Release Notes

Perception & GEN Series Firmware **Version v8.70**

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Contents

1 Update information

These release notes describe changes in Perception (including GEN series firmware) V8.70.

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.)

2.1 Supported on latest Windows versions

Including all updates until April 2024:

- Windows 10 Pro 20H2 and higher (64 bit only)
- Windows 11 Pro

Installation requirements:

- Dot Net Framework V4.8.1 (distributed with Perception installer)
- Microsoft Direct3D® capable graphics card.

2.2 Network license server

The license server for network licenses can run on Windows 10 or Windows 11. Note that Windows Server 2008 is the last version of Windows Server which can be used to run the license server.

2.3 Downgrade

Perception V8.70 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 V8.6x
- Perception V8.5x
- Perception V8.4x
- Perception V8.3x
- Perception V8.2x
- Perception V8.1x
- Perception V8.0x
- 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-E70-0x	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

Perception recording	When in Perception -> Settings -> Acquisition all optional storage is disabled, the recording will not stop the normal way. It will stop after a timeout of several minutes.
Split recording and RTFDB functions	When using the option for split recording (in Perception go to File -> Preferences... -> Perception -> Recordings) together with one of the RTFDB functions TimedMean(), TimedStdDev(), NumSamplesMean() or NumSamplesStdDev(), the different parts of the recording will remain locked until the end of the acquisition.
Limit of 900 sweeps when using split recording using the mainframe disk	When a recording is made to the drive in a mainframe and split recording is active, after 900 sweeps, the recording continues but no longer as a split recording. Also, a continuous recording can be split every 'x' seconds, if this is the case, the same will stop and the number of splits in continuous and sweeps is added together and cannot exceed 900. Workaround: The user can record to the PC drive instead of to the mainframe drive. Alternatively, the user may stop and start the recording again after a large number of sweeps.
Robustness issue when wrongly connecting the remote probes	In earlier versions, the assignment of an ePower suite connector to a recorder was an absolute channel assignment (e.g., for an application template, the connector at the inverter output was always assigned to Recorder A), this assignment has now been changed into a relative channel assignment (e.g., the connector at the inverter output is assigned to the first applicable recorder). However, this is not true for the remote probes. In this case, no default assignment is made and the user has to assign the proper channels manually.
Perception does not update settings modified through the fieldbuses	If Perception is connected and mainframe settings are change via CAN acquisition control, Perception doesn't update setting with new value. Workaround: disconnect and reconnect to the mainframe.
Remote Probes: The Analog Settings are not properly restored upon disconnection of Probes	If the Probes are disconnected for a short or long time, then upon reconnection the default settings for the channel are getting applied. This has been noticed for the span settings. The intent is to recover the actual settings when the same probe is reconnected (within a reasonable time). This is not yet the case. The current behavior will lead to problems when reloading a workbench while the channels are switched off. To avoid losing the reloaded settings when Probes are currently switched off, the user may want to make sure to switch on the probes first and then reload the workbench (when the channels report Warming Up or Power On) to retain the workbench settings. The fix to restore the analog settings upon re-connection will be available in the next upcoming release.

5 New Features

5.1 Perception – General new features

Allow to manually arm triggers from Perception	In GHS/Perception it is possible to use a trigger arming mechanism. If this mechanism is activated, triggers must first be armed before triggers can be processed to generate a sweep in a recording. At the end of a sweep, the triggers are automatically disarmed and must be armed again before the next trigger can be processed. Up until now, triggers could only be armed at the mainframe directly, for example by sending the proper fieldbus command to a mainframe. From this release, it is also possible to arm triggers in Perception: if the trigger arming mechanism is activated and the triggers are not armed, in Perception in the Acquisition Control window, the regular large trigger button (T) changes into an arming button (A). When this button is pushed, the triggers are armed and the system is ready to process triggers from all the regular trigger sources. At the same time, the arming button (A) changes into the regular trigger button (T) such that it is also possible to give a manual trigger by pushing this T button.
Semi-automatic renumbering of CAN and EtherCAT message IDs	When publishing signals on the fieldbuses, for some fieldbuses (like CAN and EtherCAT), signals names are linked to a message ID or publishing ID. Initially, Perception or the ePower suite assign default values to those IDs but those can be modified by the user one-by-one (go to Settings → Real-time Data → Publishing). However, when many signals are published, it can be time consuming to modify the ID of each individual signal to be published. For this reason, functionality was added to modify the IDs for a range of signals in one go as follows. First select a range of signals in the 'ID column' of the relevant fieldbus. Right-click the first selected signal, type in an ID number and Enter. All the selected IDs will now be renumbered sequentially. For CAN, subsequent signals will get the same ID but get assigned a different byte range (0..3, or 4..7). Note that IDs should be unique such that when an ID used for renumbering was already in use, an error will occur, just as when renumbering IDs one-by-one.
Allow exporting asynchronous signals as low sample rate synchronous signals to ASCII/Excel	Asynchronous signals are the results of cycle-based processing and the time between samples is at least 0.5ms. When exporting, those signals were resampled at a high sample rate leading to large files. In the previous release (8.60), asynchronous signals could already be exported to MATLAB and MDF4 as synchronous signals at a user-defined sample rate. In this new release, this is now also possible when exporting to ASCII or Excel. This option can be found in the regular export dialog (File → Export Recording ...).
Frequency, amplitude and phase from spectral data type in the FDB	In an earlier release, functionality was introduced to calculate the harmonics of periodic 50Hz/60Hz eGrid signals according to the IEC61000-4-7 standard using the @HarmonicsIEC61000() RTFDB function. To allow storing harmonic (spectral) information over time, a new spectral signal type was introduced. Up until now, this information could only be shown and interpreted by the Harmonic Analysis Display. In this release, three functions were added to the FDB that can postprocess those spectral signals: @HSOneHarmonicAmplitude(): returns a waveform containing the amplitude of a specified harmonic over time derived from the spectral input signal, with or without frequency grouping. @HSOneHarmonicPhase(): returns a waveform containing the phase of a specified harmonic over time derived from the spectral input signal. It returns the phase of the pure harmonic only (i.e., interharmonics are not used). @HSFundamentalFrequency(): returns a waveform containing the fundamental frequency over time of the original time signal derived from the spectral input signal.

Channel selection during export in batch processing	In earlier releases of Perception, it was made possible to select which channels should be included when exporting a recording to an external format such as MATLAB, MDF4, etc. In this release it is now also possible to select channels when exporting recordings from Perception in batch processing (i.e., exporting a large number of recordings in one go). To prevent unexpected results, make sure that all recordings in a batch contain the same signal names and signal hierarchy (such as multiple recordings of the same setup).

5.2 Perception – New ePower Suite Features

Support for GN800B Receiver card, and voltage and current Remote Probes	The ePower suite supports the Remote probes. In earlier versions, the assignment of an ePower suite connector to a recorder was an absolute channel assignment (e.g., for an application template, the connector at the inverter output was always assigned to Recorder A), this assignment has now been changed into a relative channel assignment (e.g., the connector at the inverter output is assigned to the first applicable recorder). This is also true for the remote probes in which case the Remote Probes receiver card is interpreted as a recorder with 8 channels (4 voltage channels and 4 current channels).
Measurement uncertainty for power and efficiency setpoint values	Setpoint maps are indispensable in characterizing and studying electrical motors and electrical drive trains. Important examples are setpoints maps where powers and efficiencies are shown as a function of, for example, torque and speed. In the ePower suite, setpoint maps based on setpoint values can be generated easily. Although Perception and the ePower suite are designed to measure physical quantities with high accuracy, for various reasons, such as uncontrollable environmental conditions, even with the highest quality standards, it is impossible to measure a quantity exactly and without error. Therefore, when stating measurement results, it is important to also consider the measurement uncertainty. In this release, the ePower suite setpoint functionality has been extended with the measurement uncertainty (MU) of the power and efficiency setpoint values. The MU for those setpoint values is made available as an Optional Analysis (in the ePower suite, click the Optional Analysis button and in the Measurement Uncertainty column, select for which connectors and for which efficiencies the MU must be determined). The MU of a measurement depends on the used sensors, acquisition cards, span, etc. In the new functionality, all the hardware and setting information required to determine the MU is automatically retrieved from the measurement setup. The only information to be provided by the user are environmental conditions, such as the expected ambient temperature and the expected working range of a sensor. The MUs for powers and efficiencies are made available as regular setpoint values making it possible to not only generate, for example, a setpoint map of the efficiency as a function of torque and speed, but also to generate a setpoint map giving the relative or absolute MU of the efficiency as a function of torque and speed. For further information, also refer to the Quick Start Guide ”Measurement Uncertainty Estimation for Power and Efficiency Setpoint Values” (Perception_QSG_MU_for_Setpoints) that comes with a Perception installation.
Torque ripple analysis	In the ePower suite, an optional analysis was added to determine the torque ripple. In Perception, load the ePower suite sheet, click Optional Analysis and in the 'Torque ripple' column, select the mechanical connectors for which the torque ripple must be determined. The absolute torque ripple is calculated for each user-specified cycle interval by taking the absolute difference between the maximum and minimum torque value in the cycle interval. The relative torque ripple is determined by dividing the absolute torque ripple by the absolute value of the average torque in a cycle interval. Note that meaningful results for the torque ripple will only be obtained if the measuring time of the torque Timer-Counter channel is larger than the 1 divided by the minimum frequency generated by the torque sensor. Refer to the context help of the ePower suite Optional Analysis Settings for further details.

Modifying cycle-detect parameters from the fieldbuses	The RTFDB function CycleDetect() allows detecting cycles in a measured signal. In the ePower suite, cycle detection is important to allow computing entities like cycle-based powers and efficiencies. How cycles are detected in detail is determined by 8 scalar inputs to a CycleDetect() function (such as Cycles, Level, Direction, Hysteresis). When used in the ePower suite, some of those parameters get default values and some can be edited by the user, such as Cycles and Level. From this release, it is possible to modify those 8 cycle-detect parameters using fieldbus commands. This is convenient when a system is set up using the ePower suite and after that controlled through the fieldbuses by an AuSy. To allow modifying cycle-detect parameters using fieldbus commands for an existing ePower suite setup, in the ePower suite go to Generic settings and in the tab Setup Behavior check 'Set cycle detect parameters from fieldbuses'. The default selection for new ePower suite setups can be done by loading the ePower suite, go to File → Preferences → ePower suite → Generic → Setup Parameters and check 'Set cycle detect parameters from fieldbuses'.
User-defined variable naming for ePower suite signals	In the ePower suite, a major part of the name of a signal (or variable) is derived from the user-defined names of ePower suite Components and Connectors. For example, if an ePower setup contains a component named 'Inverter' and a connector named 'Out' as user-selected names, then the name of the cycle-based power signal measured at the connector is called Inverter.Out.P. The last part of the name ('P') is chosen by the system and is shown, for example, in Meters. In many cases, users want to use their own dedicated signal names throughout (in displays, on the fieldbuses, in the recording, etc.) such that all those signals can easily be referred to in the outside world by the same name. It is now possible for the user to define the last part of this signal name. In the ePower Suite entry in the Menu bar, click 'User Defined Variable Naming...'. The 'User Defined Variable Naming' window will pop up listing listing all the signals (variables) in the first column called 'ePower suite name'. In the 2nd column, a user-defined name can be given. A user-defined name can be removed by selecting a cell (or multiple cells) and clicking the Delete button on the keyboard. Note that by default, the user-defined name is also used when publishing signals on the fieldbuses.
Optional analysis for harmonic active power and harmonic RMS	In electric machines, the electrical power in the fundamental (1st harmonic) is the most important for converting electrical power into mechanical power. Higher harmonics in the active power may negatively impact the properties of the machine by causing additional heat dissipation, torque ripple, and unwanted mechanical oscillations/vibrations, etc. In this context, it is therefore useful to know the amount of harmonic content in both the active power signal (i.e., the difference between the total power and the power in the fundamental) and the voltage and current signals (i.e., the difference between the RMS value of the voltage (or current) and the RMS value of the fundamental of the voltage (or current)). In this new release, an optional analysis 'Harmonic Power and RMS' is added generating additional RTFDB formulas giving the above information on harmonic content of active power/voltage/current signals. Within this context, the total active power is decomposed into fundamental active power and non-fundamental active power including all other harmonics. In the ePower suite, go to 'Optional Analysis' and in the column 'Harmonic Power and RMS' of the 'Optional Analysis Settings' window, select the (electrical) connectors for which signals representing harmonic content must be generated.

5.3 New Features for Hardware

Support for GN800B Receiver card	The GN800B receiver card can connect to up two remote probes via optical fiber cables. The digital transmission does not add any drift or error to the measured signal while an automatic cable length compensation ensures phase-matched signals between remote probes. Using a voltage and a current remote probe, the probes become power channels. The real-time formula database of the receiver card comes with all standard formulas for real-time power calculations up to 2 MS/s, while user-defined formulas are also possible. Digital cycle detection enables dynamic power calculations with up to 2000 results/s, with a typical latency < 1 ms and real-time bus transfer. All raw data including real-time results can be stored continuously or in a triggered mode for applications like real-time machine mapping.
Support for P101I-4 Voltage Remote Probe	The P101I-4 Voltage remote probe is a remote front end for the GN800B receiver card. It offers four analog voltage inputs with ranges up to ±2000 V and sample rates of 2 MS/s. The remote probe is connected to the mainframe only via optical fiber, which offers several advantages: It can be placed close to the device under test, short test leads minimize reflections and increase accuracy, prevent EMC disturbances sent out from the cables and eliminate crosstalk. The input ranges go up to ±2000 V serve the most demanding applications, and the overvoltage CAT ratings prevent instrument damage in case of overvoltage conditions. In combination with a P111I-4 or P112I-4 Current Remote Probe and a GN800B receiver card it offers unmatched performance, accuracy, and safety in electric power measurement.
Support for Current Remote Probes: P111I-4 without CT power, P112I-4 with CT power	The P111I-4 / P112I-4 Current Remote Probe is a remote front end for the GN800B receiver card. It offers four analog current inputs with ranges up to ± 2 A for direct connection to current transducers (CT’s) and a sample rate of 2 MS/s. Alternatively, a voltage input is available to use current clamps for current measurement. Being remote and only connected via optical fiber, it offers several advantages compared to a traditional power analyzer. Placed close to the device under test, short test leads minimize reflections and increase accuracy, prevent EMC disturbances received on the low-level transducer connection cables and eliminate crosstalk. Also, the Current Remote Probe can be calibrated independent from the receiver card or the mainframe. The P111I-4 / P112I-4 Current Remote Probe in combination with a GN800B receiver card offers unmatched performance, accuracy, and safety in electric power measurement.

New ”Remote Probes” status sheet

This is the first release that supports measuring voltage and current signals using the new Remote Probes which are connected to the new GN800B receiver card using a fiber connection. The GN800B card can be used in a regular mainframe. In Perception, the status of receiver card and the probes can be viewed in the 'Remote Probes' sheet (In Perception, go to Sheets → Manage sheets... , select 'Remote Probes' and click 'Load'). By default, a limited amount of status information is displayed. By right-clicking on a column entry or by clicking the blue 'i' in the menu bar, advanced status information is shown.
The columns in the Remote Probes sheet have the following meaning:

- Channel Status: Offline, Busy (initializing), OK/Online
- Channel Temperature: Maximum temperature measured inside the channel
- Channel Power Status: Internal power supply status of channel
- Channel CT Power Status: CT power supply status (only applicable for P112I-4)
- Channel Serial: Channel serial number
- Channel Companion Serial: Companion channel serial number
- Probe Link Status: Fiber link status between GN800B and Remote Probe
- Probe Link Quality (BER): Bit error rate of fiber link between GN800B and Remote Probe
- Probe Cable Length: Indication fiber cable length (+/- 3 m)
- Probe Serial: Remote Probe serial number
- Probe Temperature: Maximum temperature of Remote Probe with excl. channels
- Probe Power Status: Internal power supply status of remote probe excl. channels
- General SFP Status: SFP+ module overall status
- Probe SFP status: Remote Probe SFP+ module status
- Probe SFP Manufacturer: Remote Probe SFP+ module manufacturer
- Probe SFP TX Power: Remote Probe SFP+ module optical power transmitted
- Probe SFP RX Power: Remote Probe SFP+ module optical power received
- Probe SFP Serial: Remote Probe SFP+ module serial number
- Receiver SFP status: GN800B SFP+ module status
- Receiver SFP Manufacturer: GN800B SFP+ module manufacturer
- Receiver SFP TX Power: GN800B SFP+ module optical power transmitted
- Receiver SFP RX Power: GN800B SFP+ module optical power received
- Receiver SFP Serial: GN800B SFP+ module serial number

6 Improvements

6.1 Improvements in Perception

Improvements to user-interface design	The user-interface of Perception is updated and modernized with every release. In this release, improvements were made to the headers of components. Furthermore, a scroll bar was added to the window where user keys can be selected.
Mainframe password protection now also prevents firmware upgrade/downgrade	It is possible to protect Genesis HighSpeed mainframes from unauthorized or accidental access by setting a password. This is especially useful when mainframes are used in a critical environment such as production environments. However, up until now, password protected mainframes would still automatically perform a firmware upgrade when connected to a newer version of Perception, causing the mainframe to be temporarily unavailable. From this release on, for password protected mainframes, the password must be used also when a firmware upgrade is to be done. This prevents accidental or unwanted firmware upgrades.
Improved calculations when doing setpoint averaging on the mainframe	In many cases, setpoint values are determined by averaging several cycle-based results. In an earlier release, functionality was introduced to perform this averaging on the mainframes rather than in Perception. This has the additional benefit that setpoint values can be published on the fieldbuses. Additionally, setpoint values can be traced back in a recording. In this new release, the averaging intervals are improved in that the first sample after the trigger for generating a setpoint is now the first sample in the average.
Additional optional argument for type of modulo operation for FDB and RTFDB modulo functions	In both the FDB and RTFDB there is a function for determining the modulo value of a signal. A typical example where this is useful is when an angle is available that is larger than 360 degrees. In this case it is common to represent this angle as an equivalent angle between 0 and 360 degrees. This can be done by calculating the angle modulo 360. More generally this is denoted as 'a mod n'. There are, however, several slightly different ways to calculate 'a mod n'. Examples are 'a mod n' = a - trunc(a/n), or 'a mod n' = a - floor(a/n). Where in previous releases the modulo functions in the FDB and RTFDB used 'trunc', in this release an additional 'Mode' argument was added to the functions allowing to also use the 'floor' version for modulo calculations. Although this highly technical explanation might be seen as a mere detail, using the 'floor' version has benefits when measuring angles and speeds of rotating machines.

6.2 Improvements in the Perception ePower Suite

Improved cycle-based recording in the ePower suite	Setpoint values are typically determined by averaging several cycle-based results. In the ePower suite, the collection of the cycle-based results to be averaged can be done in a number of different ways (based on a fixed averaging time where all the cycle-based results in the averaging time are taken, by specifying the number of cycle-based results, etc.). The mode 'Start and stop trigger on cycles' has been improved as follows. The number of cycle-based results as specified by the user is used to determine the average setpoint value. The pre- and post-trigger times default to 0, such that exactly the data that was used for generating a setpoint ends up in the recording allowing to reproduce setpoint values in post-processing. To select the mode 'Start and stop trigger on cycles', in the ePower suite in the Acquisition setup area, select 'Wait for trigger to trigger memory first' and check 'Start and stop trigger on cycles'.
Improved user interface for selecting Setpoint map parameters and properties	In the ePower suite, a Setpoint map shows the dependency of one measured entity (e.g., the efficiency) as a function of two other measured entities (e.g., torque and speed). The user can freely choose which measured entities to use. The design of how to choose the entities has been improved. In the ePower suite, after clicking 'Create Mapping', in the 'Setpoint Map' window, select '...' → Properties to select the entities for the X, Y and Z-axes, the scaling, the number of lines, colors, etc.
Context help	In this release a start is made with context help. In several locations in the software, question mark icons are added. Clicking such an icon will open a PDF file with a short manual page explaining the context where the question mark refers to as well as an explanation for all of the settings. In subsequent releases, more context help will be added.
Improved layout for ePower suite Preferences and Generic settings	For the ePower suite, several settings can be specified. The default settings for new ePower suite setups can be done by loading the ePower suite and going to File → Preferences → ePower suite → Generic. The settings for an existing ePower suite setup can be modified by going to Generic Settings in the ePower suite. The layout of the default settings has been improved by grouping related settings together under File → Preferences → ePower suite → Generic in the left pane of the Preference window. The layout of the Generic Settings has been improved by grouping related settings together under individual tabs.
Additional step required when changing the default measuring time in the ePower suite	When measuring torque using a digital torque sensor, the so-called 'measuring time' of the Timer/Counter channel is an important parameter, also in the ePower suite. For this reason, in an earlier release, the measuring time could directly be set from the ePower suite. The default value of 1us guarantees that the torque signal is stored in the recording with a very high time resolution. Given a certain time resolution in the recording, it is not possible afterwards to get a higher time resolution, so there is a certain risk in changing measuring time to a higher value. For this reason, when changing the measuring time in the ePower suite, an additional window with a short explanation will pop up after which the measuring time can be changed.

6.3 Improvements for Hardware

Fast Span Change via fieldbus Remote Control	For fast setpoint measurement, it is important to change multiple ranges very fast via fieldbus remote control. Up until now, the span of channels can only be changed sequentially via remote control. From release 8.64 onwards, there has been improvement made for fast span change, this enhancement will allow changing a set of spans in one go. The fieldbus remote control document may be referred for details of commands for both CAN and EtherCAT.

6.4 Support items and requests

The speed of batch processing is improved	SUPEPT-307	The speed of batch processing was improved by solving an underlying cache issue.
Add current archive folder does not work with user key (save report as PDF)	SUPEPT-348	When using User Keys and using the %recstore% construction, information was not stored in the correct location. This is solved in this release.
Scaling in the report display differs from the display source	SUPEPT-352	A problem with a different scaling in Perception and a report made from Perception was solved.
Phase shift parameter for current transformers with burden resistor is confusing	SUPEPT-355	When choosing a current transducer and burden resistor in the Sensor database, there was a field called 'Phase shift'. Values entered in this field are not yet used so it was confusing which effect those values have. Therefore, the field was removed.
Unable to open large recording file on FAT file system	SUPEPT-360	In some cases, a recording file can be so large that is cannot be supported by the underlying file system (e.g., when a file is copied to a FAT file system). When this is done from Perception, there is a recovery procedure which did not always work well. This problem is now fixed in this release.
Default setting of the measuring time for torque changed from 50ms to 1us	SUPEPT-367	The measuring time is used for the so-called Timer/Counter channels. In recently releases, in the ePower suite, this time was set to 50ms as a default which is too long for most applications. In this release the default is set to 1us allowing the highest possible time resolution for Timer/Counter signals.
Delayed trace in display when exporting/importing ASCII	SUPEPT-372	When a recording saved as an ASCII file was re-imported, it showed up with a slight delay as compared to the original recording when using absolute time. This is now solved.
Perception V8.60 cannot read a pNRF file saved by V7.60	SUPEPT-376	In some situations a pNRF file generated using version V7.60 could not correctly be opened by V8.60.
Export recording of data loaded as reference is not working	SUPEPT - 377	A problem with exporting a recording loaded as reference was solved.
Recording file size increases drastically when load the workbench the first time	SUPEPT-381	A problem causing a large recording file due to a high sample rate when loading a workbench for the first time was solved.
EtherCAT state machine failed with establishing state OP	SUPEPT-382	A problem that caused failure to establish EtherCAT state machine in state OP has been solved.
Mainframe is endless rebooting with stored user settings	SUPEPT-385	A problem with an endless rebooting loop using specific user settings was solved.

Filter digital torque and speed values were not saved correctly to the workbench	SUPEPT-389	A problem with not storing the settings for the pulse width filters at the input of digital timer/counter channels was solved.
Perception crash in Preview mode when only one group's storage is enabled	SUPEPT-392	A problem that caused Perception to crash in Preview mode when only one group's storage is enabled was solved.
The data published through XCP over Ethernet to CANape are not corresponding to Perception display	SUPEPT-394	A problem with data publishing through XCP over Ethernet was solved, the data published through XCP over Ethernet to CANape is inline and corresponds to Perception display.
Copying table content from Publishing table does only work row-wise	SUPEPT-397	A problem with copying multiple rows in one go in the Publishing table was solved.
Mainframe alert - ConfiguredBoot file is based on a different version of software than currently used.	SUPEPT-400	A problem causing this unwanted mainframe alert ”ConfiguredBoot file is based on a different version of software than currently used” was solved.
Gen3i and sudden restarts	SUPEPT-401	The problem was not reproducible from the log analysis, logs captured were overwritten upon restart. For integrated systems, there has been improvements made to better capture the logs. Functionality to copy all the files in the diagnostics folder to a timestamped subfolder, upon fatal assert has been added. This allows to better investigate the root cause on any future re-occurrence of such problem.
Saving a .txt file as a recording does not work	SUPEPT-403	A text file can never be saved as a Perception recording file (pnrf). When trying to do this anyways, an error message will be given.
RPC call SetGroup-SweepSettings not shown in Perception	SUPEPT-406	The effect of the SetGroupSweepSettings RPC call is now also shown in Perception.
Recording Suspension issues noticed when two groups use different sample rates	SUPEPT-408	A problem that was causing recording suspensions in dual mode has been solved.
Set Column Width setting (user table) is gone reloading a workbench	SUPEPT-412	For a User table it is possible to change the column width. The problem was solved that this new column width was not stored in the recording (and thus was not applied after reloadin
System crash during a test, mainframe runs out of memory when split recording is active.	SUPEPT-416	A problem that was causing the crash has been prevented with a fix. Please refer known issue section to be informed on the current behavior and possible workaround when split recording is active for large number of sweeps.
Problem with adding actions to macro's	SUPEPT-417	A problem with adding actions to macro's was solved.
No data is stored when triggering after loading a settings file	SUPEPT-418	A problem with saving and reloading a settings file (.pSET) was solved.

Digital signals are displayed incorrectly on Live displays	SUPEPT-419	A problem with signals that were incorrectly displayed in the Live display was solved.
CAN values are not updated properly in the user table	SUPEPT-420	CAN data assigned to a user table were not updated always. This problem is solved.

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
- GEN7iB
- GEN7tB
- GEN17tB
- 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

Patents no: 7,868,886

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