# EZ-Glider DPC-Touch Posi-Control System
# Operation Instructions

*(Rev 1.2 1/17/2019)*
.
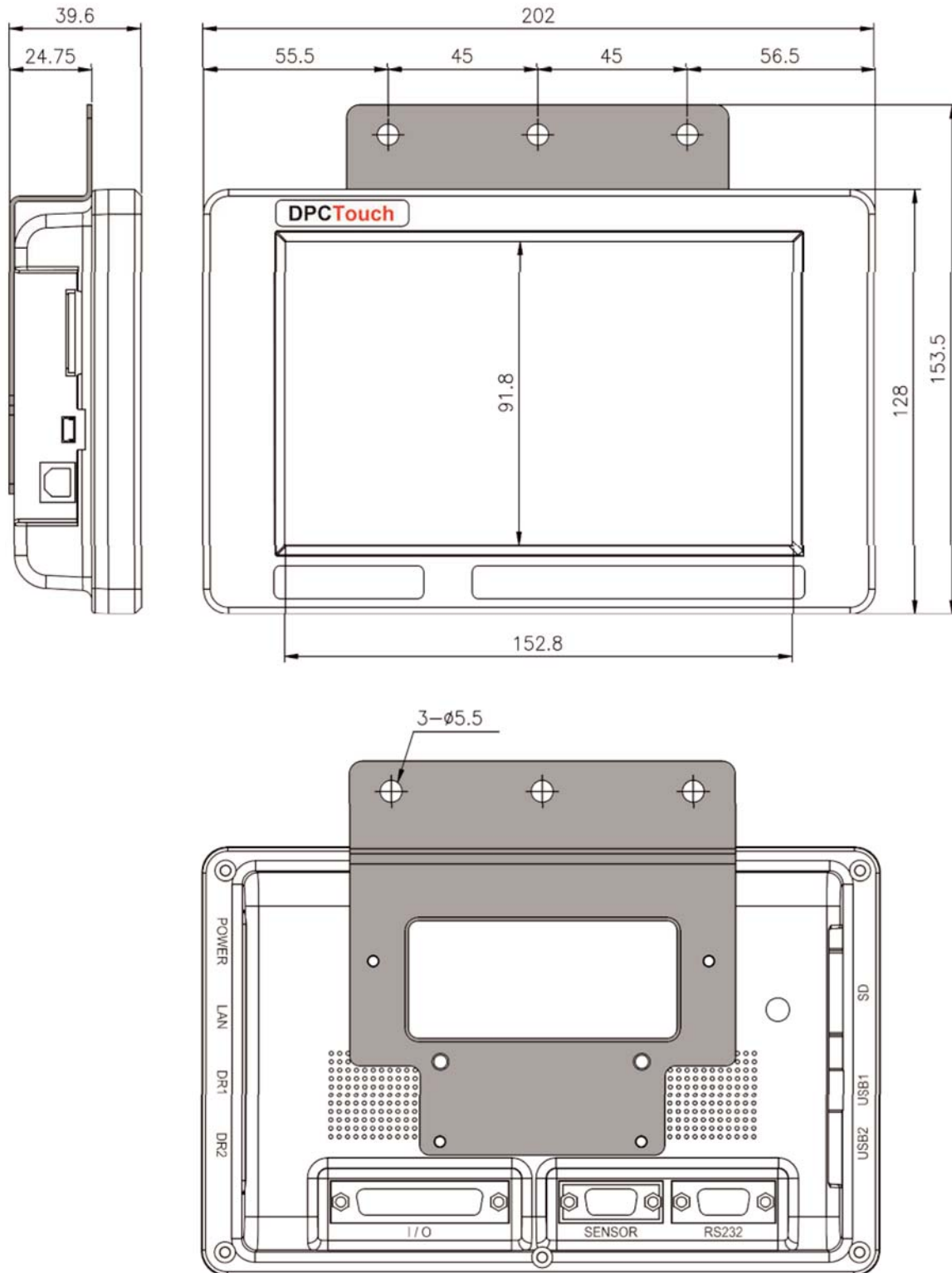
| Heading | Page |
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## SPECIFICATIONS

1. Input power: DC24V, 1AAC 100-240V / DC 24V adapter is provided.

2. Dimensions: 202(W) x 128(H) x 38(D) mm

3. Weight 1.2 lbs.

4. Screen: 7" LCD Touch screen, 800 x 480 px

5. Graphical interface: Visualization of assembly process with graphical instructions

6. Inputs and Outputs 24V: 12 inputs and 12 outputs with assignable functions.Logical I/OF for workstation automation

7. Analog encoders: 4 channels, 0...5V

8. Memory card: Removable SD card, 8Gb

9. Total jobs memory: 255 jobs with open structure

10. Total positions memory: 255 jobs x 255 steps x 99 positions per fastening step max 100 steps of the same type in one job

11. Positioning accuracy: 0.09° for angular encoders <0.5 mm for linear encoders

12. Positioning tolerance: Adjustable for each position and for each axis. Smart tolerance detection feature.

13. Compatible tools: All tool with signals – electric or pneumatic. Min required signals: «Fastening OK», «Tool Lock»

14. Communication: RS232 for bar code scanner and firmware upgrade

# HARDWARE

**Dimensions and Mounting Interface**
Mounting plate with 4 x M3 screws is delivered with the controller as a standard accessory.
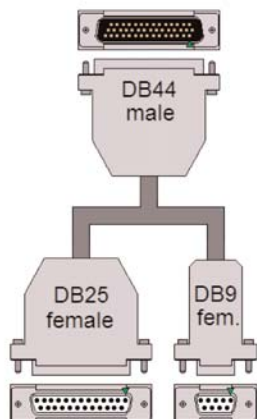Weight of the controller: 1.2 lbs.

NOTE: ports shown in grey are not used in firmware v.0.3.1

I/O port adapter

This adapter is used to split I/O signals for tool interface and other automation equipment (see Electric wiring chapter for the wiring scheme.

Encoders port adapter
(supplied only for controllers with serial numbers starting with SC******)

Encoders port adapter is used to connect standard Mountz EZ-Glider positioning torque arms to DPC Touch.

ATTENTION: Do not connect positioning arm directly to DPC Touch (serial numbers starting with SC*******)! This may damage encoders!

# JOB MANAGER

Job manager interface provides access to the list of saved jobs. It also allows to Edit or to Delete saved jobs as well as to create new ones by pressing New button or by Copying an existing job. Load button is used to load a selected job into operating mode. **NOTE**: a job can't be loaded if it doesn't contain any steps.



Each job has its number ($^1$). In order to change job number it is necessary to tap one more time on the selected job and then change its position in the list by using Up and Down buttons.

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

Home button provides access to the main menu screen.

Maximum number of jobs is 255.

**NOTE:** while not logged in, the only active buttons are Load and Home, other buttons are locked.

## GETTING STARTED

1. Connect power supply to the controller to turn it on. Normal booting time is about 2 sec. If controller is not booted, the last booting task indicates the problem (e.g. Init SD Card…missing or damaged SD card).
2. After first booting, calibration screen may appear. Follow instructions on the screen -press and hold the center of the cross for 1 sec for each position of the cross.
   **ATTENTION**: if calibration is not correctly performed, the touch screen may become unresponsive. In this case turn off the controller, take out the SD card, access the SD card from your computer and delete the following file: SD:\system\setting\Setting_posi.dat
3. Controller is started automatically in operating mode. If default job is selected it will start automatically.
4. Tap on the HOME button in order to access to the main menu screen.
5. While not logged in, JOB MANAGER and SETTINGS are not accessible.
6. To log into the system tap on the LOGIN button. Default factory password is "0".

## MAIN MENU



The main screen provides access to the main menu with four buttons:

- Job manager

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

- Operation mode

  Provides access to the operating screen.

- 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 Job manager and Settings.

  **NOTE:** default factory password is "0". If the password is lost, turn off the controller, take out the SD card, access the SD card from your computer and delete the following file:
  SD:\system\setting\Setting_posi.dat After rebooting, the controller will be reset to default factory settings.

# NEW JOB CREATION

While in Job Manager screen, press NEW button. New job will be created and placed in the end of the list. 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.



- Fastening: this step contains fastening positions including information associated with these positions (positioning tolerance, tightening program, tightening time, etc.)
- Logical In: this step is used to verify an input signal in order to pass to the next step (e.g. signals from proximity sensors, buttons, etc.).
- Logical Out: this step is used to send an output signal(s) to manage automation equipment on work station (e.g. activation of pneumatic valves, lights, etc.).
- Delay: this step allows to maintain the current state of I/OF for specified time (e.g. a delay required between receiving an input signal and sending an output signal).
- Message: this step is used to display a graphical or text message on the operating screen during working cycle.

A job may contain up to 255 steps. The maximum number of steps of the same type is 100. The maximum number of positions in a single fastening step is 99.

In order to change sequence of steps in a job, tap one more time on the selected step and then change its position in the list by using Up and Down buttons.

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

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

## Fastening step creation

**NOTE:** it is useful to define encoder's reference point before creating a fastening step. See encoder's settings for more information.

While in Job creation screen, tap on FASTENING step button. The Fastening step creation screen will appear.



Current field displays the number of position being programmed.

Saved field displays the total number of saved position in the fastening step being programmed.

Current channels fields display current values from analog encoders. Only active channels are shown.

Saved channels fields display saved values from analog encoders. Current values are saved when

Apply button is pressed or when Fastening OK signal is received.

Tolerance fields display tolerance values for analogue encoders to be applied for each encoder for the current position. Tolerance values can be automatically detected by using Smart Tolerance detection feature (please refer to corresponding chapter for more details).



Approaching area (orange): Tool is disabled

OK zone (green): tool can be enabled

Out of position area (red): Tool is disabled
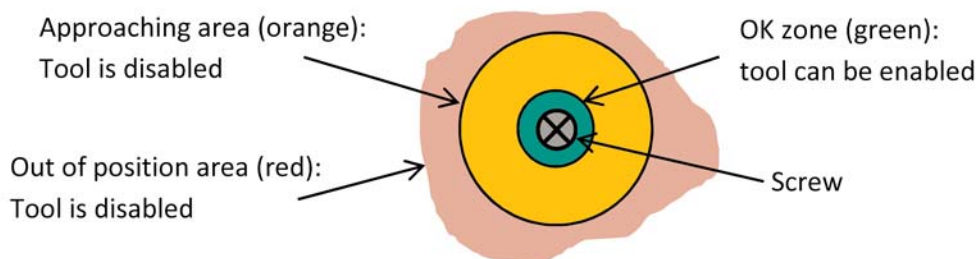
Screw

**NOTE:** real shapes of tolerance areas are not circular; they depend on the geometry of the positioning arm being used. To avoid overlapping of tolerance areas of different screws, keep tolerance values as low as possible.

Time control fields display measured Tightening time and calculated Min and Max limits. Min and Max values are calculated according to percentages defined in operating settings.

Tightening job is a preset number to be selected for the current tightening position via 24V outputs (direct or binary logic) if supported by the tool.

Retightening job is 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).

Pick up positions 1 and 2 can be selected to allow to start the tool 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.

Driver 1 and 2 selection is only applied to DOGA tools (GX, GY, DO, GA) connected through RJ45 port. This selection allows enabling and disabling tools for each individual position.

Reset button is used to reset current position data to default values. To delete a position press Reset button one more time after resetting the position data to defaults.

NOTE: there is no need to use APPLY button after modification of any of the above values. APPLY button is only used to save current values from encoders for the current position.

A Fastening step can be programmed manually or automatically.

**Manual programming of fastening step:**
0.  Optional: Use Smart tolerance detection feature (refer to Smart tolerance detection below)
1.  Position the arm on the first screw. Encoders monitoring fields are displaying the current position of the arm.
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 encoders' 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 l 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, retightening can't be managed.
9.  Press SAVE button to save the step or CANCEL button to quit programming without saving changes.

**Automatic programming of fastening step:**
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.

0.  Optional: Use Smart tolerance detection feature (refer to Smart tolerance detection below)
1.  Position the arm on the first screw. Monitoring fields are displaying the current position of the arm.
2.  Default tolerance values for the approaching Area and for the OK zone will be applied. To change default values refer to encoders 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, retightening can't be managed.
8.  Press SAVE button to save the step or CANCEL button to quit programming without saving changes.

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

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 STOP button on the screen. Or perform a tightening operation as it has to be performed during production. In this case tightening time will be saved automatically together with detected tolerance values and current position coordinates. Next position teaching will start automatically.
4.  Continue with Manual or Automatic programming.

**Logical Input step creation**

While in Job modification screen, tap on 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: for this type of signal it is necessary to detect a transition from 0 to 1.
-   Active Low: for this type of signal it is necessary to detect a transition from 1 to 0.
-   Status High: for this type of signal it is enough to detect if the signal is equal to 1.
-   Status Low: for this type of signal 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 AND condition will be applied for selected signals to complete the step.

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

**Logical Output step creation**
While in 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 two types of output signals:
- Continuous ON: the signal is continuous 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.
- Impulse: the signal is an impulse with defined duration. Duration of the signal is defined in ms.

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

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

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

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.

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

**Message step creation**
While in Job modification screen, tap on MESSAGE button. The message step creation screen will appear.

Enter the text to be displayed and activate the corresponding switch.

Select an image to be displayed from the list of available images and activate the corresponding switch. To hide the displayed message it is necessary to create a new Message step without text and/or image.

Images are stored on SD card in the following directory: SD: \user\images\messages

For the best result, use pictures with the following format: 800 x 480 px, 16 bit, RGB565 BMP

NOTE: standard 24 bit BMP images can be used, but processing time will be longer. Use provided converter utility to convert 24 bit images into 16 bit for better productivity.

Press SAVE button to save the step or CANCEL button to quit programming without saving changes.
Creating 16 bit bitmap images with Image Converter utility
1. Open Image converter utility
2. Select the directory where converted images are to be saved.
   NOTE: Image Converter will create a new folder "16bit" where converted files will be saved.
3. Add image files to be converted by using Add button. If necessary remove files by using Remove button.
   NOTE: images have to be in .jpeg or .bmp formats cropped to the size of 800x480 px
4. Press Convert button to convert images into 16 bit bitmap format. Converted images will be saved in the specified directory in "16bit" folder.
5. Close Image Converter utility.
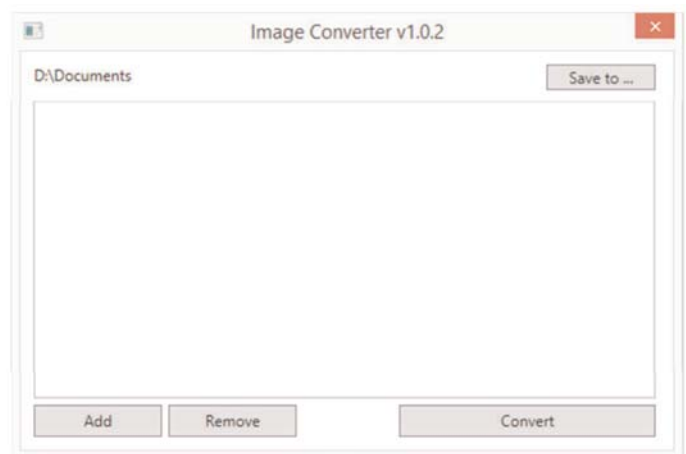
**Job example**

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

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.

| No | 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 from proximity switch to detect presence of the workpiece on the table and from two buttons which operator has to press simultaneously in order to keep his hands off the clamping device. |
| 3 | Message | Text or Image message is shown on the screen to worn 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) is sent to turn on 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 | Another 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 | Job completion message |
| 20 | Delay | Delay before the job is restarted |

# SETTINGS

**Operating**

Screen 1 of 4: Management of interface

| Parameter | Description | Range | Default value |
|---|---|---|---|
| Tool selection | Select one of the following option:<br>- **HDC/SDC**: DOGA Hybrid or Current control tools (HDC30i, HDC35i, HDC40i, SDC24, SDC40)<br>- **DC tools**: all electric digital control tools equipped with 24V I/O signals<br>- **GX, GY, DO, GA**: DOGA low voltage tools (XS-40D, XS-38D, XT-30D, XS-35D, XT-35D)<br>- **Other:** special applications on request | - | DC tools |
| Screws counting up/down | This parameter manages counting display. Turn it ON to count up (1,2,3,…) or OFF to count down (…,3,2,1) | ON/OFF | ON |
| Screws counting for step/job | This parameter manages 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 | Default job is a job which is automatically started after booting of DPC Touch. If default job number is set to 0, DPC Touch will not boot any jobs.<br>NOTE: job selection via inputs has higher priority | 0 - 255 | 1 |

## Screen 2 of 4: Management of buttons in operating mode

| Skip button access without password | Enables access to Skip button without entering password. If turned OFF the password will be asked when Skip button is pressed. | ON/OFF | ON |
|---|---|---|---|
| Back button access without password | Enables access to Back button without entering password. If turned OFF the password will be asked when Back button is pressed. | ON/OFF | ON |
| Reset button access without password | Enables access to Reset button without entering password. If turned OFF the password will be asked when Reset button is pressed. | ON/OFF | ON |
| Display job reset button | Job reset button can be displayed or hidden by using this parameter.<br>NOTE: if turned OFF and automatic reset is used, then the current step will be reset instead of the current job. | ON/OFF | ON |
| Job selection access without password | Enables access to Jobs selection without entering password. If turned OFF the password will be asked when Job selection button is pressed. | ON/OFF | ON |

| | | | |
|---|---|---|---|
| Min fastening time limit, % | Lower limit of fastening time control in percentage of actual fastening time detected during programming. NOTE: changes will be applied only to new jobs, existing jobs won't be affected. | 0 - 100 | 25 |
| Max fastening time limit, % | Upper limit of fastening time control in percentage of actual fastening time detected during programming. NOTE: changes will be applied only to new jobs, existing jobs won't be affected. | 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 |
| Temporary position loss time, ms | 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. NOTE: this parameter is used to avoid interruptions of fastening process when position is lost for short time due to vibrations. | 0 - 3000 | 50 |
| Judging time, ms | Judging time is used if Fastening OK signal is delayed after the fall of Motor run signal. | 0 - 500 | 100 |

### Screen 4 of 4: Management of NG tightenings

| | | | |
|---|---|---|---|
| Number 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 to skip automatically 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 |

**Encoders**



Encoder's activation and tolerance settings (screen 1 of 2)

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.

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.

Pick up position 1 and 2 (screen 2 of 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).
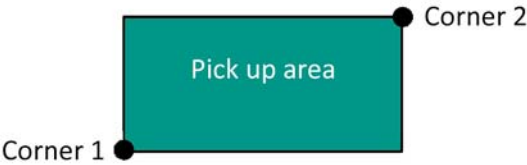


NOTE: the real shape of pick-up area is not rectangular and depends on the geometry of the arm.

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

Setting zero point of encoders (screen 2 of 2)

Encoders' reference point can be defined by using this function. Definition of the reference point is useful when encoders have to be replaces 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 Operating mode.

**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.

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 |
| Tool Alarm | Fastening NG (alarm) signal from the tool to indicate that fastening operation wasn't successful. | Continuous or Impulse |
| Set Origin | Signal is used to set zero of encoders in operating mode. | Impulse |
| D_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 |
| D_Motor_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 |
| D_Fastening_OK | Signal from tool after successful fastening operation. Once the signal is received, current position is declared as finished. | Impulse |

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.

**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 successful fastening operation. | Impulse |
| Fastening NG | Signal is provided after a fastening operation completed with errors. | Impulse |
| 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 |
| D_RUN | Signal is provided when the tool is running (D_Motor_Run input has to be connected) | Continuous |
| D_TORQUE | Signal is provided when Fastening OK signal is received from the tool (D_Fastening_OK input has to be connected) | Impulse |
| D_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.

| Pset 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.

**Network**
Network communication is not enabled in firmware v.0.3.1

**Other**
**Real time monitoring of encoders and I/OF (screen 1 of 4)**

This interface helps to verify if encoders function correctly. It also helps to check status of input signals and to force output signals to test wiring.

**Touch screen calibration (screen 2 of 4)**

Press on Start button to enter into touch screen calibration mode. Press and hold indicated positions for 2 seconds in order to calibrate the screen.

**ATTENTION:** if calibration is not correctly performed, the touch screen may become unresponsive. In this case turn off the controller, take out the SD card, access the SD card from your computer and delete the following file: SD:\system\setting\Setting_posi.dat

**Sounds (screen 2 of 4)**
Adjust the volume by using the slide bar. Select desired sounds for Position Ok, Alarm and Cycle complete signals. Activate sounds to be used.

**Date and time (screen 3 of 4)**
Adjust current date and time. The controller is equipped with internal battery to keep this data.

**Language (screen 3 of 4)**

Select language of the graphical interface. Available languages in firmware v.0.3.1:
    English, French, German, Spanish

**Password (screen 4 of 4)**
Enter the new password and press Set.

Default factory password is "0".

NOTE: If the password is lost, turn off the controller, take out the SD card, access the SD card from your computer and delete the following file: SD:\system\setting\Setting_posi.dat

After rebooting, the controller will be reset to default factory settings.

Controller reset to factory settings (screen 4 of 4)

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

Firmware version (screen 4 of 4)

Current firmware version of the controller. Upgrade the firmware regularly to keep the controller up to date. Refer to the firmware upgrade manual for the upgrade procedure.

# OPERATING MODE

Controller is started automatically in Operating mode after booting. Default job is loaded automatically (see operating settings). Operating mode is accessible through the main menu and though Job Manager by pressing Load button.

In Operating screen functions are managed in Operating settings.
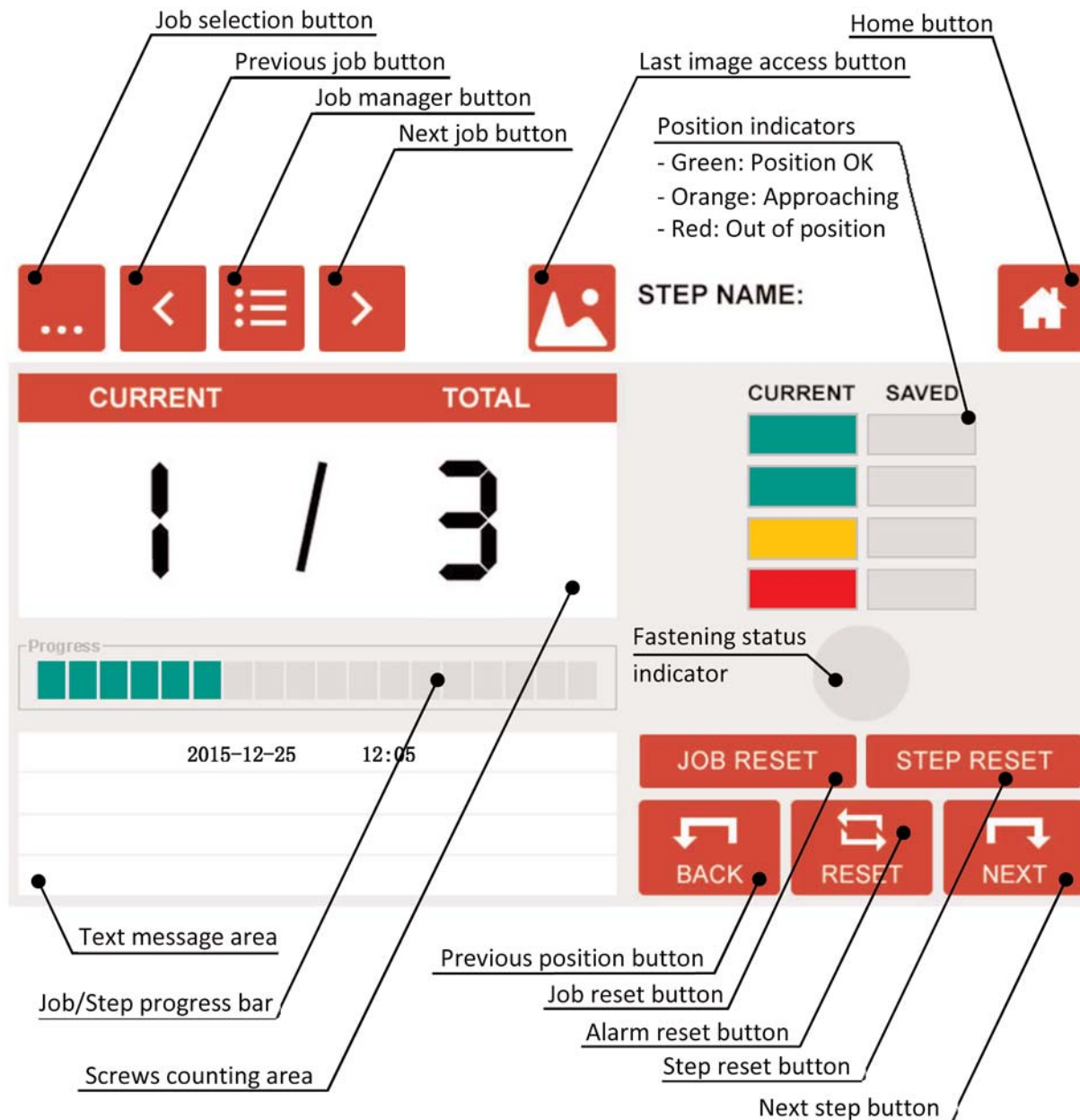


In operating mode the following error messages can occur:

- Fastening time is too long/short: fastening time is out of min/max limits (see programming)
- Trigger released before torque up: tool was stopped before reaching torque (see settings)
- Fastening NG (tool alarm): fastening NG (alarm) input signal is received from the tool
- System error: operating system error (reboot the controller)
- I/O error: error of management of inputs and outputs (check logical and assigned I/OF)
- Job complete NG: job was interrupted or completed with missing screws

**Inputs wiring scheme**

**Outputs wiring scheme**



DPC Touch outputs

Power 24V(+) or Return 0V(-)

External inputs

100mA max

Output 1 — (16)
Output 2 — (17)
Output 3 — (18)
Output 4 — (19)
Output 5 — (20)
Output 6 — (21)
Output 7 — (22)
Output 8 — (23)
Output 9 — (24)
Output 10 — (25)
Output 11 — (26)
Output 12 — (27)

(29) (30) OUTPUT COM

Return 0V(-) or Power 24V(+)
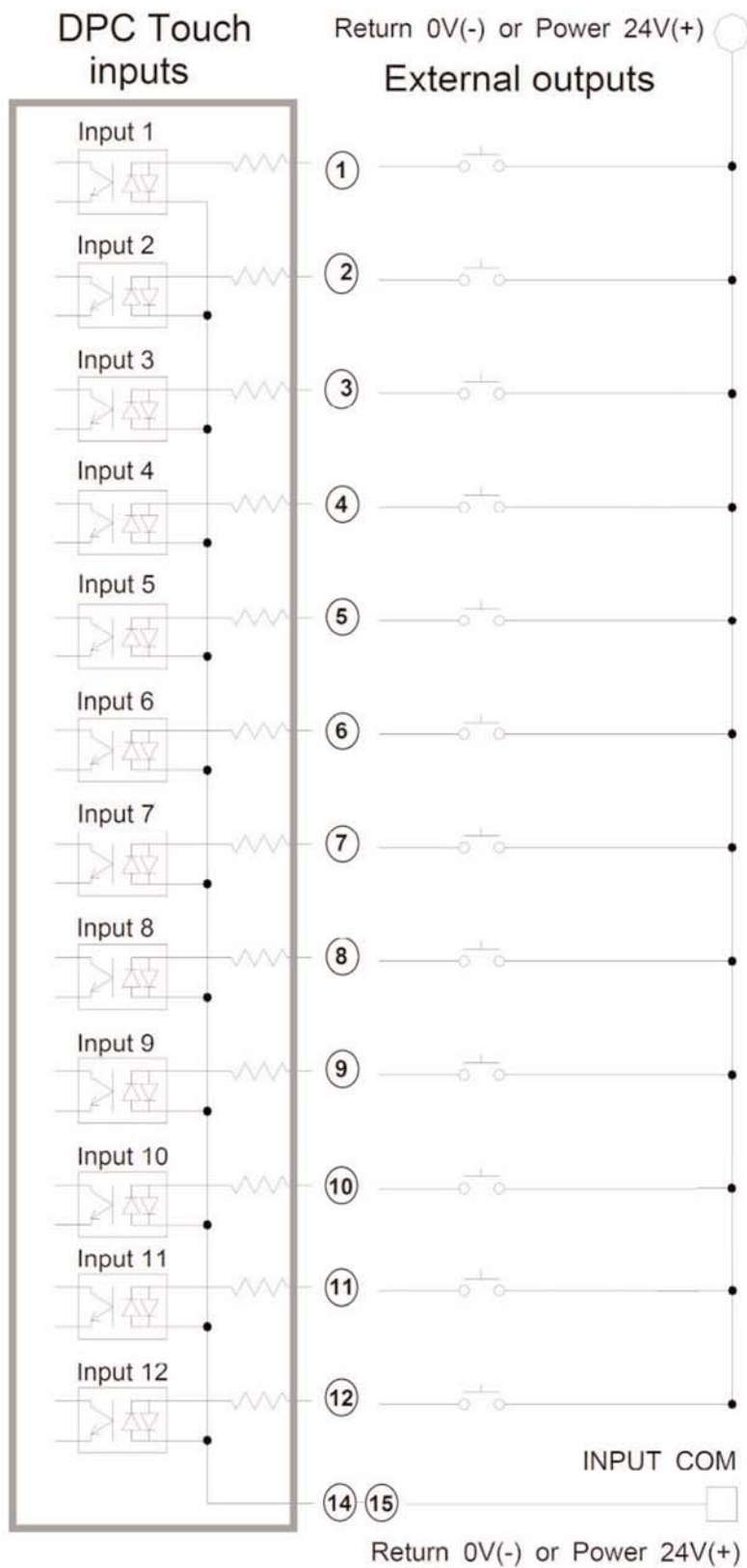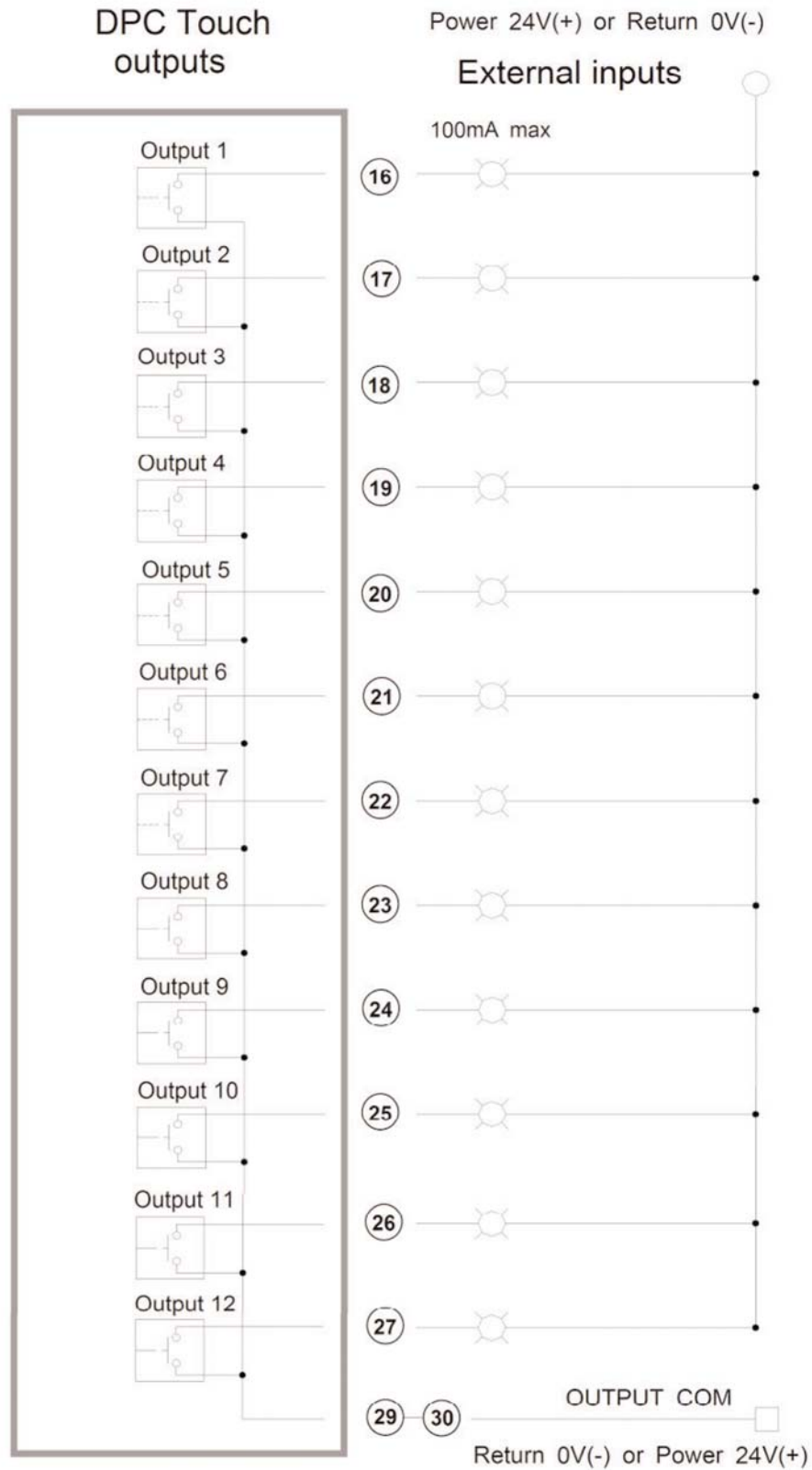
**Connection of Mountz low voltage electric screwdrivers using ET-30D, FT-30D, STC-30 & STC-40**

DPC Posi Touch                                    ET-30D, FT-30D, STC-30 or STC-40

**RJ45 I/O port 1 and 2**                              **RJ45 I/O port**

XS-40D / RJ 45 I/O

2 - Torque Up
3 - Motor Run
4 - In COM
5 - Driver Lock
6 -
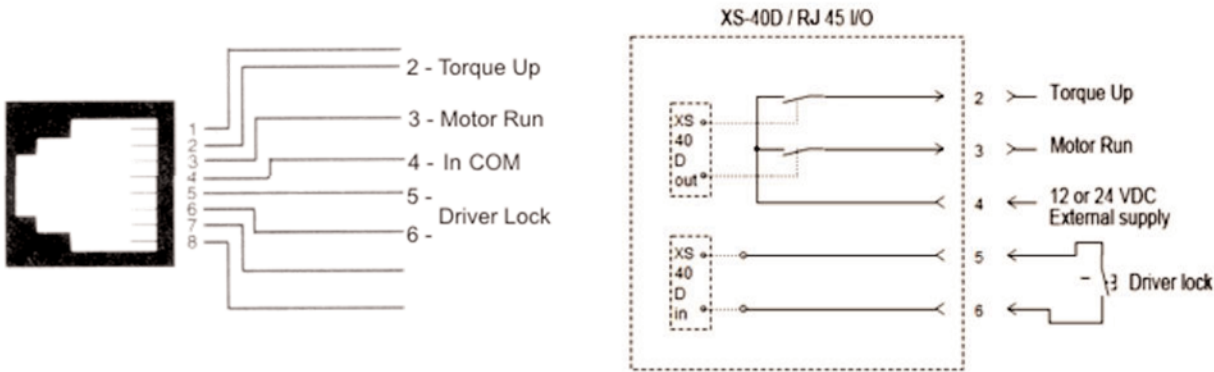
| Signal | RJ45 pin № | RJ45 pin № | Signal |
|---|---|---|---|
| Torque Up input | 2 | 2 | Torque Up output |
| Motor Run input | 3 | 3 | Motor Run output |
| Driver Lock output | 5, 6 | 5, 6 | Driver Lock input |
| 24V | 4 | 4 | 24V |

**NOTE:** Select GX/GY/DO/GA tool interface in DPC Touch operating settings.

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)**
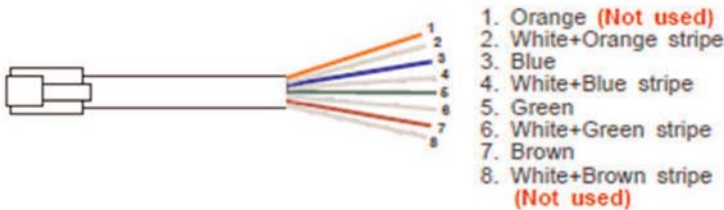
⚠ **ATTENTION!** Use only straight RJ45 cable (not crossed).

## Connection of Mountz HD-Series & SD-Series

DPC Posi Touch

HDC or SDC Controllers



**I/O adaptor**
(DB44 male to DB9 female and DB25 female)
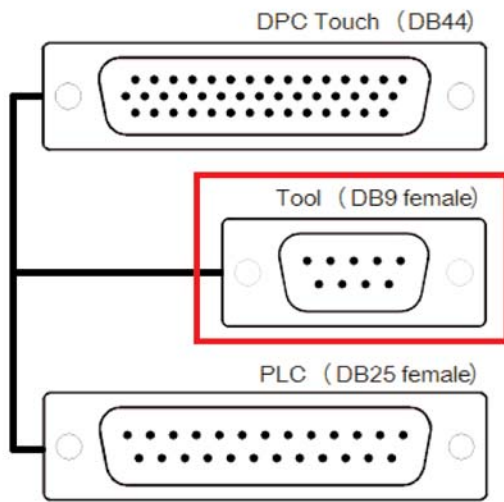
**DB25 I/O port**
(potential free)



| Input/Output | Assigned signal | DB9 pin № | HDC/SDC pin № | Signal |
|---|---|---|---|---|
| Output 1 | Torque Select 1 | 1 | 1 | Preset select 1 |
| Output 2 | Torque Select 2 | 2 | 2 | Preset select 2 |
| Output 3 | Torque Select 3 | 3 | 3 | Preset select 3 |
| Output 4 | Tool Disable | 4 | 5 | Driver Lock |
| Input 8 | D_Motor_Run | 5 | 16 | Motor Run |
| Input 9 | Tool Alarm | 6 | 18 | Alarm |
| Input 10 | D_Fastening_OK | 7 | 25 | Fastening OK |
| IN_COM | | 8 | 22 | 0V DC |
| OUT_COM | | 9 | 21 | 24V DC |

## Two tools wiring example



Tool A is connected through DB9 connector

Tool B is connected through DB25 connector

| Input | Job select bit 0 |
| --- | --- |
| Input | Job select bit 1 |
| Input | Job select bit 2 |
| **Input** | **Tool disable** |
| **Output** | **Fastening OK** |
| Output | Fastening NG |
| Output | Motor run |

| Input | Job select bit 0 |
| --- | --- |
| Input | Job select bit 1 |
| Input | Job select bit 2 |
| **Input** | **Tool disable** |
| **Output** | **Fastening OK** |
| Output | Fastening NG |
| Output | Motor run |

DB9: pin 1

DB25: pin 19

| Output 4 | Torque select 1 |
| --- | --- |
| Output 3,6 | Torque select 2 |
| Output 7,8 | Torque select 3 |
| **Output 1** | **Tool disable** |
| **Output 2** | **Logical out: Lock A** |
| **Output 11** | **Tool Disable** |
| **Output 12** | **Logical out: Lock B** |
| Input 8 | D_Motor_Run |
| Input 9 | Tool Alarm |
| **Input 10** | **D_Fastening_OK** |

DB9: pin 2

DB9: pin 5

DB9: pin 6

**DB9: pin 7**

DB25: pin 20

DB25: pin 13

DB25: pin 14

**DB25: pin 15**



DPC Touch (DB44)

Tool A (DB9 female)

Tool B (DB25 female)

## Automation equipment wiring example
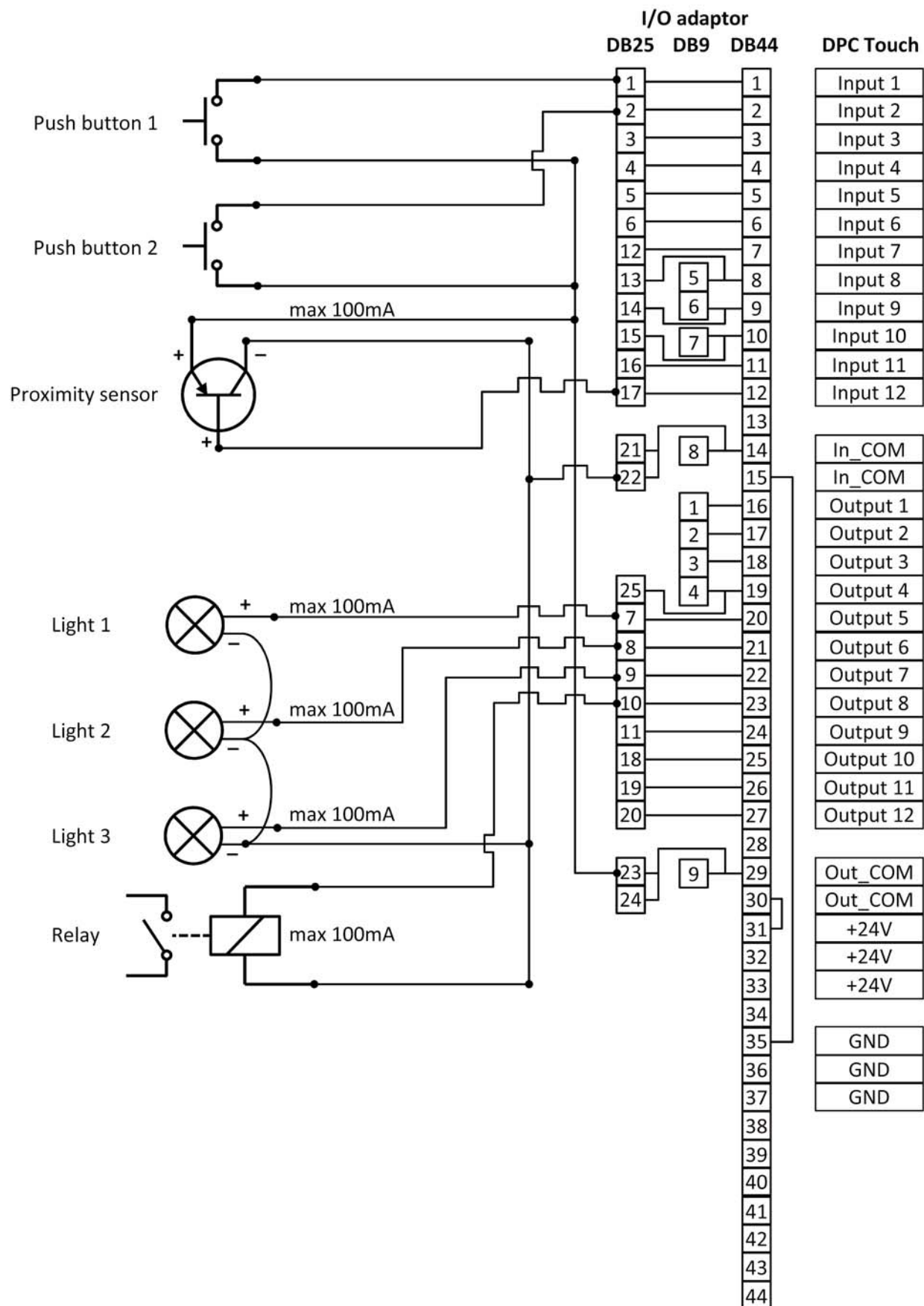
## I/O port adapter (DB44 Male  PLC:DB25 + MDC: DB9) wiring scheme

| DPC Touch | | DB44 (male) | | DB25 (female) | DB9 (female) | Example of assigned signals |
|---|---|---|---|---|---|---|
| INPUTS | Input 1 | 1 | ← | 1 | | Job select 1 |
| | Input 2 | 2 | ← | 2 | | Job select 2 |
| | Input 3 | 3 | ← | 3 | | Job select 3 |
| | Input 4 | 4 | ← | 4 | | Job select 4 |
| | Input 5 | 5 | ← | 5 | | Reset/refasten |
| | Input 6 | 6 | ← | 6 | | Step reset |
| | Input 7 | 7 | ← | 12 | | Job reset |
| | Input 8 | 8 | ← | 13 | 5 | *Motor run* |
| | Input 9 | 9 | ← | 14 | 6 | *Alarm/NG* |
| | Input 10 | 10 | ← | 15 | 7 | *Torque Up* |
| | Input 11 | 11 | ← | 16 | | Logical In |
| | Input 12 | 12 | ← | 17 | | Logical In |
| | | 13 | | | | |
| | IN_COM | 14 | | 21, 22 | 8 | Out Com (0V) |
| | | 15 | | | | |
| OUTPUTS | Output 1 | 16 | → | | 1 | *Tq Select 1* |
| | Output 2 | 17 | → | | 2 | *Tq Select 2* |
| | Output 3 | 18 | → | | 3 | *Tq Select 3* |
| | Output 4 | 19 | → | 25 | 4 | *Driver Lock* |
| | Output 5 | 20 | → | 7 | | Position OK |
| | Output 6 | 21 | → | 8 | | Motor run |
| | Output 7 | 22 | → | 9 | | Torque Up |
| | Output 8 | 23 | → | 10 | | Alarm (Error) |
| | Output 9 | 24 | → | 11 | | Job complete |
| | Output 10 | 25 | → | 18 | | Logical Out |
| | Output 11 | 26 | → | 19 | | Logical Out |
| | Output 12 | 27 | → | 20 | | Logical Out |
| | | 28 | | | | |
| | OUT_COM | 29 | | 23, 24 | 9 | In Com (24V) |
| | | 30 | | | | |
| | +24V | 31 | → | | | |
| | | 32 | → | | | |
| | | 33 | → | | | |
| | | 34 | | | | |
| | 0V | 35 | → | | | |
| | | 36 | → | | | |
| | | 37 | → | | | |
| | | 38 | | | | |
| | | 39 | | | | |
| | | 40 | | | | |
| | | 41 | | | | |
| | | 42 | | | | |
| | | 43 | | | | |
| | | 44 | | | | |

> ⚠️ **ATTENTION!** ⚡
>
> By default, the controller provides 24V output on the pins 31-33 and 35-37. This 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 (15)-(35) and (30)-(31) are made inside DB44 male connector. Cut them, if signals are to be powered by external power supply

## I/O port adapter (DB44 Male  PLC:DB25 + MDC: DB25) wiring scheme

| DPC Touch | DB44 (male) | → | PLC DB25 (female) | MDC DB25 (male) | Example of assigned signals |
|---|---|---|---|---|---|
| Input 1 | 1 | → | 1 | 10 | Job select 1 |
| Input 2 | 2 | → | 2 | 11 | Job select 2 |
| Input 3 | 3 | → | 3 | 12 | Job select 3 |
| Input 4 | 4 | → | 4 | 13 | Job select 4 |
| Input 5 | 5 | → | 5 | 14 | Reset/refasten |
| Input 6 | 6 | → | 6 | 15 | Step reset |
| Input 7 | 7 | → | 12 | 16 | Job reset |
| Input 8 | 8 | → | 13 | 17 | *Motor run* |
| Input 9 | 9 | → | 14 | | *Alarm/NG* |
| Input 10 | 10 | → | 15 | | *Torque Up* |
| Input 11 | 11 | → | 16 | | Logical In |
| Input 12 | 12 | → | 17 | | Logical In |
| | 13 | | | | |
| IN_COM | 14 | → | 21, 22 | 22 | In Com |
| | 15 | → | | | |
| Output 1 | 16 | → | | 1 | *Tq Select 1* |
| Output 2 | 17 | → | | 2 | *Tq Select 2* |
| Output 3 | 18 | → | | 3 | *Tq Select 3* |
| Output 4 | 19 | → | 25 | 4 | *Tq Select 4* |
| Output 5 | 20 | → | 7 | 5 | Tool enable |
| Output 6 | 21 | → | 8 | 6 | Motor run |
| Output 7 | 22 | → | 9 | 7 | Torque Up |
| Output 8 | 23 | → | 10 | 8 | Alarm (Error) |
| Output 9 | 24 | → | 11 | | Job complete |
| Output 10 | 25 | → | 18 | | Tq select 4 |
| Output 11 | 26 | → | 19 | | Logical Out |
| Output 12 | 27 | → | 20 | | Logical Out |
| | 28 | | | | |
| OUT_COM | 29 | → | 23, 24 | 21 | Out Com |
| | 30 | → | | | |
| +24V | 31 | → | | | |
| | 32 | → | | | |
| | 33 | → | | | |
| | 34 | | | | |
| 0V | 35 | → | | | |
| | 36 | → | | | |
| | 37 | → | | | |
| | 38 | | | | |
| | 39 | | | | |
| | 40 | | | | |
| | 41 | | | | |
| | 42 | | | | |
| | 43 | | | | |
| | 44 | | | | |

⚠ **ATTENTION!** ⚡

By default, the controller provides 24V output on the pins 31-33 and 35-37. This 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 (15)-(35) and (30)-(31) are made inside DB44 male connector. Cut them, if signals are to be powered by external power supply

## Mountz Calibration & Repair Services

Mountz Inc. features an experienced calibration and repair staff. Our trained technicians can calibrate and repair most any tool. Mountz provides rapid service with quality that you can trust as we offer two state-of-the-art calibration lab and repair facilities that can calibrate up to 20,000 lbf.ft.

Since 1965, Mountz's in-depth knowledge of torque is reflected in our tool's craftsmanship and our ability to provide solutions to both common and uncommon torque applications. We perform calibrations in accordance with ANSI/NCSL-Z540. Mountz is dedicated solely to the manufacturing, marketing and servicing of high quality torque tools.

## Tool Service & Repair Capability

- Torque Wrench Calibration: Click Wrench, Dial Torque Wrench, Beam Wrench, Cam-Over & Break-Over Wrench

- Torque Screwdrivers: Dial, Micrometer, Preset & Adjustable

- Torque Analyzers/Sensors: All brands

- Electric Screwdrivers: All brands

- Air Tools: All brands, Impact Wrenches, Drills, Pulse Tools, Grinders, Percussive Tools, Air Screwdrivers, Nutrunners, DC Controlled Nutrunners

- Torque Multipliers: All brands

## Mountz Torque Testers and Calibration Equipment

Torque tools go out of calibration with use. Calibrating a torque tool is a fine-tuning process of bringing the tool back within its tolerance. Torque testers can also be used for quick tools tests on the line or in the lab to determine whether torque tools are holding a given setting.

A regular torque tool calibration and re-calibration guarantees the operator repeatable accuracy and adherence to international standards. Torque testing also ensures torque equipment is operating to peak performance and can highlight potential tooling problems before they arise perhaps due to tool wear or broken components.

Controlling torque is essential for companies to ensure their product's quality, safety and reliability isn't compromised. The failure of a three-cent fastener that isn't properly tightened can lead to catastrophic or latent failures. Fasteners that are insufficiently torqued can vibrate loose and excessive torque can strip threaded fasteners. Using a quality torque tool has become increasingly important for many companies to ensure that proper torque is being applied and maintains gauge requirements associated with the ISO 9001 Quality Standard. Look for the Mountz hexagon logo - it's a stamp for quality tools, service and knowledge in the field of torque control.

### Mountz Service Locations

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