



Innovating Epigenetic Solutions

IP-Star® Compact

Fully Automated System for Epigenetic Applications



MAINTENANCE OPERATIONS

Cat. No. B03000002

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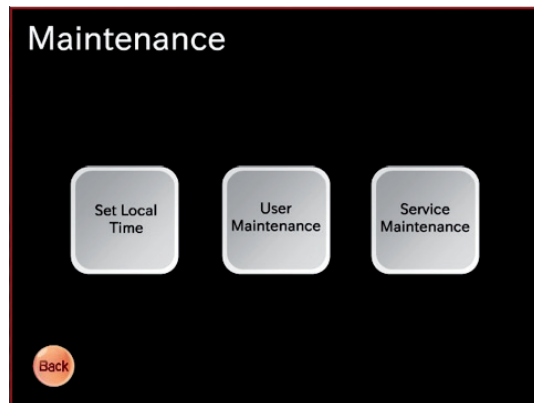
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1. Maintenance Menu Screen – M1

In this screen, users can select between, “Set Local Time”, “User Maintenance” and “Service Maintenance”.

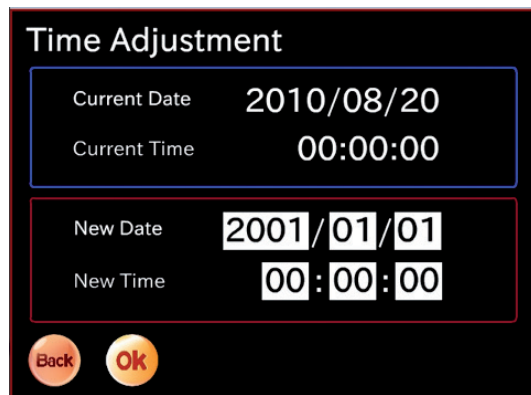


Buttons:

- Set Local Time – Move to the Set Local Time screen
- User Maintenance – Move to the User Maintenance Protocol List screen
- Service Maintenance – Move to the Service Maintenance screen (Password Locked)
- Back – Go back to the previous screen (A1)

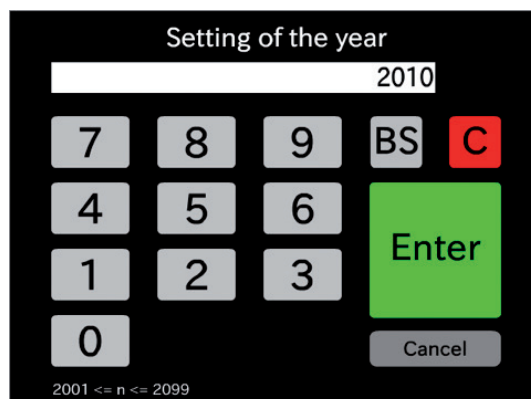
2. Set Local Time screen – M2

The system time can be set on this screen. The parameters that can be set are Current Date and Current Time.



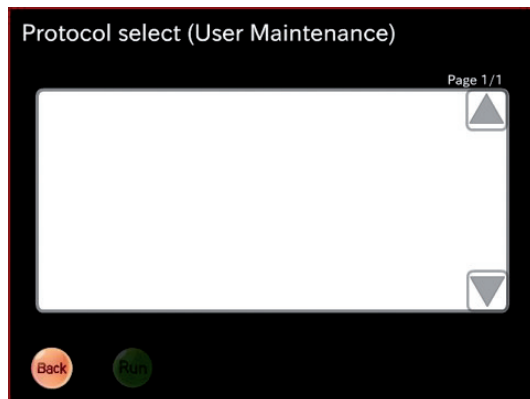
Buttons:

- New Date [Year]– Ten keys screen are displayed, and the year can be set.
- New Date [Month]– Ten keys screen are displayed, and the month can be set.
- New Date [Day]– Ten keys screen are displayed, and the day can be set. (Correspondence at leap year)
- New Time [Hour]– Ten keys screen are displayed, and the hour can be set.
- New Time [Minutes]– Ten keys screen are displayed, and the minutes can be set.
- New Time [Second]– Ten keys screen are displayed, and the seconds can be set.
- OK – A new date and time is set. The selected new date and time is indicated in Current Date and Current Time boxes.
- Back – The screen changes to the Maintenance Menu screen without changing the system time.



3. User Maintenance Screen (Protocol Select screen) – M3

Through this screen, users can execute different maintenance protocols.
When a protocol is selected on the protocol list, the Run button turns executable.



Buttons:

- RUN – The selected protocol starts and then, the screen changes to protocol running screen.
- ▲ – Page up the list box.
- ▼ – Page down the list box.

The protocols shall be included in this list are :

- User Maintenance Protocol
- Door Lock Off
- Tip Discard
- Org All (P Axis is excluded.)

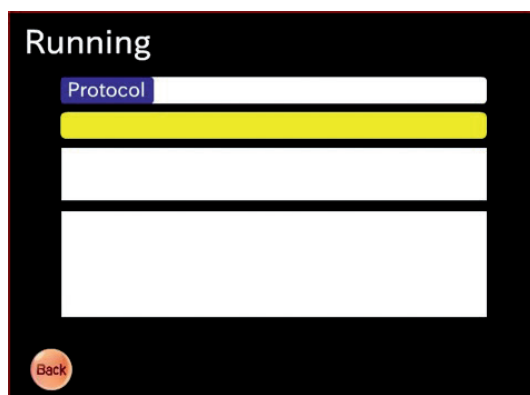
Protocol Running (User Maintenance) Screen – M4

When User Maintenance Protocol is selected, a running screen is displayed. User can select functions of pause, stop, and restart this screen.



Protocol Running (User Maintenance) Screen – M5

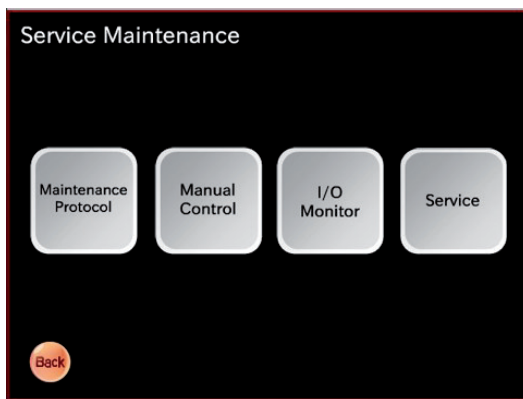
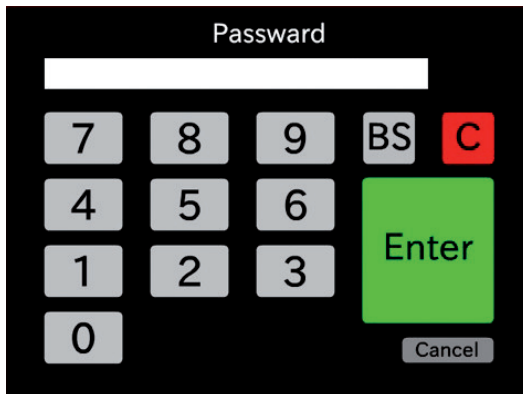
When the Maintenance Protocol finishes the screen below is displayed. When the Back button is pressed, the screen goes back to the Protocol Select (User Maintenance) screen.



4. Service Maintenance Menu Screen – M6

When the Maintenance button is pressed on the Maintenance Menu screen, the password entry screen is displayed. The password is "1833".

The screen changes to the Service Maintenance Menu screen when the password authentication succeeds. The screen goes to the Top Screen when the Cancel button is pressed.



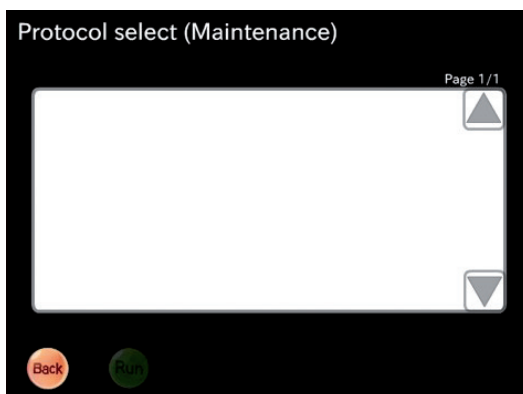
Four functions of "Maintenance Protocol", "Manual Control", "I/O Monitor", and "Service" can be selected in Maintenance Menu Screen.

Buttons:

- Maintenance Protocol – To Protocol Select (Maintenance) screen
- Manual Control – To Manual Control screen
- I/O Monitor – To I/O Monitor screen
- Service – To Service Menu screen

Maintenance Protocol Screen- M7

Through this screen, users can execute maintenance protocol for service users. When a protocol is selected on the protocol list, the Run button turns executable.

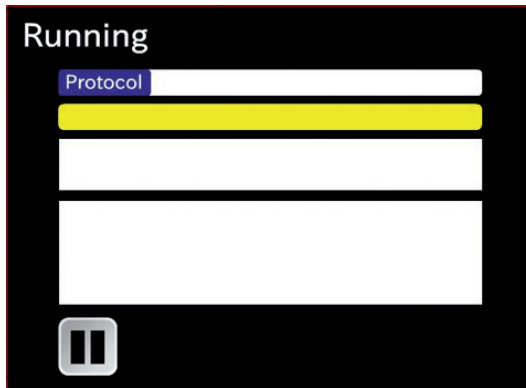


Buttons:

- RUN – the selected protocol starts and the screen changes to protocol running screen.
- ▲ – Page up the list box.
- ▼ – Page down the list box.

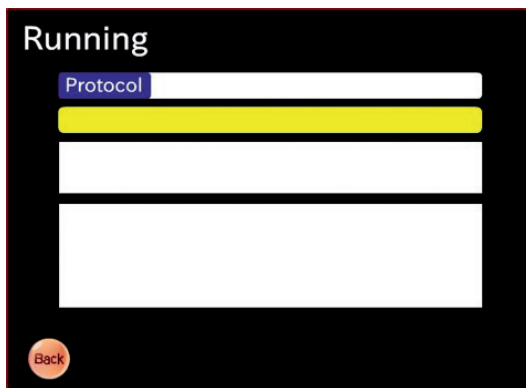
Protocol Running (Maintenance) Screen – M8

When Maintenance Protocol is executed, a running screen is displayed. User can select functions of pause, stop, and restart in this screen.



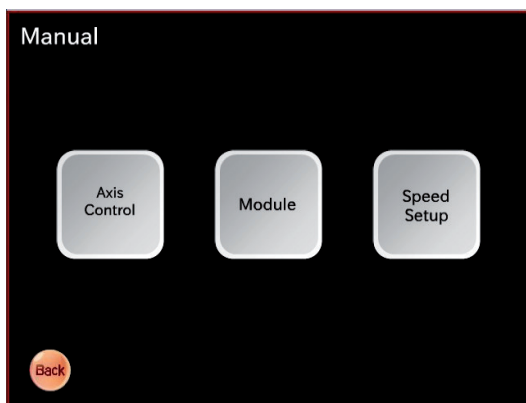
Protocol Running (Maintenance) Screen – M9

When the Maintenance Protocol finishes, the screen below is displayed. When the Back button is pressed, the screen goes back to the Protocol Select (Maintenance) screen.



Manual Menu Screen – M10

Three functions of "Axis Control", "Module", and "Speed Setup" can be selected in the Manual Menu Screen.

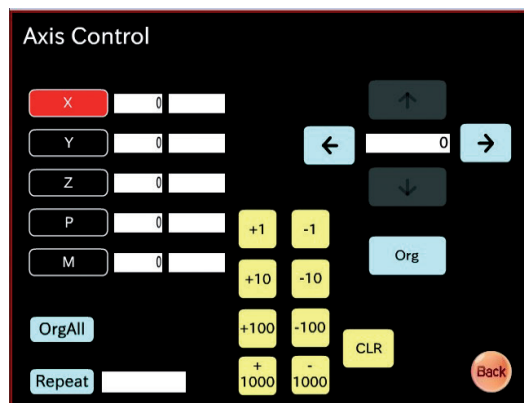


Buttons:

- Axis Control – To access to the Axis Control screen
- Module – To access to the Module screen
- Speed Setup – To access to the Speed Setup screen
- Back – To access to the Maintenance Menu screen

Axis Control Screen – M11

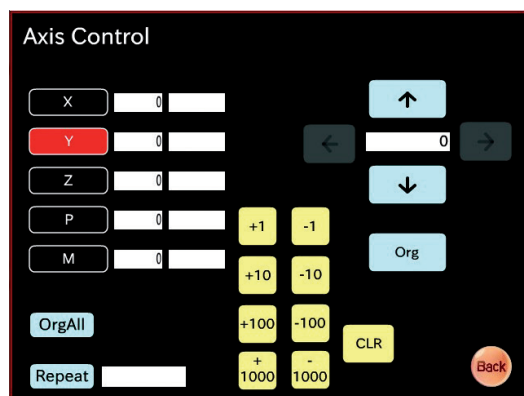
The manual operation of each axis is done through this screen.



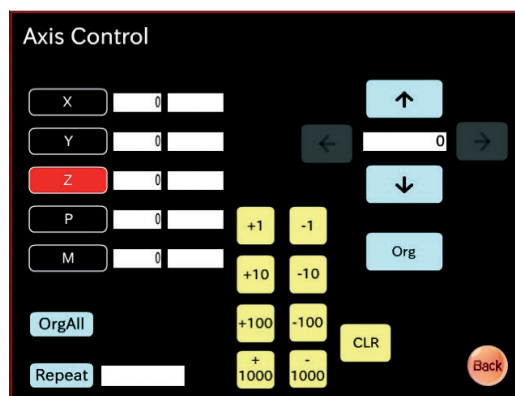
Buttons:

- Axis Select [X, Y, Z, P, M] – The axis to operate is selected by pressing this button. The selected axis label is changed to red. The display of direction buttons [↑, ↓, ←, →] can be changed according to the selected axis.
- Value [+1, +10, +100, +1000, -1000, -100, -10, -1] – The distance of the selected axis can be set with these buttons.
- OrgAll – All axes move to their original positions.
- Repeat – The selected axis move repeatedly depending on the selected frequency (Reciprocal motion).
- CLR – The set position is cleared.
- Direction button [↑, ↓, ←, →] – The selected axis moves to the position which is set in the input box.
- ORG – The selected axis goes back to their original position. X or Y axis move after Z axis org operation is done.
- Back – To Manual Menu Screen

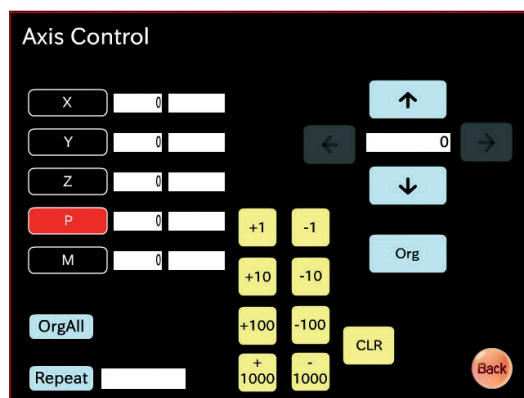
When Y axis is selected



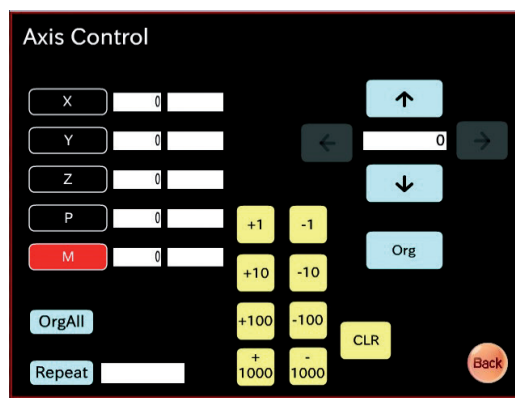
When Z axis is selected



When P axis is selected

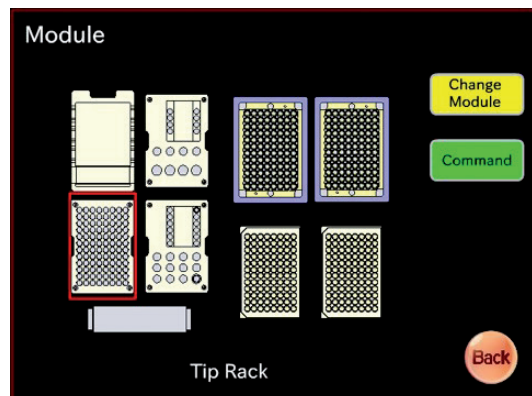


When M axis is selected



Module Screen – M12

The module layout on the stage is displayed in this screen.



Buttons:

- Change Module – Module can be changed in the selected block (indicated by a red frame).
- Command – To access to the detailed module screen
- Back – To go back to the Manual Menu screen

Tip Rack Screen – M13

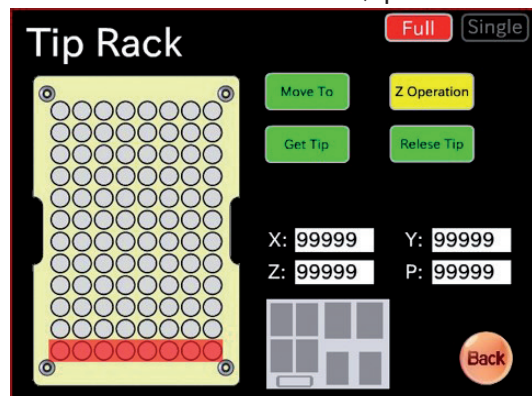
Operations in Tip Rack Module can be executed through this screen.

Various operations can be executed for the selected row or well.

When the axis moves, the position is displayed. [X:, Y:, Z:, P:]

Buttons:

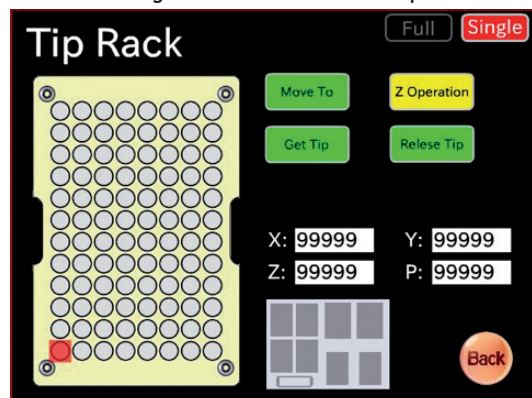
When the Full button is selected (Operation to selected row)



- Move To – The head moves to the selected row (indicated by a red frame).
- Get Tip – The tips on the selected row (indicated by a red frame) attach to the nozzle.
- Release Tip – The tips return to the selected row (indicated by a red frame).
- Z Operation – Z axis operation button is displayed.
- Back – Move to the Module screen

Buttons:

When the Single button is selected (Operation to selected well)



- Move To – The head moves to the selected well (indicated by a red frame).
- Standby Z – The Z axis moves down to the Standby Z position of the selected well (indicated by a red frame).
- Action Z – The Z axis moves down to the Action Z position of the selected well (indicated by a red frame).
- AMove Z, 0 – The Z axis moves to the 0 position.
- Org Z – The Z axis moves to the original position.
- Command – Tip Operation buttons is displayed.
- Back – Move to the Module screen.

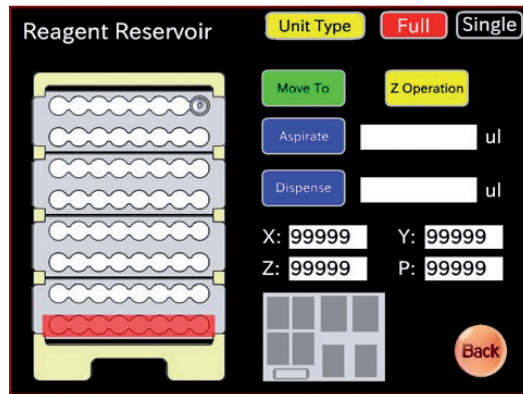
Reagent Reservoir Screen – M14

Operations in Reagent Reservoir Module can be executed through this screen.

Various operations can be executed for the selected row or well.

When the axis moves, the position is displayed. [X:, Y:, Z:, P:]

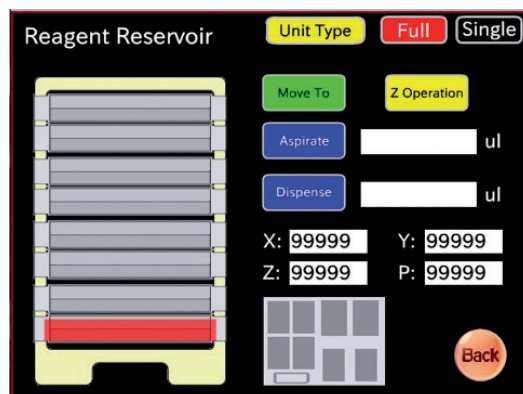
Unit Type – 1



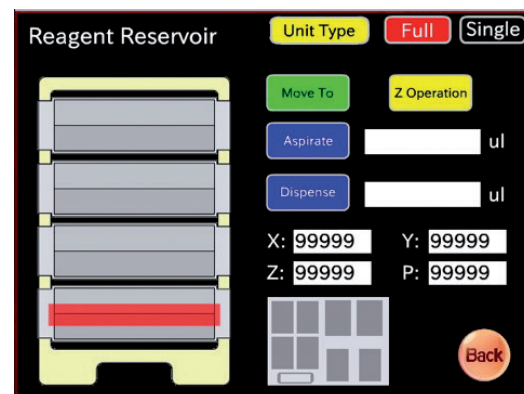
Buttons:

- Move To – The head moves to the selected position (indicated by a red frame).
- Aspirate – The nozzle aspirates the selected volume from.
- Dispense – The nozzle dispenses the selected volume to the selected wells.
- Unit Type – Unit Type is changed.
- Z Operation – The Z axis operation buttons are displayed.
- Back – Moves back to the Module screen.

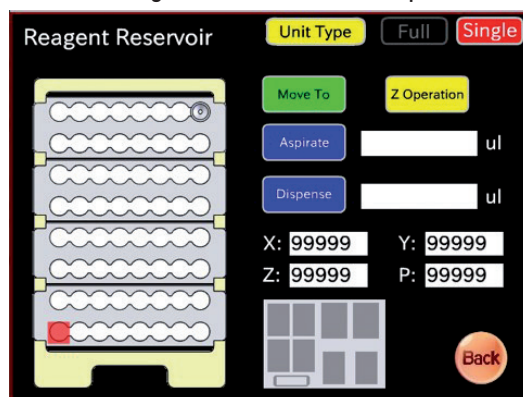
Unit Type – 2



Unit Type – 3



When the Single button is selected (Operation to selected well)



Buttons:

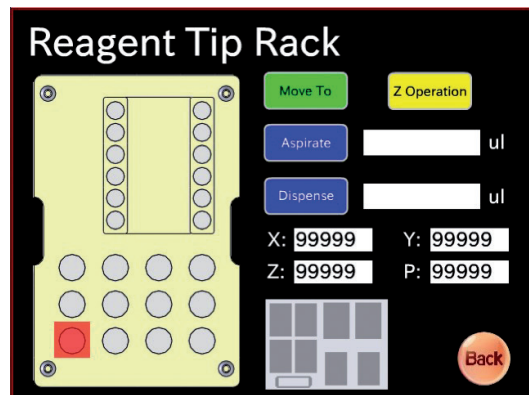
- Move To – The head moves to the selected well (indicated by a red frame).
- Standby Z – The Z axis moves down to the Standby Z position of the selected well (indicated by a red frame).
- Action Z – The Z axis moves down to the Action Z position of the selected place (indicated by a red frame).
- AMove Z, 0 – The Z axis moves to the 0 position.
- Org Z – The Z axis moves to the original position.
- Command – The aspiration and dispense operation buttons are displayed.
- Back – Moves back to the Module screen.

Reagent Tip Rack Screen – M15

Operation in Reagent Tip Rack Module can be executed through this screen.

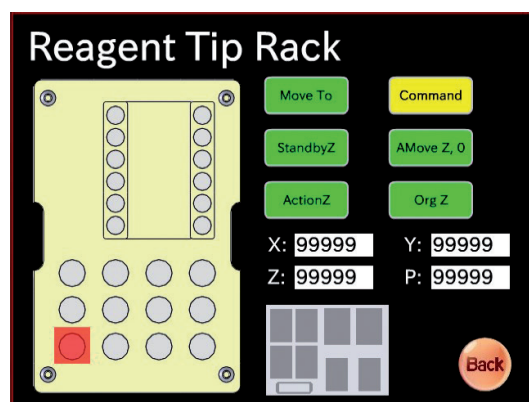
Various operations can be executed for the selected row or well.

When the axis moves, the position is displayed. [X:, Y:, Z:, P:]



Buttons:

- Move To – The head moves to the selected position (indicated by a red frame).
- Aspirate – The nozzle aspirates the selected volume from the selected position.
- Dispense – The nozzle shall dispense the selected volume into the selected wells.
- Z Operation – The Z axis operation buttons are displayed.
- Back – Moves back to the Module screen



Buttons:

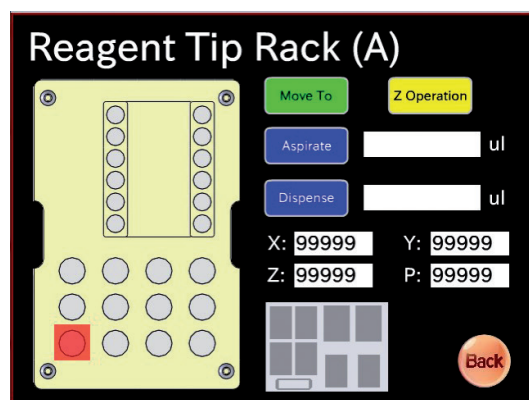
- Move To – The head moves to the selected position (indicated by a red frame).
- Standby Z - The Z axis moves down to the Standby Z position on the selected place (indicated by a red frame).
- Action Z - The Z axis moves down to the Action Z position on the selected place (indicated by a red frame).
- AMove Z, 0 - The Z axis moves to the 0 position.
- Org Z – The Z axis moves to the original position.
- Command – The aspiration and dispense buttons are displayed.
- Back – Moves back to the Module screen

Reagent Tip Rack (A) Screen – M16

Operations in Reagent Tip Rack (A) Module can be executed through this screen.

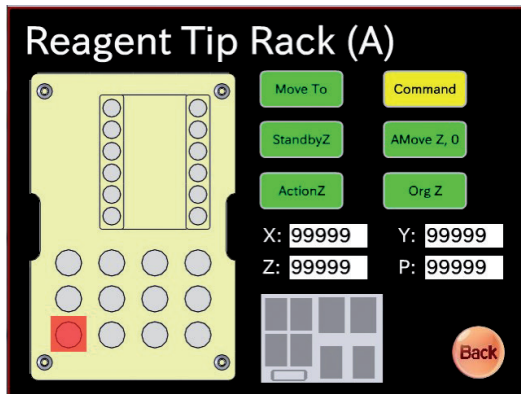
Various operations can be executed for the selected row or well.

When the axis moves, the position is displayed. [X:, Y:, Z:, P:]



Buttons:

- Move To – The head moves to the selected position (indicated by a red frame).
- Aspirate – The nozzle aspirates the selected volume from the selected wells.
- Dispense – The nozzle dispenses the selected volume into the selected wells.
- Z Operation – The Z operation buttons are displayed.
- Back – Moves back to the Module screen.



Buttons:

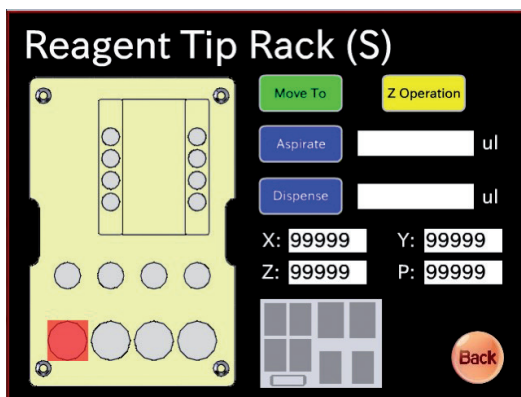
- Move To – The head shall moves to the selected position (indicated by a red frame).
- Standby Z - The Z axis moves down to the Standby Z position of the selected place (indicated by a red frame).
- Action Z - The Z axis moves down to the Action Z position of the selected place (It was enclosed with a red frame).
- AMove Z, 0 - The Z axis moves to the 0 position.
- Org Z – The Z axis moves to the original position.
- Command – The aspiration and dispense buttons are displayed.
- Back – Moves back to the Module screen.

Reagent Tip Rack (S) Screen – M17

Operations in Reagent Tip Rack (S) Module can be executed through this screen.

Various operations can be executed for the selected row or well.

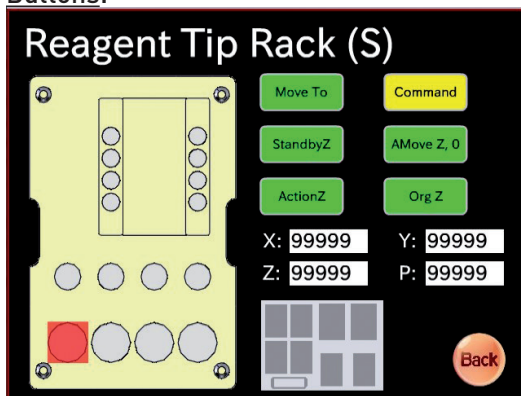
When the axis moves, the position shall be displayed. [X:, Y:, Z:, P:]



Buttons:

- Move To – The head moves to the selected position (indicated by a red frame).
- Aspirate - The nozzle aspirates the selected volume from the selected wells.
- Dispense - The nozzle dispenses the selected volume into the selected wells.
- Z Operation – The Z axis operation buttons are displayed.
- Back – Move back to the Module screen.

Buttons:



- Move To – The head moves to the selected position (indicated by a red frame).
- Standby Z - The Z axis moves down to the Standby Z position on the selected place (indicated by a red frame).
- Action Z - The Z axis moves down to the Action Z position of the selected place (indicated by a red frame).
- AMove Z, 0 - The Z axis moves to the 0 position.
- Org Z – The Z axis moves to the 0 position.
- Command – The aspiration and dispense buttons are displayed.
- Back – Move back to the Module screen.

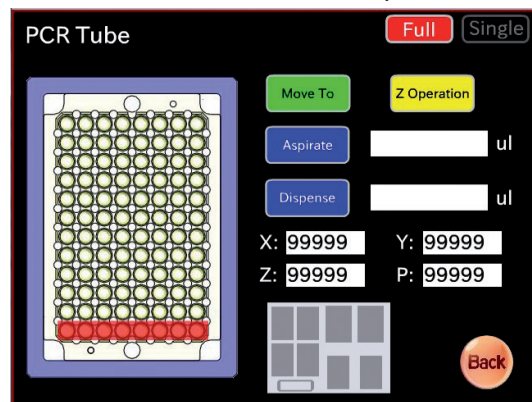
PCR Tube Screen – M18

Operations in PCR Tube Module can be executed through this screen.

Various operations can be executed for the selected row or well.

When the axis moves, the position is displayed. [X:, Y:, Z:, P:]

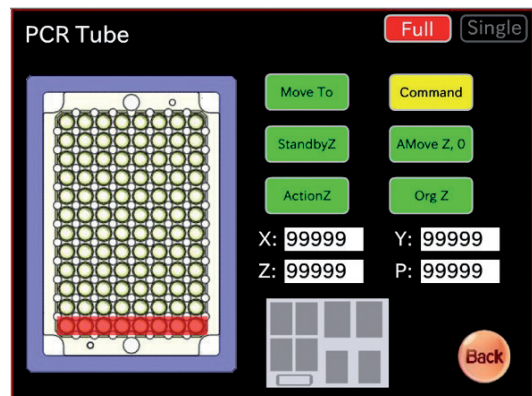
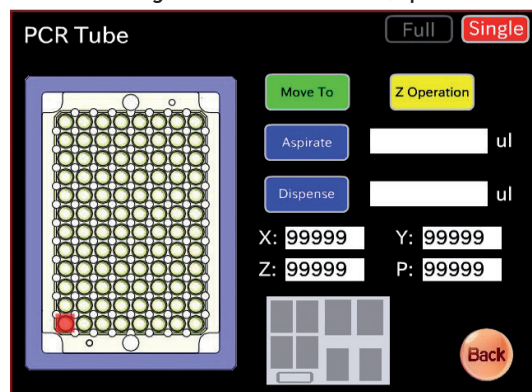
When the Full button is selected (Operation to selected row)



Buttons:

- Move To – The head moves to the selected row (indicated by a red frame).
- Aspirate – The nozzle aspirates the defined volume from the selected wells.
- Dispense – The nozzle dispenses the defined volume to the selected wells.
- Z Operation – The Z axis operation buttons are displayed.
- Back – Move back to the Module screen.

When the Single button is selected (Operation to selected well)



Buttons:

- Move To – The head moves to the selected place (indicated by a red frame).
- Standby Z – The Z axis moves down to the Standby Z position on the selected position (indicated by a red frame).
- Action Z – The Z axis moves down to the Action Z position on the selected position (indicated by a red frame).
- AMove Z, 0 – The Z axis moves to the 0 position.
- Org Z – The Z axis moves to the original position.
- Command – The aspiration and dispense buttons are displayed.
- Back – Move back to the Module screen.

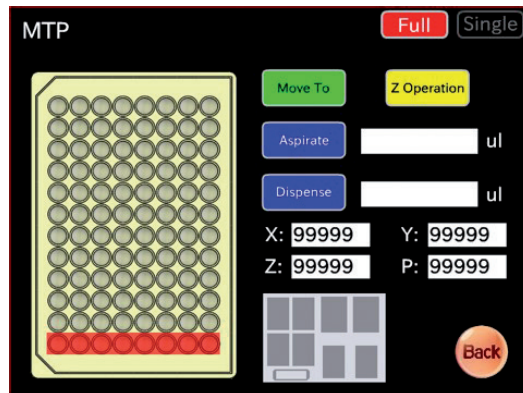
MTP Screen – M19

Operations in MTP Module can be executed through this screen.

Various operations can be executed for the selected row or well.

When the axis moves, the position shall be displayed. [X:, Y:, Z:, P:]

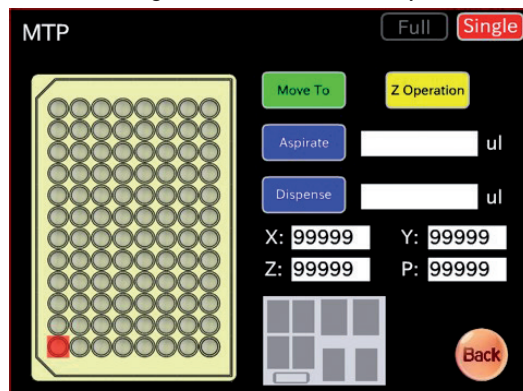
When the Full button is selected (Operation to selected row)



Buttons:

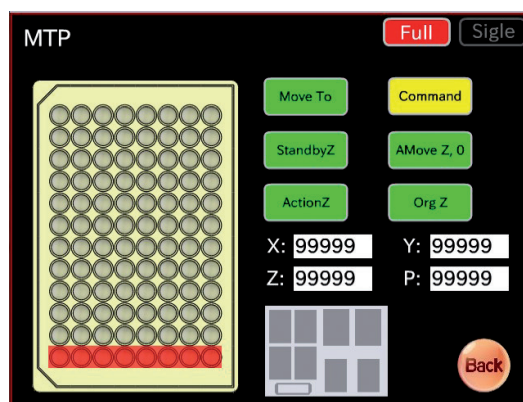
- Move To – The head moves to the selected position (indicated by a red frame).
- Aspirate – The nozzle aspirates the selected volume from the selected wells.
- Dispense – The nozzle dispenses the selected volume to the selected wells.
- Z Operation – The Z axis operation buttons are displayed.
- Back – Move to the Module screen.

When the Single button is selected (Operation to selected well)



Buttons:

- Move To – The head moves to the selected position (indicated by a red frame).
- Standby Z – The Z axis moves down to the Standby Z position on the selected position (indicated by a red frame).
- Action Z – The Z axis moves down to the Action Z position on the selected position (indicated by a red frame).
- AMove Z, 0 – The Z axis moves to the 0 position.
- Org Z – The Z axis moves to the original position.
- Command – The aspiration and dispense operation buttons are displayed.
- Back – Move back to the Module screen.

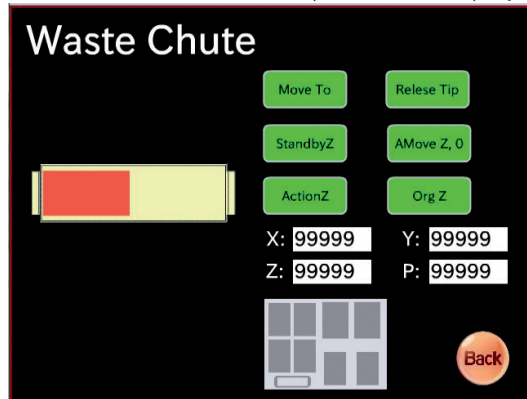


Waste Chute Screen – M20

Operations in Waste Chute Module can be executed through this screen.

Various operations can be executed for the selected row or well.

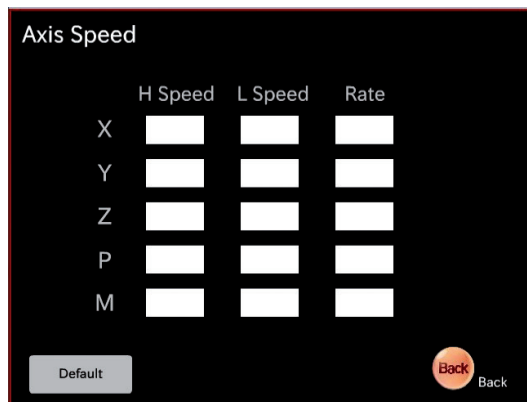
When the axis moves, the position is displayed. [X:, Y:, Z:, P:]



Buttons:

- Move To – The head moves to the selected position (indicated by a red frame).
- Release Tip – The tips are discard into the selected position.
- Standby Z – The Z axis moves down to the Standby Z position of the selected place (indicated by a red frame).
- Action Z – The Z axis moves down to the Action Z position of the selected place (indicated by a red frame).
- AMove Z, 0 – The Z axis moves to the 0 position.
- Org Z – The Z axis moves to the original position.
- Back – Move back to the Module screen.

Speed Setup Screen – M21



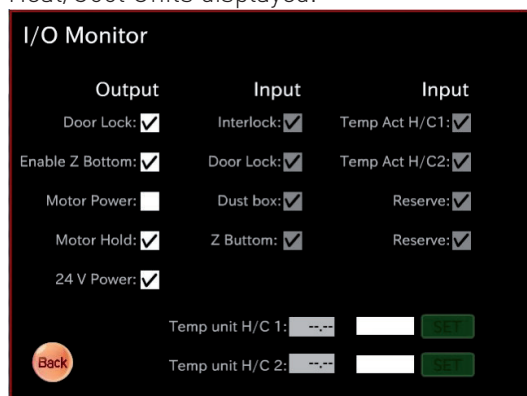
Speed of each axis can be set on this screen.

Buttons:

- H Speed [X, Y, Z, P, M] – High Speed of each axis can be set. [pps] The ten keys screen is displayed to enter the value.
- L Speed [X, Y, Z, P, M] – Low Speed of each axis can be set. [pps] The ten keys screen is displayed to enter the value.
- Rate [X, Y, Z, P, M] – Acceleration of each axis can be set. [pps/sec] The ten keys screen is displayed to enter the value.
- Default – A default value is displayed.
- Back – Move to the Manual Menu screen.

I/O Monitor Screen – M22

Through this screen, the user can set I/O status and check the status. Moreover, the temperatures of the Heat/Cool Units displayed.

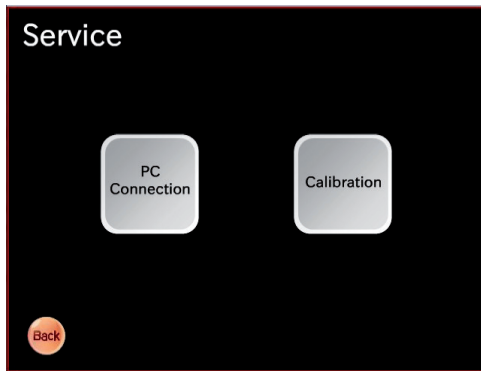


Buttons:

- Output Checkbox – User can set ON or OFF of the corresponding I/O.
- Input Checkbox – The status of the I/O is displayed in real time.
- H/C1 Setting Box – The ten keys screen is displayed and temperature can be input to the text box.
- H/C1 SET – Temperature can be set to the temperature control unit1.
- H/C2 Setting Box – The ten keys screen is displayed and temperature can be input to the text box.
- H/C2 SET – Temperature can be set to the temperature control unit1.
- Back – Move back to the Maintenance Screen.

Service Screen – M23

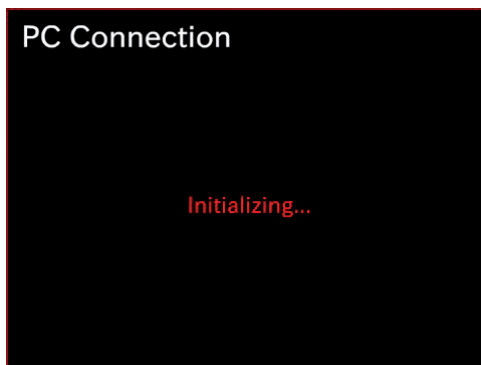
The connect function to external PC and the teaching function can be selected.



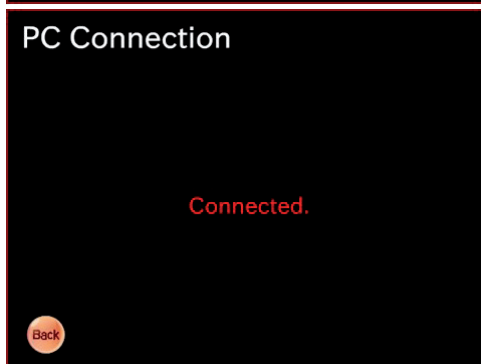
Buttons:

- PC Connection – Connect to external PC.
- Calibration – Move To the Teaching screen

PC Connection – M24



"Initialization..." shall be displayed before PC connection is established.

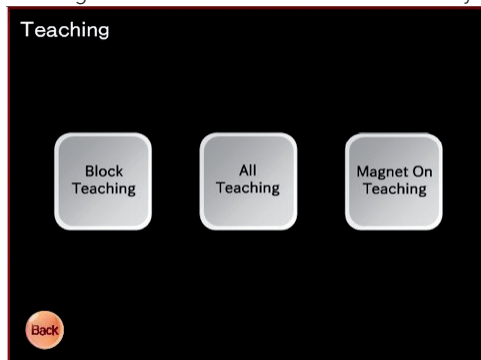


When the communication with PC is established, "Connected" appears on the screen and the Back button is displayed.

The screen goes back to the Service Menu screen when the Back button is pressed. Cutting the connection with PC.

Teaching Screen – T0

Through this screen calibration of the system can be done.



Buttons:

- Block Teaching – Move to the T1-a screen.
- All Points Teaching – Move to T1-b screen.
- Magnet On Teaching – Move to T1-c screen.
- Back – Go back to the Service Menu screen.

Block Teaching Screen – T1-a

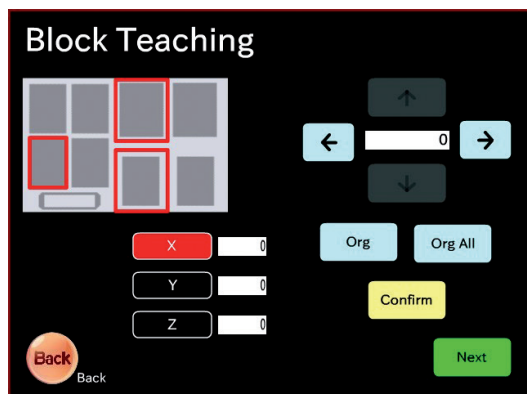
Through this screen block teaching operation can be done.

Teaching Position Select View:

When the red rectangle on the stage layout image is pressed, the nozzle head moves to the current teaching position. (Front row of the corresponding block) After block selection, the red rectangle blinks.

Axis Position View:

The current position of each axis is displayed.



Buttons:

- Axis Select [X, Y, Z] – The axis to operate is selected through this button. The selected axis label is changed to red. The display of direction buttons [↑↓←→] changes according to the selected axis.
- Axis Move [↑↓←→] – The selected axis moves to the position which is set in the input box. When input box is pressed, the ten keys screen is displayed.
- Next – Move to the T2 screen.
- OrgALL – All axes move to their original positions.
- ORG – The selected axis goes back to their original position. X or Y axis move after Z axis org operation is done.
- Confirm – After orgall operation, the nozzle head moves to the current teaching position and checks automatically the selected position.

Block Teaching Screen – T1-b

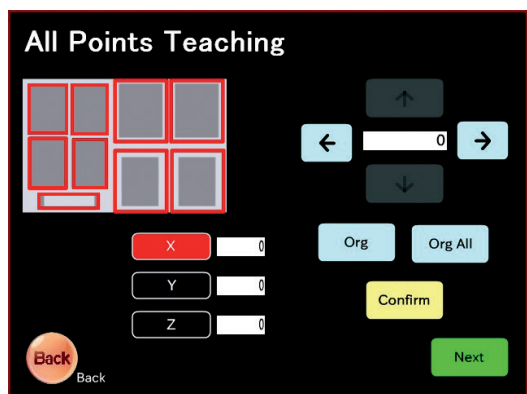
Through this screen teaching operation can be done for each module.

Teaching Position Select View:

When the red rectangle on the stage layout image is pressed, the nozzle head moves to the current teaching position. (Front row of the corresponding block) After block selection, the red rectangle blinks. All blocks can be selected.

Axis Position View:

Current position of each axis is displayed.



Buttons:

- Axis Select [X, Y, Z] – The axis to operate is selected through this button. The selected axis label is changed to red. Moreover, display of direction buttons [↑↓←→] according to the selected axis.
- Axis Move [↑↓←→] – The selected axis moves to the position which is set on the input box. When input box is pressed, the ten keys screen is displayed.
- Next – Move to the T2 screen.
- OrgALL – All axes move to their original positions.
- ORG – The selected axis goes back to their original position. X or Y axis move after Z axis org operation is done.
- Confirm – After orgall operation, the nozzle head moves to the current teaching position and checks automatically the selected position.
- Back – Go back to the T0 screen.

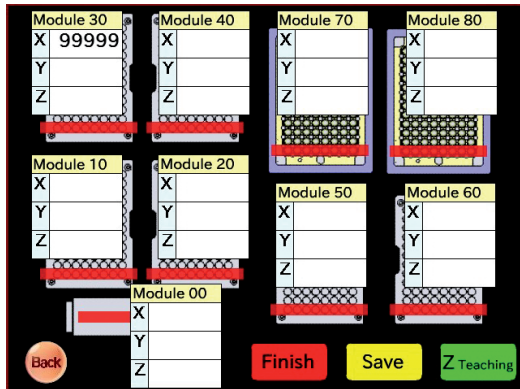
Z Position Teaching Screen – T2

Through this screen the Z position teaching can be done automatically.

Teaching Value Display View:

Current teaching positions of all blocks are displayed.

When Block Teaching operation is done, the positions of the module other than the teaching point are calculated automatically.



Buttons:

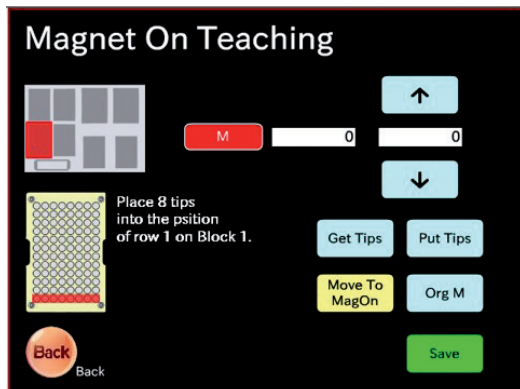
- Finish – Go back to the T0 screen.
- Z teaching – The Z position teaching is done automatically. After that the Teaching Value Display View are updated.
- Save – Current teaching positions shown in the Display View are stored to the position.def file.
- Back – Go back to the T1 screen.

Magnet On Teaching Screen – T1-c

Through this screen, the M axis teaching operation can be done.

M-Axis Position View:

Current positions of M axis are displayed.



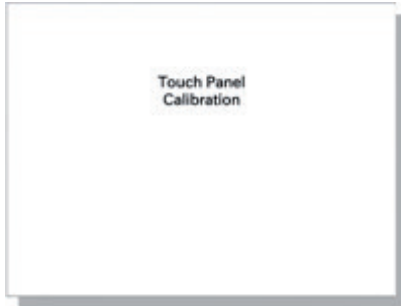
Buttons:

- Axis Move [↑↓] – The M axis moves to the position which is set to the input box. When input box is pressed, the ten keys screen is displayed.
- Get Tips – The tips placed on the first row of the Block1 shall be attached to the nozzle.
- Put Tips – The tips attach removed from the nozzle and placed to the front row of the Block1.
- Move To Mag On – The M axis moves to the current teaching position which is written in the magnet.def.
- Org M – The M axis goes back to the original position.
- Save – Current teaching position of the M axis are stored to the magnet.def.file.
- Back – Go back to the T0 screen.

5. Touch Panel Calibration – M25

Touch Panel Calibration can be done in the software. Start Screen – When the area other than the buttons on the A1 screen are pressed long time, this screen is displayed. The cursor is displayed in the following order. 1. Left – upper corner, 2 Right – upper corner, 3 Right – lower corner, 4 Left –lower corner, 5 Center of the screen. User should press the edge of each cursor. After that a saving message displayed on the screen, and the touch panel calibration data are stored in the TPCalibration.ini.file.

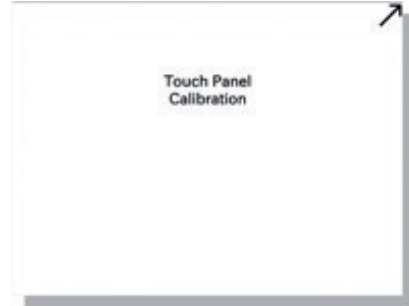
When Y axis is selected



When Z axis is selected



When P axis is selected



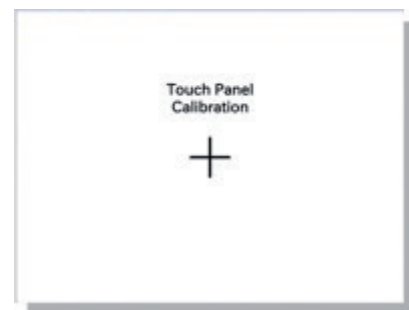
When M axis is selected



When Y axis is selected



When Z axis is selected



Saving the calibration data





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