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CVI3 Tightening Controllers

ALCORN INDUSTRIAL, INC

Configuration Manual



Model	Part number
CVI3 Essential	6159326950
CVI3 Function	6159326900
CVI3 Function eSTOP	6159326930
CVI3 Vision	6159326910
CVI3 Vision eSTOP	6159326940
TWINCVI3	6159326970
TWINCVI3 eSTOP	6159326980



⚠ 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

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 the following controllers:

- CVI3 Essential
- CVI3 Function
- CVI3 Vision
- TWINCVI3

This manual explains how to set up the system and how to execute **basic** tightening operations.

For **advanced** topics, refer to the user manual of **CVI CONFIG** (printed matter: 6159939221) available at https://www.desouttertools.com/resource-centre.

There are two types of tightening operations: Pset and Assembly Process.
The tightening strategy will be **Torque and angle** by default.

	A **Pset** is shown by this icon.

A Pset is a tightening operation combining one or several steps, each step describing a function.

The tool will execute the steps one after the other in the given order.
Content of the steps and the order can be changed at any time.

ⓘ The minimum to run the tool is 1 Pset containing 1 step.

	An Assembly Process is commonly called **AP** and is shown by this icon.

The Assembly Process available in products and systems consists in executing a Pset a certain number of times or unlimited. This feature is named **Batch**.

Configuration overview

List of screens

CVI3 Essential / CVI3 Function

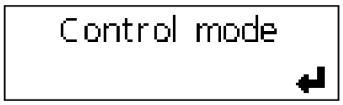
When the controller is powered on, the start screen is displayed.



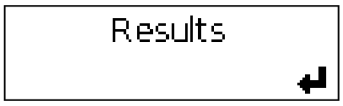
The **Stop** icon means that the tool is locked.
The controller is waiting for the selection of a Pset to run the tool.



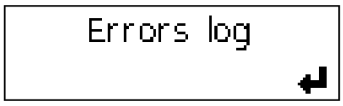
Press this button to access to the other screens.



to display the last result
to select the next Assembly Process and/or Pset



to display the results



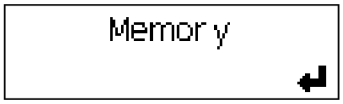
to display the user infos



to save the results, configurations and logs to a USB key
to upgrade the firmware



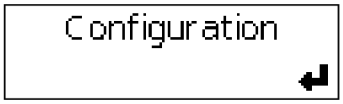
to backup, restore or erase the tightening results from the ePOD
to eject and repair the ePOD



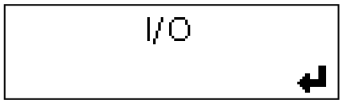
to erase the results, the user infos and the configurations



to launch a CVILOGIX program



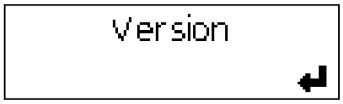
to set up the network
to customize the controller



to display the status of the Inputs/Outputs



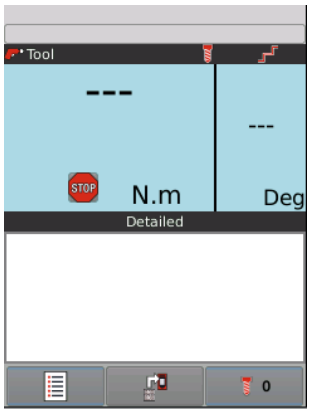
to enable or disable the data protection



to display the firmware version

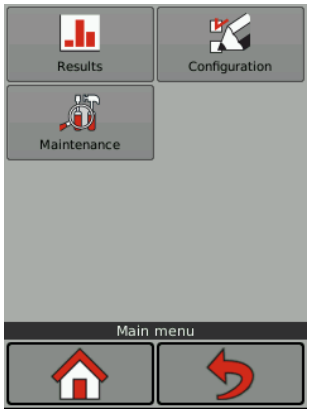
CVI3 Vision / TWINCVI3

When the controller is powered on, the start screen is displayed.



The **Stop** icon means that the tool is locked.
The controller is waiting for the selection of a Pset to run the tool.

Tap this icon to go to the main menu.



to display the results and curves

to set up the controller, the tool and the tightening processes (Pset and Assembly Process)

to set up the I/O, manage the memory, calibrate the screen
to display the tool characteristics
to manage the ePOD
to display the log of user infos
to view the firmware version

to quit and display the start screen

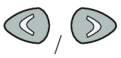
to cancel the last action and return to the previous screen

Names can be up to 40 characters long.
Comments can be up to 100 characters long.

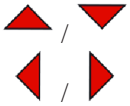
How to use buttons and icons

CVI3 Essential / CVI3 Function

Esc	to enter the start screen
	to quit without changing

	to validate
	to navigate
	to change
	Pset symbol
	Assembly Process symbol
	The system is waiting for a command. Select a Pset or Assembly Process.
	The tool is locked. Select a Pset or an Assembly Process.
	The screen is unlocked.
	The screen is locked. The "Access manager" feature has been enabled.

CVI3 Vision / TWINCVI3

	to display the main menu
	to access the different views to display the results
	to view the selected Pset
	to view the selected Assembly Process
	to view why the tool is locked
	to quit and display the start screen
	to cancel the last action and return to the previous screen
	to validate
	to save
	to quit without saving
	This tightening unit manages a cord tool.
	This tightening unit manages a cordless tool.
	The screen is unlocked.
	The screen is locked. The "Access manager" feature has been enabled.
	to navigate to change the selection

Customizing general settings

How to change the language

The language is set to **English** by default.

CVI3 Essential / CVI3 Function

1. From the start screen, press **Escape** to enter the screen **Control mode**.
2. Keep pressing **Enter** up to the screen **Service**.
   Press **Up** or **Down** key up to the screen **Language**.
3. Press the **Left** or **Right** key. The name of the language is blinking.
   Select the language.
4. Press **Enter** to validate.

CVI3 Vision and TWINCVI3



Tap this icon to go to the main menu.

Tap **Configuration** / **Controller** / **User interface / Language**.

Select your language by tapping the screen or the arrows.

Validate the selection.

Synchronizing date and time

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

Select the date and time format.
DD/MM/YY hh:mm:ss
YY/MM/DD hh:mm:ss
MM/DD/YY hh:mm:ss

Select the source which will synchronize the date and time in the controller.
For example: If **Sync source** is set to **CVI CONFIG**, the controller date and time will be updated during the data transfer from the software to the controller.

- None
- CVI CONFIG
- CVINET WEB
- Fieldbus
- Ethernet protocol
- Server NTP: enter the server address.
- Toolsnet

For CVI3 Essential / CVI3 Function, go to **Configuration > Service > Date** and use the keys up and down to change the current date. Do the same to change the time.

For CVI3 Vision and TWINCVI3, go to **Configuration > Controller > User interface > Date and time**, do the selections and tap the icon **Save** to validate.

Setting the controller beep

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

For CVI3 Essential / CVI3 Function, go to **Configuration / Service / Beep** and use the keys up and down to disable or enable the beep.

For CVI3 Vision and TWINCVI3, go to **Configuration / Controller / User interface / Display** and tick or untick **Keypad beep enabled**.

Setting the torque and speed units

Select the units according to your requirements.

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**.

Setting the backlight timeout

ⓘ This feature is valid for CVI3 Vision and TWINCVI3 only.
The screen will shut down after 2 minutes by default.
Tap the screen to wake it up.

Go to **Configuration / Controller / User interface / Display**.

Tick or untick **Back light auto off** to enable or disable the feature.

Tap **Back light timeout** and set a time between 1 and 60 minutes.

Tap **Save** to validate.

How to change the IP address

On delivery, the IP addresses of controllers are as follows.

for network 1 (or Ethernet 1)	192.168.5.212
for network 2 (or Ethernet 2)	192.168.6.212

Subnet mask is 255.255.255.0 by default.

For CVI3 Essential / CVI3 Function, go to **Configuration / Network** and use the keys up and down to change the IP address. Do the same for changing the subnet mask if needed.

For CVI3 Vision and TWINCVI3, go to **Configuration / Controller / Peripherals / Networks**, select the network configuration and change the IP address accordingly. Change the subnet mask if needed. Enter a name for each network. Tap **Save** to validate.

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

Changing the operating mode of TWINCVI3

TWINCVI3 can manage 2 tools driven by 1 or 2 tightening units depending on whether the operating mode is **synchronous** or **asynchronous**.
The operating mode shall be selected according to the application.

By default, the controller is in asynchronous mode.

ⓘ It is strongly recommended to select in which mode the controller will run at the very beginning of the setup.

In the asynchronous mode, there are 2 tightening units.
Both tools can start independently.
Tightening reports are independent.

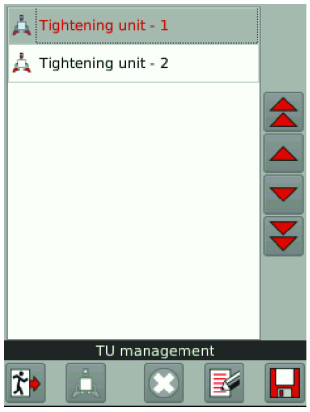
In the synchronous mode, there is 1 tightening unit.
Both tools start together (common «Start» signal).
The tightening steps of each tool can be synchronized.
The tightening report depends on both tools reporting.

Go to the start screen.



Tap this icon to go to the main menu.

Tap **Configuration** > **Tightening unit**.





To change to synchronous mode, select the second tightening unit and tap this icon.



To return to the asynchronous mode, tap this icon to add the second tightening unit.



Tap this icon to save.

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.

How to run a Pset with CVI3 Essential / CVI3 Function

ⓘ Use CVI CONFIG to create Psets and transfer the configuration to the controller.

Selecting a Pset

Go to the start screen.



The question mark indicates that the system is waiting for the selection of a Pset.
The tool is locked.

Press the **Left** or **Right** key.
The question mark is blinking.

Use the keys up and down to change the number.
Press **Enter** to validate.

⚠ **WARNING Risk Of Injury**

As the reaction force increases in proportion to the tightening torque, there is a risk of severe bodily injury of the operator as a result of unexpected behavior of the tool.

► Make sure that the tool is in perfect working order and the system is programmed correctly.

Apply the tool to the joint to tighten.

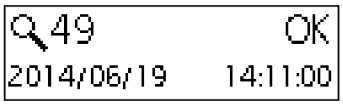
Press the tool trigger to run the selected Pset.

Viewing the last result



Pset 01 has just been executed.
The report is displayed: OK.

Use the **Up** and **Down** keys to change the display.

	The torque and angle values are displayed.
	The trend is displayed.
	The report details are available. Press **Enter** to see them.
	Result number Report status Date and time
	Pset number
	Step number Stop source Press the **Left** or **Right** key to get the message in full.

Description of symbols

	The last step has been done.
	The Pset has been stopped before the last step.
OK	The tightening operation is successful.
NOK	The tightening operation has failed.

Table 1: General

	Torque
	Time
	Overall time
	Current
	Torque rate
	Angle
	Overall angle
	Second part angle 1
	Second part angle 2
	Rundown angle

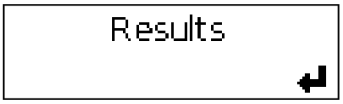
Table 2: Monitoring

	The torque is below the minimum torque.
	The torque is above the maximum torque.
	The angle is below the minimum angle.
	The angle is above the maximum angle.
	The torque is in the tolerance of the target torque.
	The angle is in the tolerance of the target angle.
	The torque is above the assembly torque limit.
	The angle is above the assembly angle limit.

Table 3: Trend

Viewing other results

Go to this menu.



Press this icon to view the last result.

Use the **Up** and **Down** keys to change the display.

Use **Left** or **Right** keys to select another result.

Keep pressing the key to display the results by 10.



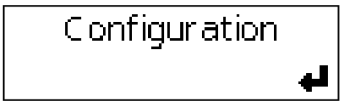
This screen indicates that a **run reverse** operation has been done.

Getting results full screen

The **Zoom** mode is used to display the **Torque** or **Angle** or **Report** full screen.

When this mode is activated, the last result and the selected Pset are alternatively displayed.
If any key is pressed, the zoom is removed and the default configuration is displayed.

Go to this menu.



Press this icon up to **Service** / **Zoom disabled**.

Use **Left** or **Right** keys to change your selection.

Press this icon validate your selection.

How to run a Pset with CVI3 Vision or TWINCVI3

Setting the running mode to Pset

Go to the start screen.



Tap this icon to go to the main menu.

Tap **Configuration** > **Tightening unit**.

Select the tightening unit which manages the tool.



Press this button to edit the tightening unit.

Go to **Running mode** and select **Pset**.



Press this button to validate.



Tap this icon to save.

Selecting which source will start the Pset

Go to the start screen.



Tap this icon to go to the main menu.

Tap **Configuration** > **Tightening unit**.



Press this button to edit the tightening unit.

Go to **Pset source** and select **Front panel**.



Press this button to validate.



Tap this icon to save.

Creating a Pset

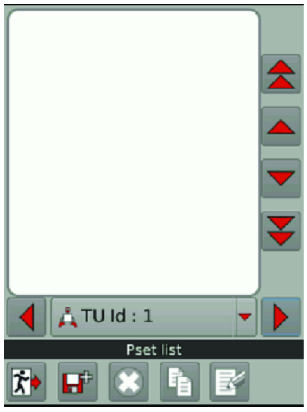
ⓘ The tool must be connected.

Keep the cordless tool awake by pressing the trigger, the run reverse button or the OK button.



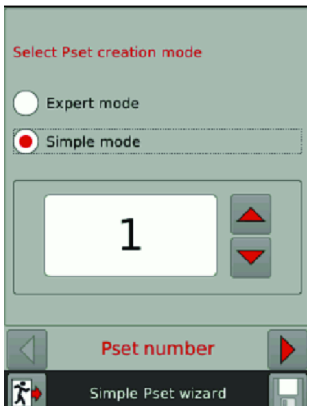
Tap this icon to go to the main menu.

Go to **Configuration** > **Pset**.



Select the tightening unit which manages the tool.

 Tap this icon to create a Pset.



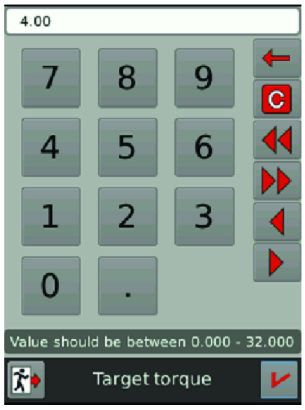
Keep the tool connected.

Tick **Simple mode**.

 Tap this icon.



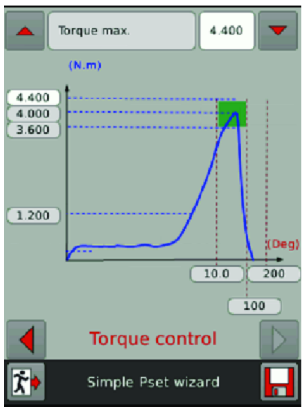
Tap the box **Target torque**.



Tap **C** to clear the text.
Type your target torque.

Tap this icon to validate.

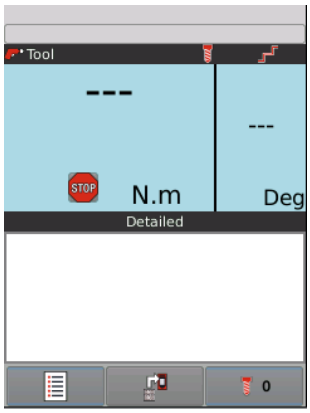
Tap this icon.



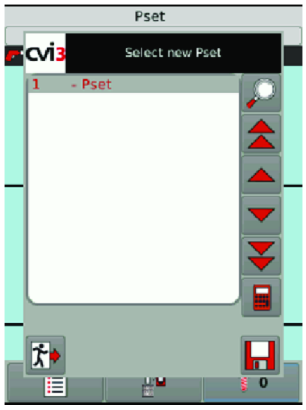
Tap this icon to save.

Running the Pset

Tap this icon.



Tap this icon.
0



Select **Pset 1** in the list.

Tap this icon to save.

⚠ WARNING Risk Of Injury

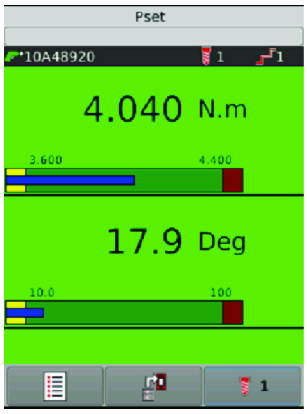
As the reaction force increases in proportion to the tightening torque, there is a risk of severe bodily injury of the operator as a result of unexpected behavior of the tool.

► Make sure that the tool is in perfect working order and the system is programmed correctly.

Apply the tool to the joint to tighten.

Press the tool trigger to run Pset 1.

The simple view is displayed by default.



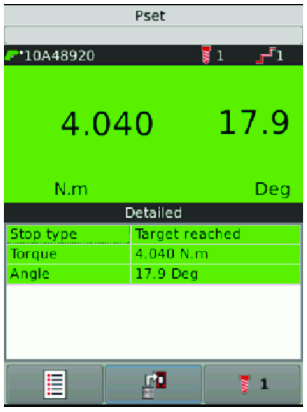
The following values are displayed:

- Min. and max. torque
- Min. and max. angle
- In the **yellow** zone (low), torque/angle is **below** the min. torque/min. angle.
- In the **green** zone (OK), torque/angle is **within** the acceptance window.
- The **blue** zone (result) shows the **measured** values.
- In the **red** zone (high zone), torque/angle is **above** the min. torque/min. angle.

Tap this icon to see the other possible views.

ⓘ The view you will select now will be the one by default for the next tightenings.

Detailed view



Curves view



The curves available are:

- Torque vs Angle
- Torque vs Time
- Angle vs Time
- Current vs Time
- Speed vs Time

Tick **Auto refresh** to keep refreshing the curve after each tightening.



Use this icon to point to the first value. Keep pressing the icon to follow the curve.



Use this icon to point to the last value.

The markers show remarkable samples.
The white cross shows the current sample. Use the dot lines to navigate on the curve.

Tap the screen to return to the start screen.

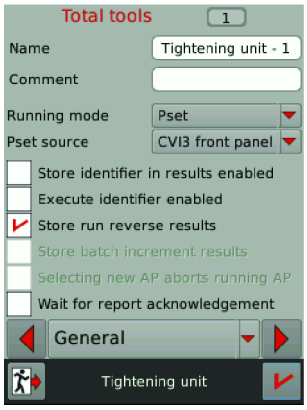
How to get curves displayed

Go to **Configuration** > **Tightening unit**.

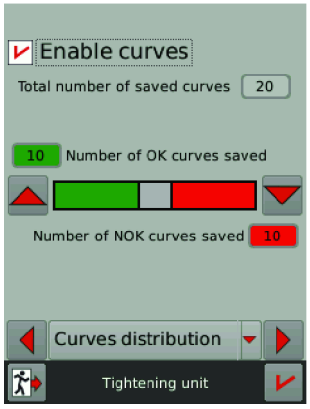
Select the tightening unit in the list.



Tap this icon to edit.



Tap this icon up to the screen **Curves distribution**.



Tick **Enable curves**.

It may happen that there is no curve because the results are not representative.

Tap this icon to validate.

Tap this icon to save.

How to run an Assembly Process with CVI3 Vision or TWINCVI3

Setting the running mode to Assembly Process

Go to the start screen.

Tap this icon to go to the main menu.

Tap **Configuration** > **Tightening unit**.

Select the tightening unit which manages the tool.

Press this button to edit the tightening unit.

Go to **Running mode** and select **Assembly Process**.

Press this button to validate.

Tap this icon to save.

Selecting which source will start the Pset

Go to the start screen.

Tap this icon to go to the main menu.

Tap **Configuration** > **Tightening unit**.

Press this button to edit the tightening unit.

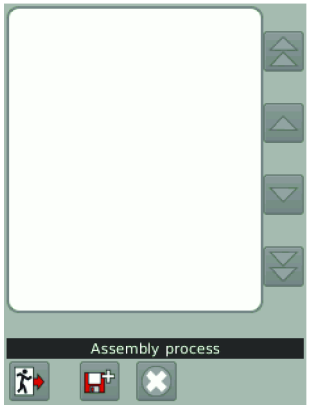
Go to **Pset source** and select **Front panel**.

Press this button to validate.

Tap this icon to save.

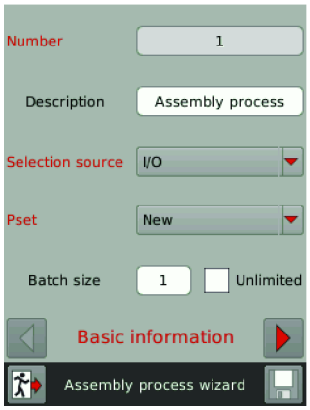
Creating an Assembly Process

Go to **Main menu** > **Configuration** > **Assembly Process**.



If you have more than 1 tool, select the tightening unit which manages the tool.

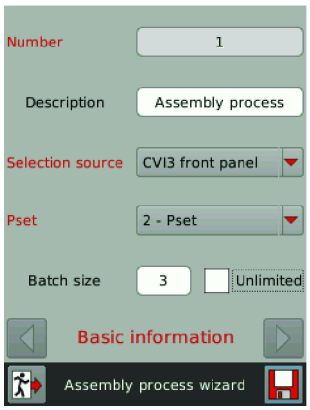
Tap this icon to create a Pset.



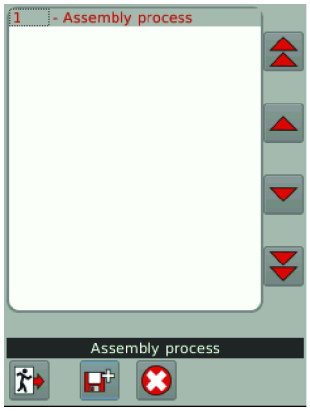
Go to **Selection source** and select which system will start the process.

Go to **Pset** and select which Pset will be executed.
If there is none, create a Pset as explained previously.

Go to **Batch size**. Enter the number of times the Pset will be executed consecutively or tick "Unlimited".
For example:



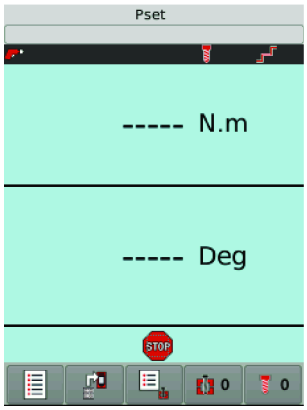
 Tap this icon to save.



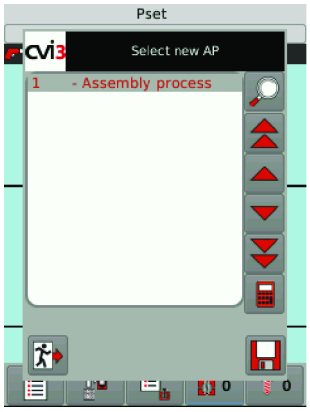
 Tap this icon.

Running the Assembly Process

 Tap this icon.



 0 Tap this icon.



Select **Assembly Process 1** in the list and tap **Save**.

Assembly Process 1 is displayed.
Pset 2 is displayed.

⚠ WARNING Risk Of Injury

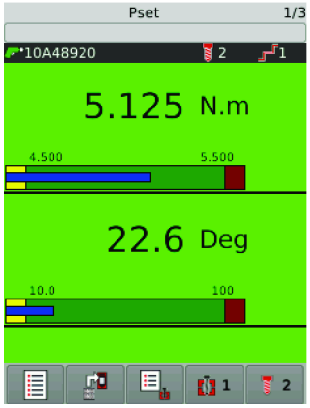
As the reaction force increases in proportion to the tightening torque, there is a risk of severe bodily injury of the operator as a result of unexpected behavior of the tool.

- ► Make sure that the tool is in perfect working order and the system is programmed correctly.

Apply the tool to the joint to tighten.

Press the tool trigger to run Pset 2.

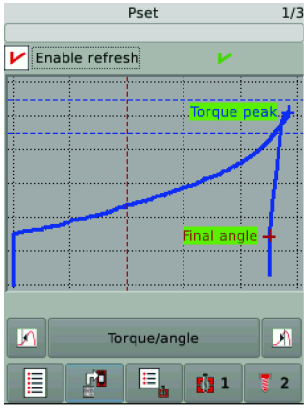
The result is displayed.



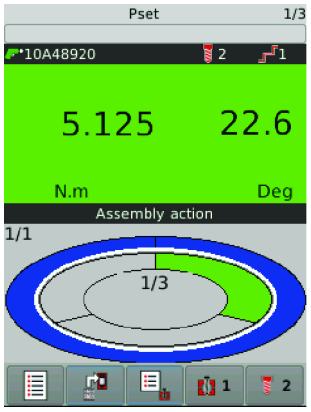
Tap this icon to see the other possible views

ⓘ The view you will select now will be the one by default for the next tightenings.

Curves view

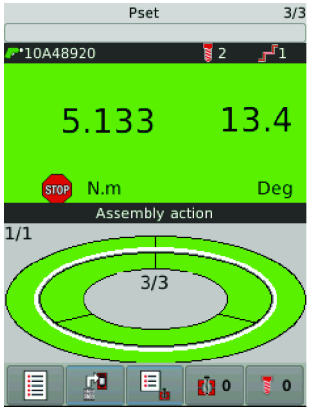


Ellipse view



Pset 2 has been executed once.

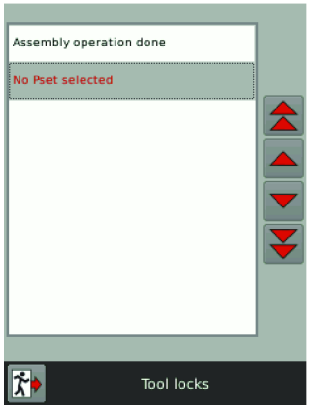
Run Pset 2 twice more to finish the batch.



The process is finished and the report is OK.
Assembly Process is set to 0 again.
Pset is set to 0 again.
The tool is locked, waiting for the next Assembly Process.



Tap this icon to display the reason why the tool is locked.

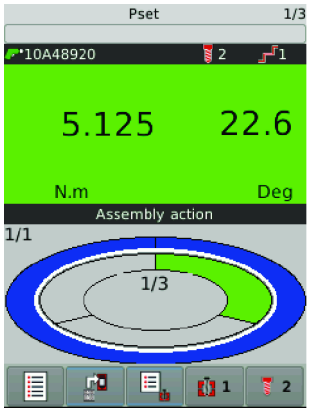


Changing the running Assembly Process

See below the actions you can do while the Assembly Process is running.

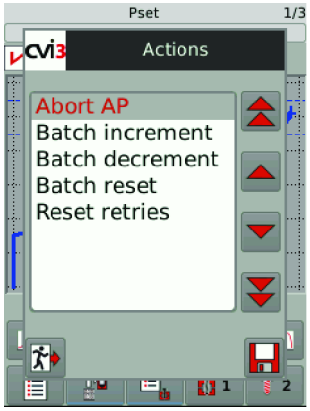
Abort AP	to stop the complete Assembly Process
Batch increment	to skip one bolt
Batch decrement	to redo the last bolt
Batch reset	to restart the complete batch

Go to one of the view.
For example:





Tap this icon.



Select the action in the list.



Tap this icon to save.

Viewing results with CVI3 Vision or TWINCVI3

Go to the start screen.



Tap this icon to go to the main menu.



Press this button to view the last results.



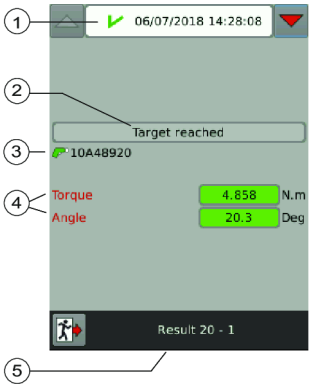
The last result is on the top of the list.

Use the arrow buttons to scroll the list.

Up to 10,000 results can be saved.



Select and tap one result, then tap this icon to display its details.



1	Report status, date and time
2	Stop source
3	Tool serial number
4	Torque and angle values and trend indication
5	Result ID - Tool ID



The report status is **OK** - The operation is complete.



The report status is **NOK** - The operation is not successful.



Loosening



Batch increment



Batch decrement



Tool report OK



Tool report NOK



The trend is: low torque, low angle.



The trend is: high torque, high angle.



The trend is: torque and angle within tolerances



The trend is unknown.

Tap **Filter** below the list of results.
Tap the red cross in each box to select the filters.



Tap this icon to save.

Results monitoring with CVIMONITOR

CVIMONITOR enables to show:

- The result in real-time, detailed per step and with the reason for the tool stop.
- Results curves
- Detailed information of a result
- Results history

Launch CVI MONITOR software from the launchbar on your computer desktop.
Type the IP of the relevant system and click "Select".



Click this icon to display the screen.

Go to the menu in the top bar and click **View / Monitoring**.
Select the views to display at your convenience.



Click this icon to disable the real-time refreshing.



Click this icon to enable the real-time refreshing.

Result in real time

Results are shown for a specific tool.

	The tool report is OK.
	The tool report is NOK.

Tolerances are shown below the tool result.

Additional information is displayed:

- Tool number
- Tool serial number (manufacturer data)
- Tool stop source (target reached or reason for NOK)
- Cable serial number (manufacturer data)

ⓘ In case of systems having several tools in a tightening unit, the global report is then is the aggregated result of all tools results.
If all tools reports are OK, the global report is OK.
If one or more tools are NOK, the global report is NOK.

The **step status** shows the result for a specific step.

	The step report is OK.
	The step report is NOK.

ⓘ To have the "Result per step" recorded in the tightening results, be sure you have previously ticked the box "Store results" in the general parameters of the step (in CVI CONFIG).

Additional information is displayed:

- Torque and angle (systematically monitored)
  Other monitorings are:
  - peak torque
  - final angle
  - current check at end
  - slip off
  - stick slip

- time
- rundown angle
- torque rate

- Step number
- Step stop source (target reached or reason for NOK)

Results curves

The result curves are the last 20 curves stored by the system.

ⓘ OK/NOK curves distribution is depending on the configuration set either in the system or in CVI CONFIG.

 Click this icon before working on the curve.

 Click this icon to export results to *.csv* file.

 Click this icon to print the curve.

Select the **type of curve** to view in the *Torque/angle* drop-down box.

- Time curves
  - Torque and angle versus time
  - Torque, angle and current versus time
  - Torque, angle, current and speed versus time
  - Torque rate versus time
- Torque/Angle
- Torque/Overall angle
  This type is used to see the angle over several steps or from the tightening start.

Use **Control Markers** to focus -for example- on Torque peak, Final angle, Target torque rate.

Use **Monitoring markers** to show -for example- the motor stop.

Choose to display the **curve for all steps or for a specific step** in the *All* drop-down box.

 Click this icon to zoom out.

 Click this icon to zoom in.
Use the mouse to draw an area.
Use the mouse to follow the points and mark a specific area.
Use the right click of the mouse to come back to the previous view.

 Slope information is shown on the right side of the curve.

 Click this icon to clear the Zoom or Slope.

Detailed information of a result

This screen enables you to monitor the tightening process in real-time.

The following details can be displayed:

- System name
- Pset number
- Assembly Process number
- Batch count
- Date and time
- Result number
- Result name
- Comment

- Tightening unit name
- Identifier name (up to 10 different identifiers can be scanned by a barcode or sent via Open Protocol / Fieldbus / CVILOGIX)

Results history

This screen shows the overview of the last 100 results.

- Result ID (status and number)

	The report is OK.
	The report is NOK.
	Loosening operation

- Tool number
- Torque value
- Angle value

Click **Load results** to upload the last 100 results from the tool.

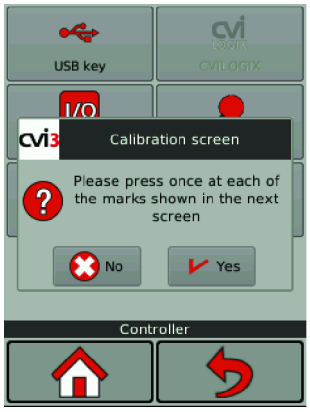
Click **Export results to CSV** to save results in a file at *C:\Program Files (x86)\Desoutter\CVI CONFIG\cvi3monitor* by default.

Features

How to calibrate the controller screen

Tap this icon to go to the main menu.

Tap **Maintenance** > **Controller** > **Calibrate screen**.



Tap **Yes** to display the calibration screen.
Tap each of the 5 crosses.
The controller will automatically re-calibrate the screen.

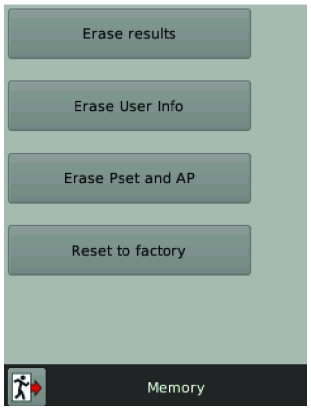
Green crosses must be over the red ones as accurately as possible.

Tap **Yes** or **No** to save or not the new configuration.
If no action is done within 10 seconds, the previous configuration will be kept.

How to manage the memory

Tap this icon to go to the main menu.

Tap **Maintenance** > **Controller** > **Memory**.



Select and tap what you want to erase from the controller memory.

- Results
- User infos
- Psets and Assembly Processes

Tap **Reset to factory** to reset the memory of the controller.

Logs and user infos will be kept.

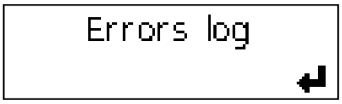
How to monitor your system by using the user infos

Use the user infos to monitor and analyse all actions performed by the system.
You can check for example, when a tool has been connected or if a Pset has been modified.

Refer to the chapter "List of user infos" in this manual to get the complete list.

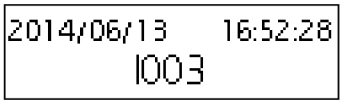
CVI3 Essential / CVI3 Function

Go to this menu.

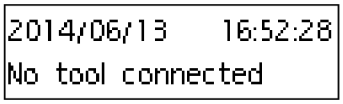




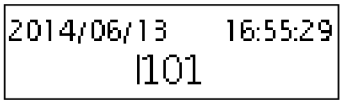
Press this icon to view the last user info.



Use the **Up** and **Down** keys to get the details.



Use the **Left** or **Right** keys to select another user info.





Press this key to clear the screen.

CVI3 Vision / TWINCVI3

When an event occurs, a message is displayed on the screen.

For example:





Press the icon to display the resolution procedure.

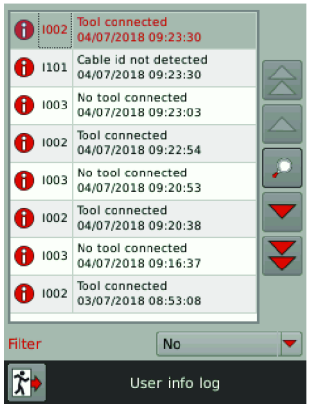


Press the icon to hide the user info.



Press the icon to display the QR code.
Scan this QR code with your smartphone and get support from Desoutter.

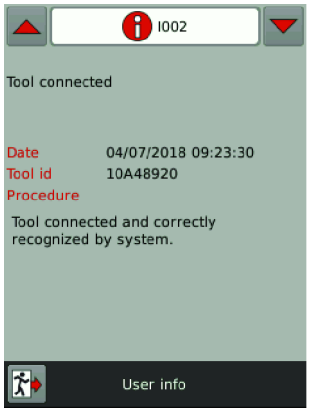
The list of events is available in the menu **Maintenance** > **User info log**.



Tap **Filter** to classify the user infos:

- Info
- Warning
- Error

 Tap this icon to view the details.



 Tap this icon to quit.

How to monitor tools

Getting information about tools

The following information is available in read-only mode.

- identification
- characteristics
- configuration
- calibration alarm
- temperature alarm

 Connect the tool to activate the screens.

Go to **Maintenance** > **Tool** > **Identification**.

The following elements identify the tool:

- Manufacturer name

- Model
- Serial number
- User comment
- Tool release
- Tool maximum torque
- Tool maximum speed
- Gear ratio
- Tool maximum current

Use the arrows to display other pages.

The **characteristics** of the tool are:

- Tool type
- Tool family
- Production date
- Motor type
- Application version
- Hardware version
- Boot loader version

Go to **Maintenance** > **Tool** > **Configuration**.

The **configuration** lists the triggers used and the accessories mounted on the tool:

- handle trigger
- front trigger
- Crowfoot
- Tubenut
- Torque multiplier

ⓘ Changing the tool configuration is performed by Desoutter technicians only.
It is mandatory to calibrate the tools after they have been modified.

Contact your Desoutter representative to get more information and support.

Monitoring the tool temperature

Go to **Maintenance** > **Tool** > **Monitoring**.





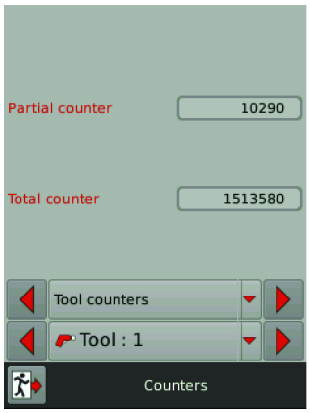
Tap this icon to go to the next page.



When the alarm is reached, a pop-up appears on the tool display. The tool is locked because the motor is too hot. Leave the tool until the temperature decreases.

Monitoring the tool counters

Go to **Maintenance** > **Tool** > **Counters**.



The **total counter** gives the number of tightenings and run reverses above the tool min. torque since the manufacturing date.

The **partial counter** gives the number of tightenings and run reverses since the last reset.

To reset the partial counter, launch **CVI MONITOR** from CVI CONFIG and go to the tab **Maintenance**. Click **Read all counters** and click **Reset**. A green tick confirms that the reset to 0 has been done. Go back to CVI CONFIG and update the product.

Monitoring the tool calibration status

Calibration data is given per transducer and per tool.

Go to **Maintenance** > **Tool** > **Monitoring**.



ⓘ When the date of the next calibration is reached, a pop-up appears on the tool display asking to perform the calibration.
Calibration is performed by Desoutter technicians only.

Contact your Desoutter representative to get more information and support.

How to set up Fieldbus

Refer to the user manual (printed matter: 6159929610) available at https://www.desouttertools.com/resource-centre.

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

To get more information, refer to *Logical input [Page 51]* and *Logical output [Page 56]* .

For CVI3 Essential / CVI3 Function, go to **I/O**.
This screen is in reading mode only.
A black circle means the Input or Output is "ON".

For CVI3 Vision and TWINCVI3, go to **Maintenance / Controller / I/O**.

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.

Physical I/O configuration

This part shows the status of the physical Input/Output of the controller.

Use the left, right or down arrow keys to navigate from one screen to another.
Use the scroll bar to navigate in the screen.

	The Input or Output is ON.
	The Input or Output is OFF.
	I/O events are associated to physical I/O. Click to display the assignment.
	I/O events are not associated to physical I/O.
	Click this icon to switch the signal.

⚠ **WARNING Risk Of Injury**

Changing output settings can affect actuators connected to the system.

ⓘ Should the application need a larger number of I/O, it is possible to connect I/O expanders to the eBUS network.

Event I/O programming

The goal is to associate I/O events to the physical I/O.
Some of the most frequently used events are already assigned.

Use the left, right or down arrow keys to navigate from one screen to another.
Use the scroll bar to navigate in the screen.

I/O events can be classified as follows:

	I/O dedicated to a tightening unit
	I/O dedicated to a tool
	I/O dedicated to a controller
	The Input or Output is ON.
	The Input or Output is OFF.

How to force/unforce an input event

Click the line of the Input event to force. The button turns green.
This input event is now activating the corresponding physical Input.

ⓘ Warning!
When you quit the screen, the forced signal becomes unforced.

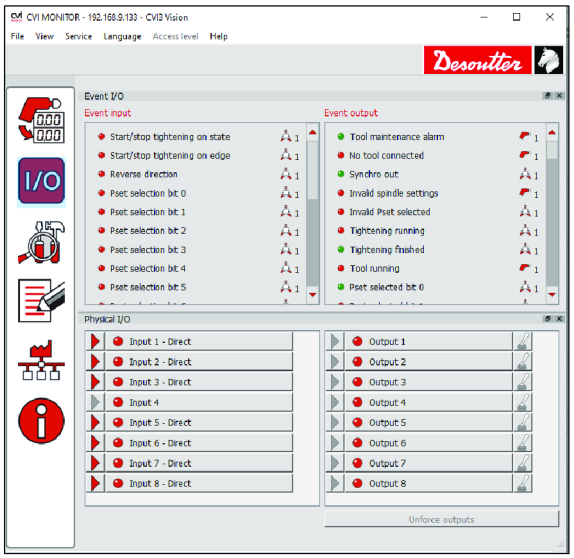
How to monitor I/O with CVIMONITOR

CVIMONITOR enables to know the real-time status of I/O and events of the connected controller.

Launch CVI MONITOR software from the launchbar on your computer desktop.
Type the IP of the relevant controller and click "Select".



Click this icon to display the status of I/O and events.



Go to the menu in the top bar and click **View / IO monitoring**.
Select the views to display at your convenience.

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

Physical I/O are 24 V Inputs or Outputs.



I/O or event is ON



I/O or event is OFF

Events can be sorted as follows:
- by controller
- by tightening unit
- by tool

How to test the Outputs

ⓘ When testing the outputs, the user must make sure that the forced output is NOT connected to an actuator that may hurt the operator.

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.

Click "Unforce outputs" to return to the original state.

Click the physical output to force or unforce the relays.

How to view user logs with CVIMONITOR

CVIMONITOR enables to view the user logs history of the connected system.
A problem solving guidance is displayed for each main issue.

Refer to the chapter **List of user infos** in this manual to get the complete list.

Launch CVI MONITOR software from the launchbar on your computer desktop.
Type the IP of the relevant system and click "Select".

 Click this icon to display the screen.

Click **View** in the top bar to display the window **Details**.

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.

Click the column title to sort by description, date, ID.

Use **Filter** to focus on a type of user info.
Select **Advanced** to search for a specific topic.

In the window **Details**, Click the **link** to get more information about the resolution procedure.
You will be redirected to the "Desoutter support" website.

Click **Load user info file** to upload an existing user info file from *C:\Program Files (x86)\Desoutter\CVI CONFIG \cvi3monitor* by default.
**.txt* file has been saved by CVIMONITOR.
.zip* file has been saved by the function **Save Log in the system.

Click **Save user info to file** to save a **User info_2020_06_02.txt** file in *C:\Program Files (x86)\Desoutter\CVI CONFIG\cvi3monitor* by default.

Using CVILOGIX

Check you have the following items:

- ePOD including the CVILOGIX function
- USB key including your own CVILOGIX program

Plug in the ePOD into the bottom panel.

Plug in the USB key into the front panel.

ⓘ For CVI3 Essential / CVI3 Function, use CVI CONFIG to set the **Pset selection source** to CVILOGIX.

CVI3 Essential / CVI3 Function

Go to this menu.



 Press this icon.



Use the **Up** and **Down** keys.



The CVILOGIX program is running.

Go to the start screen.





The program is running.



The program is stopped.

CVI3 Vision / TWINCVI3

Go to the start screen.



Tap this icon to go to the main menu.

Tap **Maintenance** > **Controller** > **CVILOGIX**.

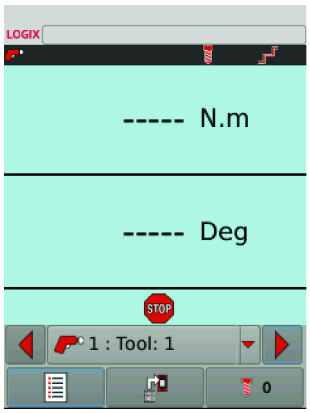


Tap **Load program**.

Tap **Start** to launch the program.

Tap **Save program** to save the program on an USB stick connected to the front panel.

Once the program started, the start screen is as follows:



The CVILOGIX logo is displayed on the top left.

LOGIX When the logo is red, the program is not activated.

LOGIX When the logo is green, the program is running.

Selecting which source will start the Pset

Go to the start screen.

 Tap this icon to go to the main menu.

Tap **Configuration** > **Tightening unit**.

Select the tightening unit which manages the tool.

 Press this button to edit the tightening unit.

Go to **Pset source** and select **CVILOGIX**.

 Tap this icon to validate.

 Tap this icon to save.

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.

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

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

Name	Description	Raising condition Falling condition
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.

Name	Description	Raising condition Falling condition
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.
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).

Name	Description	Raising condition Falling condition
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
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

Name	Description	Raising condition Falling condition
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
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

Name	Description	Raising condition Falling condition
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

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

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