

User manual

SEQUENCING AND PROCESS

MONITORING INTERFACE

DPCTouchV2



EN

60352-05/21



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REMARKS ABOUT THE MANUAL

Symbols



Information

This warning statement indicates important information (for example : damage to property), but no hazard.



Information

Information to view in your customer area on the www.doga.fr web site.



Caution

This warning statement indicates a low risk that may lead to minor or moderate injuries if not avoided.



Warning

This warning statement indicates a moderate risk that may lead to severe or fatal injuries if not avoided.

1. INFORMATIONS

1.1 IMPORTANT

The DPC TOUCH V2 delivered with this manual may have been modified for specific needs.

If this is the case, when ordering a replacement or spare parts, please indicate the controller serial number written on our shipping note, or contact **DOGA** at **+33 1 30 66 41 41**.

In this way, you will be sure to get the required controller and/or spare parts

1.2 Product Reference

Description	DPC TOUCH V2
Type	POSITION CONTROLLER

1.3 General Equipment Description

To ensure quality production, it is necessary to count, control, sequence and to display assembly steps. Our Posi-Control interface, DPC Touch V2, is the ideal tool for autonomous workstations or line production. It was developed by DOGA to address all application requirements. The DPC Touch V2 is versatile and compatible with most tightening tools on the market. It guides the operator, even a novice, through every step of an assembly process to ensure a zero default assembly.

1.4 Standard Equipment Presentation

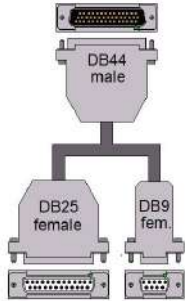
1.4.1 DPC Touch V2 Controller



1	SD Card	6	1 : GX, GY, DO, GA
2	USB mini-B port *	7	2 : GX, GY, DO, GA
3	USB-B port *	8	I/O port (DB44)
4	Power Supply	9	Encoders port (DB9)
5	Ethernet Port	10	Barcode reader (RS-232)

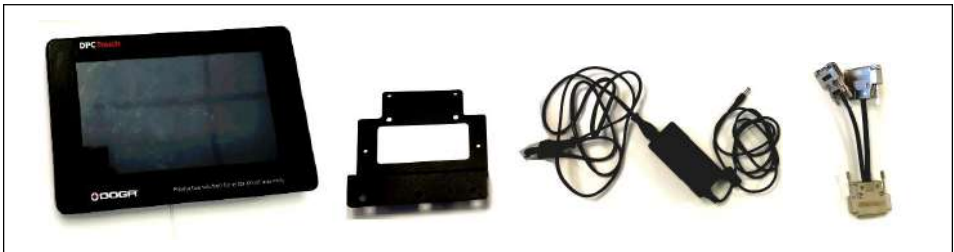
* Not activated.

1.4.2 Adapters

<p>I/O Adapters</p>	<p>This adapter is used to split I/O signals for tool interface and other automation equipment (see Electric wiring chapter for the wiring scheme)</p> <p><i>Refer to paragraph 5.3</i></p>	
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1.5 Packing List

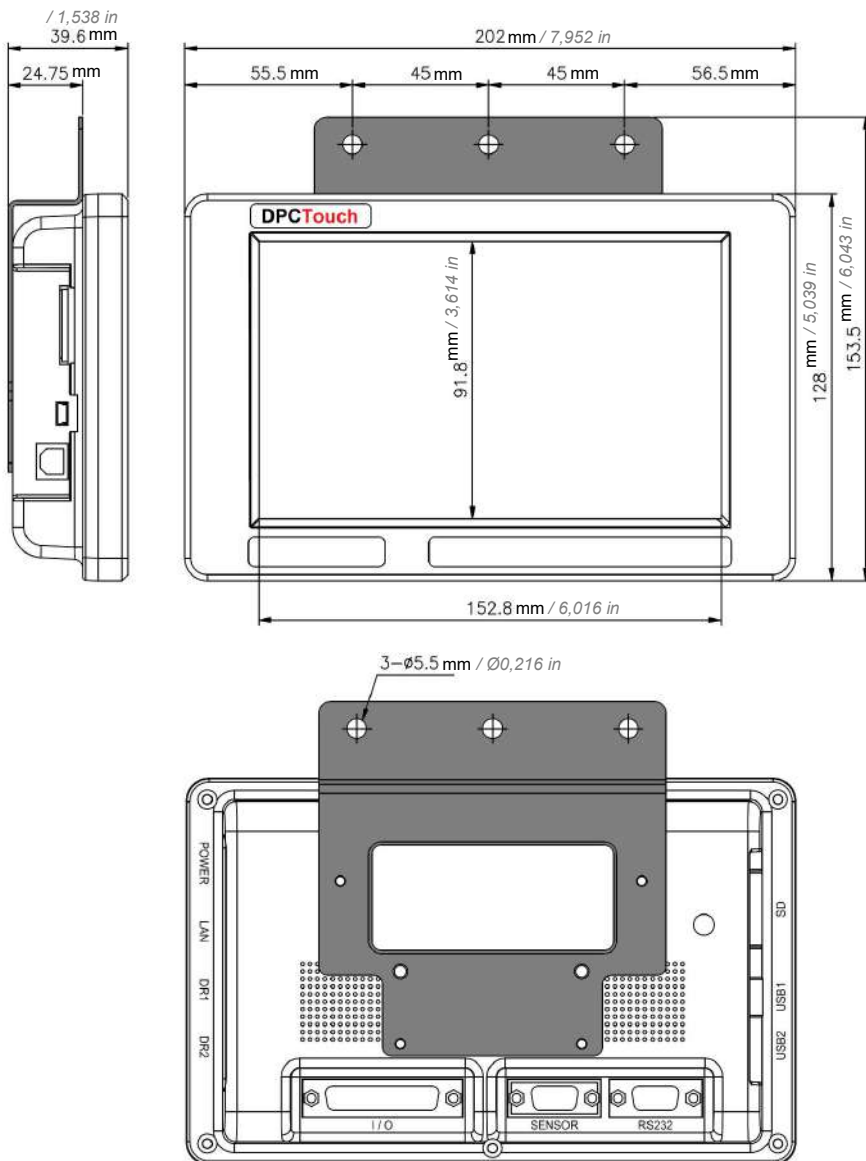
- x 1 DOGA Posi-Control DPC Touch V2
- x 1 Mounting kit
- x 1 Power supply cable
- x 1 I/O DB44 DB25 + DB9 cable




Accessories / others:

- x 4 Screw M3
- x 1 Adapter EU-UK
- x 1 Adapter EU-US
- x 1 SD Cover

1.6 Technical Specifications



Electrical Characteristics

Input power	DC 24 V  1 A
Adaptor (provided)	AC 100-240 V ~ 50 - 60 Hz
Plug	European Union / United Kingdom / USA

Physical Characteristics

Width	202 mm / 7,952 in
Depth (with support)	39,6 mm / 1,568 in
Height	128 mm / 5,039 in
Mass excluding power	0,55 kg / 1,21 lbs
Packaging (w x d x h)	300 x 255 x 65 mm 11,81 x 10,04 x 2,56 in
Use temperature	15 - 40°C
Humidity	15 - 85% HR

User interface

Screen	7" LCD Touch Screen, 800x480 px
	Visualization of assembly process with graphical instructions
Inputs & Outputs 24V	12 inputs & 12 outputs with assignable functions
Analog encoders	4 channels, 0...5V
Memory Card	Removable SD card, 8Gb
Total jobs memory	255 jobs
Total positions memory	255 jobs x 80 steps x 50 positions per fastening step
Programming	Automatic and manual programming of a fastening step
Position accuracy	0.09° for angular encoders <0.5 mm for linear encoders

User interface	
Positioning tolerance	Adjustable for each position and for each axis. Smart tolerance detection feature.
Compatible tools	All tool with signals – electric or pneumatic. Min required tool I/O: «Driver Torque Up» output, «Tool Disable» input. A «Driver Run» from the tool allows access to certain functions.
Communication	RS232 for bar code scanner and firmware upgrade Ethernet (Modbus TCP/IP)
Languages	French
	English
	Spanish
	Portuguese
	Italian
	German
	Russian
	Czech
	Polish
Protection rating	
Protection rating IP	IP 4X Equipment protected against intrusion of solids larger than 1 mm

2. STARTING UP

2.1 Workstation Description

The DPC Touch V2 is used on workstations equipped with fastening tools that require positioning control, and/or to guide an operator through an assembly process.

2.2 Unpacking

Remove the DPC Touch V2 box from its packaging.



Information

Before use, inspect all packaging and check for signs of damage. If damage is present, do not use.



Warning

Suffocation hazard!
Be careful not to leave empty packages lying around.

Dispose of the packaging in accordance with local laws.

2.3 Configuration

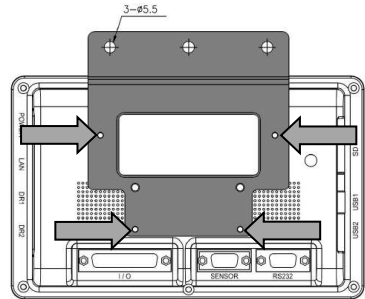
The DPC Touch V2 adapts to your manufacturing process. As a true conductor, the DPC Touch V2 is versatile and compatible with the vast majority of screwdriving tools on the market. It guides the operator, even a novice, through every step of an assembly process to ensure a zero default assembly.

2.4 Installation

2.4.1 Workstation Installation

Install the mounting bracket with 4 M3 screws delivered with the unit.

Then use the 3 holes Ø5.5 mm (0.216 in) to secure the assembly to your workstation.



Information

Make sure the screen is visible and accessible by the operator.

2.4.2 Connection


Connect the DPC Touch V2 to the positioning arm, the tool, and the various desired inputs and outputs. Refer to the appendices of this instruction manual for wiring diagrams.



2.4.3 Firmware Update


To check the version currently installed on your device, locate the label on its packaging, or go to the Settings menu (see paragraph 3.8.10).

Information




Using the latest version of the firmware ensures the most efficient user experience thanks to the constant improvement of the interface and the correction of possible bugs.


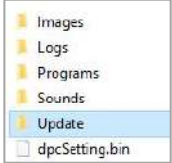
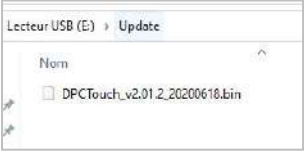

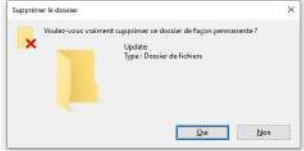
To download the latest version, refer to the «Software» tab in the resources available on the product page of our website by scanning this QR code or by following this link:

Product page	Link	QR code
DPC Touch Assembly Process Sequencing and Tracking Box	https://www.doga.fr/en/assembly-technology/torque-measuring-instruments-process-monitoring/assembly-sequencing-process-monitoring/boitier-sequencement-suivi-process-dassemblage/dpc-touch-sequencing-process-monitoring-interface	

Once the file is downloaded, please follow these steps:

Turn off the DPC Touch by unplugging the power supply, then remove the SD card.



<p>Insert the SD card into your computer. Do not format the SD card. Use an adapter if your computer does not have an SD card reader.</p>	
<p>Create an «Update» folder at the root.</p>	
<p>Move the Firmware (.bin) file to the «Update» folder. Then, safely eject the SD card.</p>	
<p>Place the SD card in the DPC Touch V2. At start-up, the latter performs the update. Wait until the gauge reaches 100% and the device starts fully. The file (.bin) should now be deleted from SD card.</p>	
<p>Turn off the DPC Touch to remove the SD card.</p>	
<p>Insert the SD card into your computer and delete the «Update» folder.</p>	
<p>Safely eject the SD card and return it to the DPC Touch.</p>	



Information

Your saved jobs and data are retained during firmware updates.

3. SETTINGS

3.1 Select language (English)

To access the system press the **LOGIN** button on the main screen. By default the password is “0.” Press **OK** to unlock the DPC Touch V2.

Press **SETTINGS** on the main screen, then press **OTHER**.

Press the **NEXT** button 2 times to reach the *TIME AND LANGUAGE* screen.

The following line is displayed:



Press the arrow and then open a drop-down menu, and select the desired language (English).

Press the HOME button  to get back on the main screen.

The following Home screen will then display in English:



3.2 Change Password

The password allows you to lock access to programming mode and settings. The DPC Touch V2 automatically logs you out as soon as a job is launched (Operation Mode).

To access the system press the **LOGIN** button on the main screen. By default the password is “0.” Press **OK** to unlock the DPC Touch V2.

Press **SETTINGS** on the main menu, then **OTHER**. Press the **NEXT** button 3 times to reach the PASSWORD AND INFORMATION screen.

Enter a new password and press **SET**.

Change password

New password : **Set**



Information

If the password is lost, disable the controller, remove the SD card, access the SD card from your computer and delete the following file: SD: \ dpcSetting.bin. After reboot, the controller is reset to factory default settings.

For data recovery without loss, contact DOGA After-sales department.

3.3 Controller Parameters - Operating

To access the controller settings, press **SETTINGS** from the main screen. The **OPERATING** tab is selected by default.



3.3.1 Operating - Management of Interface


Parameters	Description	Range	Default Value
Tool Selection	Select one of the following option: - GX, GY, DO, GA : DOGA low voltage tools (XS-40D, XS-38D, XT-30D, XS-35D, XT-35D) - DC tools : all electric digital control tools equipped with 24V I/O signals	-	DC tools
Screws counting up/down	This parameter manages the counting display. Turn it ON to count up (1,2,3,...) or OFF to count down (...3,2,1)	ON/OFF	ON
Screws counting per step/job	This parameter manages the counting display. Turn it ON to display counting separately for each step or OFF to display counting for the whole job.	ON/OFF	ON
Torque selection by binary outputs	Selection of tightening presets for each position is done via Torque selection outputs. These outputs can function in binary logic or in direct logic (one output per preset).	ON/OFF	ON
Job selection by binary inputs	Selection of Jobs of DPC Touch can be done via Job selection inputs. These inputs can function in binary logic or in direct logic (one input per job).	ON/OFF	ON
Default job number	The default job is the job that automatically runs when the DPC Touch powers up. If the default job number is set to 0, the DPC Touch will not run any jobs on start up. NOTE: Job selection via inputs has a higher priority.	0 - 255	1

3.3.2 Operating - Management of buttons in operating mode

Parameters	Description	Range	Default value
«Next» button access without password	Allows access to Next button without entering password. If turned OFF, the password will be required when Next button is pressed.	ON/OFF	ON
«Back» button access without password	Allows access to Back button without entering password. If turned OFF the password will be required when Back button is pressed.	ON/OFF	ON
«Reset» button access without password	Allows access to Reset button without entering password. If turned OFF the password will be required when Reset button is pressed.	ON/OFF	ON
Job selection access without password	Allows access to Jobs selection without entering password. If turned OFF the password will be required when Job selection button is pressed.	ON/OFF	ON
Display «job reset» button	Job reset button can be displayed or hidden by using this parameter. NOTE: if turned OFF and automatic reset is used, then the current step will be reset instead of the current job.	ON/OFF	ON

3.3.3 Operating - Management of fastening time

Parameters	Description	Range	Default Value
Min fastening time limit, %	<p>Lower limit of fastening time control in percentage of actual fastening time detected during programming.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  <p>Information: changes will be applied only to new jobs, existing jobs won't be affected.</p> </div>	0 - 100	25
Max fastening time limit, %	<p>Upper limit of fastening time control in percentage of actual fastening time detected during programming.</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;">  <p>Information: changes will be applied only to new jobs, existing jobs won't be affected.</p> </div>	0 - 100	25
Start trigger release time limit, ms	Fastening time threshold after which trigger release will be considered as NG tightening. Error message "Trigger released before Torque Up" will appear.	0 - 9999	0

<p>Temporary position loss time, ms</p>	<p>If fastening is started (Motor Run signal is received), then it is allowed to exit position OK zone (green) into approaching area (orange) for the specified time without locking the tool. If this time limit is passed the tool will be instantly locked. If position NOK zone (red) is entered the tool will be instantly locked.</p> <div data-bbox="308 536 789 744" style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <p>Information</p> <p> this parameter is used to avoid interruptions of fastening process when position is lost for short time due to vibrations.</p> </div>	<p>0 - 3000</p>	<p>50</p>
<p>Judging time, ms</p>	<p>Judging time is used if Fastening OK signal is delayed after the fall of Motor run signal.</p>	<p>0 - 500</p>	<p>100</p>

3.3.4 Operating - Management of NG tightenings

Parameters	Description	Range	Default Value
Numbers of retightenings on a position	Maximum number of attempts to rework a NG fastening. If the maximum number of attempts is reached the current position can be skipped or Job/Step can be reset according to parameters selected. NOTE: this parameter is not effective in non-sequential assembly mode.	0 - 10	1
Skip NG tightening	Allows automatic skipping of a NG tightening if rework is not allowed or if rework wasn't successful.	ON/OFF	OFF
Fastening NG signal if position skipped	If turned ON, Fastening NG signal will be provided when a position is skipped automatically, by Skip button on the operating screen or by external input. If turned OFF, Fastening OK signal will be provided.	ON/OFF	ON
Auto reset delay, ms	Alarm can be reset automatically after the specified delay. If delay is equal to 0 than reset has to be done manually or by external input.	0 - 9999	3000

3.3.5 Operating - Management of operating options

Parameters	Description	Range	Default Value
Automatically restart the job when finished	If turned ON, the job will restart automatically when finished.	ON/OFF	ON
Store logs on SD card during operation	If turned ON, all the events will be stored on the SD card (/Logs) , One folder per year, One sub folder per month, One .csv file per day. See appendice 8.5 for more information.	ON/OFF	ON
Skip by step	Skip the complete step instead of position.	ON/OFF	OFF

3.4 Controller Parameters - Encoders

3.4.1 Encoders - Tolerances Channel 1 to 4

Activate or deactivate corresponding encoders by selecting check boxes accordingly.

Enter default tolerance values for the approaching area and for OK zone where tool is enabled. Default tolerance values are applied automatically during Fastening step creation. It is possible to modify tolerances manually for each individual position during creation of a fastening step.



Information

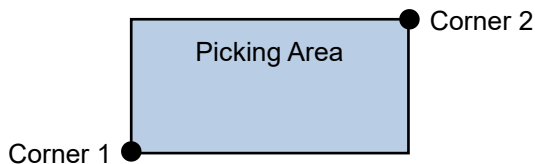
If default tolerances are changed they will be applied only to new jobs, existing jobs will not be affected.

See more information about approaching Area and OK zone tolerances in fastening step creation chapter (paragraph 4.4.2).

3.4.2 Encoders - Position Pick up 1 & 2

It is possible to define two screw feeding positions or areas. The tool can be enabled on the corresponding feeding position for easier screw picking.

Pick up position can be defined as a single point (Corner 1) or as an area between Corner 1 and Corner 2 (see below).



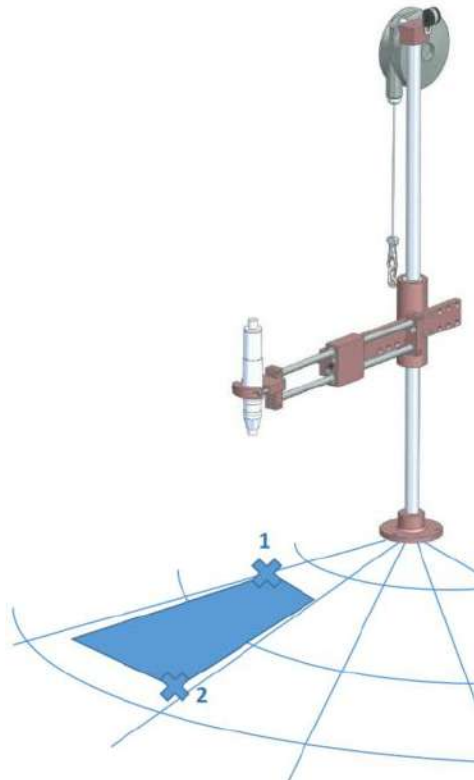
To register location of a corresponding corner, position the arm and press *Pick* button.

Encoders turn light blue and output is activated when rest position is reached.



Information

the real shape of pick-up area is not rectangular and depends on the geometry of the arm.



3.4.3 Encoders - Encoder Reference Point / Zero position

Encoders' reference point (or zero position point) can be defined by using this function. Definition of the reference point is useful when encoders have to be replaced after failure or when repeatability of position of the workpiece can't be assured.

The reference point can be defined by using *Pick* button or reset by using *Reset* button.

The reference point can also be defined by using external input signal in Operation mode.

3.4.4 Encoders - Rest Position

Designed to make sure the tool is not interfering when the product is moving along the production line, the rest position can be defined by using *Pick* button or reset by using *Reset* button.

The rest position can also be defined by using external input signal in Operating mode.

Encoders turn dark blue and output is activated when rest position is reached.

3.5 Controller Parameters - Inputs

Activate necessary inputs by selecting corresponding check boxes.

Select required input function from the list.

Non-assigned inputs can be used for Logical In steps.

Impulse signals duration must be between 100 and 500 ms.



Information

Each input function can be assigned only once.

Input Name	Function description	Signal type
Job select 1-8	Inputs to select jobs on DPC Touch in binary or in direct logic (see the table below). Logic is selected in operating settings.	Continuous
Skip	Signal is used to skip the current step or position.	Impulse
Back	Signal is used to get back to previous position. It's not possible to get back to previous step.	Impulse
Reset	DPC Touch alarm reset. If maximum number of retightenings is reached it's not possible to reset the alarm. Step or Job has to be reset.	Impulse
Reset Step	Signal is used to reset current fastening step.	Impulse
Reset Job	Signal is used to reset current job.	Impulse
Next Job	Signal is used to select next job in the job manager list.	Impulse
Previous Job	Signal is used to select previous job in the job manager list.	Impulse

Workpiece detect	Signal is used to continuously monitor the presence of the workpiece during assemble. If assembly is not finished and the workpiece is removed, then "I/O error" is provided.	Continuous
Tool Alarm	Fastening NG (alarm) signal from the tool to indicate that fastening operation wasn't successful.	Continuous or Impulse
Tool disable	Signal is used to continuously monitor the disabled tool out of picking and green zone.	Continuous
Set Origin	Signal is used to set encoder zero position in operating mode.	Impulse
Driver Reverse	Signal from tool to indicate that the tool is in reverse rotation mode. DPC Touch will lock the tool if the signal is received on the first tightening. After NG tightening DPC Touch will not lock the tool if this signal is received to allow rework operation.	Continuous
Driver Run	Signal from tool to indicate that the tool is running. Signal is used to control fastening time and to assure functioning of Smart tolerance teaching feature and Temporary position loss feature.	Continuous
Driver Torque Up	Signal from tool after successful fastening operation. Once the signal is received, current position is declared as finished.	Impulse
Emergency	External signal to completely lock the DPC Touch until emergency button is released.	Continuous

The table below shows the relation between Job select signals and Job number in binary logic.

Job Number	Job Select 1	Job Select 2	Job Select 3	...	Job Select 8
0	0	0	0	0	0
1	1	0	0	0	0
2	0	1	0	0	0
3	1	1	0	0	0
4	0	0	1	0	0
...					
255	1	1	1	1	1

NOTE: See Output's settings for direct logic example.

3.6 Controller Parameters - Outputs

Activate desired outputs by selecting corresponding check boxes.
 Select required output type from the list. Non-assigned outputs can be used for Logical Out steps.

Duration of impulse signals is 100 ms.

Each output function can be assigned to multiple outputs.

Output Name	Function description	Signal type
Fastening OK	Signal is provided after a successful fastening operation (OK from tool + OK from time control).	Impulse
Fastening NG	Signal is provided after a fastening operation completed with errors.	Impulse
Rest position	Signal is provided when the tool is in the rest position	Continuous
Step OK	Signal is provided after successful completion of a step.	Impulse
Step NG	Signal is provided after if a step was interrupted or completed with missing screws.	Impulse
Tool enable	Signal is provided to enable the tool (when position is OK).	Continuous
Tool disable	Signal is provided to lock the tool (when position is NOK or during alarm mode).	Continuous
Driver run	Signal is provided when the tool is running (Driver Run input has to be connected).	Continuous
Driver torque-up	Signal is provided when driver torque-up signal is received from the tool («Driver torque up» input has to be connected).	Impulse
Driver reset	Signal is provided when reset was made (manually, automatically or via I/O).	Impulse

Torque select 1-8	Signals to select fastening presets on the tool in binary or direct logic (see the table below). Logic is selected in operating settings.	Continuous
Job OK	Signal is provided after successful completion of a job.	Impulse
Job NG	Signal is provided after if a job was interrupted or completed with missing screws.	Impulse
System ready	Signal is provided when the controller is in operating mode and ready for selection of jobs. Once a job is started the signal drops down.	Continuous
Alarm	Signal is provided when the controller is in Alarm mode	Continuous

The table below shows the relation between Torque select signals and Preset number in direct logic.

Job Number	Torque select 1	Torque select 2	Torque select 3	...	Torque select 8
0	1	0	0	0	0
1	0	1	0	0	0
2	0	0	1	0	0
...					
8	0	0	0	0	1

NOTE: See Input's settings for binary logic example.

3.7 Controller Parameters - Network

3.7.1 Network - RS-232 - Serial Communication

Activate (ON) or deactivate (OFF) the serial communication and/or external trigger start for the use of the RS232 serial port of the DPC Touch V2 controller.

When serial communication is enabled, you must then set the communication mode in COM 1 or COM 2 settings.



Warning

Refer to the RS-232 connector wiring diagram in the appendix of the document. In case of COM1 and COM2 use, an adapter is required to separate the ports, contact the DOGA service.

2 possible options in COM settings: **barcode** and **RS-232**.

Once the mode is selected, enter the transmission rate.

You have 5 possibilities: 9600, 19200, 38400, 57600 and 115200. This choice will depend on the hardware connected to the DPC Touch V2 controller.

If you select the **barcode**, please go the screen n°3/3 so in order to start the recognition of the barcode(s) that will be used for job calls (see paragraph 3.7.3.).



Warning

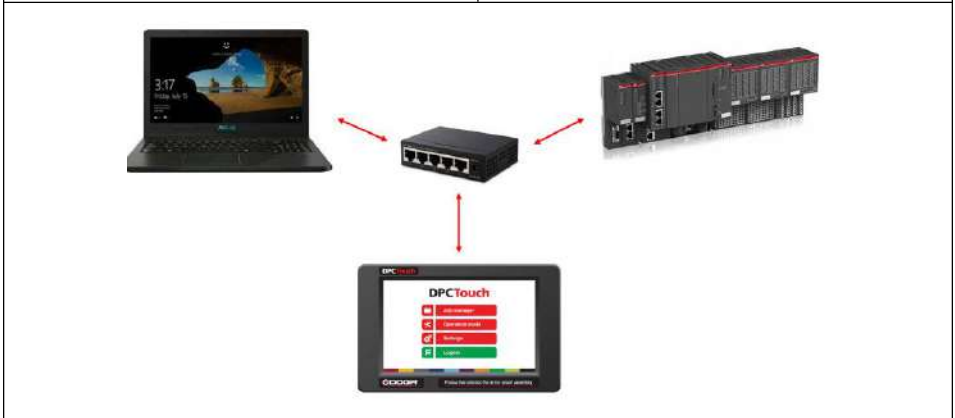
Do not use a RS-232 standard cable, you must adapt the wiring. Please refer to the RS-232 connector wiring scheme in Appendix.

3.7.2 Network - Ethernet Communication - Modbus TCP/IP

Activate (ON) or deactivate (OFF) Ethernet.

You must complete the communication parameters :

IP address	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
Subnet mask	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
Default gateway	<input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/> <input type="text" value="0"/>
Port	<input type="text" value="0"/>
Mac address	<input type="text" value="00:00:00:00:00:00"/>



Example of accessible informations (live):
All settings in the setting menu
Job N°, Step N°, Screw N°, etc.
Encoders position
Tool signal (hourly/anti-hourly rotation, lock, motor run, torque OK)

Example of accessible information (by events): (Buffer 15)
Event number with time stamp
Event type, included barcodes
Job N°, Step N°, Screw N°, etc.
Encoders position at time of fastening

Actions available at distance:
Job selection
Job /step reset
Next / Previous
DPC Touch V2 Reset (code 77)

Please refer to the address in annexes (paragraph 8.3 & 8.4).

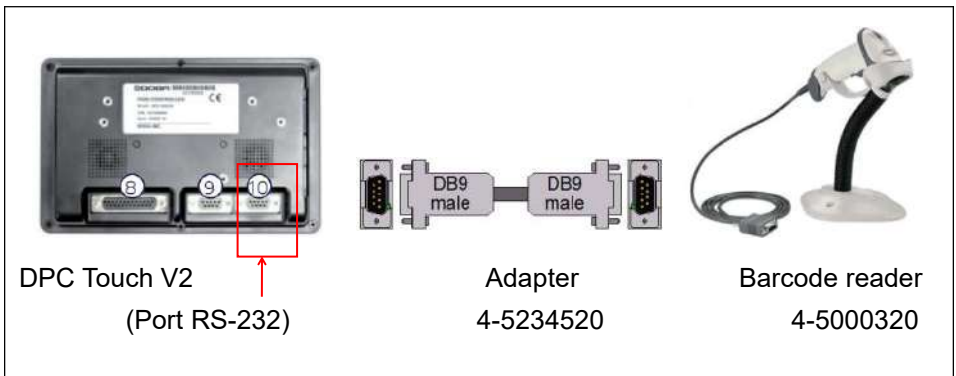
3.7.3 Network - Barcodes

For barcode recognition, connect the reader to the DPC Touch V2 controller.



Warning

Do not connect the bar code reader directly to the DPC Touch V2. You must use an adapter. Refer to the RS-232 Connector Wiring Diagram in the appendix.



Using the red up and down arrows, select the position of the barcode (see next paragraph), as well as the associated job (job #:) according to its order in the programming mode.

Press **READ**  then scan the barcode.



Information

Be careful to associate only 1 barcode per job.

3.7.4 Network - Barcode filtering rules (start/ end) job call:

Using START and END to define the parts of the barcode to be read.
Follow these filtering rules:

If beginning: 0 and end: 0	Barcode is not read, any barecode with an equal or higher number of characters will launch the selected job.
If beginning: 1 and end: between 1 & 32	The barcode is read between the defined limits.



Information

If two barcodes are similar, or contains another barcode, enter the longest barcode first.

Example: ABCD code associated with job 1, ABCDE code associated with job 2. Enter the ABCDE code in first position.

3.8 Controller Parameters - Others

3.8.1 Others - Real time encoders monitoring

This interface helps to verify if the encoders are functioning correctly. The displayed values change with the movement of the positioning arm.

3.8.2 Others - Input monitoring

This interface helps to verify the status of input signals.

3.8.3 Others - Outputs test

This interface can force output signals in order to test wiring.

3.8.4 Others - Touch Screen Calibration

Press the **START** button to enter touchscreen calibration mode. Press and hold indicated positions for a few seconds in order to calibrate the screen.



Attention

If the screen calibration is not done correctly, the touch screen might not work. Press for 10 seconds on the screen to start the calibration menu.

3.8.5 Others - Sounds

Adjust sound volume by using the slide bar.

Select desired sounds for Position OK, Alarm and Cycle complete signals.

3.8.6 Others - Date & time

Adjust current date and time. The controller is equipped with internal battery to keep this data.



Information

If not started for at 30 days or more, the date & time will need to be adjust.

3.8.7 Others - Languages

Please refer to paragraph 3.1. for the first start and the language change.

Adjust the interface language by using this menu.

Languages	French
	English
	Spanish
	Portuguese
	Italian
	German
	Russian
	Czech
	Polish

Press **HOME** button  to get back on main menu.

The home screen will display with the desired language.

3.8.8 Others - Change Password

Please refer to paragraph 3.2. to change password.

3.8.9 Others - Reset to factory settings

Enter “77” to reset the controller to factory settings. Saved jobs will not be deleted.

3.8.10 Others - Firmware Version


Current firmware version of the controller. Upgrade the firmware regularly to keep the controller up to date (refer to paragraph 2.4.3).

4. USE

4.1 Tool Start-Up and Stop

To turn the unit on, plug in the power supply. The display screen will light up.
To turn the unit off, unplug the power supply. The display screen will turn off.

4.2 Main Menu

The DPC Touch V2 starts in the Operation Mode.  Press **HOME** button to access the main menu.

The main screen display the following 4 menus:



JOB MANAGER

Provides access to the list of saved jobs and allows creation/modification of jobs. This menu is partially locked while user is logged out.



OPERATION MODE

Provides access to the operating screen (normal work mode).



SETTINGS

Provides access to the controller settings. This button is locked while the user is logged out.



LOGIN - LOGOUT

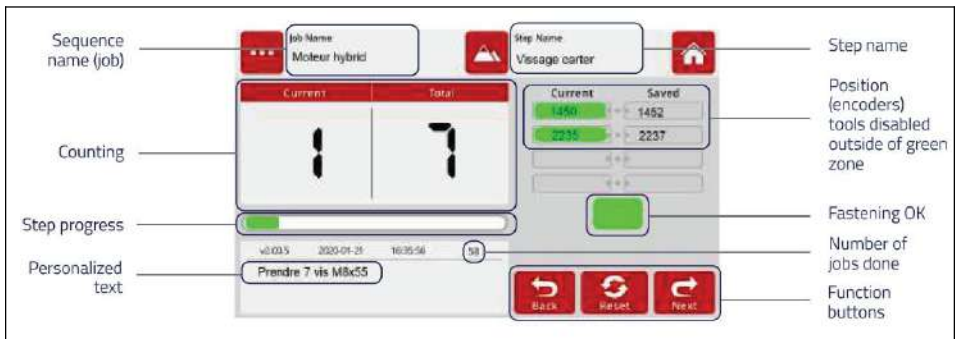
Allows logging into the system by entering the password to access and modify Job manager and Settings.

4.3 Menu - Operation Mode

Operation mode is the normal running interface for an operator.

The controller automatically starts in operation mode once it is powered up. The default job is automatically loaded (refer to paragraph 3.3.1).

The following information is displayed on the screen:



In operation mode, the following error messages can appear:

- *Fastening step is too short/long*
- *Trigger is released before torque up!*
- *Fastening NOK! (tool alarm)*
- *System error*
- *Detection piece error!*
- *Emergency*
- *Complete job NOK!*

4.4 Menu - Job Manager

The programming menu is the administrator interface.

It offers total access once the password is entered in the login screen.

The job manager interface provides access to the saved jobs. It allows editing and deleting saved jobs, as well as creating new ones by simply pressing the New button or by Copying an existing job. The load button is used to load selected job into operating mode.



Information

If the controller is locked, the only active buttons are Load and Home. The other buttons are locked.

Each job has a sequential number (№). In order to change the job number, tap the job once and then change its position in the list by using the *Up* and *Down* buttons.



Warning

Changing the order of jobs is not automatically updated in the assignment of barcodes.

For information purposes, the number of steps and screws in a job is displayed on the corresponding line in the list.

HOME button provides access to the main menu screen.






Maximum number of jobs is 255.

4.4.1 New job creation

While on the Job Manager screen, press the **NEW** button. A new job will be created and placed at the end of the list. A new job creation screen will be displayed automatically.

A job is represented by a sequence of steps. These steps can be organized in any order which corresponds to the desired production sequence.

There are 5 types of steps and each one of them can be used multiple times if necessary:

	<p>Fastening</p>	<p>This step contains fastening positions including information associated with these positions (positioning tolerance, tightening program, tightening time, etc.)</p>
	<p>Logical In</p>	<p>Used to verify an input signal in order to pass to the next step (e.g. signals from proximity sensors, buttons, etc.).</p>
	<p>Logical Out</p>	<p>Used to activate output signals to manage automation equipment on work station (e.g. activation of pneumatic valves, lights, etc.)</p>
	<p>Delay</p>	<p>Used to maintain the current I/O status for a specified time period (e.g. a delay required between receiving an input signal and sending an output signal, barcode, confirmation).</p>
	<p>Message</p>	<p>Used to display a graphical or text message on the operating screen during working cycle.</p>

A job may contain up to **80** steps.

The maximum number of positions in a single fastening step is **50**.

To change the sequence of steps in a job, tap the step once and then change its position in the list by using the Up and Down buttons.

Created steps can be modified by using the **EDIT** button or deleted by using the **DELETE** button. The COPY button creates a copy of the selected step and inserts it at the end of the list.

Press the **SAVE** button to save the job, or the **CANCEL** button to quit programming without saving changes.

The job name can be changed with the keypad by clicking on the actual name. There must be at least one step in the job in order for a new job name to be registered.

4.4.2 Fastening step creation



Information

it is useful to define encoder's reference/zero point before creating a fastening step (please refer to paragraph 3.4.3).

While on the Job creation screen, tap the **FASTENING** step button. The Fastening step creation screen will appear:

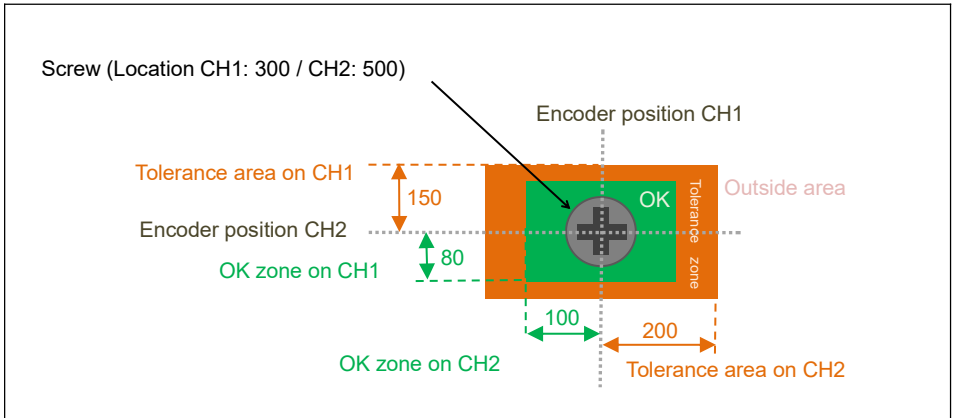
Position - CURRENT	Displays the number of positions being programmed
Position - SAVED	Displays the total number of saved positions in the fastening step being programmed

Position Manager informations:

Position Manager CH 1 to 4 - Current	Displays current values from analog encoders. Only active channels are shown.
Position Manager CH 1 to 4 - Saved	Displays saved values from analog encoders. Current values are saved when then Apply button is pressed or when the Fastening OK signal is received.
Tolerance, pts - Approaching area (orange)	Displays the encoder tolerance value (in number of encoder points on either side of the screwing position) applicable to the orange zone (where the tool is allowed to exit the green zone during screwing).
Tolerance, pts - OK zone (Green)	Displays the encoder tolerance value (in number of encoder points on either side of the screw position) applicable to the green zone (where the tool is allowed to operate).

Example:

For a screw position saved as follow CH1: **300** & CH2: **500**, and for an **OK zone** defined with **80** pts on CH1 and **100** pts on CH2, and a **Tolerance zone** defined with **150** pts on CH1 and **200** pts on CH2:



In the **OK zone**, tool is enabled.

In this example, this OK zone contains all positions on CH1 between 220 and 380 (**300 +/- 80**) and on CH2 between 400 and 600 (**500 +/- 100**).

In the **tolerance zone**, tool is disabled. If the option «Temporary position loss time» is activated (see paragraph 3.3.3.), the tool can finish its cycle even if it enter in the tolerance zone during the fastening.

In this example, the tolerance zone contains all positions on CH1 between 150 and 450 (**300 +/- 150**) and on CH2 between 300 and 700 (**500 +/- 200**).

Out of those zones, tool is disable.

Smart tolerance: the OK zone can be defined using this automatic function (refer to paragraph 4.4.6). Must be used after the position is defined.



Information

The actual shape of the tolerance zones varies. They depend on the geometry of the arm used. To avoid overlapping tolerance zones, keep tolerance values as low as possible.

The step name can be changed via the numeric keypad by clicking directly on the current name. There must already be a position created in this step for the new step name to be saved.

On the right of the screen, choose to activate the non-sequential option to leave the operator free to tighten screws in any order. Otherwise, the screws will be to be tightened according to the registration order.

On the right of the screen, the screwdriving time control panel displays the screwdriving times and the min/max limits.

The minimum/maximum values are calculated according to the percentage defined in the screwdriving parameters.

Finally, the position management table contains the following information:

<p>Tightening Job</p>	<p>Preset number to be selected for the current tightening position via 24V outputs (direct or binary logic) if supported by the tool.</p>
<p>Retightening job</p>	<p>Similar to the Tightening job but it is used only for rework operation and it is automatically selected after NG tightening (if retightening is enabled in operating settings)</p>

<p>Pick up positions 1 & 2</p>	<p>Allows the tool to start in a specific position or area (outside position OK zone) in order to pick up a screw. Fastening OK signals and Motor run signals are not effective on pick-up position.</p>
<p>Driver 1 / 2 (RJ45 port)</p>	<p>Only used for DOGA tools (GX, GY, DO, GA) connected through RJ45 port. This selection allows enabling and disabling tools for each individual position</p>

The following buttons are at the bottom of the screen:

<p>APPLY</p>	<p>The apply button is used to save the encoder values in their working positions (copy the current to saved value). It is not necessary to press the apply button after making any tolerance or control/configuration changes.</p>
<p>RESET</p>	<p>Used to reset the default values for the saved position and for the tolerances.</p>
<p>DELETE</p>	<p>Used to remove a position (requires confirmation).</p>
<p>SELECT IMAGE</p>	<p>For a dynamic display of the screwdriving step, with an image of your choice (see paragraph 4.4.4.).</p>
<p>RIGHT ARROW</p>	<p>To create a new position or navigate to the next position.</p>
<p>LEFT ARROW</p>	<p>To navigate to previous positions.</p>

A fastening step can be programmed manually or automatically.

4.4.3 Manual programming of fastening step (DC Tool)

Order	Description
1	Position the arm on the first screw. The arm's current encoder positions are displayed.
2	Press APPLY button to save current position of the arm. Saved values from encoders will be displayed in corresponding fields. If not satisfied with the result press APPLY button again to rewrite saved values from encoders.
3	Default tolerance values for the approaching Area and for the OK zone are applied. To change default values refer to the encoder settings. Tolerance values can be adjusted manually for each individual position or by using Smart tolerance detection feature.
4	If necessary, define Tightening and Retightening programs to be used for the current position, feeding point (see Pick Up positions in encoders' settings) and the screwdriver to be used for this tightening position (used only for DOGA GX/GY/DO/GA tools).
5	If necessary, enter Min and Max tightening time limits in corresponding fields. Tightening time control is not used if limits are equal to 0.
6	Press NEXT button to pass to the next position.
7	Repeat 1-6 for each position.
8	Activate Non-sequential mode if there is no need to keep strict tightening sequence. NOTE: in non-sequential mode, retightenings can't be managed.
9	Press SAVE button to save the step or CANCEL button to quit programming without saving changes.

4.4.4 Automatic programming of fastening step (GX/GY)

For automatic programming, make sure that the tool is connected to the controller and signals are correctly assigned. In order to register tightening time, Motor run and Fastening OK signals have to be connected.

Order	Description
1	Position the arm on the first screw. The arm's current encoder positions are displayed.
2	Default tolerance values for the approaching Area and for the OK zone will be applied. To change default values refer to the encoder settings. Tolerance values can be adjusted manually for each individual position or by using Smart tolerance detection feature.
3	If necessary, define Tightening and Retightening programs to be used for the current position, feeding point (see Pick Up position in encoders' settings) and the tool being used.
4	Perform a tightening operation as it has to be performed during production.
5	Tightening time will be registered automatically. Min and Max tightening time limits are calculated automatically by using default values in operating settings. Tightening time control is not used if limits are equal to 0.
6	Repeat 1-5 for each position.
7	Activate Non-sequential mode if there is no need to keep strict tightening sequence. NOTE: in non-sequential mode, retightenings can't be managed.
8	Press SAVE button to save the step or CANCEL button to quit programming without saving changes.

4.4.5 Picture programming into a fastening step

Once a fastening step is created, it is possible to associate a picture with it that will appear on the screen. It allows the operator customized guidance.

- 1- Save your pictures on the SD card in **JPG** 800x480 format, use the « pictures » directory, SD:/Pictures (refer to paragraph 4.4.10).
- 2- Press **SELECT IMAGE** button at the bottom of the screen to open the picture programming screen.
- 3- Press **SELECT IMAGE /SCREW** button to choose the desired file.
- 4- Select and place the different tightening positions on the picture.
- 5- Press **SELECT OPTION** to choose position's size & color, or adjust the screen layout of the selected position using the arrows.
- 6- Press **CLOSE**.

The picture will be displayed once the step has been launched in «Operation mode». The encoder colors will be included into the circle of the active position.

Example:



4.4.6 Smart Tolerance detection feature

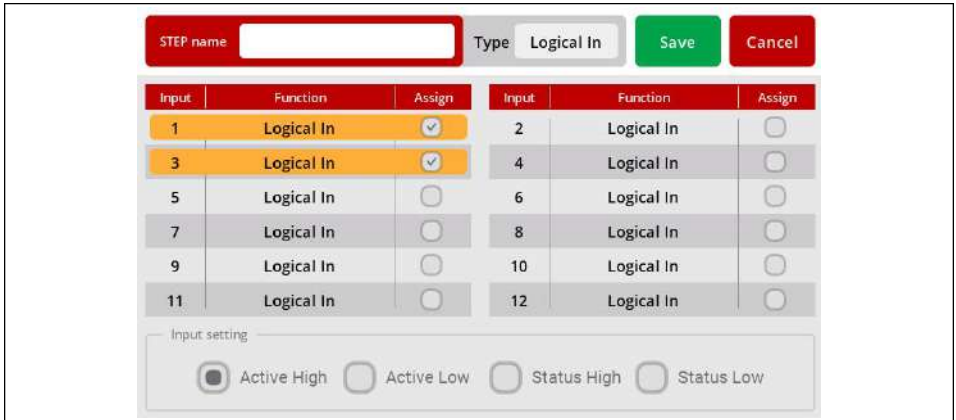
This feature allows for the automatic detection of OK zone tolerance for each position. Motor Run signal has to be connected in order to use this feature.

This function have to be used on fastening points already saved.

Order	Description
1	Press Start button to begin smart tolerance detection.
2	Start the tool and move it around the screw to define OK zone (the zone where operator is allowed to run the tool).
3	Stop the tool and press Monitoring button on the screen.
4	Continue with Manual or Automatic programming.

4.4.7 Logical Input step creation

While on the Job modification screen, tap the **LOGICAL IN** button. The Logical In step creation screen will appear.



Select an available input from the list of Inputs.

If an Input was assigned for a specific function in Input settings it is not available to be used as a logical signal.

Select the type of the signal. There are four types of input signals:

Active High	it is necessary to detect a transition from 0 to 1.
Active Low	it is necessary to detect a transition from 1 to 0.
Status High	it is enough to detect if the signal is equal to 1.
Status Low	it is enough to detect if the signal is equal to 0.

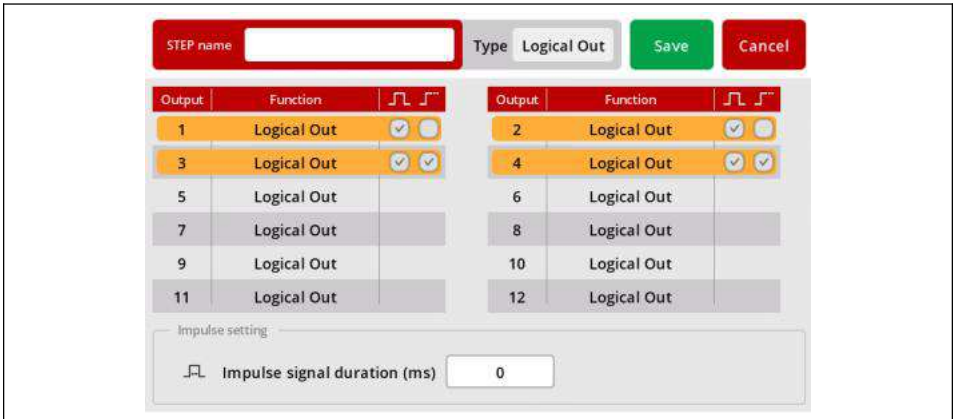
Logical input step is completed if the corresponding input signal matches the condition of the selected signal type.

If two or more signals are selected, then the condition will be applied for selected signals to complete the step.

Press the **SAVE** button to save the step, or the **CANCEL** button to quit programming without saving changes.

4.4.8 Logical Output step creation




While on the Job modification screen, tap on **LOGICAL OUT** button. The Logical Out step creation screen will appear.



Select an available output and its type from the list of Outputs.

If an Output was assigned for a specific function in Output settings it is not available to be used as a logical signal.

There are three types of output signals:

<p>Continuous ON</p> 	<p>The signal is maintained until it is deactivated in the next Logical Out step. To deactivate the signal, create a new Logical Out step and deselect the corresponding signal.</p>
<p>Impulse</p> 	<p>The signal is momentary with a defined duration. Duration of the signal is defined in ms.</p>
<p>Flashing</p> 	<p>The signal will be blink until it is deactivated in the next Logical Out step. The time between two flashing signals is defined in ms in the impulse duration field.</p>

Multiple output signals can be used in the same Logical Out step.

Press the **SAVE** button to save the step, or the **CANCEL** button to quit programming without saving changes.

4.4.9 Delay step creation

While on Job modification screen, tap the **DELAY** button. The Delay step creation screen will appear.

There are three types of delay steps:

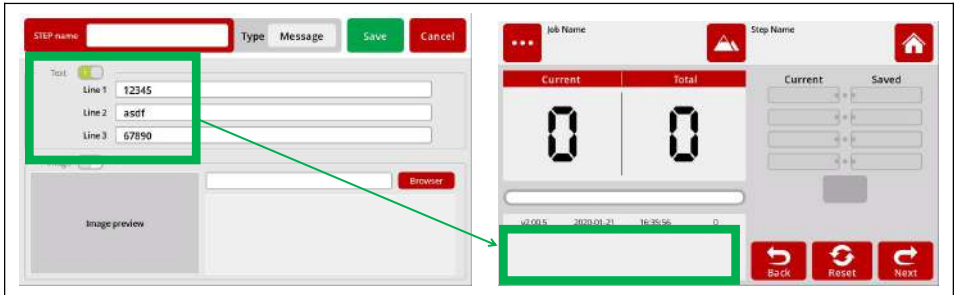
Delay time	The controller will stay on hold for the defined time. Delay step can be used to manage timing between Logical In and Logical Out steps or between messages.	
Barcode	Enter the barcode (up to 32 alphanumerical characters) and filter it according to the defined criteria. Using the START and END criteria filters the portion of the barcode to be read. Here are the filtering rules:	
	If END: 0	Barcode is not read, any barcode will valid the step.
	If START and END: Between 1 and 32	Barcode is read only between the defined values.
Confirmation	User will see a confirmation message Box «Are you Sure?».	

Press the **SAVE** button to save the step, or the **CANCEL** button to quit programming without saving changes.

4.4.10 Message step creation

While on the Job modification screen, tap the **MESSAGE** button. The message step creation screen will appear. A message can be text or an image.

For **text**: Enter the text to be displayed on the operation screen and activate the corresponding switch.



The message appears on the lower left-hand side of the work mode.

3 lines are customizable and limited to 26 characters.

To hide the displayed message it is necessary to create a new Message step without text and/or image.

For an **image**: Select an image to be displayed from the list of available images and activate the corresponding switch.

Images must first be stored on the SD card, with format **JPG** 800x480, in the directory **SD:\Pictures**.

Once the picture is chosen, press the **Select** button.

On the next screen the image will appear.

The image will remain on the screen waiting for a logical input or for a defined duration.

Press the **SAVE** button to save the step, or the **CANCEL** button to quit programming without saving changes.

4.4.11 Job example

A simple job may contain only a Fastening step, which will assure screw counting and tool position control functions.

The example below illustrates a job for management of an automated station with multiple sensors and actuators.

This job uses 5 logical inputs, 4 logical outputs, 7 messages (text and/or image) and 2 fastening steps.

N°	Step type	Step functions
1	Message	Text or image message appears on the screen to indicate what workpiece has to be assembled. Image stays on the screen until replaced by next message or until screen is touched.
2	Logical In	Three input signals (active high) are expected. One from a proximity switch (to detect presence of the workpiece) and two from buttons the operator has to press simultaneously (in order to keep hands clear of the clamping device).
3	Message	Text or image message is shown on the screen to warn the operator about closing clamping device.
4	Delay	A short delay is used before activation of the clamping device.
5	Logical out	Two output signals (continuous) are sent to activate the clamping device to lock the workpiece on the table and to turn on assembly status light.
6	Message	Text or image message is shown on the screen to indicate parts to be picked.
7	Logical out	One output signal (continuous) activates the pick-to-light indicator 1.
8	Logical In	One input signal (active high) is expected for picking verification by sensor 1.

9	Logical out	Pick-to-light indicator 1 is turned off once picking is performed.
10	Message	Text or Image message is shown on the screen to indicate first fastening operations to be performed.
11	Fastening	First fastening operations are performed, screws are counted and tool position is assured.
12	Message	Text or image message is shown on the screen to indicate parts to be picked.
13	Logical Out	One output signal (continuous) is sent to turn on pick-to-light indicator 2.
14	Logical In	One input signal (active high) is expected for picking verification by sensor 2.
15	Logical Out	Pick-to-light indicator 2 is turned off once picking is performed.
16	Message	Text or Image message is shown on the screen to indicate second fastening operations to be performed.
17	Fastening	Second fastening operations are performed, screws are counted and tool position is assured.
18	Logical Out	Two output signals are disabled to open the clamping device and to turn off assembly status light.
19	Message	Complete Job Message.
20	Delay	Delay before the job restarting.

5. MAINTENANCE

5.1 Maintenance

Periodic cleaning of the screen should be carried out regularly with a clean, soft, dry and lint-free cloth.

5.2 Troubleshooting

During manufacturing the proper functioning of the unit is checked multiple times. However, if the unit malfunctions, troubleshoot it using this list:



Warning

All troubleshooting tasks requiring the opening of the box must be performed by DOGA or a company authorised by DOGA.

Problem	Solution
Controller is not booting (black screen)	SD card is not found. Check if SD card is inserted and not damaged.
Controller is not responding after calibration	Press the screen for 10 second to launch the calibration menu.
Password is lost or forgotten	Turn off the controller and delete the following file from the SD card: SD:/dpcSetting.bin The saved parameters will be lost. If you do not want to lose your data, please contact our after-sales dept at DOGA.
Controller is not responding	Turn off and on the controller.

<p>Input signal is not received</p>	<p>Input signals should be between 20 and 30V in order to be detected by the controller. Check if signal is detected in Other settings, real time monitoring.</p>
<p>Output signal is not sent</p>	<p>Max current capacity of outputs is 100 mA per output and total of 500mA for all outputs. To check wiring, force output signal in Other settings, real time monitoring. Outputs are optically isolated.</p>
<p>Image message is not displayed on the screen</p>	<p>Check image size and format. Images have to be in JPEG format with following size: 800x480 px.</p>
<p>The job is locked in an endless loop</p>	<p>Make sure that a job contains at least one Fastening or one Logical input step. Otherwise the job will be stuck in automatic loop. Rapidly press the HOME icon to stop the job and then correct it.</p>
<p>Error: “Fastening time is too short/long”</p>	<p>Check fastening time control limits in operating settings. Check saved min and max fastening time in corresponding fastening step. Reprogram or modify manually if needed. To deactivate the tightening time control, set min & max fastening time at 0 in the fastening step programming. NOTE: control limits in operating settings are only applied to newly created jobs.</p>
<p>Error: “Trigger released before torque up”</p>	<p>Check min threshold for trigger release control in operating settings (screen 3 of 4). If start trigger is released after the min threshold, the error is displayed. To disable trigger release control, set the threshold to 0 or to 9999.</p>

Even after verification,
the controller doesn't
work correctly.

Please contact the DOGA After-Sales Dept.

If you cannot resolve a problem despite reading this manual, please contact the DOGA After-Sales Department.



My client area on www.doga.fr

Go to your client area on www.doga.fr, click “Your contacts”, then select your specific **After-sales contact** depending on the device type.

5.3 Spare Parts

<p>Mounting kit Code: 4-1290006</p>	
<p>I/O adapter cable DB44 to DB25 + DB9 Code: 4-1290007</p>	
<p>Power Cable Code: 4-1050599 and 4-1050600</p>	
<p>RS-232 Adapter for Barcode reader Code: 4-5234520</p>	
<p>Barcode Reader Code: 4-5000320</p>	
<p>Protecteur de carte SD Code article : 4-1290031</p>	

5.4 Hotline

5.4.1 For any information regarding the use of the DPC Touch V2

Please contact your Technical Salespeople.



My client area on www.doga.fr

Go to your client area on www.doga.fr, click “Your contacts”, then select your **Technical Salespeople** depending on the tool type.

5.4.2 For any information regarding troubleshooting

Please contact your After-Sales contact.



My client area on www.doga.fr

Go to your client area on www.doga.fr, click “Your contacts”, then select your specific **After-sales department contact** depending on the device type.

If our technician can remotely determine the origin of the fault, he will tell you what to do to allow you to repair it by yourself as far as possible.

5.5 After-sales Returns

All material must be returned with a after-sales service Return Form, that you must complete and attach to your package.

The repair, maintenance or adjustment service can only start at the receipt of this form.

Information



Following this procedure allows you to quickly take charge of your request and reduce the troubleshooting costs.

DOGA reserve the right to apply a trade-in discount and to invoice, if applicable, the costs of repairing and packaging.

5.5.1 Download the after-sales return form

You can download the return form by following this link:

<http://service.doga.fr/syst/dogatech.nsf/liste/00184>

Information



You can use your own after-sales service return form as long as it contains all the information necessary to take care of your equipment.

5.5.2 Send your equipment

The returned package must be postage paid to the following addresses depending your transport mode:

Postal Packages	Carrier Packages
DOGA - Service SAV 8, avenue Gutenberg - CS 50510 78317 MAURAPAS Cedex FRANCE	DOGA - Service SAV 11, rue Lavoisier 78310 MAUREPAS FRANCE

5.6 On-site repair

Even though it seems convenient, on-site repair is seldom the best solution for transportable equipment. The conditions in which the technician will work are worst than in our workshops and technician travel expenses are costly.

If you require an on-site intervention, please contact the After-sales department.



My client area on www.doga.fr

Go to your client area on www.doga.fr, click “Your contacts”, then select your specific **After-sales contact** depending on the device type.

Our services will organize the intervention.

5.7 Warranty

DOGA guarantee all his products against any defect in parts or fabrication for a period of **12 months**.

To benefit from the parts and labor warranty, the following conditions must be respected:

- The DPC Touch V2 must have been used in a professional use and in accordance with the normal conditions of use described in the instruction manual.
- The DPC Touch V2 must not have suffered any damage from storage, maintenance or improper handling.
- The DPC Touch V2 must not have been adapted or repaired by unqualified persons.

6. SAFETY

6.1 General Provisions



The instruction manual must be carefully stored in a known place and easily accessible to the potential users of the product.



Warning

Read this manual and have each operator read it carefully before installing, using or repairing.

Make absolutely sure that the operator has fully understood the rules of use and the meaning of any symbols affixed to the product.

Most accidents can be avoided by following the instruction manual. These rules have been drafted with reference to the European Directives and their various amendments as well as standard rules product. In each case, respect and comply the National Safety Standards. Do not remove or damage the labels and annotations affixed to the product, more particularly those imposed by the law.

6.2 Contra-indications




- Do not cover.
- Do not immerse.
- Do not expose to splashing liquids.
- Do not use near to a heat source.

7. STANDARDS

7.1 Manufacturer details

Manufacturer : DOGA
Address : ZA Pariwest
 8 avenue Gutenberg CS 50510
 78317 MAUREPAS CEDEX - FRANCE

7.2 Markings

DPC Touch V2	Designation of equipment
Position controller	Type
Input 24V DC 1A	Power
Serial No. MM/AAAA XXXX	Serial number
	Name of the equipment manufacturer
	Equipment designed and manufactured in accordance with the requirements of European Directives 2014/30/EU and 93/68/EEC
	Every security rules and instructions must be read

7.3 Transport and storage



Information

Your equipment can be damaged if you store it or transport it improperly. Observe the transport and storage information for your equipment.

7.3.1 Transport

Use a suitable container to transport the unit and protect it during shipment.

7.3.2 Storage

Respect the following guidelines before each storage:

- Turn off the DPC Touch V2 (unplug the power cable).
- Clean the tool according to the instruction manual (Maintenance Chapter).
- Store it in a suitable container to protect it from dust and direct sunlight.
- Store it in a dry place at an ambient temperature, below 40°C.

7.4 WEEE recycling and end of service life



The symbol showing a crossed out trash container, when placed on an electric or electronic device, means that it should not be disposed of with household trash.

Collection solutions are as follows:

7.4.1 Collection and recycling scheme

In compliance with the French Environmental Code covering professional Waste Electric and Electronic Equipment (WEEE) (art.R543-195 et seq.), DOGA is a member of ECOSYSTEM, an eco-organization approved by public authorities under the conditions defined by art R543-197.

You can also benefit from collection and recycling system proposed by ECOSYSTEM for WEEE originating from the professional equipment marketed by DOGA. Further information on www.ecosystem.eco.

7.4.2 Collection points

Free collection points for used electric or electronic devices are available near your company.

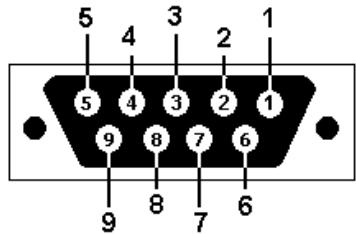
Your local authorities can provide their addresses.

8. APPENDICES

8.1 DPC Touch V2 Electrical wiring

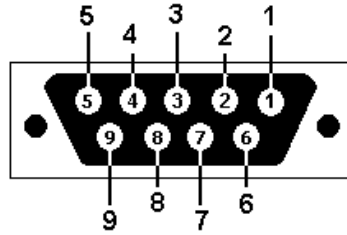
8.1.1 Encoder port wiring scheme

Pin	Fonction
1	5V power supply
2	Channel (1)
3	Channel (2)
4	Ground (Canal 1, Canal 3)
5	Ground (Canal 2, Canal 4)
6	Channel (3)
7	24V (Canal 1, Canal 3)
8	24V (Canal 2, Canal 4)
9	Channel (4)



8.1.2 RS232 port wiring scheme

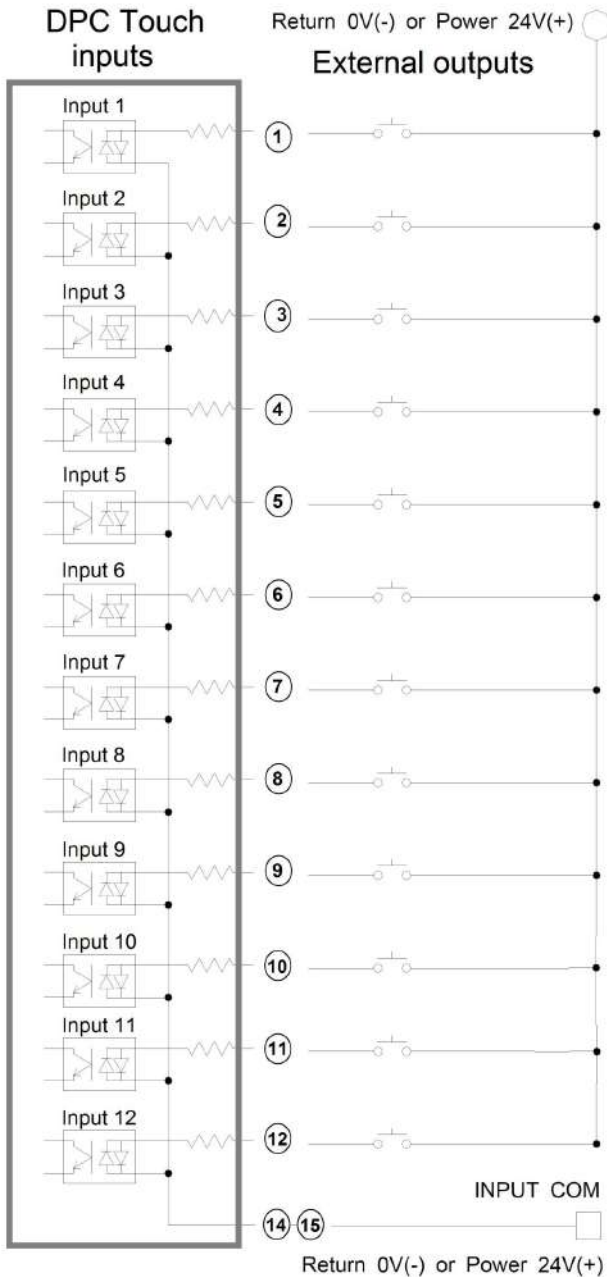
Pin	Function	
	Port 1	Port 2
1		RX (2)
2	RX (1)	
3	TX (1)	
4		
5	GND (1)	
6		TX (2)
7		
8		
9		GND (2)



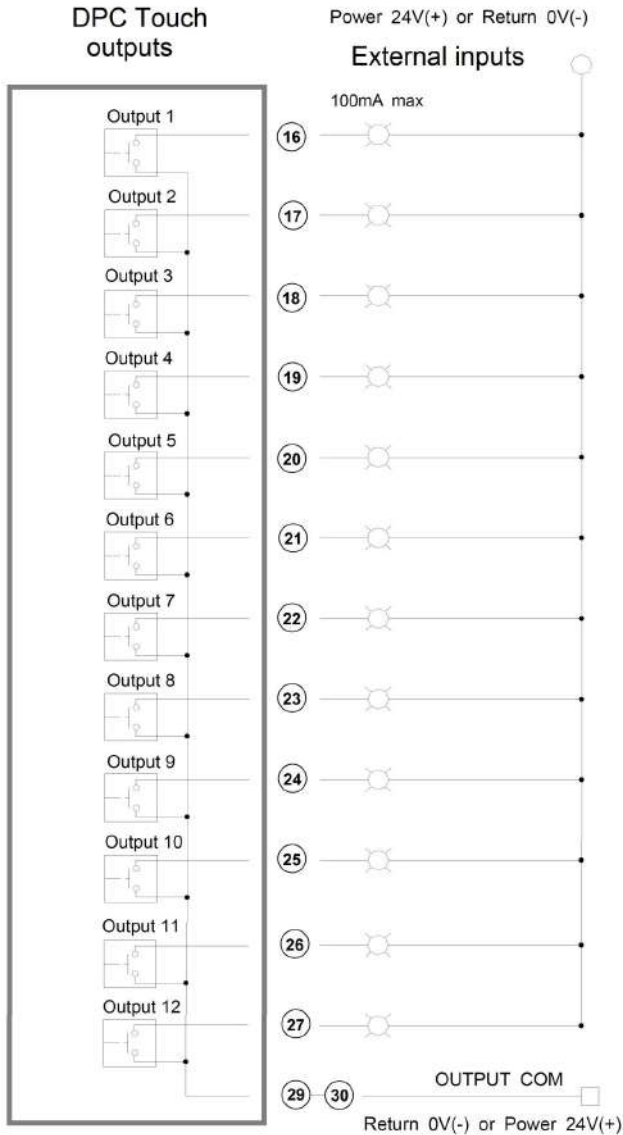
Information

For the bootloader upgrade mode pins 7 and 8 have to be shorted together (refer to the firmware upgrade manual).

8.1.3 Inputs wiring scheme



8.1.4 Outputs wiring scheme



Information



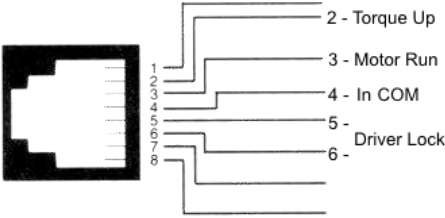
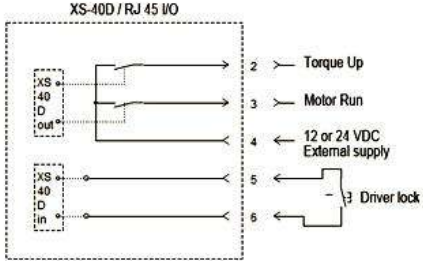
All outputs are optically isolated.

Max current capacity is 100mA per output. Total of 500mA.

8.2 Connection of DOGA low voltage tools

8.2.1 Connection of DOGA low voltage tool GX/GY/DO/GA

Two tools can be simultaneously connected to corresponding ports DR1 and DR2.

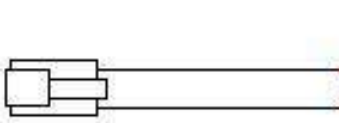
DPC Touch V2		DOGA GX/GY/DO/GA*	
			
RJ45 E/S port 1 et 2 		RJ45 E/S port 	
Signal	RJ45 pin No	RJ45 pin No	Signal
Driver torque up	2	2	Torque up
Driver motor run	3	3	Motor run
Driver lock	5, 6	5, 6	Driver lock
24V	4	4	24V

*Controllers XT-30D, XS-38D, XS-40D, XS-35D, XT-35D.



Information

Select GX/GY/DO/GA tool interface in DPC Touch operating settings.
The tool is locked by shorting together contacts 5 and 6.



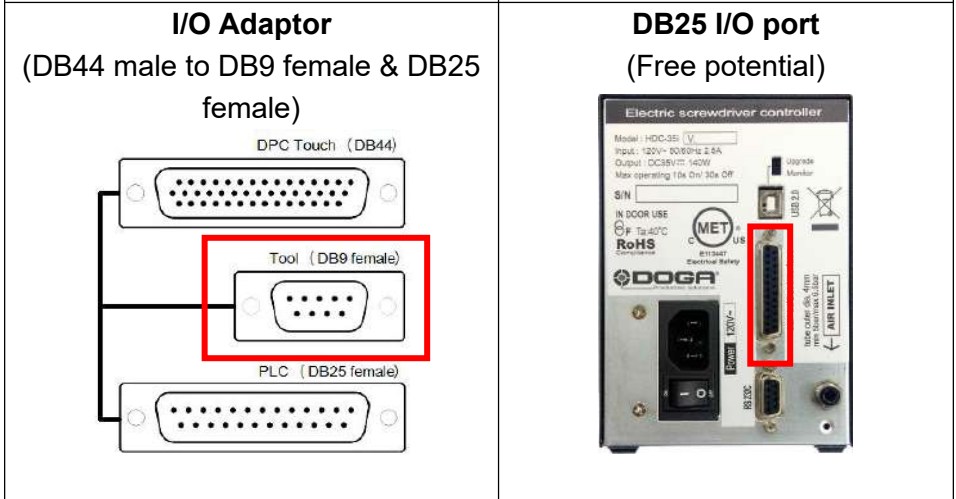
1. Orange (**Not used**)
2. White+Orange stripe
3. Blue
4. White+Blue stripe
5. Green
6. White+Green stripe
7. Brown
8. White+Brown stripe
(Not used)



Warning

Use only straight RJ45-RJ45 cable (not crossover).

8.2.2. Connection of DOGA Hybrid HDC & current control SDC tools



Input/Output	Assigned signal	DB9 N° pin	HDC/SDC N° pin	Signal
Output 1	Torque select 1	1	1	Select program 1
Output 2	Torque select 2	2	2	Select program 2
Output 3	Torque select 3	3	3	Select program 3
Output 4	Tool disable	4	5	Driver lock
Input 8	Driver run	5	16	Motor run
Input 9	Tool alarm	6	18	Alarm
Input 10	Driver torque up	7	25	Fastening OK
IN_COM		8	22	0V DC
OUT_COM		9	21	24V DC

Information



Select HDC/SDC tool interface in DPC Touch operating settings.
 Select PLC (except Start and Reverse) interface on HDC/SDC controller.

8.2.3. Connection of DOGA current control MDC series

DPC Touch V2

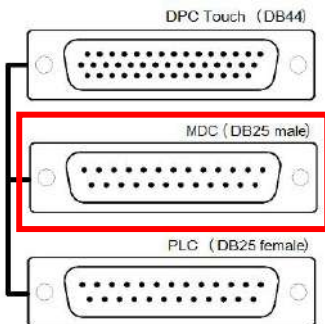


DOGA séries MDC



I/O cable

(DB44 male to DB25 male
 E& DB25 female)
 Code : **6-1252006**



DB25 I/O port

(free potential)



Input/O utput	Assigned signal	DB44 N° pin	DB25 N° pin	Input/ Output	Signal
Output 1	Torque Select 1	16	1	Input 1	Select program 1
Output 2	Torque Select 2	17	2	Input 2	Select program 2
Output 3	Torque Select 3	18	3	Input 3	Select program 3
Output 4	Torque Select 4	19	4	Input 4	Select program 4
Output 5	Tool Disable	20	5	Input 5	Driver lock
Input 1	Driver Run	1	10	Output 1	Motor Run
Input 2	Tool Alarm	2	11	Output 2	Alarm
Input 3	Driver Torque up	3	12	Output 3	Fastening OK
IN_COM		14, 15	22		0V DC
OUT_COM		29, 30	21		24V DC



Information



All 8 inputs and 8 outputs of MDC controller are wired to DPC Touch controller. These signals can be used for advanced functions (management of Reset, Reverse, etc). I/O's numbers are matching.

Assign signals on DPC Touch and MDC as above.

Select DC tool interface in DPC Touch operating settings.

Activate Torque selection by binary in DPC Touch operating settings.

8.2.4. Connection of Atlas Copco PF4000

DPC Touch V2	Atlas PF4000
	
<p align="center">I/O Adaptor (DB44 male to DB9 fem. & DB25 fem.)</p>	<p align="center">I/O Connectors (12 + 10 contacts)</p>



Information



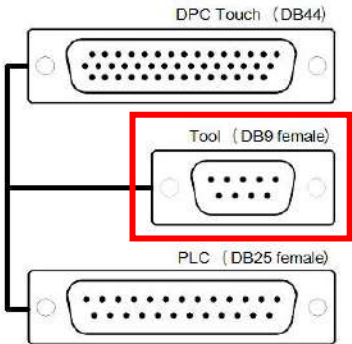
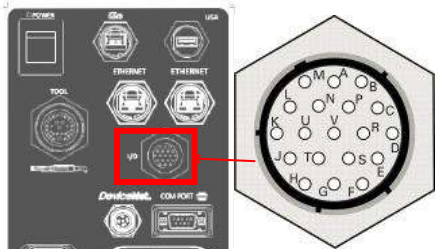
Select DC Tool interface in DPC Touch operating settings. Either DB25 or DB9 connectors can be used depending on desired number of I/O's.

If DB9 connector is used, then max 3 jobs can be selected on DPC Touch in binary logic by using 2 contacts.

In order to use independent power supply to DPC Touch, do not connect 24V contact.

I/O numbers	Signals assignment example	DB9 pin	DB2 5 pin	Signals assignment example	Contacts			I/O
Input 8	Driver Torque Up	5	13	Fastening OK	1	NO	RE1	RELAY OUTPUTS
					2	F		
					3	NF		
					4	NO		
Input 9	Job select 1	6	14	Select Job 0	5	F	RE2	
					6	NF		
Input 10	Job select 2	7	15	Select Job 1	7	NO	RE3	
					8	F		
					9	NF		
Input 11	Job select 3	-	16	Select Job 2	10	NO	RE4	
					11	F		
					12	NF		
Output 1 (5)	Torque Select 1	1	(7)	Select Torque 0	13	+	DI 1	DIGITAL INPUTS
					14	-		
Output 2 (6)	Torque Select 2	2	(8)	Select Torque 1	15	+	DI 2	
					16	-		
Output 3 (7)	Torque Select 3	3	(9)	Select Torque 2	17	+	DI 3	
					18	-		
Output 4	Tool Enable	4	25	Tool Enable	19	+	DI 4	
					20	-		
OUT_COM (24V)		9	23,24	Power supply	21	24V		
IN_COM (GND)		8	21,22	Ground	22	GND		

8.2.5. Connection of Stanley Alpha & Kappa tools

DPC Touch V2		Stanley Alpha/Kappa (8 Preset - cable 4-5241050)		
				
<p style="text-align: center;">I/O Adaptor (standard) (DB44 male to DB9 female & DB25 female)</p> 		<p style="text-align: center;">I/O Port</p> 		
Input/ Output	Assigned signal	N°pin DB9	N°pin Stanley	Signal
Output 1	Torque Select 1	1	P	Select Job (bit 0)
Output 2	Torque Select 2	2	R	Select Job (bit 1)
Output 3	Torque Select 3	3	S	Select Job (bit 2)
Output 4	Tool Disable	4	M	Stop (Outil disable)
Input 8	Driver Run	5	C	Motor run
Input 9	Tool Alarm	6	K	Cycle NOK
Input 10	Driver Torque up	7	J	Cycle OK
IN_COM		8	V	0V DC
OUT_COM		9	B	Usual output

DPC Touch V2

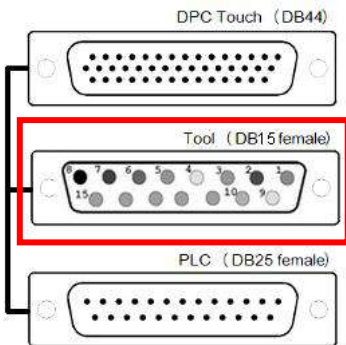


Stanley Alpha/Kappa (16 Preset - cable 4-5241051)

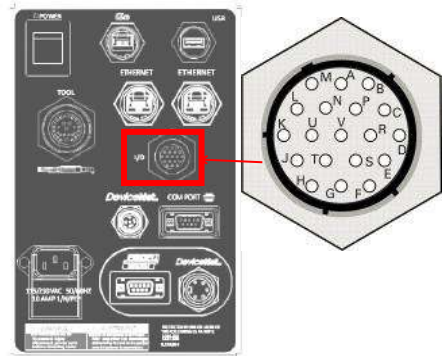


I/O Adaptor (special with cable)

(DB44 male to DB15 female & DB25 female)



I/O Port



Input/ Output	Assigned signal	N°pin DB15	N°pin Stanley	Signal
Output 1	Torque Select 1	1	P	Select Job (bit 0)
Output 2	Torque Select 2	2	R	Select Job (bit 1)
Output 3	Torque Select 3	3	S	Select Job (bit 2)
Output 10	Torque Select 4	10	U	Select Job (bit 3)
Output 4	Tool Disable	4	M	Stop (Outil disable)
Input 8	Driver Run	5	C	Motor run
Input 9	Tool Alarm	6	K	Cycle NOK
Input 10	Driver Torque up	7	J	Cycle OK
	IN_COM	8	V	0V DC
	OUT_COM	9	B	Usual output



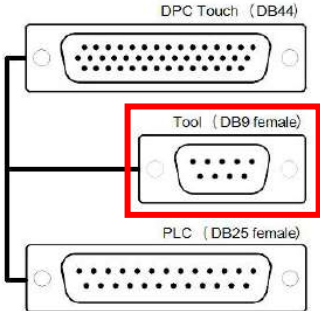
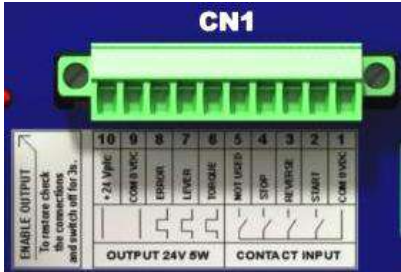


Information

Select DC tool interface in DPC Touch operating settings.

In order to use 24V supply from Stanley controller, short connect pins A and B. In this case DPC Touch will be powered by Stanley controller. Don't connect DPC Touch to external power in this case.

8.2.6. Connection of KOLVER EDU tools

<p>DPC Touch V2</p>	<p>KOLVER série EDU</p>
	
<p>I/O Adaptor (DB44 male to DB9 female & DB25 female)</p> 	<p>CN1 port (10 contacts)</p> 

Input/Ouput	Assigned signal	N°pin DB9	N° contact CN1	Signal
Output 1		1		
Output 2		2		
Output 3		3		
Output 4	Tool Disable	4	4	Stop 5V In
Input 8	Driver Torque up	5	6	Torque 24V out
Input 9	Driver Run	6	7	Trigger 24V out
Input 10	Tool Alarm	7	8	Error 24V out
IN_COM		8	9	Usual 0V DC
OUT_COM		9	1	Usual 0V DC

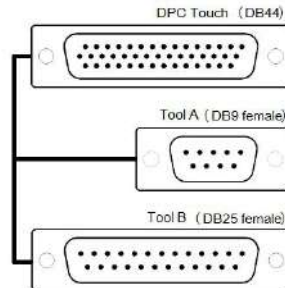
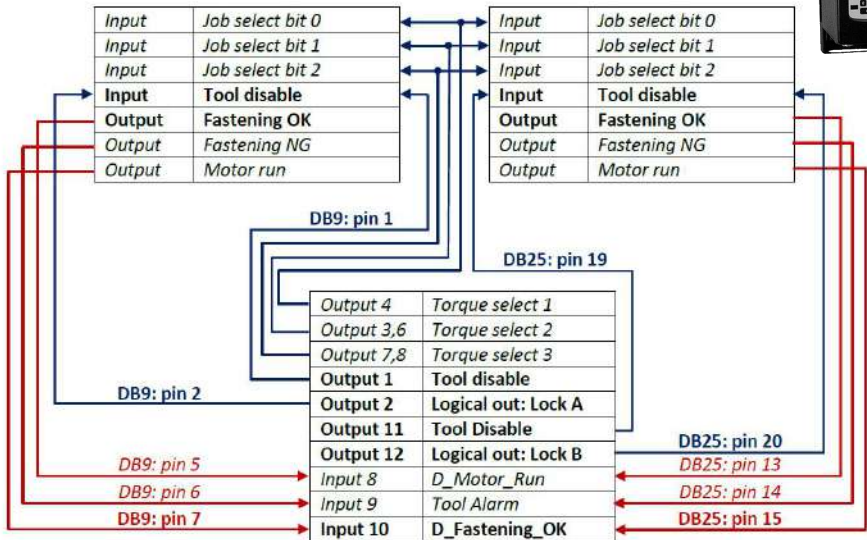


Information

Select DC tool interface in DPC Touch operating settings.

8.2.7. Two tools example wiring

Tool A is connected to DB9 plug / Tool B connected to DB25 plug



Information

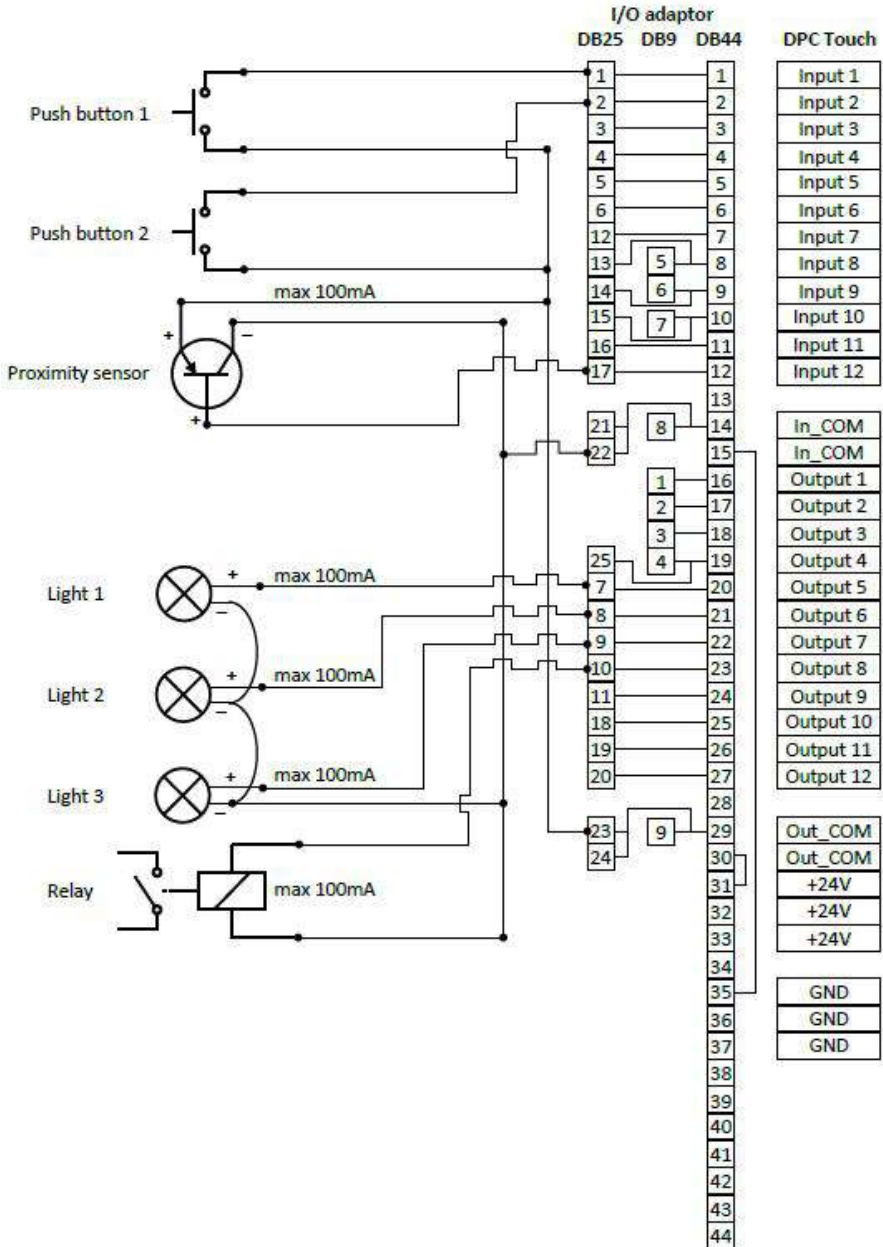


Inputs and outputs shown in **bold text** are mandatory, *others* are optional.

Logical outputs (Lock A and Lock B) are used inside a job.

Corresponding output should be enabled (Continuous On signal) in a Logical Out step to lock corresponding tool during fastening step that follows.

8.2.8. Automation equipment wiring example



8.2.9. I/O port adaptor (DB44 → DB25 + DB9) wiring scheme

	DPC Touch	DB44 (male)	DB25 (female)	DB9 (female)
INPUTS	Input 1	1	1	
	Input 2	2	2	
	Input 3	3	3	
	Input 4	4	4	
	Input 5	5	5	
	Input 6	6	6	
	Input 7	7	12	
	Input 8	8	13	5
	Input 9	9	14	6
	Input 10	10	15	7
	Input 11	11	16	
	Input 12	12	17	
	IN_COM	14	21, 22	8
		15 **		
OUTPUTS	Output 1	16		1
	Output 2	17		2
	Output 3	18		3
	Output 4	19	25	4
	Output 5	20	7	
	Output 6	21	8	
	Output 7	22	9	
	Output 8	23	10	
	Output 9	24	11	
	Output 10	25	18	
	Output 11	26	19	
	Output 12	27	20	

DPC Touch	DB44 (male)	DB25 (female)	DB9 (female)
OUT_COM	29	23, 24	9
	30 *		
+24V	31 *		
	32		
	33		
0V	35 **		
	36		
	37		



Warning

By default, the controller provides 24V output on the pins 31-32-33 & 0V pins 35-36-37. Its power supply can only be used to power I/O signals (max 100mA per output, max 500mA for all outputs).

The controller can also be powered by external power supply through I/O port.

Bridges between pins **(15-35)**** & **(30-31)*** are made inside DB44 male connector.



Information

Pins n°13, 28, 34, 38, 39, 40, 41, 42, 43, 44 are not used.

8.3 Modbus TCP/IP addresses Settings

Adr.	Operation	Description	Function Code
1	Tool selection	2: GX/GY/DO/GA 3: DC Tools	0x03/0x06
2	Screws counting up	0: Not use 1: Use	0x03/0x06
3	Screw counting for step	0: Not use 1: Use	0x03/0x06
4	Torque selection by binary outputs	0: Not use 1: Use	0x03/0x06
5	Job selection by binary inputs	0: Not use 1: Use	0x03/0x06
6	Default job number	value = Job no	0x03/0x06
7	Skip button access without password	0: Not use 1: Use	0x03/0x06
8	Back button access without password	0: Not use 1: Use	0x03/0x06
9	Reset button access without password	0: Not use 1: Use	0x03/0x06
10	Job selection access without password	0: Not use 1: Use	0x03/0x06
11	Display job reset button	0: Not use 1: Use	0x03/0x06
12	Min fastening time limit %	value <= 25	0x03/0x06
13	Max fastening time limit %	value <= 25	0x03/0x06
14	Start trigger release time limit(ms)	value <= 9999	0x03/0x06
15	Temporary position loss time(ms)	value <= 3000	0x03/0x06
16	Judge Time(ms)	value <= 500	0x03/0x06
17	Number of retightening on a position	value <= 9	0x03/0x06
18	Skip NG tightening	0: Not use 1: Use	0x03/0x06
19	Fastening NG signal if position skipped	0: Not use 1: Use	0x03/0x06
20	Auto reset delay(ms)	value <= 9999	0x03/0x06
21	Automatically restart the job when finished	0: Not use 1: Use	0x03/0x06
22	Store logs during operation	0: Not use 1: Use	0x03/0x06
23	Skip by step	0: Not use 1: Use	0x03/0x06

Adr.	Operation	Description	Function code
100	Use Channel1	0: Not use 1: Use	0x03/0x06
101	Use Channel2	0: Not use 1: Use	0x03/0x06
102	Use Channel3	0: Not use 1: Use	0x03/0x06
103	Use Channel4	0: Not use 1: Use	0x03/0x06
104	Ch1 Position Area tolerance	value <= 4000	0x03/0x06
105	Ch2 Position Area tolerance	value <= 4000	0x03/0x06
106	Ch3 Position Area tolerance	value <= 4000	0x03/0x06
107	Ch4 Position Area tolerance	value <= 4000	0x03/0x06
108	Ch1 Position Ok tolerance	value <= 4000	0x03/0x06
109	Ch2 Position Ok tolerance	value <= 4000	0x03/0x06
110	Ch3 Position Ok tolerance	value <= 4000	0x03/0x06
111	Ch4 Position Ok tolerance	value <= 4000	0x03/0x06
112	Use Pickup Position 1 Corner1	0: Not use 1: Use	0x03/0x06
113	Use Pickup Position 1 Corner2	0: Not use 1: Use	0x03/0x06
114	Use Pickup Position 2 Corner1	0: Not use 1: Use	0x03/0x06
115	Use Pickup Position 2 Corner2	0: Not use 1: Use	0x03/0x06
116	Pickup Position 1 Corner 1 Channel 1	-4095<= v <=4095	0x03/0x06
117	Pickup Position 1 Corner 2 Channel 1	-4095<= v <=4095	0x03/0x06
118	Pickup Position 2 Corner 1 Channel 1	-4095<= v <=4095	0x03/0x06
119	Pickup Position 2 Corner 2 Channel 1	-4095<= v <=4095	0x03/0x06
120	Pickup Position 1 Corner 1 Channel 2	-4095<= v <=4095	0x03/0x06
121	Pickup Position 1 Corner 2 Channel 2	-4095<= v <=4095	0x03/0x06
122	Pickup Position 2 Corner 1 Channel 2	-4095<= v <=4095	0x03/0x06
123	Pickup Position 2 Corner 2 Channel 2	-4095<= v <=4095	0x03/0x06
124	Ch1 Zero position	value <= 4095	0x03/0x06
125	Ch2 Zero position	value <= 4095	0x03/0x06
126	Ch3 Zero position	value <= 4095	0x03/0x06
127	Ch4 Zero position	value <= 4095	0x03/0x06

Adr.	Network	Description	Function Code
300	Serial communication enable	0: Not use 1: Use	0x03/0x06
301	External start trigger	0: Not use 1: Use	0x03/0x06
302	Comport 1 mode	0: Not use 1: Barcode 2: RS-232	0x03/0x06
303	Comport 2 mode	0: Not use 1: Barcode 2: RS-232	0x03/0x06
304	Comport 1 baudrate	0: 9600 1: 19200 2: 38400 3: 57600 4: 115200	0x03/0x06
305	Comport 2 baudrate	0: 9600 1: 19200 2: 38400 3: 57600 4: 115200	0x03/0x06

Adr.	Input	Description	Function Code
200	Input value	0000 1111 1111 1111 1111 (16bit value) LSB is input no.1 MSB is input no.12	0x03/0x06
201	Input 1 type		0x03/0x06
202	Input 2 type		0x03/0x06
203	Input 3 type		0x03/0x06
204	Input 4 type		0x03/0x06
205	Input 5 type		0x03/0x06
206	Input 6 type		0x03/0x06
207	Input 7 type		0x03/0x06
208	Input 8 type		0x03/0x06
209	Input 9 type		0x03/0x06
210	Input 10 type		0x03/0x06
211	Input 11 type		0x03/0x06
212	Input 12 type		0x03/0x06

Adr.	Output	Description	Function Code
250	Output value	0000 1111 1111 1111 1111 (16bit value) LSB is output no.1 MSB is output no.12	0x03/0x06
251	Output 1 type		0x03/0x06
252	Output 2 type		0x03/0x06
253	Output 3 type		0x03/0x06
254	Output 4 type		0x03/0x06
255	Output 5 type		0x03/0x06
256	Output 6 type		0x03/0x06
257	Output 7 type		0x03/0x06
258	Output 8 type		0x03/0x06
259	Output 9 type		0x03/0x06
260	Output 10 type		0x03/0x06
261	Output 11 type		0x03/0x06
262	Output 12 type		0x03/0x06

Adr.	Others	Description	Function Code
400	Rest position ch1	value <= 4095	
401	Rest position ch2	value <= 4095	
402	Rest position ch3	value <= 4095	
403	Rest position ch4	value <= 4095	
404	Volume	value <= 100	0x03/0x06
450	Interface language	0: English 1: French 2: German 3: Spanish	0x03/0x06
990	Parameter value initialize	Initializations require rebooting. (It is not initialized to the SD card. If you want to write to the SD card, you need to write address 999 after initialization).	0x06
999	Save setting value to SD card	If set to a value of 1, the controller is saved to the SD card.	0x06

Adr.	Controls	Description (operation mode only)	Function Code
4000	Reset	Error reset	0x06
4001	Job reset	Job reset	0x06
4002	Step reset	Step reset	0x06
4003	Skip	Skip	0x06
4004	Back	Cancel previous fasten screw	0x06
4005	Fastening OK	Fastening OK	0x06
4006	Job change	Job change (value = job no)	0x06

8.4 Modbus TCP/IP addresses Real time monitoring

Adr.	Status	Description	Function Code
3200	Current Job no		0x04
3201	Current Step no		0x04
3202	Current Job total screw		0x04
3203	Current Job remain screw		0x04
3204	Current Step total screw		0x04
3205	Current Step remain screw		0x04
3206	Current Position state	1: Not in pos, 2: Near pos, 3: Ok pos, 4: complete pos, 5: Pickup pos, 6: rest pos	0x04
3207	Current Input state		0x04
3208	Current Output state		0x04
3209	Current Screw saved position ch1		0x04
3210	Current Screw saved position ch2		0x04
3211	Current Screw saved position ch3		0x04
3212	Current Screw saved position ch4		0x04
3213	Current Position ch1		0x04
3214	Current Position ch2		0x04
3215	Current Position ch3		0x04
3216	Current Position ch4		0x04
3217	Workpiece detection state		0x04
3218	Tool alarm state		0x04
3219	Tool reverse state		0x04
3220	Tool disable state		0x04
3221	Tool run state		0x04
3222	Tool torque up state		0x04

8.5 Modbus TCP/IP addresses Event monitoring

Adr.	Status	Description	Function Code
3300	Event no		0x04
3301	Event occur year		0x04
3302	Event occur month		0x04
3303	Event occur day		0x04
3304	Event occur hour		0x04
3305	Event occur minute		0x04
3306	Event occur second		0x04
3307	Job no		0x04
3308	Step no		0x04
3309	Step type	0: Empty step 1: Fastening 2: Input 3: Output 4: Delay 5: Message	0x04
3310	Action type	0: Empty 1: Job select 2: Job finish 3: Job reset 4: Step select 5: Step reset 6: Error 7: Reset 8: Emergency 9: Skip 10: Back 11: Fasten 12: Barcode	0x04

Adr.	Status	Description	Function code
3311	Action result	Job select - Job no Step select - Fastening (Step total screw), Input (Input value), Output (0), Delay (Delay time), Message (0) Fasten - 0: NG or 1: OK Job Finish - 0: NG or 1: OK	0x04
3312	Error code (HEX)	0x20: Not work (DEC 32), 0x21: Step Ng (DEC 33), 0x22: Job Ng (DEC 34), 0x23: Workpiece Ng (DEC 35), 0x24: Alarm (DEC 36), 0x25: Fasten time Ng (DEC 37), 0x26: Fasten no torque-up Ng (DEC 38), 0x27: Fasten skip Ng (DEC 39)	0x04
3313	Job total screw		0x04
3314	Job remain screw		0x04
3315	Step total screw		0x04
3316	Step remain screw		0x04
3317	Fastening position ch1		0x04
3318	Fastening position ch2		0x04
3319	Fastening position ch3		0x04
3320	Fastening position ch4		0x04
3321	Barcode data 32		0x04
3353	character		0x04

8.6 Explanation .csv file on SD Card

The daily file consists of different columns (data separation by a comma). The table below shows the information available:

Column	Description
Time	Time the action took place (HH:MM:SS)
Job no	N° job called on DPC TOUCH V2
Step no	N° step in the job
Step type	None / Fastening / Input / Output/ Delay / Message
Action type	Job select / Job end / Job reset / Step select / Step reset / Error / Reset / Emergency / Skip / Back / Fasten / Barcode
Action result	<ul style="list-style-type: none"> - Job select : n° du job - Job end : 0 pour NG ou 1 pour OK - Input / Step select : n° de l'entrée - Fastening / Step select : nombre total de vis étape - Delay / Step select : durée de la temporisation - Fasten : 0 pour NG ou 1 pour OK
Error	<ul style="list-style-type: none"> 32 : System error 33 : Step NG 34 : Job NG 35 : Workpiece detec. NG 36 : Tool alarm 37 : Fastening time NG 38: No torque signal reached beyond the allowed trigger push delay (in the Settings), valid only on GX. 39: Pressing "Skip" causing an NG during a fastening step (choice in Settings).
Job Total screw	Total number of screws to be fasten in the job.
Job Remain screw	Remaining number of screws to be fasten in the job.

Step Total screw	Total number of screws to be fasten in the step.
Step remain screw	Remaining number of screws to be fasten in the step.
Preset	N° Tool preset parameters
ADC	Position of encoders
Barecode	Value of the barecode entered to select the job or validate the step.

8.7 DPC TOUCH V1 to V2

Jobs and images created for DPC TOUCH V1 are not compatible with DPC TOUCH V2.

Concerning jobs, it is necessary to create them again, making sure not to leave a special character like the «/» in the name of the job.

For images, they must be converted from a BMP format to a JPG format.

8.8 EC Declaration of Conformity

Description	Download link	QR code
Declaration of conformity CE DPC Touch	http://service.doga.fr/syst/dogatech.nsf/liste/00276	

Download the ultimate version of this manual via this link here below or via QR code :
<http://service.doga.fr/syst/dogatech.nsf/liste/60352>

