



Data Acquisition and Analysis Software

- Real-time display, control and analysis for *GEN series* and *Liberty DAQ systems*
- Control for the *BE3200* test sequencer
- Playback and analysis for *Dimension4i data recorder*
- Support for legacy instruments: *Sigma, BE256, MultiPro* and *Vision*
- A variety of options to suit your needs:
 - exports
 - multi-monitor display
 - analysis
 - basic FFT
 - advanced reporting
 - synchronized video playback
 - remote interfacing
 - multi-mainframe control
 - high voltage high power analysis
 - high voltage impulse analysis
 - custom extensions and programming
- Unique user interface with graphical setup for amplifiers and system
- Close integration with Office Word and Excel
- Equally easy control of small and large scale systems
- Unique “review while recording” mode
- **STATSTREAM^{®(1)}** display technology for review of GigaBytes of data in seconds

SOFTWARE MAKES HARDWARE HAPPEN

Perception software is here to make your life easier. Designed from the ground up for “ease-of-use”, it is a true “out-of-the-box” solution offering hardware control, real-time display, review, analysis and reporting in one integrated package. No programming, no headaches. Just install and run.

Perception adapts to the application

The unique “user mode” concept modifies the workspace and feature set to your application. Select “transient” or “continuous” modes to get the exact features and menu entries to do the job.

Fast review

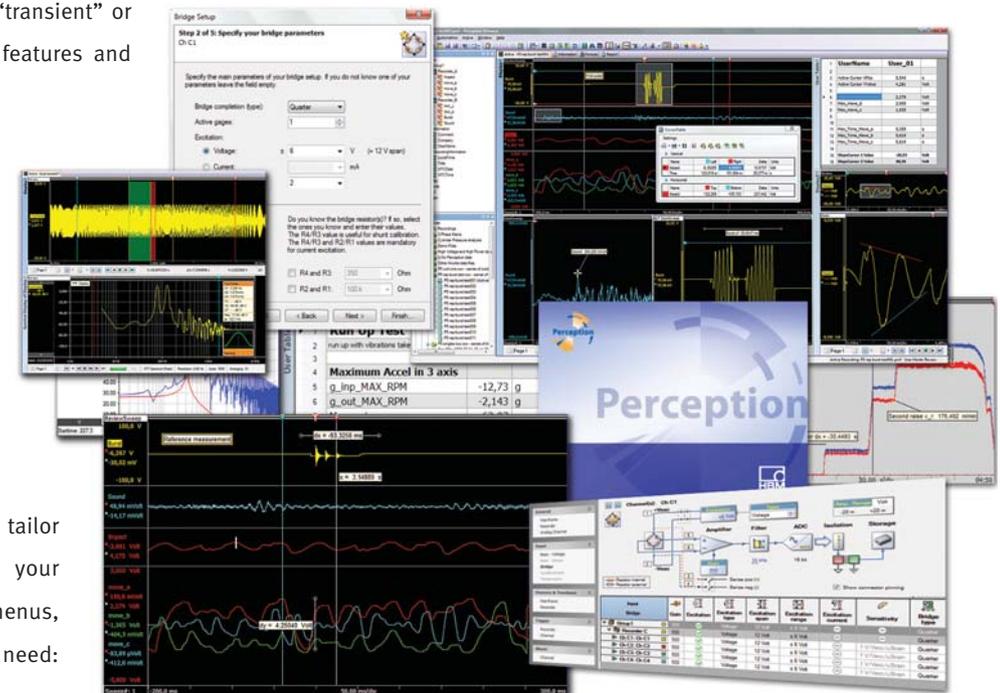
It has never been easier to get the work done. Multiple mainframes, 100's of channels, TeraBytes of data ... display is a breeze with our innovative **STATSTREAM** display technology.

Options to match your needs

A variety of options are available to tailor the *Perception* software exactly to your requirements. No myriad of redundant menus, but the choice to add the features you need:

video playback, additional export formats, multi-monitor support, sophisticated analysis, basic FFT, advanced reporting and much more.

As a scalable system, *Perception* puts unparalleled instrument control, analysis and report generation at your fingertips. Manage hundreds of channels, thousands of recordings, TeraBytes of data with one “out-of-the-box” solution.



StatStream is a registered trademark in the US and the EU.
 (1) StatStream is patented in Germany and patent pending in the UK, US and France.



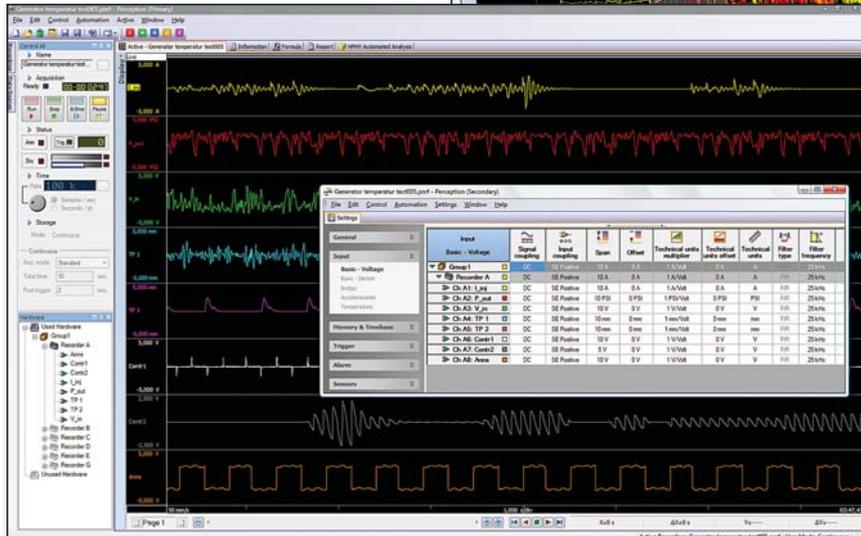
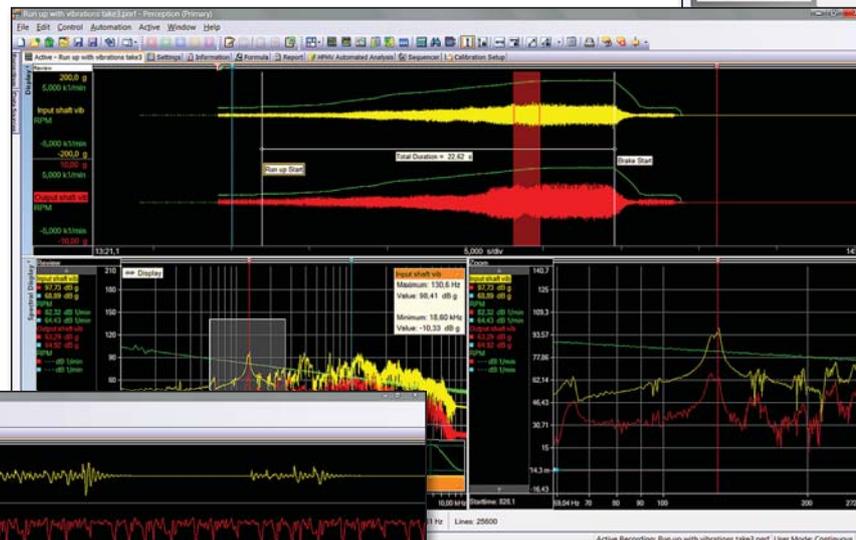
An all in one solution ...

All in one solution

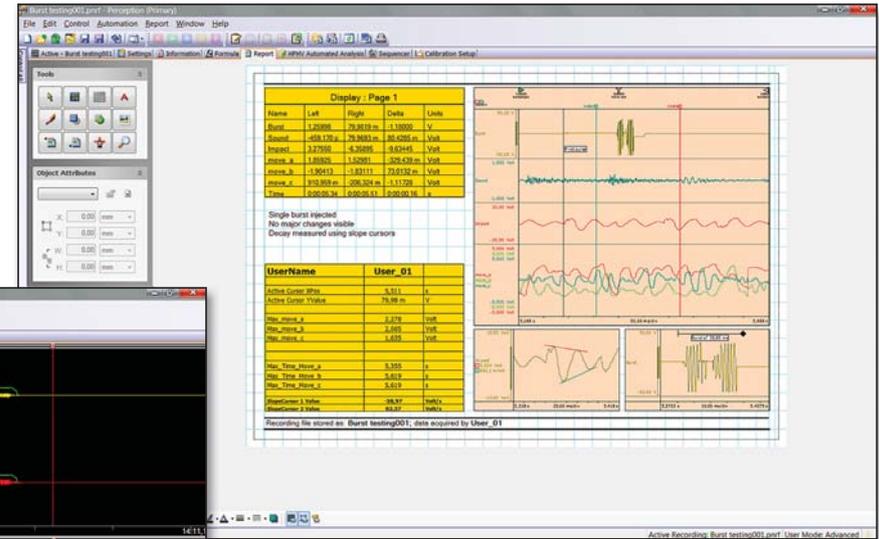
The *Perception* software is designed from an experienced team of application specialists and software engineers to deliver an “all in one solution”. Not only software for hardware control or data acquisition, not just a powerful analysis software, and not a report generation tool. No, “all in one”. Everything integrated – if needed. All from one vendor, with one common, easy user interface. Tightly integrated from “sensor to report”.

No need to learn multiple software packages, no more problems with data transfer or data conversion from one software package into another.

All in one: Playback with Analysis up to Basic FFT



All in one: Acquisition and Instrument control with Live displays



All in one: Powerful reporting tools and MS-Office integration

Perception integrates multi-platform hardware control, live display, data acquisition, review, analysis, report generation and data export in one, powerful package.

As a result, each and every bit of information from sensor scaling and amplifier settings to formulas used in analysis are stored together in a single “Experiment” data file and can be retrieved from there.

Backup, archiving and review of complete data sets was never easier.

... out of the box

Out of the box

We know that your job is not to write code. Very often your job is not even data acquisition. You just have to do this to get the data to do your "real job". So data acquisition should help, not become a stumbling block. Knowing this, *Perception* is developed for users, not for programmers. Do your job rather than spending weeks or months programming your DAQ system. No configuration of various software packages, hardware drivers or instrument interfaces. Install and acquire within minutes.



The network self discovery feature of Perception just finds any supported acquisition device connected to the network. The Auto-Config feature then connects to it and sets it up in the most useful way, depending on the hardware found. Just after launching the software, you see scrolling data and only have to press RUN to get it.

When finished, just use STOP to display the acquired dataset automatically. No other preparations or setup procedure, no save or recall, no other software.

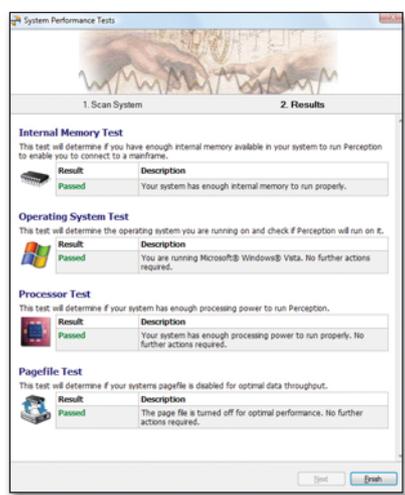
Acquire and review in seconds – out of the box.

Guaranteed performance

And all the Genesis HighSpeed hardware is fully integrated with *Perception* software. There are no interfaces in between that we don't control. No Windows to mess up performance and loose valuable data.

The whole DAQ SYSTEM is from one vendor guaranteeing the overall performance. No pinpointing between vendors like "it's the OS" or "it's the driver".

As all is from HBM, we guarantee the performance of what you'll get from us. A thorough system performance test when installing *Perception* even qualifies third party PC's performance to be used with our hardware and software.



Automated system test ensures proper performance even with your PC

One vendor to help you

With HBM, you will find one partner for all aspects of your measurement task. If you don't know how to connect your sensors or how to set up your hardware – ask HBM. Need tips on how to compare or reduce datasets – ask HBM. How to transfer data into Office to generate reports – that's again one for us. There are not many suppliers involved blaming each other on "wrong drivers", "corrupted data" or "incompatible software". Whatever help you need to use your system, you have one partner assisting you along the way – HBM.



Bank on the market leader in high end data acquisition to help you doing your most demanding measurement tasks. Our experience and our "one stop shop" approach gives you a solution "from sensors to report".



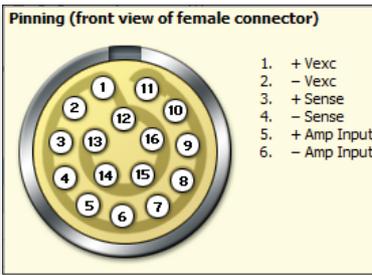
Software is key to your success ...

Usability

Usability is key to all software. There is no need for a function which cannot be found, and unwanted features even endanger the proper use. So usability is key for every aspect of *Perception*. *Perception* offers Wizards to help you set up the system and offers both a graphical setup for the amplifiers one by one - for



At startup, you tell Perception what you want to do. The user interface adapts automatically...



Built In set up assistance even displays connector pinning if desired....

Perception adapts in various areas to the selected "application" as shown in this example of the Storage settings

Software that adapts to you and your needs

Perception allows you to create a workspace based on your application. This option goes beyond window arrangements. Like a chameleon *Perception* adapts the user interface to the natural environment to provide those features and controls that are required for your type of application. Configuring this personal workspace is a three stage

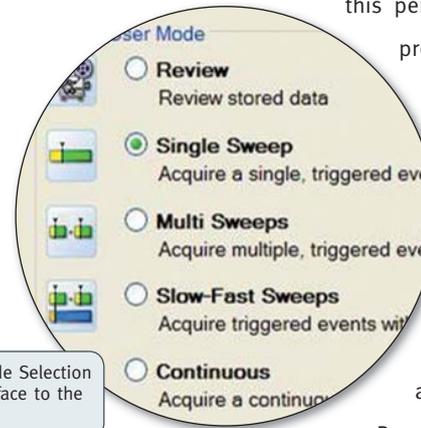
process: First, you tailor *Perception* with software options to exactly meet your requirements.

Second, at startup, you tell *Perception* the type of work you want to do. No matter whether it is single-shot transient work, continuous tape recorder type acquisition or complex fault finding,

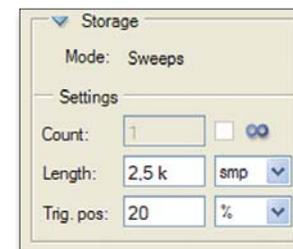
Perception adapts to these applications showing only the relevant features.

Third, you select and switch "on the fly" between the Advanced and the Basic user modes.

No unnecessary menus, no long lists to select from. Just what you need to do the job. This adaption to the application, the needed feature set and the user's skillset is unique in the market place and ensures the most effective and easiest user interface possible for any user and any work to be done.



The unique User Mode Selection tailors the user interface to the measurement task



starters - as well as powerful tables to manage hundreds of channels on a single click - for experts.

Notifications tell you about critical parameters you should know like a lost external clock signal.

Warnings and Errors are displayed and even resolved automatically by built in intelligence.

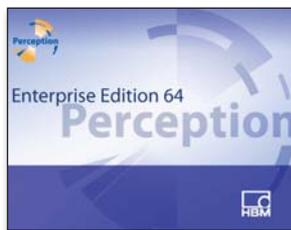
And if you need the pinning of our 16 wire bridge amp input, just click on the connector in the graphics and get the pinning displayed. We really brought measurement power to your fingertips, both for starters and experts. Usability is key for every user, for a single channel or hundreds of them.



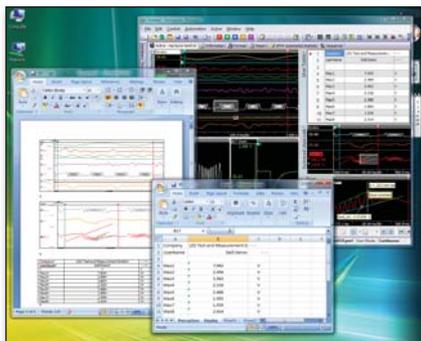
... today and tomorrow

Up to date with latest Windows and Office software

The *Perception* software is not only continuously expanded in functionality, it is also updated to keep pace with the latest developments on the Operating System and Office package side. *Perception* is – of course – running on Windows XP, Vista and Windows 7. And for high end applications, it is even available in a native 64-bit version to take advantage of the enhanced stability, the huge memory capabilities and the increased speed of the 64-bit versions of Windows XP, Vista and Windows 7.



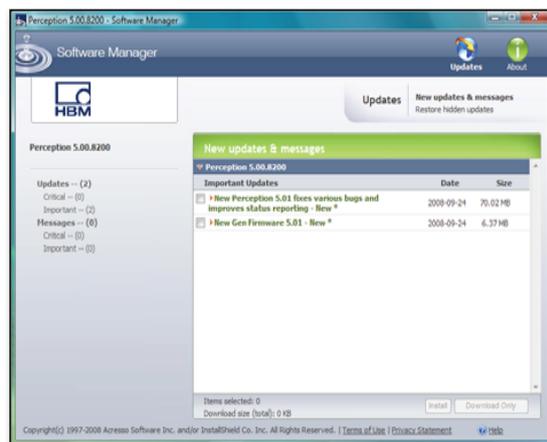
And Office integration is also up to date. Running Office 2007, you can transfer tables, displays, results into Word or Excel with a single mouse click. Whole reports can be transferred into Word or generated dynamically inside Word – all out of *Perception*.



By staying always on top of latest developments here, you are never endangered that your DAQ software gets obsolete just because of a new Microsoft software.

Software Maintenance

Purchasing and using test equipment is a significant investment from your side – both time and money. Our installed base of more than 1500 *Perception* users pushes us to further improve *Perception* and to add new features. You can easily participate in this to keep your system up to date by joining our attractive maintenance contracts. Keep your system up to date and automatically updated through the internet. Also, great new features become available to you via the maintenance contract at no extra fee. Don't worry about new Windows versions or Service Packs. Let us do the job and deliver the solution. Join the "maintenance" club and secure the future of your investment.



Training in the HBM Academy

Even the best user interface needs a learning curve. And we can help you to climb this faster. If you need a jumpstart on *Perception*, we are able to deliver world class, structured training on *Perception* in the HBM Academy. With regular courses at HBM facilities or on site. Structured to your needs - worldwide.



Low TCO instead of low cost

All of these extras around the software itself help to minimize the most important cost factor: Total Cost of Ownership. An initial low cost purchase might turn into a financial nightmare afterwards. So more important to us is what it costs you to run and to maintain your investment. And *Perception* - by being maintained and future proof - offers the lowest TCO for an extended lifetime guaranteed.



Setup and Control was never so easy ...

Setup a single channel or a thousand

Setting up your instrument is one of the most critical jobs. It needs to be done quickly, and any mistake here might result in a failed test or lost data.

Perception can be used to set up hardware in two ways:

You can use the graphical mode showing all settings in a channel diagram, reducing potential errors down to zero.

Or you can use the table mode, allowing dozens or hundreds of channels to be controlled in a single go.

Freely select any number of channels to be controlled simultaneously, group them, and expand or collapse the table at any time for more details or a better overview.

You even might use both and show the graphical channel settings on top of the overview table, combining the advantages of both set up modes.

Amplifier setup in combined graphical and table mode

The screenshot displays the Perception software interface. On the left, there is a sidebar with navigation tabs: General, Input, Memory & Timebase, Trigger, Alarm, and Sensors. The main area is titled 'Channel(s): Recorder G' and shows a graphical block diagram of the signal path: Input (AC/DC) -> Amplifier (with Span and Offset controls) -> Filter (5 kHz) -> ADC (16 bit) -> Isolation -> Storage. Below the diagram is a table of channel settings.

Input	Signal coupling	Input coupling	Span	Offset	Technical units multiplier	Technical units offset	Technical units	Filter type	Filter frequency
Basic - Voltage	DC	SE Positive	10 A	0 A	1 A/Volt	0 A	A	FIR	25 kHz
Group 1									
Recorder A	DC	SE Positive	10 A	0 A	1 A/Volt	0 A	A	FIR	25 kHz
Ch A1: I_inj	DC	SE Positive	10 A	0 A	1 A/Volt	0 A	A	FIR	25 kHz
Ch A2: P_out	DC	SE Positive	10 PSI	0 PSI	1 PSI/Volt	0 PSI	PSI	FIR	25 kHz
Ch A3: V_in	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	FIR	25 kHz
Ch A4: TP 1	DC	SE Positive	10 mm	0 mm	1 mm/Volt	0 mm	mm	FIR	25 kHz
Ch A5: TP 2	DC	SE Positive	10 mm	0 mm	1 mm/Volt	0 mm	mm	FIR	25 kHz
Ch A6: Contr1	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	FIR	25 kHz
Ch A7: Contr2	DC	SE Positive	1 V	0 V	1 V/Volt	0 V	V	FIR	25 kHz
Ch A8: Anns	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	FIR	25 kHz
Recorder B	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	FIR	10 kHz
Ch B1: Ch B1	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	FIR	10 kHz
Ch B2: Ch B2	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	FIR	10 kHz
Ch B3: Ch B3	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	FIR	10 kHz
Ch B4: Ch B4	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	FIR	10 kHz
Recorder D	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	Wideband	—
Ch D1: Ch D1	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	Wideband	—
Ch D2: Ch D2	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	Wideband	—
Ch D3: Ch D3	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	Wideband	—
Ch D4: Ch D4	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	Wideband	—
Recorder E	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	FIR	25 kHz
Recorder G	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	Bessel (IIR)	5 kHz
Ch G1: Ch G1	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	Bessel (IIR)	5 kHz
Ch G2: Ch G2	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	Bessel (IIR)	5 kHz
Ch G3: Ch G3	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	Bessel (IIR)	5 kHz
Ch G4: Ch G4	DC	SE Positive	10 V	0 V	1 V/Volt	0 V	V	Bessel (IIR)	5 kHz

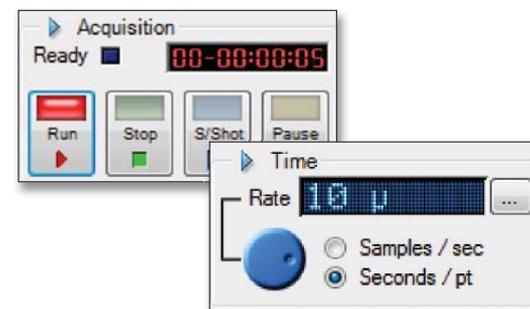
Control with buttons and wheels

Nothing comes close to pressing a button to start an action or turning a knob to select a choice.

Unfortunately, most software driven instruments ignore this proven user interface and replace it by tons of menus, check marks, radio buttons, or pull down menus. This “Windows style” user interface is fast and cheap to program.

Perception maintains a first level user interface which mimics the natural way to operate an instrument.

A Control Panel can be customized and offers direct access to the most important features. Just press the RUN button to start or press STOP to finish a recording, or “turn a knob” to change the sample rate. The intuitive, well known elements of *Perception's* Control Panel make users friends with every *Perception* driven instrument. The Control Panel looks like the instrument's front panel and is able to adapt to the various user modes.



... with wizards helping you

Let wizards help you do the job

Ever wondered why you have to do the boring parts of an acquisition job, sitting in front of a computer? Or why you have to use your calculator to set up your PC driven instrument?

The PC should help you do your job, not add unnecessary and time consuming complications. There is a whole set of tools in Perception to help the user.

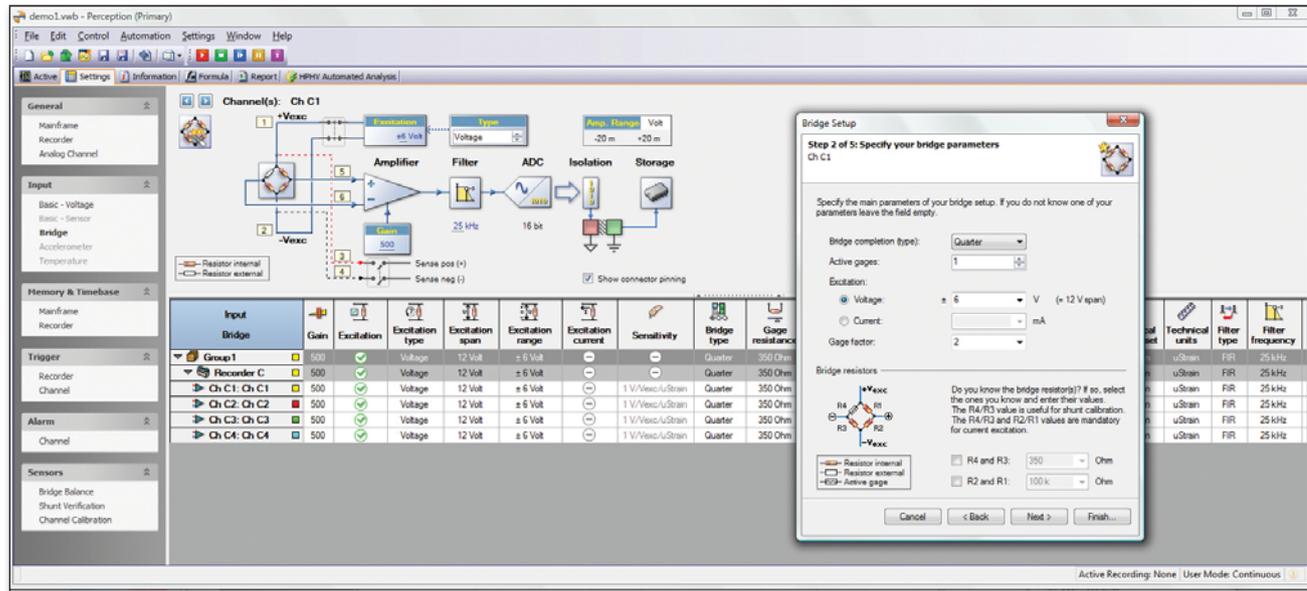
The unique Bridge Wizard is just one example: it guides you through setting up hundreds of bridge channels in just 5 steps. It asks clear questions as to what to do, and spits out results enabling you to understand what you did so you can check if the results are correct.

You don't have to be a "Bridge wizard" to set up a strain gage; the Perception Wizard does this for you.

Or the flexible calibration routine, which lets you calibrate a single or hundreds of inputs. Just enter the equivalent physical values, or measure these "on the fly".

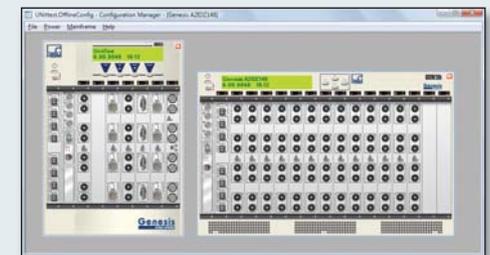
Or the bridge balance and shunt calibration, designed to do the job for you. Just balance and let Perception tell you the channels that failed to meet a certain accuracy criteria. No need to check all of them, Perception will do it for you.

Wizards guide the user through bridge setup or other critical tasks



OFFLINE SETUP MODE

The acquisition hardware is an expensive portion of your test setup, and setting it up might take a lot of time. This becomes lost time for the hardware, as no data is acquired. Users always tried to work around this, and some even used Excel spreadsheets to prepare a setup. This might work, but is always problematic as no error checking or setup validation is possible.



The unique and free Perception Offline Setup tool is the perfect solution for this problem. Just "save" your hardware configuration to a file and mail this to anyone who wants to set up the hardware. Launch free Perception Offline setup, load your configuration file and work with Perception just like with real hardware. Set up amplifiers, select filters and sample rates offered from the menus preventing any wrong setting – just like with real hardware. Then save your setup and use it later with your hardware. It never was easier to be prepared.



Display the data in the way you need it ...

Displays

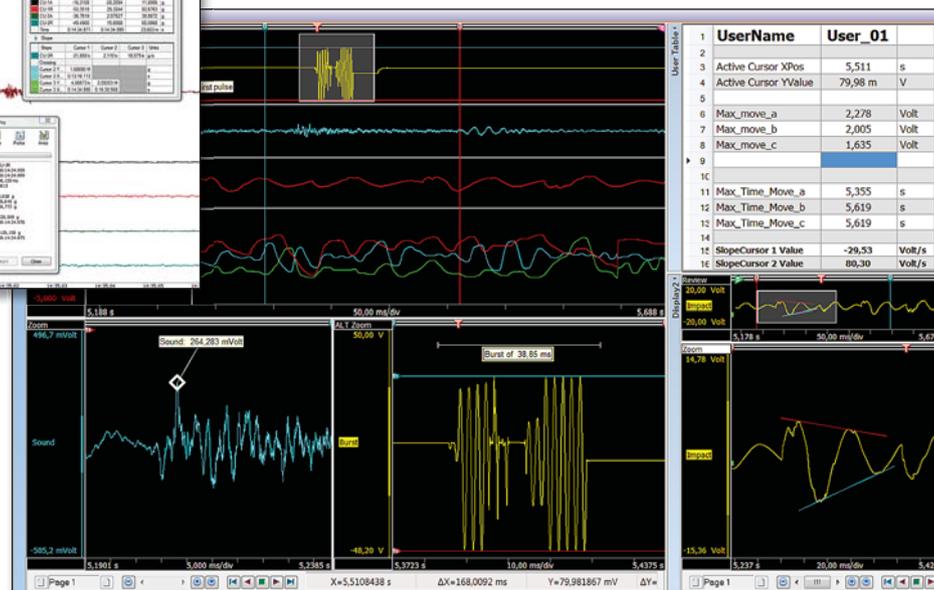
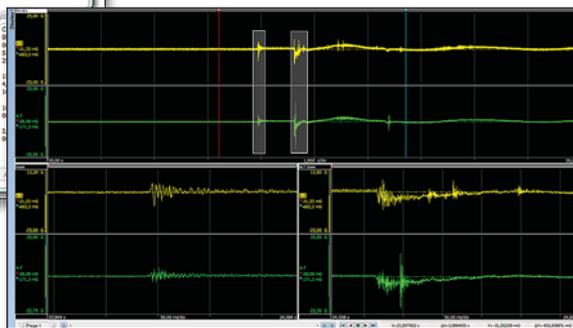
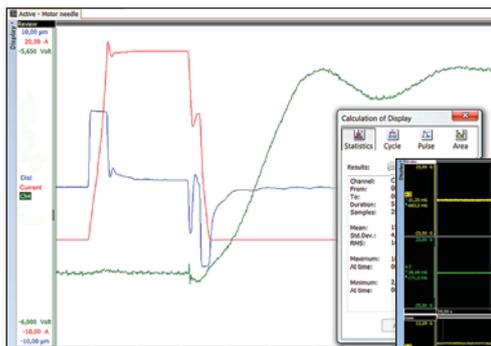
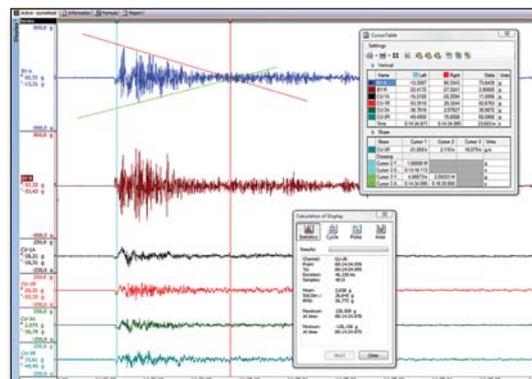
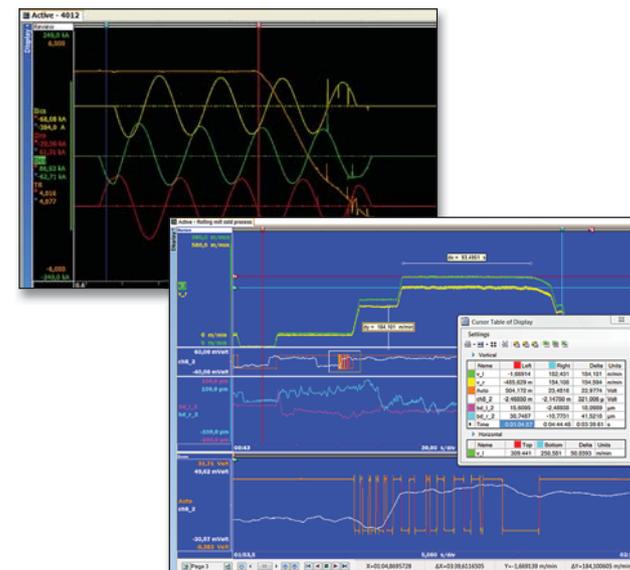
Finally, you want to see the data. The flexible *Perception* display allows an unlimited number of stacked “panes” with an unlimited number of channels per pane. So display 100 channels on top of each other or separated – no problem.

Important channels can be enlarged, while less important ones might be smaller.

The unique “Page” concept allows the distribution of channels on multiple pages which can be easily toggled through while maintaining time relationship and cursor information. This enables hundreds of channels to be displayed and to be compared effortlessly. And as each Page maintains its content even while not displayed, each channels history can be reviewed at any time. Use multiple displays to get different views on the data, while showing different time segments or different channels grouped together.

You can even use different display modes like scrolling or sweeping simultaneously. Powerful annotation features let you view the data with respect to trigger time, local time or IRIG based UTC time. Link channel’s y-axis scaling together to get normalized views or auto scale a single or hundreds of channels with a single command.

When using an external clock for the acquisition, the display can even divide the clocks into something meaningful for the application like cycles and degrees rather than showing a plain sample count.



... with all the flexibility you want

Review while recording

One of the most powerful *Perception* features is the unique “review while recording” mode. You can review acquired data while the acquisition is still running. No need to wait for the acquisition to be completed to scroll through data, zoom in and out, drop cursors or even analyze or export what’s “already in”. You can save lots of time when starting your “after the acquisition job” while this is still running. You might be able to find results and correct the acquisition, while still continuing.

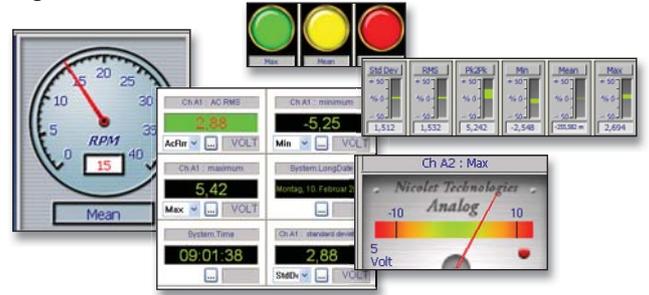
Your whole working cycle Acquire - Analyze - Acquire will accelerate the delivery of results. And the longer the acquisition is supposed to last, the larger the potential time and cost saving is. You can also use the “review while recording” feature to analyze your last recording while a new one is being made – on the same PC, using the same software. Just to save time or to conveniently compare the stored with the live data.



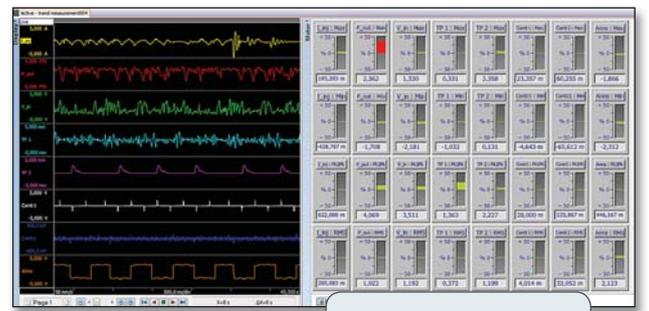
While LIVE data is still recorded and shown in the right window, the same dataset can be reviewed, analysed, exported in the left window

Meters

Perception provides a range of meter types that you can use to visualize a variety of parameters. Meters are available in different sizes, are highly customizable and provide alarm levels as well as peak-hold. Some meters offer latched over-range indicators as well, giving critical input channel information at a glance.



Especially with high channel counts the meters are better suited to indicate a complete system overview than a waveform display. Meters and waveform displays can be combined, so your workspace might show hundreds of meters as an overview and a dozen critical waveforms scrolling or sweeping.



Mixed display of traces and meters for best overview

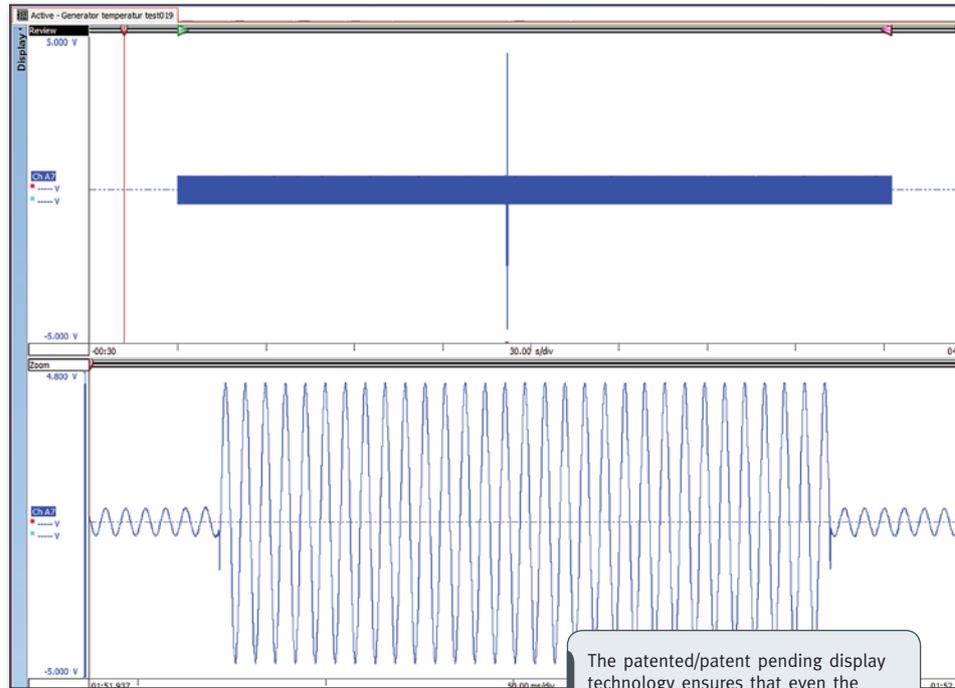


Data handling made fast and easy ...

Display speed saves your time

Ever acquired a dataset at full speed for an hour with a PC based DAQ? It might last over an hour to review as well! With increasing resolution, channel count and test duration the amount of data is really going through the roof. Whereas this was few kiloBytes some years ago, now it might be several GigaBytes. Which make some systems loose breath in review, not while acquiring. Minutes to wait for data loading, and more waiting on every zoom or analysis in this huge dataset – this might be reality.

HBM's patented/patent pending StatStream technology enables the review of GigaBytes in seconds. Loading data, zooming in and out, dropping cursors and conducting statistical analysis lightning fast make you believe this is still a kiloByte only – while in actuality it is a GigaByte. Experience a new dimension of handling large datasets using HBM's StatStream.



The patented/patent pending display technology ensures that even the shortest transients are displayed with proper amplitude information even in the longest recordings

Review benchmark

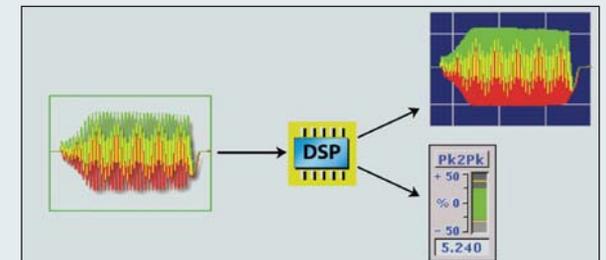
(16 channels sampled at 1 MS/s each = 32 MByte/s)

Acquisition time	Recording size	Load & display time*
10 seconds	320 MB	2s
1 minute	1.92 GB	3s
10 minutes	19.2 GB	4s
1 hour	115.2 GB	4s

*PC running VISTA 32 bit Pro, 2 GHz DualCore, 2 GB RAM

STATSTREAM® DISPLAY TECHNOLOGY

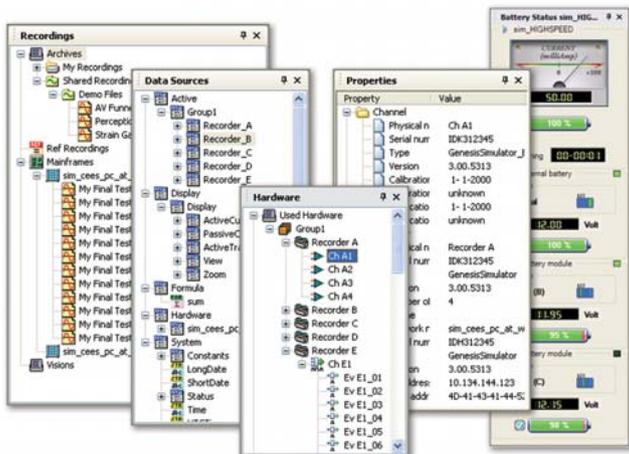
Most PC-based DAQ systems can easily acquire MegaBytes of data. But even the most powerful PC is poorly equipped to display and process files of MegaBytes or GigaBytes. HBM's exclusive StatStream display technology accelerates all aspects of your measurement task with dedicated hardware and firmware. While recording, StatStream pre-processes a display summary at the full resolution of your PC monitor. Even a single point transient on any channel is accurately displayed. In addition, StatStream continuously calculates parameter values on blocks of data. You know the vital statistics at every moment, including warnings if any channel goes off scale. When reviewing your stored files, the embedded StatStream data enables an accurate, detailed overview of any size file in seconds. Unlike competitive systems, your PC has no need to inspect GigaBytes of information just to display the last kiloByte. As you zoom in, more detail is displayed while always maintaining the highest visible resolution.



Tools and features to make your life easier ...

Browse through information

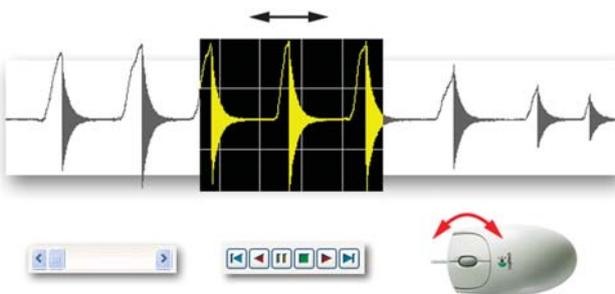
The data navigator lets you easily find your way between the various data sources such as live waveforms, files, strings, numerical values or calculated results. These data sources can be located anywhere: on your data acquisition system, on your hard disk or somewhere on the intranet. The Perception Navigators make sure that you can manage the “tons” of information you need to acquire.



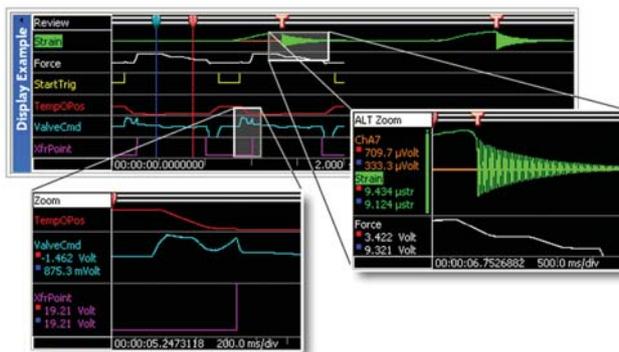
In order to display critical system status, there is an information window available always showing relevant acquisition and processing parameters. And in case you use our battery operated Liberty DAQ system a separate status panel informs you about charge status, battery condition and remaining operation time.

Scrolling and Zooming was never easier

Once you’ve experienced how easy it is to navigate through data with Perception, you’ll question how you ever could have done without. Just turn the mouse wheel and MegaBytes of data scroll back and forth. Or press shift + turn the wheel to zoom in and out unbelievably fast.



The dual-zoom feature allows you to compare two remote points of interest without the need to go back and forth from one point to the other. Zoom in on one point just by using your mouse, scroll through the data and alt+zoom on the other point.

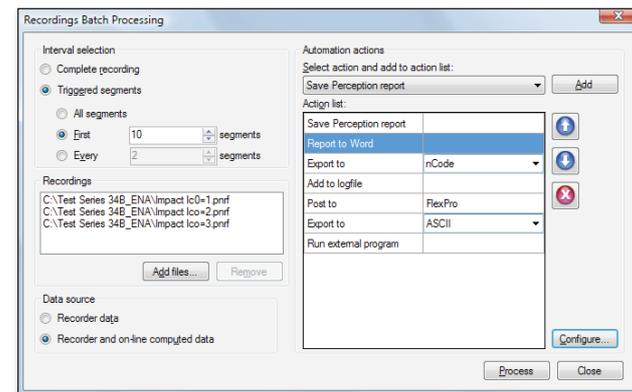


Automation and Batch processing

When you need the results from your tests without delay, the **Automation feature** will automatically analyze, report or export your data immediately after recording. Now you can extract information from your test data quickly and share the results instantly. This feature also allows for unattended processing of data when long recordings are made, or, for a triggered acquisition, can process the first few sweeps while still more sweeps are recorded.

Or use **Batch processing** to analyze, report or export a full series of tests. Once set up, it does not matter if it processes ten or ten thousand recordings. No more loading and processing over and over again to get the end result.

The unique **Logfile** feature stores freely definable results like MAX values across multiple acquisitions to an Excel file for further analysis. This feature can also be used to gather multiple cursor readouts into a single file.

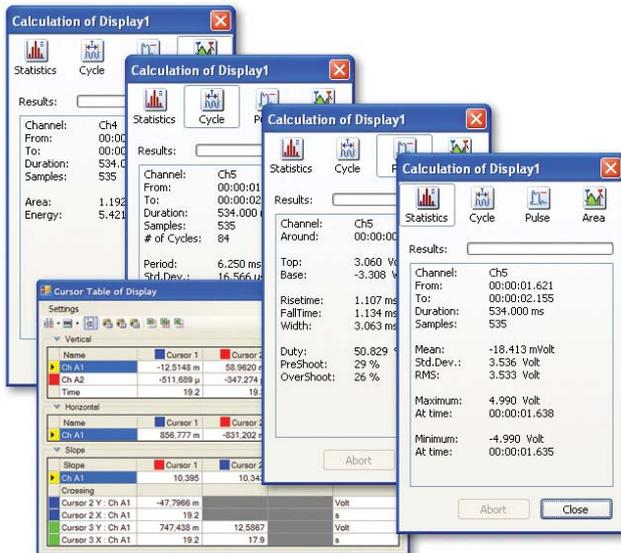


Get more information out of your data ... in a better way

Cursors and Calculators

Perception provides the measurement functionality you need to work with ease and efficiency. The powerful cursor measurement feature with a promptly updated result table allows for fast and easy access to points of interest. Interactively inspect your data and use up to seven vertical, horizontal or slope cursors for simultaneous multi-channel measurements.

Selected segments of each test can be statistically analyzed providing results like RMS value, pulse parameters, energy, etc. with a single click of the mouse.



Cursor readings and statistical results can be copied and pasted into other applications like Excel with a single mouse click. Or they can be made part of a QuickReport, a Word report or an internal report layout.

User tables for more information

Beyond displaying traces and meters, there might be the need to show columns of results, parameters or just “Go/NoGo” readings.

Run Up Test	
1	run up with vibrations take2
2	
3	
Maximum Accel in 3 axis	
5	g_inp_MAX_RPM -12,73 g
6	g_out_MAX_RPM -2,143 g
7	Max_g_inp 62,07 g
8	Max_g_out 4,681 g
9	
10	Max_RPM 4,031 k 1/min
11	
Timings	
13	t_max_g_inp 829,3 s
14	t_max_g_out 830,9 s
15	t_max RPM 834,2 s

The *Perception* user table provides a means to fully arrange any desired display of numerical or alphanumeric data. Setup is easy by just dragging and dropping any desired data source onto the table to get it displayed. Powerful formatting options allow the appearance to match expectations. Any user table can be made part of a QuickReport, a report to Word or of an internal report layout.

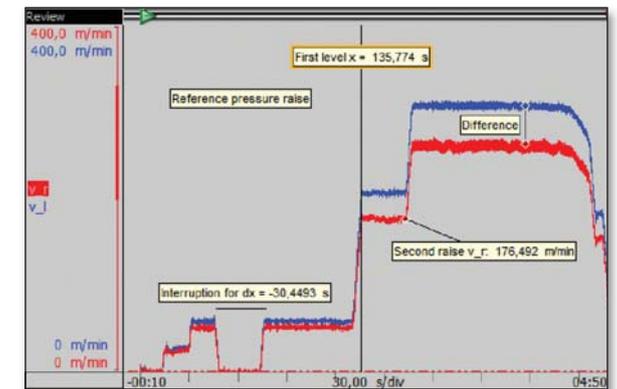
Trace Markers

Ever searched your recorded traces to find certain points of interest? And then you had to do it again the next day with the next acquisition?

Perception's Trace Markers enables to put labels on traces to mark Min, Max, or special points in time like “molding end”, “start of pressing cycle”, or a duration with “burnout period”. Various different Marker styles enable several different annotations.

Adding markers to data will make it easier to understand the data.

And there is no need to redo this for the next test data: markers can be set to be “automatic”, so that this marker is set at any data point found in the formula database.



The end result is a fully annotated display – for each and every test. And of course these markers will become part of QuickReports, internal or Word based reports. Therefore reports will not only show data, but also will have meaningful annotation.

Reporting, documentation and data transfer made easy ...

QuickReport to Word

With *Perception's* QuickReport feature, professional reports are just a mouse click away.

Prepare the QuickReport by selecting the *Perception* objects to



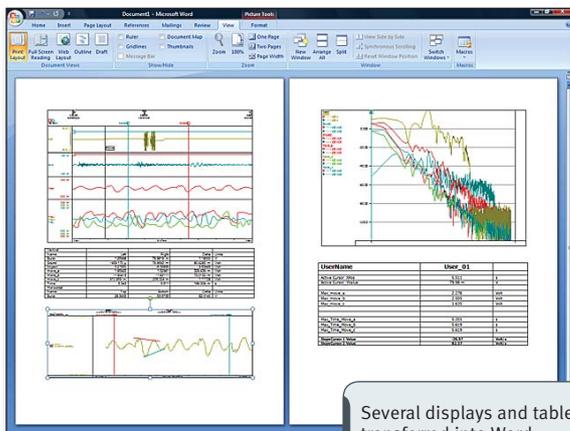
be included: time and frequency domain displays, user or cursor tables, graphics, whatever.

Once set up, a single mouse click transfers all these into Word. Done.

And the next time data comes in, another mouse click repeats this.

Or include the QuickReport into Automation or Batch processing

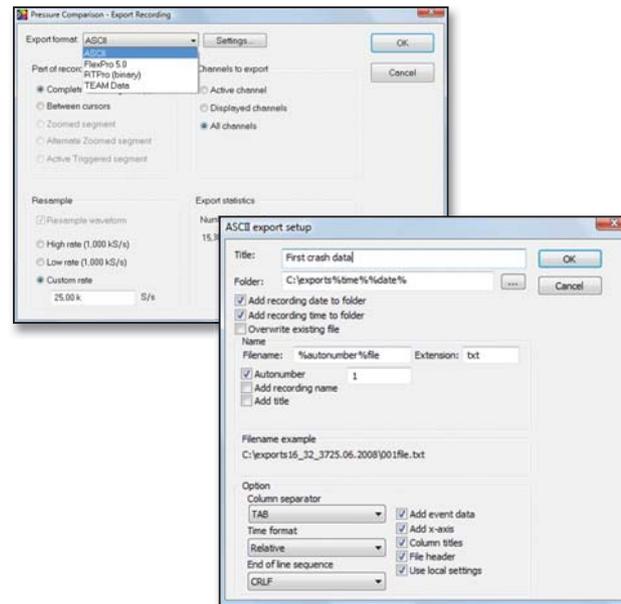
and you'll get professional Word reports without any user interaction.



Several displays and tables transferred into Word

Exports

Even though *Perception* offers advanced analysis and report capabilities, it might be necessary to export the data. *Perception* offers various transition paths for the data.



Perception has various export formats available as standard:

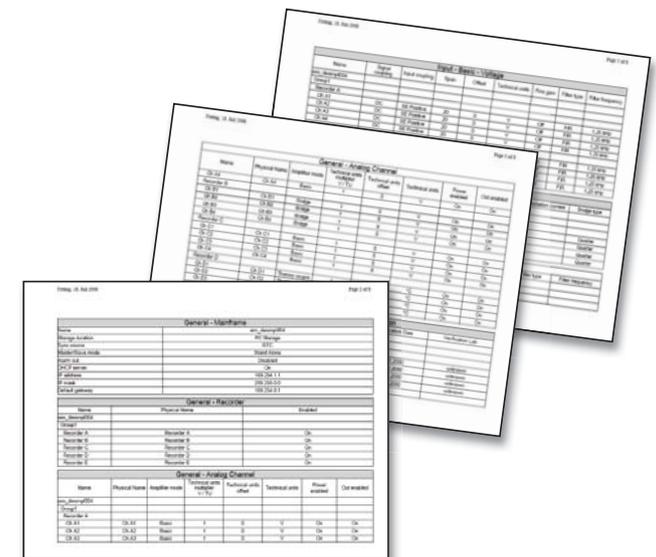
- ASCII as generic file format for data exchange
- TEAM to support this legacy product format
- EXCEL as standard office software
- RT Pro for extensive frequency analysis.

The export feature offers powerful options like channel or segment selection or even up or down sampling. It also can be used with Automation or Batch Processing to create the data files you need in the format you want automatically.

Print hardware settings – even later

Ever wondered how your hardware was set up when you caught that data? Or tried to prove to your customer that everything was set up correctly when passing the acceptance test? The flexible Print Settings feature of *Perception* lets you document your settings on paper. Black on white. Or create a PDF document containing all settings, or directly transfer all settings into Word to be included in your report.

And as *Perception* always automatically stores ALL relevant and important information within the test data, you can even print your settings if the hardware is no longer connected or available. Just retrieve the complete hardware settings out of the stored experiment data – print from the file. Months after the event - no room for error.





Powerful options to customize Perception

A software configured to your needs



Ever tried to find a special function you need in your word processor? You know it's there, but it's hidden in one of these myriads of menus. This is the penalty to pay for adding more and more features without the real needs of the users in mind. And as every *Perception* user has a unique requirement, the best solution to overcome this issue is to make the software modular.



The *Perception Standard package* offers – as indicated by its name - all standard features every user needs.

Beyond that, *Perception* offers a whole range of options from FFT analysis to Multi-Mainframe control, which can be mixed and matched to meet your real needs. So there are no “unnecessary menus” and you don't have to pay for features you don't need. And if your tasks are becoming more complex, *Perception* can grow with it. Just order the option needed for your new task, and an emailed key will grant you access to these functions in minutes. No different software, no upgrades to install.

And for pure review of data, there are two options: the *Free Viewer* can be used for basic work at no extra cost, while the *Perception Viewer package* offers all the standard features except hardware control as a cost effective solution.

Analysis

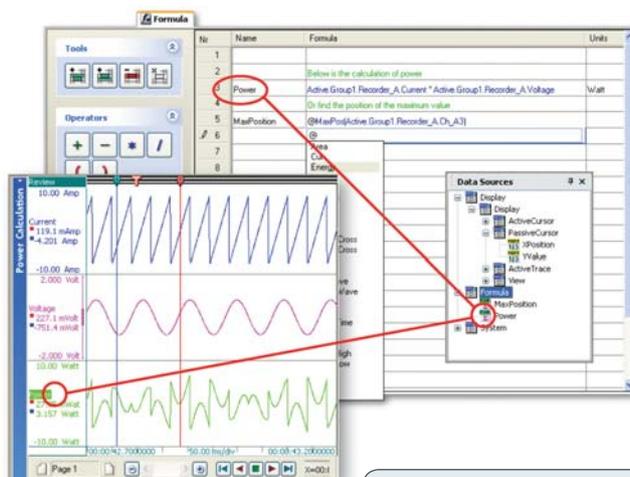


A variety of built-in functions get you on the right track for analysis, ranging from basic statistics to advanced math.

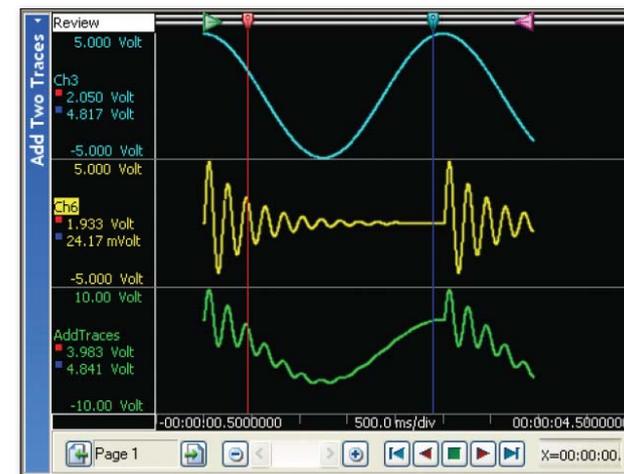
Using the formula database you can create your own set of additional functions without programming or sequencing. Just type in the required calculation and display the result. New data? The result is updated automatically, not only in the formula database but also directly on the displays and within the reports.

Once defined, the formulas can be saved to be used anytime, anywhere.

And as *Perception* offers the unique Review while Recording feature, you can also see the results of the analysis done while recording.



Once defined in the Formula Database, each new variable is available in the data pool and can be displayed.



Two traces added with the result displayed underneath

The formula database allows for an unlimited number of formulas, each with a name and units.

A formula can be created using arithmetic operations on waveforms and scalars and combined with one of the built-in functions, cursor information, or the result of another formula.

Major functions – about 80 in total – include

- Basic math like Plus or Multiply
- Advanced math like Integral or Abs
- Trigonometric functions like Sine or Tan
- Statistics like Energy or RMS
- Edit and generate data like Cut or Reduce

Auto-complete and in-line help guide you through the various options.



Powerful options to customize Perception

Basic FFT



If the analysis in the time domain does not supply answers you need, a look “over the fence” into the frequency domain might do so. Especially with complex, composite or statistical signals, a FFT analysis might be the better approach to get results.

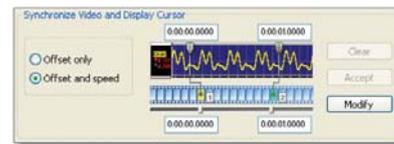
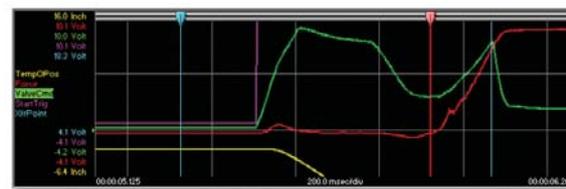


The Basic FFT option offers the most common frequency domain analysis features like FFT, PSD, ESD and others. It has a range of window selections and averaging options. And while being a sophisticated analysis method, it still matches the *Perception* approach of being “as easy to be used” as possible. A single click on the “FFT Display” button transfers the current time domain window into the frequency domain. No clumsy setup, no myriads of menus to work through. A single click and you will see the desired spectrum.

Synchronized Video Playback



Integrating video with acquired waveforms opens a complete new spectrum of analysis options. Using a web-cam or high-end, high-speed video, you now can actually see what happened at a specific point in time on the waveform(s).



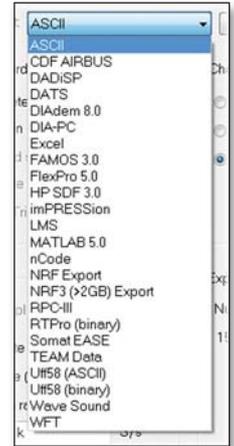
The *Perception* video option seamlessly aligns video with data and synchronizes the video acquisition rate to the data acquisition rate. Scroll back and forth and watch the video and data stay locked together. If you want to look at something specific you simply use the scroll bar and drag it back and forth - the data and video will smoothly scroll together. Use the cursors to take readings from the sensor data at any position within the waveform, and see exactly which video frame it fell on.

Advanced Exports



For off-line analysis using third-party software packages *Perception* offers some standard export formats: ASCII, Excel, TEAM and RT Pro data.

With the multiple export option you can add twenty more export formats for many popular programs. Extensive set-up options let you export the data of interest the way you want, and nothing more.



Multiple Workbooks



Perception's multiple workbook option allows you to organize your work environment into logical sections (workbooks). You can place and use each workbook on a separate monitor. Create various workspaces and display each workspace on a single monitor in a multi-monitor system.





Powerful options to customize Perception

Advanced Reporting



With intuitive layout and graphical tools, the *Perception Reporter* is not only a better choice for report generation, it's a superior way to work.

The **INTERNAL** reporting delivers WYSIWYG style, professionally designed reports and provides a natural work flow within your test environment. Data and results naturally stream into the report without copying or loading.

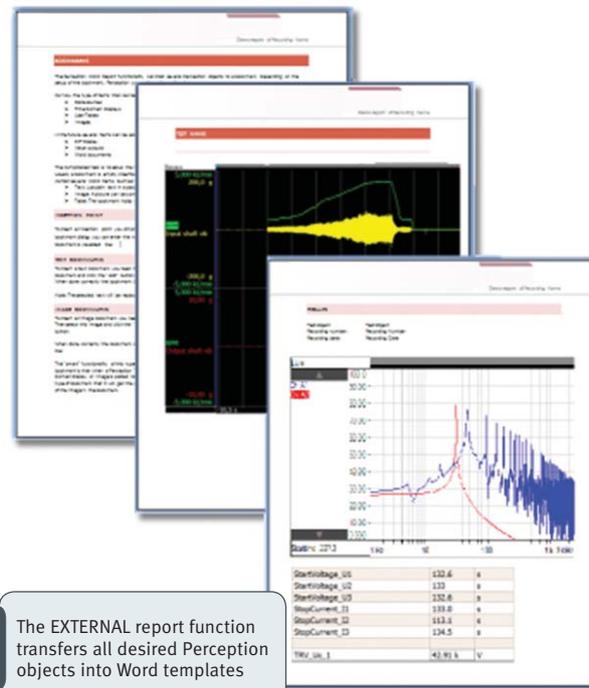
The Reporter includes tools for text, headers and footers, drawings, tables, images and displays. It supports multi page reports including page numbering. Reports or just layouts can be saved and retrieved, and also can be transferred into other applications as graphic files with just a single click.

If MS-Office is your preferred workspace for reporting, use the **EXTERNAL** reporting function.

Just create a Word template and insert bookmarks into it for test data. As data then comes in, it is transferred manually or automatically into the template and fills the bookmarks with graphics, tables, calculation results and more.

Powerful, multi page reports in Word are the result.

Combined with automation or batch processing, documenting even hundreds of test runs is no longer a pain.



The EXTERNAL report function transfers all desired Perception objects into Word templates

Information



Ever wondered who did that test last month? What the test setup was, and what prototype was used for the test?

The Information option enables you to add additional information into an input mask to be stored permanently as soon as an acquisition is done. You can freely edit input fields, add numerical or string areas, or even make them essential to be filled in before a test can be started. Never ever have "information gaps" later on by defining upfront what's needed - your ISO 9000 guys will like this....

Even without the full option installed, the COMMENTS field being standard enables you to annotate each recording with free text or with additional information out of the datasources - dynamically per test. And it also tracks the USER NAME and COMPANY NAME per acquisition - no room for error.



The INTERNAL report function creates stunning, multi page reports

Special options for programmers – and the sky is the limit

COM/RPC Remote Control



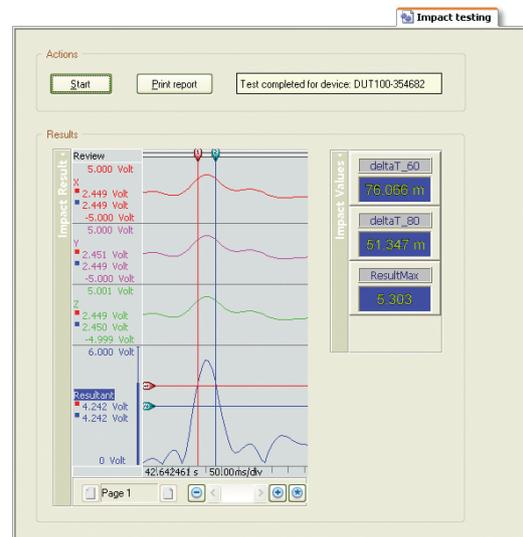
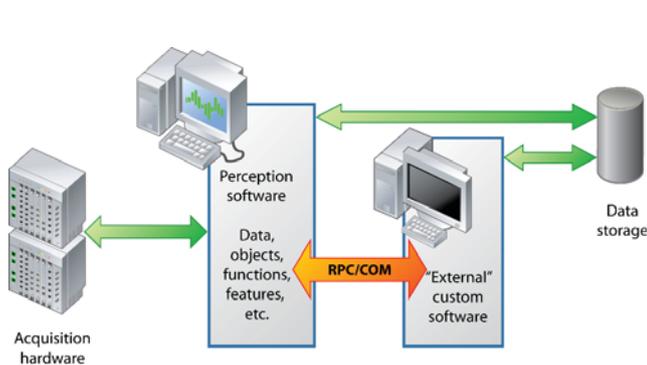
When interfacing with the *Perception* software is required, there are various choices, all included in the Remote Control option:

- COM is most likely the easiest and most popular way to interface. The high level Microsoft Component Object Model allows retrieval and control of all hardware settings, acquisition control, data retrieval and more.... COM is supported by any major programming language and also HP-VEE, NI Labview, Matlab and other software packages used in the T&M world.
- RPC provides the same functionality, but based on the cross platform standard of Remote Procedure Calls. So this interface can be used to talk to *Perception* from Windows, Linux, or any other programming environment supporting RPC.

CSI Custom Software Interface



This is a very flexible option intended to be used by programmers. The “Custom Software Interface” enables you to include your software parts INTO *Perception*. Create your own sheets with any controls or displays you like. Do special menus or even add your own specific analysis algorithms into the formula functions of *Perception*. The sky is the limit. Outperforming “classic” API programming types of software interfaces, the .NET based CSI is your gateway to the future. As this is the interface being used by the system internally as well, it offers unmatched flexibility and performance while the best maintenance and error proof design is guaranteed. If a user needs a customized CSI solution but does not have the resources, HBM can offer an engineering service on a project basis.

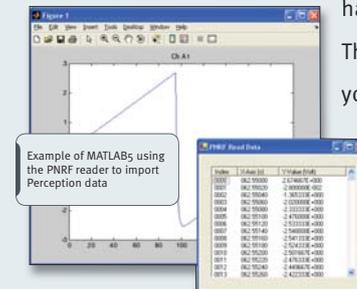


FREE PNRF READER AND PNRF VIEWER



Two free tools help users to review and handle data in other environments without Perception software:

- The PNRF Reader gives you easy access to the proprietary HBM PNRF File format. Simply integrate the tools delivered by the PNRF reader into your user-written programs and have them do the job. The PNRF Reader provides you the tools needed to get data and information in from a PNRF file without a detailed knowledge of the file format itself. There are a number of analysis packages that include a programming environment that allows you to reference external DLL's like the PNRF reader and use of them. MATLAB and LabView are two examples.



- The PNRF Viewer allows direct loading of Perception recordings to display and do a basic review of data. It is downloadable from the web and can be used by your colleagues, students, or customers to review your data without a paid Perception license. It offers display capabilities like x- and y-zoom, freeform dual zoom windows, several cursors with cursor readouts, trace markers, and several export formats.

We are committed to support and to protect your investment

Multi Mainframe Control

The multi-mainframe control option enables easy control and operation of large-scale test environments. No more limitations on channel count. Simply expand your hardware with more mainframes and control all this from within a single application.

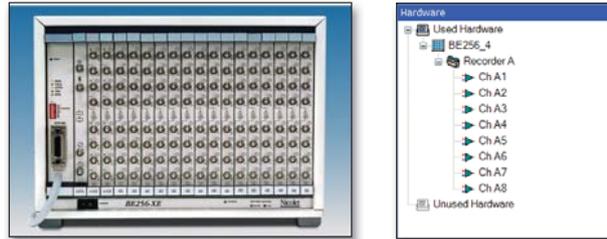
Setup and control can be based on logical group configuration. Combine the channels you want - irrespective from their hardware location - and use them as a single entity. *Perception* allows you to modify a setting for a large number of channels with a single click, while maintaining fundamental flexibility and individuality. Even combining a GEN DAQ series mainframe for dynamic signals and a Liberty DAQ system for slower signals like temperatures is possible. And even if recorded with multiple mainframes, the data ends up in a single, easy to be managed file.



BE256 / MultiPro Control

Protecting investment is important for customers and HBM is committed to support this. The BE256/MultiPro control option allows to control 15 years old hardware.

Product development cycles are very fast for software products, mainly to keep up with new techniques and technologies used in operating systems, increase productivity and to match users expectations. Hardware development cycles are much slower, as the physical phenomena often remains the same.



The transition from one measurement platform to another always raises two questions:

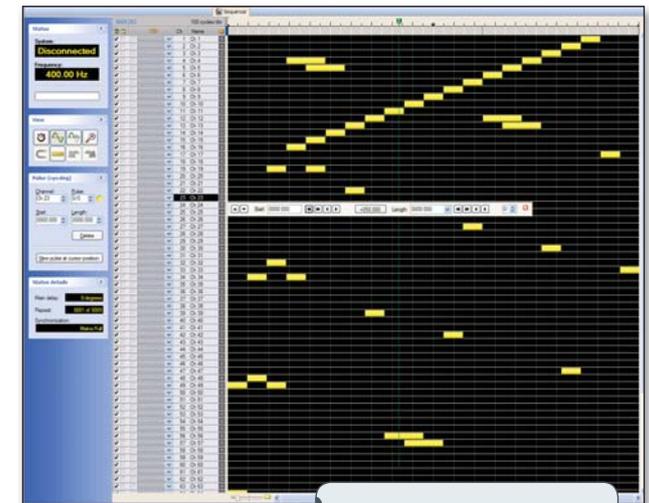
- how can I protect my investment by re-using existing components for a period of time
- how can I still have access to my old data archive

The BE256/MultiPro control option allows to continue using the hardware for another couple of years running on the latest software platform. Also the old data files in WFT and TEAM format can be opened in *Perception* directly, so there is no need to convert whole archives of recorded data files.

BE3200 Sequencer control

The BE3200 Test Sequencer is a timing device used in HV, MV, and LV labs. It's the world class standard to control switchgear, fuse or circuit breaker tests accurately and safely.

The Sequencer control option now integrates the setup and control of this device fully into *Perception*, creating a unique and effective workspace for these demanding power applications. No need for a separate PC or different software to learn – all is integrated into the same, common user interface. The control portion communicates with the acquisition portion to offer maximum safety and prevents potential user error. All existing sequence files in the TEAM SQN format can be imported and reused - this saves hours of work.



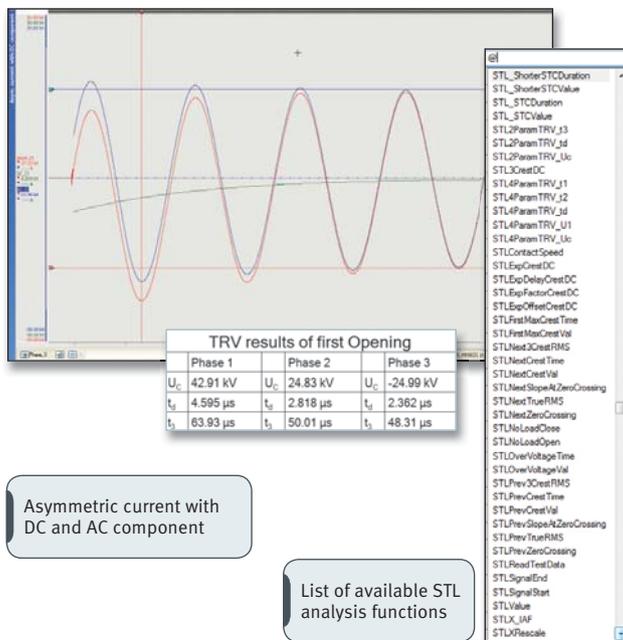
Graphical setup makes creating the sequence a breeze

Special options for the power testing community – from experts for experts

STL Analysis



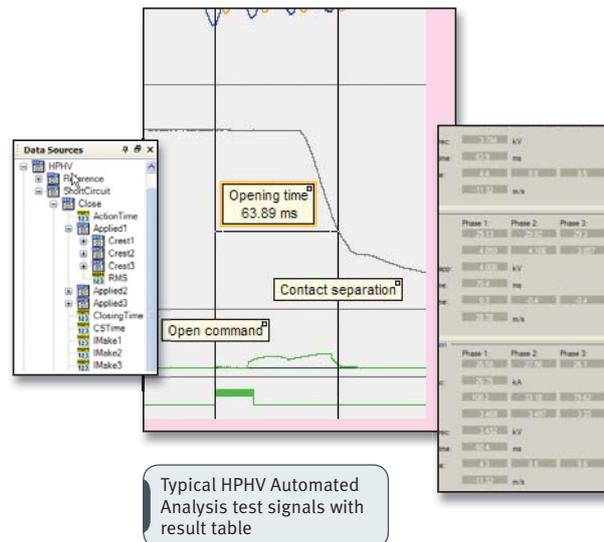
This analysis option covers all requirements in the recommendation “*STL, Technical Report, Harmonization of data processing methods for high power laboratories*” and offers about 40 specific algorithms. Written by experts for experts, the STL analysis option serves all the needs in a high power/high voltage lab to get fast and repeatable results, in compliance to the STL technical report. The STL analysis option contains a set of example applications for verification of the evaluation results according to STL (TDG test cases).



HPHV Automated Analysis



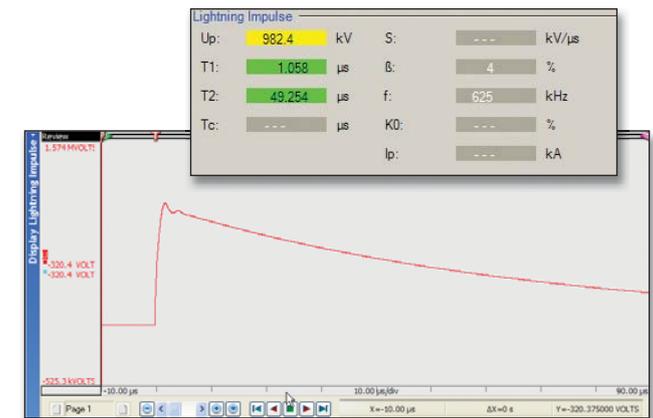
This option is a full application package for automated analysis of HV and MV switchgear devices. The automated approach reduces the need of manual interaction and allows increased repeatability and throughput. Required input signals are voltages and currents as well as signals from tripping coils and the contact travel. The “*Perception HPHV Automated Analysis*” combines the STL algorithms with built-in intelligence to take decisions based on input signals. The result is an automated signal evaluation with calculations performed at the right position of the signal (recovery voltage, breaking current, etc.), ignoring minor loops and other characteristic signal portions, which required a manual interaction in the past. Internally taken decisions are reported to the operator in a status output.



High Voltage Impulse Analysis



This option is an application package for HV Impulse analysis according to IEC 60060-1 and IEC 61083-2. Lightning impulses as well as Switching impulses are analyzed and the characteristic parameters are calculated automatically. Lightning impulses with either Overshoot, Oscillation, Chopping or a combination of the three are analyzed without user interaction. Integrated pass/fail indicators with user definable limits increase testing throughput and productivity.



To bring a testing campaign of several shots into a single report, a unique technology is used inside *Perception* to keep all raw data as well as all calculated results in its memory. Listing all the results of all shots in the user table of *Perception* brings them together in one list.

The evaluation of data can be performed according to the existing standards as well as the new k-factor method proposed in the draft of the revised IEC 60060-1 for 2010.



Supported hardware & software configurations, requirements and options



Supported hardware



- **GEN series** - High-end DAQ system combines transient recording and data streaming.
- **Liberty** - Extremely rugged data acquisition system with a low power design.
- **BE3200** - Fully optically isolated test sequencer for use in LV-MV-HV labs.
- **Dimension4i** - Portable data recorder.
- **Sigma** - Legacy streaming transient scope.
- **BE256 / MultiPro** - Popular, legacy products and Bakker transient recorders.
- **Vision XP** - Legacy, portable Data Recorder.

Note: Dimension4i, Sigma and Vision XP are supported for playback only.

Available configurations

Select the configuration that matches your needs:

Included options:	Viewer	Viewer advanced	Standard	Advanced	Professional	Enterprise 64bit version
Single GEN Series/Liberty hw control	X	X	✓	✓	✓	✓
Basic review, cursor, report, export	✓	✓	✓	✓	✓	✓
Analysis	X	✓	X	✓	✓	✓
Advanced Report	X	✓	X	✓	✓	✓
Advanced Export	X	✓	X	✓	✓	✓
Video Playback	X	✓	X	✓	✓	✓
Multi Monitor	X	✓	X	✓	✓	✓
Information	X	✓	X	✓	✓	✓
Multi GEN series/Liberty hw control	X	X	X	X	✓	✓
Basic FFT	X	X	X	X	✓	✓

The two **Viewer** versions are used for playback only without acquisition or control. All other versions include acquisition and control. Second licenses and floating network license are available for all versions. A basic **Free Viewer** is available as well.

System requirements

- Intel® Core™ Duo or comparable PC
- 512 MB RAM minimum, 2 GB RAM recommended (2GB required for Multi-Mainframe control)
- Windows® XP (SP3 or higher), 32-bit or 64-bit; Windows Vista® Business or Professional (SP1 or higher), 32-bit or 64-bit; Windows 7 Professional or Ultimate, 32-bit or 64-bit
- 200 MB of free hard disk (5 GB to install all Example Data)
- CD drive for installation (dual-layer DVD drive to install Example Data)
- Microsoft .NET 3.5 SP1 or higher (included on CD)
- Required interfaces for hardware control:
 - GEN series: 1 GB Ethernet
 - Liberty: 100 MB Ethernet
 - BE3200: RS-232 serial
 - BE256/MultiPro: IEEE-488 (NI GPIB-USB-US)

Note: For certain data transfer functions to work properly (like Word reporting), Office 2007 is required

Available software options

Software options are either part of a package selected, or can be freely combined as well. Any software option can be added later.

- **Analysis** - over 80 functions for lighting fast analysis ranging from simple *Add* or *Multiply* to more complex *Energy*, *Integrate* or *Cosine*.
- **Advanced Reporting** - creates professional documents or transfers into Word templates.
- **Basic FFT** - single channel analysis like FFT, Linear/Auto Power spectrum, ESD and PSD.
- **Multi Workbooks** - gives you more flexibility to work with multiple monitors.
- **Multi Export Formats** - expands the standard exports with 20 additional formats.
- **Multi Mainframe Support** - allows control of multiple acquisition mainframes together.
- **Video Playback** - the video playback module fully integrates video with recorded data.
- **Information** - enables entering and storing experiment information with test data.
- **RPC / COM** - control acquisition hardware through the remote software interface.
- **CSI** - program interface to create special application sheets or menus.
- **BE3200 Control** - allows control of the BE3200 test sequencer from within Perception.
- **BE 256 / MultiPro Control** supports legacy BE256 and the MultiPro transient recorders.
- **STL Analysis** - a set of 40 analysis algorithms according to the STL recommendations.
- **HPHV Automated Analysis** - application specific solution for HV/MV power labs.
- **HV Impulse Analysis** - application specific solution for HV Impulse testing.

Head Office
HBM
Im Tiefen See 45
64293 Darmstadt, Germany

Tel: +49 6151 8030
Email: info@hbm.com

France
HBM France SAS
46 rue du Champoreux, BP76
91542 Mennecy Cedex

Tel: +33 (0)1 69 90 63 70
Email: info@fr.hbm.com

Germany
HBM Sales Office
Carl-Zeiss-Ring 11-13
85737 Ismaning

Tel: +49 89 92 33 33 0
Email: info@hbm.com

UK
HBM United Kingdom
1 Churchill Court, 58 Station Road
North Harrow, Middlesex, HA2 7SA

Tel: +44 (0) 208 515 6100
Email: info@uk.hbm.com

USA
HBM, Inc.
19 Bartlett Street
Marlborough, MA 01752, USA

Tel : +1 (800) 578 4260
Email: info@usa.hbm.com

PR China
HBM Sales Office
Room 2912, Jing Guang Centre
Beijing, China 100020

Tel: +86 10 6597 4006
Email: hbmchina@hbm.com.cn

