



New Features in ibaPDA v8.8.0

2024-07-25

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1 General remarks

1.1 **ibaInCycle Absolute Delta Calculation**

In the past, in some cases the "Absolute Delta" was not calculated correctly. The error is limited to the "Warning and Alarm" event mode. The calculated "Absolute Delta" referred to the "Alert Limit" and not to the "Alarm Limit".

If the same values are to be calculated for the "Absolute Delta" as before the update, the Alarm Limit must be set to the level of the Alert Limit.

2 LAND Pyrometer Interface

Starting with version 8.8.0, ibaPDA provides the new LAND Pyrometer interface to retrieve temperature measurements from LAND Spot+ devices.

Order Information	
Order no.	31.001014
Name	ibaPDA-Interface-LAND spot+
License	Yes/No (unlimited connections)

2.1 Interface

The interface overview contains a list of the configured LAND Spot+ modules with statistics for each module. Each row represents a module and can have different colors based on the state of the module.

LAND Pyrometer							
DEMO							
<input type="checkbox"/> Set all values to zero when the connection to a sensor is lost <input checked="" type="checkbox"/> Start acquisition even if a sensor is not accessible							
<div>Open log file</div> <div>Reset statistics</div>							
Module	Read counter	Error counter	Update time				
			Actual	Min	Max	Average	
▶ Spot+ (0)	96	2	22 ms	21 ms	101 ms	28 ms	
Spot+ (2)	399	0	22 ms	19 ms	112 ms	23 ms	
Spot+ (3)	0	3	2678 ms	0 ms	0 ms	2677 ms	
?	?	?	?	?	?	?	

Green

No issues.

Red

An error occurred during the last request.

Orange

The actual update time exceeds the configured update time.

LAND Pyrometer							
DEMO							
<input type="checkbox"/> Set all values to zero when the connection to a sensor is lost <input checked="" type="checkbox"/> Start acquisition even if a sensor is not accessible							
<div>Open log file</div> <div>Reset statistics</div>							
Module	Read counter	Error counter	Update time				
			Actual	Min	Max	Average	
▶ Spot+ (0)	250	0	0 ms	0 ms	0 ms	0 ms	
?	?	?	?	?	?	?	
?	?	?	?	?	?	?	
?	?	?	?	?	?	?	

Set all values to zero when the connection to a sensor is lost

If enabled, sets the measured value to zero when a request failed.

Start acquisition even if a sensor is not accessible

If enabled, starts the acquisition even if a sensor is not available when applying the configuration. Otherwise, the acquisition can't be started if a sensor is not available.

Open log file

Opens the LAND pyrometer log file.

Reset statistics

Resets the statistics of each module to zero.

2.2 Module

Each module represents the connection to a single pyrometer device.

The screenshot shows the 'Spot+ (0)' configuration window with the 'General' tab selected. The window has three tabs: 'General', 'Connection', and 'Analog'. The 'Basic' section is expanded, showing a table of configuration parameters.

Basic	
Module Type	Spot+
Locked	None
Enabled	True
Name	Spot+
Comment	
Module No.	0
Timebase	10 ms
Use module name as prefix	False

Connection	
Update time	100 ms

Update time

Defines the delay between requests.

The connection tab can be used to test and configure the connection.

The screenshot shows the 'Spot+ (0)' configuration window with the 'Connection' tab selected. The window has three tabs: 'General', 'Connection', and 'Analog'. The 'Connection' tab contains an 'Address' input field and a 'Test connection' button.

Address:

Test connection

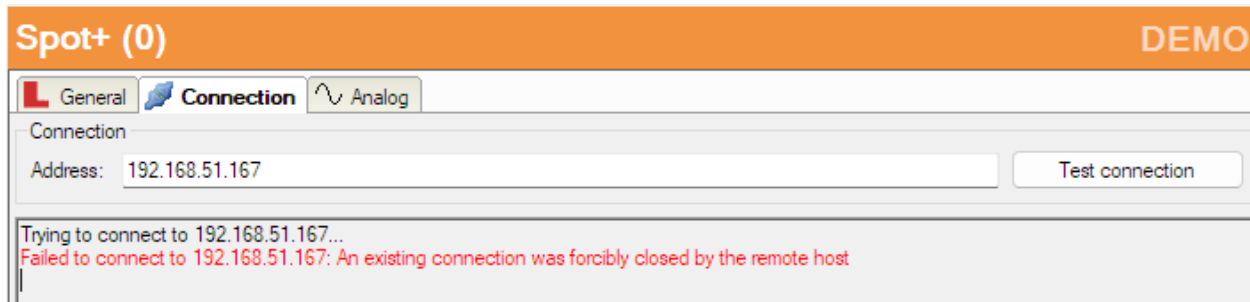
Address

The hostname or IP address of the pyrometer device.

Test connection

Can be used to test the connection to the provided address.

If the connection is established successfully, information about the device is displayed. Otherwise, the error is shown.



3 GH180-Xplorer

The GH180-Xplorer interface is used to measure data from SINAMICS Perfect Harmony GH180 medium voltage drives. Only a network connection to the controller is required. No changes need to be made to the program running in the controller. It is an Xplorer interface which means that the data is cyclically read by ibaPDA instead of being sent by the PLC.

Order Information	
Order no.	31.001051
Name	ibaPDA-Interface-GH180-Xplorer
License	1 connection, max. 255
Order no.	31.101051
Name	one-step-up-Interface-GH180-Xplorer
License	+1 connection

3.1 Interface

The screenshot shows the 'iba I/O Manager' window. On the left is a tree view of the I/O configuration, including links, GCOM, TCP, UDP, and various modules like 'Local GH180', 'Standard (2)', 'SOP (3)', 'Test', 'Standard (4)', 'HPI Request', 'HTTP(S)', 'ibaCapture', 'IEC 61850 Client', 'IEC 61850-9-2', 'LANDSCAN', and 'Logix-Xplorer'. The 'GH180-Xplorer' module is selected.

The main window displays the 'GH180-Xplorer' configuration. It has two checkboxes: 'Set all values to zero when the connection to a drive is lost' (unchecked) and 'Start acquisition even if a drive is not accessible' (checked). There are buttons for 'Open log file' and 'Reset statistics'.

Below the configuration is a table with the following columns: Name, Error count, Commands, Update time Actual, Response time Actual, Response time Average, Response time Min, and Response time Max. The table contains 21 rows. Row 0 is 'Local GH180' with a green background. Row 1 is 'Test' with a red background. Rows 2-21 are greyed out.

Name	Error count	Commands	Update time Actual	Response time Actual	Response time Average	Response time Min	Response time Max
0 Local GH180	0	16	1,0 ms	0,6 ms	0,6 ms	0,4 ms	1,5 ms
1 Test	3	1	0,0 ms	0,0 ms	0,0 ms	0,0 ms	0,0 ms
2	?	?	?	?	?	?	?
3	?	?	?	?	?	?	?
4	?	?	?	?	?	?	?
5	?	?	?	?	?	?	?
6	?	?	?	?	?	?	?
7	?	?	?	?	?	?	?
8	?	?	?	?	?	?	?
9	?	?	?	?	?	?	?
10	?	?	?	?	?	?	?
11	?	?	?	?	?	?	?
12	?	?	?	?	?	?	?
13	?	?	?	?	?	?	?
14	?	?	?	?	?	?	?
15	?	?	?	?	?	?	?
16	?	?	?	?	?	?	?
17	?	?	?	?	?	?	?
18	?	?	?	?	?	?	?
19	?	?	?	?	?	?	?
20	?	?	?	?	?	?	?
21	?	?	?	?	?	?	?

At the bottom of the window, there is a progress bar showing 904, and buttons for 'OK', 'Apply', and 'Cancel'.

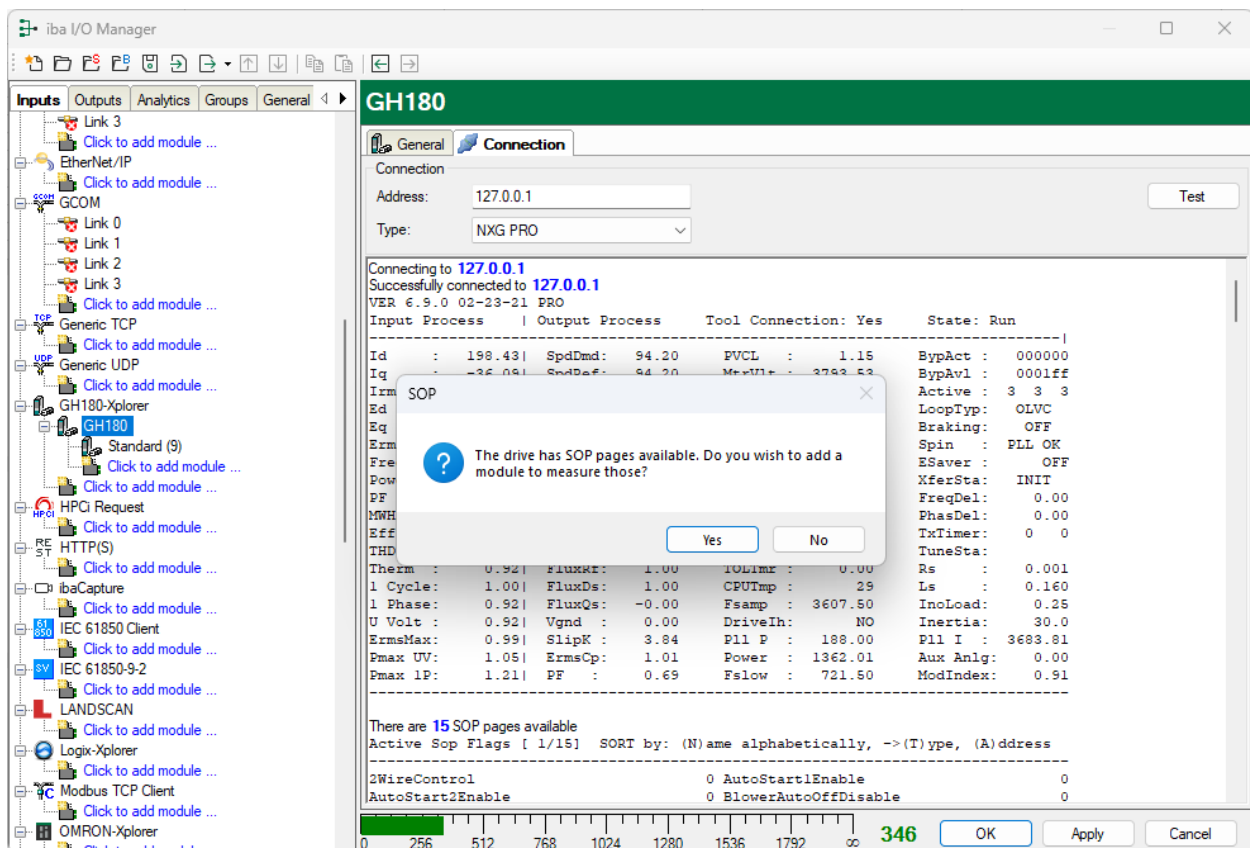
The interface shows a table of the available connections. Per GH180-Xplorer license you get 1 connection. A maximum of 255 connections is allowed. Each connection corresponds to a row in the table. The row is green when the connection is ok and data is being read. The row is orange when the connection is ok but the data is coming slower than the configured update time. The row is red when the connection could not be established. The row is grey when there is no connection configured. The response time is the time it takes to read the data for a connection. The table shows the actual, average, minimum and maximum values of the response time. The update time is the time between 2 read operations. The number of read commands needed for the configured signals are shown in the

Commands column. You can use the “Reset statistics” button to clear the counters for all connections. Clicking “Open log file” opens the most recent log file related to GH180-Xplorer connections.

On the interface you can also decide how to handle some error conditions:

- When the connection to a drive is lost then the measured data can remain the same or it can be reset to zero. Check the first checkbox to reset the data to zero.
- When a GH180 drive is not accessible during the start of the acquisition then you can choose if the acquisition starts without this drive or if the acquisition is not started. When the acquisition is started without the drive then ibaPDA will periodically (every 10s) try to connect to the drive during the acquisition. As long as the drive is disconnected the values will remain at zero.

3.2 Module



On the interface you can add GH180 drive modules. On the connection tab you must enter the address of the drive and the type. Use the “Test” button to try to connect to the drive. In the status window you will see the connection attempt and the responses from the drive. First the version information is requested, then the advanced command is executed and finally the so-called SOP (System Operating Program) pages are retrieved. The SOP pages contain inputs, outputs, timers and counters that are used in the drive’s system program. There can be 38 items per page. If there are more items configured then multiple pages will exist. A separate command is needed per page. IbaPDA asks if you want to add a module for the SOP pages.

Underneath the GH180 drive module you can add submodules. Each module corresponds to a different command sent to the drive. By default, a “Standard” module is added. The “Standard” module handles the “advanced” command which contains most of the important data of the drive.

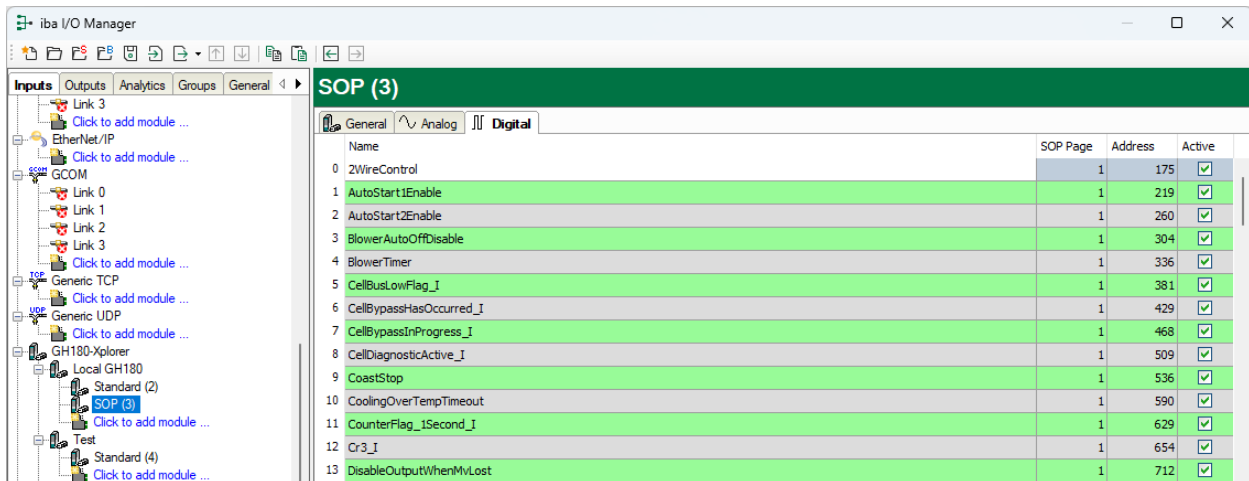
The yellow part highlights the address. The value of the signal will be parsed from the text starting at the address. White space is ignored. To change the address you can edit the "Address" column in the signal grid. You can also change it by clicking in the preview while the "Address" column is selected. When you doubleclick the preview the address will be changed and an attempt will be made to extract the name of the signal from the text left of the address.

Input	Process	Output	Process	Tool	Connection	Yes	State	Run
Id	198.43	SpdDmd	94.20	PVCL	1.15	BypAct	000000	
Iq	-36.09	SpdRef	94.20	MtrVlt	3793.54	BypAvl	0001ff	
Irms	202.12	MtrSpd	94.19	Drv V	3791.67	Active	3 3 3	
Ed	4076.12	SlpSpd	0.62	SafeV	4285.35	LoopTyp	OLVC	
Eq	-7.00	SpRlBk	OFF	Y0DC	0.00	Braking	OFF	
Erms	4077.98	EncSpd	-134.41	Low Lim	0.00	Spin	PLL OK	
Freq	60.03	IdsRef	219.11	Min Lim	-0.00	ESaver	OFF	
Power	1402.17	Ids	212.76	Max Lim	0.82	XferSta	INIT	
PF	0.98	IqsRef	207.75	FiltIa	0.00	FreqDel	0.00	
MWhrs	13846.43	Iqs	205.30	FiltIb	0.00	PhasDel	0.00	
Eff	97.32	VdsRef	-0.06	FiltIc	0.00	TxTimer	0 0 0	
THD	6.64	VqsRef	1.03	TOLLevl	0.43	TuneSta		
Therm	0.92	FluxRf	1.00	TOLTrx	0.00	Rs	0.001	
1 Cycle	1.00	FluxDs	1.00	CPUTmp	29	Is	0.160	
1 Phase	0.92	FluxQs	-0.00	Fsmp	3607.50	InoLoad	0.25	
U Volt	0.92	Vgnd	0.00	DriveIh	NO	Inertia	30.0	
ErmsMax	0.99	SlpK	3.84	Pl1 P	188.00	Pl1 I	3683.81	
Pmax UV	1.05	ErmsCp	0.98	Power	1362.03	Aux Anlg	0.00	
Pmax 1P	1.22	PF	0.69	Fslow	721.50	ModIndex	0.91	

The signals have already been preconfigured to match the standard "advanced" command response. An analog signal has an "Address" and a "Hex" property. The "Address" property is the index in the response from where to start parsing a value. White space is ignored. You can see that by default the address is configured just after the semicolon. The "Hex" property determines if the value is a hexadecimal or decimal value. On the advanced response there are 2 hex values: BypAct and BypAvl.

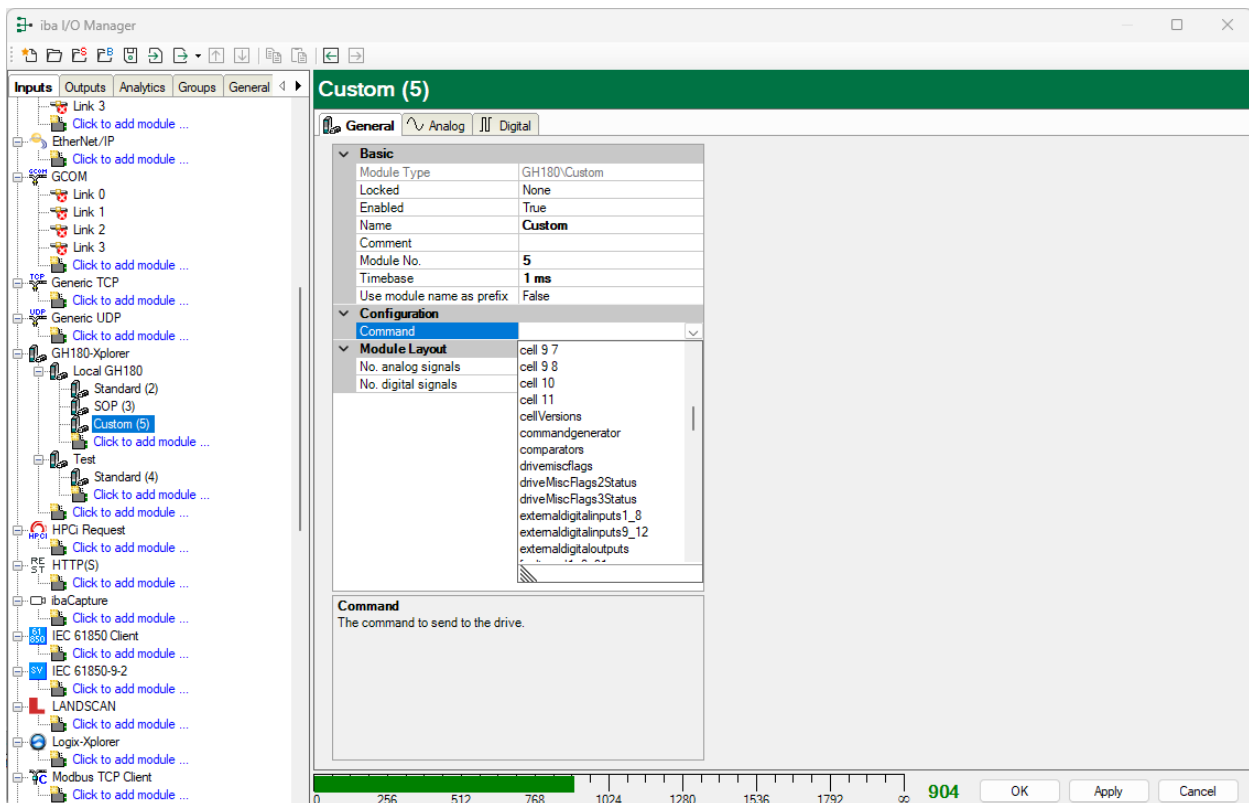
Digital signals have "Address", "Enum" and "Enum Value" properties. The "Address" property is the same as for analog signals. The "Enum" property determines if this signal belongs to an enumeration or if it is a simple digital signal. There are several enumerations in the advanced response. One example is State. It can have values like Idle, Mag, Load, Run, ... For each possible value, a digital signal is configured. The "Enum value" property determines for which value the digital signal will be 1. Therefore the "State: Run" signal will have the value 1 when the text after State is equal to "Run".

With the Offline/Online button in the middle you can create a diagnostic connection to the drive to retrieve the current response to the command. The green boxes show addresses that are used once. The red boxes show addresses that are used multiple times. This is the case for the addresses corresponding to the digital signals.



The analog and digital signals of a SOP module have an extra “SOP Page” property that determines on which page the signal can be found. All signal names and addresses are created automatically by ibaPDA. You can just activate and deactivate the signals. Remember that the update time will increase the more pages you have active.

Finally, there is a third module type called Custom. It allows you to measure data from other commands than “advanced” and “SOP”.



On the general tab you can configure the command to use. There is a list of known commands but you can enter any other command you want. On the analog and digital tabs you can configure signals. If you are online then you can double-click in the preview to add signals automatically. IbaPDA will try to generate a signal name from the text left to the address you double-clicked. IbaPDA will also automatically select the next empty signal row. This way you can keep double-clicking to add multiple signals.

Each submodule can have its own time base. All submodules use the same connection to the drive. The time bases determine how often the commands are sent. If you want to use multiple connections, then configure multiple GH180 drive modules. All modules that connect to the same drive will count as one for the license.

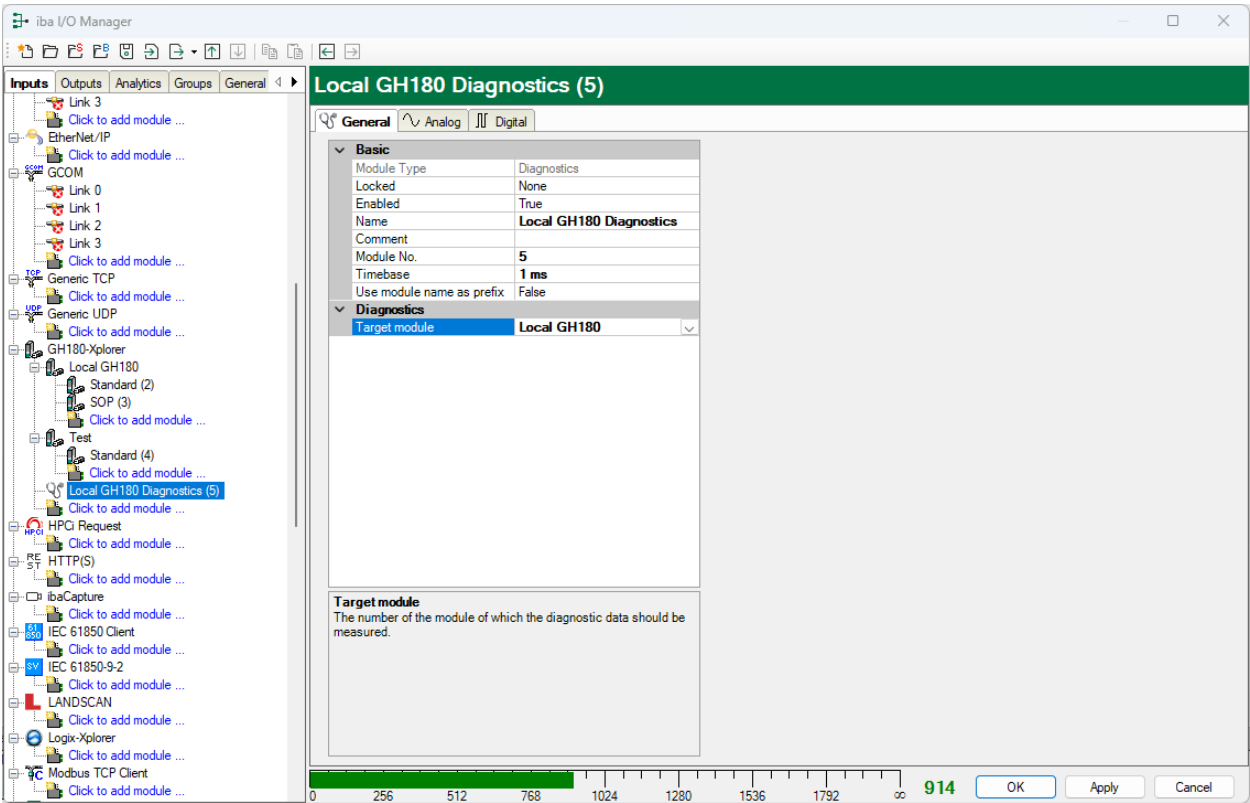
On the GH180 drive module you can see the actual values of the configured signals when the acquisition is running.

The screenshot shows the 'iba I/O Manager' window. On the left is a tree view of various modules including Link 3, EtherNet/IP, GCOM, Link 0, Link 1, Link 3, Generic TCP, Generic UDP, GH180-Xplorer, Standard (2), SOP (3), Test, Standard (4), HPC Request, HTTP(S), ibaCapture, IEC 61850 Client, IEC 61850-9-2, LANDSCAN, Logix-Xplorer, Modbus TCP Client, and OMRON-Xplorer. The 'Local GH180' module is selected. The main window displays a table with columns: Name, Command, Address, and Actual. The table lists 26 rows of data for the 'Source: Standard (2)' module. At the bottom, there is a progress bar and a status indicator showing '904' with 'OK', 'Apply', and 'Cancel' buttons.

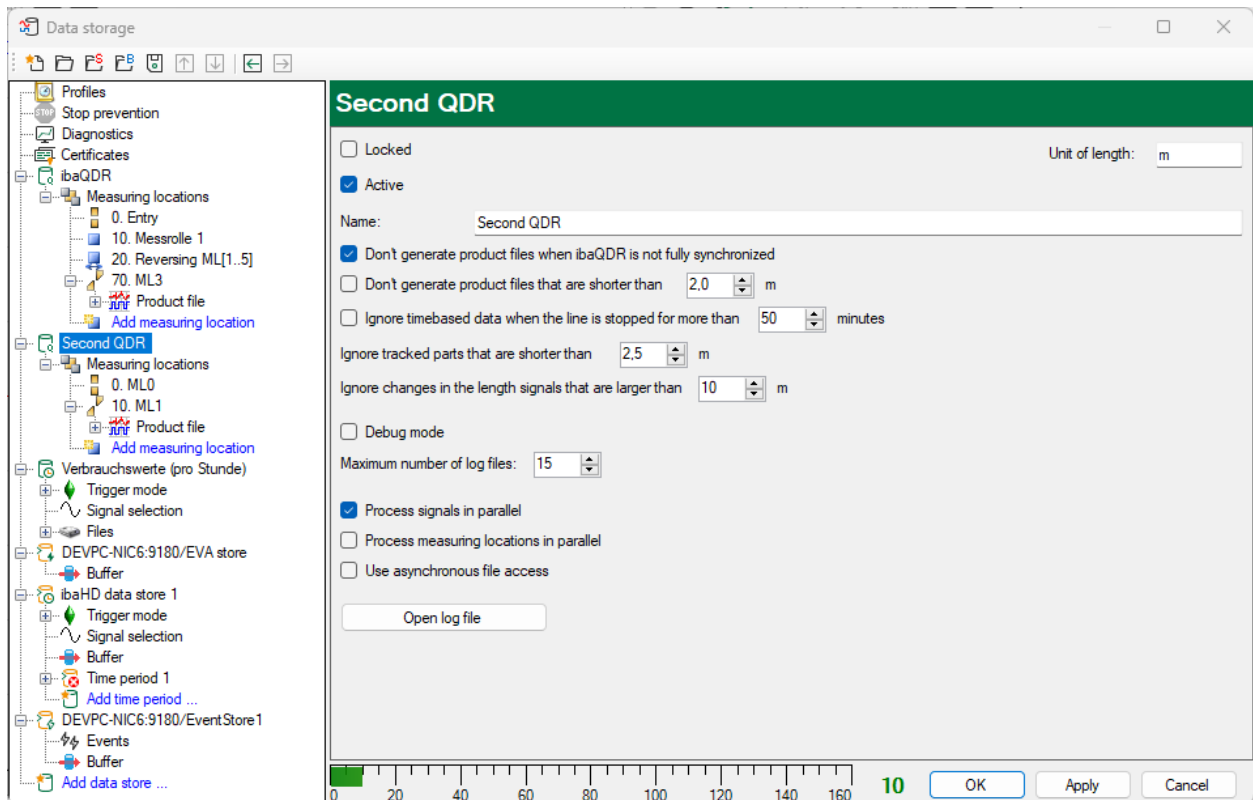
Name	Command	Address	Actual
[2:0]: Id	advanced	170	198,42 A
[2:1]: Iq	advanced	251	-36,09 A
[2:2]: Irms	advanced	332	202,11 A
[2:3]: Ed	advanced	413	4076,24 V
[2:4]: Eq	advanced	494	-8,02 V
[2:5]: Erms	advanced	575	4078,99 V
[2:6]: Freq	advanced	656	60,05 Hz
[2:7]: Power (input)	advanced	737	1401,29 kW
[2:8]: PF (input)	advanced	818	0,98
[2:9]: MWhrs	advanced	899	13846,4 MWh
[2:10]: Eff	advanced	980	97,32 %
[2:11]: THD	advanced	1061	6,63 %
[2:12]: Therm	advanced	1142	0,92
[2:13]: 1 Cycle	advanced	1223	1
[2:14]: 1 Phase	advanced	1304	0,92
[2:15]: U Volt	advanced	1385	0,92
[2:16]: ErmsMax	advanced	1466	0,99
[2:17]: Pmax UV	advanced	1547	1,05
[2:18]: Pmax 1P	advanced	1628	1,22
[2:19]: SpdDmd	advanced	189	94,2 %
[2:20]: SpdRef	advanced	270	94,2 %
[2:21]: MtrSpd	advanced	351	94,19 %
[2:22]: SlpSpd	advanced	432	0,62 %
[2:23]: EncSpd	advanced	594	-132,88 %
[2:24]: IdsRef	advanced	675	218,77 A
[2:25]: Ids	advanced	756	222,29 A
[2:26]: IdsRef	advanced	837	207,59 A

3.3 Diagnostics module

All information that is shown on the table of the GH180-Xplorer interface you can also measure using the diagnostics module. On the general tab you must select the target module you wish to monitor.

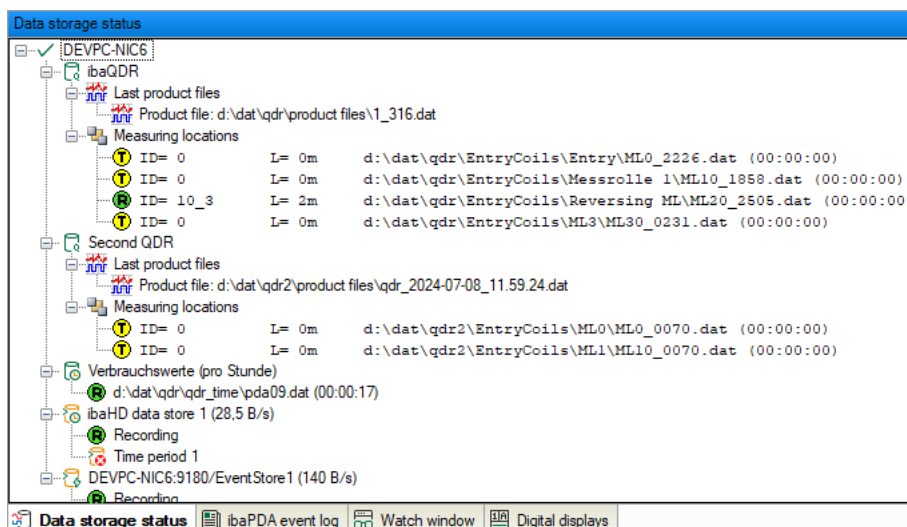


4 Multiple QDR data stores



In the data storage manager it is now possible to add multiple QDR data stores. The licensed measuring locations can be freely distributed over the different QDR data stores. If you have e.g. a license for 64 measuring locations then you could have e.g. 2 QDR data stores with 16 measuring locations and 1 QDR data store with 32 measuring locations. The QDR data stores work independently from each other. This means that the directories for the tracking files and the product files should be unique across the different QDR data stores.

Measuring locations can only be dragged within one QDR data store. It is not allowed to move a measuring location from one QDR data store to another.

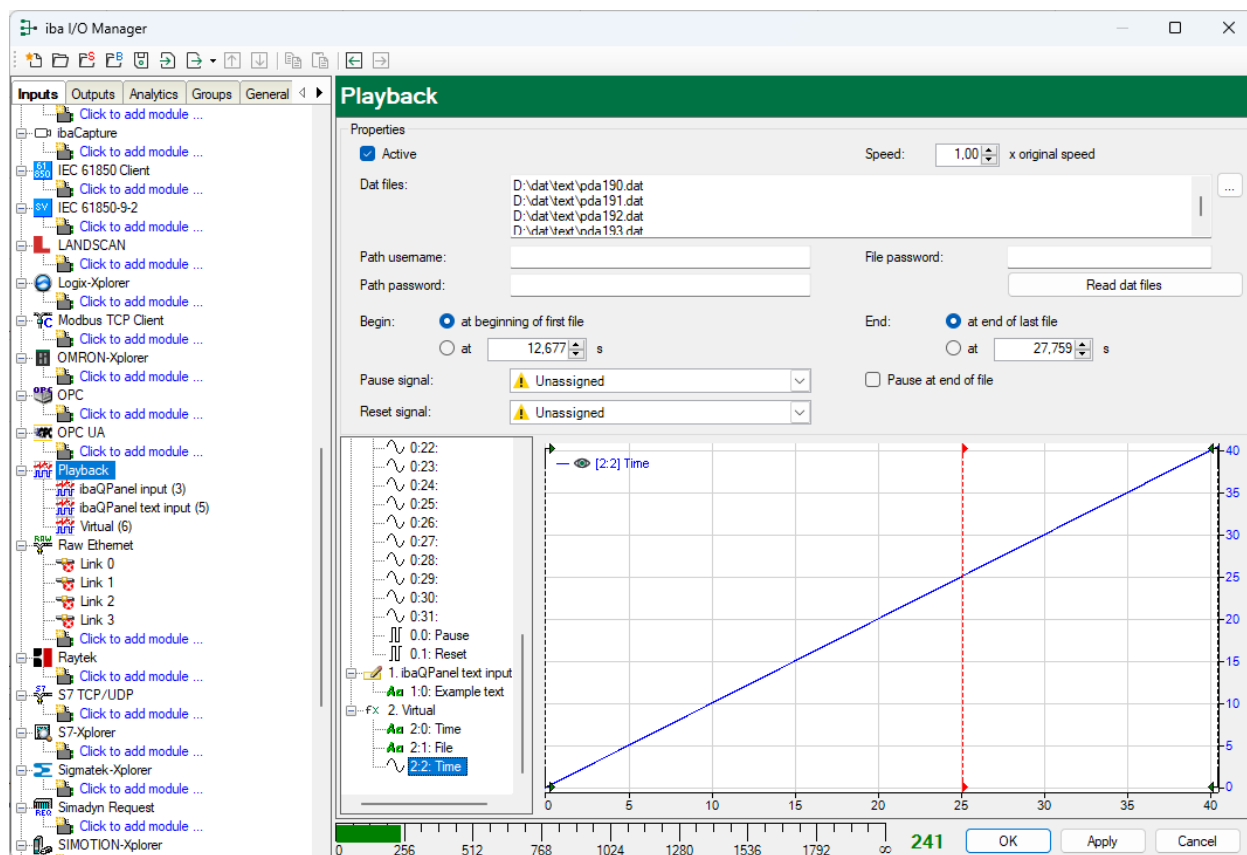


The status of the different QDR data stores can be seen in the data storage status window. The status is also available in the OPC UA server and SNMP server of ibaPDA. The ibaQDR nodes were already arrays.

In previous versions the array could have a maximum of 1 element. Now the array will have as many elements as there are QDR data stores.

The `DataStoreInfo` function now supports all QDR data stores. Use index = -1 for the first QDR data store. Use index = -2 for the second, index = -3 for the third and so on.

5 Playback improvements



You can now select multiple files for playback. The files will be appended without gaps in between the files. The preview shows the appended data. The begin and end positions are relative to the total length of all files. You can change the order of the files by directly editing the dat files list. Signals that are not available in all files cannot be played back.

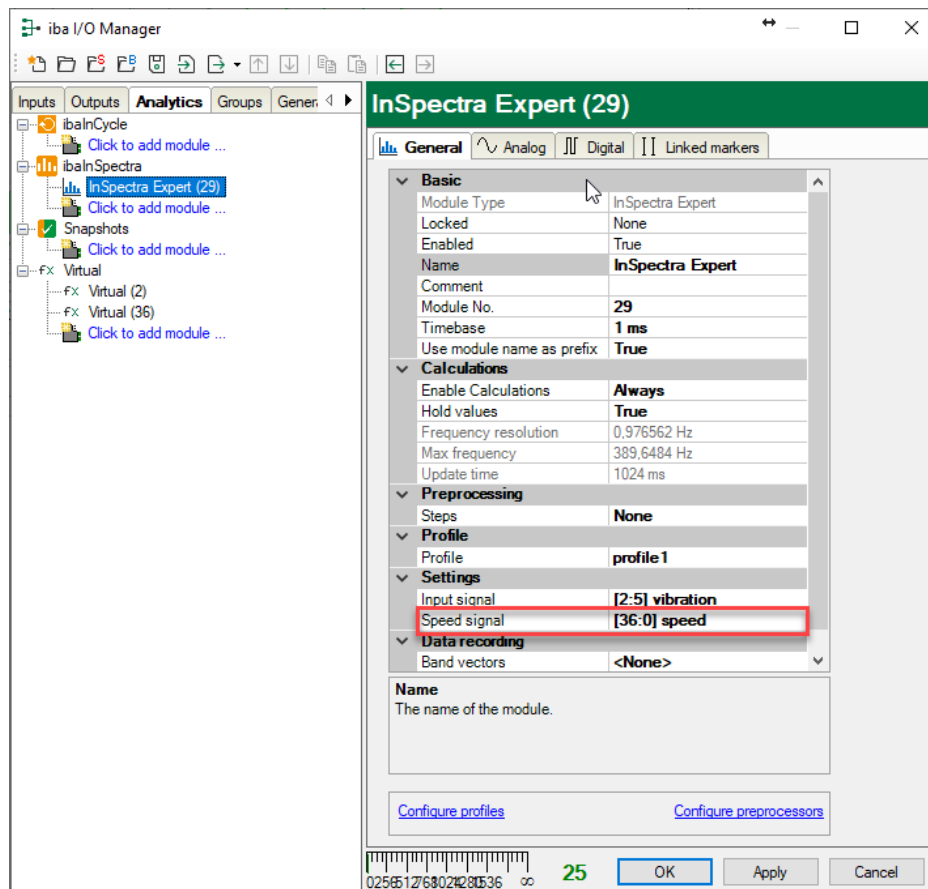
There is a new pause signal available. It is a digital signal. When it is 1 then the playback will be paused. This means that the last value of all signals will be repeated. When the pause signal is 0 again then the playback will continue.

There is also a reset signal available. It is a digital signal. When there is a rising edge on the reset signal then the playback will start again from the configured begin.

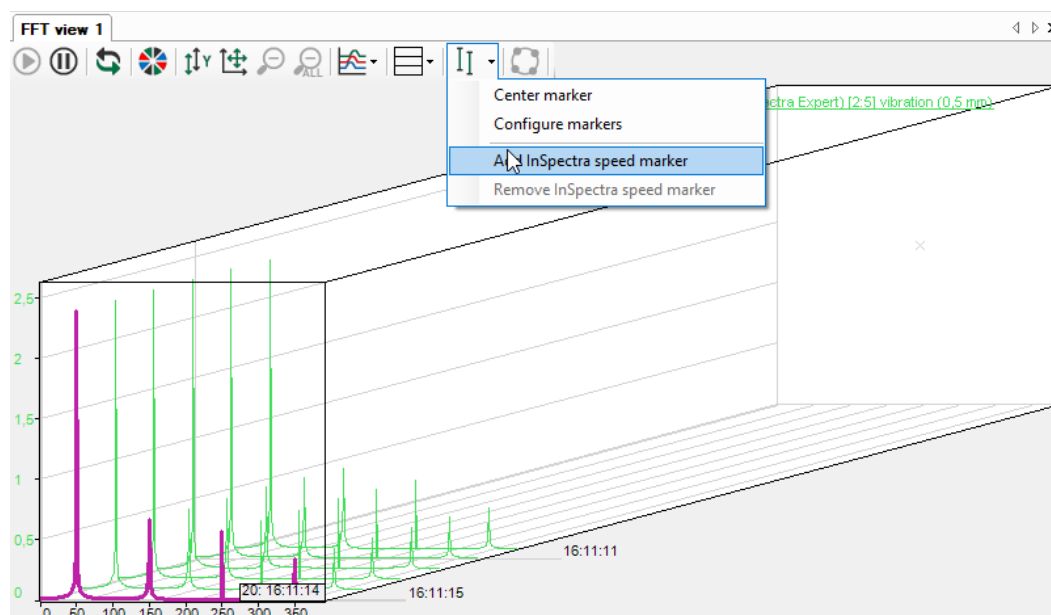
There is also an option to automatically pause the playback when the end is reached. The reset signal is then required to restart the playback from the beginning.

6 FFT view: Quickly adding the speed marker

When displaying an InSpectra Expert module in the FFT view, one can easily add the speed marker corresponding to the speed signal configured in the module:



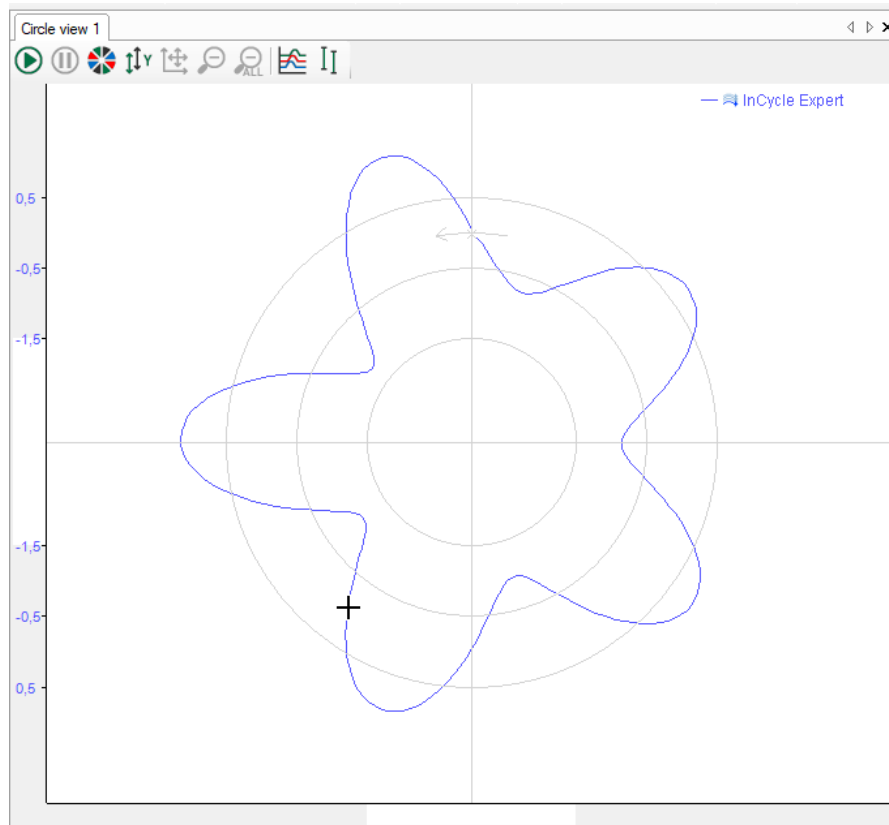
This can be done using the context menu of the marker button:



7 Circle view

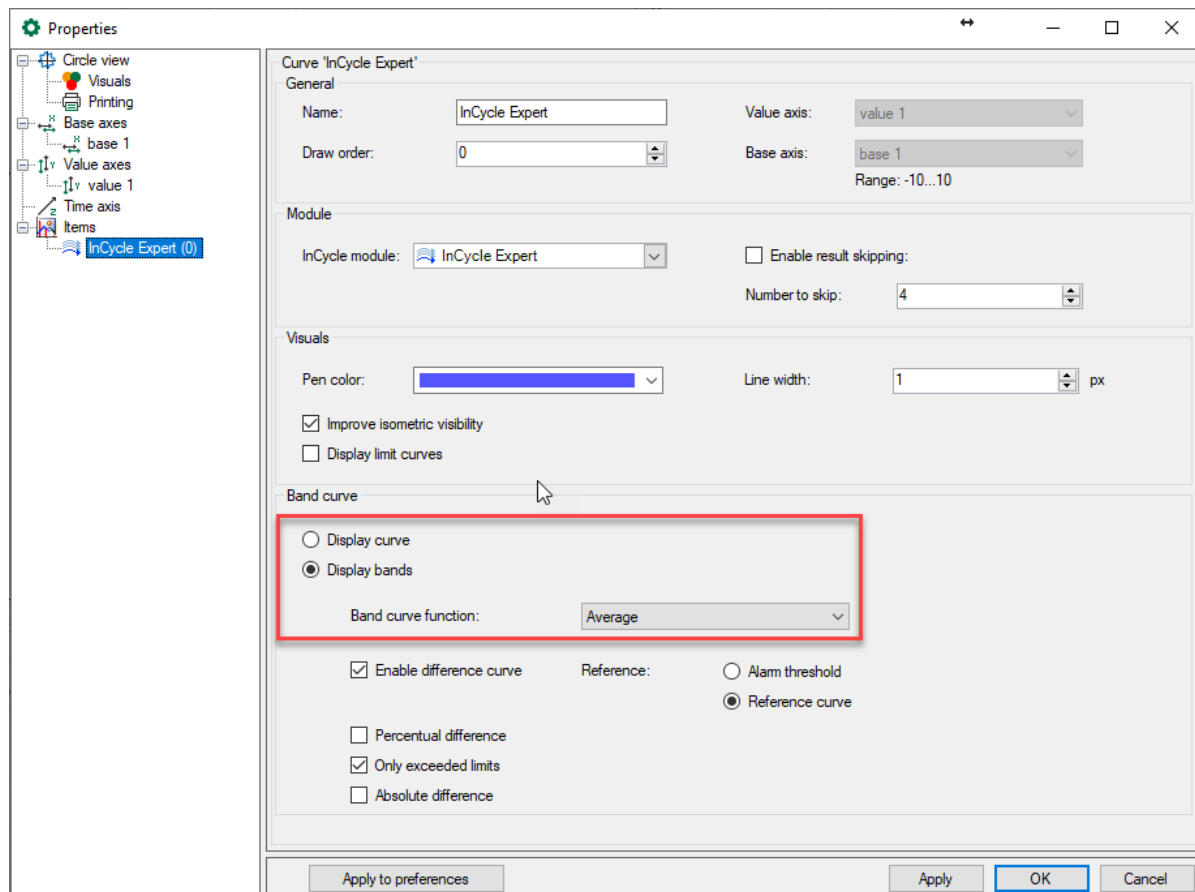
7.1 Display of bands

The circle view allows displaying the results of an InCycle Expert module in a circle. Until now, only the sampled values of each cycle could be displayed, e.g. 250 samples per cycle:

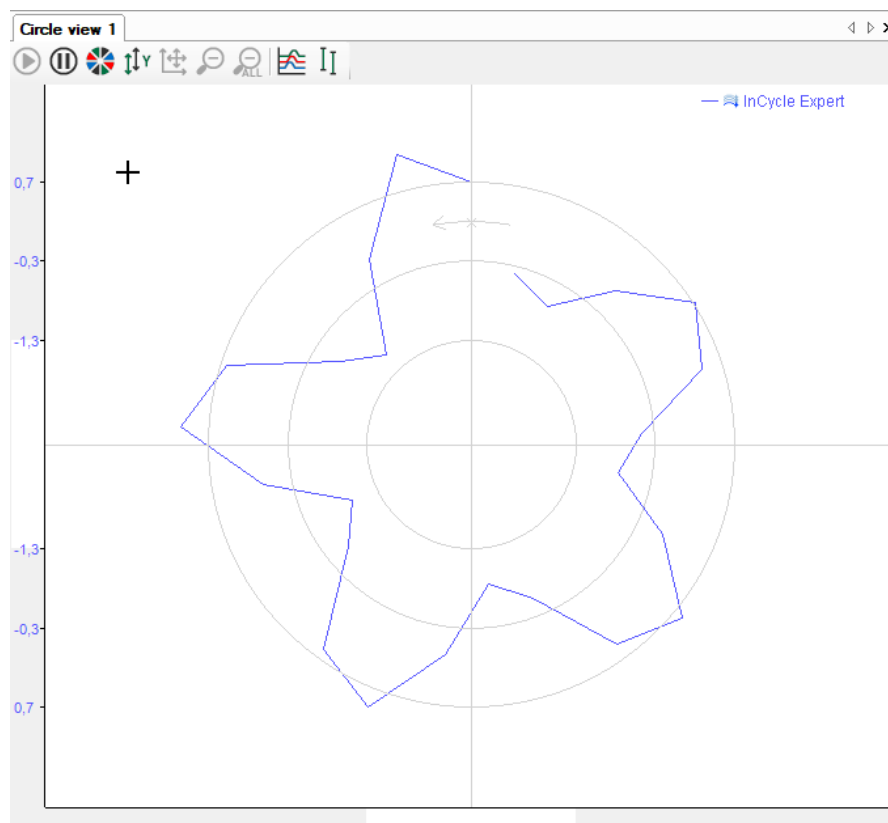


From this version on, it is possible to display the band values of each cycle. The bands are configured in the profile of the InCycle Expert module in the Bands tab. In the Calculations tab of the profile, you can configure which calculations are done for each band.

In the properties of the Circle view, one can select Display bands:

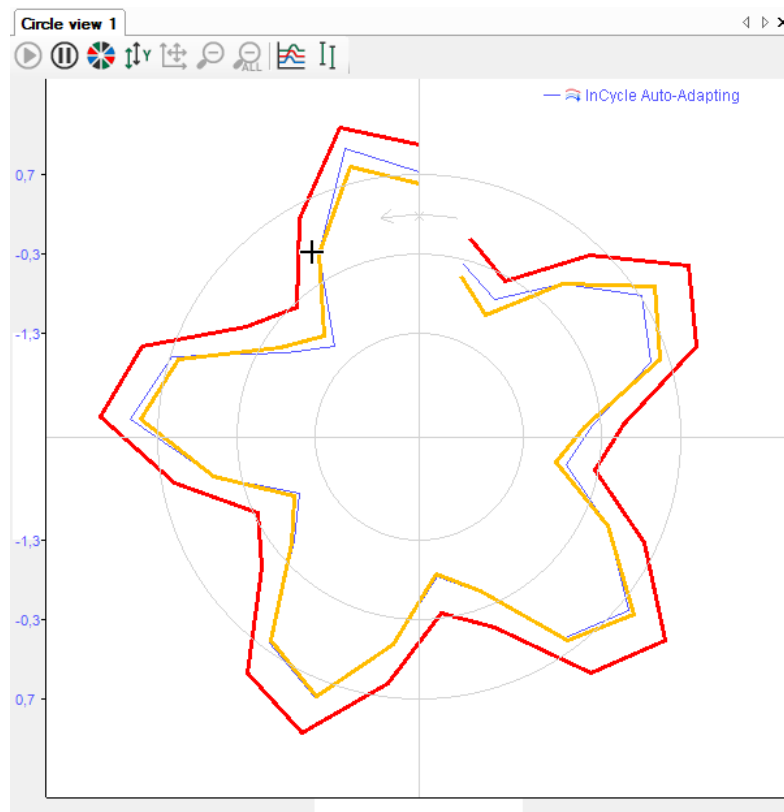
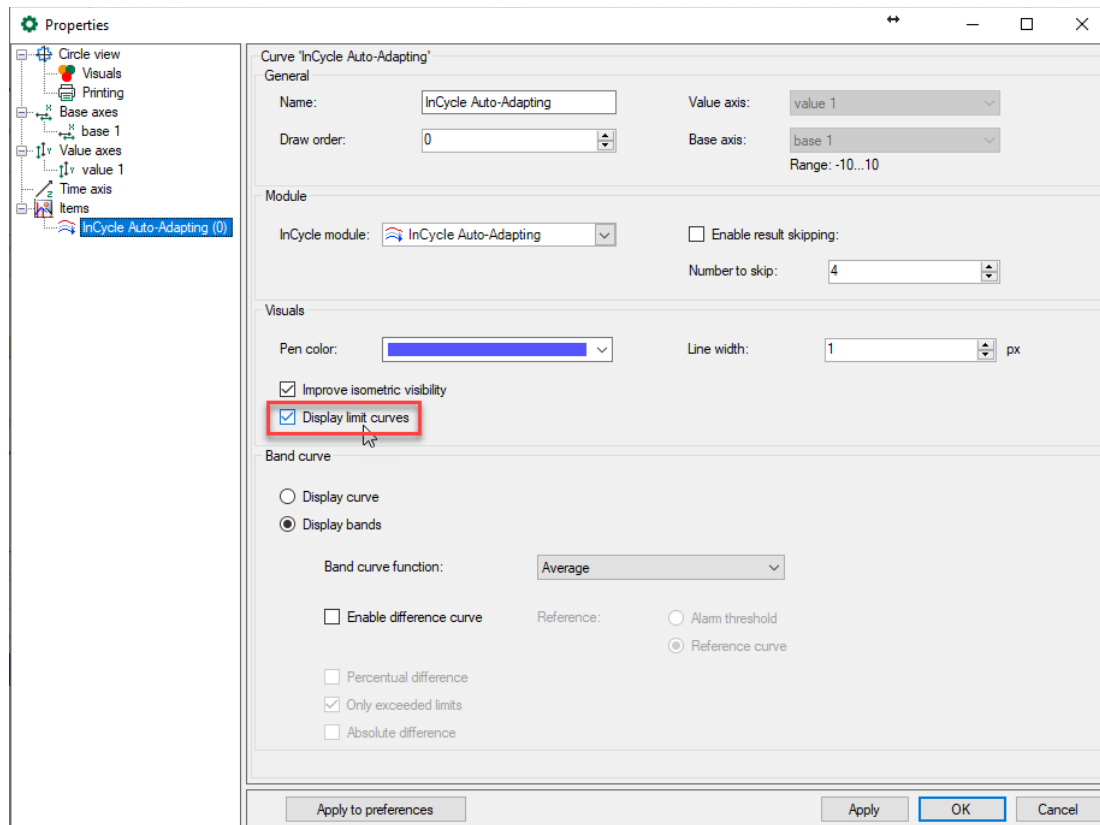


One can also configure the band curve function. In the example below, 25 equidistant bands are configured in the profile. The band curve function selected in the properties of the view is Average:



7.2 Display of limit curves

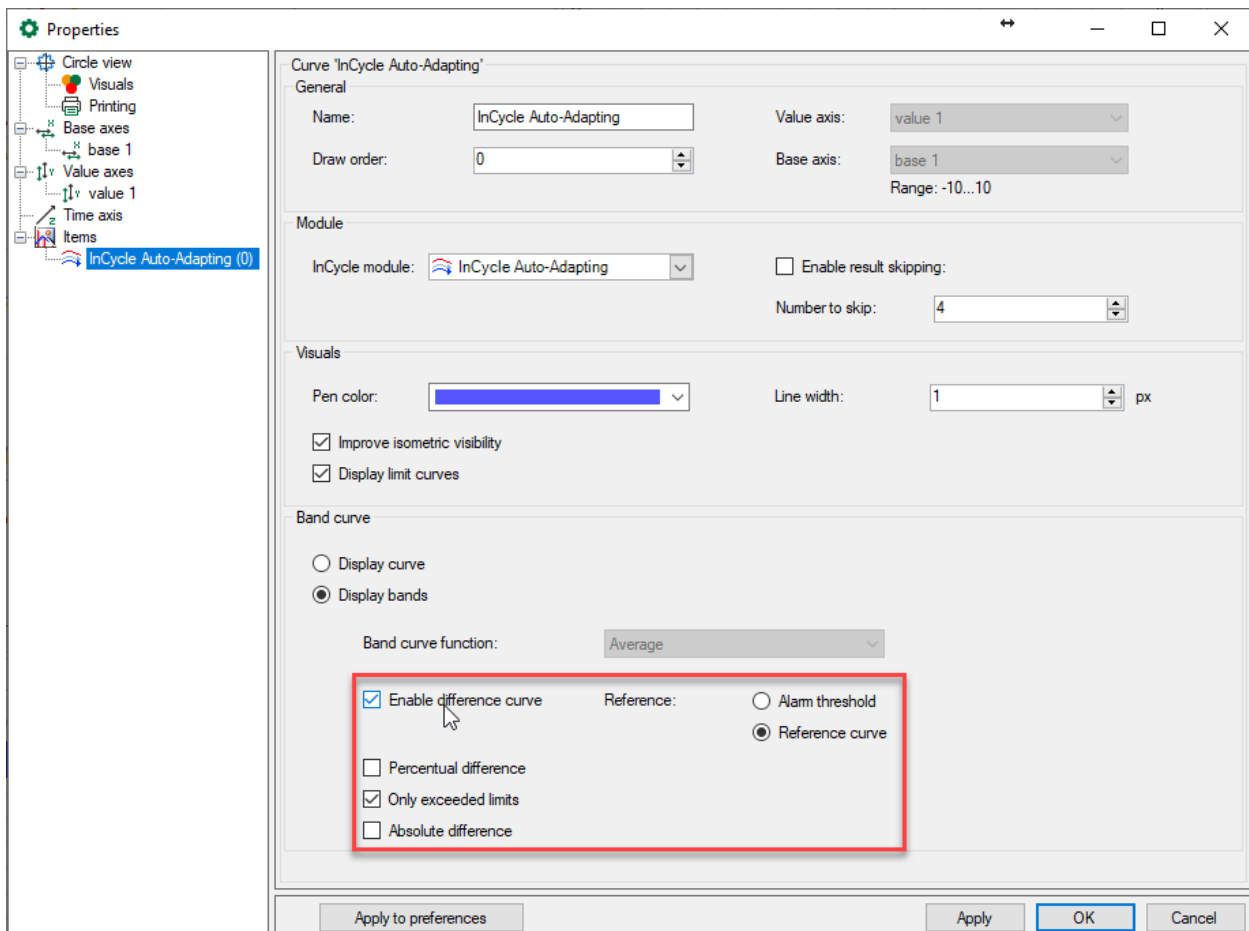
When displaying an InCycle Auto-Adapting module in the circle view, it is possible to display the limit curves. This feature already exists in the Cycle view. The red line is the alarm level, the orange line is the alert level:



7.3 Difference curve

In the properties of the Circle view, you can configure the view to display the difference curve. This only applies if *Display bands* is selected. In this mode, the difference between a band value and a reference is calculated and displayed in a circle. The reference is either the *Alarm threshold* or the *Reference value* of the band.

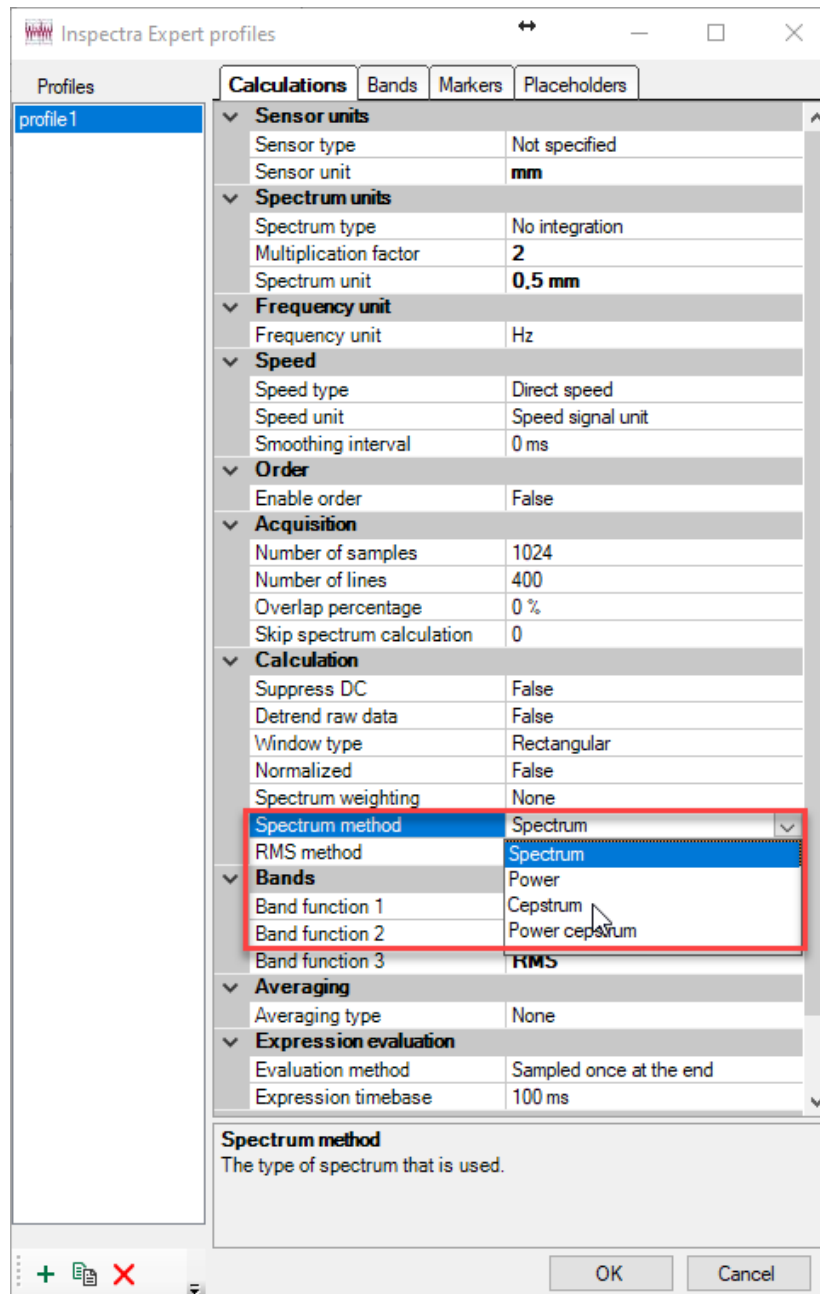
There are some other configuration options as well which are self-explanatory. These options are the same as the ones available in the Cycle view.



8 InSpectra Expert: Cepstrum calculation

In the profile of an InSpectra Expert module, it is possible to choose the *Cepstrum* or *Power Cepstrum* as an alternative to the normal spectrum calculation.

The cepstrum is the inverse-FFT of the natural logarithm of the amplitude spectrum. In case the selected spectrum method is Cepstrum, the unit of the frequency axis is seconds. The frequencies are called quefrencies.



The screenshot shows the 'InSpectra Expert profiles' dialog box with the 'Calculations' tab selected. The 'profile1' is listed on the left. The main area shows various configuration options grouped by expandable sections. The 'Spectrum method' dropdown is open, showing 'Spectrum', 'Cepstrum', and 'Power cepstrum'. The 'Bands' section shows 'Band function 1' as 'Cepstrum' and 'Band function 2' as 'Power cepstrum'. The 'RMS' method is also visible in the 'Bands' section.

Section	Property	Value
Sensor units	Sensor type	Not specified
	Sensor unit	mm
Spectrum units	Spectrum type	No integration
	Multiplication factor	2
	Spectrum unit	0.5 mm
Frequency unit	Frequency unit	Hz
Speed	Speed type	Direct speed
	Speed unit	Speed signal unit
	Smoothing interval	0 ms
Order	Enable order	False
Acquisition	Number of samples	1024
	Number of lines	400
	Overlap percentage	0 %
	Skip spectrum calculation	0
Calculation	Suppress DC	False
	Detrend raw data	False
	Window type	Rectangular
	Normalized	False
	Spectrum weighting	None
	Spectrum method	Spectrum
Bands	RMS method	Spectrum
	Band function 1	Cepstrum
	Band function 2	Power cepstrum
	Band function 3	RMS
Averaging	Averaging type	None
Expression evaluation	Evaluation method	Sampled once at the end
	Expression timebase	100 ms

Spectrum method
The type of spectrum that is used.

OK Cancel