# ToolsTalk2 FLEX

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# **Configuration Manual**

Software





A WARNING Read all safety warnings and instructions

Failure to follow the safety warnings and instructions may result in electric shock, fire and/or serious injury.

Save all warnings and instructions for future reference



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# **Configuration overview**

# Navigating the user interface

# User interface start view

After a successful start of ToolsTalk 2 the following view is displayed.

	А В	C D
/	/ •	/
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Illustration 1: Navigation overview

А	Left-side menu bar	В	Plant structure workspace
С	System menu bar	D	Controller workspace

( The controller workspace area displays different content and depends on the selected icon or menu.

At start the default icon selection is the **Plant structure** icon <sup>•</sup>. This is indicated by changing the icon color to light blue. The workspace is divided into two parts:

- The structure workspace is used to organize controllers and to select an individual controller.
- The controller workspace shows all the controller icons and is used to view and set all parameters and configurations for one selected controller.

Left menu bar	Function
Plant structure	The <b>Plant structure</b> icon <b>L</b> . A single controller is selected for viewing or edit- ing.
System administration	The <b>System administration</b> icon includes software updates and configura- tion management.
Libraries	Under the Libraries icon $\mathbb{N}$ several global library functions resides that are used to distribute global configurations and parameters to many controllers.

*Table 1:* Content of the left menu bar

System menu bar	Function
Push changes	<b>Push</b> icon Push Changes <b>Push</b> . Saved configuration changes or parameter updates are pushed to a controller.
User settings	User settings icon <b>O</b> . Selection of language, torque units and temperature units.
Help	The <b>Help</b> icon shows the ToolsTalk 2 software version. Will in the future include help functions.

Table 2: Content of the system menu bar

The plant structure view is empty if no controllers are connected to ToolsTalk 2, or if user rights do not allow access to folders or controllers.

# **Controller list**

The **Plant structure** workspace will always contain a default folder named **All controllers**. The **All controllers** folder contains all the folders currently connected to the ToolsTalk 2 server, regardless if they are online or offline.

#### Selecting a controller

- 1. Click **Plant structure** in the left side menu bar.
- 2. Click **Open**  $\checkmark$  in the **All Controllers** structure.
- 3. Scroll down to the controller and select it by clicking on the name field Controller Name

The selected controller is highlighted. A controller with online status constantly updates the ToolsTalk 2 application.

Offline controller names are crossed out.

A controller in offline status may display old and outdated information if any changes have been made through another controller interface than ToolsTalk 2.

It is possible for several ToolsTalk 2 users to access the same controller. If an attempt is made to select a controller, which is already selected by another ToolsTalk 2 user, a modal dialog box appears with the following warning message:

( Other users are currently active in the system. Parameter values may be changed without notice.

Click **OK** to close the dialog box and to continue.

#### **Remote controller restart**

In certain circumstances it may be needed to make a complete **power on reset (POR)** of the controller.

To make a remote POR from ToolsTalk 2:

- 1. Click **Plant structure** in the left side menu bar.
- 2. Click **Open** V in the **All Controllers** structure.
- **3.** Right-click on the selected controller and select **Restart** in the shortcut menu
- **4.** Confirm or cancel the controller restart operation in the modal window dialog. The controller will first go offline before it gets back online.

This operation may take a few minutes.

While this is in progress, it is possible to perform other tasks in ToolsTalk 2.

It is only possible to make a remote restart on a controller that is online and connected to the ToolsTalk 2 application server. Offline controller names are crossed out.

### **Creating new folder**

- 1. Right-click at the bottom of the folder area.
- 2. Click Add folder in the shortcut menu. A *New folder* will be created and added to the list.
- **3.** Click on the *New Folder* to select it. Its color changes to light blue to indicate it has been selected.
- 4. Press F2.
- 5. Name the folder and press Enter.

### **Creating new subfolder**

- 1. Right-click on an existing folder.
- 2. Click Add folder in the shortcut menu. A *New folder* will be created and added to the list.
- **3.** Click on the *New Folder* to select it. Its color changes to light blue to indicate it has been selected.
- 4. Press F2.
- 5. Name the folder and press Enter.

#### **Deleting folder or subfolder**

- 1. Right-click on an existing folder.
- 2. Click **Delete** in the shortcut menu.

#### Copying a controller from the All controllers folder to a custom folder

- 1. Click on a controller to select it. Its color changes to light blue to indicate it has been selected.
- 2. Drag-and-drop the selected controller to the destination folder.

# Creating folder structures and sorting controllers

The **Plant structure** icon **the** is located in the left menu bar.

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The **All controllers** folder contains all the folders currently connected to the ToolsTalk 2 server, regardless if they are online or offline.

It is possible to create customized structures of folders and subfolders. Controllers can be copied to the customized structure to group controllers and create improved visibility of a working area.

#### New folder

To create a new folder:

- 1. Right-click at the bottom of the folder area.
- 2. Click Add folder in the shortcut menu. A *New folder* will be created and added to the list.
- **3.** Click on the *New Folder* to select it. Its color changes to light blue to indicate it has been selected.
- 4. Press F2.
- 5. Name the folder and press Enter.

#### New subfolder

To create a new subfolder:

- 1. Right-click on an existing folder.
- 2. Click Add folder in the shortcut menu. A *New folder* will be created and added to the list.
- **3.** Click on the *New Folder* to select it. Its color changes to light blue to indicate it has been selected.
- 4. Press F2.
- 5. Name the folder and press Enter.

#### Delete folder or subfolder

To delete a folder or subfolder:

- 1. Right-click on an existing folder.
- 2. Click **Delete** in the shortcut menu.

#### Copy a controller from the All controllers folder to a custom folder

To copy a folder from the All Controllers folder:

- 1. Click on a controller to select it. Its color changes to light blue to indicate it has been selected.
- 2. Drag-and-drop the selected controller to the destination folder.

# User interface - workspace with controller overview

After selecting a controller and selecting a controller menu icon, the controller workspace can show the following information.

A	B C E	DE FG
	Fieldbus	
		NN
		NN
	XYX NN XYX NN	NN NN

Illustration 2: Controller workspace overview

А	A selected controller in the <b>Plant</b> structure workspace	В	Controller name in the <b>controller</b> workspace. The name is identical to the selected controller name in the <b>Plant structure</b>
С	Name of the selected controller menu icon	D	List of configurations with over- view information in the <b>con-</b> <b>troller</b> workspace
Ε	Controller menu icons	F	A row of command buttons in the <b>controller</b> workspace. The type of command buttons vary depending on the controller menu icon selected
G	Selected controller menu icon. Highlighted with a yellow border		

The workspace **overview** shows either a list of configurations or shows menus with parameter values. If a list of configurations is shown, the next level, the **Menu** level is accessed by a **double-click** on a configuration name.

# User interface - saving controller configuration data

When a controller has a status of **On-line**, it automatically updates ToolsTalk 2 if any changes are made in the web GUI or in the controller GUI.

Any changes made in the ToolsTalk 2 GUI are automatically saved but are not copied to the controller. A **Push** copies changes to the controller and is executed by an active command.

A push indicator 🕥 is displayed beside the controller name in the plant struc-

ture workspace to indicate that configuration changes have been made in ToolsTalk 2 but not yet copied to the controller.

1. Click the **Push** command button Push Changes to start copying changes from ToolsTalk 2 to one or more controllers.

( It is not possible to make a **Push** to a controller which has a status of **Offline.** 

A detailed description of synchronisation between ToolsTalk 2 and a controller is described in Settings - Push configuration changes.

# Saving changes in parameters and configurations

When a controller has a status of **On-line**, it automatically updates ToolsTalk 2 if any changes are made in the web GUI or in the controller GUI.

Any changes made in the ToolsTalk 2 GUI are automatically saved but are not copied to the controller. A **Push** copies changes to the controller and is executed by an active command.

A push indicator • is displayed beside the controller name in the plant struc-

ture workspace to indicate that configuration changes have been made in ToolsTalk 2 but not yet copied to the controller.

A push can be made in two different ways:

- Click the **Push** command button Push Changes (1) in the system menu bar to start copying changes from ToolsTalk 2 to one or more controllers. A short-cut menu opens to select affected controllers
- Right click on a controller name in the plant structure workspace and select the **Push** command button in the shortcut menu. Changes are copied from ToolsTalk 2 to the one selected controller.
- (1) It is not possible to make a **Push** to a controller which has a status of **Offline.**

A detailed description of synchronisation between ToolsTalk 2 and a controller is described in Settings - Push configuration changes.

# **Remote controller restart**

In certain circumstances it may be needed to make a complete **power on reset (POR)** of the controller.

To make a remote POR from ToolsTalk 2:

- 1. Click the **Plant structure** icon in the left side menu bar.
- 2. Click the **Open** button  $\mathbf{\nabla}$  in the **All Controllers** structure.
- **3.** Right-click on the selected controller and select **Restart** command in the shortcut menu
- 4. Confirm or cancel the controller restart operation in the modal window dialog. The controller will first go offline before it gets back online.

(1) This operation may take a few minutes.

While this is in progress, it is possible to perform other tasks in ToolsTalk 2.

It is only possible to make a remote restart on a controller that is online and connected to the ToolsTalk 2 application server. Offline controller names are crossed out.

# Multistep tightening introduction

A multistep tightening is a tightening done in several steps. The number of steps and the type of the steps vary depending on the tightening to be done.

Often a multistep tightening is run with many tools in parallel, for example, to tighten the five bolts holding a wheel on a car. To make sure the tightening is done properly all the tools must run synchronized so they reach the same torque at roughly the same time.

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To make sure this synchronization happens, the multistep program uses synchronization points. At a synchronization points each tool stop. When all of the tools have reached the synchronization point the tools continue with the next step until they reach the next synchronization point.

The number of steps between the synchronization points is flexible and could vary from 1 to 10. It is not necessary for the multistep programs running on different tools to have the same number of steps between the synchronization points. A multistep tightening program is highly configurable and the actual layout of different multistep programs can vary wildly.

# Example: Multistep tightening program



Pos	
А	Step 1 and 2 engage the tool on the bolt.
В	A fast rundown is made with step 3.
С	Step 4 and 5 run the actual tightening
D	Step 6 is used to release the socket from the bolt.

# Restrictions

Restrictions are used to make sure the tightening stops if something unexpected occurs. These restrictions could, for example, test that a maximum set torque is not reached or that a part of the multistep tightening does not take too long to run. Every step can have up to four restrictions each.

#### Monitors

Monitors are used to verify that the tightening was made according to the specification. This can be, for example, angle limits or torque limits. Every step can have up to four monitors each.

#### Sync mode

With sync mode it is possible to run different tightening programs on different tools at the same time. The main function of the sync mode is to define the tools that shall be included in a synchronized tightening and specify the tightening program each tool shall run.

#### **Reject management**

If something goes wrong in a tightening program the program can either do a repair or the program is terminated.

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The reject management works like this, when all tools have reached a synchronization point the status of each tool and the total status is evaluated. If all channels at the synchronization point are OK the program continues with the next step. If something is NOK the program will repair or terminate according the set action. Managing the tightening program menu



Each row in the list represents one multistep tightening program.

Column	Description
Check box	Used, for example, when deleting a tightening pro-
	gram.
Name	A user-defined name.
Strategy	Selected strategy for the tightening program.
Library link	Linked to global library Yes/No.
Target	
Last change	Time expressed in ToolsTalk 2 time.
Changed by	Tightening program changed by <user></user>
Controller updated	Controller updated, expressed in controller time.
Controller updated by	Controller updated by <user></user>

### Adding a multistep program

- 1. Click the Add button. The Create new Tightening program window opens.
- 2. Enter tightening program name, index number (only valid for tightenings), operation mode and select tightening strategy Multistep. The tightening program will be given the next sequential number in the list of programs if no active selection of the index is made.
- 3. Click the Add button.

# Deleting a multistep program

- 1. For each multistep program to be deleted, mark the check box in the left most column in the workspace area.
- 2. Click the Manage command button.
- **3.** Select **Delete**. The selected multistep program(s) are removed and the list is updated.

# Settings for a multistep tightening program

#### Properties

Parameter	Description
Name	A user-defined name for the multistep program.
Description	Description of the multistep program.

# **General settings**

Parameter	Description
Tightening type	Set type of tightening, for example, fixtured.
Direction	Clockwise (CW) or counter clockwise (CCW). Nor-
	mally this direction is clockwise.

#### Validation

Parameter	Description
Validate against tool values	Use <b>On</b> if tool is known and set <b>Max Torque</b> and <b>Max Speed</b> .
	Use <b>Off</b> if tool is not known.
Tool	Drop-down for choosing the tool to validate against.
Max torque	Max torque of the tool to validate against.
Max speed	Max speed of the tool to validate against.

#### **Program restrictions**

Parameter	Description
Maximum time limit	Set amount in seconds. This restriction checks the to- tal time for the tightening and if it exceeds the <b>Maxi- mum time limit</b> limit the tool is stopped immedi- ately. The time is measured from the start of the pro- gram.
Maximum torque limit	Set amount. This restriction checks the torque and if the measured torque exceeds the <b>Maximum torque</b> <b>limit</b> limit the tool is stopped immediately.

#### Attachment tuning

Parameter	Description
Use attachment tuning	Select whether attachment tuning should be on or off.
Gear ratio	The gear ratio value can be between 0.5 and 4.0.
Efficiency tuning	The efficiency tuning value can be between 0.5 and 1.0.

# **Restrictions and Monitoring**

**Restrictions** are used to make sure the tightening stops if something unexpected occurs. These restrictions could, for example, test that a maximum torque is not reached or that a part of the multistep tightening does not take too long to run. All steps can have up to four restrictions each. Each step has its own set of mandatory step restrictions and optional step restrictions. The mandatory restrictions are included when dragging a new step to the multistep.

**Monitors** are used to verify that the tightening was made according to the specification. This can be, for example, angle limits or torque limits. All steps can have up to four monitors each. Each step has its own set of mandatory step monitors and optional step monitors. The mandatory monitors are included when dragging a new step to the multistep program.

#### **Deleting restrictions and monitors**

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- 1. Mark the restriction/monitor function in the created multistep procedure, click **Delete**.
- ( It is only possible to delete the restrictions and monitors that are **optional**. The mandatory cannot be deleted.



# Create tightening program in the drag and drop area

Buttons		
E	Tool box	
D	Terminate area	
C	Tightening program area	
В	Repair area	
А	Buttons	
Pos		

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Name	Description
Display	• Repair - Show or hide the repair area.
	• Terminate - Show or hide the terminate area.
	<ul> <li>Monitor - Show or hide the step monitors.</li> </ul>
	• Restriction - Show or hide the step restrictions.
	• Direction Arrow - Show or hide the direction arrow.
	<ul> <li>Display DropArea Help - Show or hide the DropArea help.</li> </ul>
Zoom in	Zooms in on the tightening program.

Name	Description
Zoom out	Zooms out from the tightening program.
Fit to screen	Fits the whole tightening program to the drag and drop area.
Delete	Deletes the selected item.

#### **Repair area**

The steps in the repair area show the repair path to be followed if the status at a synchronization point is NOK.

A repair path always starts and ends at a synchronization point. Where the repair path should re-enter the tightening path is flexible, but the repair path must always go back towards the beginning of the program.

Only one repair path can start in each synchronization point, but several repair paths may end at the same synchronization point.

The number of steps to run in the repair path can be between 1 and 3.

It is not possible to define a repair path from the start of the program.

#### **Example: Repair paths**



Pos	
A	Repair path from the first synchronization point to the start of the program.
В	Repair path from the third synchronization point to the second synchronization point.

#### **Tightening area**

The tightening area includes the tightening path, i.e., the steps and synchronization points in the multistep tightening program excluding repair and termination paths.

#### Terminate area

The steps in the terminate area shows the terminate path followed if the status at a synchronization point is fatal. After the termination path is done the tightening is ended. A termination path always starts at a synchronization point. Only one termination path can start in each synchronization point.

The number of steps to run in the termination path can be between one and three.

It is always possible to terminate from all synchronization points. If no termination path is defined, the program will go directly to the end without running any other steps.

# **Example:** Termination path



Pos	
А	Termination path from the first synchronization point to the end of the program.
В	Termination path from the third synchronization point to the end of the program.

# Tool box

The Tool box includes the available tightening steps, sync point, restrictions and monitors.

# Steps

All steps of the multistep tightening are included in this part of the tool box.

# A – Tighten to angle

This step runs the tool until the target angle is reached. The target angle is measured from the start of the step.

Parameter	Description
Target angle	The angle target. Must be $> 0$ .

Parameter	Description
Brake	On or Off.
	If <b>On</b> the tool will be stopped when the target is reached.
	If <b>Off</b> the program goes directly to the next step with- out stopping the tool.
Speed ramp type	Hard, soft, or manual. Default: Hard. If you select Manual, the Speed ramp field opens.
Speed ramp	If Speed ramp type is Manual, this field opens. De- fault: 500 rpm/s.
Speed	Default: 60 rpm.

## **T** - Tighten to torque

This step runs the tool until the target torque is reached.

Parameter	Description
Target torque	The torque target. Must be $> 0$ .
Brake	<b>On:</b> the tool will be stopped when the target is reached.
	<b>Off:</b> the program goes directly to the next step with- out stopping the tool.
Speed ramp type	Hard, soft, or manual. Default: Hard. If you select Manual, the Speed ramp field opens.
Speed ramp	If Speed ramp type is Manual, this field opens. De- fault: 500 rpm/s.
Speed	Default: 60 rpm.

# T+A – Tighten to torque plus angle

This step runs the tool until the target torque is reached. From this point it continues to run an additional target angle.

Parameter	Description
Target torque	The torque target. Must be $> 0$ .
Target angle	The angle target. Must be $> 0$ .
Brake	If <b>On</b> the tool will be stopped when the target is reached.
	If <b>Off</b> the program goes directly to the next step with- out stopping the tool.
Speed ramp type	Hard, soft, or manual. Default: Hard. If you select Manual, the Speed ramp field opens.
Speed ramp	If Speed ramp type is Manual, this field opens. De- fault: 500 rpm/s.
Speed	Default: 60 rpm.

# **DT** – Tighten to DynaTork

This step runs the tool until the **Torque target** is reached. The tool will then hold the current constant at the **DynaTork Percentage** of **Torque target** during the **DynaTork time**.

To avoid overheating of the tool, it is strongly recommended to never run DynaTork to more than 40% of the maximum torque of the tool.

Parameter	Description
Target torque	The torque target. Must be $> 0$ .
DynaTork time	The time DynaTork will be active.
DynaTork Percentage	The percentage of <b>Torque target</b> .
Speed ramp type	Hard, soft, or manual. Default: Hard. If you select Manual, the Speed ramp field opens.
Speed ramp	If Speed ramp type is Manual, this field opens. De- fault: 500 rpm/s.
Speed (rpm)	Default: 60 rpm.

## W – Wait

In this step the tool waits the specified amount of time. The tool does not rotate while waiting.

The step before the Wait step must have the setting Brake set to On, that is, the Wait step must start with the tool standing still.

Parameter	Description
Wait Time	Number of seconds the tool will stand still.
Hold position	On or Off.
	If <b>On</b> , the tool holds the position during the <b>Time target</b> .

# SR – Socket Release

This step runs the tool until the target angle is reached. The target angle is measured from the start of the step.

This step is only allowed to use as the last step in the tightening path of a multistep tightening program.

Parameter	Description
Target angle	The angle target.
	Default: $3^{\circ}$ , must be $> 0$
Speed ramp type	Hard, soft, or manual. Default: Hard. If you select Manual, the Speed ramp field opens.
Speed ramp	If Speed ramp type is Manual, this field opens. De- fault: 500 rpm/s.
Speed	Default: 60 rpm.

# T|A – Tighten to torque or angle

This step runs the tool at the chosen speed in the forward direction until the first of either torque target or angle target is reached. The torque and angle measurements start at the beginning of the step.

Parameter	Description
Target torque	Must be $> 0$ .
Target angle	Must be $> 0$ .
Speed	Default: 60 rpm. Must be $> 0$ .
Speed ramp type	Hard, soft, or manual. Default: Hard. If you select Manual, the Speed ramp field opens.
Speed ramp	If Speed ramp type is Manual, this field opens. De- fault: 500 rpm/s.
Brake	If <b>On</b> the tool will be stopped when the target is reached.
	If <b>Off</b> the program goes directly to the next step with- out stopping the tool.

### A – Loosen to angle

This step runs the tool with the speed n in the backward direction until the angle target is reached.

Parameter	Description
Target angle	Default: 0. Must be $> 0$ .
Speed	Default: 60 rpm. Must be $> 0$ .
Speed ramp type	Hard, soft, or manual. Default: Hard. If you select Manual, the Speed ramp field opens.
Speed ramp	If Speed ramp type is Manual, this field opens. De- fault: 500 rpm/s.
Brake	If <b>On</b> the tool will be stopped when the target is reached.
	If <b>Off</b> the program goes directly to the next step with- out stopping the tool.

#### T – Loosen to torque

This step runs the tool with the speed in the backward direction. For the step to be active, the torque must first **exceed** 110 % of the Target torque. The Target torque should be set to a positive value. After reaching Target torque, the step runs until the torque drops below the Target torque.

Parameter	Description
Target torque	Must be $> 0$ .
Brake	<b>On</b> : the tool will be stopped when the target is reached.
	<b>Off:</b> the program goes directly to the next step with- out stopping the tool.
Stop on first torque	The step runs until the torque pass the Target torque. The Target torque should be set to a positive value.
Speed ramp type	Hard, soft, or manual. Default: Hard. If you select Manual, the Speed ramp field opens.
Speed	Default: 60 rpm. Must be $> 0$ .

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Parameter	Description	
Speed ramp	If Speed ramp type is Man fault: 500 rpm/s.	ual, this field opens. De-

#### **RD** – Rundown

This step runs the tool with the speed in the forward direction, and depending on the stop condition, Torque or Snug the step behavior is as follows:

Stop condition Torque: The step stops when the specified target torque is found.

Stop condition Snug: The snug gradient calculation starts at the specified torque trigger level Tt. If no torque trigger is set the gradient calculation is started at the start of the step.

Parameter	Description
Rundown type	To torque or to snug.
Target torque	Default: "not set". Must be $> 0$ .
Brake	If <b>On</b> the tool will be stopped when the target is reached.
	If <b>Off</b> the program goes directly to the next step with- out stopping the tool.
Speed	Default: 60 rpm. Must be $> 0$ .
Speed ramp type	Hard, soft, or manual. Default: Hard. If you select Manual, the Speed ramp field opens.
Speed ramp	If Speed ramp type is Manual, this field opens. De- fault: 500 rpm/s.

#### YM2 – Tighten to yield, method 2

This step runs the tool with the specified speed in the forward direction until the yield point is detected.

Parameter	Description
Target torque	Must be $> 0$ .
Filter angle	Default: 1. Must be $> 0$ .
Number of samples	Default: 6. Must be $\geq=4$ .
Number pf samples, reference	Default: 6. Must be $\geq=4$ .
Yield point percentage	Default: 90%. Must be >20%.
Speed	Default: 60 rpm. Must be $> 0$ .
Speed ramp type	Hard, soft, or manual. Default: Hard. If you select Manual, the Speed ramp field opens.
Speed ramp	If Speed ramp type is Manual, this field opens. De- fault: 500 rpm/s.
Brake	If <b>On</b> the tool will be stopped when the target is reached.
	If <b>Off</b> the program goes directly to the next step with- out stopping the tool.

## Using speed shifts

You can define 1-5 angle triggers or torque triggers during a step, where the speed will shift.

( Within one step, all the speed shift triggers are based on the same property, i.e. either torque or angle. They cannot be mixed within one step.

To add a speed shift:

- 1. In the dialog box of a step that can have speed shifts, click Add speed shift and choose an angle range or a torque range. The Speed Shift Angle/ Torque fields open.
- 2. Add values according to the table below.

Parameter	Description	
Angle/Torque trigger	Must be $> 0$ .	
Speed	Must be $> 0$ .	
Speed ramp type	Hard or soft.	

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The Torque triggers and Angle triggers must be less than the step target, depending on the type of the step and the trigger type.

The Torque trigger and Torque speed also validate against the Max torque and Max speed **of the tool**. A warning or error indicator occurs whenever the Speed Shift settings exceed either the tool max values or step max values.

(1) It is possible to push the settings to the controller when a tightening program has a warning, but not when a tightening program has an error(fault) indicator.

#### Synchronization point

In a synchronization point the tool waits for all other tools to reach the corresponding synchronization point in their programs. Depending on the status for all tools the program continues on the tightening path, the repair path or the terminate path.

To prevent overheating of tools that are waiting in a synchronization point they are only allowed to "hold torque" or "hold position" for a maximum of 1 second. After this the tool will release the hold and continue to wait for the other tools.

Parameter	Description
Sync hold condition	NoHold, Holdposition or HoldTorque
	• Hold position: The tool holds the position it had when the previous step ended.
	• No Hold: The motor is turned off and the position will not be held.
	<ul> <li>Hold Torque: If the step before the synchroniza- tion point is a DynaTork step it is possible to set HoldTorque.</li> </ul>

#### **Step Monitors**

The step monitors are used to verify that the tightening was made according to the specification, for example, angle limits or torque. The monitors are flexible and can be placed as needed in the multistep program.

For each step in the multistep tightening program it is possible to have up to four monitors.

## M:A – Angle

This step monitor measures the maximum angle reached during the monitor and checks that it is between **High limit** and **Low limit**. The angle measurement starts at the start of the monitor or, if specified, at the point where the torque passes **Trigger torque** for the first time during the monitor.

Parameter	Description	
Туре	Four angle types are available: Peak angle (default), Angle at peak torque, Shut off angle, and Angle at end.	
Trigger torque	The angle measurement starts at this trigger.	
Low limit	Lowest acceptable angle.	
High limit	Defined highest angle.	

# M:PT – Peak Torque

This step monitor measures the maximum torque reached during the monitor, including any over shoot, and checks that it is between **High limit** and **Low limit**.

Parameter	Description
Low limit	Lowest acceptable torque.
High limit	Defined highest torque.

# M:SOT – Shut Off Torque

The shut off point is the point where the step reaches its target. The torque is measured at the shut off point and checked to be between **High limit** and **Low limit**.

Parameter	Description
Low limit	Defined lowest torque.
High limit	Defined highest torque.

# M:TRD – Torque Rate and deviation

This step monitor measures and checks the torque rate, i.e. the ratio of torque vs. angle. The calculated torque rate is checked if it is within the torque rate limits defined by **High limit** and **Low limit**.

Parameter	Description
Trigger torque	Torque of the angle start point.
Start point angle	When Start point angle has been measured from Trig- ger torque the measuring of the torque starts.
End point angle	Angle point where the measuring of the torque is stopped.
End point torque	Torque where the measuring of the torque is stopped.

ΕN

Parameter	Description
Low limit	Defined lowest torque.
High limit	Defined highest torque.
Limit	Must be $> 0$

## M:PVTH – Post view torque high

This monitor checks that all torque values in the angle window are below the limit.

Parameter	Description	
Start Angle	Must be $\geq 0$	
Window length	Must be $\leq 0$	
Number of samples	1	
High limit	Defined highest torque.	

#### M:PVTL – Post view torque low

This monitor checks that all torque values in the angle window are above the limit.

Parameter	Description	
Start Angle	Must be $\geq 0$	
Window length	Must be $\leq 0$	
Number of samples	1	
Low limit	Defined lowest torque.	

# M:YA – Angle from yield

This monitor measures the peak angle reached from the yield point and checks that the peak angle is within the limit.

Parameter	Description
Gradient angle window	If set to Manual: Must be $> 0$
Angle window	Available when gradient angle window is set to Man- ual.
Yield Point Percentage	Must be $\geq 20 \%$
Trigger torque	Must be $\geq 0$
Low limit	Must be $\geq 0$
High limit	Must be $> 0$

# **M:PrT – Prevailing torque**

This monitor calculates the prevailing torque value in the angle window and checks that it is within the limits.

Parameter	Description
Torque Compensation	On or off.
Start angle	Must be $> 0$
Window length	Must be $\geq 0$
Low limit	Must be $> 0$

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Parameter	Description	
High limit	Must be $\geq 0$	

## M:TAW – Torque in angle window

This monitor checks that all torque values in the angle window are within the torque limits.

Parameter	Description
Trigger torque	Must be $\geq 0$
Start Angle	Must be $> 0$
Window length	Must be $\leq 0$
Low limit	Must be $\geq = 0$
High limit	Must be $> 0$
	Must be > Low limit

#### Restriction

To make sure the tightening stops if something unexpected happens, it is possible to add restrictions to the multistep tightening program. For each of the steps in a multistep program it is possible to have up to four restrictions.

#### **R:T – Maximum torque**

This restriction checks the torque and if the measured torque exceeds the **Maxi-mum limit**, the tool is stopped immediately and the program jumps to the next synchronization point.

Parameter	Description
Maximum limit	If the torque reaches this specified limit the tool is
	stopped immediately and the program jumps to the
	next synchronization point

#### R:A – Maximum angle

This restriction measures the angle. If the measured angle reaches the **Maximum limit**, the tool is stopped immediately and the program jumps to the next synchronization point. The angle is measured from the start of the restriction or, if specified, from the point where the torque passes **Trigger torque** for the first time during the restriction.

Parameter	Description
Trigger torque	If specified, this is the torque from where the angle is measured.
Maximum limit	If this limit is reached the tool is stopped immediately and the program jumps to the next synchronization point.

#### R:CTh – Cross Thread

This restriction checks the angle from the point where torque passes **Start torque** (T1) to the point where the torque passes **End torque** (T2). If the angle measured from **Start torque** (T1) is higher than **Maximum limit** (Amax), the tool is stopped immediately and the program jumps to the next synchronization point.

When the torque passes **End torque** (T2), the measured angle is checked against the limit **Minimum limit** (Amin). If the angle is lower than this limit, the tool is stopped immediately and the program jumps to the next synchronization point.

Parameter	Description	In illustration
Start torque	Must be <=0.	T1
End torque	Must be $\leq= 0$ .	Τ2
Minimum limit	The low angle limit.	Amin
Maximum limit	The high angle limit.	Amax



# **R:RT – Rescinding torque**

This restriction checks the torque. If the measured torque is lower than the limit Torque low limit, the tool is stopped immediately and the program jumps to the next synchronization point, or the end of the program.

Parameter	Description
Rescinding torque limit	Default: 10 Nm. Must be $> 0$ .

#### **R:TG – Torque gradient**

This restriction checks the gradient and if it is outside the limits the tool is stopped immediately and the program jumps to the next synchronization point or the end of the program.

Parameter	Description
Gradient angle window	If set to Manual: must be $\leq=0$ .
Angle window	Available when the gradient angle window is set to Manual.

Parameter	Description	
Trigger torque	Must be $\geq = 0$ .	
Minimum Limit	Must be $\geq = 0$ .	
Maximum Limit	Must be $> 0$ .	

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# **R:TAW – Torque in angle window**

**ToolsTalk2 FLEX** 

This restriction checks that the measured torque in the angle window is within its limits. If the measured torque is outside the limits the tool is stopped immediately and the program jumps to the next synchronization point, or the end of the program.

Parameter	Description
Trigger torque	Must be $\geq 0$
Start angle	Must be $\geq 0$
Window length	Must be >0
Minimum limit	Must be $\geq 0$
Maximum limit	Must be <= Minimum limit

#### Drag and drop area shortcut keys

Shortcut key	Description
Space bar + cursor	Move Drag and drop area.

#### Drag and drop area functions

Function	Description
Add step	Grab a step in the <b>Tool box</b> . Drag the step to the desired position. Possible positions are indicated by a light blue indication arrow.
Mark a step	Click on a step to mark it.
Move a step	To move a step, click on the step and hold the button pressed while moving.
Copy step	$\Box + \bullet \Box + \bullet \bullet \bullet \Box + \bullet \bullet \bullet \bullet$

**Features** 





# Configurations

# **Configurations - overview**

Socket selectors, stacklights and tools are just some of the examples of device types that are connected to the controller via the I/O bus. Multiple devices can be connected to the I/O bus and each type of device has its own set of configuration parameters. Before operation, the configurations must be assigned to a Virtual Station.

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For a general overview of existing configurations:

1. Select a controller in the Line structure

2. Select the **Configurations** icon in the menu bar.

The workspace area shows a list of all the current configurations.

**3.** Double click on a row in the workspace list to view details of the selected configuration.

The workspace area shows the configuration menus where it is possible to configure the selected device.

Column	Description
Check box	Select to get access to the Manage command button list.
Name	Shows the name of the controller template.
Туре	Type of configuration set-up.
Last change	Last changes made, expressed in ToolsTalk 2 time.
Changed by	Last changes made by
Controller	Last changes made, expressed in controller time.
updated	
Controller updated	Last update of the controller done by

Table 3: Configuration overview list

(1) The list can be sorted by clicking in the header of each column.

# Adding a configuration

- 1. In Configurations (-), click Add. The Create new configuration pop-up window opens.
- 2. Select type of device from the pull-down list.
- 3. In the **Properties** menu, type a configuration name and a description.

Depending on selected type of device, each configuration have their own set of input and output signals. How to configure each type of device is described separately.

# **Deleting a configuration**

- 1. In **Configurations** =, select the checkbox for the configuration to delete.
- 2. Click Manage and select Delete.

The selected configurations are removed from the list.

A configuration can only be deleted if it is not assigned to any Virtual Station.

# Stacklight configuration

# Stacklight overview

The stacklight provides long distance visual communication from the controller to the operator. In addition to the lights, the accessory can be equipped with a button, key switch, buzzer and I/O connections.

The stacklight is connected to the controller using the I/O bus. Multiple accessories can be connected on the I/O bus. Read the stacklight documentation for address configuration and specifications of the connections.

How to assign an accessory configuration to a virtual station is described under

the Virtual station icon

# Internal IO configuration

# Internal I/O overview

The FlexController has two screw terminals located on the inside. They can be used to connect digital input and output signals.

All the digital input signals and the digital output signals that are listed in the **Reference** section can be routed to the internal I/O terminals.

For electrical specification and connections, see the FlexController documentation.

How to assign an accessory configuration to a virtual station is described in the

Virtual station I section.

# **Operator panel configuration**

# **Operator panel overview**

The operator panel is connected to the I/O bus and provides a configurable digital communication link between an operator and the controller. Lamps, buttons, buzzer, and switches are used in the communication. Read the operator panel documentation for address configuration and specifications of connections.

How to assign an accessory configuration to a virtual station is described in the **Virtual station** is section.

# IO expander configuration

# I/O expander overview

The I/O expander is connected to the I/O bus and provides an extension to connect digital input and output signals. Multiple expanders can be connected. Read the I/O expander documentation for address configuration and specifications of connections.

How to assign an accessory configuration to a virtual station is described in the **Virtual station** is section.

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# Indicatorbox

The Indicator box is a flexible display indicator used to display status signals from the controller. The display is equipped with 20 dual color LEDs, these are mounted in a square with five LEDs at each side.

# Configuring the indicator box

# Add a LED configuration

- 1. Select Indicator box in the Configurations menu.
- 2. Click Edit.
- **3.** To add a LED click on the + button.
- 4. Type LED letter in the **Position** box according to the illustration.
- 5. Select signal for red and green LED.

# Change a LED configuration

- 1. Select Indicator box in the Configurations menu.
- 2. Click Edit.
- 3. Click on the row with the LED you want to change.
- 4. Change signal for red and green LED.

# Manage sync mode



The sync mode allows the different tools in a fixtured solution to run different multistep programs at the same time.

In a flexible production line you may need to use a different sync mode for each new product. The sync mode feature allows you to set up a mode for each configuration.

Each line represents one sync mode. The columns contain the following information:

Column	Description
Check box	Used when, for example, deleting a sync mode.
Name	A user defined name for the sync mode
Channels	The number of channels in the sync mode.
Last saved	Time expressed in ToolsTalk 2 time.
Last saved by	Shows who saved the configuration data.
Controller updated	Time when the controller was updated, expressed in controller time.
Controller updated by	User who last updated the controller.

# Adding a sync mode

- 1. Select a controller in the Structure window.
- 2. Click the **Sync mode** icon in the **Menu** bar. The workspace area shows a list of all the current sync modes.

#### Deleting a sync mode

- 1. Select a controller in the **Structure** window.
- 2. Click the sync mode icon in the **Menu** bar. The workspace area shows a list of all the current sync modes.
- **3.** For each sync mode to be deleted, mark the check box in the left most column in the workspace area.
- **4.** Click the **Delete command** button. The selected sync mode are removed and the list is updated.

# Reject management

The reject management function is used for automatic repair or termination of failed steps. At each synchronization point the status of the tightening is evaluated. If the status is OK the next part of the tightening program starts. If the total status is **NOK** an action is taken to repair, terminate or end the tightening program.

The repair path from each sync point is defined in the repair area in the tightening program.

The termination path from each sync point is defined in the termination area in the tightening program.

#### Status at a synchronization point

When all tools have reached a synchronization point the status of each tool and the total status is evaluated.

	OK	NOK	Not repairable	Fatal
Status of a tool	Everything is OK so far.	The step(s) before the synchronization point has an error detected by a moni- tor. For these errors a repair is possible to do.	The step(s) before the synchronization point has an error detected by a restric- tion.	The step(s) before the synchronization point has a fatal er- ror. Reasons for this can be: - Hardware errors in tool or drive - Max time in pro- gram restriction <b>Time</b> was reached - Max torque in pro- gram restriction <b>TORQUE</b> was reached.
Status for a repair group	All the tools in the repair group reached the synchronization point with status <b>OK</b> .	At least one of the tools in the repair group reached the synchronization point with status <b>NOK</b> (and none had the status <b>NOT RE-</b> <b>PAIRABLE</b> or <b>FA-</b> <b>TAL</b> ).	At least one of the tools in the repair group reached the synchronization point with status <b>NOT RE-</b> <b>PAIRABLE</b> (and none had the status <b>FATAL</b> ).	At least one of the tools in the repair group reached the synchronization point with status <b>FA-</b> <b>TAL</b> .

	OK	NOK	Not repairable	Fatal
Total status	All the tools reached the synchronization point with status <b>OK</b> . The execution of the program con- tinues with the next step in the tighten- ing.	At least one of the tools reached the synchronization point with status <b>NOK</b> (and none had the status <b>NOT RE-</b> <b>PAIRABLE</b> or <b>FA-</b> <b>TAL</b> ).	At least one of the tools reached the synchronization point with status <b>NOT RE-</b> <b>PAIRABLE</b> (and none had the status <b>FATAL</b> ).	At least one of the tools reached the synchronization point with status FA- TAL.

#### Calculate action if total status at a synchronization point is NOK

If total status at a synchronization point is **NOK** the applicable action is calculated. The action is decided depending on the set triggers. The first trigger that is fulfilled decide the action to do:

1. Maximum number of failing steps exceeded:

If the total number of failing steps in the whole tightening exceeds the number *Max number of failing steps* the *Action of exceeded* is used. If the same step fail more than once it still only counts as one failing step.

- 2. Maximum number of repairs exceeded: If the total number of repairs started from the current synchronization point exceeds the number *Repairs* in the *Number of repairs* trigger the *Repair* action is used.
- **3.** Maximum number of failing groups: If the number of failing groups (groups that have status **NOK**) exceed the number *NOK groups* in the *Number of NOK channels* trigger the *NOK group* action is used.
- Maximum number of failing tools: If the number of failing tools (tools that have status NOK) exceed the number NOK channels in the Number of NOK groups trigger the NOK channel action is used.
- **5.** Default failing action: If none of the conditions above is fulfilled the setting in *Default failing* action is used.

#### Action running a repair

A tool that run a repair will run the steps in its repair path and jump back to a previous synchronization point. The repair is ongoing until the program returns to the synchronization point that started the repair. When the repair are done the status of the tools, repair groups and the total status will be evaluated again. If the total status is now OK all tools will continue with the next step, otherwise a new repair or termination is started.

The tools not running a repair will stay at the current synchronization point and wait for the repair to finish.

Action on status	Total status NOK
Repair NOK	All the tools with status <b>NOK</b> will run a repair. The
	tools not running a repair will stay at the current syn-
	chronization point and wait for the repair to finish.

ΕN

Action on status	Total status NOK
Repair NOK groups	All tools that belong to a repair group with status <b>NOK</b> will run a repair. All the tools in the repair group will run a repair, regardless of their individual status. The tools not running a repair will stay at the current synchronization point and wait for the repair to finish.
Repair All	All the tools, regardless of their status, will run a re- pair.

#### Action running a termination

A tool that run a termination will run the steps in its termination path. After that the tightening is completed with status **NOK**.

Action on status	Total status NOK	Total status Not repairable
Terminate NOK	All the tools with status <b>NOK</b> will run a termination.	All the tools with status <b>NOK</b> or <b>NOT REPAIRABLE</b> will run a termination.
Terminate NOK Groups	All tools that belong to a repair group with status <b>NOK</b> will run a termination. All the tools in the re- pair group will run a termination, regardless of their individual status	All tools that belong to a repair group with status <b>NOK</b> or <b>NOT</b> <b>REPAIRABLE</b> will run a termi- nation. All the tools in the repair group will run a termination, re- gardless of their individual status.
Terminate All	All the tools, regardless of their stat	tus, will run a termination.

The tools with status **OK** will continue according the setting *Other* :

- **CONTINUE**, The other tools will wait on the current synchronization point until the termination is finished. After this they will continue with the remaining parts of the tightening program.

- END ALL, The other tools will end the tightening.

#### Action end a tightening program

A tool that end the tightening program will go directly to the end without running any other steps. After that the tightening is completed with status **NOK**.

Action on status	Total status NOK	Total status Not repairable
End NOK	All the tools with status <b>NOK</b> will end the tightening without running the termination path.	All the tools with status <b>NOK</b> or <b>NOT REPAIRABLE</b> will end the tightening without running the termination path.
End NOK Groups	All tools that belong to a repair group with status <b>NOK</b> will end the tightening without running the ter- mination path. All the tools in the repair group will end the tighten- ing, regardless of their individual status.	All tools that belong to a repair e group with status <b>NOK</b> or <b>NOT</b> <b>REPAIRABLE</b> will end the tight- ening without running the termina- tion path. All the tools in the repair group will end the tightening, re- gardless of their individual status.
End All	All the tools, regardless of their stat running the termination path.	tus, will end the tightening without

The tools with status **OK** will continue according the setting *Other* :

- **CONTINUE**: The other tools will continue with the remaining parts of the tightening program.

- **TERMINATE ALL**: The other tools will run a termination.

# Action on total status Fatal

If the total status is **FATAL** a repair is not allowed. The tools with status Fatal cannot run anymore, so they will just end the tightening. The other tools will terminate, regardless of their individual status.

# Handling sync mode configuration

Sync mode is used to:

- Define the tools that shall be included in a synchronized tightening
- Specify the tightening program each tool shall run
- Handle reject management.

# Properties

Parameter	Description
Name	A user defined name for the mode.
Description	Description of the mode.

# **Reject management**

Parameter	Description	
Max number of failing steps	Specifies the maximum number of different steps that can fail during the whole tightening. It does not mat- ter if the same step fail more than once, it still only counts as one failing step. If not set an unlimited number of steps can fail.	
Action if exceeded	Specifies the action if <b>MAXIMUM NUMBER OF</b> <b>FAILING STEPS</b> is exceeded.	
Action if NOK during repair	Specifies the action if a new error ( <b>NOK</b> ) is detected while a repair is ongoing.	

# Triggers

( To view the **Sync point table** a tightening program with sync points must be selected for at least one bolt in **Bolt configuration**.

For each synchronization point in the main path of the programs it is possible to specify different triggers to control the reject management.

Default trigger parameters	Description		
Sync point	Sync point in the selected tightening program.		
Default failing	Specifies the main action if an error is detected. Is used if none of the other conditions are fulfilled.		
Default failing other	This parameter defines the action on the tools not run- ning <b>END</b> or <b>TERMINATE</b> .		
Repair trigger parameters	Description		
---------------------------	---	--	--
Repairs	Specifies the maximum number of repairs that can be started from the synchronization point. If not set an unlimited number of repairs can be made		
Repair action	Specifies the action if <b>Maximum number of repairs</b> have been made and a new error occur		
Repair action other	This parameter defines the action on the tools not run- ning <b>END</b> or <b>TERMINATE</b> .		
NOK channels parameters	Description		
NOK channels	Specifies the maximum number of channels that can fail in the synchronization point. If not set the number of failing channels settings will never be used to de- cide the action.		
NOK channel action	Specifies the action if more than <b>NOK channels</b> have failed in the synchronization point.		
NOK channel other	This parameter defines the action on the tools not run- ning END NOK or TERMINATE NOK.		
NOK groups parameters	Description		
NOK groups	Specifies the maximum number of groups that can fail in the synchronization point. If not set the number of failing groups settings will never be used to decide the action.		
NOK group action	Specifies the action if more than <b>NOK groups</b> have failed in the synchronization point.		
NOK group other	This parameter defines the action on the tools not run- ning END NOK or TERMINATE NOK.		

Not repairable Parameters	Description
Not repairable	Specifies the action if the total status in the synchro- nization point is <b>NOT REPAIRABLE</b> .
NOK repairable other	This parameter defines the action on the tools not run- ning <b>END</b> or <b>TERMINATE</b> .

### Add trigger

- 1. Click on the + icon next to Add trigger.
- 2. Select trigger.
- **3.** Set action for each sync point.

### **Delete trigger**

- 1. Click on the + icon next to Add trigger.
- 2. Click on delete icon next to the trigger you want to delete.

# **Bolt configuration**

Parameter	Description
Check box	Used when, for example, deleting a channel.

Features

Parameter	Description
Channel	Number of the channel, also named drive index.
Tightening program	Select tightening program defined in the menu <b>Tight-</b> ening <b>Program</b> .
Bolt	The actual fastener that is tightened when a tightening is made. This number will be used as the address when collecting data for the specific bolt, for exam- ple, in the fieldbus signal <b>Bolt tightening status</b> .
Bolt name (optional)	Name of the bolt.
Group	The repair groups are used to group bolts that depend on each other when running a repair. One channel can belong to none, one or more repair groups. If a group is specified for one bolt all the other bolts must also have a repair group defined, otherwise the sync mode is considered invalid.

# **Channel numbering**

When a system is powered up a channel number (also named drive index) will be assigned to each FlexDrive. The drive index is dependent of which FlexCarrier and where in the FlexCarrier the FlexDrive is mounted.

### **Example: Channel numbering**

Carrier	Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6
1	Controller	Drive	Drive	Drive	Drive	Drive
Drive index	-	2	3	4	5	6
Carrier	Slot 1	Slot 2	Slot 3			
2	Drive	Drive	Drive			
Drive index	7	8	9			

# Tools

# Tools icon - workspace

The **Tools** icon **f** in ToolsTalk 2 is located in the top-side menu bar when a controller is selected under the **Plant structure** icon **F**.

The **Tools** workspace displays a list of tools connected to the controller.

# ToolsTalk2 FLEX

	A B C D
	Controller name
Controller name	
	/
Illustration 3: Tool icon - workspace	

А	Controller name	В	Tools table header row
С	Tools icon f	D	Tools table, one row for each tool connected to the controller

Column	Description
Tool type	Describes the type of the tool.
Model	A detailed model number of the tool.
Serial number	The serial number of the tool.
Software version	The software version of the tool.
Max torque	The maximum torque value the tool can produce.
Max torque with	The maximum torque value the tool can produce when using the TurboTight strategy.
TurboTight	Applicable only to certain tools.
Max torque with	The maximum torque value the tool can produce when using the TensorPulse strategy.
I ensor Puise	Applicable only to certain tools.
Max speed	The maximum rotation speed of the tool.
Next calibration	Date for the next calibration of the tool.
Virtual station	The name of the virtual station to which the tool is connected.

Column	Description
	Not an actual column.
•	The list of configurations can be sorted in rising or falling alphabetical order, numeri- cal order or time order. Click on the header row to make an arrow visible and click on the arrow to change the current sorting direction. One arrow is shown.

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Table 4: Tools table columns

# **General Tool information**

The **General Information** menu contains the following information for each tool:

Information	Description
Model	Tool model denomination.
Serial number	Tool serial number.
Product number	The same as ordering number.
Software version	Tool software version number.

### **Tool limits**

The Tool limit menu contains the following information:

Information	Description
Max torque	The maximum torque the tool can use for a tightening.
Max speed	The maximum rotation speed of the tool.
Gear ratio	The ratio of the angular velocity of the input gear to the angular velocity of the output
	gear.

#### Connection

Information	Description	
Virtual station		
Channel		

### Service settings

### Calibration

In the menu **System settings**, see System settings menu - Tool tool alarms related to calibration and maintenance can be configured. Trigger points for these alarms are taken from the **Tool** menus.

The calibration value is stored in the tool memory and is used to adjust the torque value given by the tool's torque transducer so that the correct torque value is displayed on the controller. The controller displays the date when the tool was last calibrated.

Tool calibration is carried out at the controller and uses a torque reference transducer. This process is described in the FlexController configuration guide.

Store the new calibration value in the tool memory by entering the calculated value in the **Calibration value** parameter entry box, and then click the **Set** command button.

Information	Description	
Last calibrated	Date when last calibrations was made.	
Calibration value	Enter the measured and calculated value into the parameter entry box.	
Next calibration	Next calibration is due before this date.	
Set	Command button.	
	Stores the entered values.	

Table 5: Tool calibration information

### Maintenance

Field	Description	
Last service	Date and time when last service was performed. The Last service date is set at the re- pair workshop. The <b>Last service</b> date is set to current date and time when the <b>Reset</b> button is pressed.	
Total tightenings at service	The <b>Total tightenings at service</b> is the total number of tightenings performed by the tool since it was used for the first time. This value is updated at service, and will remain the same until the next service.	
Remaining tighten- ings		
Service interval	Number of tightenings to be performed before the next service. Can be set in multiples of 10 000.	
Set	The command stores the value entered in the <b>Service interval</b> parameter entry field and adjusts the value to a multiple of 10 000.	
Reset	The <b>Reset service counter</b> command resets the <b>Remaining tightenings</b> counter and sets the <b>Last service</b> date to the current date.	

Table 6: Tool maintenance information

# **Tool health monitor**

The equipment health monitor regularly measures parameters and stores them.

Information	Value	Description
Refresh		Command button: read tool value.
History		Command button:
		History window opens to display latest temperature readings.
Tool motor temp ature	er- Degree C or F	Latest temperature recording expressed in month/day/year hour:minute:second.
Tool electronics temperature	Degree C or F	Latest temperature recording expressed in month/day/year hour:minute:second.

Table 7: Tool health monitor

# Virtual station configuration

# Virtual station introduction

The Virtual station icon **f** is located in the controller menu bar when a con-

troller has been selected in the Plant structure

A virtual station is a software abstraction of a controller. Within one controller it is possible to create several virtual stations. Each virtual station behaves like a controller. The various configurations can be assigned to virtual stations as needed.

The virtual station concept is not valid for a FlexController. The software architectural design is maintained for both controller types, and therefore the virtual station appears in the FlexController interface.

### Virtual station workspace

To open the Virtual station workspace and view the list of virtual stations:

- 1. Select a controller in the **Plant structure** workspace
- 2. Click Virtual station If in the menu bar.

The workspace area displays a list of virtual stations in the controller. The list is empty if no virtual stations have been created.

Column	Description
Check box	Selects a virtual station.
Name	Shows the name of the virtual station.

EN

Table 8: Virtual station workspace information

Command	Description
Add	Creates a new virtual station.
Delete	Removes the selected virtual stations from the list.

Table 9: Virtual station workspace command buttons

The following can be done:

- Select one or more check boxes on the left side. Selected configurations can be deleted by clicking **Delete**.
- Click once on one row to expand the view and see the configuration menus for the selected virtual station.
- Click a second time on the row to collapse the menu view and to display the virtual station list.
- Click Add to create a new virtual station.

# Virtual station - Properties

A virtual station must have a name. This is configured in the **Properties** menu. The default name is *Virtual station <index nr>*.An optional description field is also available.

 $^{\textcircled{1}}$  If the name field is left blank, a red error indicator is displayed  $\bigcirc$ .

# **Controller information**

### **Controller information menu**

The Intelligent Application Module (IAM) is located on the inside of the Flex-Controller door. It contains the controller program, configuration parameters and stored results.

The IAM module can easily be removed and moved into another controller, which then will behave exactly as the previous controller.

To view the **Controller information** menus and current configurations:

- 1. Select a controller in the **Plant structure**
- **2.** Go to **Controller** <sup>1</sup>.

The workspace area displays the **Controller** menus.

Menu	Functionality
Model	Provides general information about the type of controller.
Serial number	Provides information about the serial number of the controller.
Service Ethernet	Provides information about the IP address of the service port. Through this port a ser-
port.	vice engineer can access the controller without being connected to the factory network.

Table 10: Controller model information

Menu	Functionality
IAM type	Atlas Copco provides different IAM types with different functionality.
Customer key	Is an identifier for application-specific or customer-specific configurations.
Serial number	Provides information about the serial number of the IAM module.

Table 11: Controller IAM information

# Controller information - software menu

- 1. Select a controller in the **Plant structure** workspace
- 2. Go to Controller

The workspace area displays the Controller menus.

Menu	Functionality
Current version	The main active working software.

EN

**ToolsTalk2 FLEX** 

Table 12: Controller software version

This has two advantages:

- Controller software can be loaded to controllers in parallel to normal operation. If several controllers are to be updated, a switch can then be made very quickly on all controllers at the same time.
- If a software upgrade results in unexpected results, a switch to the previous version is a quick back-up fix.

# **Controller information - hardware configuration**

This menu provides information about the system hardware configuration.

- 1. Select a controller in the **Plant structure** workspace
- 2. Go to Controller <sup>1</sup>.

The workspace area displays the **Controller** menus.

For a FlexController the menu is named **Hardware**. The information lists the different hardware modules that make up the controller.

For each module, the following data is provided:

- Serial number
- Article number
- Hardware revision number

For more controller hardware descriptions, please look into the FlexController documentation.

For a FlexController the menu is named **Channels**. The information lists the different hardware drives and tools that make up the controller.

# Controller information - export and import

The export and import function is used to export the events and tightening results accessible in the **Results** menu for analysis in external programs, as well as allowing transfer of tightening program, batch, and controller configurations between controllers.

The command **Export** can be used for the following reasons:

- Exporting tightening results and events for further processing.
- Exporting log files for debug assistance from an Atlas Copco service engineer.
- Exporting the entire controller configuration that can be used to copy the configuration to another controller.
- Comparing two exported configurations to see differences.

# Export

1. Select a controller in the **Plant structure** 

**2.** Go to **Controller** <sup>(1)</sup>.

The workspace area displays the **Controller** menu.

3. Click the **Export/Import** button to export one of the following:

Parameter	Description		
Export	Exports all controller information.		
Export Con- figuration	Exports settings and configurations.		
Export Tool Log	Exports logs (tightenings and hardware information) from connected tools. Available for SRB, TBP and STB.		
	The export consists of atlas tool i.zip and ExportInfo.txt		

4. Select the location for saving the export file, click **OK**.

### Import

- 1. Select a controller in the **Plant structure**
- 2. Go to Controller

The workspace area displays the **Controller** menu.

- 3. To import controller configurations, click the Import command button.
- 4. Click **Open file**. Select the file to import.

The import file must be a previously exported file.

When using the import function, all settings for tightening program, batch, accessories, and controller are replaced by the settings from the import file. However, settings for network, PIN, and results and events are not imported.

# Controller system health monitor

The equipment health monitor regularly measures parameters and stores them.

- 1. Select a controller in the **Plant structure** workspace
- **2.** Go to **Controller** <sup>(1)</sup>.

The workspace area displays the **Controller** menus.

**3.** The **Health** menu displays environmental data and system health information.

Information	Value	Description
<b>Refresh</b> command button	Degree C or F	Reads information from the controller and displays the latest re- sult.
Controller temper- ature	Degree C or F	Latest temperature recording expressed in month/day/year hour:minute:second.

Features

Information	Value	Description
Battery status OK/NOK	Monitors the memory and real time clock battery in the con- troller computer board.	
		Status message NOK, means the battery needs to be changed as soon as possible to avoid loss of data or wrong results.
		Latest recording expressed in month/day/year hour:minute:sec- ond.
<b>History</b> command button		Provides a list of monitor readings.

Table 13: Controller health monitor

### Channels

The list shows information on the drives and tools that are connected to the controller.

Information	Description
Drive	The FlexDrive's serial number.
Tool	The tool's serial number.

# SoftPLC

The SoftPLC is used to customize the PF6/PFFlex behavior, sending and receiving fieldbus data, or exchanging I/O signals to and from the external PLC. The external PLC is used for control of machinery on assembly lines. Configuration and programming is done through a third party software called Multi-Prog, integrated with ToolsTalk even though running in a process of its own. The SoftPLC tab PLC is visible for controllers supporting this function either by license and/or capability.

### Prerequisites

- The external PLC configurator program, MULTIPROG 5.51 should be installed on the same PLC as the ToolsTalk client.
- The PLC should be set to **On** in the **General PLC settings**, in order to import and edit existing SoftPLC projects or to create new projects. PLC On is indicated with status **Running** in the **PLC Status** column. When in Running mode, the auto save process starts and is now auto saving everything in the SoftPLC MultiProg to the local memory with a time interval of 100 ms.
- If a fieldbus should be used via SoftPLC: Allocate Bytes for inbound and

outbound signals to the fieldbus (Profinet) in the fieldbus settings menu  ${}^{4}$  .

### MultiProg

MultiProg is where the actual PLC program is created. When creating an initial project for a controller, variables and function blocks are created depending on the current setup of the controller and its capabilities. The templates will serve as a basic suggestion which can be further adjusted.

### Create new project

Click **Create New** to create a new PLC project. This project will use a basic Template as a starting point. This template includes all functions available in MultiProg.

The created and edited project is continuously saved to the local disc when the project is built and stored in **Documents** > **Mp Temp**. At ToolsTalk SoftPLC startup, when clicking **OPEN**, this stored project is used if the PLC project has not been saved to the ToolsTalk server. The editing may continue.

- 1. Click Create New. The MultiProg opens automatically.
- 2. Edit the PLC program in MultiProg and give the project a Name and Description in ToolsTalk.

Add virtual station mappings with I/O signal configurations by clicking **Update project virtual stations**.

Add Fieldbus data by clicking Update project fieldbus framesize.

- The fieldbus frame size must be configured to contain a special Soft-PLC input/output part to be able to send and receive fieldbus data directly to/from the SoftPLC.
- 3. Click SAVE to check in the edited project to the ToolsTalk server.
- 4. **Push** the changes to the controller.

### Import project as template

New PLC projects can be created from an existing project template. The templates will serve as a basic suggestion which can be further adjusted. The selected project template is then **copied**, to not overwrite the original project.

- 1. Click Import project and select an existing PLC project.
- 2. Edit PLC project in the MultiProg.

Add virtual station mappings with I/O signal configurations by clicking **Update project virtual stations**.

Add Fieldbus data by clicking Update project fieldbus framesize.

- 3. Click SAVE to check in the edited project to the ToolsTalk server.
- 4. **Push** the changes to the controller.

### Update project virtual stations

PLC Virtual Station mappings are added or updated to the PLC project, if not already included in the project.

### **Create PLC Signal Configurations**

Interaction between accessories and the SoftPLC is done through exchanging I/ O signals.

- 1. Click Add to see the list with all supported I/O signals connected to this controller.
- 2. Clear the irrelevant signals in order to exclude them from the PLC signal configuration (all signals are selected by default).
- 3. Name the Signal configuration list.

### Features

PLC SIGNAL CONFIGURATIONS >				
CONFI	GURATION			
Name	Plc signalco	figuration 1		
	CTIVE IN PLC	NAME	DIRECTION	SIGNAL ID
		BATCH_INCREMENT	Input	10001
×		BATCH_DECREMENT	Input	10002
×		RESET_BATCH	Input	10003

The created signal configuration is then available as an option to select, when mapping the signal configurations to the virtual station.

EN

Create PLC mapping	×
Virtual station	ASFS3001 ·
PLC Signal configuration	· · · ·
	Plc signalconfiguration 1 Plc signalconfiguration 2 Plc signalconfiguration 3
	ADD CLOSE

The signals **not** included in a signal configuration, will still be visible in the PLC configurator MultiProgram, crossed out.

### PLC Virtual Station Mapping Configuration

- Add: Click Add to map a new virtual station with a PLC signal configuration. The same PLC signal configuration can be used for multiple virtual stations.
- **Delete:** Select the virtual station signal configuration mapping by marking the corresponding checkbox. Click Delete.

Each virtual station can use one PLC signal configuration. When a virtual station is mapped with a signal configuration, it is no longer available in the list when creating a new mapping. In order to be available, the existing mapping for the virtual station must first be deleted.

**Index:** Connect specific virtual stations on the controller to an ordered index in the PLC environment. If the PLC refers to virtual station 2, this mapping will inform the PLC exactly which virtual station currently is number 2.



Press **Update Project Virtual Station** to see any changes you made to a PLC Signal Configuration or PLC Mapping in the PLC project. ToolsTalk will not delete variables in the Multiprog PLC project when updating, only add or modify. Because of this, it might be good to clear the global variables for Virtual stations or Fieldbus in MultiProg before updating.

### **Delete project**

The current project can be deleted by clicking **Delete** button in the Project area. Click Delete again in the pop-up to confirm.

### Also see about this

Push configurations to a controller [} 99]

# Fieldbus configuration

# Fieldbus overview

A typical factory management control system that uses fieldbus communication can look like the figure below when it communicates with a controller.



Illustration 4: Fieldbus communication system

А	Fieldbus master (PLC)	В	Frame header
С	User data to and from several vir- tual stations inside the <b>Process</b>	D	Virtual station
	Data Frame		
Е	Controller vith multiple virtual stations		

A fieldbus master, normally a PLC, exchanges information with a number of remote nodes which are called fieldbus slaves. The master communicates with one slave at a time. The master transmits a frame to the slave and receives another frame in response.

The PLC transmits data to a controller that may contain identification data, task selection information and other signals.

A controller sends responses to the PLC that may contain event signals, status signals, tightening results and other signals.

The physical transmission link depends of the selected fieldbus type. A transmission consists of a **Frame Header**, containing address information, and a **Process Data Frame**, which contains all the data.

If the controller supports virtual stations, it is important to direct the correct information to each virtual station. The **Process Data Frame** may contain one or more **Fieldbus maps**, one for each virtual station.

### **Fieldbus prerequisites**

For proper fieldbus communication, the following installations and configurations must be made:

- A fieldbus module installed in the controller.
- Common fieldbus parameters set in the menus in **Settings** <sup>•</sup>.
- Fieldbus maps created in the menus in Fieldbus
- Items mapped into fieldbus maps in the menus **Fieldbus**
- Fieldbus maps assigned to virtual stations and placed into the Process Data
   Frame in the menus in Settings \* .

### Fieldbus workspace

To open the **Fieldbus workspace** and view the list of **Fieldbus maps**, perform the following steps:

- **1.** Select a controller in the **Structure** window
- 2. Click the Fieldbus icon in the Menu bar <sup>4</sup>.

The Fieldbus workspace shows a list of maps.

Column	Description
X	Check box.
Name	<b>Name</b> : Shows the name of the map. The name is identical for both the receive map and the transmit map.
Size to	The size of the receive map to a virtual station. The value must be an even number of bytes.
Size from	The size of the transmit map from a virtual station. The value must be an even number of bytes.
Library link	
Last changed	
Changed by	
Controller updated	
Controller updated by	

Table 14: Fieldbus workspace information

Commands	Description
Export Fieldbus configuration	The Fieldbus map can be exported to be reused in a different controller.

ToolsTalk2 FLEX

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Commands	Description
Add	Creates a new fieldbus map.
Delete	Removes the selected maps from the list.
Add to library	
Unlink	

Table 15: Fieldbus command buttons

### Create a new Fieldbus map

To create a new Fieldbus map, perform the following steps:

- **1.** Select a controller in the **Structure** window
- 2. Click the Fieldbus icon in the Menu bar <sup>1</sup>.

The **Fieldbus** workspace shows a list of maps.

3. Click the Add command button to create a new fieldbus map.

The Create or import fieldbus configuration pop-up window appears.

- 4. Select the New tab to create a new fieldbus map.
- 5. Give the map a name.
- 6. Enter the **Size to** parameter. This is the receive size of the data frame to a virtual station, expressed in number of bytes. This value must be an even number.
- 7. Enter the **Size from** parameter. This is the transmit size of the data frame from a virtual station, expressed in number of bytes. This value must be an even number.
- **8.** Click **Add** to continue with the configuration. This action will also close the pop-up window and the list of maps is automatically updated with the new fieldbus map configuration.
- (1) The map size entered can not be larger than the **Process Data Frame**.

### Delete a Fieldbus map

- **1.** Select a controller in the **Structure** window
- Click the Fieldbus icon in the Menu bar
   The Fieldbus workspace shows a list of maps.
- 3. For each fieldbus map to be deleted, mark the check box 🖾 in the left most column in the fieldbus workspace and click the **Delete** command button.

The list of maps is updated.

### Export a Fieldbus map

The Fieldbus map defines how signal items are placed into the communication frame that is used between a virtual station and a remote location. This map can be exported as a template and be imported and reused by another controller.

**1.** Select a controller in the **Structure** window

2. Click the Fieldbus icon in the Menu bar <sup>4</sup>.

The Fieldbus workspace shows a list of maps.

- 3. For the fieldbus map to be exported, mark the check box in the left most column in the fieldbus workspace and click the **Export** command button.
- 4. Browse to the desired location and click Save.

The map will be saved as a JSON file (\*.json). The exported file can be imported to a different controller.

### Create a Fieldbus map from a template

A previously exported fieldbus map can be reused as a template and be imported to a controller.

To import a fieldbus map, perform the following steps:

- 1. Select a controller in the **Structure** window
- 2. Click the Fieldbus icon in the Menu bar <sup>1</sup>.

The Fieldbus workspace shows a list of maps.

3. Click the Add command button to create a new filedbus map.

The Create or import fieldbus configuration pop-up window appears.

- 4. Select the **Import** tab to reuse an existing map.
- 5. Click the **Open file** command button to open a browser window.
- 6. Select a file. The file type must be a JSON file. (\*.json).
- 7. Click Open. The browser window closes.
- 8. Click Add to import the file. This action will also close the pop-up window and the list of maps is updated.

Information	Description
Name	The fieldbus configuration should be given a name.
Size to controller	The size of the receive frame. The frame contains all the items received by a virtual station.
Size from con- troller	The size of the transmit frame. The frame contains all the items transmitted by a vir- tual station.

### Fieldbus - properties menu

Table 16: Fieldbus basic setting menu parameters

(1) The transmit frame and the receive frame may have different size.

# Understanding the fieldbus configuration and the fieldbus map

In the **Fieldbus configuration** menu it is possible to edit the fieldbus map. **Items** can be added, deleted or moved inside the map.



*Illustration 5:* The fieldbus map

A	<b>Tabs;</b> selects the receive map or B the transmit map	The map shown in a graphical presentation of how items are placed
С	The map shown in a table presen- D tation of how items are placed	<b>Command</b> buttons to <b>Add</b> or to <b>Delete</b> items from the map
Е	Colour coded example of item	

EN

positions

If a row is selected in the list, the item is highlighted in the list and on the map.

If an item is selected on the map it is highlighted on the map and in the list.

An item can occupy one single bit or extend over several bits. An item position is always described with a starting position of the least significant bit. The starting position points to a byte and bit. The length parameter indicates how long the item stretches from right to left.

Items are added or edited in a pop-up window.



Illustration 6: Pop-up window to add or edit items in the fieldbus map

### Features

- A Add item or Edit item pop-up B List of available items window map
- C Byte position D Bit position
- E Item length parameter field F Item information field
- G Command buttons

# Adding an item to the fieldbus map

To add an item to the map, perform the following steps:

- 1. Select a controller in the Structure window .
- 2. Click the Fieldbus icon in the Menu bar <sup>4</sup>.

The **Fieldbus** workspace shows a list of maps.

- **3.** Double click on the name of the selected map. The workspace shows the configuration menus.
- 4. Select the **To controller** tab or the **From controller** tab in **Fieldbus configuration** menu.
- 5. Click the Add command button.

The Create signal configuration pop-up window appears.

- 6. Click the item name in the list to select the item.
- 7. Set the item starting position by typing the **BYTE** number in which the least significant **BIT** is located.
- 8. Set the item starting position by typing the **BIT** in which the least significant **BIT** is located.
- 9. Set the Length of the item, expressed in number of bits.
- 10. Select an optional Converter value from the pull-down menu.
- 11. Click the Add command button.
- **12.** Repeat step 6-11 for every item to be added.
- **13.** Click the **Close** button to terminate the adding operation and to close the pop-up window.
- (1) If the item is not place manually into the map, ToolsTalk 2 will try to place the item at the lowest possible position. It is possible to later move the item within the map.

# Editing or viewing an item in the fieldbus map

To edit or move an item inside the fieldbus map, perform the following steps:

- 1. Select a controller in the Structure window .
- 2. Click the Fieldbus icon in the Menu bar . The Fieldbus workspace shows a list of maps.
- **3.** Double click on the name of the selected map.

The workspace shows the configuration menus.

4. Select the **To controller** tab or the **From controller** tab in **Fieldbus con-figuration** menu.

5. Double click the item name in the map table in the **Fieldbus configuration** menu.

The **Edit item**pop-up window appears.

- 6. Edit the item starting position by typing the **BYTE** number in which the least significant **BIT** is located.
- 7. Edit the item starting position by typing the **BIT** in which the least significant **BIT** is located.
- 8. Edit the Length of the item, expressed in number of bits.
- 9. Edit an optional **Converter** value from the pull-down menu.
- **10.** Click the **OK** command button to confirm any changes and to close the pop-up window.

The **Fieldbus configuration** menu is updated in both the map and in the table.

# Deleting an item from the fieldbus map

To delete one or more items from the map, perform the following steps:

- 1. Select a controller in the **Structure** window
- 2. Click the Fieldbus icon in the Menu bar <sup>1</sup>. The Fieldbus workspace shows a list of maps.
- **3.** Double click on the name of the selected map. The workspace shows the configuration menus.
- 4. Select the **To controller** tab or the **From controller** tab in **Fieldbus con-***figuration* menu.
- 5. For each item to be deleted from the map, mark the checkbox in the left most position in the table of items in the **Fieldbus configuration** menu.
- 6. Click the **Delete** command button.

The Fieldbus configuration menu is updated in both the map and in the table.

# Parameters for fieldbus configuration

An item is placed into the fieldbus map by defining the position of the least significant bit. This position is identified by a **byte** number and a **bit** number.

Information	Description	
<b>Starting byte</b> The byte number in which the least significant of the item is located. A n ber in the range from zero to <b>size</b> minus one.		
	The numbering starts from zero $(0)$ . The least significant byte or bit is number 0.	
Starting bit	The bit number in which the least significant of the item is located. Starting from the previous selected starting byte. A numeric number in the range from zero to seven.	
	The numbering starts from zero $(0)$ . The least significant byte or bit is number 0.	
Length	A numeric value representing the number of bits in the item.	
Range	Information only. Provides information of minimum length, the maximum length and the default length of the selected item.	
Converter	A pull-down list of available signal converters. This is used if the PLC has any re- quirements on how items are represented in a digital format.	

Table 17: Item position

The item converters are used convert items between different data types.

Information	Description
<b>Boolean inversion</b>	Inverts the digital signal from active high (1) to active low (0).
Fixed-point	

Table 18: Item converters

# Fieldbus definitions

An **Item** is a digital signal. It can for example be signals, as they are described in the controller reference section:

- A single bit of information, like **Tightening OK**.
- Several bits of information, like an **Event code**.

An **Item** can be several bits of information representing a counter value, an identification number or a tightening result.

An Item can be a string of characters.

Information	Description
Fieldbus Item	Boolean:
	The signal can be a simple boolean expression, occupying one single bit position.
	Examples are digital IO signals.
	Integer:
	The data occupies one or more bits of data in the array.
	Character or string:
	The signal can be a alphanumeric character string, occupying one or several byte posi- tions.

Table 19: Fieldbus items

Information	Description
Fieldbus map	An array of data. The <b>Size</b> must be an even number of bytes. The fieldbus map is cre- ated in the <b>Fieldbus window</b> in the <b>Fieldbus menu</b> . Fieldbus items are placed in the fieldbus map to create a unique array for the master-slave communication. items are placed into the array by defining the starting position and the length, expressed in number of bits.
Process Data Frame	An array of data. The size must be an even number of bytes. The <b>Process Data Frame</b> is created in the <b>Settings window</b> in the <b>Settings menu</b> . <b>Fieldbus maps</b> are placed into the <b>Process Data Frame</b> when they are assigned to a <b>Virtual Station</b> . The position of the map within the frame is defined by the <b>Offset</b> , which is calculated from the beginning of the frame.
Fieldbus configura- tion	Fieldbus configurations are done in the <b>Settings window</b> in the <b>Settings menu</b> . Con- figuration parameters consist of both common parameters and type specific parame- ters.
	A list of parameter entry boxes are displayed after the fieldbus type has been selected.

Table 20: Fieldbus definitions

Information	Description
Offset	A pointer variable. The signal can be a simple boolean expression, occupying one sin- gle bit position.
	Examples are digital IO signals.
Starting byte	A pointer variable. Points to a byte within the fieldbus map that contains the LSB of an item.
Starting bit	A pointer variable. Points to a bit in the previously defined byte within the fieldbus map that contains the LSB of an item.
Item length	A size variable expressed in a number of bits.
LSB	Least Significant Bit or Byte.

Table 21: Filedbus item positions

Name	Description
Field bus transmis- sion	A datagram sent over the network. The transmitting node combines a <b>Frame Header</b> , containing address information, with a <b>Process Data Frame</b> that is sent to the network. The receiving node detects its address in the <b>Frame Header</b> and retrieves the <b>Process Data Frame</b> .
Frame header	Network address information and other data to ensure an error free transmission over the network
Fieldbus master	Typically a PLC that initiates the communication to a fieldbus slave. The master transmits a data frame and receives another frame from the slave.
Fieldbus slave	A remote node responding to a transmission from a fieldbus master. When the slave detects a transmission, it receives a frame and responds by sending another frame in return to the sender.

# Settings

# Controller preference for a selected controller

The settings menu contains a preferences section, which is used to select language, torque units and PIN protection of the controller interface.

To set controller preferences, perform the following steps:

- 1. Select a controller in the **Plant structure** workspace
- 2. Click the Settings icon 🌣 in the Menu bar.

The workspace area displays the **Settings** menus.

- **3.** Make selections in the preference menu according to the information in the table.
- 4. To update the controller with any changes, click the **Push changes** command button Push Changes .

Parameters for controller preference

Parameter	Description	Default	Condition
Torque unit	Selected from a shortcut list.	Nm	
	Selects the unit in which torque measurement results shall be displayed for this controller in the controller GUI or web GUI.		
Temperature unit	Selected from a shortcut list.	Celcius	
	Selects the unit in which temperature measurement results shall be displayed for this controller in the controller GUI or web GUI.		
Language	Selected from a shortcut list.	English	
	Selects the language for the controller that shall be displayed for this controller in the controller GUI or web GUI.		
Use PIN	Selected in a switch.	Off	
	A PIN can be enabled for this controller when accessed through the controller GUI or web GUI.		
Set PIN	Select a 4 digit PIN numbe.r		Only affected if PIN is enabled (On).
Repeat PIN	Repeat 4 digit PIN number.		Only affected if PIN is enabled (On).

### Also see about this

Controller preference for a selected controller [] 57]

### Tool service alarms for tools connected to a controller

The settings menu contains a tool section, which is used to select tool alarms for Service indicator alarm, Tool lock after service alarm and Show calibration alarm

To set tool alarms:

- 1. Select a controller in the **Plant structure**
- 2. Go to Settings 🌣

The workspace area displays the Settings menus.

Parameter	Description	Default	Location
Last service	Date and time when last service was performed. The <b>Last service</b> date is set at the repair workshop.		The date for the last service can be viewed under the <b>Tool</b> icon
Total tightenings at service	The <b>TOTAL TIGHTENINGS AT SERVICE</b> is the number of tightenings performed by the tool since it was used for the first time. This value is updated at service, and will remain the same until next service.		This value is visible under the <b>Tool</b> icon
Service indicator	Selected in a switch.	Off	
alarm	Turn the alarm <b>On</b> or <b>Off</b> . The alarm is triggered when the service interval is reached.		

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#### Features

Parameter	Description	Default	Location
Tool lock after ser-	Selected in a switch.	Off	
vice alarm	Lock the tool when the service interval is reached.		
Set service interval Set the Service interval value.			This is done under
			the <b>Tool</b> icon
Show calibration	Selected in a switch.	Off	
alarm	Triggers the calibration alarm if the tool has not been calibrated within the specified time. Last calibration date can be seen in the <b>Tool</b> menu. Default interval is one year but can be changed from the controller GUI or web GUI.		

*Table 22:* Tool alarm parameters

### Controller communication with the ToolsNet server

A controller always sends tightening results to ToolsTalk 2. A controller can also send the results to ToolsNet for further processing. The address to the ToolsNet server must be configured in the controller.

To set the communication between the controller and the ToolsNet server:

- 1. Select a controller in the **Plant structure**
- 2. Go to Settings 🌣 .

The workspace area displays the Settings menus.

- **3.** Go to **ToolsNet**, enable or disable the communication with the ToolsNet server.
- **4.** If the communication is enabled, set the IP address and port number of the server.

Parameter	Description	Default	Comment
ToolsNet enabled	Enables/Disables communication to the server.	Off	
Server host	ToolsNet server IP address.		Communication en- abled.
Server port	ToolsNet server port.		Communication en- abled.

Table 23: License server parameters

### Also see about this

Push configurations to a controller [] 99]

### **Controller time setting**

Each controller must have its time and date programmed for accurate reporting.

- 1. Select a controller in the **Plant structure** workspace
- **2.** Go to **Controller settings**

The workspace area displays the Controller settings menus.

- 3. Select the source for the time reference.
- 4. Enter additional parameters, depending on the selected time source.
- 5. Select the controller local time zone from the **Time zone** shortcut menu.
- To achieve best time accuracy and stability it is recommended to use the NTP server that can communicate with all controllers.

The time source is selected from a shortcut menu, and can be one of the following:

- Manually enter time and date into the controller. This can be done through all GUI interfaces.
- Using the standardized **Network Time Protocol** (NTP). A server distributes time references to connected controllers. It is possible to configure up to two different NTP servers.
- Using the ToolsNet server as the time reference, if the controller is connected and online to the ToolsNet server. When using ToolsNet as the time reference it is important that the server and the controller are set to the same time zone, even if they are in separate time zones.

To add and configure **Date and time**:

Parameter	Condition	Description
Source		The selection is made from a shortcut menu.
		Select the method to configure a controller time and date.
Time zone		The selection is made from a shortcut menu.
		Select the time zone in which the controller is located.
Time	Source = Manual	Enter a time in the format Hours: Minutes: Seconds.
Date	Source = Manual	Enter a date from the calendar symbol.
SET command button	Source = Manual	Sends the entered date and time to the controller. To be able to execute this command, the controller must be online.
ADD command button	Source = NTP	Add an additional NTP server address.
<b>DELETE</b> command button	Source = NTP	Delete the selected NTP server address.
NTP server	Source = NTP	Enter the IP address of the NTP server.

Table 24: Controller time setting

# **Controller system settings - Fieldbus menu**

The Connection status can show the following status messages:

Status	Description
Fieldbus_Online	The fieldbus module is <b>online</b> . The communication between the controller and the fieldbus master is active.
Fieldbus_Offline	The fieldbus module is <b>offline</b> . The communication between the controller and the fieldbus master is not active.
Fieldbus_NoModuleInstalled	No fieldbus module is detected in the controller.
Fieldbus_NotConfigured	A fieldbus module is detected in the controller but the module is not configured.

Status	Description
Fieldbus_Initializing	A fieldbus status during reset or as a result when global parameters have
	been changed. This is a temporary status until a steady status is displayed.

The fieldbus status can also show errors:

Error Code	Description	Action
Fieldbus_ModuleMismatch	Supported module. Parameter mis- match detected.	Contact Atlas Copco to read error log.
Fieldbus_UnsupportedModuleIn- stalled	Unsupported fieldbus module.	Contact Atlas Copco to read error log.
Fieldbus_ConfiguredModuleNot In- stalled	Configuration data created. No module detected.	Contact Atlas Copco to read error log.
Fieldbus_Unexpectedconfigura- tionerror	Mismatch between controller and ToolsTalk 2.	Contact Atlas Copco to read error log.

Changing some global parameters like frame size, fieldbus module address, will cause the fieldbus module to reset.

1. Select a controller in the **Plant structure** workspace

```
   Click the Settings icon  in the Menu bar.
   The workspace area displays the Settings menus.
```

- 3. In the Fieldbus menu, select the fieldbus type from the pull-down menu.
- 4. Enter the size in bytes of the entire **Process Data Frame (PDF)** for both the receive and transmit direction. The value must be an even integer number.
- 5. Enter the fieldbus type specific parameters.

### Also see about this

Push configurations to a controller [] 99]

### Controller system settings - Fieldbus mapping menu

Column	Function
Check box	Select or deselect a mapping.
Virtual station	Name of virtual station.
Fieldbus configuration	The fieldbus map.
Controller offset	Starting point of the fieldbus map within the Process
	Data Frame.

Table 25: Fieldbus mapping

A virtual station in a controller and the fieldbus master communicate by exchanging a **fieldbus map** between each other.

One or more **fieldbus maps** are combined into a **Process Data Frame**, which is sent on the physical communication link between the controller and the fieldbus master.

To view how a fieldbus map is assigned to a virtual station:

- 1. Select a controller in the **Plant structure** workspace
- 2. Go to Settings 🌣 .

The workspace area displays the **Settings** menus.

The **Fieldbus mapping** menu displays a list of fieldbus maps and to which virtual station they are assigned. The offset column points to the address in the **Process Data Frame** where the fieldbus map starts.

To remove a **fieldbus map** from a virtual station:

- 1. Select a controller in the **Plant structure** workspace
- 2. Go to Settings 🌣

The workspace area displays the **Settings** menus.

- **3.** For each fieldbus mapping to be removed, select the left most check box in the **Fieldbus mapping** menu.
- 4. Click Delete.

The Fieldbus mapping table will be updated.

To assign a fieldbus map to a virtual station and place it into the **Process Data Frame**:

- 1. Select a controller in the **Plant structure** workspace
- 2. Go to Settings

The workspace area displays the **Settings** menus.

3. Click Add in the Fieldbus mapping menu.

The Add fieldbus mapping pop-up window opens.

- 4. Select a fieldbus configuration.
- 5. Select a Virtual station.
- 6. Click OK. This action also closes the pop-up window.
- 7. Repeat steps 3-6 as many time as needed.

**fieldbus maps** are placed into the **Process Data Frame** in the order they are assigned to a virtual station or at the lowest possible entry point where the **field-bus map** can fit.

The order between **fieldbus maps** can be changed manually. The spacing between **fieldbus maps** can be controlled. Both these two functions are controlled by the **Offset** parameter. This value defines the starting position of a **fieldbus map** in the **Process Data Frame** array.

To change the offset:

- 1. Click on the **row** to select a virtual station.
- 2. In the Offset column, click the parameter entry field.
- 3. Type the starting offset of the **fieldbus map** within the **Process Data Frame**.

Validation is automatically done. If the new offset value is accepted, it is shown in black text. If the value is not accepted an error message is shown in red text, that provides information what offset rule is violated.

(1) The start address must be an even number.

### Also see about this

Push configurations to a controller [} 99]

# Handling results

The tightening results are displayed in a condensed list that can be individually or collectively chosen to analyze further.

### **Tightening result**

GUI part	Description
Holding pin 🗙	Press the holding pin icon to pin the result to the pinned tab.
Trace icon	Press the trace icon to view a graphical view of the results in the <b>Trace</b> workspace.
Save icon	This command creates a zip-file with the result data. A pop-up dialogue window is opened to save the file at a desired location.
Shunt calibration	Shows if shunt calibration is displayed.
Overall Status	Total status of the tightening, <b>OK</b> or <b>NOK</b> .
Туре	
Virtual station name	Name of the virtual station.
Sync Mode Index and name	Index and name of the sync mode used in the tighten- ing.
Time Stamp	Time stamp for the tightening, that is, time and date.

### **Channel result**

For each channel an overall result is reported with the following content:

GUI part	Description
Trace icon	Press the trace icon to view a graphical view of the results in the <b>Trace</b> workspace.
Save icon	This command creates a csv-file with the result data. A pop-up dialogue window is opened to save the file at a desired location.
Bolt name	The number and name of the bolt. Set in Sync Mode > "Name of the sync mode" > Bolt configuration > Bolt and Bolt name.
Status	Total status of the tightening, <b>OK</b> or <b>NOK</b> .
Multistep name	The name of the tightening program. Set in Tighten- ing and Multistep Program > "Name of the tightening program" > Basic settings > Name.
Channel	The channel number.
Final Angle	The actual measured angle of the last tightening step It is the <b>Step Monitor Peak Angle</b> located in the last tightening step that reports this parameter.
Final Torque	Final Torque for the tightening. It is the <b>Step Moni-</b> <b>tor Peak Torque</b> located in the last tightening step that reports this Parameter.

Features	EN	ToolsTalk2 FLEX
GUI part	Description	
Target torque	Target torque.	
Elapsed time	Time from tightening	start to end.
Shunt calibration	Press this icon to displ	ay the shunt calibration data.

### **Step results**

Each step in the multistep tightening program reports data. Most of this data is coming from the monitors and restrictions that are active during the step, so the data is only reported if a monitor or restriction of the correct type is configured.

The same step may be executed more than once if repairs are made.

Result Parameter	Description
Step number	The number of the step.
Status	Status of the step, <b>OK</b> or <b>NOK</b> .
Step type	Step type in the multistep program.
Path	Indicates there in the program the step is located, that is, if it is in the tightening path or a repair or termina- tion path.
Peak Torque	Measured final torque including the torque induced during the internal break. Typically the peak torque is higher than the shut-off torque.
Elapsed time	Time from tightening start to end.
Angle	

### Trace

On a result click on the **Trace** icon if it is active. W. The result graph is displayed. It is possible to view several traces simultaneously by selecting several traces.

The **Trace** workspace shows detailed graphical information on one or several tightening result.

Trace settings/preferences	Description
Show limits	Check this box to If one curve is shown, limit values can be shown if they are used in the tightening pro- gram.
Show Min/Max	Show minimum or maximum measured value.
Peak Sync	Different curves may look the same, but are placed differently in the graph.
	This option creates an overlay of the curves and syn- chronizes their peak values.
Supported trace plots	Information on the trace's axis:
	• Torque over angle
	• Torque over time
	Angle over time
	Angle and torque over time

ΕN

Trace settings/preferences	Description
Save	This command creates a picture of the graphical area. A pop-up dialogue window is opened to save the file at a desired location. The file name is by default <b>ex-</b>
	port.png.
Remove all	This button clears the trace plot area.
	The traces are still in the results and can be accessed again in "live results" workspace.

### **Shunt calibration**

Before a tightening each tool performs a shunt calibration and zero offset compensation.

Multistep name	Name of the tightening program the tool runs.
Gain	Relative to measured zero torque.
Gain Difference	Gain difference compared to previous calibration.
Gain Limit High	High limit relative to measured zero torque.
Gain Limit Low	Low limit relative to measured zero torque.
Gain Max Change	Maximum amount the gain may change compared to previous calibration.
Offset	Signed offset relative to ideal zero torque.
Offset Difference	Offset difference compared to previous calibration.
Offset Limit High	High limit relative to ideal zero torque.
Offset Limit Low	Low limit relative to ideal zero torque.
Offset Limit Low	Low limit to ideal zero torque.
Offset Max Change	Maximum amount the offset may change compared to previous calibration.
Shunt Failed	True or False.
Zero Offset Failed	True or False.

### **Export results**

All the details from one or more tightenings can be exported.

- 1. Click the **Export results** button.
- 2. Select where to export from.
- **3.** Select how many results you want to export. The results are first taken from the top of the list and then downwards.
- 4. Click Export.
- 5. A dialogue window opens for selecting the storage location.
- 6. Click Save.

# Pinned tab for investigation

A tightening result can temporarily be stored into the **Pinned** tab. This is useful for detailed analysis of a tightening, and prevents the tightening result to be dropped from the window as new results are received.

# Live results

A controller sends tightening results to ToolsTalk 2 as soon as the task is completed, and the result is added to the top of the **Live results**. A limited number of results can be stored. When the list is full, the oldest result is dropped from the list.

On the top level the result for a synchronized tightening with several channels contain the following information:

GUI part	Description
Red bar	The left most position in the <b>Live results</b> table may be a red bar icon. It is shown with erroneous tighten- ings for quick identification of errors. This corre- sponds to NOK.
Holding pin 🗙	Press the holding pin to pin the results to the <b>Holding area</b> for investigation.
Trace icon 🔍	Press the <b>Trace</b> icon to view the trace.
Overall Status	OK or NOK.
	<b>NOK</b> is always in combination with the red bar icon, to quickly identify erroneous tightenings.
Virtual station name	Name of the virtual station.
Sync Mode Index and name	Index and name of the sync mode used in the tighten- ing.
Time Stamp	Time stamp for the tightening, that is, time and date.

### **Events**

The workspace area shows events from the selected controller. Events are changes in the controller operating state.

Result Parameter	Description
Severity	Shown as a symbol.
Date & time	Shown as the set time in the controller.
Code	Events code number.
Description	Description of the event.
Details	More detailed information about the event.
Virtual station	Virtual station name.
Group	Controller, Drive, Tool or Carrier.
Channel	Channel where the event is triggered.
Carrier	Carrier number.
Serial number	Serial number of the device.

# Handling reports

Export and import changes a controller configuration parameters and leaves the controller program unchanged.

### Import configuration parameters

- Importing new configurations will overwrite existing configurations. Sync modes that do not need to be overwritten are kept as they are, that is, if the destination controller have modes 1, 2, 3 and 4 and the import file only have 1 and 2, then in the destination controller, 1 and 2 are overwritten while 3 and 4 is kept as they are.
- 1. Click in the check box to select a controller.
- 2. Click IMPORT.
- 3. Select file.
- 4. Click IMPORT

### **Export configuration parameters**

- 1. Click in the check box to select a controller
- 2. Click on EXPORT.
- 3. Browse for folder.
- 4. Click OK.

# Libraries

# Libraries

The **Library** icon **I** is located in left-side menu bar with global functions and provides the following functionality:

Library	Function
	Controller configuration library
-	The controller configuration library contains controller templates that can be used to create and modify controller configurations and distribute them to multiple controllers. The library is also very useful for copying and developing configurations in Station Setup mode without access to a ToolsTalk 2 server installation.
_	Program templates
0	Create templates for Multistep tightening program. When creating a new multistep program, the template can be inserted (drag-and-drop) and act as a base to build the multistep program on.
IIN	Tightening program library
<b>O</b> I	This library contains all global tightening programs available for the controllers to sub- scribe to. The global tightening programs may be copied from one controller or created in the library, modified and/or distributed to one or more controllers.
IIN	Configuration library
Ð	This library contains all global configurations available for the controllers to subscribe to. The configurations may be copied from one controller or created in the library, modified and/or distributed to one or more controllers.
IIN _	Fieldbus configuration library
-0	This library contains all global fieldbus configurations available for the controllers to subscribe to. The fieldbus configurations may be copied from one controller or created in the library, modified and/or distributed to one or more controllers.

Table 26: Library functions

# **Controller configuration library**

### Controller library introduction

The **Controller template** is an entire virtual controller. It allows a user to create, edit and analyze all controller configurations without having access to a physical controller. A controller template can be created from the beginning with all parameter values empty. A controller template can be created by copying an existing controller with valid configurations and parameters.

A **Controller template** does not show information about tools, as no tools are connected. Hardware related information and configurations are not possible. Configurations of supporting functions, like various servers, are not possible from a template. When a template is distributed to a controller, these parameters must be checked or added.

### Station setup

A ToolsTalk 2 installation normally consists of three modules.

Module	Function
Server application	The ToolsTalk 2 collects and stores all configuration parameters from all connected controllers. Stores and displays tightening results and events from connected controllers.
Client application	The client application is the user interface that can run on any computer on the net- work and that is in connection with the server application. Controller configurations can be modified from this remote position.
Database	An SQL database that is used for storing all the configurations, parameters and results.

EN

Table 27: Station setup building blocks

The Station Setup mode is a subset of the full operation described above. The server application and the client application are combined and the database is omitted. The condensed Station Setup installation has full controller configuration functionality, but also some limitations:

- The entire installation has a smaller footprint and is installed on a portable computer.
- An SQL database is not needed.
- Only one physical controller can be managed at a time.
- The computer is connected to the service port of the controller to avoid interruption of normal activity.

### Applications

The typical application for this mode of operation can be the following:

- A small installation with few controllers when the ToolsTalk 2 functionality is desired but may not have a business justification.
- Atlas Copco service personnel can access a controller using ToolsTalk 2 without connecting to the customer network but instead using the service port of the controller.
- Offline configuration of controllers using the controller library features. The configuration file can later be transferred to a real controller for verification.

EN

• An easy export of a controller configuration that is very helpful in debugging tasks.

Parameter	Description
Check box	Select controller template.
Name	Shows the name of the controller template.
Last change	Last change, expressed in ToolsTalk 2 time.
Changed by	Last changes made by
Version	Controller software version that is supported by the controller template.
<b>↓ ↑</b>	Not an actual column.
	The list of configurations can be sorted in rising or falling alphabetical order, numeri- cal order or time order. Click on the table header row to make an arrow visible and click on the arrow to change the current sorting direction. One arrow is shown at a time.

Command	Description
Delete	Removes selected controller templates from the list.
Add	Creates a new controller template.
Distribute	Selects configurations from a template that are to be distributed to one or several con- trollers.
Export	Export a selected controller template. File format is *.json
Import	Import a controller template. File format is *.json

Table 28: Controller template command buttons

If no controller template exists, the work space area is empty. Click **Add** to create a new controller template or double-click on an existing template to view or edit parameters.

### Controller configuration library - Adding a new template

The **Controller template** is an entire virtual controller. It allows a user to create, edit and analyze all controller configurations without having access to a physical controller. A controller template can be created from the beginning with all parameter values empty. A controller template can be created by copying an existing controller with valid configurations and parameters.

A **Controller template** does not show information about tools, as no tools are connected. Hardware related information and configurations are not possible. Configurations of supporting functions, like various servers, are not possible from a template. When a template is distributed to a controller, these parameters must be checked or added.

To create a new controller template:

1. Click Library IN in the left-side menu bar.

**2.** Go to **Controller library**  $\square$  .

The workspace shows a list of **Controller templates**.

3. Click Add.

The Create controller template pop-up window is shown.

- 4. Enter the following parameters:
  - Give the controller template a name.
  - Select the controller type from the shortcut menu.
  - Select the controller software version from the shortcut menu.
- 5. Click Add in the shortcut window.

The shortcut window closes and the list of controller template list is updated.

EN

( It is important to select the correct controller software version. A template can only be distributed to controllers who have the same software version.

# Controller configuration library - Creating a template from an existing controller

The **Controller template** is an entire virtual controller. It allows a user to create, edit and analyze all controller configurations without having access to a physical controller. A controller template can be created from the beginning with all parameter values empty. A controller template can be created by copying an existing controller with valid configurations and parameters.

A **Controller template** does not show information about tools, as no tools are connected. Hardware related information and configurations are not possible. Configurations of supporting functions, like various servers, are not possible from a template. When a template is distributed to a controller, these parameters must be checked or added.

To create a controller template from an existing controller:

- 1. Select a controller in the **Plant structure** workspace
- 2. Click Add to library in the top-side menu bar.

All the controller configurations, except hardware and tool dependencies, are copied to the controller configuration library.

- **3.** Click **Library III** in the left-side menu bar.
- **4.** Click **Controller library** <sup>□</sup> in the upper menu bar in the workspace window.

The workspace shows a list of **Controller configurations** and the newly created controller configuration that can be used as a template is shown in the list.

The name of the controller template is copied from the source controller name.

It is recommended to give the controller template a unique name in the library.

# Controller configuration library - Distributing a template

The **Controller template** is an entire virtual controller. It allows a user to create, edit and analyze all controller configurations without having access to a physical controller. A controller template can be created from the beginning with all parameter values empty. A controller template can be created by copying an existing controller with valid configurations and parameters.

A **Controller template** does not show information about tools, as no tools are connected. Hardware related information and configurations are not possible. Configurations of supporting functions, like various servers, are not possible from a template. When a template is distributed to a controller, these parameters must be checked or added.

A controller template or parts thereof can be distributed to one or several controllers. A distribution means that configurations are copied from the template and overwrites the configurations at the destination controllers whenever this is allowed.

The controller template software version, must be the same as the destination controller software version. If they do not match, the distribution is not possible

To distribute a controller template:

- 1. Click Library IN in the left-side menu bar.
- 2. Go to Controller library

The workspace shows a list of **Controller templates**.

- 3. Select the check box of the controller template to distribute.
- 4. Click Distribute.

The Distribute controller template shortcut window opens.

- 5. Select the check box ⊠ of each configuration to be included in the distribution.
  - Configurations type can be individually selected. Certain dependencies exist between configurations. When selecting to distribute a template configuration, additional configurations may also be selected by default.
- 6. Select one or more controllers in the right side of the pop-up window.
- 7. Click **Distribute** in the pop-up window.

The pop-up window closes.

- **8.** The selected configurations are only distributed to the controllers in Tool-sTalk 2.
- The configurations selected for distribution will result in that the existing configurations are deleted and are replaced with the controller configurations from the template.

# Also see about this

Push configurations to a controller [} 99]

# Controller configuration library - Editing a template

Editing a controller template is very similar to normal controller configuration. Almost all menu icons and parameter settings are identical to what can be done to a real controller in the ToolsTalk 2 GUI.

To edit or to configure a controller template:

- **1.** Click Library **III** in the left-side menu bar.
- **2.** Go to **Controller library**

The workspace shows a list of **Controller templates**.

3. Double-click on the name field in the list of controller templates.

The controller workspace is identical to a real controller. To show that this is a controller template, the background color of the controller menu is a lighter grey instead of dark.

### Controller configuration library - Exporting a template

The **Controller template** is an entire virtual controller. It allows a user to create, edit and analyze all controller configurations without having access to a physical controller. A controller template can be created from the beginning with all parameter values empty. A controller template can be created by copying an existing controller with valid configurations and parameters.

A **Controller template** does not show information about tools, as no tools are connected. Hardware related information and configurations are not possible. Configurations of supporting functions, like various servers, are not possible from a template. When a template is distributed to a controller, these parameters must be checked or added.

( A controller template can be exported and then reused (imported) in another ToolsTalk 2 installation or in a ToolsTalk 2 Station Setup installation.

To export a controller template:

- 1. Click Library IIN in the left-side menu bar.
- Go to Controller library <sup>•</sup> .
  The workspace shows a list of Controller templates.
- 3. Select the check box of the controller template to be exported.
- 4. Click Export.
  - A browser window opens for saving the export file.
- 5. The default file name is <*controller\_template\_name*>.*json* Click **Save**.

The exported file can be given any name with the \*.json extension.

Inside the exported \*.json file the controller template is given the name from the controller column. When a controller template is imported, the name given to the controller template is taken from this field inside the \*.json file, regardless of the file name. This means that an imported controller template may have a different name than the imported file name.

( To avoid controller templates with identical names it is advised to give the template a unique name before exporting and not to change the file name.
## Controller configuration library - Importing a template

The **Controller template** is an entire virtual controller. It allows a user to create, edit and analyze all controller configurations without having access to a physical controller. A controller template can be created from the beginning with all parameter values empty. A controller template can be created by copying an existing controller with valid configurations and parameters.

A **Controller template** does not show information about tools, as no tools are connected. Hardware related information and configurations are not possible. Configurations of supporting functions, like various servers, are not possible from a template. When a template is distributed to a controller, these parameters must be checked or added.

A previously exported controller template can be imported in a ToolsTalk 2 installation or in a ToolsTalk 2 Station Setup installation.

To import a controller template:

- 1. Click Library IIN in the left-side menu bar.
- **2.** Go to **Controller library**

The workspace shows a list of **Controller templates**.

3. Click Import.

A browser window opens for reading the import file.

**4.** Select the desired import file. The file must have the format *<controller\_template\_name>.json*. Click **Open**.

The workspace shows an updated list of Controller templates.

The exported file can be given any name with the \*.json extension. The \*.json file contains a controller template name that is shown in the list of controller templates. When a controller template is imported, the name given to the controller template is taken from inside the \*.json file, regardless of the file name. This means that an imported controller template may have a different name than the imported file name. To avoid controller templates with identical names it is advised to give the template a unique name before exporting and not to change the file name.

## Tightening program library

## Tightening program library introduction

The combination of a tightening strategy selection and parameter values forms the tightening program and is named a tightening program. The tightening program can be either **Global** or **Local**.

A Local tightening program is valid for a single controller and a Global tightening program may have several controllers subscribing to the same tightening program.

A controller can subscribe to **Global tightening programs**. Whenever a change is made to a program, the change propagates to all controllers in ToolsTalk 2 that subscribe to the program.

The **Tightening program library** manages the global tightening programs and the controllers that subscribe to specific **Tightening programs**.

Updates to subscribers are done within the ToolsTalk 2 application. All affected controllers will show the Push indicator () in the Line structure workspace.

ToolsTalk 2 can distinguish between a local and global tightening program. The controller itself has no knowing of local or global tightening programs. Thus it is important to specify the action in ToolsTalk 2 if a tightening program is changed from either the controller GUI or the web GUI.

## ▲ WARNING Risk of injury

A change in configuration to the tightening program may cause unexpected torque, rotational direction, or speed in the system(s) where the tightening program is currently in use. This could result in severe bodily injury and/or property damage.

 Check the tightening program configurations after adding a new program or after applying changes to an existing program.

## Also see about this

**Features** 

Push configurations to a controller [} 99]

## Tightening program library workspace

- **1.** Click **Library II** in the left-side menu bar.
- 2. Go to Tightening library **O**

The workspace area shows a list of **Global tightening programs**.

Column	Description
Check box	Select a configuration.
Name	Shows the name of the configuration. A <b>Push indicator</b> $\odot$ can be next to the name.
Strategy	The tightening strategy selected for the configuration.
Global	A Yes in the column indicates that this is a global tightening program.
Target	The final target is either expressed in a torque value or in an angle value.
Last changed	When were the last changes made, expressed in ToolsTalk 2 time.
Changed by	Who made the last changes.
Version	Controller software version that can support the Global tightening program library.
<b>Controller type</b>	Shows which controller type the tightening program is intended for.
11	Not an actual column.
Y U	The list of configurations can be sorted in rising or falling alphabetical order, numeri- cal order or time order. Click on the table header row to make an arrow visible and click on the arrow to change the current sorting direction. One arrow is shown at a time.

Table 29: Tightening library overview

Command	Description
Delete	Removes selected tightening program from the list.
Add	Creates a new tightening program.

Tal	k2	FL	EX
	sTal	sTalk2	Talk2 FL

Command	Description
Distribute	Opens the Distribute global Pset shortcut window. The selected Global tightening
	program can be added to the distribution list.

Table 30: Tightening library workspace command buttons

Select one or more **Global tightening programs** check boxes to view the distribution list. The distribution list shows all controllers currently subscribing to the selected programs.

If no global tightening programs exist, the work space area is empty. Click **Add** to create a new tightening program or double-click on an existing program to view or edit parameters.

## Tightening program library - Add a global tightening program

To add a Global tightening program:

- 1. Click Library IIN in the left-side menu bar.
- 2. Go to Tightening library <sup>•</sup>•.

The workspace area shows a list of **Global tightening programs**.

- 3. Click Add. The Create new program dialog window appears.
- 4. Enter the parameters described in the table.
- 5. Click Add in the dialog window. The window closes, and the workspace shows the tightening program menus.

Parameter	Description
Controller type	Select a controller type from the shortcut menu.
Controller software version	Select a controller software version from the shortcut menu.
Name	Give the global tightening program a name in the parameter entry field.
Strategy	Select a tightening strategy from the shortcut menu.
Target	Select a target type from the shortcut menu.
Target value	Enter the numeric target value for the final step in the parameter entry field or fields.

Table 31: Create new Pset parameters

## Tightening program library - Delete a global tightening program

To delete a Global tightening program:

- **1.** Click **Library II** in the left-side menu bar.
- 2. Go to Tightening library

The workspace area shows a list of **Global tightening programs**.

- **3.** For each tightening program to be deleted, select the check box in the left most column.
- 4. Click Delete.

The global tightening program is removed from library and the list is updated.

The controllers subscribing to the deleted program do not lose the program. A deleted tightening program is removed from the list in the **Tightening program library** workspace. The tightening program is still present in the list in the **Tightening** workspace of the controllers that have subscribed to the global tightening program. The visible change is that the tightening program is transformed from being a global tightening program to a local tightening program. (The entry in the column Library link is cleared).

## Tightening program library - Distribute global tightening programs

Tightening program library distribution list

The global tightening program distribution list is like a subscription list. Whenever a change is made to a global tightening program, the change is propagated to all subscribers. The distribution list manages the subscription.

- **1.** Click **Library II** in the left-side menu bar.
- 2. Go to **Tightening library** <sup>•</sup>

The workspace area shows a list of Global tightening programs.

**3.** Select one or more check boxes in the *Global tightening program* library to view the content of the distribution list.

The distribution list shows all controllers that subscribe to the currently selected tightening programs.

Tightening program library - add a global program to the distribution list

- **1.** Click **Library III** in the left-side menu bar.
- 2. Go to Tightening library **O**

The workspace area shows a list of **Global tightening programs**.

- 3. Use the check boxes  $\boxtimes$  to select one or more programs to be added to the distribution list.
- 4. Click Distribute.

The Distribute global configurations dialog window opens.

The left side column shows the selected Global tightening programs.

The right side column show a list of controllers that are compatible with the selected programs and can be added to the distribution list.

5. Use the check boxes ⊠ to select one or more controllers in the right side column.

If a controller already subscribes to the selected **Global tightening programs** it will not show up in the right side column.

- 6. Optional step: Click the down arrow  $\mathbf{\nabla}$  to open additional configurations.
- 7. Optional step: Select the action to be taken by ToolsTalk 2 if a global tightening program is changed by the controller GUI or web GUI.
- 8. Click Add.

The dialog window is closed.

ToolsTalk 2 can distinguish between a local and a global tightening program. The controller itself has no knowing of local or global tightening programs. Thus it is important to specify the action in ToolsTalk 2 if a tightening program is changed from either the controller GUI or the web GUI. This action is defined in the distribution of a global tightening program in the tightening program library.

Action	Result
Auto revert	Updating a tightening program in a controller from the controller GUI or from the web GUI is ignored if the program is marked as a global tightening program in ToolsTalk 2.
	The update is made and sent to ToolsTalk 2. A change is noticed but not accepted. The global pro- gram is immediately pushed back to the controller.
Unlink	Updating a tightening program in a controller from the controller GUI or from the web GUI causes the program to change from a global program to a local program in the affected controller.
	The update is made and sent to ToolsTalk 2. A change is noticed. As a result the tightening program is immediately removed from the distribution list to the controller.

Table 32: Updating a global tightening program from the GUI

The selection of auto revert or unlink must be made when a global tightening program is configured for distribution to a controller. The selection cannot be changed at a later stage.

# Tightening program library - remove a global program subscription from the distribution list

The global tightening program distribution list is like a subscription list. Whenever a change is made to a global tightening program, the change is propagated to all subscribers. The distribution list manages the subscription.

Select one **Global tightening program** check box to view the content of the distribution list. The distribution list shows all controllers subscribing to the selected program.

To remove the subscription of a **Global tightening program** from one controller:

- 1. Select a controller in the **Plant structure** workspace
- **2.** Go to **Tightening**  $\mathbf{O}$ .

The Tightening workspace shows a list of tightening programs.

The entry in the column **Library link** is marked with **Yes** for the selected tightening program.

3. Select the check box  $\boxtimes$  for the selected tightening program.

4. Click Unlink.

The entry in the column **Library link** is cleared for the selected tightening program.

EN

- 5. Click Library IIN in the left-side menu bar.
- 6. Go to Tightening program library
- Select the checkbox of the removed tightening program. The distribution list is updated and the controller name is removed from the list.

## Tightening program library - Update a global tightening program

In the tightening library workspace:

- **1.** Click **Library III** in the left-side menu bar.
- 2. Go to Global tightening library

The workspace area shows a list of Global tightening programs.

- **3.** Double-click on the name field, the tightening menus are editable. The changes are auto saved to the tightening program.
- ( A global tightening program can only be edited or updated if the tightening menus are opened from the library path.

## ▲ WARNING Risk of injury

A change in configuration to the tightening program may cause unexpected torque, rotational direction, or speed in the system(s) where the tightening program is currently in use. This could result in severe bodily injury and/or property damage.

- Check the tightening program configurations after adding a new program or after applying changes to an existing program.
- Updates to subscribers are done within the ToolsTalk 2 application. All affected controllers will show the Push indicator in the Plant structure workspace.

## Also see about this

Push configurations to a controller [] 99]

# *Tightening program library - Convert a local tightening program to a global program*

It is possible to convert a local tightening program, that has been developed at one controller, to become a global tightening program. This tightening program can then be distributed to selected controllers.

ToolsTalk 2 can distinguish between a local and global tightening program. The controller itself has no knowing of local or global tightening programs. Thus it is important to specify the action in ToolsTalk 2 if a tightening program is changed from either the controller GUI or the web GUI.

## **Global configurations library**

## Configurations library introduction

The configuration can be either **Global** or **Local**.

A Local configuration is valid for a single controller and a Global configuration is valid for several selected controllers.

A controller can subscribe to **Global configurations**. Whenever any changes are made to a configuration it propagates to all controllers in ToolsTalk 2 that subscribe to the configuration.

The **Global configurations library** manages the global configurations and the controllers that subscribe to the configurations.

ToolsTalk 2 can distinguish between a local and global configuration. The controller itself has no knowing of local or global configurations. Thus it is important to specify the action in ToolsTalk 2 if a device configuration is changed from either the controller GUI or the web GUI.

### Also see about this

Push configurations to a controller [} 99]

## Global configurations library - Add a global configuration

To create a new configuration to add to the library:

- 1. Click Library IN in the left-side menu bar.
- 2. Go to the **Configurations library** in the upper menu bar in the workspace window.

The workspace shows a list of Global configurations.

3. Click Add.

The Create new configuration pop-up window is shown.

- 4. Enter the following parameters:
  - Select **Type of configuration** to add, **Controller type** and **Controller software version** for the configuration to apply to.
- 5. Click Add in the shortcut window.
- 6. The configuration window for selected type of configuration is shown.
- (1) The configuration is auto saved to the Configurations library.

### Also see about this

Push configurations to a controller [} 99]

## Global configurations library - Delete a global configuration

To delete a Global configuration:

- 1. Click Library IIN in the left-side menu bar.
- 2. Go to Configuration library

The workspace shows a list of **Global configurations**.

**3.** For each configuration to be deleted, select the check box in the left most column.

### Features

### 4. Click Delete.

The global configuration is removed from the library and the list is updated.

EN

The controllers subscribing to the deleted configuration do not lose the configuration. A deleted global configuration is removed from the list in the Configuration library workspace. The configuration is still present in the list in the Configurations workspace of the configurations that have subscribed to the global configuration. The visible change is that the configuration is transformed from being a global configuration to a local configuration. (The entry in the column Library link is cleared).

# *Global configurations library - Create a global configuration from existing*

- Select a controller containing the desired configuration in the Plant structure
- 2. In the menu bar, go to **Configurations**
- **3.** Select one or more configurations to add to the library and click **Manage**, then select **Add to library**.
- **4.** The selected local configuration will become a global configuration, stored in the **Global configurations** library.

If local changes are made in the controller or web interface, there are two options:

- Auto revert: Changes in the controller will not apply to the global configuration, the global configurations will still be applied.
- Unlink: Changes in the controller will apply to the configuration in the controller, and the link to the global configuration will be cut. As a result, the global configuration is immediately removed from the distribution list to the controller.
- 5. Click Library IN.
- 6. In the upper menu bar, click Global configurations

The workspace shows a list of **Global configurations** and the newly added configuration is now visible in the list.

## Also see about this

Push configurations to a controller [} 99]

## Global configurations library - Distribute a global configuration

- 1. Click Library IIN in the left-side menu bar.
- **2.** Go to **Configuration library**

The workspace shows a list of **Global configurations**.

- 3. Select the configuration check box. Click **Distribute**.
- 4. Use the check boxes  $\boxtimes$  to select each configuration to be included in the distribution.

5. Select one or more controllers in the right side of the pop-up window. Click **Distribute** in the pop-up window.

Any updates to the global configuration will update the distributed copies. Changes in the global configuration will apply to the selected controllers.

If local changes are made in the controller or web GUI, there are two options:

- Auto revert: Changes in the controller will not apply to the configuration, the global configurations will still be valid.
- Unlink: Changes in the controller will apply to the configuration and the link to the global configuration will be cut. As a result, the global configuration is immediately removed from the distribution list to the controller.
- (1) The changes are auto saved to the global configurations library.
- ③ All affected controllers will show the Push indicator 
   in the Plant structure workspace.

## Also see about this

Push configurations to a controller [} 99]

Configuration library - Distribution list

The global configuration distribution list is like a subscription list. Whenever any changes are made to a global configuration, the changes are propagated to all subscribers. The distribution list manages the subscription.

- 1. Click Library IIN in the left-side menu bar.
- **2.** Go to **Global configurations** <sup>™</sup>**≘**

The workspace shows a list of **Global configurations**.

**3.** Select the check box of one or more configurations in order to view the content in the distribution list.

The distribution list shows all controllers that subscribe to the currently selected configuration.



*Illustration 7:* Global configuration workspace

А	Library icon	В	Global configuration library icon
С	List of global configurations	D	Command buttons

## E Distribution list

## Global configurations library - Edit a global configuration

- 1. Click Library IIN in the left-side menu bar.
- 2. Go to Global library

The workspace shows a list of **Global configurations**.

- **3.** Double-click the configuration to edit. The configuration window for selected type of configuration is shown.
- ( The changes are auto saved to the global configurations library.
- All affected controllers will show the Push indicator 

   in the Plant structure workspace.

## Also see about this

Push configurations to a controller [] 99]

# Fieldbus configuration library

## Fieldbus configuration library introduction

The fieldbus configuration can be either Global or Local.

A Local fieldbus configuration is valid for a single controller and a Global fieldbus configuration is valid for several selected controllers.

A controller can subscribe to **Global fieldbus configurations**. Whenever any changes are made to a configuration it propagates to all controllers in ToolsTalk 2 that subscribe to the configuration.

The **Global fieldbus configurations library** manages the global fieldbus configurations and the controllers that subscribe to the configurations.

ToolsTalk 2 can distinguish between a local and global fieldbus configuration. The controller itself has no knowing of local or global fieldbus configurations. Thus it is important to specify the action in ToolsTalk 2 if a fieldbus configuration is changed from either the controller GUI or the web GUI.

## Also see about this

Push configurations to a controller [] 99]

# Fieldbus configuration library - Create or import a global fieldbus configuration

To create a fieldbus configuration:

- 1. Click Library IIN in the left-side menu bar.
- **2.** Go to **Fieldbus library**

The workspace shows a list of **Fieldbus configurations**.

**3.** To **add a new** fieldbus configuration to the list, click **Add**. The **Create or import fieldbus configuration** pop-up window is shown.

- 4. Enter the following parameters to add a new fieldbus map:
  - Choose a Name
  - Enter Size to controller and Size from controller
  - Select **Controller type** and **Controller software version** for the device to apply to, from the shortcut menu.
- 5. Click Add in the shortcut window.
- 6. The configuration window for the added fieldbus configuration is shown.
- (1) The fieldbus configuration is auto saved to the fieldbus library.

To **import** an already existing fieldbus configuration:

- 1. Click Library IIN in the left-side menu bar.
- 2. Go to Fieldbus library

The workspace shows a list of **Fieldbus configurations**.

3. To add a new one to the list, click Add.

The Create or import fieldbus configuration pop-up window is shown.

- 4. Select the Import tab.
- 5. Click Open file.

A browser window opens for reading the import file.

- 6. Select the desired import file. The file must be in the format *<controller\_template\_name>.json*. Click **Open**.
- 7. Click Add in the shortcut window.
- 8. The configuration window for the added fieldbus configuration is shown.
- (1) The fieldbus configuration is auto saved to the fieldbus library.

# *Fieldbus configuration library - Delete a global fieldbus configuration*

To delete a Global fieldbus configuration:

- 1. Click Library IIN in the left-side menu bar.
- Go to Fieldbus configuration library <sup>•</sup><sup>•</sup>.
   The workspace shows a list of Global fieldbus configurations.
- **3.** For each fieldbus configuration to be deleted, select the check box in the left most column.
- 4. Click Delete.

The global fieldbus configuration is removed from library and the list is updated.

The controllers subscribing to the deleted configuration do not lose the configuration. A deleted global fieldbus configuration is removed from the list in the Fieldbus configuration library workspace. The fieldbus configuration is still present in the list in the Fieldbus workspace of the fieldbus that have subscribed to the global fieldbus configuration. The visible change is that the fieldbus configuration is transformed from being a global fieldbus configuration to a local fieldbus configuration. (The entry in the column Library link is cleared).

# Fieldbus configuration library - Create a global fieldbus configuration from existing fieldbus configuration

To create a global fieldbus configuration from an existing:

- Select a controller (containing the desired fieldbus configuration) in the Plant structure workspace
- 2. Click Fieldbus <sup>1</sup> in the menu bar.
- **3.** Select one or more fieldbus configurations to add to the library. Click **Add to library**.
- 4. The selected local configuration will become a global configuration, stored in the **Global fieldbus configurations** library.

If local changes are made in the controller or web GUI, there are two options:

- Auto revert: Changes in the controller will not apply to the global fieldbus configuration, the global configurations will still be applied.
- Unlink: Changes in the controller will apply to the fieldbus configuration in the controller, and the link to the global configuration will be cut. As a result, the global fieldbus configuration is immediately removed from the distribution list to the controller.
- 5. Click Library IIN in the left-side menu bar.
- 6. Go to Global fieldbus library

The workspace shows a list of **Global fieldbus configurations** and the newly added fieldbus configuration is now visible in the list.

# *Fieldbus configuration library - Distribute a global fieldbus configuration*

- **1.** Click Library IIN in the left-side menu bar.
- 2. Go to Global fieldbus library

The workspace shows a list of **Global fieldbus configurations**.

**3.** Select the check box for the fieldbus configuration to distribute. Click **Dis***tribute*.

The Distribute controller template shortcut window opens.

4. Select the check box ⊠ of each configuration to be included in the distribution.

5. Select one or more controllers in the right side of the pop-up window. Click **Distribute** in the pop-up window.

Any updates to the global configuration will update the distributed copies. Changes in the global configuration will apply to the selected controllers.

If local changes are made in the controller or web GUI, there are two options:

- Auto revert: Changes in the controller will not apply to the global fieldbus configuration, the global configurations will still be valid.
- Unlink: Changes in the controller will apply to the fieldbus configuration in the controller, and the link to the global configuration will be cut. As a result, the global configuration is immediately removed from the distribution list to the controller.
- (1) The changes are auto saved to the global fieldbus configurations library.
- ③ All affected controllers will show the Push indicator 
  O in the Plant structure workspace.

## Also see about this

Push configurations to a controller [} 99]

Fieldbus configuration library - Distribution list

The global fieldbus configuration distribution list is like a subscription list. Whenever any changes are made to a global fieldbus configuration, the changes are propagated to all subscribers. The distribution list manages the subscription.

- 1. Click the Library icon IN located in the left-side menu bar.
- 2. Click the Fieldbus library icon in the upper menu bar in the workspace window.

The workspace shows a list of **Global fieldbus configurations**.

3. Select the check box of one or more fieldbus configurations in order to view the content in the distribution list.

The distribution list shows all controllers that subscribe to the currently selected fieldbus configuration.

## Fieldbus configuration library - Edit a global fieldbus configuration

To edit a fieldbus configuration:

- 1. Click Library IIN in the left-side menu bar.
- 2. Go to Global fieldbus library

The workspace shows a list of **Global fieldbus configurations**.

- **3.** Double-click the fieldbus configuration to edit.
- 4. The configuration window for the selected fieldbus configuration is shown.
- The fieldbus configuration is auto saved to the global fieldbus configurations library.
- ③ All affected controllers will show the Push indicator 
  In the Plant structure workspace.

## Also see about this

Push configurations to a controller [} 99]

# Fieldbus configuration library - Exporting a global fieldbus configuration

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To export a global fieldbus configuration:

- 1. Click Library IIN in the left-side menu bar.
- 2. Go to Global fieldbus configurations library

The workspace shows a list of **Global fieldbus configurations**.

- 3. Select the check box of the global fieldbus configuration to be exported.
- 4. Click Export.

A browser window opens for saving the export file.

5. The default file name is *<configuration>.json* Click **Save**.

## System administration

# System administration - Controller software update and data management

# System administration - Introduction to controller software and data management

Go to System administration and select Controller software and data management

- Export controller results, configurations and settings.
- Import controller settings.
- Load new controller software.
- Switch between controller software installations.
- Generate report.

**Export/import:** Changes the controller configuration parameters and leaves the controller software program unchanged.

**Software update:** Changes a controller software and leaves the controller configuration parameters unchanged.

Controller names, IP addresses and server connections are unaffected by these operations.

Column	Description
Controller	Controller name.
Factory port	<b>On</b> : For controllers with enabled communication via factory port.
	No text is displayed if the connection is disabled (set to <b>off</b> in the controller set- tings).

**ToolsTalk2 FLEX** 

Column	Description
Current version	Current software version.
	Red: Software is not in the approved software list. Add it to the list by clicking the Add command button and entering the current software version.
	Black: Software is in the approved software list.
Stored version	Stored inactive software version.
Import	Task status and result during import.
Export	Task status and result during export.
Software update	Software update task status and result.
Button	Description
Generate report	Generates the <i>SoftwareVersionReportcsv.csv</i> file and opens a dialog pop-up win- dow for storage selection.
Activate stored	Switches program execution to the stored version. The previous active program reverts to the inactive stored state.
Software update	Loads a new program into the controller, into the stored version program space.
Export	Exports controller configurations, parameters and results.
	The file name should be like this <i>Filename.tar.gz</i>
Import	Imports controller configurations and parameters.
	The file name should be like this <i>Filename.tar.gz</i>

(1) The export and import function also exists in Controller configurations

**i** and in the **Scheduled export and import iii**. The file format and the results are the same.

The right side of the workspace window contains a list of approved software that is allowed to execute in a controller. Not approved software is marked in red in the running **current version** column.

Command	Description
Add	Opens a shortcut menu to enter a new software version to the list.
Delete	Removes one or more selected software versions from the list.

The **Generate report** creates a *SoftwareVersionReportcsv.csv* file containing a matrix with the following information in the columns:

- Controller name.
- Current software version.
- Stored software version.
- Indication if the current software is approved or not.

#### Also see about this

System administration - Administrating scheduled export and import [] 94]

### Features

# System administration - Export and import controller configurations and tool logs

The export and import function is used to export the events and tightening results accessible in the **Results** menu for analysis in external programs, as well as allowing transfer of tightening program, batch, and controller configurations between controllers.

EN

The command **Export** can be used for the following reasons:

- Exporting tightening results and events for further processing.
- Exporting log files for debug assistance from an Atlas Copco service engineer.
- Exporting the entire controller configuration that can be used to copy the configuration to another controller.
- Comparing two exported configurations to see differences.

## Export

1. Click System administration

# 2. Go to Controller software and data management

- 3. Select the check box 🖾 of the controller. It is only possible to export a controller configuration if the controller is online.
- 4. Click **Export/Import** to export one of the following:

Parameter	Description
Export	Exports all controller information.
	The exported file will have a file name and extension that looks like <b><filename>.tar.gz</filename></b> .
<b>Export Con-</b>	Exports settings and configurations.
figuration	The exported file will have a file name and extension that looks like <b><filename>.tar.gz</filename></b> .
Export Tool Log	Exports logs (tightenings and hardware information) from connected tools. Available for SRB, TBP and STB.
	The export consists of atlas_tool_i.zip and ExportInfo.txt

5. Select the location for saving the export file, click **OK**.

The filename consists of one part to identify the controller and of one part which is a time stamp.

## Import

The purpose of the **Import** command is to copy a controller setting and to reuse a previously exported source file and shall have a file name and extension that looks like **<Filename>.tar.gz**.

To import a controller configuration, perform the following steps:

- 1. Click System administration in the left-side menu bar.
- 2. Click Controller software and data management in the upper menu bar in the workspace window.

- 3. Select the check box  $\boxtimes$  of the controller. It is only possible to import to a controller configuration if the controller is online.
- 4. Click Import.

The Import to selected pop-up window opens.

- 5. Click **Open file** and browse to the selected file.
- 6. Select the file and click **Open**.
- 7. The file path is shown and the **Import** button is active. Click **Import**.

After restarting, the imported file is now in use with a new configuration setting.

( A file import does not change the program of the controller. It changes every setting and configuration except the factory IP address.

## System administration - Import controller configurations

The purpose of the **Import** command is to copy a controller setting and to reuse a previously exported source file and shall have a file name and extension that looks like **<Filename>.tar.gz**.

To import a controller configuration, perform the following steps:

- 1. Click the System administration icon in the left-side menu bar.
- 2. Click the **Controller software and data management** icon in the upper menu bar in the workspace window.
- 3. Mark the check box  $\boxtimes$  of the selected controller. It is only possible to import to a controller configuration if the controller is on-line.
- 4. Click the Import button.

The Import to selected pop-up window opens.

- 5. Click **Open file** and browse to the selected file.
- 6. Mark the file and click **Open**.
- 7. The file path is shown and the **Import** button is active. Click **Import**.
- 8. The Import column in the workspace will show the following messages:
  - 1. Importing file
  - 2. Controller restarting
  - 3. Import complete

After restarting, the imported file is now in use with a new configuration setting.

( A file import does not change the program of the controller. It changes every setting and configuration except the factory IP address.

## System administration - Updating controller software

Updating and switching controller software are two different tasks that are tightly coupled. The controller can have two different software versions installed, one active version and one passive version. It is a simple process to switch between the two versions. Switching controller software is the task that switches active and passive software.

To load new software to the controller:

1. Click System administration in the left-side menu bar.

- 2. Go to Controller software and data management
- 3. Select the check box  $\boxtimes$  of the controller. It is only possible to update the controller software if the controller is online.
- 4. Click Software update.

The Software update pop-up window opens.

- Click Open file and browse to the selected file. The file name should end with -px2it.zip
- 6. Mark the file and click **Open**.
- 7. The file path is shown and the button **Software update** is active. Click the button to start loading the software.

## System administration - Switching controller software

Updating and switching controller software are two different tasks that are tightly coupled. The controller can have two different software versions installed, one active version and one passive version. It is a simple process to switch between the two versions. Switching controller software is the task that switches active and passive software.

To activate stored software in the controller:

- 1. Click System administration in the left-side menu bar.
- 2. Go to Controller software and data management
- 3. Select the check box  $\boxtimes$  for the controller. It is only possible to execute the command if the controller is online.
- 4. Select Activate stored in Software drop-down list.
- 5. The Software update column in the workspace will show the following messages:
  - 1. Activating stored software.
  - 2. Stored software activated, controller restarting.

## System administration - Generate controller software report

The Controller update workspace shows all the controllers and both their current running software and the stored software.

To generate a list on file:

- 1. Click System administration in the left-side menu bar.
- 2. Go to Controller software and data management
- 3. Click Generate report.

The browser pop-up window opens.

4. Select a file location and click Save.

The *SoftwareVersionResultcsv.csv* file will be written to the selected location.

# System administration - Functionality management system

## Functionality management system introduction

The **Functionality Management System** (FMS) allows Atlas Copco customers to use additional desired features, when they are needed, through a dynamic licensing scheme.

When the business deal is completed, the customer's account in **Atlas Copco License Portal** (ACLP) will automatically receive the purchased features within 24 hours and these features can be downloaded as a license file.

This capability file (included in the license agreement) is loaded in the **Local License Server** (LLS) where it is decoded and available for distribution.

A pool of *feature items* is created and may be used across a number of controllers. A desired feature item can be uploaded to the controller when needed, and be returned to the pool when it is not needed anymore.

In the Atlas Copco License Portal (ACLP) it is possible to manage an account with all feature items, entitle and return licenses to/from a license server.

( The creation and management of a customer account in the ACLP is not covered in this documentation.

## Functionality management system - distribution of feature items

In the **Functionality Management System** (FMS) workspace a user can manage licensed feature items in all the controllers that are connected to the **Local License Server** (LLS) and online to the ToolsTalk 2 server.

- ( The view and information below assumes that a capability file has been received from Atlas Copco, and that it is loaded into the LLS.
- 1. Click the System Administration icon



2. Click the Functionality Management System icon

The workspace area displays the list of all controllers and their current capabilities.

В



Illustration 8: FMS workspace



Fea	itures	EN	ToolsTalk2 FLEX
C E	Reservation list. D Host ID: A unique identity of the F distribution server on which the capability file is loaded.	Command buttons. Graphical presentation of the dis- tribution of controller capabili- ties.	
	<b>No of Virtual Stations config- ured:</b> number of configured VS / total VS available for configura- tion		

The reservation list shows both the fixed capability that is part of controller IAM, and how the pool of licensed feature items is distributed across controllers.

Column	Functionality
Controller name	Identification of the controller.
Default virtual sta- tions	The amount of virtual stations in the controller. This is controlled by the IAM module. This functionality can not be removed from the controller.
Additional virtual stations	The amount of additional virtual stations in the controller.
True angle com- pensation Tur- boTight	If the check box is selected $\boxtimes$ , the LLS has enabled the feature item in the controller. The LLS can add and remove the feature items from a controller.
TurboTight	
Soft PLC	
Yield control	
Gradient control	

Table 33: Reservation list

The graphical pie charts provides an overview of the reservation list and the feature items.

Command button	Functionality
Available	The total amount of available licensed feature items.
Allocated	The reserved (used) licensed feature items distributed to controllers.

The **Capability file** is a binary file that contains the feature items. The file is created in the Atlas Copco Licensing Portal (ACLP). The file is downloaded to the customer premises. When decoded in the distribution server, a pool of feature items is created that can be distributed to the controllers in two ways:

- A networked distribution system using the **Functionality Management System** server which is controlled through the ToolsTalk 2 user interface.
- A manual distribution system using a secure USB flash drive that is inserted into each controller and managed through the controller user interface. It is described in detail in the controller documentation.

### ToolsTalk2 FLEX

<b>Command button</b>	Functionality
Download request	The Capability file is retrieved from the LLS and can be sent to the ACLP for updat-
	ing.
Unload features	The <b>Canability file</b> file received from ACLP is loaded into the LLS

#### Also see about this

- Push configurations to a controller [] 99]
- SoftPLC [} 46]

#### Download request

The **Host id** identifies the unique identity of the Local License Server (LLS) on which the capability file is loaded. The **Host id** is also the name of the capability file, which is the binary file containing the licensed *feature items*.

To reduce feature items of an existing system and to return licences to Atlas Copco:

- 1. Complete the business deal, with the new set of desired feature items.
- **2.** Retrieve an updated capability file from the Atlas Copco License Portal (ACLP).
- **3.** Save the file at an location that is accessible from trom the ToolsTalk 2 server and terminal.
- **4.** Click the **Upload features** command button. The **Upload features** pop-up window opens.
- **5.** Browse and select the capability file and click the **Upload features** command button.

The file is loaded into the LLS and decoded. The pool of feature items is updated and ready to use.

6. Click the **Download request** command button.

A pop-up window is opened.

- 7. Browse to a location where the file is to be saved, and click the **Download** command button.
- **8.** Send the downloaded file to the ACLP or to your Atlas Copco sales representative.

Use the **Download request** command when less functionality is needed and a customer want to return feature items.

#### Also see about this

Functionality management system introduction [] 91]

#### Upload features

The **Host id** identifies the unique identity of the Local License Server (LLS) on which the capability file is loaded. The **Host id** is also the name of the capability file, which is the binary file containing the licensed *feature items*.

To add new additional feature items to an existing system:

- 1. Complete the business deal, with the new set of desired *feature items*
- **2.** Retrieve an updated capability file from the Atlas Copco License Portal (ACLP).

- **3.** Save the file at a location that is accessible from trom the ToolsTalk 2 server and terminal.
- 4. Click the Upload features command button. The Upload features pop-up window opens.
- **5.** Browse and select the capability file and click the **Upload features** command button.

The file is loaded into the LLS and decoded. The pool of feature items is updated and ready to use.

## Also see about this

Functionality management system introduction [] 91]

# System administration - Administrating scheduled export and import

Go to System administration and click on Scheduled export and import

- Export controller results and settings.
- Import controller settings.
- Scheduling of export and import tasks to selected controllers.

Each row in the workspace table represents a task which is either an import or an export.

The columns have the following headers from left to right:

Column	Description
Check box	To select or deselect a task.
Name	Task name.
Last change	When was the task changed.
Changed by	Who made the last change to the task.
Latest run	When was the last time the task was executed.
Running	Status information of a currently running task.

Table 34: Table in the export and import workspace

The list of controllers on the right side shows which controllers are affected by the task. The list is only shown if one task is selected.

Command	Description
Execute now	One or more tasks can be selected and forced to execute immediately, without waiting for the set scheduled date and time. The <b>Backup location</b> settings must be defined in order for 'Execute now' to work.
Add	Create a new task. A pop-up window opens.
Delete	Delete one or more tasks from the task table.

( The export and import function also exists in Controller configurations

and in the **Controller software and data management**. The file format and the results are the same in both cases.

### Add a new scheduled task

- 1. Click Add.
- 2. Select a Scheduled task type.

The pop-up window closes, the workspace displays the export or import configuration menus.

### **Execute now**

- 1. Select a task by ticking the corresponding check box.
- 2. Click Execute now to ignore the scheduling in order to run the task immediately.

#### Delete a scheduled task

1. Select a task by ticking the corresponding check box and click **Delete** to remove the selected task.

The deleted task is removed from list of scheduled tasks.

#### Edit a scheduled task

The workspace window displays all the scheduled export or import configuration menus. Configuration is done in ToolsTalk 2 and not in the controller.

- 1. Double-click on the task to edit.
- 2. Edit the scheduled task.

Changes are automatically saved and no **Push** is needed.

#### Also see about this

Controller information - export and import [] 44]

# System administration - Scheduled export and import configuration menus

- 1. Click System administration in the left-side menu bar.
- 2. Go to Scheduled export and import
- **3.** Perform one of the following steps:
  - Click Add to create a new task.
  - Select a task in the check box and click **Delete** to remove a task.
  - Select a task in the check box and click **Execute now** to ignore the scheduling and run the task immediately.
  - Double-click on the name field of a task in the workspace list to display the **Scheduled export and import** menus in the workspace area.

If no scheduled export and import task exists, the list is empty.

Menu	Description
Basic setting	Give the task a name and description.
Schedule	Time and interval settings for the task.
Controllers	Select which controllers are affected by the task.
Results	The result of the task.
Import file	Only visible if the task type is <b>IMPORT CONTROLLER CONFIGURA-</b> <b>TION</b> .
Backup location	Only visible if the task type is <b>EXPORT CONTROLLER CONFIGURA-TION</b> .

Table 35: Scheduled export and import workspace menus

#### System administration - Export and import properties

The default name of each export or import task is identical to the task type, which is either **EXPORT CONTROLLER CONFIGURATION** or **IM-PORT CONTROLLER CONFIGURATION**.

It is recommended to give the task a name and a description.

#### System administration - Export and import scheduling time

Parameter	Description
Enabled	Switch with Yes or No position.
	When set to <b>YES</b> , the scheduled task will run according to the scheduled config- urations.
	When set to NO, the scheduled task will not run.
Weekdays	Mark one or more weekdays when the task will run.
Time	Select a run time from the pull-down menu.
Start date	Select a start date for the run time from the calender icon.
Select end date	Switch with Yes or No position.
	When set to <b>YES</b> , the scheduled task will run according to the schedule until the end date.
	When set to <b>NO</b> , the scheduled task will run according to the schedule from the start date.

Table 36: Scheduled export and import workspace: Schedule menu

### System administration - Export and import controller selection

Select which controllers are affected of the scheduled task. It is possible to select all controllers or only selected controllers.

Paramatar	Description
	Description
Schedule all controllers	Switch with Yes or No position.
	When set to YES, the scheduled task will run on all controllers that are con-
	nected to ToolsTalk 2 and that are visible in the plant structure workspace.
	When set to <b>YES</b> , all the individual selections become obsolete and are made invisible.
Check all	All controllers are automatically marked and the task will run on the marked con- trollers.
$\boxtimes$	Select the controllers that the task should run on. The task will run only on the selected controllers.

Table 37: Scheduled export and import workspace: Controllers menu

#### Important difference between Check all and Schedule all controllers:

Check all
Easy to select or de-select individual controllers.
A static list. If new controllers are added, they are not automatically included.

Table 38: Check all

#### Schedule all controllers

Any changes in the structure of connected controllers will not alter the scheduled task on all controllers. Dynamic list, all controllers are always affected.

Table 39: Schedule all controllers

Important notice:

If an import is made to several controllers using the same import file, the controller name field is overwritten by name of the controller name in the imported file. This leads to that all controllers will have the same name.

A further import or export, with named controllers will fail, as the name may not be recognized anymore.

One way to overcome this issue is to use the **Schedule all controllers** switch set to **YES**.

## System administration - Export and import result

After a task is executed, the results are shown in the **Results** menu.

Parameter	Description
Status	The scheduled task status after running the task can show <b>OK</b> or <b>NotOk</b> .
Controller	
Latest run	Time and date when the scheduled task was executed.

|--|

Parameter	Description
Error	One of the following error codes is displayed if the status is <b>NotOk</b> .
	ControllerNotOnline
	ControllerNotFound
	NoWriteAccessToStorage
	• ExportFailed
	• ImportFailed
	• FileNotFound
	• TimedOut

Table 40: Scheduled export and import workspace: Results menu

## System administration - Scheduled Import file

This menu is visible if the *Scheduled task type* is selected to **IMPORT CON-TROLLER CONFIGURATION**.

Menu item	Description
File name	The file and name must be a previously exported configuration file. It must be in the format : *.tar.gz
Browse	The command opens the browser window to locate the import file.

Table 41: Scheduled export and import workspace: Import file menu

The import file is loaded into ToolsTalk 2 and the scheduled task runs at the configured times.

- ( A file import does not change the program of the controller. It changes every setting and configuration except the factory IP address.
- ( A scheduled file import can only occur if the controller is online at the time of the import.

## Scheduled task - backup location

This menu is visible if the *Scheduled task type* is selected to **EXPORT CON-TROLLER CONFIGURATION**.

Parameter	Description
Save location	Enter a valid path to the location to which the export file is to be written. The de-
	fault value is empty with an error indicator 🕑 that shows the server does not recognize the location as a valid path.
	The path must be valid when the scheduled task is executed.

Parameter	Description
Filename	The exported file is in the format : *.tar.gz
	It can later be used to import configurations to controllers or sent to Atlas Copco for debugging purpose or failure analysis.
	The default filename is something like <i>PFExport_</i> < <i>controller-name</i> >_< <i>Date-code</i> >. <i>tar.gz</i> .
	System variables can be used to differentiate and to create unique filenames.
Folder per controller	Switch with Yes or No position.
	When set to YES, each export will be saved in a separate sub folder.
	When set to NO, the exports will be saved in the Save Location folder.
Folder name	System variables can be used to differentiate and to create unique folder names.

Table 42: Scheduled export and import workspace: Backup location menu

System variables can be used to specify file names and folder names for the export. They are added at runtime, to the file name or folder to create unique export files or locations.

The system variables are written inside brackets, and the following may be used:

- [ControllerName]
- [IpAddress]
- [ControllerSerialNumber]

It is possible to combine text with system variables. An example is *Sta-tion\_3\_[ControllerName]\_[IpAddress]*. If the controller name is ABC and its IP address is 10.25.25.180, the resulting filename at runtime will be *Sta-tion\_3\_ABC\_10.25.25.180.tar.gz*.

( A scheduled file export can only occur if the controller is online at the time of the export and that the export path is valid.

## Push configurations to a controller

ToolsTalk 2 contains mirrored data per each controller that is connected to the ToolsTalk 2 server. Data is automatically copied from the controller to Tool-sTalk 2 at first connection, at reconnecting or at any configuration made in the controller or in the web interface.

Data from ToolsTalk 2 to the controller is **not** sent automatically. The operator must push data to the controller for the changes to apply.

A controller that is **offline** can have its configuration settings or parameter values changed by the ToolsTalk 2 application, the data is then stored and can be pushed later.

If any configuration settings are changed in ToolsTalk 2, the **Push** indicator **O** appears next to the controller name in the structure listing and also next to the tightening programs that have been changed.

• Configurations can be made in the ToolsTalk 2 interface regardless if the controller is online or offline.

- Configurations can only be pushed to a controller in online state. If the controller is offline, the command is ignored.
- A push can be made to multiple controllers simultaneously.
- As soon as the **Push** command is successfully executed, the indicator disappears.
- ( When the **Push** indicator ( is shown, the push marked items are **blocked** from being changed through the controller or web interface.

To push parameters to one or more controllers:

- 1. Click the **Push** indicator **(**) next to the controller or the icon in the menu. The **Controllers to push** pop-up window appears.
- 2. There are some optional ways to push the configurations:



- A Mark this check box in order to push all configurations at once. This will apply to all controllers in the list.
- B All configurations for the selected controllers will be pushed. Select controllers by marking the corresponding check box.
- C Expand the list of configurations for a controller and handpick what configurations to be pushed. The remaining configurations will still be in the list after the selected ones have been pushed.
- **3.** Click the **Push** command button (D).

## ▲ WARNING Risk of injury

A change in configuration to the tightening program may cause unexpected torque, rotational direction, or speed in the system(s) where the tightening program is currently in use. This could result in severe bodily injury and/or property damage.

 Check the tightening program configurations after adding a new program or after applying changes to an existing program.

# IO signals PF6 FlexSystem

**To FlexSystem** 

Parameter ID	Name	Description
10010	Start tightening	Active signal starts tightening. Once input goes inactive the tight- ening shall be stopped.
10020	Select input	Set to the number of the mode to use in next tightening. Valid modes are 1-255.
10024	Tightening pulse start	Will start a tightening, if the system is ready for start.
10030	Tightening pulse stop	Will stop any ongoing tightening immediately.
10045	External identifier	The identifier will be included in the result and connects the result with the part.
10054	Channel command	Sends command to a specific chan- nel.
10055	Enable operation	Enables synchronized operations.
10056	Reset cycle status	Resets cycle related status.
10057	Disable test bolt	
10062	Reset system error	

EN

## From PF6 FlexSystem

Parameter ID	Name	Description
42	Controller switched on	Set to true at start up of IOEx- change.
72	Select mode id	The actual id of the selected mode, 0 if no mode selected.
75	Cycle OK	Synchronized tightening cycle ended with OK result.
76	Cycle NOK	Synchronized tightening cycle ended with NOK result
77	Cycle complete	Synchronized tightening cycle ended and result is stored
78	Cycle running	Synchronized tightening cycle is running

#### References

Parameter ID	Name	Description
79	Bolt tightening status	Bit coded status information for each bolt:
		• Bit 4: Bolt Running
		• Bit 5: Bolt Inhibited, mirror of Inhibit_Channel_XX
		• Bit 6: Bolt Retry, that is, run- ning reject management(a)
		• Bit 7: Spare
80	Channel tightening status	Status for individual channels in a synchronised tightening, 50 channels are supported.
81	Channel hardware status	HW status for individual channels
82	Cycle ready to start	Indicates if it is possible to start a new tightening
83	No system error	Set if there are no hardware errors in the system
85	Software release version	
86	Software major version	
87	Software minor version	
88	Configuration version	
91	Test bolt activated	
102	No system warning	
10045	External identifier	Identifier sent from external system
20036	Emergency stop	Activated if the system is emer- gency stopped

# **Overall Status Additional Information**

On the multiple level and the overall level for each bolt there is a field called **Overall Status Additional Information**. The possible parameters for this field are described in the table below:

Parameter	Comment
Repaired	The total status of the tightening is OK, but at least one error that was repaired occurred during the tight- ening.
Terminated By Reject Management	The bolt did not have any errors of its own but was ordered to terminate due to an error on another bolt.
Reject Management Termination Failed	The bolt was ordered to terminate and an error oc- curred while executing the termination path.
Stopped	The tightening was ended due to a stop signal from the outside, for example <i>Machine stop</i> sent through fieldbus or if the tool trigger was released.
Emergency Stopped Tool Error	The tightening was ended due to emergency stop. The tightening was ended due to a hardware error in the tool.

ToolsTalk2 FLEX EN References **Parameter** Comment Drive Error The tightening was ended due to a hardware error in the drive. Inhibited The device was not allowed to run, since outside signal blocked it. InvalidPset The controller has loaded an invalid tightening program. PreStartCheckFailed The preStartCheck state of Controller failed, it can be many reasons, such as tool errors, emergencyStop is active and the system received a stop signal and so on. The bolt was ordered to repair and an error occurred **Reject Management Repair Failed** while executing the repair path.

# File formats for export and import

Export and import of controller configurations and results can be done from different places in the ToolsTalk 2 application. An export can also result in different file content.

- Export tightening results and events for further processing.
- Export log files for debug assistance from an Atlas Copco service engineer.
- Export controller configuration that can be used to copy settings to another controller.

An export of controller data can vary between controller type and between controller software version. For a detailed description of the file format and the file content, please refer to the documentation for each controller and version.

The tables provide a summary of the ToolsTalk 2 exports.

Location	Path	File type and format	Usage
Controller library configu- ration		*.json	Export of controller con- figurations and to create controller templates.
			Used inside ToolsTalk 2.
Fieldbus configuration	IIV	*.json	Export of fieldbus config- urations. Used to copy configurations. Used to- gether with the import command.
			Used inside ToolsTalk 2.
Controller software and data management		*.tar.gz	Used to make a complete export of controller results and configurations from a controller. It is also possi- ble to export Tool logs.
			Can be used to make im- ports of configurations and parameters of a previ- ously exported file.

References

## ToolsTalk2 FLEX

Location	Path	File type and format	Usage
Scheduled controller export and import		*.tar.gz	Used to make a complete scheduled export of con- troller results and configu- rations from a controller.
			Can be used to make scheduled imports of con- figurations and parameters of a previously exported file.
Controller export and import	<b>;; 0</b>	*.tar.gz	Used to make a complete scheduled export of con- troller results and configu- rations from a controller.
			Can also be used to make scheduled imports of con- figurations and parameters of a previously exported file.
			Used as an alternative route if user rights prevent access to the global icons.
Result export		*.csv	Used to only export tight- ening results from the controller
Controller software		*px2it.zip	Load new controller soft- ware.

Table 43: Export/import

## File formats

File type and format	Usage
*.json	A file format used within the ToolsTalk 2.
	The files can be used to copy configurations and parameter settings.
	The file format can not be used by the ToolsTalk 2 application.

File type and format	Usage
*.tar.gz	Used to make a complete export of controller results and configurations from a controller.
	The file format can not be used by the controller. The file can contain the following modules:
	• A folder with configurations and parameters, that is used by a subsequent import.
	• Several log and data files. Only used by Atlas Copco for debug information in case of error.
	• *_events.csv. A result file listing the controller events.
	<ul> <li>*_results.csv. A result file listing the controller tightening results.</li> </ul>
*.csv	Used to only export tightening results or events from the controller.
	This file is included in the *.tar.gz file.
	The csv files uses different characters to separate the fields depending on the language setting in the controller.
	The fields can vary between controller software ver- sions.
*px2it.zip	Only used to load controller software. Does not con- tain any configurations or parameter settings.

Table 44: Export locations and formats

Original instructions



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