

ToolScope

Quick reference guide



Customer-specific

Last revised:

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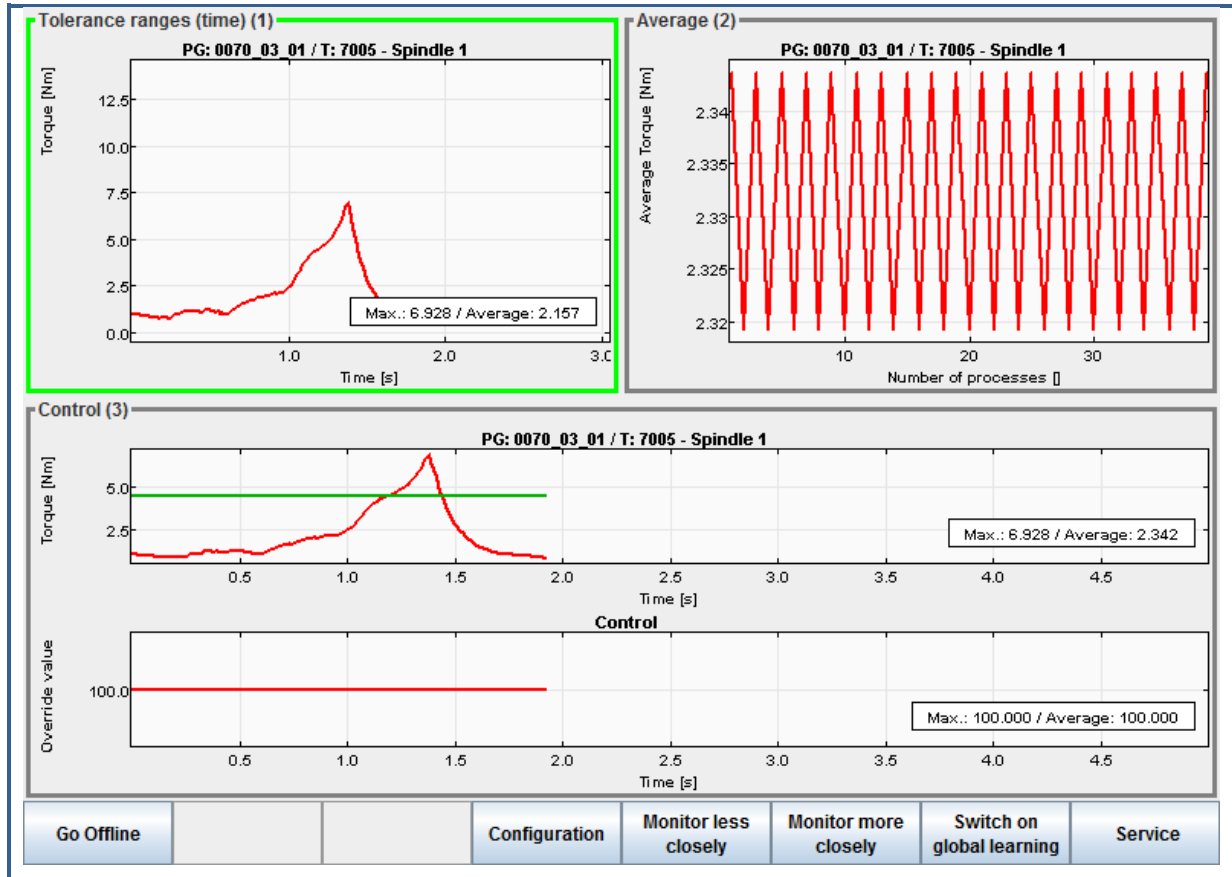
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ToolScope

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1 Customer-specific information

1.1 ToolScope overview



Monitoring channel: Tolerance ranges (time) (1)

- Monitored Signal: Filtered spindle torque
- Breakage monitoring: Exceeding the upper or lower limit or the maximum value
- Machine response if the alarm is triggered: Immediate stop

Monitoring channel: Average (2)

- Monitored Signal: Filtered spindle torque
- Monitoring wear/missing limits
- Machine response if the alarm is triggered: If the wear alarm or the missing limit is triggered → Stop at the end of the process

Monitoring channel: Control (3)

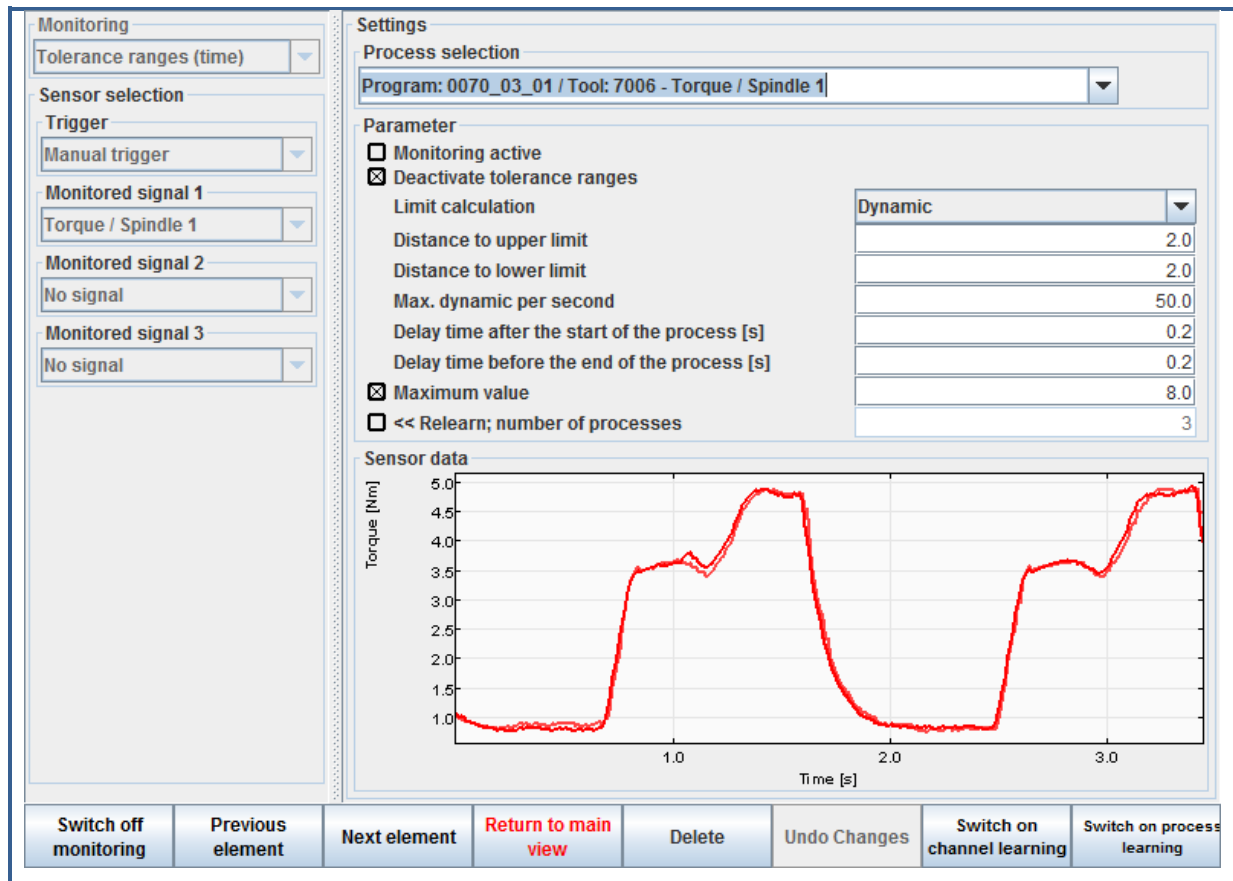
- Monitored Signal: Filtered spindle torque
- Adjusting the feed override depending on the spindle torque
- Machine response if the alarm is triggered: No alarms present

1.1.1 Tolerance ranges monitoring channel

1.1.1.1 General

Select monitoring channel →

Configuration



Monitoring

Tolerance ranges (time) [v]

Sensor selection

Trigger [Manual trigger v]

Monitored signal 1 [Torque / Spindle 1 v]

Monitored signal 2 [No signal v]

Monitored signal 3 [No signal v]

Settings

Process selection [Program: 0070_03_01 / Tool: 7006 - Torque / Spindle 1 v]

Parameter

Monitoring active

Deactivate tolerance ranges

Limit calculation [Dynamic v]

Distance to upper limit	2.0
Distance to lower limit	2.0
Max. dynamic per second	50.0
Delay time after the start of the process [s]	0.2
Delay time before the end of the process [s]	0.2
Maximum value	8.0
<< Relearn; number of processes	3

Sensor data

Torque [Nm]

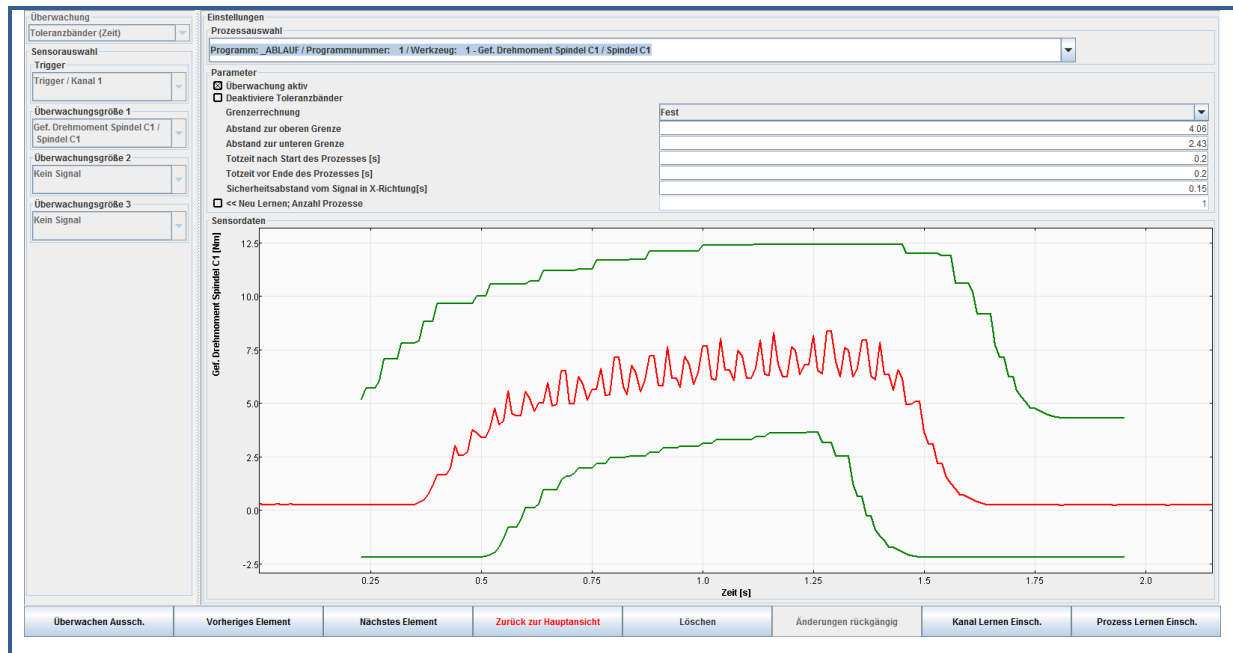
Time [s]

Switch off monitoring | Previous element | Next element | Return to main view | Delete | Undo Changes | Switch on channel learning | Switch on process learning

- General settings are on the left
- Process-specific parameters are on the right
- The signal paths learned for the selected process are shown in the graphic
- The "default" process acts as a learning template for new processes

1.1.1.2 Parameters

Select process → Press ENTER



The corresponding parameters can be manually adjusted in order to optimize the selected process:

Monitoring active: When inactive, processes are recorded but not monitored

Deactivate tolerance ranges: Tolerance range monitoring (green) is switched off

Limit calculation: Fixed = limits are retained until the next learning sequence

Distance to upper limit: Larger/smaller = increase or decrease monitoring sensitivity

Distance to lower limit: Larger/smaller = increase or decrease monitoring sensitivity

Delay time after the start... : e.g. limit starts 0.2 s after the start of the process

Delay time before the end... : e.g. limit ends 0.2 s before the end of the process

Clearance along the X axis: Larger/smaller = limit tracks the signal more/less closely

Relearn: The selected process is relearned with the number of processes entered on the right

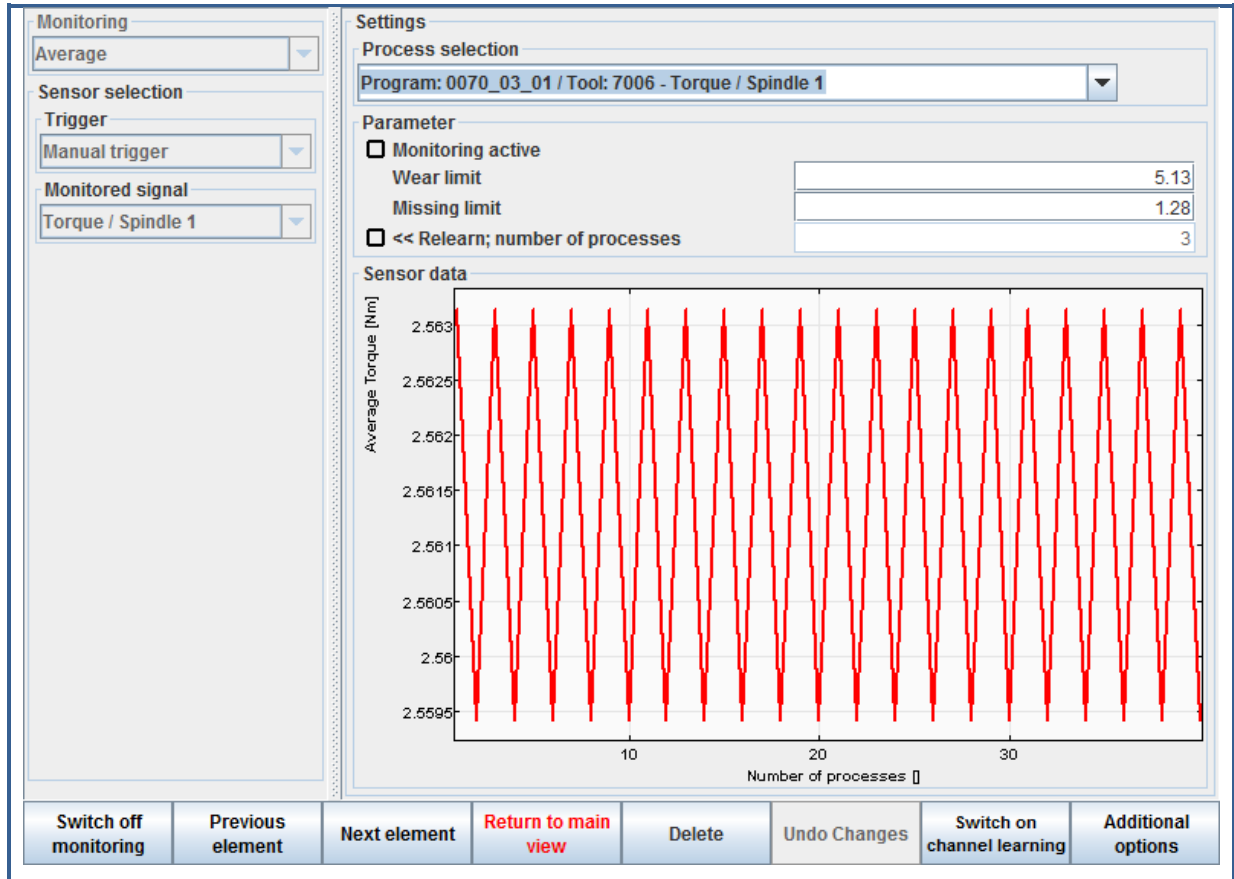
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1.1.2 Average monitoring channel

1.1.2.1 General

Select monitoring channel → **Configuration**



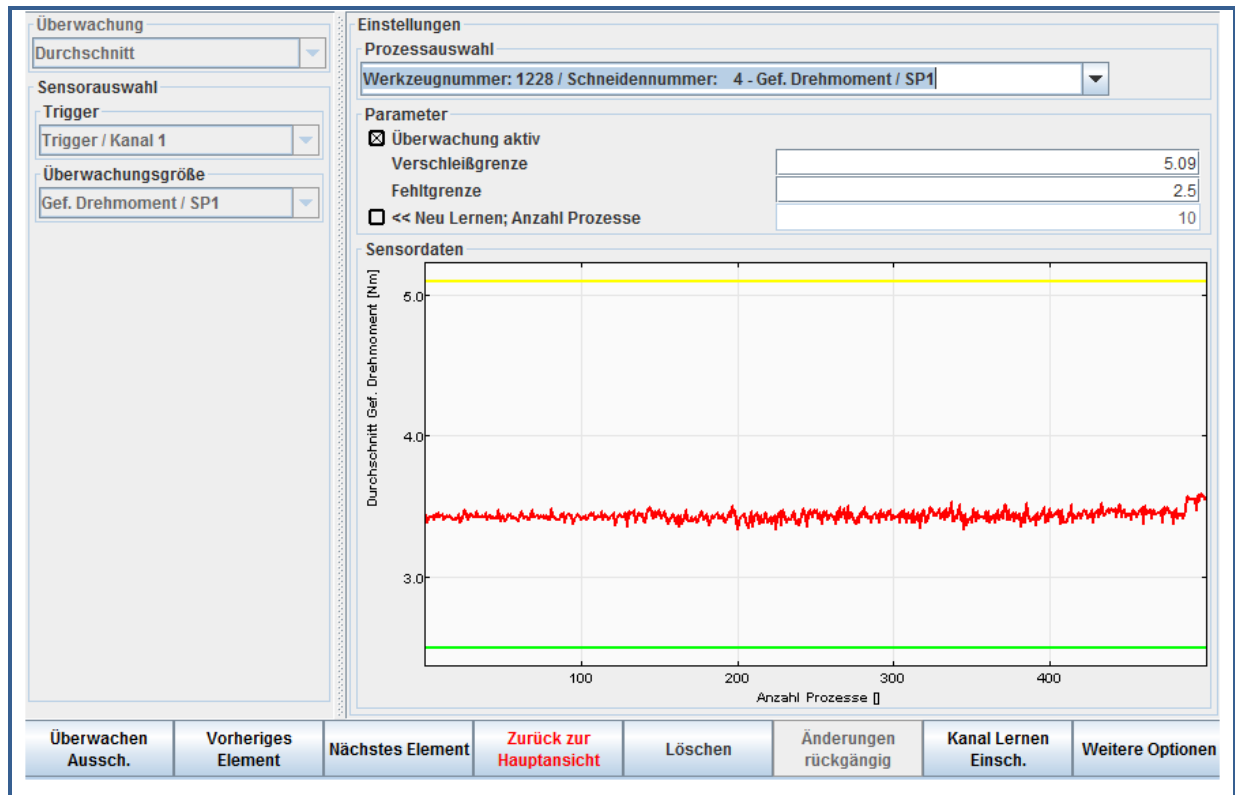
- General settings are on the left
- Process-specific parameters are on the right
- The signal paths learned for the selected process are shown in the graphic
- The "default" process acts as a learning template for new processes

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1.1.2.2 Parameters

Select process → Press ENTER



The corresponding parameters can be manually adjusted in order to optimize the selected process:

Monitoring active: When inactive, processes are recorded but not monitored

Wear limit: Value for the wear limit (yellow)

Missing limit: Value for the missing limit (green)

Relearn: The selected process is relearned with the number of processes entered on the right

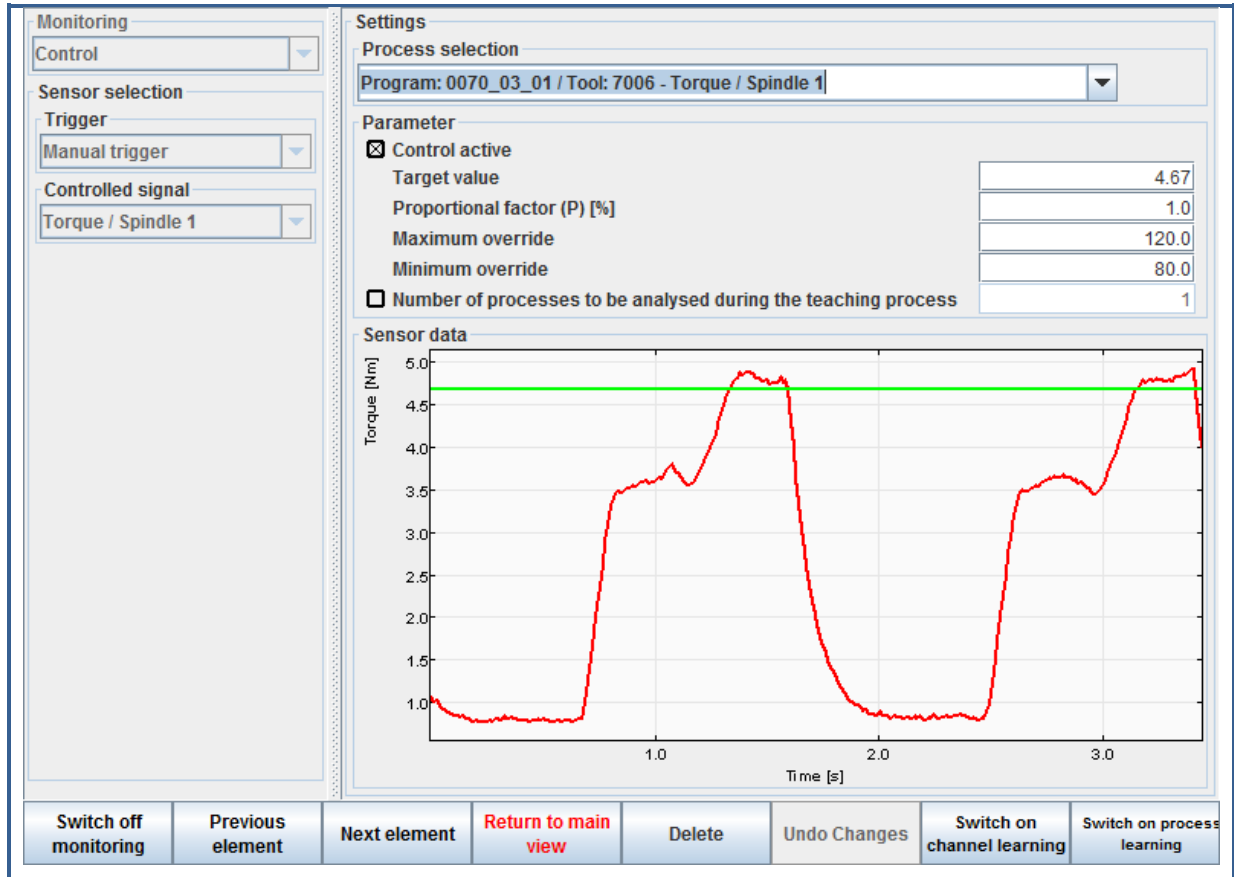
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1.1.3 Control monitoring channel

1.1.3.1 General

Select monitoring channel → **Configuration**



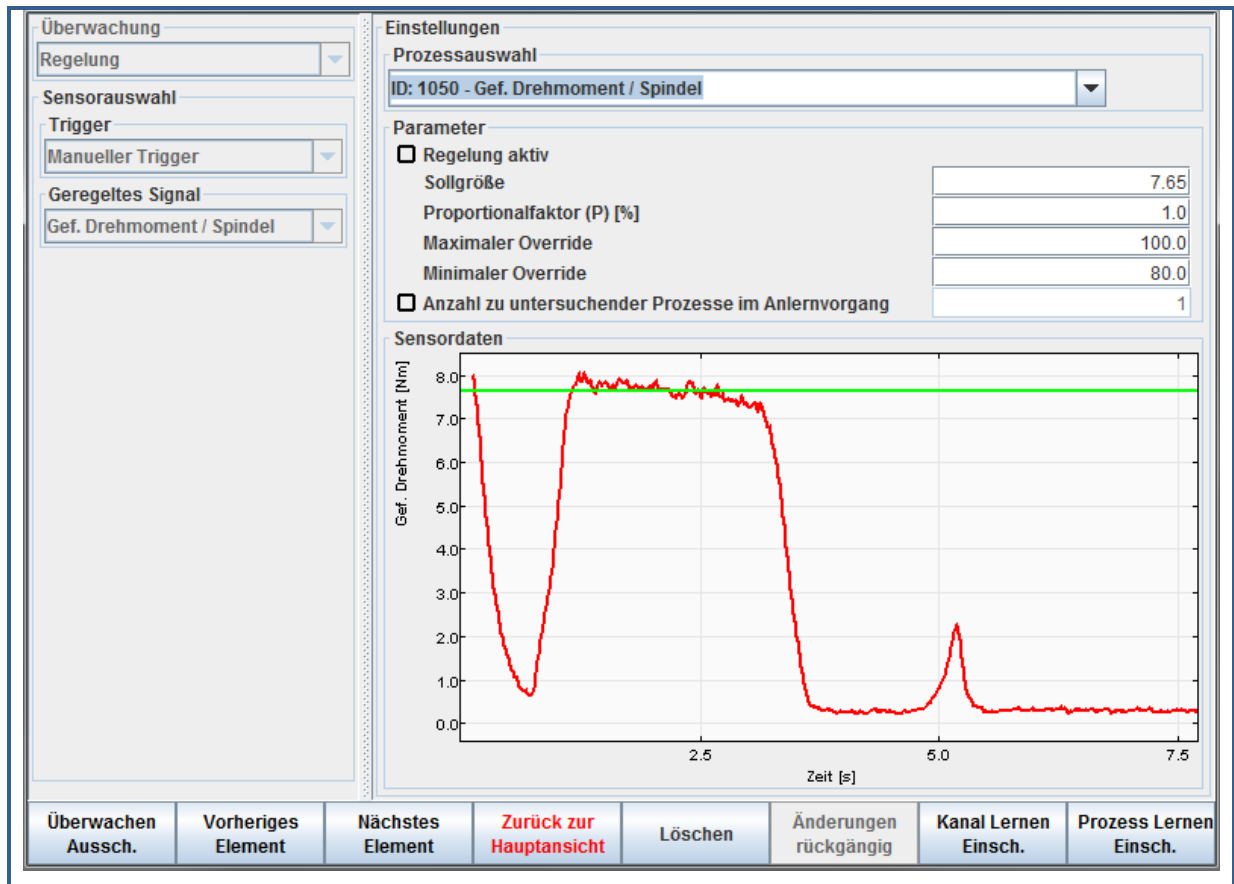
- General settings are on the left
- Process-specific parameters are on the right
- The signal paths learned for the selected process are shown in the graphic
- The "default" process acts as a learning template for new processes

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1.1.3.2 Parameters

Select process → Press ENTER



The corresponding parameters can be manually adjusted in order to optimize the selected process:

Control active: When inactive, processes are recorded but not controlled

Target value: Corresponds to the ideal processing torque learned

If the spindle torque exceeds this target value, the feed override is reduced

If the spindle torque falls below this target value, the feed override is increased

Proportional factor: Indicates the extent of the response to deviations from the target value (default = 1.0)

Max. override: Upper limit of the control range in %

Min. override: Lower limit of the control range in %

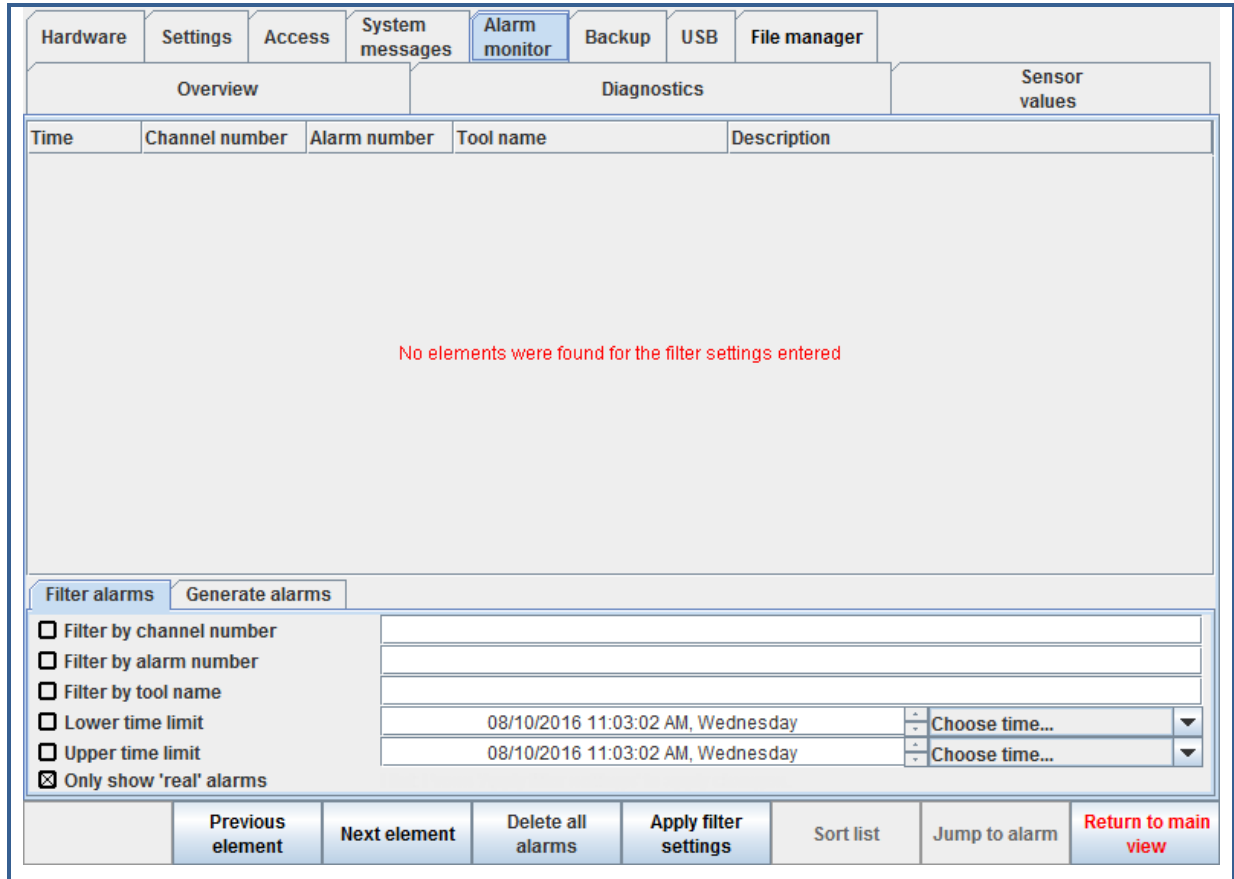
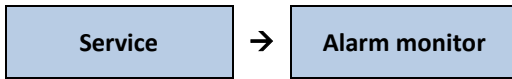
Number of processes to be analysed...: Number of processes to be learned in order to determine the target value

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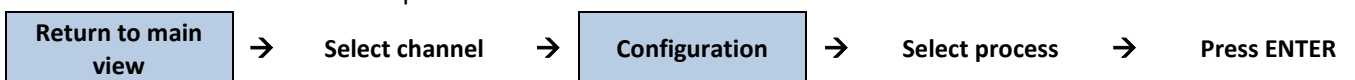
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1.2 Procedure for false alarms

Check the error in the alarm monitor

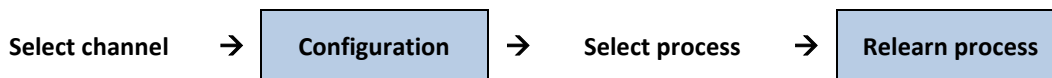


Select the relevant channel and process



Check limits and optimize them if necessary
Start a new process

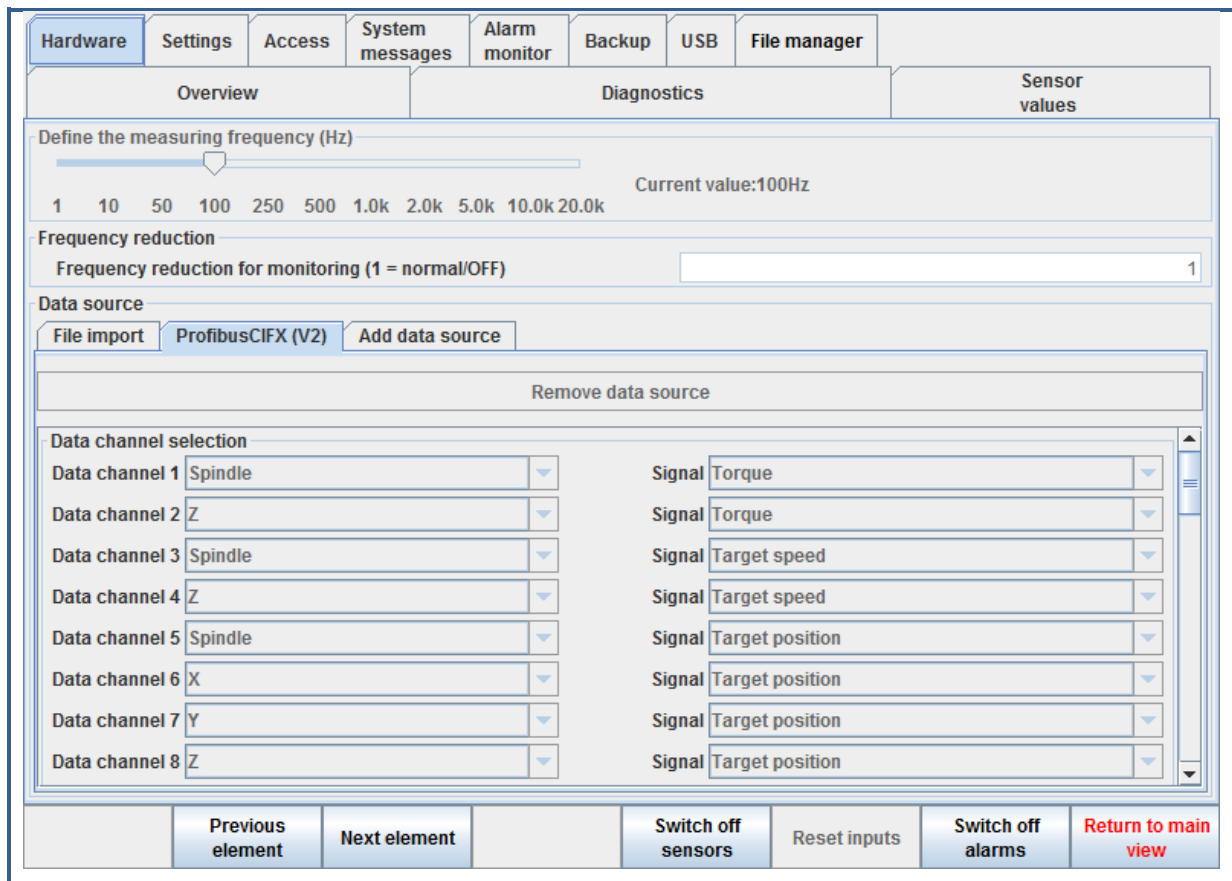
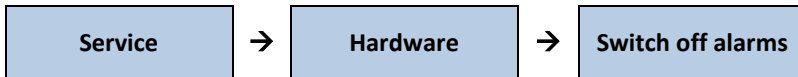
Optimization not possible → Relearn the relevant process (possibly increasing the number of learning processes)



2 General operation

2.1 Switching off alarms

2.1.1 General



Data channel	Data channel	Signal
Data channel 1	Spindle	Torque
Data channel 2	Z	Torque
Data channel 3	Spindle	Target speed
Data channel 4	Z	Target speed
Data channel 5	Spindle	Target position
Data channel 6	X	Target position
Data channel 7	Y	Target position
Data channel 8	Z	Target position



No information is sent to the machine when alarms are switched off in general. No machine response takes place.

If there are issues with individual processes, the processes in question should be deactivated specifically. Please refer to 2.1.2.

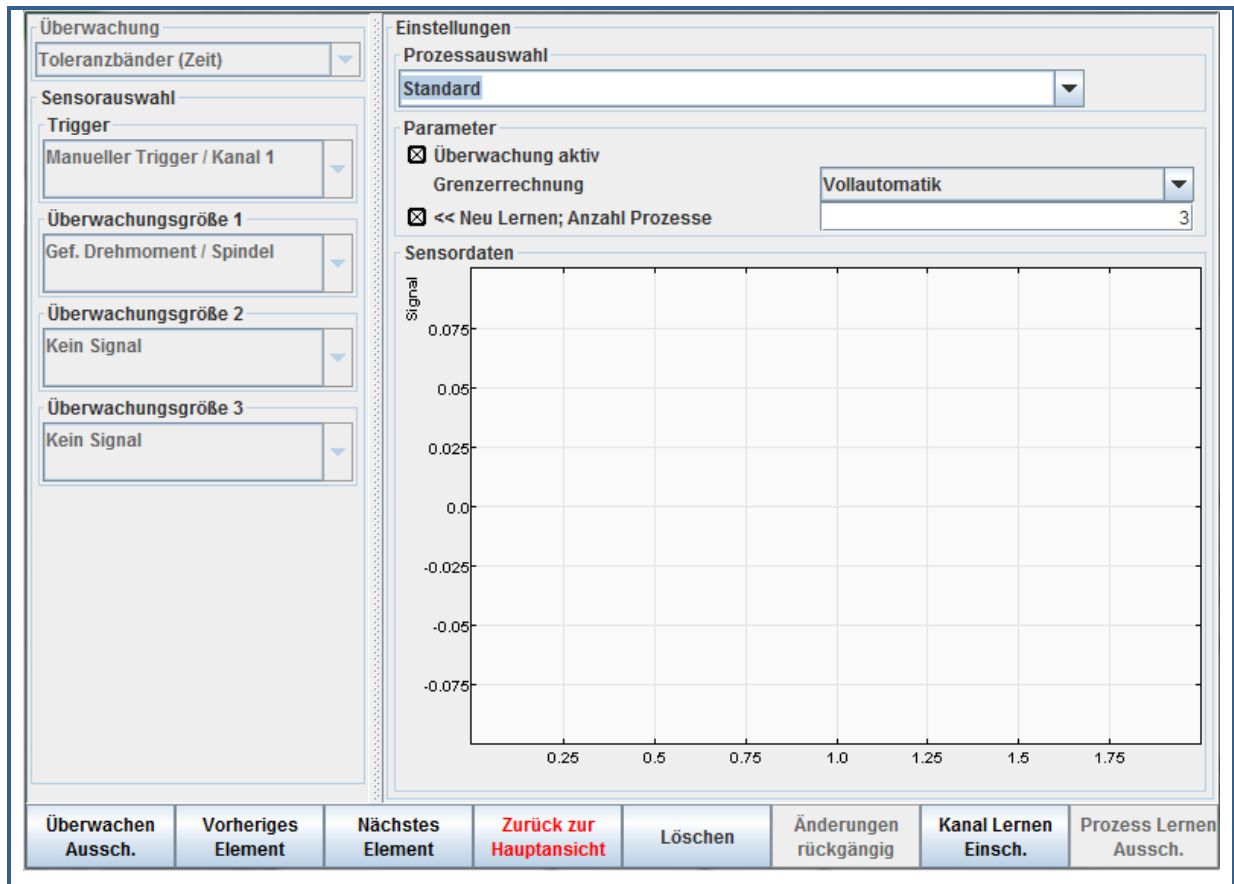
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2.1.2 Deactivating individual processes

Select channel →

Configuration



- Select the required process in "Process selection"
- Deselect "Monitoring active"

Observation of the signal path can continue and if necessary monitoring can be reactivated using this method.

2.2 Add new data source



Hardware	Settings	Access	System messages	Alarm monitor	Backup	USB	File manager
Overview			Diagnostics				Sensor values
Define the measuring frequency (Hz)							
<input type="range"/> Current value:100Hz							
1	10	50	100	250	500	1.0k	2.0k 5.0k 10.0k 20.0k
Frequency reduction							
Frequency reduction for monitoring (1 = normal/OFF)							<input type="text" value="1"/>
Data source							
ProfibusCIFX (V2)	HideAtAcceleration0	HideAtAcceleration1	Add data source				
ProfibusAPPIO (V2)							
Add new data source							
	Previous element	Next element		Switch off sensors	Reset inputs	Switch off alarms	Return to main view

Add data source

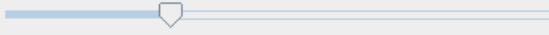
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- Select the needed driver

Hardware	Settings	Access	System messages	Alarm monitor	Backup	USB	File manager	
Overview			Diagnostics				Sensor values	
Define the measuring frequency (Hz)								
<input type="range"/> Current value:100Hz								
1 10 50 100 250 500 1.0k 2.0k 5.0k 10.0k 20.0k								
Frequency reduction								
Frequency reduction for monitoring (1 = normal/OFF) <input type="text" value="1"/>								
Data source								
File import		Add data source						
Signal processing script1								
Add new data source								
	Previous element	Next element	Add new data source	Switch on sensors	Reset inputs	Switch off alarms	Return to main view	

➔ Add new data source

Hardware	Settings	Access	System messages	Alarm monitor	Backup	USB	File manager			
Overview			Diagnostics				Sensor values			
Define the measuring frequency (Hz)										
								Current value:100Hz		
1	10	50	100	250	500	1.0k	2.0k	5.0k	10.0k	20.0k
Frequency reduction										
Frequency reduction for monitoring (1 = normal/OFF)								<input type="text" value="1"/>		
Data source										
File import		Add data source								
ProfibusCIFX (V2) ▼										
Add new data source										
	Previous element	Next element	Add new data source	Switch on sensors	Reset inputs	Switch off alarms	Return to main view			

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Switch on sensors

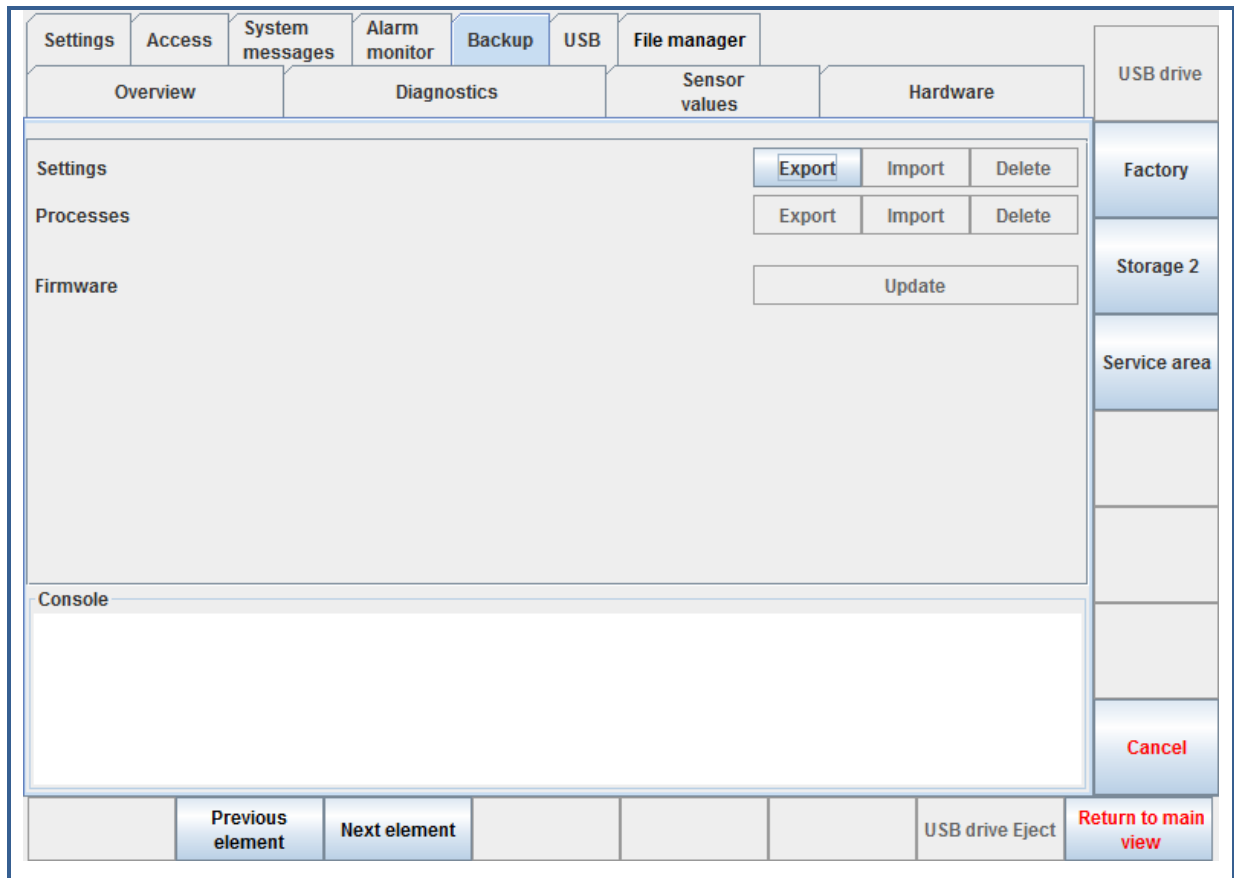
Hardware	Settings	Access	System messages	Alarm monitor	Backup	USB	File manager																			
Overview			Diagnostics				Sensor values																			
<p>Define the measuring frequency (Hz)</p> <div style="display: flex; align-items: center;"> <div style="flex-grow: 1;"> <input type="range" value="100"/> </div> <div style="margin-left: 10px;">Current value: 100Hz</div> </div> <p>1 10 50 100 250 500 1.0k 2.0k 5.0k 10.0k 20.0k</p> <p>Frequency reduction</p> <p>Frequency reduction for monitoring (1 = normal/OFF) <input style="width: 150px;" type="text" value="1"/></p> <p>Data source</p> <div style="display: flex; border-bottom: 1px solid gray; margin-bottom: 5px;"> <div style="border-right: 1px solid gray; padding: 2px 5px;">File import</div> <div style="border-right: 1px solid gray; padding: 2px 5px; background-color: #d9e1f2;">ProfibusCIFX (V2)</div> <div style="padding: 2px 5px;">Add data source</div> </div> <div style="border: 1px solid gray; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; margin: 0;">Remove data source</p> </div> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th colspan="2" style="text-align: left; padding: 2px;">Data channel selection</th> </tr> </thead> <tbody> <tr> <td style="width: 50%; padding: 2px;">Data channel 1 Spindle</td> <td style="width: 50%; padding: 2px;">Signal Torque</td> </tr> <tr> <td style="padding: 2px;">Data channel 2 Z</td> <td style="padding: 2px;">Signal Torque</td> </tr> <tr> <td style="padding: 2px;">Data channel 3 Spindle</td> <td style="padding: 2px;">Signal Target speed</td> </tr> <tr> <td style="padding: 2px;">Data channel 4 Z</td> <td style="padding: 2px;">Signal Target speed</td> </tr> <tr> <td style="padding: 2px;">Data channel 5 Spindle</td> <td style="padding: 2px;">Signal Target position</td> </tr> <tr> <td style="padding: 2px;">Data channel 6 X</td> <td style="padding: 2px;">Signal Target position</td> </tr> <tr> <td style="padding: 2px;">Data channel 7 Y</td> <td style="padding: 2px;">Signal Target position</td> </tr> <tr> <td style="padding: 2px;">Data channel 8 Z</td> <td style="padding: 2px;">Signal Target position</td> </tr> </tbody> </table>									Data channel selection		Data channel 1 Spindle	Signal Torque	Data channel 2 Z	Signal Torque	Data channel 3 Spindle	Signal Target speed	Data channel 4 Z	Signal Target speed	Data channel 5 Spindle	Signal Target position	Data channel 6 X	Signal Target position	Data channel 7 Y	Signal Target position	Data channel 8 Z	Signal Target position
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Data channel 8 Z	Signal Target position																									

| Previous element | Next element | Switch off sensors | Reset inputs | Switch off alarms | Return to main view |

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2.3 Import Export Settings

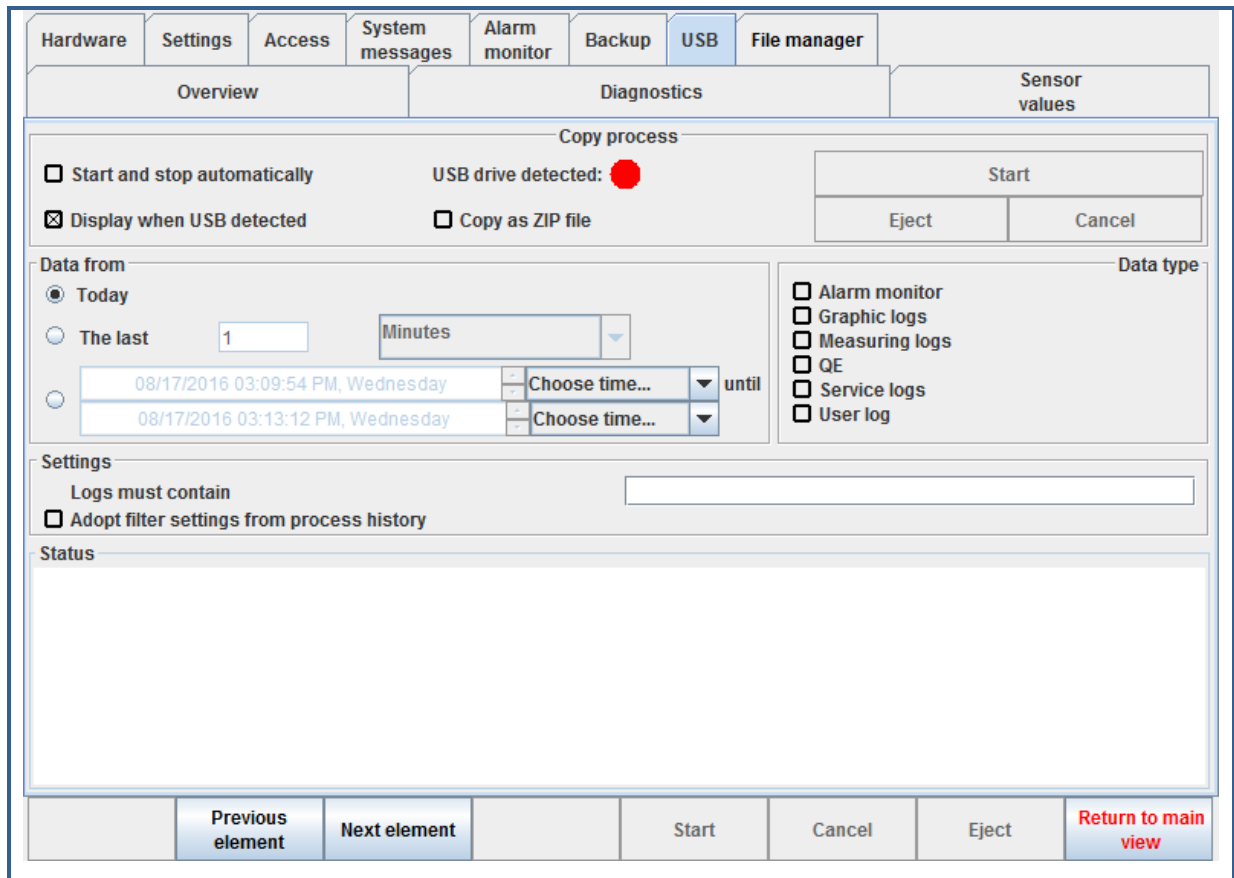


- Select Import/Export/Delete from Settings or Processes you needed
- Choose Backup device or Cancel
- Confirm with second push “Really”
- Successful

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2.4 Secure protocols

The screenshot shows the 'USB' configuration window in ToolScope. The 'Copy process' section includes options for automatic start/stop, display when detected, and copy format (ZIP). The 'Data from' section allows selection of time ranges (Today, The last 1 Minutes, or specific dates). The 'Data type' section lists log categories to be copied. The 'Settings' section includes a filter text field and an option to adopt filter settings. The 'Status' area is currently blank. Navigation buttons are located at the bottom of the window.

- Plug in a USB Stick in ToolScope , and wait for detection
- Select data
- Start data Transmission note status window
- Successful
- Plug out USB Stick