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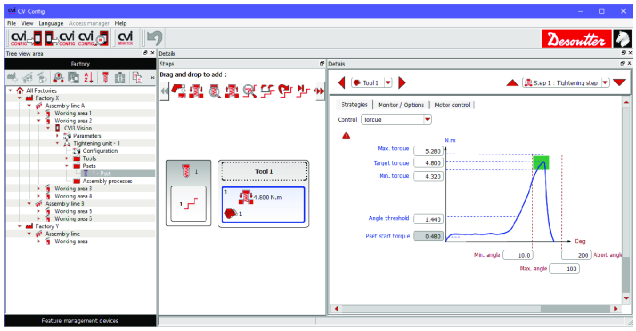
CVI CONFIG

Configuration Manual



⚠ 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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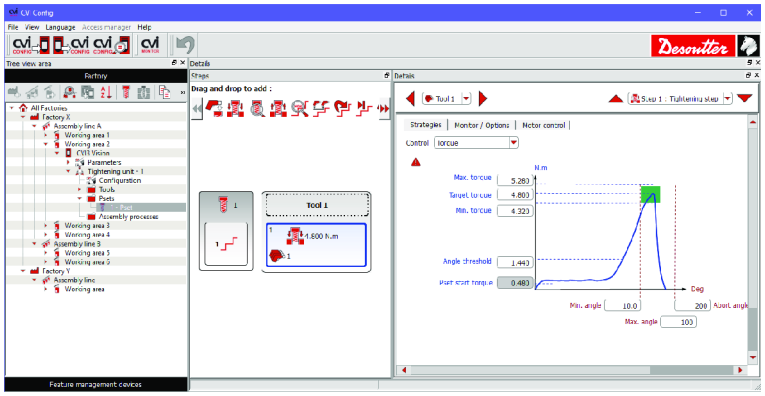
Introduction

Description

CVI CONFIG



CVI CONFIG is designed to set your systems point to point or via network with an intuitive and guided interface.

From your computer, you can set up Desoutter tightening products, cord tools, cordless tools, WI-FI cordless tools, accessories, peripherals and tightening processes.
You can also configure Fieldbus, protocols, backup and you can send data to CVINET WEB for traceability.

CVIMONITOR

CVIMONITOR is included in CVI CONFIG and is intended to monitor and diagnostic in live your systems.

- Check directly Inputs/Outputs and Fieldbus for an easy commissioning.
- View in real-time tightening results and curves.
- Monitor your system by viewing and analyzing all actions performed by the system (user infos).
- Set preventive alarms for tools, test LEDs and triggers, calibrate tools, get all information about tools.

CVIMONITOR can also be used in standalone and launched directly from the deskop launch bar.
In that case, tightening products must be connected to the PC via an Ethernet cable.
And cordless tools must be connected to the PC by using eDOCK.

- Collect and display the last 100 results executed by tools.
- Set up network configurations and WI-FI settings of cordless tools.
- Perform maintenance tasks.

Read before starting

The following equipment has been installed in the workstation:

- Tightening tools, accessories, I/O and external peripherals have been installed and connected to the tightening products.
- CVI CONFIG has been installed on the computer.

About configuration manual

This manual describes how to set up a workstation, an assembly line, one or more factories.

ⓘ To learn how to create a Pset, an Assembly Process, refer to the user manual Tightening methods and Assembly Processes available at https://www.desouttertools.com/resource-centre (printed matter 6159925480).

ⓘ About Fieldbus, refer to the user manual available at https://www.desouttertools.com/resource-centre (printed matter 6159929610).

Getting started

Liability

Many events in the operating environment may affect the tightening process and shall require a validation of results. In compliance with applicable standards and/or regulations, we hereby require you to check the installed torque and rotational direction after any event that can influence the tightening result. Examples of such events include but are not limited to:

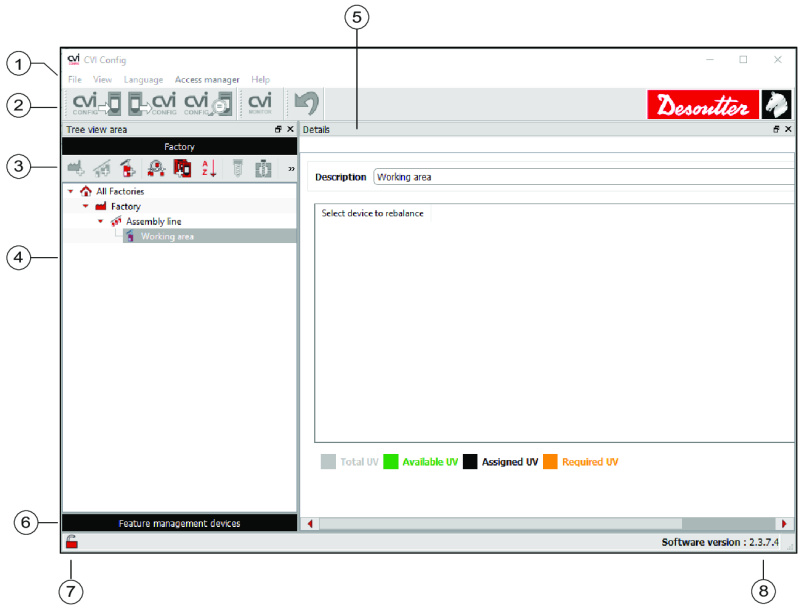
- initial installation of the tooling system
- change of part batch, bolt, screw batch, tool, software, configuration or environment
- change of air- or electrical connections
- change in line ergonomics, process, quality procedures or practices
- changing of operator
- any other change that influences the result of the tightening process

The check should:

- Ensure that the joint conditions have not changed due to events of influence.
- Be done after initial installation, maintenance or repair of the equipment.
- Occur at least once per shift or at another suitable frequency.

Overview

Description of the start screen



1	Menu
2	Tool bar
3	Tree view area
4	Tree view tool bar
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6	Feature management devices
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8	Software version

Icons and tips

Tool bar

	Click this icon to update CVI CONFIG.
	Click this icon to update the product.
	Click this icon to compare data between CVI CONFIG and the product.
	Click this icon to launch CVI MONITOR.
	Use this icon to cancel your last action.

Tree view tool bar

	Click this icon to **add a factory**.
	Click this icon to **add an assembly line** in the factory.
	Click this icon to **add a working area** in the assembly line.
	Click this icon to **scan Ethernet networks**.
	Click this icon to **add a tightening product**.
	Click this icon to **sort** the item alphanumerically.
	Click this icon to **add a Pset**.
	Click this icon to **add an Assembly Process**.
	Click this icon to **copy** the item.
	Click this icon to **paste** the item.
	Click this icon to **delete** the item.
	Click this icon to **import** the item.
	Click this icon to **export** the item.

There is no button **Save**.
All modifications are saved in real time.

The following characters are prohibited: **" ? < > &**.

The number of characters allowed for names and descriptions: **100**.

Click **Help** in the menu to display the user manual.

To quit CVI CONFIG, go to the Menu and click **File / Exit.**

Tightening products

	**CVI3 Essential** controller can drive 1 hand-held cord tool.
	**CVI3 Function** controller can drive 1 hand-held or fixtured cord tool.
	**CVI3 Vision** controller can drive 1 cord tool and 1 cordless tool by default. It is possible to extend the number of cordless tools by using an ePOD.
	**TWINCVI3** controller can drive 2 cord tools in a synchronous or asynchronous mode.

A **workgroup** is a system designed to drive from 3 to 14 fixtured cord tools.
It is composed of a single primary controller and several secondary controllers. The primary controller drives the tools. It is also the unique access point for every communication interface used on the system.
Configure the system as you would do for a synchronous TWINCVI3.

- **CONNECT-W** has an embedded WI-FI access point and allows to manage up to 10 tools with internal access point and 20 with an external access point.
- **CONNECT-X** communicates with an external WI-FI access point and allows to manage up to 20 tools.

Advanced stand-alone cordless nutrunners.

- EABA
- EPBA
- BLRTA

WI-FI cordless nutrunners used in **stand-alone**.

- EABS
- EABC
- EPBC
- BLRTC

Tightening units

Tightening units (also named TU) are intended to manage the tightening tools.

Tightening units are managing:

- the tightening process (Pset or Assembly Process)
- the run reverse parameters
- the management of curves per tool
- the configuration of identifiers
- the association of Pset with sockets or bits
- many options such as NOK report, storage of results, etc... .

CVI3 Essential

Icon	Type	Description	Associated tools
	Tightening unit - 1	This tightening unit manages 1 hand-held cord tool.	EAD / EID ERP ERS / ERSA

CVI3 Function

Icon	Type	Description	Associated tools
	Tightening unit - 1	This tightening unit manages 1 hand-held or fixtured tool.	EAD / EID ERF ERP ERSx EFDx

CVI3 Vision

Icon	Type	Description	Associated tools
	Tightening unit - 1	This tightening unit manages 1 hand-held or fixtured tool.	EAD / EID ERF ERP ERSx EFDx

Icon	Type	Description	Associated tools
	Tightening unit - 51	This tightening unit manages 1 cordless tool.	EABS EABC EPBC BLRTC

TWINCVI3

Icon	Type	Description	Associated tools
	Asynchronous tools (by default)	2 tightening units with 1 tool each (hand-held or fixtured)	EAD / EID ERF ERP ERSx EFDx
	Synchronous tools	1 tightening unit with 2 tools (hand-held or fixtured)	EAD / EID ERF ERP (except ERP high torque) ERSx EFDx

CONNECT-X / CONNECT-W

ⓘ Each tightening unit has to be activated by UV (Unit Values) which have been already defined during the configuration step and which are supplied in an eWallet.

Icon	Type	Description	Associated tools
	Premium	This tightening unit manages cordless tool with full traceability.	EABS EABC EPBC BLRTC
	Essential	This tightening unit manages cordless tool with OK/NOK traceability.	EABS EABC EPBC BLRTC
	E-LIT Wi-Fi	This tightening unit manages cordless tool with OK/NOK traceability.	ELC-A-W ELC-P-W

Customizing general settings

How to change the language

ⓘ The language is set to **English** by default.
Any user can change the language at any time.

English	Bulgarian	Korean	Japanese
French	Hungarian	Slovak	Chinese
Spanish	Dutch	Czech	Polish
German	Portuguese (Brazil)	Turkish	
Swedish	Italian	Romanian	

Go to **Menu** and click **Language**.
Select a language in the list.
Changes are automatically applied.

Customizing the workspace

Go to **Menu** and select **View**.
Select and tick an item or all items to display the views and toolbars at your convenience.

ⓘ In case of any problem, tick **Restore default layout**.

Features

How to set up a tree view

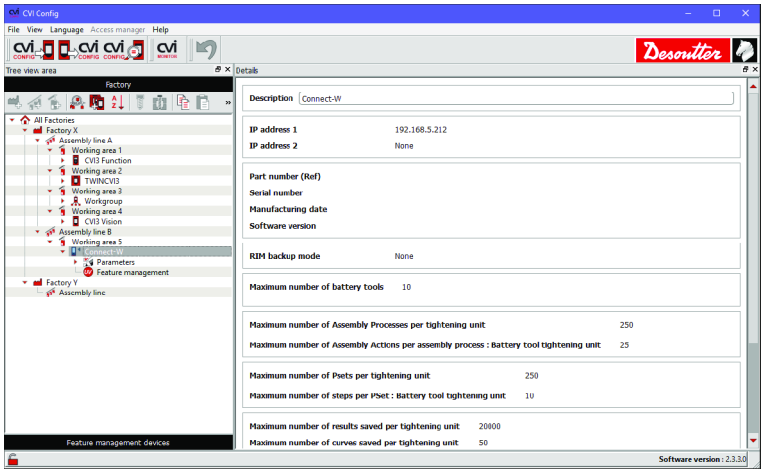
Tree view

The tree view is used to sort your tightening products in such a way that they match their physical position in the factory.

	All factories
	A **factory** is a group of assembly lines.
	An **assembly line** is a group of working areas.
	A **working area** is a line segment where a specific assembly action is done. The working area contains one or more tightening products.

Add tightening products in working areas.

Example of tree view



Factories X and Y are part of **All factories**.

Factory X is composed of 2 Assembly lines: A and B.

Assembly line A is composed of 4 working areas.

Working area 1	The assembly action is performed manually by 1 operator. 1 CVI3 Function controls 1 cord tool.
Working area 2	The typical example is the twin-spindle machine. 1 TWINCVI3 controls 2 cord tools in a synchronous mode.
Working area 3	The typical example is the wheelnut machine. 1 workgroup is composed of 1 CVI3 Vision (master) and 4 CVI3 Function (slaves) and controls 5 cord tools.
Working area 4	The assembly action is done manually but assisted by a positioning arm driven by the system. 1 CVI3 Vision controls 1 cord tool handheld by one operator and 1 wireless tool handheld by a second operator.

Assembly line B is composed of 1 working area.

Working area 5	8 different assembly actions are performed in a WI-FI area. 1 CONNECT is managing the WI-FI cordless tools handheld by operators.

Offline or online setup

Offline setup

Offline setup means that products and tools are not connected to the computer where CVI CONFIG is installed. Create all configurations in the tree view area and when it is over, connect the tightening products to the computer and update the configuration in the product one by one.

ⓘ Warning! Check not to overwrite settings of the tightening product by mistake.

Online setup

Connecting tightening products to the computer via an Ethernet cable or network means that you can use the **Scan for systems** button to build up the configurations in the tree view area.
Products and tools will be recognized by the software.

ⓘ Warning! Check that the IP address of each product is unique.

Do not forget to update products or CVI CONFIG each time you make a modification.
Configurations must be identical on both sides all the time.
Use the **Compare** button in the tool bar to verify that configurations are identical on both sides.

How to connect tightening products to the computer

How to connect a CVI3 controller to a computer

Plug an Ethernet cable to the computer and to the Ethernet port (DHCP server) of the front panel.

How to link CONNECT to a computer

Plug an Ethernet cable to the computer and to any available Ethernet port of the inside panel

In the computer, go to **Network and Sharing Center** and change the IP address of the computer for a compatible **static IP address** . Change also the subnet mask if needed.

How to connect cordless tools to a computer

Valid for:
- Advanced cordless tools
- WI-FI cordless tools used in stand-alone

Connect an eDOCK to the tool and to the computer as described in the manual dedicated for the tool.

How to build up your tree view area

Go to the **Tree view area**, build up your own architecture and create as many configurations you want.

	Click this icon to **add a factory**.
	Click this icon to **add an assembly line** in the factory.
	Click this icon to **add a working area** in the assembly line.

Adding products by scanning Ethernet networks

Check the product is connected to the computer.
Select the working area where to add the product.

Click this icon to **scan Ethernet networks**.

Go to the column **Action**, click **Add to a working area**.
Click **OK** and then **Exit** when the transfer is done.

Notice that product settings and tool characteristics are displayed as the software has uploaded all data during the scan.
Repeat the procedure for all products you have until the tree view is finished.

How to add products offline

Go to the tree view area.
Select the "Working area" where to add the product.

Click the icon of the product to select it.
Customize the description.

Enter a **valid** IP address.

Select the number of tools allowed per tightening unit.
Click **Finish**.

How to import a product offline

Use this function to import a configuration you have previously saved on a **USB key** or in the default folder **C:\Program Files (x86)\Desoutter\CVI CONFIG\export_controller.**

- The configuration file has a **.ctlr** extension when the export has been made by using CVI CONFIG.
- The configuration file has a **.zip** extension when the export has been made by using the tightening product.

Right-click **Working area** and select **Import**.
Click **OK** to finish.

How to update a tightening product from CVI CONFIG

ⓘ The configuration of the tightening product will be overwritten.

Check the IP address is the correct one.
Click **Start transfer**.

ⓘ If the access to product fails (connection timeout), verify the selected network interface.

How to set up tightening products

Getting information on the product

Click **Update** to upload information from the tightening product.

Product capacities can vary according to:

- the model of product
- the ePOD model connected
- etc...

Change the description to customize your configuration.

Click this icon to update the product.

Localizing the settings of a product

Go to the tree view and select the product.
Click **Parameters** -> **User interface**.

The following torque units are available: **Nm, ft lb, in lb, kg m, kg cm, oz in**.

The following speed units are available: **rpm** or a **percentage of the maximum tool speed**.

The language is set to **English** by default.
Scroll the list and select a language.

Keypad beep enabled
When this function is enabled, a sound is emitted each time a button is pressed.

Backlight auto off (sleep mode)
The screen will be automatically turned off after the timeout.
The screen will turn on as soon as the screen is touched or when a tightening result is displayed.

Back light timeout
The timeout value for the automatic switching off can be set between 1 and 60 minutes.

Click this icon to update the product.

Synchronizing date and time of a product

This function is used to synchronize the date and time to ensure that the tightening results are stored with the correct date and time.

Go to the tree view and select the product.
Click **Parameters** -> **Date and time**.

Select the **Sync source** which will set the date and time in the product.

- None
- CVI CONFIG
- CVINet
- Fieldbus
- Ethernet protocol
- Server NTP --> Enter the server address and the time zone.
- Toolsnet

Select the **date and time** format.

- DD/MM/YY hh:mm:ss
- YY/MM/DD hh:mm:ss
- MM/DD/YY hh:mm:ss

Click this icon to update the product.

How to change the IP address of a product

Be sure that each IP address is unique and valid.

Go to the tree view and select the product.
Click **Parameters** -> **Networks** -> **TCP/IP - Ethernet**.

Enter the new IP address in both boxes **New IP address** and **Current IP address**.
Check that the subnet mask is compatible with the subnet mask of the computer.

Click this icon to update the product.

How to quickly select a network interface (CVI3 controller)

Go to the tree view.
Select the product.

Go the tool bar on the top.

Right-click this icon to select the interface.

Select:
- Ethernet 1
- Ethernet 2 (if defined)
- Front panel

How to quickly select a network interface (CONNECT)

Go to the tree view.
Select the product.

Go the tool bar on the top.

Right-click this icon to select the interface.

Select:
- Ethernet 1
- Ethernet 2 (if defined)
- WI-FI (CONNECT-W)

How to send tightening results for traceability

Go to the tree view and select the product.
Click *Parameters / Networks*.
Click the tab *CVINet*.

Tick *CVINet data collection activated* to activate the screen.

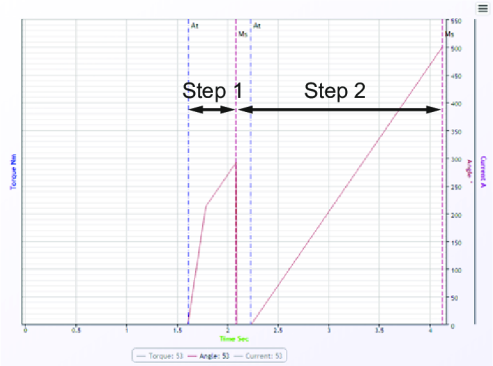
Enter the IP address and the port of the server where CVINet software is installed.

Select the data to collect:

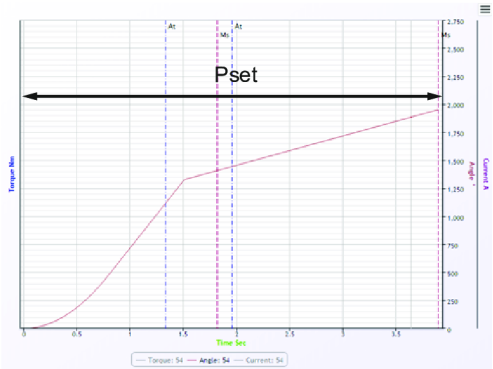
- Curves for OK tightenings
- Curves for NOK tightenings
- Assembly Process results
- User info codes

Select the type of angle:

- Step angle



- Pset overall angle



Buffer (FIFO) settings

Tightening products are regularly sending results to CVINet.
The purpose is to provide a full traceability even when the network connection is unstable.

Tick *Block if result buffer (FIFO) is full.*
1. The system is able to keep a defined number of results previously generated by each tightening unit (typically 10,000). The alarm threshold corresponds to the percentage of these results that have not been sent to the server and stored in FIFO memory.
2. When option "Block if FIFO is full" is enabled, a tightening unit is locked when the FIFO level is 100%. It allows

to ensure traceability of all generated results. The tightening unit is unlocked when connection is re-established and FIFO level is under 100%. When disabled, no lock is set when FIFO level is 100%, and traceability of all results is not ensured.

Select the *buffer (FIFO) size*. 10,000 tightening results is the value by default.

Enter the *alarm threshold*. 50 % by default.
The value sets the level of the FIFO that triggers an alarm message on the system display and activates the "Reporting alarm" output event. The system is not locked by this alarm. The alarm informs on possible communication issues with the server.
Maintenance operators can solve the issue before the system is locked (if option "Block is FIFO is full" is enabled), or before traceability of some results is lost (if option "Block is FIFO is full" is disabled).

Click this icon to update the product.

How to set up tightening tools

Triggers management

Some tools can start in different ways according to the model and the accessories mounted.
The standard way is **Start with handle trigger**.

If the tool is equipped with a different trigger, you need to declare the trigger mounted on the tool by using CVI MONITOR.

Select how to start the tool

- Start with front trigger
  This operator has to press the front trigger to start the tool.
- Start with push start
  The tool is pressed against the screw to start the tightening operation.
- Safety mode
  This mode means that the operator has to press two triggers at the same time to perform the tightening operation. The purpose is to ensure that the operator has both hands on the tool before triggering.
- Safety mode with timer
  This mode forces the operator to press the first trigger and then the second trigger in a defined time. Enter the maximum time in ms. When this time is reached and the second trigger is not pressed, the tool is locked and will not start.

How to declare a trigger for cord hand-held tools

To activate the screens, you need to have an ACCESS KEY USB stick with the right profile (configured with the Desoutter CVIKEY software).
If not, contact your CVIKEY manager for support.

Go to CVI CONFIG.
Select the product in the tree view.

Click this icon to launch CVI MONITOR.

Click this icon.

Select the tightening unit which drives the tool.
Click **Tool identification**.

Select the trigger to activate and click **Write to tool**.
A green tick indicates that the writing has been successful.

Go back to CVI CONFIG.

Click this icon to update CVI CONFIG.

Select the tightening unit which drives the tool.
Select the tool.
Click the tab **Identification**.
Click the **Update** button.
Click the tab **Setup**.

You can now select how to start the tool.

How to declare a trigger for cordless tools

Plug the eDOCK to the tool and connect it to the USB port of the computer.

To activate the screens, you need to have an ACCESS KEY USB stick with the right profile (configured with the Desoutter CVIKEY software).
If not, contact your CVIKEY manager for support.

Launch CVI MONITOR and click the tab **Tool**.
Click **Select**.

Select the trigger to activate.

Click this icon to write the new parameters into the tool.

Go back to CVI CONFIG.

Click this icon to update CVI CONFIG.

LEDs management

When the tool is equipped with a front light and/or yellow and blue lights, the tab **LED configuration** is automatically displayed.

Select the product in the tree view.
Select the tightening unit which drives the tool.

Select the tool.
Click **LED configuration**.

Select the duration of the front light:

- Disabled
- 0.15 minute
- 0.50 minute
- 1 minute
- 2 minutes
- 5 minutes
- 10 minutes

Assign a single input or output to the LED by dragging and dropping items from the left to the right.
Drag and drop it to the left to cancel the action.

Click this icon to update the product.

How to set up run reverse settings

Go to the tree view and select the product.
Select the tightening unit which drives the tool.

In the pane "Run reverse parameters", select the reverse mode and the parameters of the run reverse action.

Reverse once	The tool starts in reverse direction when the operator presses the start trigger. Once the tool has run, the tightening direction is automatically re-activated.

Alternate (by default)	The tool starts in reverse direction when the operator presses the start trigger. When the operator pushes again the reverse button, the tightening direction is selected.
Reverse disabled	The tool cannot start in reverse direction.
Double hit	The operator has to quickly press the reverse button twice in order to switch from the tightening direction to the reverse direction (and vice versa).

Speed	in %	This can be used for any run reverse operation.
Minimum torque and minimum angle	Nm Deg	These values will allow to detect a real loosening of the assembly. The "Fastener loosened" output event is activated.
Maximum time	second	The tool stops automatically after this time.
Maximum number of turns	0-999	The tool will stop automatically when this number is reached.

Click this icon to update the product.

Selecting how to unlock the tool after a NOK report

Go to the tree view and select the product.
Select the tightening unit which drives the tool.

Go to the pane "Options on reject report" and select one of the following options.

Error acknowledge input unlock	The tool will be unlocked by actuating the *Error Acknowledge* input event.
Reverse direction unlocked	The tool will be unlocked by pushing the run reverse button or by selecting the reverse direction.
Run reverse unlocked	The tool will be unlocked by performing a run reverse set to minimum torque and angle reached.

How to lock a cord tool at the end of a tightening

Go to the tree view and select the product.
Select the tightening unit which drives the tool.

Tick *Wait for report acknowledgement* to lock a cord tool at the end of a tightening.

The tool will be unlocked when *Report acknowledge* input event is activated.

Customizing the tool display

Torque and angle results are displayed by default.

The following information is also available.

Batch count	The Assembly Process batch count and batch size are displayed as follows: xx/xx.
Ellipse	The Assembly Process ellipse is displayed.
Pulses	The number of pulses done during the last tightening executed is displayed.

Select the product in the tree view.
Select the tightening unit which drives the tool.
Select the tool.

Click **Setup**.
Select which information to have on the tool display.

Click this icon to update the product.

Enabling the tool sound

Beeps have been created to alert the operator in case of problems or events that may happen during the tightening operation. This feature is not enabled by default.
By default, **Tightening NOK** is enabled with 1 long beep count in a low pitch.

It is also possible to setup sounds for "Tightening OK" and "Batch OK" events.

Select the product in the tree view.
Select the tightening unit which drives the tool.
Select the tool.

Click **Setup**.
Click **Sound enabled**.

Click this icon to update the product.

Tool power saving mode

The tool display switches off automatically after 2 minutes of inactivity.

Power saving
The WI-FI is de-activated after 5 minutes of inactivity.

Power off
The tool powers off after 30 minutes of inactivity.

Select the product in the tree view.
Select the tightening unit which drives the tool.
Select the tool.

Click **Setup**..
Move the cursor in the "Power saving" box to set up your own configuration.

Click this icon to update the product.

Selecting which battery pack to use

Valid for EPBx and BLRTx tools only.

This feature allows you to select the type of battery pack the operator is allowed to plug (18 V or 36 V or both).

Select the product in the tree view.
Select the tightening unit which drives the tool.
Select the tool.

Click **Setup**.

When a battery pack 18V is selected, the option **Automatically adjust speed settings** can be set.

When the option is disabled:
if a 18V battery pack is plugged and that the Pset have speed settings higher than the tool maximum speed allowed with a 18V battery pack, the tool is locked and the message "Speed settings" is displayed.

When the option is enabled:
if a 18V battery pack is plugged and that the Pset have speed settings higher than the tool maximum speed allowed with such a battery pack, the tool is not locked but speed settings are automatically adjusted with the tool maximum speed allowed with a 18V battery pack.

If a 18V battery pack is plugged and that the Pset settings have torque settings higher than the tool maximum torque allowed with a 18V battery pack, the tool is locked and the message "Torque settings" is displayed.

Click this icon to update the product.

Results/curves buffer and disconnection

The WI-FI cordless tool is able to keep a defined number of results and curves previously generated (typically 10,000).

By default:
- the tool is not locked when the communication is lost with the system
- the disconnection timeout is set to 10 seconds.

Select the product in the tree view.
Select the tightening unit which drives the tool.
Select the tool.
Click **Setup**.

When the option **Block if tool results buffer is full** is enabled, the tool is locked when the buffer level is 100%. This allows to ensure the traceability of all generated results.
The tool is unlocked when the connection is re-established and the buffer level is under 100%.
When the option is disabled, no lock is set when the buffer level is 100% and the traceability of results is not ensured.

When the option **Lock tool at disconnection** is enabled, the tool and system interconnection is verified based on lifetime period set.
The tool locks itself automatically when the lifetime period is over without feedback from the system.
To ensure a full synchronization, the tool authorizes to execute another tightening only when the previous tightening done has been reported to the system.

Click this icon to update the product.

How to access to the tool maintenance menus via CVIMONITOR

This function allows you to navigate in the following screens:

- Tool identification
- Upgrade firmware
- Tool test
- Motor align
- Tool calibration
- Tool working mode

Plug an eDOCK to the tool and connect it to the computer.

Go to CVI CONFIG.
Select the product in the tree view.
Select the tightening unit which drives the tool.
Select the tool.

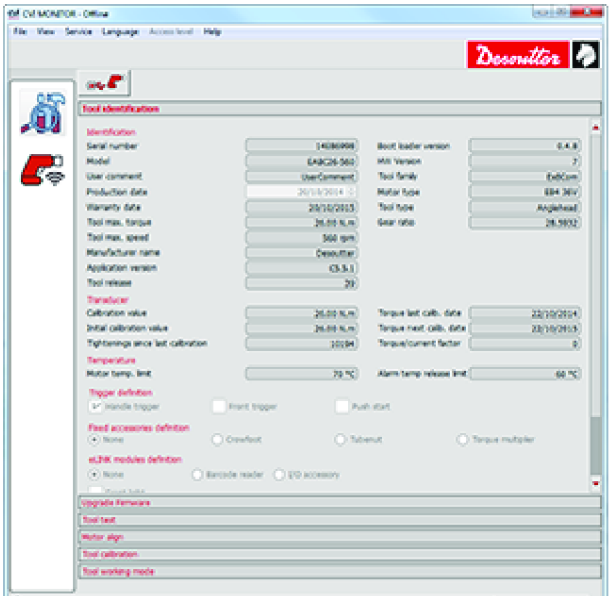
Go first to the tab **Information** and click **Update** to refresh the screen and check the connection with the tool is correct.
Click **Setup**.

For **cordless** tools, click the button "Tool maintenance" at the bottom right of the screen.
For **cord** tools, click the button "CVIMONITOR" in the tool bar.

In the screen **Scan for systems**, click the tab **Tool**.
In the column "Action", click **Select**.

ⓘ Keep the cordless tool awake.

CVI MONITOR software is launched.



To activate the screens, you need to have an ACCESS KEY USB stick with the right profile (configured with the Desoutter CVIKEY software).
If not, contact your CVIKEY manager for support.

How to set up a tool barcode reader

ⓘ CVI CONFIG is able to automatically detect the accessory mounted on the tool.

Go to the tree view and select the product.
Click **Tools** and select the tool model.

Go to the pane **Details** on the right.
Click the tab **Tool barcode reader**.

Select the scan source. Tick the box **Scan button** or **Handle trigger** or **both**.
Enter the **Scan time** (3 seconds by default).

Click this icon to update the product.

How to set up a removable accessory

A removable accessory is intended to be attached **temporarily** to the output shaft of a tool for specific assembly. For example: customized heads (Crowfoot, torque multiplier, etc). Consequently, the tool parameters such as the maximum torque or speed will be dynamically adjusted, depending on the removable accessory characteristics (efficiency, gear ratio, etc).

Go to the tree view and select the product.
Go to **Parameters** --> **Removable accessories**.

Right-click **Removable accessories** and add one. Enter an unique name to describe it.

Before filling in the screen, collect the following technical data from the accessory manufacturer:

Efficiency coefficient	Mechanical efficiency of the accessory (between 0.001 and 1.000).
Gear ratio	The gear ratio is the ratio of the angular velocity of the input gear to the angular velocity of the output gear.
Max input torque	Maximum torque of the accessory input. It will replace the maximum tool torque if lower.

Inverter	Click this option to declare that the accessory inverts the rotation direction of the tool (between the input and output shafts of the tool). This parameter depends on the number of stages of the accessory: • If the number is odd, the accessory is not inverted. • If the number is even, the accessory is inverted.

Click this icon to update the product.

ⓘ You can associate one or more Pset requiring the usage of a removable accessory on the tool.

To get more information, refer to the user manual **Tightening methods and assembly processes**.

How to set up a Crowfoot

Some models of tools are standard-equipped with an close-ended head (Crowfoot).
Consequently, tool parameters can be modified, such as the input torque.

Go to the tree view and select the product.
Go to the relevant **Tightening unit** and click **Tools**.

Go to the pane **Details** and click the tab **Setup**.
Select a model of tool equipped with a Crowfoot.

Go to the tab **Crowfoot**.

To get information about parameters, go to chapter *How to set up a removable accessory [Page 20]*.

Click this icon to update the product.

How to set up a tubenut

Some models of tools are standard-equipped with an open-ended Crowfoot (Tubenut).
Consequently, the tool parameters can be modified, such as the re-indexing torque and speed.

Go to the tree view and select the product.
Go to the relevant **Tightening unit** and click **Tools**.

Go to the pane **Details** and click the tab **Setup**.
Select a model of tool equipped with a tubenut.

⚠ **WARNING Risk Of Injury**

To reduce the risk of injury, tools with an open geared front attachment must be equipped with a mechanical trigger safety guard or an additional front trigger.

► Both triggers must be activated simultaneously to allow the tightening start.

Go to the tab **Tubenut**.

To get information about the parameters, go to the chapter *How to set up a removable accessory [Page 20]*.

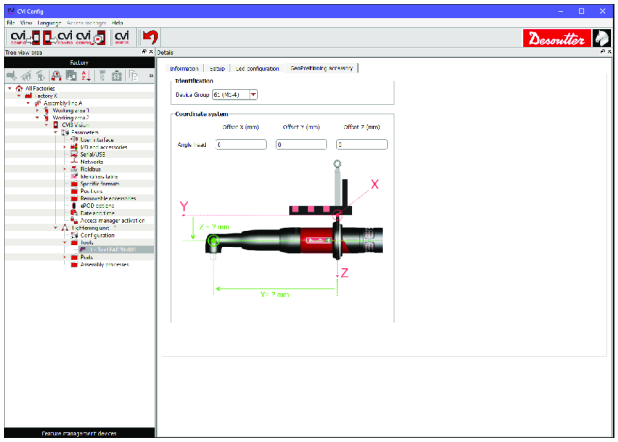
Click this icon to update the product.

How to setup a Geopositioning accessory

Go to the tree view and select the product.
Go to the relevant **Tightening unit** and click **Tools**.

Go to the pane **Details** and click the tab **Setup**.
In the box **Type**, select **Positioning**.

Click the new tab **Geopositioning accessory**.



Select the **Device group** (plug located at the back of the receiver):

- 61 (M1-4)
- 62 (M5-8)

Measure X, Y and Z and enter the coordinates of the system.

Go back to the tree view.
Click **Parameters / Positions**. Right-click **Positions** to add a sphere or a parallelepiped.

Select the number of the position (20 in total).
Enter a description.
Assign the tightening unit.

Click **Learning mode** to define the coordinates of the position.

ⓘ The blue LED of the tool is on.

Follow the instructions displayed on the screen.

ⓘ For the parallelepiped position, follow strictly the process order: 1, 2 and 3.

The display turns green when the coordinates are acceptable.
Click **Save** to validate.

Click this icon to update the product.

Feature management devices

Feature management devices

This section of CVI CONFIG will help you to manage the UVs of devices such as CONNECT and eWallet.

- How many available UVs are present on an eWallet.
- How to redistribute UVs among two eWallets or two CONNECT.
- How to use Demo UVs.

How many available UVs in an eWallet

Plug the eWallet to the USB port of the computer.

Launch CVI CONFIG.
Go to the tab **Feature management devices** at the bottom of the screen.
Click the eWallet.

Enter a description.

See the following information about the eWallet:

- Serial number
- Firmware version

The number of available UVs is in green.
The number of demo UVs is available.

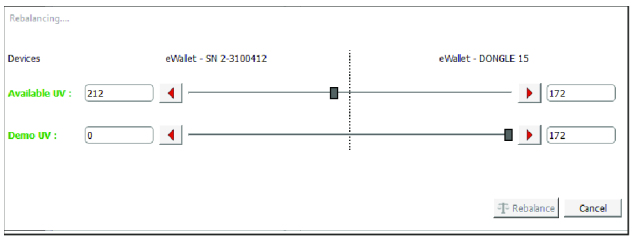
How to redistribute UVs

Connect two eWallets to the computer.

Launch CVI CONFIG.
Go to the tab **Feature management devices**.

Click each eWallet to see its content.
Click **Rebalancing**.

Tick each eWallet.
Click the button **Rebalance** at the bottom right.



Move each cursor to make your selection.

Click the button **Rebalance** to execute the action.
A green tick indicates the action is completed.

Click **Quit** to finish the action.

How to use Demo UVs

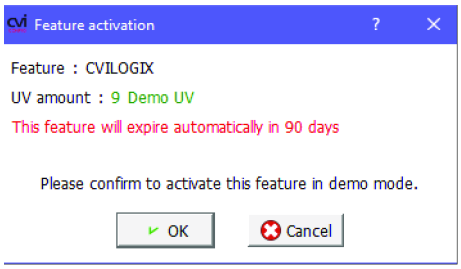
Demo UVs can be used in the same way as standard UVs but they last **90 days only** and when this time is over, tightening units are not active. The status of Demo UVs will change then from **Active** to **Expired**.

There are two possibilities:

- Suppress your configuration in the hub or in CVI CONFIG.
- Replace expired UVs to unlock the features.

When using Demo UVs, a specific icon is displayed.
Go to the pane **Current configuration**.

 Click this icon to get information about the feature.



Accessories and peripherals

How to set up eBUS accessories

How to use input/output events

I/O events are I/O functions that can be assigned to a physical input or output.

I/O events can be classified as follows:

Icon	Description	Example
	I/O dedicated to a tightening unit	Tightening OK
	I/O dedicated to a tool	Tool OK

Icon	Description	Example
	I/O dedicated to a system	Open Protocol activated

Right click an input to select the signal direction:

Direct	Input and event follow the same direction.
Not	Input is inverted compared to the event.

⚠ WARNING Risk Of Injury

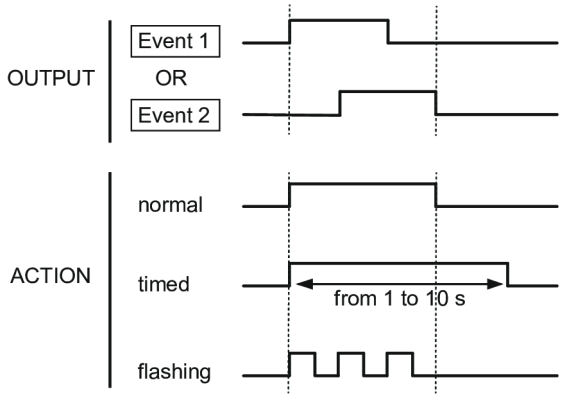
Changing output settings can affect actuators connected to the system.

When several outputs are assigned to the same physical output, right-click the output to select the logical operation:

- or (by default)
- and
- nor
- nand

Click the output number and select the type of action:

Normal	the output is maintained until one of the events changes.
Timed	The output is maintained during 10 seconds maximum.
Flashing	The output is flashing (375 ms on / 375 ms off).

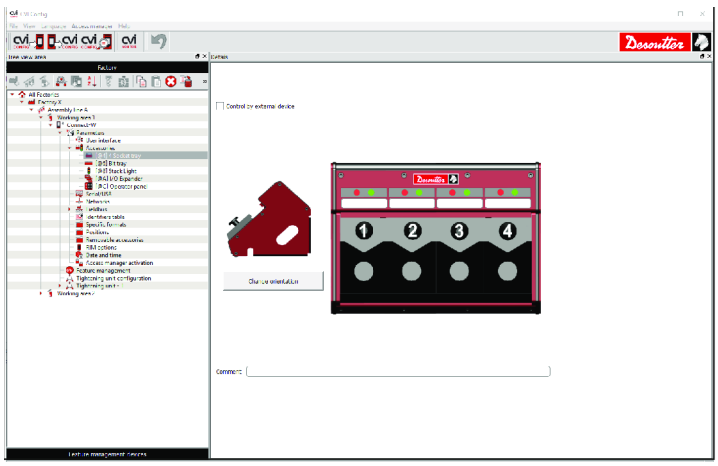


Socket tray

Check the accessory is connected to the eBUS port of the product.

Go to the tree view and select the product.
Go to **Parameters** --> **I/O and accessories**.
Right click **I/O and accessories**.

Select **Socket tray**.



ⓘ The address of the socket tray is @4 by default.

Click **Change orientation** if required. The LED number 1 is always the first left.
Go to the white label above the green and red LEDs and enter a **comment for each socket**.
Tick **Control by external device** to have the socket tray directly managed by an external device such as a PLC.

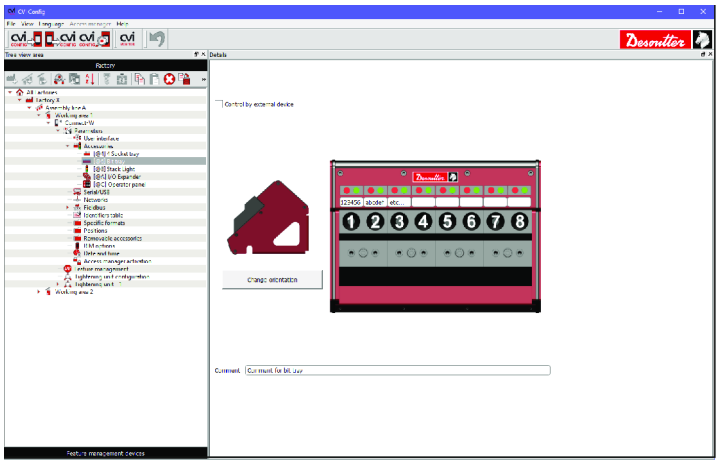
Click this icon to update the product.

Bit tray

Check the accessory is connected to the eBUS port of the product.

Go to the tree view and select the product.
Go to **Parameters --> I/O and accessories**.
Right click **I/O and accessories**.

Select **Bit tray**.



The bit tray has the same behaviour as the socket tray.
Refer to the chapter *Socket tray [Page 24]*.

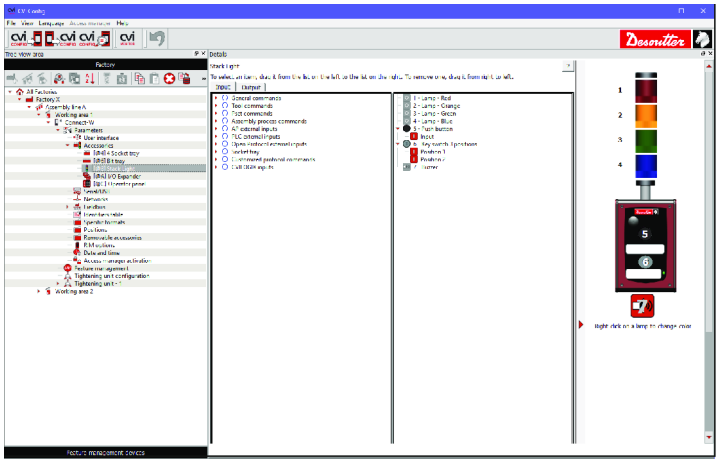
ⓘ The address of the bit tray is @6 by default.

Stacklight

Check the accessory is connected to the eBUS port of the product.

Go to the tree view and select the product.
Go to **Parameters --> I/O and accessories**.
Right click **I/O and accessories**.

Select **Stacklight**.



ⓘ The address of the stacklight is @8 by default.

Drag and drop input events to the push-button and the key switch.
Drag and drop output events to the lamps and the buzzer.

⚠ WARNING Risk Of Injury

Changing output settings can affect actuators connected to the system.

To get more information about input and output events, refer to *I/O events - logical input [Page 55]* and *I/O events - logical output [Page 48]*.

Customize the color of the lamps. Right-click on the picture of the lamp and change the color as desired.
Customize the name of the push-button and key switch. Click in the white label of the picture and write the new name.

Click **Set defaults** to delete your programming and restore the default configuration.

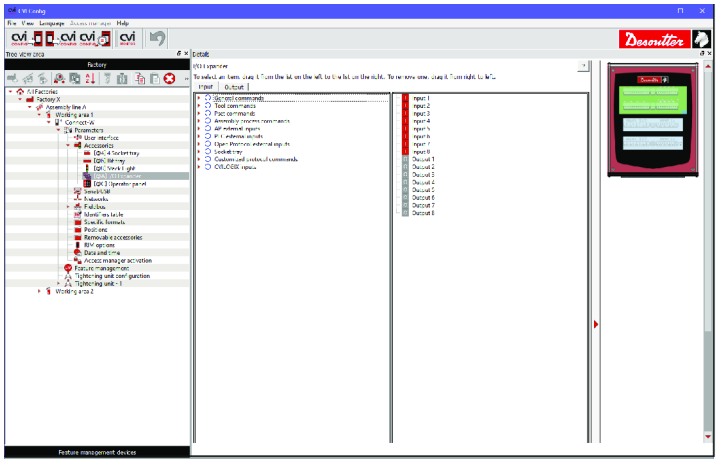
Click this icon to update the product.

I/O expander

Check the accessory is connected to the eBUS port of the product.

Go to the tree view and select the product.
Go to **Parameters --> I/O and accessories**.
Right click **I/O and accessories**.

Select **I/O expander**.



ⓘ The address of the I/O expander is @A by default.

Drag and drop input events to the input of the accessory.

Drag and drop output events to the output of the accessory.

⚠ WARNING Risk Of Injury

Changing output settings can affect actuators connected to the system.

To get more information about input and output events, refer to *I/O events - logical input [Page 55]* and *I/O events - logical output [Page 48]*.

Click **Set defaults** to delete your programming and restore the default configuration.

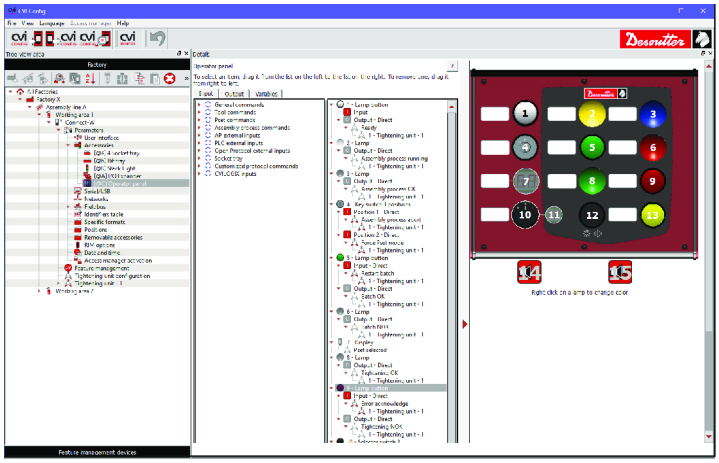
Click this icon to update the product.

Operator panel

Check the accessory is connected to the eBUS port of the product.

Go to the tree view and select the product.
Go to **Parameters --> I/O and accessories**.
Right click **I/O and accessories**.

Select **Operator panel**.



ⓘ The address of the operator panel is @C by default.

To change the default configuration, right-click an item in the picture and change the type of item.

Drag and drop input events, output events and variables to the accessory.

⚠ **WARNING Risk Of Injury**

Changing output settings can affect actuators connected to the system.

To get more information about input and output events, refer to *I/O events - logical input [Page 55]* and *I/O events - logical output [Page 48]*.

Click **Set defaults** to delete your programming and restore the default configuration.

Customize the name of the items. Click in the white label of the picture and write the new name.

Click this icon to update the product.

Positioning arm

A specific user manual named **How to configure the positioning system for Desoutter TRA and D53 arms** is available on the website at www.desouttertools.com.

Contact your Desoutter representative to get more information and support.

How to add an eBUS accessory

In case you have 2 eBUS accessories of the same type (for example, 2 socket trays) connected to the product, the address of each socket tray must be different.

1 - Change the number of the encoding wheel in the accessory.

Refer to the *Installation and upgrade* manual of CVI3 tightening controllers (printed matter: 6159924330) available at https://www.desouttertools.com/resource-centre.

2 - Declare this new address in CVI CONFIG.
Right-click the accessory and select **Change address**.

ⓘ Be sure that the address of each accessory is unique.

How to set up internal I/O (24 V)

ⓘ The product has an internal I/O connector (for example, CVI3 Vision).

Go to the tree view and select the product.
Go to **Parameters** --> **I/O and accessories**.
Right click **I/O and accessories**.

ⓘ Some of the most frequently used events are already assigned.

Drag and drop input events to the input of the connector.
Drag and drop output events to the output of the connector.

⚠ WARNING Risk Of Injury

Changing output settings can affect actuators connected to the system.

To get more information about input and output events, refer to *I/O events - logical input [Page 55]* and *I/O events - logical output [Page 48]*.

Refer to *How to use input/output events [Page 23]*.

Click **Set defaults** to delete your programming and restore the default configuration.

Click this icon to update the product.

How to set up serial/USB peripherals

Barcode readers, CVILOGIX are external peripherals connected to either RS232 or USB ports of products.

Delta measuring units, Open Protocol are external peripherals connected to RS232 ports of products.

The feature **Report output** allows you to output user-defined information on one of the serial ports.

ⓘ To avoid damaging the equipment, make sure the settings/wirings are the same in the peripheral, the tightening product and CVI CONFIG.

Go to the tree view and select the product.
Go to **Parameters** --> **Serial/USB**.

Select an equipment per port and fill in the data required for the exchange.

Baudrate	from 300 to 115200
Data bits	7 / 8
Stop bit	1 / 2
Parity	none / odd / even

Click **Enable power supply** to provide 5V (pin 9) to a peripheral, barcode reader for example.

When the equipment is **Report output**, select one of the following output formats:

- PC4
- CS5700
- Specific format (displayed only when created in the item "Specific formats".

Click this icon to update the product.

How to set up tracking systems

ⓘ For the installation and set up of the tracking base, refer to the Product Instructions of the tracking base, referenced 6159925540, available at https://www.desouttertools.com/resource-centre

Connect the tracking base to CONNECT.

Go to CVI CONFIG.
Go to CONNECT.
Click "Parameters > Tracking systems".

Tick "Enable tracking system".

Click "Parameters > Serial/USB".
Select the **USB** port on which the tracking base is connected, scroll the list and click **Tracking**.

Click this icon to update the product.

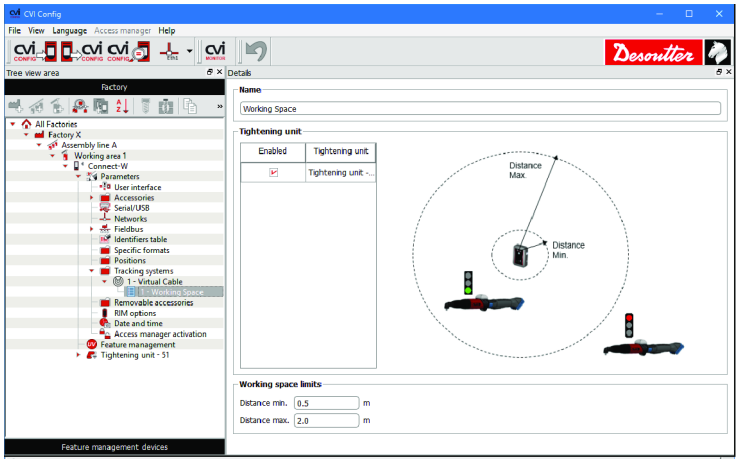
Click "Parameters > Tracking systems".

Go to the tab "Trackers".
Tick "Enabled" and enter the **MAC address of the tracker** (located on the front panel of the tool).

Go to the tab "Tracking bases".
Click "Add" and enter the name and the **MAC address of the tracking base** (located on the rear panel of the tracking base).

Right-click "Tracking systems" in the tree view area and add "Virtual cable".
Go to the tracking base list, select the **tracking base defined for the working space**.

Right-click "Virtual cable" to add the Working space.
Define the **tightening unit to enable for this working space**.
Enter the **distances min. and max.** from the center of the tracking base to define the limits of the working space.



Click this icon to update the product.

Now that this tightening unit has been declared for this working space, it is mandatory to **activate the feature** to authorize the tool to run.

Go to "Feature management".
Select the feature and activate it.

ⓘ If more than one working space is used, the feature "Multiple working spaces" is required.

Click this icon to update the product.

How to customize Sight displays

In the tree view, go to **Parameters** --> **Accessories** --> **Sight displays**.

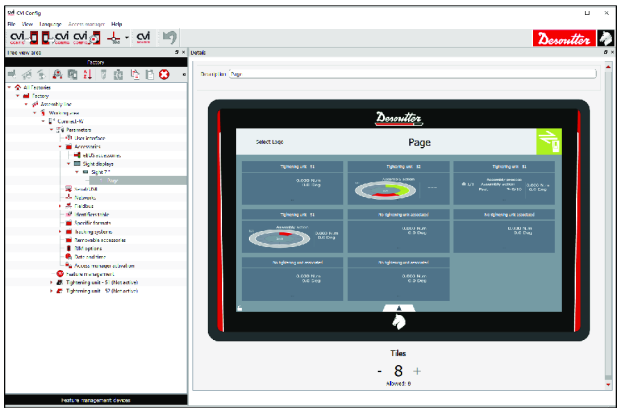
Right-click **Sight displays** to add one.
Up to 20 Sight displays can be plugged to CONNECT.

Change the description as desired.
Click "Select logo" and browse your computer to add one.

Right-click the Sight display just created and add a page.
Up to 10 pages can be created per Sight display.
Change the description as desired.
Click + to add a tile to the page.
Up to 8 tiles can be added to a page.

Double-click each tile and select:
- the tightening unit to use
- the type of view: Simple / Ellipse / Assembly Process.

For example:



Click this icon to update the product.

Go to the Sight display to select one of the configurations.
Refer to the user manual of Sight available at https://www.desouttertools.com/resource-centre.

How to set up identifiers

How to create an identifier

Go to the tree view and select the product.
Go to *Parameters / Identifiers table*.

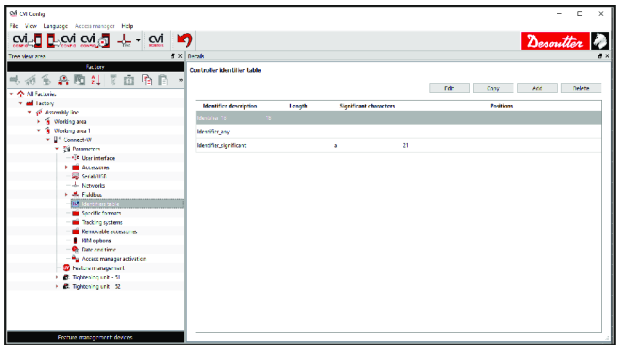
Click *Add* in the pane on the right.
Enter a description.

Accept any	Any identifier whatever the length or significant characters.
Identification by length	To be accepted, the identifier must fulfil a specified length. ⓘ Two different codes with the same length will have the same action.
Identification by significant characters	Significant characters must be found in the received identifier. Type the significant characters into the grid. ⓘ Two different codes with the same significant characters at the same place will have the same action.

ⓘ It is possible to combine *Identification by length* and *Identification by significant characters*.

When created, identifiers are listed in the identifier table.

For example:

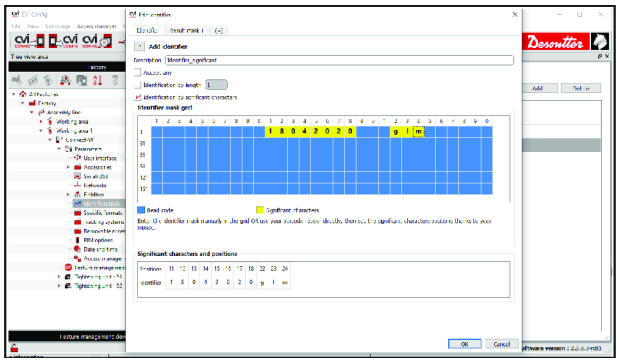


You can copy or delete any identifier.
Click *Import* to get identifiers from a .csv file.
Click *Export* to save your identifiers to a .csv file.

How to position characters in results

For each type of identifier, create identifier mask grids as many as you want.
Go to the identifiers table.
Click *Edit / Identifier* to set the significant characters positions.

Hereafter an example of a mask grid.



Enter the content manually and slide then the mouse on the significant characters you need and the boxes will turn yellow.
In the identifier mask grid, enter the mask manually by clicking into the boxes that will turn green.

ⓘ Up to 4 results masks can be defined to adjust or extend the number of characters of an identifier stored within a result.

How to save identifiers into results

Go to the tab *Identifiers configuration*.
Tick *Store identifier in results enabled* to activate the screen.
Click *Edit*.

There are up to 10 positions available in results.
For each position, select the following:

Source type	Select the identifier location	Open Protocol Any barcode reader Fieldbus Barcode reader serial 1 or 2 Barcode reader USB 1 or 2 CVILOGIX Tool barcode reader Customized protocol
Identifier	In the list, select which identifier will be recorded.	
Result mask 1-4	In the list, select which result mask will be used for identifier traceability.	

Go to the next row and click *Edit*.
Example of an identifier configuration

Click *Reset at Pset selection* if required.

How to trigger an action linked to the reception of an identifier

Go to the tab *Execute identifer*.
Tick *Execute identifier*.
Click *Edit*.

Source type	Select the identifier location	Open Protocol Any barcode reader Fieldbus Barcode reader serial 1 or 2 Barcode reader USB 1 or 2 CVILOGIX Tool barcode reader
Action	Select the action to execute.	
Identifier	In the list, select which identifier will be used to trigger this action.	

Tool barcode reader (displayed only when this source type is selected)	Select which tool will execute the action.

How to set up protocols

ToolsNet

ⓘ Plug the relevant ePOD to the tightening product to activate this feature.

Go to the tree view and select the product.
Click *Parameters / Networks*.
Click *Toolsnet* and tick *Toolsnet activated*.

Enter the IP address of the server where Toolsnet software is installed.

Server version	TN4000/TN3000
Data collection	TN4000 only
FIFO settings	The system regularly sends results to Toolsnet. The purpose is to provide a full traceability even when the network connection is unstable.
Block if FIFO is full	1. The system is able to keep a defined number of results previously generated by each tightening unit (typically 10,000). The alarm threshold corresponds to the percentage of these results that have not been sent to the server and stored in FIFO memory. 2. When *Block if FIFO is full* is enabled, a tightening unit is locked when the FIFO level is 100%. It allows to ensure traceability of all generated results. The tightening unit is unlocked when connection is re-established and FIFO level is under 100%. When disabled, no lock is set when FIFO level is 100%, and traceability of all results is not ensured.
Alarm threshold	This value sets the level of the FIFO that triggers an alarm message on the system display and sets the *Reporting alarm output* event. The system is not locked by this alarm. The alarm informs on possible communication issues with the server. Maintenance operators can solve the issue before the system is locked (option *Block is FIFO is full* enabled), or before traceability of some results is lost (option *Block if FIFO is full* disabled).
System number	Enter the system number.
Station number	Enter the station number to be used by tightening unit 1 (n). Tightening unit 2 will automatically use the next higher number (n+1).

Open Protocol

Go to the tree view and select the product.
Click *Parameters / Networks*.
Click *Open Protocol* and tick *Open Protocol activated*.

Option 1: *Use common port for all tightening units*
Open Protocol data is exchanged on a common communication port.
In that case, the fields "Station ID" and "Tool ID" must be set in each Open Protocol message headers in order to differentiate tightening units and tools involved.

Option 2 (recommended): *Use unique port per tightening unit*
Each tightening unit has a unique communication port for Open Protocol.

Customized protocol

ⓘ Plug in the appropriate model of **ePOD customer** to the system or if you use CONNECT, re-balance the necessary number of UV into the RIM to activate the feature.

Go to the tree view and select the product.
Click *Parameters / Networks*.
Click *Customized protocol*.

Tick *Customized protocol activated* to activate the connection to the system and check the ePOD is present.

A new screen is then displayed.
Fill in the parameters.

Contact your Desoutter representative to get more information and support.

Protection and backup

Access Manager in CVI CONFIG

It is recommended to protect your programming work against hazardous changes.

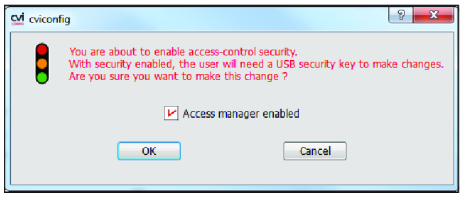
On delivery, the **Access manager** feature is not activated and any modification can be done.

	The open padlock at the bottom of the screen means that the protection is not activated.
	The closed padlock at the bottom of the screen means that the protection is activated.

To activate the screens, you need to have an ACCESS KEY USB stick with the right profile (configured with the Desoutter CVIKEY software).
If not, contact your CVIKEY manager for support.

See the message at the bottom closed to the padlock signifying that a ACCESS KEY has been plugged.

Go to the menu bar.
Click **Access manager**.
Click **Enable / disable on CVI CONFIG**.
The feature is not activated and any modification can be done.



Tick the box **Access manager enabled** to activate the protection.
The padlock at the bottom of the screen is closed.

From now, any user will need a ACCESS KEY with the right profile to make changes.

Access manager in product/system

It is recommended to protect your programming work against hazardous changes.

ⓘ On delivery, the **Access manager** feature is not activated and any modification can be done.

Launch CVI CONFIG.
Select a product in the tree view.

Plug a ACCESS KEY with the right profile to the product.
Go to **Parameters** and click **Access manager activation**.

Tick **Access manager enabled** to activate the protection.

From now, any user will need a ACCESS KEY with the right profile to make changes.

Backup of the programming in CVI CONFIG

Save your programming work done in CVI CONFIG by creating a database in your computer.

Click **File** in the Menu area.

Click **Create a backup** to save your work in a database in the local disk (C: by default).

Use an unique name.
The name is by default: `cviconfig_dd_mm_yyyy_hh_mm_ss.db`.

ⓘ Be careful when naming the databases. Do not overwrite them.

We recommend to create as many folders as databases.

Click **Open a database** to upload an existing database from the local disk (C: by default).

Click **Database file location** to display where the database is located.

Backup of the programming of a product

Plug an ePOD to the product or use the RIM of the product.

For more information about installing the ePOD, refer to the installation manual delivered in the packaging box or available at https://www.desouttertools.com/resource-centre

Go to the tree view and select the product.

Go to **Parameters** and click **ePOD options** or **RIM options**.

Select the backup mode:

- Automatic: each modification is saved in real-time in the ePOD or RIM. The ePOD or RIM acts as the product mirror.
- Manual: the ePOD or RIM is a snapshot of the product.

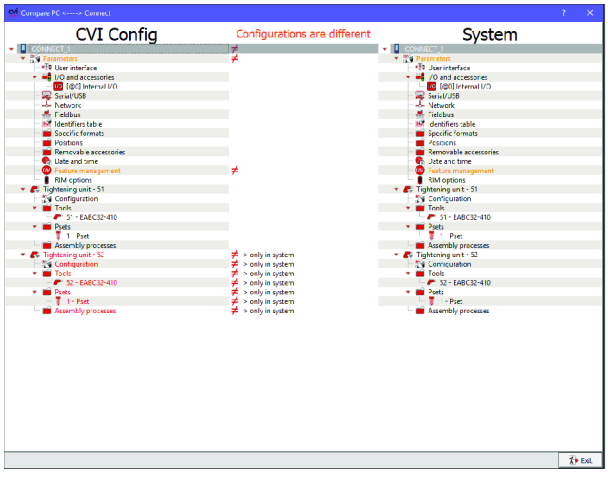
How to avoid overwriting and mistakes

Before changing the configuration of an existing tightening product, launch the feature **Comparison between CVI CONFIG and product** to avoid overwriting and mistakes.

Check the product is connected to the computer.

Select a product in the tree view area.

Click this icon to compare data between CVI CONFIG and the product.



A report is displayed and all differences are highlighted.

In the example above, the tightening unit 52 is missing in CVI CONFIG.

Click **Exit** to quit.

How to lock the screens of a product

This feature allows to prevent unauthorized users to use the screen of the product.

Authorized users will need a CVIKEY stick with the right profile to access the screen.

Plug a CVIKEY with the right profile to the product.

Go to the tree view and select the product.

Go to **Parameters** and click **Access manager activation**.

Tick **Lock screen enabled** to activate the protection.

Click this icon to update the product.

How to add optional information to traceability

Go to the tree view and select the product.
Select the tightening unit which drives the tool.

Tick *Store run reverse results* to have them recorded in the tightening results.

Tick *Enable curves* to enable or disable the curves generation.
Select the number of points to store in the curves (2000 points by default).
Slide the cursor to change the distribution.

Tick *Store batch increment results* to have them recorded in the tightening results.
Check first that the running mode is set to *Assembly Process*.

Click this icon to update the product.

References

List of user infos

List of user infos related to the system

Type	Colour	Description	Action
Information	White	For information only.	No action is required.
Warning	Orange	The tool is locked.	Click the message to clear (acknowledge) the message and unlock the tool.
Error	Red	The tool is locked.	The issue has to be solved to unlock the tool and clear the error message.

Number	Description	Procedure
I001	Tubenut open	1- Tubenut tool is detected as open.
I002	Tool connected	1- The tool is connected and correctly recognized by the system.
I003	No tool connected	1- The tool has been disconnected. 2- If the tool is not physically disconnected, check the tool cable.
I015	Tool lock on reject	1- The tool is locked forward after a NOK. 2- Unlock the tool in function of the "lock on reject option" selection i.e. by reversing, loosening or input.
I016	Tool lock by Open Protocol	1- Tool has been locked by Open Protocol. 2- Unlock the tool by sending an "Enable tool" message via Open Protocol.
I017	Loosening prohibited	1- Loosening is prohibited. 2- The loosening is disabled in the Assembly action. 3- The batch count type OK + NOK is used.
I021	Maximum retries reached	1- The maximum number of retries has been reached. 2- The tool is locked. 3- The running Assembly Process has to be aborted.
I022	Lock wait socket	1- The tool is locked. Put all sockets back and lift the correct sockets combination.
I024	Loosening prohibited XML	1- Loosening is disabled by VWXML protocol.
I025	Tightening prohibited XML	1- Tightening is prohibited by VWXML protocol.
I040	Tool over speed	1- Motor speed exceeds 130% of its maximum value. 2- Check tool parameters (wrong motor tune parameters). 3- Contact your Desoutter representative for support.
I042	Tool locked by GeoPositioning system	1- Tool has been locked by GeoPositioning system. 2- Unlock the tool by moving the tool in its defined area.
I043	Tubenut maintenance	1- Tubenut settings need to be reconfigured. 2- Contact your Desoutter representative for procedure.
I044	GeoTracking/Positioning learning mode ongoing	1- GeoTracking/Positioning learning mode.
I049	Access denied	No procedure.
I050	Tool detection for pairing	No procedure.
I051	ePOD connected	ePOD connected.
I052	Incorrect network parameters	Incorrect network parameters
I053	No Tightening Unit available	No Tightening Unit available
I054	Pairing success	No procedure.
I055	eDOCK already present on system	No procedure.

Number	Description	Procedure
I056	ePOD disconnected	ePOD disconnected
I057	Pairing error	No procedure.
I058	Tool locked by GeoTracking system	1- Tool has been locked by GeoTracking system. 2- Unlock the tool by moving the tool in its defined area.
I059	New tool detected	No procedure.
I060	Tool synchro ongoing	No procedure.
I061	ExBC connection conflict	1- Two ExBC are configured with the same network settings. 2- Verify communication ports and IP addresses.
I100	Cable ID invalid parameter	1- Invalid tool cable parameter. 2- Check that the tool cable is Desoutter certified. 3- Contact your Desoutter representative for support.
I101	Cable ID not detected	1- Tool cable communication error. 2- Check that the tool cable is Desoutter certified. 3- Contact your Desoutter representative for support.
I102	Cable ID not certified	1- Tool cable authentification error. 2- Check that the tool cable is Desoutter certified. 3- Contact your Desoutter representative for support.
I199	Console activated	1- The serial console is activated. 2- Warning: this console is dedicated to debug purposes only and should not be used in production.
I202	Fieldbus lost	1- Fieldbus connection with PLC is lost. - no heartbeat is received from PLC. - the cable is broken or disconnected. - the PLC is offline or not powered. 2- Check the Fieldbus configuration.
I204	Tool not validated	1- Tool locked by I/O. 2- Check I/O settings: "Tool validation" must be active to unlock the tool.
I207	Assembly done	1- Assembly Process is done, the tool is locked. 2- Select a new Assembly Process to unlock the tool.
I208	Invalid run reverse parameter	1- Invalid Run Reverse setting: torque or speed are greater than tool characteristics or loosening strategy is not supported. 2- Check Pset settings with the current tool characteristics. 3- Reduce the maximum number of turns.
I209	Pset invalid parameters	1 - Software internal error. 2 - Pset is corrupted. Try to transfer it again to the system. 3 - If the error persists, contact your Desoutter representative for support.
I215	Current calibration error	1- Current calibration failed. 2- Try once again. 3- If the problem occurs again, contact your Desoutter representative for support.
I225	Error angle	1- Tool communication error. 2- Check tool and cable connections. 3- If the problem occurs again, contact your Desoutter representative for support.
I226	Error torque	1- Tool communication error. Check tool and cable connections. 2- Try once again. 3- If the problem occurs again, contact your Desoutter representative for support.

Number	Description	Procedure
I234	Fieldbus mismatch	1-The Fieldbus module declared in configuration is not the same than the module connected to the system.
I237	Invalid data	1- The Fieldbus mapping has too many items.
I238	Invalid address	1- The device address affected to Fieldbus is invalid.
I239	Invalid communication settings	1- Fieldbus communication settings are invalid.
I241	CVINET FIFO alarm	1- CVINET FIFO has reached the alarm threshold, the connection is lost. 2- Check the Ethernet cable. 3- Check the Ethernet configuration. 4- Check that CVINET is running correctly.
I242	ToolsNet FIFO alarm	1- ToolsNet FIFO has reached the alarm threshold, the connection is lost. 2- Check the Ethernet cable. 3- Check the Ethernet configuration. 4- Check that ToolsNet is running correctly.
I244	Accessory disconnected	1- The accessory at the given address has been disconnected from the eBUS of the system. 2- Check the accessory cable.
I245	Wait report acknowledge	1- Acknowledge report with its corresponding input.
I254	Drive communication error	1- Error detected in drive communication. 2- Restart the system. 3- If the problem occurs again, contact your Desoutter representative for support.
I259	Reset input active	1- "Reset" input is active. 2- The tightening unit will unlock when input switches to "Inactive".
I261	Locked by IPM	1- IPM protocol has locked the system. 2- Check the connection with the IPM gateway. 3- Check the IPM configuration in the system.
I262	Open Protocol connection lost	1- Open Protocol connection has been lost.
I263	Socket tray conflict	1- For this tightening unit, do not associate more than one socket combination to a Pset.
I264	Too many steps	1- Connect an ePOD3 to the system to enable more steps per Pset.
I266	Message:	Incoming message received with dynamic text.
I269	Pset modified	No procedure.
I271	External tool Pset selected	1- Tool is locked because of "External tool Pset" selection.
I275	Invalid eCompass Pset	1- Check tool is compatible with gyroscope (eCompass). 2- Else use a tool compatible with gyroscope. 3- Else edit your Pset to remove gyroscope settings.
I310	Identifier OK:	1- An identifier has been received and accepted. 2- The identifier is matching an Assembly Process start condition.
I311	Identifier NOK:	1- An identifier has been received. 2- The identifier does not match any Assembly Process start condition.
I312	Access expired	1- The access rights on the USB key cannot be read. 2- Unplug the key and insert it again. 3- If the issue is persistent, the access right file is probably corrupt. 4- Contact your "CVI Key" administrator.

Number	Description	Procedure
I313	Access invalid	1- The access rights on the USB key cannot be read. 2- Unplug the key and insert it again. 3- If the issue is persistent, the access right file is probably corrupt. 4- Contact your "CVI Key" administrator.
I314	CVIKey plugged	No procedure.
I315	CVIKey unplugged	No procedure.
I316	Barcode lost	No procedure.
I400	Default network configuration	1- Network configuration has been set to default.
I401	Network configuration error	1- Network configuration failed. 2- Check your settings. 3- If the problem occurs again, contact your Desoutter representative for support.
I500	CVILOGIX user info	Message generated by CVILOGIX program.
I503	CVILOGIX	1- Tool has been locked by CVILOGIX. 2- Check the CVILOGIX program status. 3- Check an ePOD is plugged to the system.
I700	eWallet plugged	eWallet plugged
I701	eWallet unplugged	1- eWallet unplugged. 2- Try unplugging the key and insert it again. 3- If the problem occurs again, contact your Desoutter representative for support.
I702	RIM unplugged	RIM unplugged
I703	RIM unplugged	RIM unplugged
I888	System software updated	No procedure.
I889	Device software updated	No procedure.
I891	System started	No procedure.
I899	Downgrade not allowed	1- Software downgrade is not allowed for this version. 2- Check the software image version on your USB key. 3- If the problem occurs again, contact your Desoutter representative for support.
I900	Software update failed	1- Software upgrade failed. 2- Do not remove the USB key and restart the system. 3- If the problem occurs again, contact your Desoutter representative for support.
I901	Software not found	1- The software upgrade failed: software image invalid. 2- Check your USB key: it must have only one image at the root directory.
I902	Software invalid	1- The software upgrade failed: software image invalid. 2- Remove and copy again your software image. 3- Try another USB key. 4- Contact your Desoutter representative for more information.
I903	Software updater missing	1- The software updater is not available or damaged. 2- Contact your Desoutter representative for more information.
I904	Backup disabled	1- The "Save parameters" utility is not available. 2- Contact your Desoutter representative for more information.
I905	USB key full	1- Your USB key is full, all data were not saved. 2- Delete your old backup files and try again.

Number	Description	Procedure
I906	Save parameters failed	1- An error occurred during backup: data were not saved. 2- Check the available space on your key, delete files and try again. 3- If the problem occurs again, contact your Desoutter representative for support.
I907	Wrong USB port	1- Your USB device is plugged to the wrong port. 2- If your device is a USB key, plug it to the USB front port. 3- If your device is a USB barcode reader or keyboard, plug it to the bottom USB ports.
I908	Too HID device	1- Too many USB devices (barcode reader or keyboard) are plugged to the system. 2- Remove all devices and plug them again to the bottom USB ports only.
I909	HID device error	1- Your USB device is not supported by the system. 2- Only USB barcode reader and USB keyboard are supported. 3- If the problem occurs again, contact your Desoutter representative for support.
I910	Save program error	1- Plug an USB key to the front panel. 2- Check available space on your USB key, delete some old backup and try again.
I911	Load program error	1- Plug an USB key to the front panel. 2- The .zip file was not found: check that it is in the correct directory.
I912	Backup failed	1- Check the ePOD connection. 2- Contact your Desoutter representative for support.
I913	Restore failed	1- Check the ePOD connection. 2- Contact your Desoutter representative for support.
I914	Maintenance ongoing.	Maintenance ongoing.
I917	Accessory configuration error	1- The accessory configuration is not correct. 2- Check type of elements and events associated.
I920	System reset	ePOD automatic backup must be configured again.
I921	Pset execution not authorized	1- Check used features allowance. 2- Contact your Desoutter representative for support.
I923	Additional transducer offset failure	1- Offset value from additional torque sensor is outside bounds. 2- Restart the tool with no mechanical constraints. 3- If the problem occurs again, contact your Desoutter representative for support.
I924	Tool calibration required	1- Perform a calibration of the tool.
W041	Unauthorized tool	1- The tool connected to the system is not authorized. 2- Maximum number of battery tools reached or tightening unit associated does not exist anymore. 3- Check the ePOD/RIM connection and capacity.
W201	Replace RTC battery.	1- The "Real Time Clock" backup battery needs to be replaced.
W214	Short circuit	1- Serial peripheral default. 2- Disconnect and reconnect. 3- Check the serial peripheral.
W219	Trig. safety failure	1- Drive hardware failure. 2- Safety issue. 3- Contact your Desoutter representative for support.
W220	Hardware trip	1- Drive hardware failure. 2- Safety issue. 3- Contact your Desoutter representative for support.

Number	Description	Procedure
W229	Drive PWM error	1- Software failure. 2- Restart the system. 3- If the problem occurs again, contact your Desoutter representative for support.
W246	Synchro I/O problem	1- Error detected on synchronisation input. 2- Check the configuration of I/O. 3- Check the synchronisation cable.
W250	Pset corrupted	1- Pset is not defined correctly. 2- Check the Pset.
W253	Incorrect tool Id	1- Pset is not defined correctly. 2- One tool declared in the Pset is not part of the tightening unit. 3- Check the Pset.
W257	Remote start error	1- Verify the tool trigger is correctly pushed.
W258	Calibration need Pset mode	1- For tool calibration, the tightening unit has to be in "Pset" mode. 2- Change the tightening unit mode into "Pset" mode.
W276	Database error	1- It was not possible to access the database. 2- Try to clear the database. 3- If problem persists, contact your Desoutter representative for support.
W726	Desoutter Protocol: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
W727	Desoutter MIDs not autorized	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "Feature management" menu.
W735	Ford Protocol: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
W736	Ford Protocol not active	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "Feature management" menu.
W741	CVILOGIX: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
W742	CVILOGIX not active	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "Feature management" menu.
W743	Up to 50 Pset: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
W744	Up to 250 Pset: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
W745	Up to 50 AP: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
W746	Up to 250 AP: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.

Number	Description	Procedure
W501	CVILOGIX user info	Message generated by CVILOGIX program.
W600	System disconnected	1- The system is disconnected. 2- Check the network cable.
W601	Result not OK	Result not OK.
W925	RIM update in progress	1-Wait until the RIM update is finished.
W926	Inconsistencies RIM information	1- Perform a firmware upgrade to fix the information in the RIM.
E006	Rotor locked	1- Replace the tool. 2- The damaged tool needs maintenance.
E013	Bad tool ground	1- Phase-phase or phase to ground short-circuit. 2- Disconnect the tool. Contact your Desoutter representative for support.
E014	Torque power default	1- The torque sensor is not correctly supplied. 2- The tool needs maintenance. If the problem occurs again, contact your Desoutter representative for support.
E019	Tool communication error	1- Tool communication error. 2- Check tool and cable connections. If the problem occurs again, contact your Desoutter representative for support.
E020	Tool LED error	1- Tool LEDs are not correctly supplied. 2- Disconnect and reconnect the tool. If the problem occurs again, contact your Desoutter representative for support.
E023	Unsupported tool	1- The tool connected to the system is not supported. 2- Contact your Desoutter representative for support.
E200	Quick stop !	1- The quick stop has been activated. 2- Check the Phoenix connector.
E213	Drive connection lost	1- Connection with the drive has been lost. 2- Reboot the system. 3- If the issue remains, contact your Desoutter representative for support.
E217	Drive disabled	1- Drive disabled by external source. 2- Contact your Desoutter representative for support.
E218	Drive power failure	1- Drive hardware failure. 2- Safety issue. Contact your Desoutter representative for support.
E221	Drive check error	1- Drive hardware failure. 2- Safety issue. Contact your Desoutter representative for support.
E222	System too hot	1- Heatsink too warm. 2- Let the system cool down.
E230	DC bus high	1- Maximum current exceeded. DC-bus voltage high. 2- Contact your Desoutter representative for support.
E231	DC bus too low	1- Power failure. DC-bus voltage low. 2- Contact your Desoutter representative for support.
E232	Error ID Fieldbus	1- The Fieldbus module plugged to the system is not an authorized Desoutter module. 2- Contact your Desoutter representative for more information.
E233	CVINET FIFO full	1- CVINET FIFO is full, the connection has been lost. 2- Check the Ethernet cable. 3- Check the Ethernet configuration. 4- Check that CVINET is running correctly.

Number	Description	Procedure
E236	ToolsNet FIFO full	1- ToolsNet FIFO is full, the connection has been lost. 2- Check the Ethernet cable. 3- Check the Ethernet configuration. 4- Check that ToolsNet is running correctly.
E240	XML not authorized	1- The selected XML protocol is not authorized. 2- Check the ePOD characteristics.
E243	PFCS not authorized	1- The selected PFCS protocol is not authorized. 2- Check the ePOD characteristics.
E247	XML version conflict	1- Conflict detected in Audi / VW XML protocol version. 2- Check the coherence of the version between the system and master PC/PLC.
E248	SAS order failed	1- Fieldbus SAS order has failed. 2- Check the value of RRGI, SIO, etc.
E249	XML PRG 0	1- The PRG value 0 has been set by Fieldbus.
E255	Drive choke too hot	1- Power electronics too warm. 2- Let the system cool down.
E256	Motor too hot	1- Tool is locked because the maximum motor temperature has been reached. 2- Tool will remain locked until the motor temperature comes back to its normal value.
E260	IPM not authorized	1- The selected IPM protocol is not authorized. 2- Check the ePOD characteristics.
E265	Socket(s) usable with more than one tightening unit	1- Reconfigure sockets combination to resolve conflicts.
E268	CVINET incompatible	1- Update CVINET WEB software.
E277	Half DC bus voltage out of range	1- Half DC-bus voltage is out of range. 2- Switch off the system. Wait at least 30 seconds. Switch on the system and try again. 3- If the problem occurs again, change the drive and try again. 4- Contact your Desoutter representative for support.
E278	Pre-loaded BUS capacitors failure	1- Bus capacitors are not correctly pre-loaded. 2- Switch off the system. Wait at least 30 seconds. Switch on the system. 3- If the problem occurs again, change the drive and try again. 4- Contact your Desoutter representative for support.
E280	Result not stored	1- It was not possible to persist the tightening result on ePOD. 2- Switch off the system. Wait at least 30 seconds. Switch on the system. 3- Contact your Desoutter representative for support.
E502	CVILOGIX user info	Message generated by CVILOGIX program.
E704	Missing UV	1- The UV amount of the configuration is greater than the number of UVs available in the RIM. 2- Allocate UVs to this RIM. 3- Contact your Desoutter representative for more information.
E705	Missing demo UV	1- The demo UV amount of the configuration is greater than the number of demo UVs available in the RIM. 2- Allocate demo UVs to this RIM. 3- Contact your Desoutter representative for more information.

Number	Description	Procedure
E706	Missing UV/demo UV	1- The demo UV amount of the configuration is greater than the number of demo UVs available in the RIM. 2- Allocate demo UVs to this RIM. 3- Contact your Desoutter representative for more information.
E711	Tightening Unit: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
E712	Tightening Unit not active	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "feature management" menu.
E717	Up to 50 Pset: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
E718	Up to 250 Pset: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
E719	Up to 50 AP: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
E720	Up to 250 AP: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
E721	Up to 50 Pset: not active	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "feature management" menu.
E722	Up to 250 Pset: not active	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "feature management" menu.
E723	Up to 50 AP: not active	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "feature management" menu.
E724	Up to 250 AP: not active	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "feature management" menu.
E729	PFCS: demo expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
E730	PFCS not active	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "feature management" menu.
E732	VWXML: demo expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
E733	VWXML not active	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "feature management" menu.

Number	Description	Procedure
E738	IPM: demo expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
E739	IPM not active	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "feature management" menu.
E890	Device Software Error	-
E915	Inconsistent version	1- Firmware version of all systems must be identical. 2- Update the systems firmware.
E916	Workgroup not authorized	1- Connect an ePOD3 to the primary system.
E918	Emergency stop !	1- The emergency stop has been activated. 2- Check the M8 connector.
E919	Additional transducer error	1- The additional transducer maximum torque is lower than the embedded transducer maximum torque. 2- The Pset uses an additional transducer not installed on the tool.
E927	Corrupted RIM information	1- It is not possible to use this RIM. 2- Contact your Desoutter representative for support.
E928	Tracking System communication failed	1- Tracking System communication failed.
E935	1 Working Space: demo expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
E936	1 Working Space: not authorized	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "feature management" menu.
E941	E-Lit WI-FI: demo mode expired	1 - The demo period for this feature was 90 days. 2 - This demo period is now elapsed. 3 - To continue to use it you need to activate it with UV.
E942	E-Lit WI-FI: not authorized	1 - This feature is configured but not active. 2 - To activate it with UV, go to the "feature management" menu.

List of user infos related to the tools

Type	Colour	Description	Action
Information	White	For information only.	No action is required.
Warning	Orange	The tool is locked.	Click the message to clear (acknowledge) the message and unlock the tool.
Error	Red	The tool is locked.	The issue has to be solved to unlock the tool and clear the error message.

Number	Description	Procedure
I004	Span failure	1- Span value from torque sensor is outside bounds. 2- Try once again to start the tool with no mechanical constraints. If the problem occurs again, contact your Desoutter representative for support.
I005	Offset failure	1- Offset value from torque sensor is outside bounds. 2- Try once again to start the tool with no mechanical constraints. If the problem occurs again, contact your Desoutter representative for support.
I026	Tool maintenance alarm n1	1- The tool tightening counter has been reached.

Number	Description	Procedure
I027	Tool maintenance alarm n2	1- The tool tightening counter has been reached.
I038	Tool logs	1- Unexpected tool software exception. 2- Log file has been generated by the tool. 3- Contact your Desoutter representative for support.
I046	Abnormal battery current	1- Abnormal battery current consumption. Check the Pset settings. 2- This error can be due to wrong speed settings.
I063	Battery pack removed	1- Battery pack removed from the tool detected. 2- After few seconds, the tool will shutdown
I065	External start ignored	1- External start detected but ignored. 2- Check tool and external start configuration.
I103	Invalid rotary selector direction	1- Change the direction of the rotary selector. 2- Verify that the rotary selector is in correct position or not damaged.
I205	Torque settings	1- Invalid Torque setting: torque is greater than tool characteristics. 2- Check Pset settings with the tool characteristics.
I206	Speed settings	1- Invalid speed setting: speed is greater than tool characteristics. 2- Check Pset settings with the tool maximum speed.
I210	Invalid Pset selected	1- The selected Pset does not match the Pset selectable in the Assembly Process.
I211	Invalid trigger configuration	1- The tool connected to the system is not equipped with the trigger required by the trigger configuration. 2- Adjust your trigger configuration to the tool or change the tool according to the trigger configuration.
I224	IGBT too hot	1- Power electronics too warm. 2- Let the system cool down.
I251	No Pset selected	1- No Pset selected. 2- Select a Pset.
I270	Time settings	1-Invalid Time setting|2-Check Pset settings with correct time value settings
W010	Tool calibration expired	1- The tool calibration date has expired. 2- A tool calibration needs to be done to ensure the measurement accuracy.
W028	Battery tool version error	1 - Battery tool version and system version are not compatible.
W030	The battery is low.	1- The battery is low. 2- Recharge the battery.
W033	Tool time error	1- The tool time is not set correctly. The tightening results will not be time stamped. 2- Connect the tool to the system to set date and time.
W036	Tool memory full	1- The tool memory is full. 2- Connect the tool to the system to empty the memory.
W062	Overload of torque	1- Overload of the torque (could be a rehit). 2- Check the tool cable is not damaged.
W212	Result not stored	1- It is not possible to store the tightening result in the system. 2- Contact your Desoutter representative for support.
W216	Current high	1- Maximum current exceeded. 2- Contact your Desoutter representative for support.
W267	Result transfer error	Result transfer error.

Number	Description	Procedure
E007	Motor too hot	1- Tool is locked because the maximum motor temperature has been reached. 2- Tool will remain locked until the motor temperature comes back to its normal value.
E008	Tool angle fault	1- Problem detected with the tool angle sensor. 2- The tool needs maintenance.
E009	Tool invalid parameters	1- Check the tool compatiblity. 2- The tool memory cannot be read or is invalid. 3- The tool needs maintenance. If the problem occurs again, contact your Desoutter representative for support.
E012	Tool EEPROM error	1- The tool memory cannot be read or is invalid. 2- The tool needs maintenance. If the problem occurs again, contact your Desoutter representative for support.
E018	Torque out of range !	1- The target torque value is above the tool maximum torque. 2- Check Pset settings with tool characteristics.
E029	The battery is empty.	1- The battery back is discharged. The tool cannot tighten. 2- Recharge the battery pack.
E031	Battery error	1- Abnormal battery voltage. The tool cannot tighten. 2- Recharge the battery pack. If the problem occurs again, replace the battery pack.
E032	Tool display error	1- Board display malfunction. 2- Contact your Desoutter representative for support.
E034	Tool memory error	1- The tool memory does not work properly. 2- Contact your Desoutter representative for support.
E035	Tool memory locked	1- The tool memory is locked to protect old data from rewriting. 2- Connect the tool to the computer via eDOCK to retrieve old data.
E037	Tool trigger error	1- The tool trigger does not work properly. 2- Check and clean the trigger. If the problem occurs again, contact your Desoutter representative for support.
E045	Abnormal battery voltage	1- Check the battery pack. 2- This error can be due to charger malfunction or end of life battery.
E047	Battery is too low.	1- Check the battery pack. 2- If the problem occurs again, replace the battery pack.
E048	Battery type not allowed	1- Battery type not allowed. 2- Replace the battery pack or your configuration.
E223	Drive init error	1- Software failure. 2- Restart the system. 3- If the problem occurs again, contact your Desoutter representative for support.
E227	Motor stalled	1- Motor stalled (could be missing phase, wrong motor tune or power electronics failure) 2- Try once again. 3- If the problem occurs again, contact your Desoutter representative for support.
E228	Drive error	1- Software failure. 2- Restart the system. 3- If the problem occurs again, contact your Desoutter representative for support.

I/O events - logical output

General status

Name	Description	Raising condition Falling condition
Ready	The system is free of any internal issue that could prevent it from being fully operative. Communication between system and tool is OK.	No error in system nor in tool Quick stop activated Error coming from the system
Identifier OK	Identifier received (e.g. barcode) matches masks (stays during 0,5 s at active level).	Identifier received and identified 0,5 s after rising
Identifier NOK	Identifier received (e.g. barcode) does not match masks (stays during 0,5 s at active level).	Identifier received but not identified 0,5 s after rising
User info present	User info (Info, Warning or Error) is present.	User info present on screen No user info on screen
Keep alive ack	This output is the copy of the "Keep alive" input. It can be used by the PLC to check the system is still running.	When "Keep alive" input raises. When "Keep alive" input falls.
Fieldbus Fault	No Fieldbus. The "Fieldbus fault" is on as long as the Fieldbus communication is not established. It switches off automatically when the communication works again.	Communication lost and/or keep alive missing. Fieldbus communication established and keep alive present
Reporting Alarm	When working with ToolsNet or CVINet: FIFO Threshold Alarm reached. Results are stored in the system memory and are erased when sent to ToolsNet or CVINet. This way the system memory will never be full. A full system memory induces result losses and traceability error. To detect communication issues with ToolsNet or CVINet, the software measures the fill in rate (%) of the memory. When the rate overpasses the target threshold, the Reporting alarm will switch on; maintenance operators are then able to solve the issue before losing results."	FIFO Threshold Alarm reached FIFO under threshold alarm.
Open Protocol activated	Open Protocol is activated in configuration	Protocol is enabled Protocol is disabled
Open Protocol connected	Open Protocol is connected to the Tightening Unit	At least 1 peer connected No peer is connected
Time synchro done	Time synchronisation completed successfully using Fieldbus data (Q_SYN in VWXML)	-
Emergency stop	Emergency stop is activated.	Emergency stop activated Emergency stop deactivated
TU running	This indicates that the fastening operation has actually started: at least one involved tool is running. The signal switches off as soon as the fastening operation is finished (all reports sent).	Pset is started. The fastening operation is finished (all reports sent)

Tool status

Name	Description	Raising condition Falling condition
Tool ready	The tool is ready: - communication between system and tool is ok - a valid Pset has to be selected - the tightening strategy must cope with the tool"	Tool connected AND valid Pset. Tool disconnection, Pset selection.
Tool not locked forward	There is no tool lock in forward direction.	Tool unlocked in forward direction New lock in forward direction
Tool not locked reverse	There is no tool lock in reverse direction.	Tool unlocked in reverse direction New lock in reverse direction
Tool running	The tool is running (CW or CCW, tightening or loosening).	Tool starts to run. Turns off when the tool stops.
Tool direction	Indicates if the tool is in tightening mode. Active: tightening mode Inactive: run reverse mode Note: independent if tool is running or not.	Entering tightening mode. Entering run reverse mode.
Tool tightening	Tool is running in tightening mode. Pset threshold is not taken into account.	Tool start in tightening mode. Tool stops.
Tool middle course trigger	Reflects the raw state of tool middle course start trigger, independently from the "Tightening Unit" state.	Middle course of main trigger is reached. Main trigger is completely released.
Tool main start trigger	Reflects the raw state of tool main course start trigger, independently from the "Tightening Unit" state.	Trigger is pushed. Trigger is released
Tool reverse trigger	Reflects the raw state of tool reverse trigger, independently from the "Tightening Unit" state. (reverse or forward).	Trigger is pushed. Trigger is released
Tool push start or front start trigger	Reflects the raw state of tool push start or front start trigger, independently from the "Tightening Unit" state.	Trigger is pushed. Trigger is released
Manual reverse in progress	The operator has selected the reverse direction on the tool and is running the tool.	Manual runreverse selected and trigger pushed. Stay on as long as the operator is running the tool
Fastener loosened	There is a fixed minimum torque value to declare that the fastener was "loosened".	Run reverse Result generation. New start (tool trigger or external start)
Tube nut open	Indicates that the tube nut is open. The tool can be removed from the assembly.	- Tool running
Tool maintenance alarm	Reflects the different tool maintenance alarm state with or condition.	Tool maintenance alarm 1 or 2 is active. No tool maintenance alarm is active.
Invalid spindle settings	Tool characteristics does not match Pset parameters (e.g. negative jog times or contradictions, torque over the maximum tool torque range, speed over the maximum tool speed, maximum tool torque range, etc…)	Pset selection or tool connection. Tool disconnection or new Pset selected.

Name	Description	Raising condition Falling condition
Span failure	When starting a tightening, before running the tool, the system checks the torque span. "Span failure" indicates that the span drifts by ±3% or more, causing a tool lockout. This fault can be due to the torque transducer or the tool electronics. The only solution is to replace the tool.	Span failure detection. Disconnecting tool or new check without fault.
Offset failure	Indicates the offset (0 point) drifts by 50 % of full scale or more. This error exists when, at the beginning of the Pset, the torque transducer is seen to have 50 % or more of full-scale torque prior to even starting the motor. With an "Offset failure", the system cannot adequately compensate for this transducer error and, therefore, will not allow a tightening operation to occur. The only solution is to replace the tool.	Offset failure detection Disconnecting tool or new check without fault.
Motor over temperature	Indicates that the temperature of the tool motor windings has exceeded the temperature threshold. An error message remains.	Temperature threshold: - 100°C for fixtured tools - 60°C for portable tools The signal turns off as soon as the temperature returns below the threshold (minus hysteresis = 10°C).
Angle measurement fault	Drive detected angle sensor fault. It can be an angle sensor fault, a tool electronic fault or a combination of both. The communication is tested permanently. As soon as the fault disappears, the signal turns off.	Angle fault detection. Disconnecting tool
No tool connected	Indicates that the system is not detecting the tool. Systems are designed to work with a range of fastening tools. The tools have an Intelligent tool Interface (ITI) board which is continuously sending status information to the system. If the system requests status information from the tool and gets no response, the system software turns on the "No tool connected" output. This output resets immediately upon successful communication with a tool.	No tool connected or tool not recognized Tool connected and recognized.
Redundancy error	Redundancy error in case of operational control transducer and faulty monitoring transducer.	Result generation Use of "reset of redundancy error" input, change of tool free of this error

Pset status

Name	Description	Raising condition Falling condition
Pset selected bits (0..7)	Echoes the binary "Pset select bit 0 to 7" input if the corresponding Pset exits, echoes 0 if the Pset does not exist or if there is no Pset selected.	New Pset selected New Pset selected

Name	Description	Raising condition Falling condition
Tightening running (old cycle declared)	This indicates that the fastening operation has actually started: the tool is running and the torque is over the Pset start torque threshold. The signal switches off as soon as the fastening operation is finished (all reports sent).	Torque reach the cycle start threshold. The fastening operation is finished (all reports sent)
Tightening finished	Indicates that a Pset report is available.	Result generation. New start (tool trigger or external start) or reset input
Tightening OK	Indicates that the fastening operation (for a specific Tightening Unit) ends correctly and that all controlled and monitored tightening parameters are within tolerances.	Result generation. New start (tool trigger or external start) or reset input
Tightening NOK	Indicates that the fastening operation (for a specific Tightening Unit) has failed.	Result generation. New start (tool trigger or external start) or reset input
Spindle OK	Indicates that the fastening operation (for a specific tool) ends correctly and that all controlled and monitored tightening parameters are within tolerances.	Result generation. New start (tool trigger or external start) or reset input
Spindle NOK	Indicates that the fastening operation (for a specific tool) has failed.	Result generation. New start (tool trigger or external start) or reset input
Angle low	Indicates a low angle reject. The angle must meet or exceed this value for a correct Pset. When the angle stays below this value, it becomes a "Low angle reject" and this output is turned on. Stays on until a new fastening operation starts.	Result generation. New start (tool trigger or external start) or reset input
Angle OK	Indicates a correct angle. The angle is inside the limits declared in the step.	Result generation. New start (tool trigger or external start) or reset input
Angle high	Indicates a high angle reject. The angle must stay below this value to be a correct Pset. When the angle meets or exceeds this value, it becomes a "High angle reject". The tool will stop when this limit is reached and this output is turned on. Stays on until a new fastening operation starts.	Result generation. New start (tool trigger or external start) or reset input
Torque low	Indicates the peak torque low reject. If the torque stays below the "Peak torque low limit" and results in a “Reject” Pset. This can happen when a Pset is prematurely finished, a thread strips out or when the Pset is automatically finished due to other error conditions, such as a High angle fault or when a Pset Time Monitor expires and causes the Pset to be terminated. Stays on until a new fastening operation starts.	Result generation. New start (tool trigger or external start) or reset input
Torque OK	Indicates a correct torque. Torque is in inside limits declared in the step.	Result generation. New start (tool trigger or external start) or reset input

Name	Description	Raising condition Falling condition
Torque high	Indicates the peak torque high reject. When the torque meets or exceeds this value, this output is turned on and the result is NOK. If a `Peak Torque High` error persists, it may be advisable to slow down the tool speed or replace the tool with one of lesser capacity. A second variable that can cause errors is a badly chattering joint. Chatter is the squawking noise you hear on some fasteners at the end of the fastening operation. Chatter is induced by slip-stick and actually causes the fastener to momentarily stop rotating, then crack loose and re-start turning. This condition can cause a `Peak Torque High` condition. Stays on as long as a new fastening operation starts.	Result generation. New start (tool trigger or external start) or reset input
Yellow report on tightening system	This output reflects the state of the system yellow light.	System yellow light is on New fastening operation starts
Green report on tightening system	This output reflects the state of the system green light.	System green light is on New fastening operation starts
Red report on tightening system	This output reflects the state of the system red light.	System red light is on New fastening operation starts
Lock on reject	Indicates that a tool is locked out because of an incorrect tightening operation. The system will not continue to run the tool depending on “lock on reject option “ : - until the ""Error Acknowledge"" input is activated - until a run reverse operation - until a loosening operation	Tightening finished with bad result and option “lock on reject” activated. Input “Error acknowledge” activated or runreverse operation or loosening operation.,
Remove fastener	Indicates that the fastening operation resulted in a torque that exceeded the “Remove Fastener” setpoint. When correctly set, this means that the torque for any reason becomes very high. There is a risk that the fastening operation is not reliable: disassemble the joint and check parts.	Result generation. New start (tool trigger or external start) or reset input
Tightening finished without timeout	Indicates that a Pset report is available and the source stop is not overall timeout.	Result generation. New start (tool trigger or external start) or reset input
Overall time reached	Max overall time has been reached during tightening	Result generation. New start (tool trigger or external start) or reset input
Synchro out	Synchro output : set to 1 when running step starts, reset to 0 when a synchro step is reached.	Start of running step. Synchro step reached
Invalid parameter set selected	Indicates the Pset is disabled (has not been set). For example, if 3 Psets are used, Psets 1, 2 and 3 are enabled. If, however, any Pset other than 1, 2 or 3 is selected, the Pset is invalid and this output is turned on. It is possible for an Assembly process to select invalid Psets.	Pset unselection Pset selection

Assemby Process status

Name	Description	Raising condition Falling condition
Assembly Process selected bits (0..7)	Indicates the Assembly Operation per tightening unit currently selected (Bit 0..7).	New AP selected. AP aborted New AP selected. AP aborted
Assembly process running	Indicates the assembly operation is being processed. The signal is on as long as the assembly operation is running. The signal falls down when the assembly operation is finished.	Assembly process start. Assembly process finished or aborted.
Assembly process finished	Indicates when an assembly operation is completed.	Assembly process finished. A new Assembly Process start or reset input
Assembly process OK	Indicates when an assembly operation is completed with no rejects. The signal stays on as long as a new Assembly process starts.	Assembly process finished and OK. A new Assembly Process start or reset input
Assembly process NOK	Indicates when an Assembly process reject occurs. Stay on as long as a new Assembly process starts.	Assembly process finished and NOK or aborted. A new Assembly Process start or reset input
Assembly process aborted	When an Assembly process has been aborted, "Assembly process aborted" is activated. Stays on as long as a new Assembly process starts.	Assembly process aborted. A new Assembly Process start or reset input
Current batch count bit (0..6)	Bit indicator of current batch count	Batch count increment When batch is finished, new start (tool trigger or external start) or reset input or new AP selection
Remaining batch count bit (0-6)	Bit indicator of the number of remaining bolts in the batch	Batch count increment When batch is finished, new start (tool trigger or external start) or reset input or new AP selection
Batch running	A batch process is underway. The output is set to 1 before the first tightening operation.	A batch operation is enabled Batch is finished or reset input
Batch finished	Indicates when the batch count equals the batch size and the batch is declared completed. It is used together with "Batch OK" to indicate the status of a batch.	Batch is finished. New start (tool trigger or external start) or reset input
Batch OK	Such as when the batch gets aborted…or in the case rejects are included as part of the batch count (managed by Assembly Process).	Batch is finished and NOK. A new AP has been selected. New start (tool trigger or external start) or reset input
Batch NOK	Such as when the batch gets aborted…or in the case rejects are included as part of the batch count (managed by Assembly Process).	Batch is finished and NOK. A new AP has been selected. New start (tool trigger or external start) or reset input
Max retries reached	Indicates when max number of retries is reached.	Max number of retries is reached. Max number of retries is reset.

External output

Name	Description	Raising condition Falling condition
External Out AP bit	Outputs that can be set or reset within an Assembly process	Depending of AP behavior Depending of AP behavior
External Out PLC bit (0..9)	Indicates this output is controlled by a PLC via Fieldbus (like a remote I/O). On PLC side, it is an output.	Depending on PLC behavior Depending on PLC behavior
External Out OP bit (0..9)	Outputs dedicated to Open Protocol.	Depending on OP behavior Depending on OP behavior

Socket tray

Name	Description	Raising condition Falling condition
Socket selectable (0..4)	24 V socket trays (BSD). Informs which socket can be taken by the operator.	A new socket has to be taken by the user. No socket to be taken by the user.

Customized Protocol Status

Name	Description	Raising condition Falling condition
Customer Protocol activated	A customer Protocol has been activated in configuration	Protocol is enabled Protocol is disabled
Customer Protocol connected	The activated customer Protocol is connected	Protocol is connected Protocol is disconnected
Customer Protocol reporting alarm	The activated customer Protocol has declared an alarm about result reporting of this Tightening unit.	Alarm is raised Alarm is cleared
Q_SAS	ACK start tightening job	-
RDY	System ready	-
Q_LSN	Reverse disabled	-
WGZ	Tool disabled	-
Q_EDZ	Result and reports reset	-
Q_XMS	XML data transfer completed	-
EIO	Result OK	-
ENO	Result NOK	-
FSCIO	Group status OK	-
FSCNIO	Group status NOK	-

CVILOGIX

Name	Description	Raising condition Falling condition
External Out CVILOGIX bit (0..100)	Indicates that this output can be used by an internal CVILOGIX application	-

Miscellaneous

Name	Description	Raising condition Falling condition
ON	On state, used to set level "1" to physical outputs.	At system startup. Never falls

Name	Description	Raising condition Falling condition
OFF	Off state, used to set level "0" to physical outputs.	At system startup. Never falls

I/O events - logical input

General commands

Name	Description	Status
Start stop Tightening on state	Initiates a fastening cycle if: - the ""Spindle validation forward"" is active and required by the tightening unit, - a Pset is selected. A rising edge must be detected to initiate a tightening, that is the change in the state of the tool from off to on as the trigger is released, then pressed again must be detected. For the tightening to proceed, this input must remain active. If this input becomes inactive at any time during the tightening, the tightening will be aborted and the tool will stop running. At the end of tightening, a tightening can began only if signal falls and then rise. After power-up, even if this signal is active, an edge is necessary to start tightening."	State
Toggle start stop tightening on edge	This input is enabled for fixed tools only (tools without trigger). Initiates or ends a fastening cycle. A cycle can be initiated only if: - the ""Spindle validation forward"" is active and required by the tightening unit - the Pset is selected. If no tightening is currently executed, a rising edge will initiate a tightening. A falling edge has no effect on the tightening to proceed. If a tightening is in execution, a rising edge will stop it."	Rising edge
Reverse direction	When activated, the tool green & red lights are flashing to indicate that the tightening unit reverse direction is selected. This signal status is not controlled during a tightening but only when tool is not running.	State
Error acknowledge	Enables the "Reject lockout" function. When locked out, the tool cannot run until this input is reset.	Rising edge

Name	Description	Status
Reset	When input reset raises (and there is no cycle running): - defaults are acknowledged - batch counter of current Assembly Process is reset - reports lights on controller and tool are set off - result on display is erased but the last 5 result values on Vision display stay readable - in Pset mode, Pset selected remains unchanged. In AP mode, AP is aborted. - ready output stay on - echo identifier is reset When input reset raises (and there is cycle running): - tightening is immediately stopped - defaults are acknowledged - batch counter of current Assembly Process is reset - at tightening end, there is no report generated. - at tightening end, it is impossible to start a new tight, reset input must be released first. - in Pset mode, Pset selected remains unchanged. In AP mode, AP is aborted. - ready output stay on - echo identifier is reset	State
Reset only status	When input reset raises (and there is cycle running): - tightening is immediately stopped Resets only: - Tightening OK/NOK - Spindle OK/NOK - Pset finished - Pset finished no timeout - Batch OK/NOK/Finished The Assembly Process is not aborted. Result values (angle, torque) are still present in Fieldbus. LEDs on tool and system are not affected.	State
Ack error message	Acknowledge error message displayed on HMI.	Rising edge
Force Pset mode	Forces the Tightening unit to switch in Pset mode in order to temporary run Psets (nothing saved). When AP mode + input state high, then switch to Pset mode. When Temporary Pset mode + input state low, then switch to AP mode. Switching on the system power with the input set will switch to Pset mode. Other cases do nothing."	State
Ack result	Acknowledges the current result. The tool is then unlocked and can tight again. Formerly dedicated to Fieldbus only, this behaviour is now also available for IOs and OpenProtocol	Rising edge

Name	Description	Status
Keep alive	Input used to check that the controller is still alive. State of this input is copied to "Keep alive ack" output. This input is also used by a PLC to inform the controller that Fieldbus communication is working.	State
Time Synchro Trigger	Execute date & time synchronisation from Fieldbus (SYN in VWXML Protocol)	Rising edge
Enable access manager	Enable/disable access manager	State
Lock display	Lock/unlock the controller display.	State
Restart controller	Reboots the controller. Everything must be done by software before using this input	Rising edge
Reset identifiers	Erase all ongoing accepted identifiers fields from system/tool memory in order to guarantee a correct traceability	Rising edge

Tool commands

Name	Description	Status
Tool validation forward	Enables the tool to run the selected Pset. Note: the forward and reverse validation can be done by setting both validations on the same input. When the validation signal falls down, the tool stops.	State
Tool validation reverse	Enables the tool run reverse. Note: the forward and reverse validation can be done by setting both validations on the same input. When the validation signal falls down, the tool stops.	State
Reset tool locks	Reset tool locks, only the none safety tool locks will be affected	Rising edge
Tool stop	Stops the tool.	Rising edge
Tool blue light ctrl by IO	1 = tool blue light is controlled by IO 0 = tool blue light is managed by the controller	State
Tool blue light	If "tool blue light ctrl by IO" is set to 1 (see upward) then: 1 = tool blue light is set to on 0 = tool blue light is set to off	State
Tool green light ctrl by IO	1 = tool green light is controlled by IO 0 = tool green light is managed by the controller	State
Tool green light	If "tool green light ctrl by IO" is set to 1 (see upward) then: 1 = tool green light is set to on 0 = tool green light is set to off	State
Tool red light ctrl by IO	1 = tool red light is controlled by IO 0 = tool red light is managed by the controller	State
Tool red light	If "tool red light ctrl by IO" is set to 1 (see upward) then: 1 = tool red light is set to on 0 = tool red light is set to off	State

Name	Description	Status
Tool yellow light ctrl by IO	1 = tool yellow light is controlled by IO 0 = tool yellow light is managed by the controller	State
Tool yellow light	If "tool yellow light ctrl by IO" is set to 1 (see upward) then: 1 = tool yellow light is set to on 0 = tool yellow light is set to off	State
Tool white light ctrl by IO	1 = tool white light is controlled by IO 0 = tool white light is managed by the controller	State
Tool white light	If "tool white light ctrl by IO" is set to 1 (see upward) then: 1 = tool white light is set to on 0 = tool white light is set to off	State
Reset of redundancy error	Resets only redundacy error	State

Pset commands

Name	Description	Status
Pset select bit (0..7)	Used to select Psets. These inputs must be in the desired state BEFORE the activation of the cycle start input. If the selected Pset is zero, there is no Pset selected.	State
Select previous Pset	Select lower number Pset.	Rising edge
Select next Pset	Select higher number Pset.	Rising edge
External stop abort Pset	This input is used with proximity detectors to end immediately Pset running. The user can choose which state or transition will stop the Pset: No, Rising, Falling, Change, High, Low. When a Pset is aborted with this input, the Pset result is NOK.	"rising edge or state
External stop to next step	This input is used with proximity detectors to end the running step. The user can choose which state or transition will stop the Pset : No, Rising, Falling, Change, High, Low. The user can also choose the step result when the stop request occurs: OK, NOK, Monitoring (Monitoring means that the result is computed depending on monitoring requested).	"rising edge or state
Synchro in	Step synchronisation input. The step starts when a transition to 0 is detected.	State
External tool inputs bit (0..9)	Indicates that these inputs can be used by external tool (to generate OK/NOK report for example)	State

Assembly Process commands

Name	Description	Status
Assembly process selection bit (0-7)	Used to select an Assembly process. These inputs must be in the desired state BEFORE the activation of the assembly process start input.	Rising edge

Name	Description	Status
Abort assembly process (tightening unit)	The "Abort assembly process" input stops the Assembly process being processed.The Assembly process is finished. The Assembly process result is memorized as "aborted" and “AP aborted” and "AP NOK" events are set.	Rising edge
Batch-1	The "Batch-1" input allows the operator to select the previous operation of a batch whatever the result of the next operation. The batch counter is decremented. The action is recorded OK or NOK according to the result and "Batch-1 event" is set.	Rising edge
Batch+1	In case you cannot complete the current operation of a batch, jump to the next one by using the external input "Batch +1". The action is declared as NOK and "Batch+1" event is set.	Rising edge
Restart batch	Restarts the current batch of the current Assembly Process step. The "Restart batch" event is set.	Rising edge
Reset number of retries	Reset the number of retries counter. If the max counter has been reached the tool is unlocked	Rising edge

External input

Name	Description	Status
External in AP bit (0..49)	Inputs used in Assembly process in start conditions or in assembly actions sense input	Rising edge
External In PLC bit (0..9)	Indicates this input can be used by an PLC via Fieldbus (like a remote I/O). For PLC side, it is an input.	State
External In Open Protocol 1-8	Inputs used in Open Protocol. They can be monitored from the Open Protocol client by subscription. These inputs are named "External monitored 1..8" in Open Protocol specification.	State

Socket tray

Name	Description	Status
Socket lifted bit (0..4)	Used with CVI II controllers only: 24V socket trays (BSD). Informs which socket has been lifted.	State

Customized Protocol commands

Name	Description	Status
PFCS End Of Cycle	Input used in PFCS Chrysler to flush the result FIFO when the operator has completed the work	Rising edge
SAS	Starts tightening job	State

Name	Description	Status
RST	Resets any running tightening job	State
LSN	Disables reverse	State
TOL	Tool validation	State
STR	Tool start	State
EDZ	Resets results	State
XMS	Synchronous XML	State
XMA	XML activated	State

CVILOGIX

Name	Description	Status
External In CVILOGIX bit (0..100)	Indicates that this input can be used by an internal CVILOGIX application	State
CVILOGIX validation	Enables CVILOGIX to lock/unlock the tool.	State

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