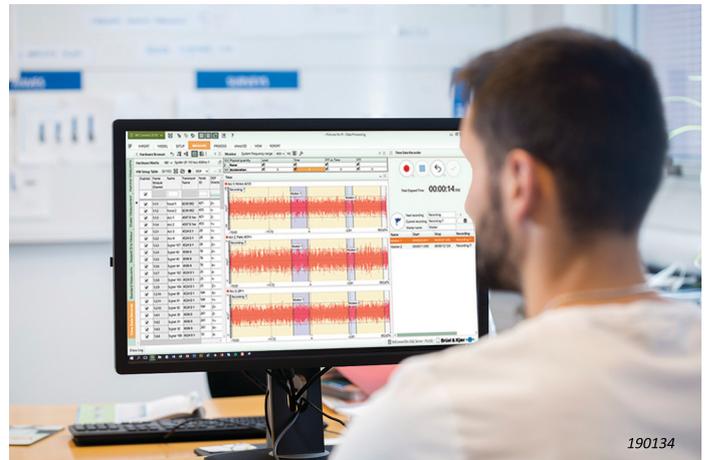# BK Connect Time Data Recorder

BK Connect® is a fully integrated solution for multi-channel data acquisition (using our industry-leading LAN-XI hardware), data processing, data management and reporting. The innovative user interface is easily customized so you can adapt it to the needs of different users within your organization enabling expert users and operator technicians to work together with maximum efficiency and high productivity.

The core applications of BK Connect are designed for general-purpose sound and vibration engineering. Together they provide a comprehensive set of tools for measurement and data processing with the flexibility to deal with a wide range of engineering scenarios – from repetitive, standardized testing to complex troubleshooting investigations.

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Uses and features of BK Connect Time Data Recorder

Uses

- Sound and vibration data acquisition, analysis and reporting
- Time data recording
- Visualization and editing of dynamic channels, CAN bus and auxiliary channels, as well as audio playback of time data after recording and in preparation for analysis
- Display of frequency, rpm and order content of time signals during audio playback
- Off-line analysis (post-processing) of recorded time data along with CAN bus and auxiliary data
- Batch processing of multiple sets of time recordings
- Simple and efficient reporting of results with user-definable layouts and user-selectable metadata

Features

- Stand-alone time data recording, playback and review
- With the addition of a BK Connect Data Processing license, you have a single integrated interface for acquisition, recording, batch post-processing, data management and reporting
- User interface and data organization optimized to fit your workflows, allowing multiple tests, setups and applications inside a single project
- Graphical setup of transducers used with the data acquisition hardware (using real or virtual front end)
- Signal, speed and auxiliary signal triggers to start and stop recordings
- Visualization, editing and audio playback of time data after recording and in preparation for analysis
- Display of frequency, rpm and order content of time signals during audio playback
- Easy to learn and use, reducing training and test time

BK Connect
Core application modules that enable quick and easy testing at each step of the process

*Fig. 1   BK Connect core applications*

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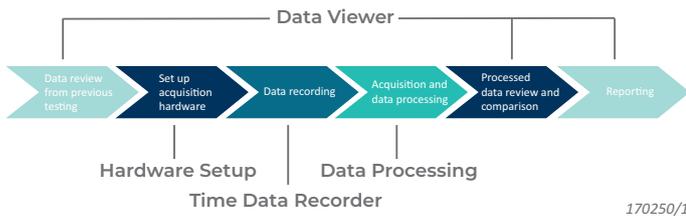
The core applications of BK Connect are:
- **BK Connect Data Viewer** for data management, viewing and reporting
- **BK Connect Hardware Setup** for setting up transducers and front-end hardware
- **BK Connect Time Data Recorder** for dedicated time data recording and review
- **BK Connect Data Processing** for measurements and time or function data processing

Each of these applications is designed as a self-contained solution for a typical task or set of tasks within test and analysis. Select the module or modules that will help you perform the task, or combine applications to increase functionality and create super-efficient workflows for quick and easy completion of multiple steps in a sound and vibration test process.

Licencing that fits your needs
BK Connect Data Viewer Type 8400, a free license, is the prerequisite for all applications except BK Connect Hardware Setup.

The four core applications can all be used stand-alone or incorporated into the main application, BK Connect Data Processing. On its own, Data Processing is purely for time or frequency data post-processing, however when the Hardware Setup license is present, you can also perform measurements. When the Time Data Recorder license is present, you can simultaneously record and post-process test data to quickly produce your final results and/or reports.

BK Connect Time Data Recorder

BK Connect Time Data Recorder
Application modules for recording time data in the field or lab for immediate or later processing

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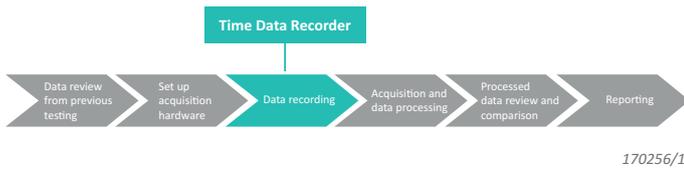
BK Connect Time Data Recorder is designed for fast, efficient, flexible recording. Start and stop manually with a click of a button, or set up signal or speed triggers for automated recordings.

Both Data Viewer Type 8400/8400-NT and Hardware Setup Type 8401 are required to use Time Data Recorder. When used as a stand-alone application, Time Data Recorder provides fast and efficient recording with post-recording verification. When used inside the Data Processing application, it becomes part of a sophisticated recording, measurement and post-processing workflow.

Time data recording
As standard, Type 8402 provides a number of time data recording tools and features:
- **Flexible triggers** allowing different options for triggered start and stop of a recording – ideal for 'set up and leave' scenarios
- **Trigger delay** or pre-delay gives the flexibility to record unpredictable transient events
- **Two recording modes**:
  - Multiple mode enables a fixed number of sub-recordings to be made in a single recording process
  - Circular mode enables a fixed number of sub-recordings to be continuously updated so you can record for a fixed period of time and stop on a signal trigger event, for example recording what happens before an unpredictable event
- **Markers** allow you to indicate events during recording that can later be used as an aid to post-processing. These markers can be edited in the Time Editor task
- **One-touch operation** via hot keys for use when normal operation is difficult, for example, in a moving vehicle
- **Metadata definitions and event markers** are saved in the recording file for use during post-processing and reporting
- **Closely linked with the Hardware Matrix and the real-time Monitor** ensuring that no event goes unnoticed while recording is in progress. During recording any markers are displayed in the Monitor
- **A documented API** for external applications, or smart device apps, to control key functions and obtain status information

Fig. 2   *The Time Data Recorder interface*
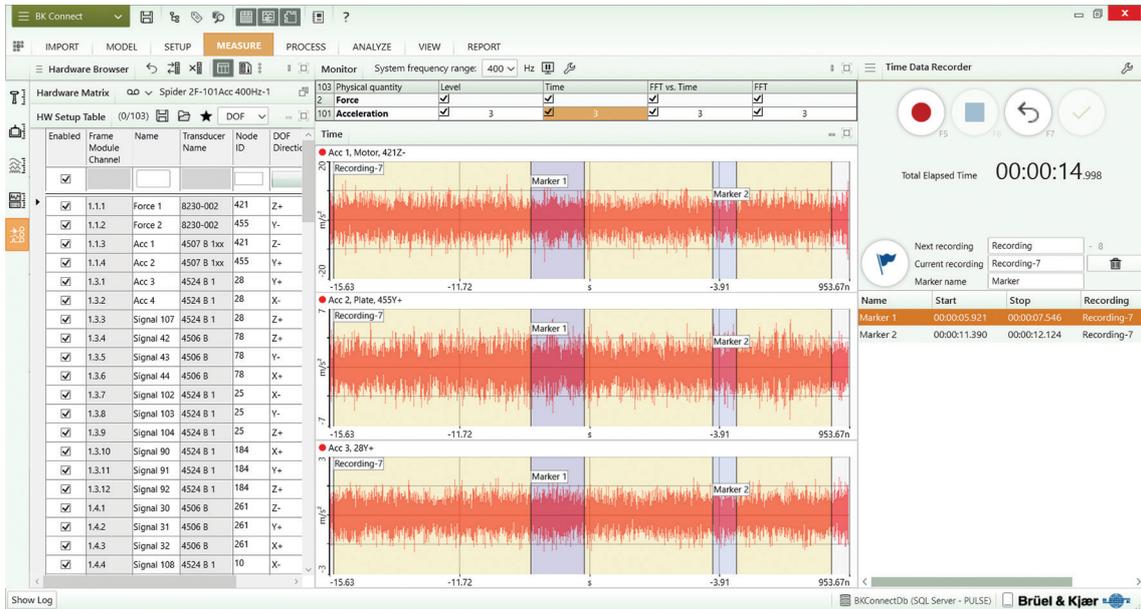

Geometry-guided recording

If you also have a BK Connect Geometry Type 8410 license, features expand to include geometry-guided recordings, where you predefine the measurement/recording sequence using the DOF Setup task.

The appropriate number of tracks will be added to the recording task and the geometry will be visible to help you rove the transducers to the correct location between recordings.

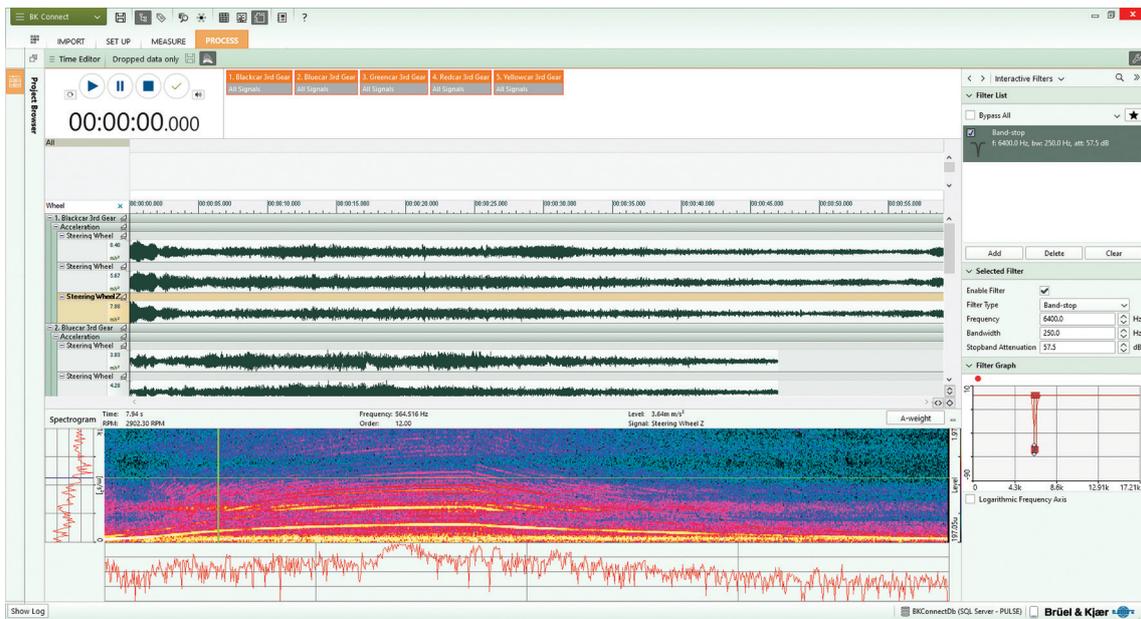**Fig. 3**   *The test geometry in the Time Data Recorder task*
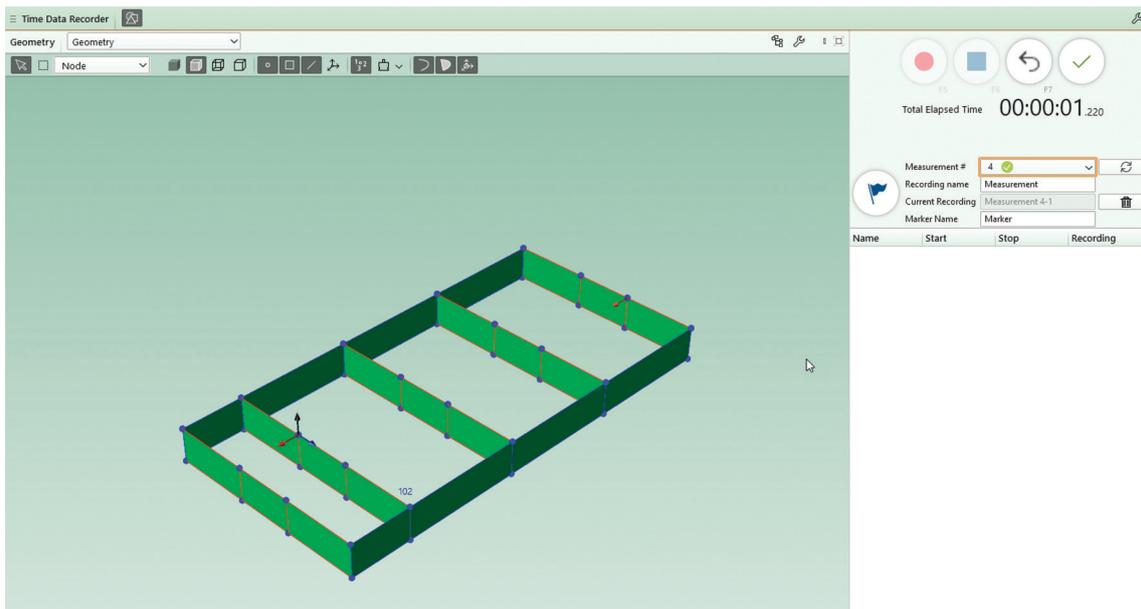
Time data review

With the Time Editor task you can check the quality of your recordings by playing them back, listening to individual channels, and trimming them to remove unwanted data.

The Time Editor's powerful interface makes it easy to review multiple time data files simultaneously and target specific 'regions' of interest within one or more signals. These regions can be edited and combined as needed prior to processing of the data.

You can also edit the metadata or markers, if needed, so that the recordings are fully prepared and error free, for later post-processing.

The Time Editor also includes:

- A fast spectrogram display that is synchronized with audio playback for quick visualization of frequency and order content of time signals
- Filter application
- Tachometer pulse train synthesis from from a given rpm profile
- Tachometer repair: Profile smoothing and drop-out/spurious pulse correction
- Autotracking

Fig. 4   *The Time Editor task*

The software is delivered via download option or USB installation media. The license is either: node-locked to a PC host ID or dongle; or floating, locked to a network server

System

PC SYSTEM REQUIREMENTS
- Operating System: Windows® 10 or 11, Pro or Enterprise, 64-bit, with either Current Branch (CB), Current Branch for Business (CBB), Semi-annual Channel (Targeted) or Semi-annual Channel servicing model
- Microsoft® Office that includes Microsoft Access®. This can be Office 2019 or 2021 (x32 or x64) or Microsoft 365® Desktop version (x32 or x64)
- Microsoft® SQL Server® 2019 or 2022 (**NOTE:** SQL Server 2022 Express included with software)
- To play back signals: Windows®-compatible sound card

RECOMMENDED PC SYSTEM
- Intel® Core™ i9, 3 GHz processor or better
- 32 GB RAM
- 1 TB Solid State Drive (SSD) with 100 GB free space, or better
- 1 Gbit Ethernet network[*]
- Microsoft® Windows® 10 Pro or Enterprise (x64) with CB

- Microsoft® Office 2021
- Microsoft® SQL Server® 2022
- Screen resolution of 1920 × 1080 pixels (full HD)
- For time data review: PC optimized for CPU and hard-disk intensive operations

FRONT-END SUPPORT
One or more HBK LAN-XI data acquisition modules (stand-alone or in frame). If you are using a BK Connect applet, only single modules (no frames) are supported.

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[*] For data acquisition: A dedicated data acquisition network (LAN or WAN) is recommended. A network that only handles data from the front end improves the stability of the data.

BK Connect Time Data Recorder Type 8402

Software prerequisites
- BK Connect Data Viewer Type 8400 (standard) or 8400-NT (free viewer)
- BK Connect Hardware Setup Type 8401

Included licenses

For PULSE™ LabShop software owners with a valid M1 agreement, the following licenses are included:
- PULSE LabShop Time Type 7789
- PULSE LabShop Time Capture Type 7705
- PULSE LabShop Time Data Recorder Type 7708

Time data recording

BASEBAND FREQUENCY SPAN	50 Hz – 204.8 kHz in 2^n (1, 2, 4, 8, …) sequence
FREQUENCY SPAN	Max. 204.8 kHz per channel (hardware module dependent)
CHANNEL × BANDWIDTH	The maximum rate is dependent on the acquisition hardware and PC configuration but a total rate of 4 MHz (40 Mbyte/s) can be expected from a typical system and rates exceeding 15 MHz (150 Mbyte/s) are obtainable on specially configured PCs
RECORDING MODES	**Single:** Maximum recording length is defined by the size of the recording disk
	Multi and Circular: Maximum recording length is defined by the size of the recording disk: • Maximum number of sub-recordings is limited to 32 767 • Maximum length of a sub-recording is 65.4 ks ~ 18 h • Maximum recording length is more than 1 year (Max. sub-recordings × Max. length of sub-recording)
TRIGGERING	Start and stop of a recording can be controlled manually or using a trigger, via a time delay, a predefined signal level, or at a specified rpm
EVENT MARKERS	All markers in a single recording have the same name. The number automatically increments with each pair of markers added, so that the pair define the start and end points. Markers are used to define regions during post-processing
METADATA AND DEVICE UNDER TEST	Metadata values entered are saved with any subsequent recordings made during the current session (or until changed)

EXPORT FILE FORMATS	.bkc (BK Connect native format) Compressed files can be stored along with the full time history so rendering in the Time Editor task can be done faster
GEOMETRY-GUIDED RECORDINGS	Requires BK Connect Geometry Type 8410 license. Model task and DOF Setup sub-task become available enabling creation of DOF sequences. See www.hbkworld.com for more information on BK Connect Geometry

Time data review

Display, audio playback and pre-processing of time data in preparation for analysis

DATA SELECTION	• Automated generation of regions from multiple files having similar channel configurations – in preparation for batch processing • Manual grouping of regions – for batch processing • Region selection by group of channels and time range • Append regions to other regions (concatenation) • Save regions to project
DISPLAY	• Fast navigation by scrolling through channels, panning and zooming in time axis • Fast spectrogram display – synchronized with time data display and playback • Interactive order slice and frequency spectrum display synchronized with spectrogram cross-hair cursor
PRE-ANALYSIS	• Automatic calculation of rpm profile from a tachometer pulse train

Ordering information*

Type 8402-X   **BK Connect Time Data Recorder**

Software prerequisites

Type 8400-X or -NT   BK Connect Data Viewer or Free Viewer
Type 8401-X   BK Connect Hardware Setup

For geometry-guided recordings

Type 8410-X   BK Connect Geometry

Other BK Connect software modules and packs

BASIC APPLICATION AND IMPORT OPTION MODULES
Type 8400-A-X   BK Connect Data Viewer (advanced)
Type 8400-C-X   BK Connect External File Importers
Type 8400-D-X   BK Connect Nastran Interface
Type 8400-E-X   BK Connect Ansys Interface
Type 8400-F-X   BK Connect Abaqus Interface

DATA ACQUISITION APPLICATION MODULES
Type 8401-A-X   BK Connect Hardware Setup (advanced)
Type 8401-V-X   BK Connect Virtual Hardware Setup

DATA PROCESSING APPLICATION AND OPTION MODULES
Type 8403-X   BK Connect Data Processing
Type 8403-A-X   BK Connect Data Processing (advanced)
Type 8405-B-X   BK Connect Advanced Frequency Analysis Option
Type 8405-C-X   BK Connect CPB Option
Type 8405-E-X   BK Connect Order Analysis and Tracking Option
Type 8405-G-X   BK Connect Sound Quality Metrics Option

DATA RECORDING PACKS
Type 8402-NS   BK Connect Time Data Recorder Pack – node-locked license that includes Types 8400, 8401 and 8402
Type 8402-A-NS   BK Connect Time Data Recorder Pack (advanced) – node-locked license that includes Types 8400, 8400-C, 8401, 8401-A and 8402

DATA PROCESSING PACKS
Type 8403-NS   BK Connect Data Processing Pack – node-locked license that includes Types 8400, 8401 and 8403

DATA RECORDING AND PROCESSING PACKS
Type 8404-NS   BK Connect Data Processing and Time Data Recorder Pack – node-locked license that includes Types 8400, 8401, 8402, 8403 and 8403-A
Type 8404-A-NS   BK Connect Data Processing and Time Data Recorder Pack (advanced) – node-locked license that includes Types 8400, 8400-A, 8400-B, 8401, 8401-A, 8402, 8403 and 8403-A

Team data sharing

Type 8400-T-FY   BK Connect Team Server, Single User, Annual Floating Lease License and Support

Software Maintenance and Support Agreements†

M1-8400-X   Agreement for Type 8400
M1-8400-A-X   Agreement for Type 8400-A
M1-8400-C-X   Agreement for Type 8400-C
M1-8400-D-X   Agreement for Type 8400-D
M1-8400-E-X   Agreement for Type 8400-E
M1-8400-F-X   Agreement for Type 8400-F
M1-8401-X   Agreement for Type 8401
M1-8401-A-X   Agreement for Type 8401-A
M1-8401-V-X   Agreement for Type 8401-V
M1-8402-X   Agreement for Type 8402
M1-8403-X   Agreement for Type 8403
M1-8403-A-X   Agreement for Type 8403-A
M1-8405-B-X   Agreement for Type 8405-B
M1-8405-C-X   Agreement for Type 8405-C
M1-8405-E-X   Agreement for Type 8405-E
M1-8405-G-X   Agreement for Type 8405-G
M1-8410-X   Agreement for Type 8410
M1-8402-NS   Agreement for Type 8402-NS Pack
M1-8402-A-NS   Agreement for Type 8402-A-NS Pack
M1-8403-NS   Agreement for Type 8403-NS Pack
M1-8404-A-NS   Agreement for Type 8404-A-NS Pack
M1-8402-NS   Agreement for Type 8402-NS Pack

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*   "X" indicates the license model can either be N: Node-locked or F: Floating
†   Agreement expiration date to be agreed at time of contract

2024-07

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