Version 8.22

1. Update information

These release notes describe changes between Perception (including GEN series firmware) versions V8.00.20232 and V8.22.21328.

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 July 2021:

• Windows 10 Pro 1607 and higher (64 bit only)

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 V8.0x can be downgraded to the following versions:

- Perception V7.6x
- Perception V7.5x

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'.

5. New Features

Perception – General new Features

Perception New FDB functions	The functions @UpperEnvelope() and @LowerEnvelope() were added to the Formula Database which determine the upper and lower envelope, respectively, of the specified input signals.
Perception New UX	 Y-t display annotation area now drag-drop resizable Invert display color available as menu item
Perception RT-FDB storage	To provide more consistent sweep-data storage behavior of RT-FDB signals, all data outside of pre and post trigger is no longer stored.
Perception SensorDB now without license	Going forward, the Sensor database no longer requires a license.
Perception Updated SensorDB	Sensor database has been updated to the latest release which includes many new sensors.
Perception New User Keys	 New action allowing to update an RT-FDB scalar. Update can be either hard-coded or taken from a datasource (for example an InfoSheet datasource). New action supporting load/save real time formulas from/to Excel or ASCII file. New action to open a pre-defined workbench. New action to set the channel span.
Perception Timed Cycles	The acquisition setup now also supports 'External Trigger Out' settings.
Perception Display toolbar	Added two new buttons to "invert colors" and "change zoom style".
Perception Scope display improved	The ePower Suite scope display now is more stable.
Perception Bridge Wizard removed	The Bridge Wizard is no longer part of Perception.
Perception File size VWB reduced	Since Perception 8.0 the VWB file size increased due to storing icons. VWB files are now compressed with much reduced file size (up to factor of 10). Note that compressed workbench files cannot be re-used in older Perception versions.
Perception RTFDB auto display range	The RTFDB output display range is now automatically determined based on the input channel display range(s) and the chain of follow up RTFDB calculations. When the auto range feature is active, the output display range is updated matching input channel range changes. The resulting output display ranges can be finetuned using the "Display Range Factor" and "Display Range Offset" columns that have been added to the



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	Real Time Calculations table.
Perception UFF58 recording loader	Added UFF58 recording loader
Acquisition Control tooltip	The gauge in the acquisition control now has a tooltip with rich details. Both load on the network as on the disk is reported out on a per mainframe base.

Perception – New ePower Suite Features

ePower Suite Phasor Display improvements	Display inherits colors and font from linked display.
ePower Suite Start-up video	The ePower Suite now shows a video at startup. This gives an 11-minute introduction into basic operation principles of the ePower suite. Later releases will see updated video content.
ePower Suite More responsive setup	During ePower Suite setup, certain selections cause the system to enter a (time- consuming) process of redeploying formulas. This happens now less often.
ePower Suite New efficiency page	A new sheet is added to the ePower Suite, showing efficiencies.
ePower Suite workbench backwards compatibility	Loading back a VWB where an event bit was selected as a cycle source threw an exception. This selection is not supported in ePower and is now changed to an 'empty' selection.
ePower Suite New FDB formulas	Following formulas were added to extend processing capabilities: @DQ0InverseTransformation(), @DQ0ToSpaceVectorTransformation, @SpaceVectorToDQ0Transformation()

New Features for Hardware

Native CAN recording	Support for the new, built-in 4 port CAN FD interfaces for GEN DAQ mainframes GEN2tB, GEN4tB, GEN7tA and GEN17tA. These internal CAN FD interfaces allow: - to record CAN data streams, - to broadcast computed results like RMS values, Power or Efficiency to CAN FD - and to remote control the hardware via CAN bus commands. It replaces the QuantumX based CAN recording solution, which will be discontinued in the future.
CAN acquisition control	CAN messages to control acquisition have an incoming message request and an outgoing confirmation message. Both messages now have a separately configurable message ID.
GN310B/GN311B GN610B/GN611B Enhancement: 4 TimerCounter channels	The power analyzer cards GN310B/GN311B and high voltage cards GN610B/GN611B now support 4 rather than 2 TimerCounter channels. Two of the 4 TimerCounter channels are linked to an input on the mainframe they are used in.
GN310B/GN311B Enhancement: analog Torque/Speed	The ePower Suite added support for analog torque and speed when using the GN310B/GN311B input card.

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GN810xB Increased sample rate	Input card GN810xB: The maximum continuous sample rate is upgrade from 25 MS/s to 50 MS/s
Skip waiting for WOL	GHS mainframes support Wake On LAN. When connecting to a mainframe that is not 'On', a WOL packet is sent to wake it up, which takes 2 minutes. A new option is added to skip mainframe/waiting.
Higher trigger limit	Now up to 200.000 triggers are captured as part of the PNRF. Earlier limit was 10.000.
Technical Unit Range extended	The Technical Unit Range and Offset now have a wider range selection: TUM: 1.0E-15 to 1.0E15 TUO: - 1.0E15 to 1.0E15

6. Improvements

Improvements in Perception

Perception General	 Current/Next experiment name now consistent In case Perception runs on an older Windows version, the audiodg.exe driver might be causing memory leaks upon trigger sounds being played. Playing sound within Perception is now dropped when this driver exceeds 250 MB memory usage Improved handling of switching from preview to recording state – solving potential issues in the live data management (as used by the ePowerSuite)
Perception Acquisition Control	 Several minor updates to improve User Experience. Solved case where post-trigger time could not be entered properly. When storage location is changed, this is now properly updated in the GUI. Creating results now always produces required behavior
Perception Display	Fixed scenario where a zoom window would show spikes where the not-zoomed display would not.
Perception Display	 Added option to remove unused items from the display. This then cleans up two things: All empty traces. A trace is empty if it does not have a data source attached. All panes that do not contain a non-empty trace will be removed (at least one single pane will always be shown)
Perception Workbench	 Manually configured mainframes are now fully supported in all workbench-related scenarios External trigger-in setting now properly persisted Channel range settings in context of ePowerSuite and applied sensor now properly restored Workbench now can also be re-used after a change in the configuration of an internal option carrier cards is applied
Perception Post-process formulas	ePowerSuite can generate post-process formulas. In some conditions this caused an exception.
Perception User Table	Fixed issue where in rare conditions a UserTable setup might cause an exception.
Perception Exporting data	Exporting data now properly supports recordings where certain channels have no data at all
Perception RPC methods	GetAsyncRTFDBValues() now properly returns full list rather than a smaller subset





Perception Experiment name	Reporting of current/next experiment name and numbering system made more consistent across full system.
PNRF storage	The starting and stopping of a recording process is now 100% faster.
Perception FDB	Dividing two signals with same unit now produces a unit-less result.
Perception Markers	Formatting using the Fixed-Point notation in markers now works correctly; when the before separator is less than the number of digits before the separator of the value to be shown.
FDB @BackEMF	Solved issue where @BackEMF() formula failed to produce data.
License update	Solved issue where updating license would fail on GEN3i/GEN7i

Improvements in the Perception ePower Suite

ePower Suite	 ePowerSuite Copy button now also works with display scaling other than 100% Reduced CPU and network load when not using FFT displays. New notification in rare cases, when too many traces need live updating. Improved connection behavior against mainframe in preview mode Some workbench loading improvements Improved TimerCounter channel setup for 'Use reference pulse' scenario Improved 'Start and stop trigger on cycles' handling of real-time formulas Event channel storage setting was wrongly affected upon Perception disconnecting from mainframe
ePower Suite	 Fixed issue with inconsistent filter frequency settings Improved handling of setpoint generation in excel file where race condition might have caused dropped items Upon Perception connecting with mainframe in 'preview' or 'recording' mode, no state is changed in the mainframe anymore Reduced Perception memory usage when generating a large amount of setpoints
ePower Suite workbench backwards compatibility	Loading back a VWB where an event bit was selected as cycle source threw an exception. This selection is not supported in ePower and is now changed to an 'empty' selection.
ePower Suite storage enabled of additional channels	When storage of additional channels (not used by ePower setup) was enabled and saved in a workbench, storage of these channels was not enabled anymore after loading this workbench. This is fixed.
ePowerSuite setpoints	Setpoint capturing process now also robust for close triggers.

Improvements for CAN and GEN DAQ API

CAN Backwards Compatibility	The introduction of the CAN IN recording feature also introduces advanced settings for CAN bus timing. These settings are not compatible with the CAN bus settings for CAN fieldbus. Reloading configured boot, or a workbench created with a Perception version earlier than 8.22, requires a check of the CAN bus settings by the user and storing the new configured boot and/or the workbench.
CAN	Corrected the endianness of published float values. In some conditions it was flipped

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Data output	 the wrong way. CAN *.DBC file generation contained faulty endianness information.
CAN Acquisition Control	A saved workbench – containing CAN acquisition control setup – is now properly loading.
CAN DBC file	CAN DBC file generation now generates useful Display range values.
CAN fieldbus	 DBC file generation now is compliant with external validation tooling Bit Rate Shifting is now properly stored in workbench and applied upon reloading
GEN DAQ API	The fixed Status and Value properties of published data have been renamed to the published data name: - "_S" suffix for status - "_V" suffix for value.

Improvements for Hardware

GN840B/GN1640B	Default sweep length for GN840 and GN1640 has been changed to 0.5s, following defaults of other cards.
GN1202B/GN8101B	Default sample rate was changed from 25 MS/s to 20 MS/s. This default also allows Digital IO.
Local mainframe storage	Multiple improvements on setting up and using the feature of accessing a data disk local to the mainframe.
Linearization	A few use cases lacked proper support for linearization. All around improvement leading to proper linearization in all relevant use cases.
Sensors	 Various improvements on usage of non-linear sensors. Note that some of these improvements might affect (i.e. improved) interpretation of existing recordings. RTFDB: Timer/Counter signals apply non-linear user scaling for non-linear sensors. Correct ADC ranges are applied for a sensor with multi point linearization. TEDS sensors with two-point linearization are mapped on technical unit scaling. Fix in applying technical unit scaling
	Zeroing of a two-point linearization sensor now works always rather than only once - after TEDS detection. Timer / Counter channels can be zeroed from Perception and/or GEN DAQ API.
Robustness	Solved spontaneous mainframe reboot scenario
Robustness	Fixed case where auto-ranging caused embedded mainframe software to crash
Local storage	Fixed issue with formatting of mainframe-bound disk.
Configured boot	Applying configured boot now correctly restores the High Rate storage flag for RT-FDB channels
Configured boot	In rare cases some channels from the GN310B/GN311B input cards were incorrectly initialized upon booting with a configured boot setup. This resulted in potentially clipped values.
Configured boot	Report configured boot errors with three beeps and on the GEN4tB and GEN2tB error messages will be shown on the LCD display.

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Auto configure	Using auto-configure to connect to a mainframe is now robust against mainframes being in preview mode both either with or without the ePowerSuite sheet being used.
QuantumX	When connecting to a QuantumX device and its clock is found to be mismatching the Perception PC time by more than one day, the QuantumX timestamping is replaced with Perception PC timestamping. This solves scenarios where lack of proper QuantumX time synchronization introduces timestamps from 2019 or earlier.
QuantumX	Fix for scenario where in some sweep-based recordings a false positive 'Timebase synchronization lost' marker was inserted.

7. Supported Genesis HighSpeed Mainframes

The following Genesis HighSpeed Mainframes are supported:

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

8. Supported QuantumX Modules

The following QuantumX models are supported:

- MX1609KB
- MX1609TB
- MX471B / MX471C
- MX809B
- CX27B as single network access point only, no setup or control of CX27B

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

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

Patents no: 7,868,886

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