RELEASEnotes

Version 8.30

1. Update information

These release notes describe changes between Perception (including GEN series firmware) versions V8.20.21307 and V8.30.22203.

> ⚠ **Note**: Before you can upgrade to Perception 8.30, you must upgrade to Perception 8.28 first! This step is required due to changes to the update mechanism. ⚠

2. Mid- and long-term support roadmap

Starting with Perception V8.00 some legacy features, mainframe and card support are no longer present. (A Perception V7.6x maintenance version is available for critical bug fix support.)

Supported on latest Windows versions

Including all updates until June 2022:

- Windows 10 Pro 1607 and higher (64 bit only)
- Windows 11 Pro

Installation requirements:

- Dot Net Framework V4.8
  (distributed with the install CD and available for download on the internet)
- Microsoft Direct3D® capable graphics card.

Downgrade

Perception V8.30 can be downgraded to the following versions.

> ⚠ **Note**: When an EtherCAT card is installed, a downgrade to any version before V8.28 must go through version V8.28 first. ⚠

- Perception V8.2x
- Perception V8.1x
- Perception V8.0x
- Perception V7.6x
- Perception V7.5x

RELEASEnotes

3. Perception versions

Version	Description	
	Perception Standard	Free
1-PERC-AD-0x	Perception Advanced	Paid
1-PERC-VA-0x	Perception Viewer Enterprise	Paid
1-PERC-E64-0x	Perception Enterprise	Paid

Perception supports the following application extensions:

Version	Description	
1-PERC-OP-EDR	eDrive application (setup, live and efficiency mapping table)	Paid
1-PERC-OP-STL	Advanced High Voltage/High Power analysis according STL standards	Paid
1-PERC-OP-HIA	High Voltage Impulse Analysis	Paid
1-PERC-OP-CSI	CSI Runtime extensions (Customized Software Interfaces)	Paid

4. Known Issues

Below table lists known issues.

GN310B Card	The GN310B card supports Power Calibration. Currently Perception fails to show the correct power calibration date. The date shown maps on '12/30/1899'.
Perception settings	Mainframe settings changed via the CAN remote control are not updated in the UI. Reconnecting to the mainframe will show the changes.

5. New Features

Perception – General new Features

Strict Synchronization check	Start of acquisition (preview and recording) is blocked until the mainframe is synchronized to the selected sync source. This affects all means (GENDAQ, CAN, Digital IO, etc.) for controlling mainframes, expect Perception. Perception shows a dialog (System health) for the user where he can acknowledge the issue and choose to continue.
Measurement Uncertainty	Perception Enterprise now contains a dedicated sheet to calculate the Measurement Uncertainty (MU) of DC, AC, and mechanical power values. Given inputs like the measured AC power, the type of acquisition card used, and the type of transducer used, this MU Estimation (Basic) sheet calculates the absolute and relative MU of the measured quantity. If the sheet is not visible, in Perception choose from the menu bar Sheets and then 'MU Estimation (Basic)'. Once the sheet is loaded, the Quick Start Guide can be found by opening the context menu of the sheet's tab and choosing Quick Start Guide...
Harmonic Analysis	Functionality has been added to calculate and display harmonic information according to the IEC 61000-4-7 standard. This standard specifies how harmonics must be calculated for signals with a 50Hz or 60Hz fundamental frequency which typically appear in power grid and power line applications. This new functionality contains the following parts. A new RTFDB function is now available called HarmonicsIEC61000 which calculates the spectrum of a signal following IEC 61000-4-7. The resulting harmonics can be made visible in a new Harmonic Analysis Display in Perception, both in graphical and tabular form. Harmonic Analysis is also fully integrated in the ePower suite as an optional analysis where it comes with several ready-to-use grid application setups. The Quick Start Guide for this new functionality is part of the documentation that comes with the installation and is also available from the Perception website.
XY display extensions	The XY Display has been improved and extended. The maximum number of samples that can be used showing curves in the XY Display has been increased from 1M to 10M. Furthermore, it is now possible to load an XY trace from an ASCII file that acts as a reference trace for signals available in Perception (In the XY Display, right-click, choose Properties and in the Properties window, check "Use reference trace"). This functionality makes it possible, for example, to compare the dependency between torque and speed from an external model (which generates the reference trace) with actual torque and speed data measured by Perception.
Continuous writing rate details	Details about continuous writing rates (how much data is or will be sent over a network or written to disk) are now collected in a single overview called the Continuous Writing Rate Details window (in Perception, from the menu bar choose Window, and then Continuous writing rate details...). This overview gives writing rate details down to a single type of channel, disk rates for local mainframe and PC disks, network rates towards the PC, etc. A summary of the network rates is available in the System Topology window as well (in Perception, from the menu bar choose Help, and then System Topology, or from the Continuous Writing Rate Details window, choose ... in the top-right corner). The

	Continuous Writing Rate Details window also indicates errors and warnings in case writing rate limits are exceeded, and it is clearly indicated which component(s) or which connection(s) cause the warning/error. As in earlier releases, errors and warnings are also indicated in the System Health and Status windows.
Improved system health indication	The system health information in the System Health window has been improved to contain more information about the actual system health (like when mainframes are not synchronized) and the messages in this window have been changed to make them easier to understand.
Calculator	The structure of the Perception calculator has been improved in that all results are now visible in a single view with the option to collapse certain parts. The calculated results can now be represented using scientific or engineering formatting, and the format of how a time point is represented can be selected. Furthermore, it is possible to export the results from the Calculator to Excel, to the clipboard, and to Word reports and Reporting sheets.
Double clicking on channel label should open Display setup menu	To improve usability, in the Y-t display, double clicking the channel label now opens the display properties window with the Trace Setup tab selected.
Perception UX - Show RT-FDB async in AcqControl	In triggered recording, the cycle-based (asynchronous) data were always stored for the whole duration of the recording, even if for other channels the data was stored for the pre- and post-trigger intervals. From this new release, cycle-based results are treated like other results, and this is now also indicated in the top graphic in the Perception Acquisition window.
Y-axis auto scaling	Automatic scaling is added to Y-t display such that the part of the signal that is visible is shown in the full height of the window (right-click in a Y-t display, select Properties and then, in the Traces Setup tab, choose Automatic).
All active components are marked orange	To more clearly indicate which components are active, all active components are marked orange.
Added a shortcut (Ctrl+K) active Zoom Back in a Perception Y-t display	In the Perception Y-t display, a shortcut (Ctrl+K) was added for the Zoom Back function.
Allow six components per sheet	In earlier versions of Perception, the number of components on a sheet was limited to four. From this release we allow six components per sheet. There also is more flexibility in the layout of the different components. Apart from some preset configurations of components on a sheet (selectable from the toolbar), it is now possible to divide a component into two components by right-clicking on the title bar of the component. An empty component can immediately be filled with a certain type of object (e.g., a meter, an XY display) by clicking the icon in the empty component.
Several smaller improvements	Several bugs were solved, and various actions were taken to further improve the quality of the product.

Perception – New ePower Suite Features

Harmonic Analysis	Harmonic Analysis according to the IEC 61000-4-7 standard mentioned under “Perception – General new Features” above is also fully integrated in the ePower suite as an optional analysis where it comes with several ready-to-use grid application setups.
Improved efficiency map	Several improvements have been made to the efficiency sheet in the ePower suite. Where in earlier releases, the efficiency was always displayed as a function of torque and speed,

	it is now possible to depict any measured signal in the setpoint table against any other two signals in the setpoint table. Furthermore, all the three axes can be scaled to get the maximum information in the 3D plot, it is possible to zoom in to a certain area, and clicking in the plot gives the x, y, and z value of the clicked point.
Saving and restoring setpoint data	In the ePower suite, it is now possible to save and reload setpoint maps making it possible to review an efficiency plot that was made earlier.
Ability to select time format in the table	In the ePower suite in the Setpoint table, the trigger time of a setpoint is indicated. It is now possible to format this time in terms of Relative to start of recording, Absolute local time, and Absolute UTC. The format can be selected in the ePower suite by selecting Generic Settings and then Time format.
Optional analyses per connector	In the ePower suite, the optional analyses (like the Fundamental RMS and the phasors) used to be selected globally for all connectors. It is now possible to select optional analyses per connector giving more flexibility in selecting specific analyses for specific connectors while at the same time reducing in the amount of data and the computational load.
Allow time constant for M_raw, M_inst and n_inst to be set from UI	In the ePower suite, it has been made possible to select the update rate for generating the so-called instantaneous torque and speed signals. This allows the user to control the dynamic presentation of those signals. The update rates can be selected in the ePower suite by selecting Generic Settings and then Update rate for dynamic torque and speed traces.

New Features for Hardware

EtherCAT Distributed Clock	A new "EtherCAT DC" sync source is added to the selectable list of sync sources in the Perception settings sheet. When this sync source is selected, the mainframe will try to synchronize its internal clock with the EtherCAT distributed clock. This allows EtherCAT data to be time aligned with recorded sample data. **Note:** it is strongly recommended to generate a new ESI file from Perception and import it into your EtherCAT master setup.
Config boot waits for the synchronization	When using configured boot, if boot to preview is selected, mainframe waits up to 60 seconds to establish synchronization to the sync source.
RTFDB formulas	The function HarmonicsIEC61000 was added to the RTFDB functions. This function calculates the spectrum of a signal according to the IEC 61000-4-7 standard. See also the new feature Harmonic Analysis.
CAN bus enhancements	Mainframe setup commands are added to the CAN bus interface.

6. Improvements

Improvements in Perception

Perception file location	The last loaded workbench is created in the diagnostics folder instead of the folder where the PNRF file was located.
Perception Exporting data	Exporting data now properly supports recordings where certain channels have no data at all. Also exporting using %recname% as output file now also works when display page contains only formulas.

Improvements in the Perception ePower Suite

ePower Setpoint mapping	Fixed issue related to missing temperature values in ePower Setpoint mapping

Improvements for CAN and GEN DAQ API

Connection with timeout mechanism	Two new functions are added to support timeout handling on the connections over the GEN DAQ API: GHSConnectWithTimeout and GHSInitiateDataTransferWithTimeout See helpfile for explanation of the function arguments of the new functions.
Various methods added GEN DAQ API	Various methods are added to the GEN DAQ API. **Note:** Several methods have become one based, requiring updating the applications using the GEN DAQ API.

RELEASEnotes

Improvements for Hardware

GN610B, GN611B, GN310B, GN311B, GN840B, GN1640B, GN8101B, GN1202B, GN815, GN3210, GN3211	Quadrature Angle mode now supports up to 32767 pulses per rotation improving the precision of the signal.
RTFDB number of channels available for storage	The number of RTFDB channels available for storage has been increased to the table below.

Mainframe type	Available number of RTFDB channels for storage **before**	Available number of RTFDB channels for storage, **after update**
GEN2tB	256	256
GEN3t / GEN3i / GEN3iA	256	300
GEN4tB	256	500
GEN7t / GEN7i / GEN7iA	256	1000
GEN17tA	256	1000

Configured boot	Resolved an error condition while storing and restoring of configured boot on cards with RTFDB support, but with an empty RTFDB configuration.

7. Deprecated support

The following is no longer supported within Perception.

- GPS2750

8. Supported Genesis HighSpeed Mainframes

The following Genesis HighSpeed Mainframes are supported:

- GEN2tB
- GEN3t
- GEN4tB
- GEN7tA
- GEN17tA
- GEN3i
- GEN3iA
- GEN7i
- GEN7iA
- BE3200

9. Supported QuantumX Modules

Note: The support of QuantumX Modules in Perception will stop with future versions of Perception!

QuantumX modules can be integrated in systems with tethered mainframes using the CAN-interface together with a QuantumX MX471C.

The following QuantumX models are supported:

- MX1609KB
- MX1609TB
- MX471B
- MX809B
- CX27B as single network access point only, no setup or control of CX27B

Data streaming is available for all other B type QuantumX modules.

Note: Former Release notes mentioned to support MX471B / MX471C, but this should have been only the MX471B. The MX471C might work in some cases, but this is not guaranteed.

Note: Perception includes and only works with the following QuantumX software components:

- QuantumX firmware: V4.12.32.0
- HBM common API: V4.0.0.56

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