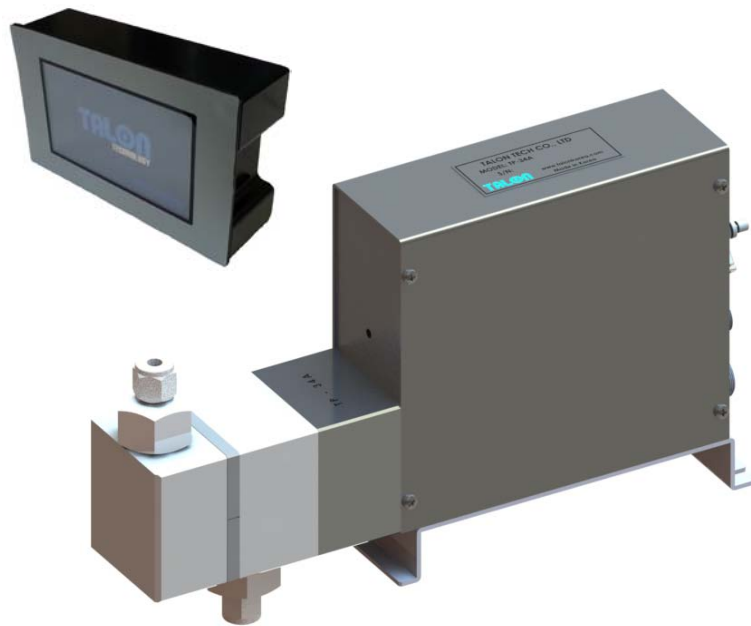


Pump for PR Dispense

Pump & Controller – Built-in Type

PUMP MANUAL

MODEL : TP-34A



TALON TECH CO. LTD.

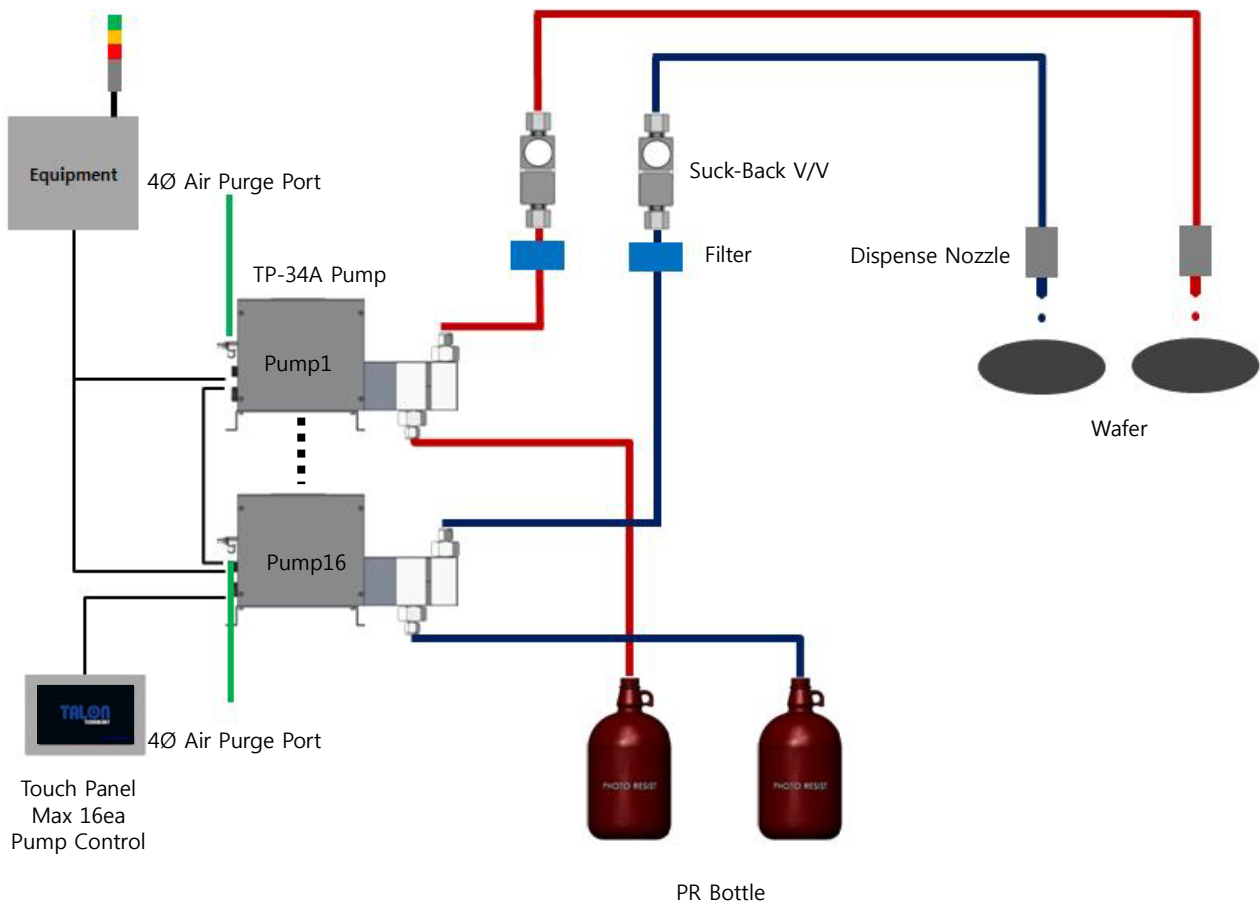
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1

System Configurations



TP-34A pump can be used as the above configuration and has been developed for the semiconductor system's automation by operating RS422 communication. Especially, the adoption of servo motor is good for the high degree of PR dispense. The basic communication between the touch pad and the pump is RS422 Multi Drop method. By synchronizing with Windows CE Operating System, Touch Pad MMI 2.0 Software operates TP-40BA pump.

Be careful to use the pump by following this manual or Talon Tech's acceptance. Or, other defects should be paid even under the warranty period.

※ Features & Merits

1. All the PR contacting points are made by Teflon.
2. Driving Method : Outer type Edgeless Bellows, No ripple & No shaking.
3. Touch pad has the same function of controller & It can control upto16 pumps.
4. Normal trigger signal.

2 System Specifications

2-1 Pump [TP-34A]

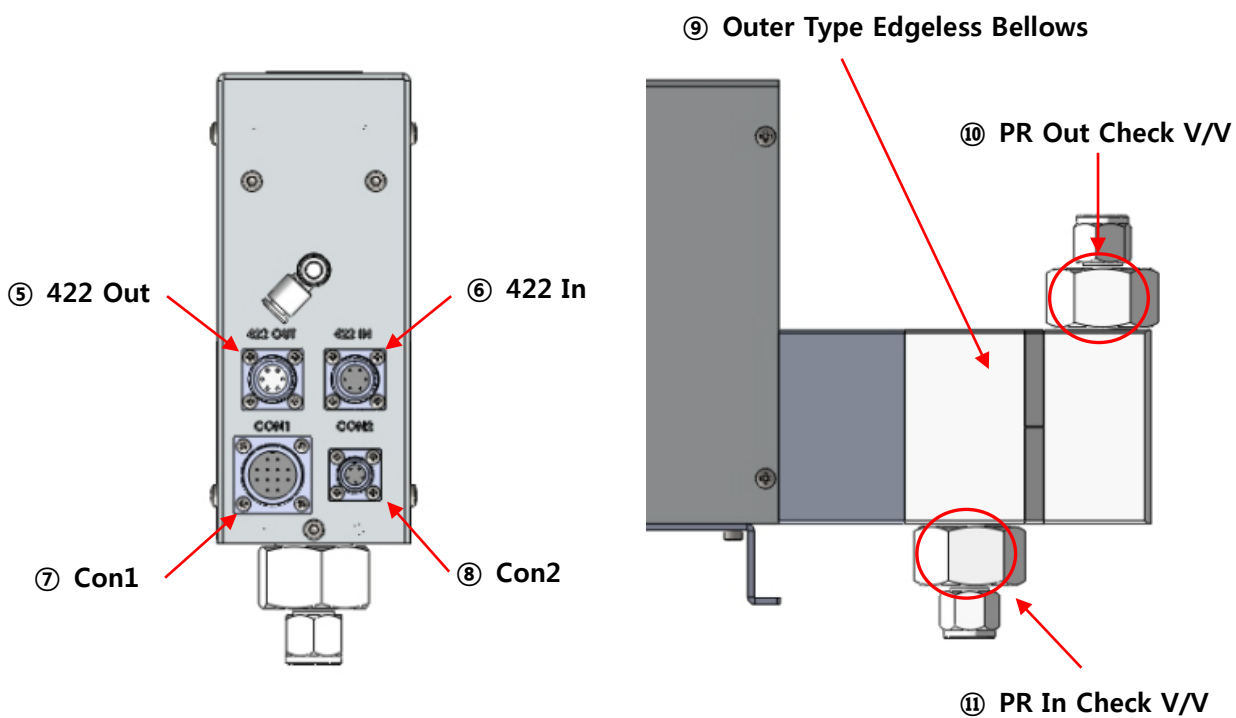
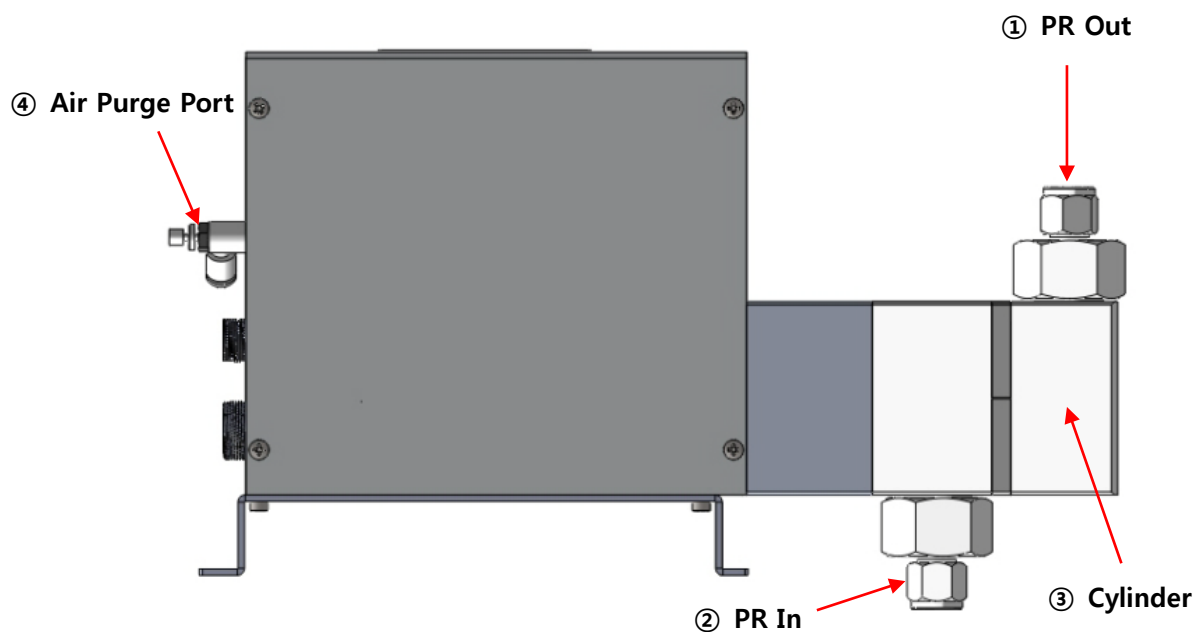
ITEM	SPEC	REMARKS
Dispense Volume Range	0.5cc ~ 10cc	
Dispense Pressure	0.2Mpa (2kgf/cm ²)	
Dispense Volume Resolution	±0.02cc	
Dispense / Reload Rate	0.3cc/sec ~ 3.0cc/sec	
Dispense Repeatability	≤±0.05 (2.2cp, 23°C)	
Viscosity	Max : 800cp	
Driver System	DC Servo Motor	
Control System Power	Control Board Power : DC24V/2A	
Input Pulse VS Dispense Volume	800 pulse (Full Step) / 1cc	
Resist In/Out	¼ Inch Teflon	
Ambient Temperature	16 ~ 30°C	
Weight	2.84kg	
Pump Dimension	W : 56mm, L : 285mm, H : 173mm	

2-2 Touch Pad

ITEM	SPEC	REMARKS
Main CPU	32Bit ARM920T	
Ram	64Mb (OS:32Mb/App:32Mb)	
Flash	NAND Flash 64Mb (OS:32Mb/App:32Mb)	
LCD Size	4.3 Inch TFT Wide (480*272)	
RTC Function Built-in	Exchangeable Coin Battery	
Max. Connecting Pump No.	16 Pumps	
Communication	RS422	
Touch Pad Power	DC12~24V, current consumption: 5W (400~700mA)	
Ambient Temperature	-10 ~ 55C	
Weight	0.64kg	
Dimension	W : 140mm, D : 44mm, H : 88mm	

3 System In/Exterior Names

3-1 Pump In/Exterior Names



3-1-1 Pump Name Explanation

① **PR Out**

- Chemical Dispense. (¼ Inch Teflon)

② **PR In**

- Chemical Supply. (¼ Inch Teflon)

③ **Cylinder**

- Function of containing PR and dispensed by bellows

④ **Air Purge Port**

- Air Cooling function (4Ø Air Tube)

⑤ **422 Out**

- RS422 Connector for communication with Touch Pad. (Round Panel Mount 6P male)

⑥ **422 In**

- RS422 Connector for communication among pumps. (Round Panel Mount 6P Female)

⑦ **Con1**

- Connector for Con1(Track) Pump Operation. (Round Panel Mount 12P Female)

⑧ **Con2**

- Connector for Con2(Motor) Pump Operation. (Round Panel Mount 5P Female)

⑨ **Outer Type Edgeless Bellows**

- Edgeless Type Bellows for chemical dispense.

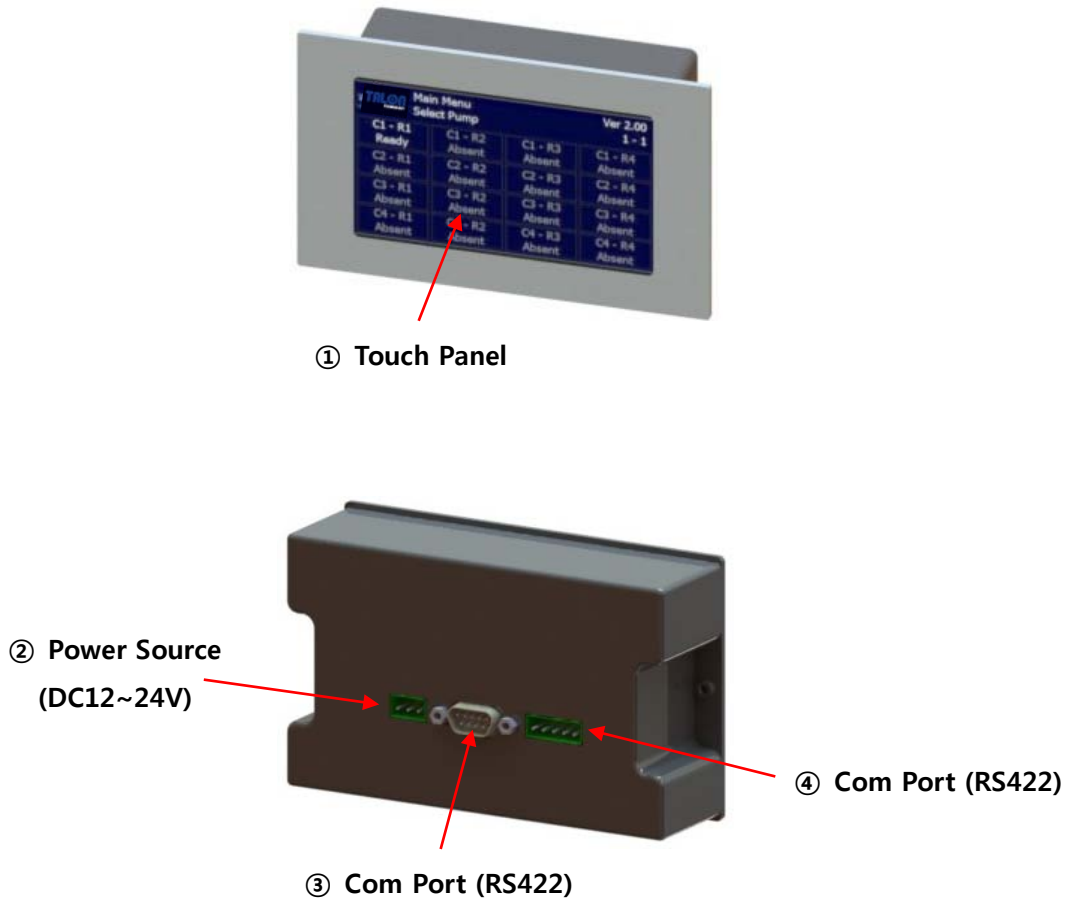
⑩ **PR Out Check V/V**

- check valve for on/off at PR outlet

⑪ **PR In Check V/V**

- check valve for on/off at PR inlet

3-2 Touch Pad Exterior Names

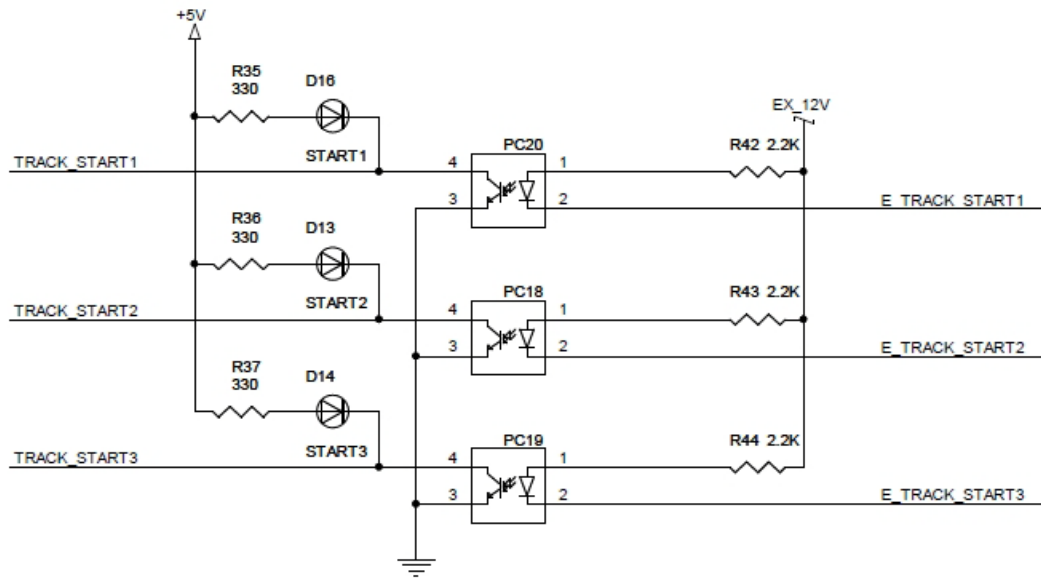


3-2-1 Touch Pad Name Explanation

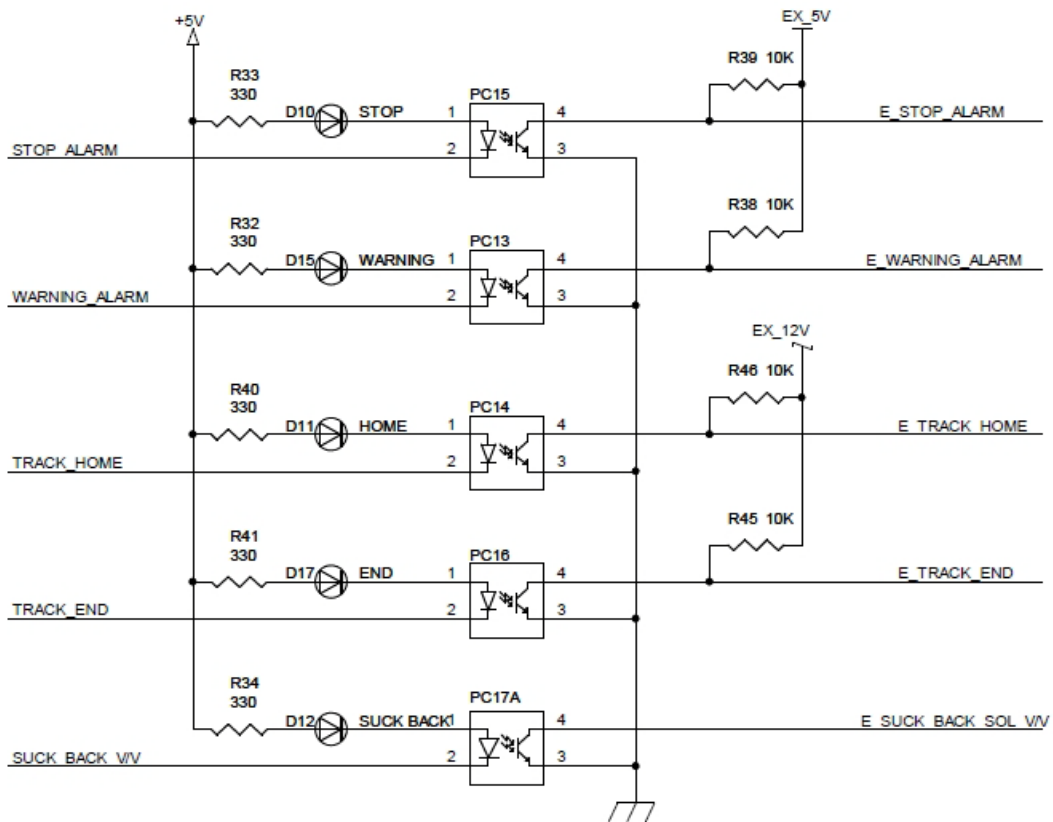
- ① **Touch Panel**
 - Touching area.
- ② **Power In**
 - Touch Pad Power DC12~24V Connector.
- ③ **Com Port**
 - Touch Pad RS422 Communication Connector. (D-SUB 9P Male)
- ④ **Com Port**
 - Touch Pad RS422 Communication Connector.

4 Wiring & Signal Interface

4-1 Track Interface Signal

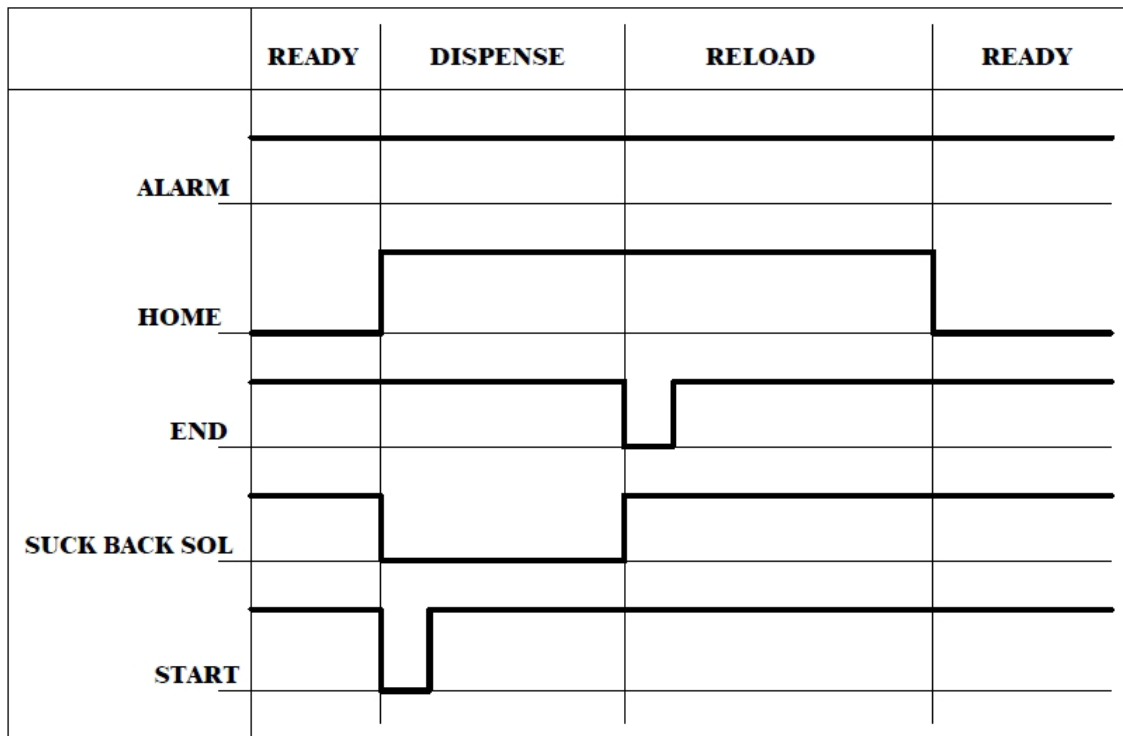


[Input Signal]



[Output Signal]

4-2 Track Timing Chart



4-3 Dispense Trigger Select

"0" Trigger Off

"1" Trigger On

Recipe Select	Start1 [1]	Start2 [2]	Start3 [3]	Remark
1	1	0	0	
2	0	1	0	
3	1	1	0	
4	0	0	1	Cycle Recipe
5	1	0	1	
6	0	1	1	
7	1	1	1	

4-4 CON1 Pin Assign [Track Cable]

Standard Type			
Pin NO.	Signal Name	I/O	Description
A	+24V	Input	Pump Power
B	GND		
C	EXT_+5V	Input	External Power
D	Home	Output	
E	End		
F	N.O EXT	Output	Alarm EXH
G	Stop	Output	Pump Alarm
H	Warning		
I	EXT_GND	Input	External Power
J	Suck Back +	Output	Suck Back Sol
K	Suck Back -		
L	COM	Output	Alarm EXH
ACT Type			
Pin NO.	Signal Name	I/O	Description
A	+24V	Input	Pump Power & Suck-Back +(Output)
B	GND		Pump Power
F	N.O EXT	Output	Alarm EXH
J	Suck Back +	Output	Suck Back Sol
K	Suck Back -		
L	COM	Output	Alarm EXH
Mark Type			
Pin NO.	Signal Name	I/O	Description
A	+24V	Input	Pump Power & Suck-Back +(Output)
B	GND		Pump Power
C	+ 5V	Output	External Power
D	Home	Output	
E	End	Output	
F	N.O	Output	Alarm EXH
I	GND	Input	External Power
J	Suck Back +	Output	Suck Back Sol
K	Suck Back -		
L	COM	Output	Alarm EXH

4-5 CON2 Pin Assign [Dispense Trigger Cable]

Standard Type			
Pin NO.	Signal Name	I/O	Description
A	EXT_+VCC	Input	Dispense Trigger+
B	Start1	Input	Selselect1-
C	Start2	Input	Selselect2-
D	Start3	Input	Selselect3-
E	Not Use	Not Use	
ACT / Mark Type			
Pin NO.	Signal Name	I/O	Description
A	+ 12V	Input	Dispense Trigger+
B	Start1	Input	Dispense Trigger-
C	Not Use	Not Use	
D	Not Use	Not Use	
E	Not Use	Not Use	

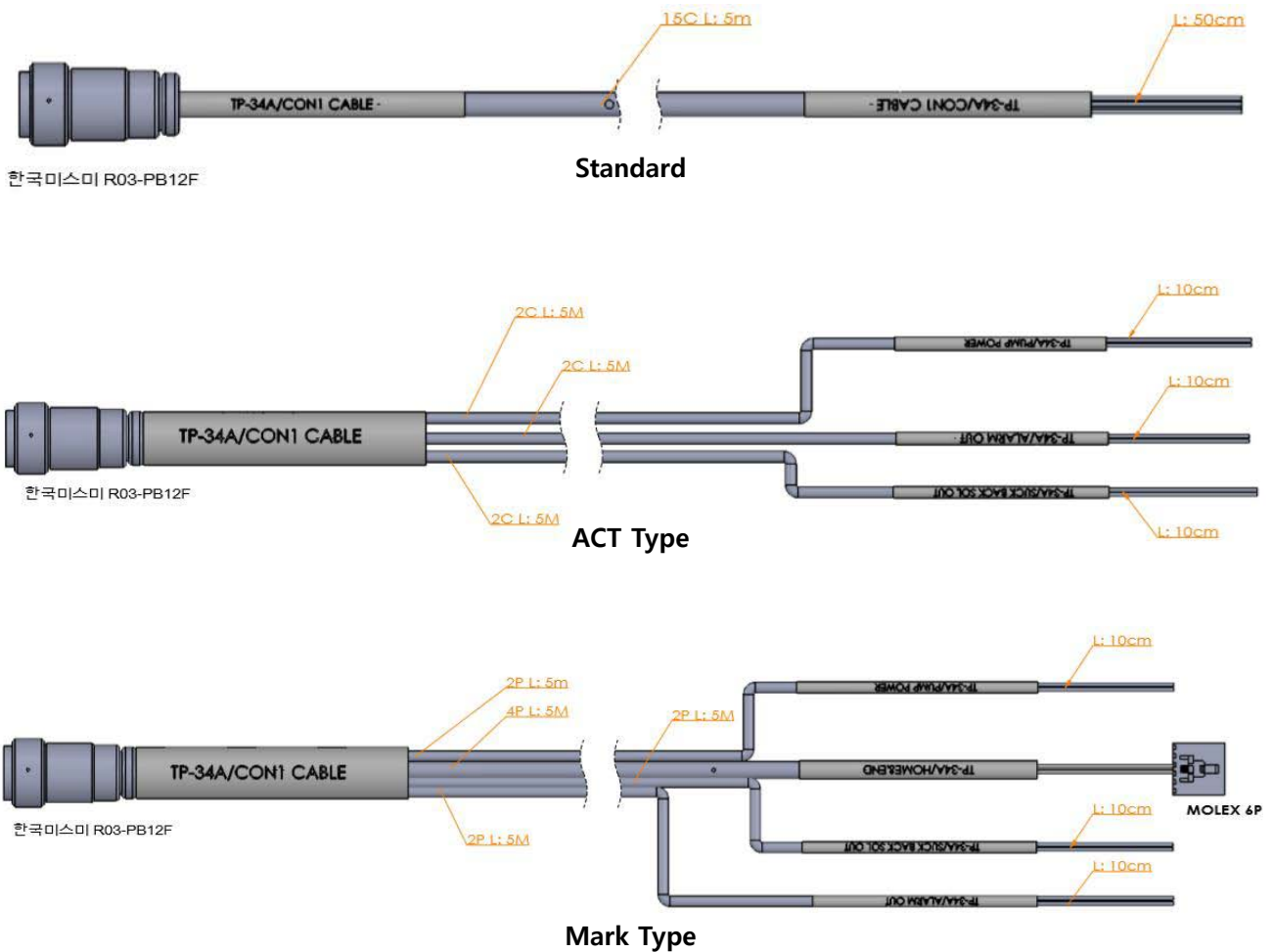
4-6 422 In/Out Pin Assign [Communication Cable]

Standard Type			
Pin NO.	Signal Name	I/O	Description
A	+24V	Input	RS422 Communication Cable
B	TX+	Output	
C	TX-	Output	
D	RX+	Input	
E	RX-	Input	
F	GND	Input	
ACT / Mark Type			
Pin NO.	Signal Name	I/O	Description
A	+24V	Input	RS422 Communication Cable
B	TX+	Output	
C	TX-	Output	
D	RX+	Input	
E	RX-	Input	
F	GND	Input	

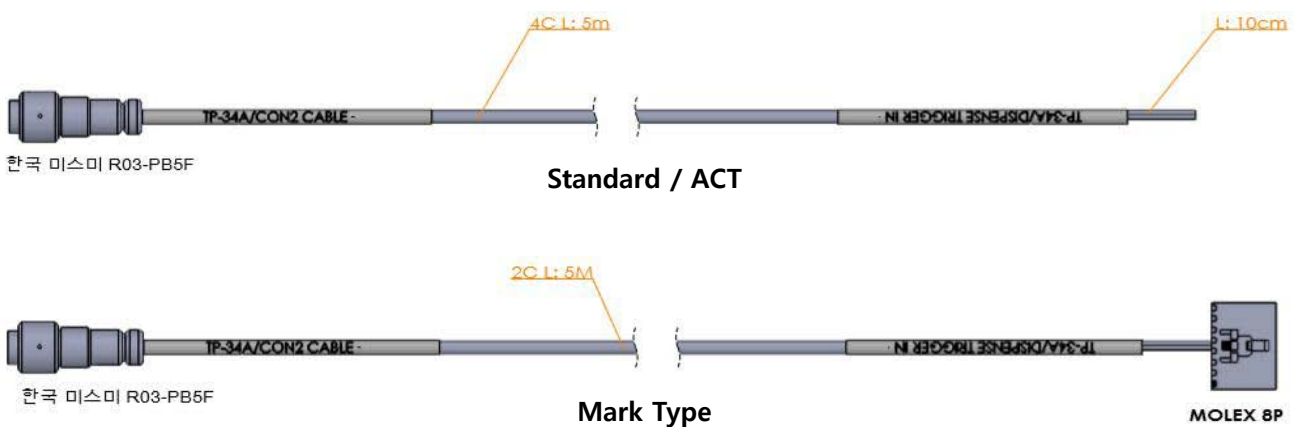
5

External Cable Length

5-1 CON1 Cable



5-2 CON2 Cable



6 Touch Pad Operation

5-1 Operation

6-1-1 Initial Screen

Main Menu Select Pump				TP-34A Ver 2.01 1 - 1
C1 - R1 Ready	C1 - R2 Absent	C1 - R3 Absent	C1 - R4 Absent	
C2 - R1 Absent	C2 - R2 Absent	C2 - R3 Absent	C2 - R4 Absent	
C3 - R1 Absent	C3 - R2 Absent	C3 - R3 Absent	C3 - R4 Absent	
C4 - R1 Absent	C4 - R2 Absent	C4 - R3 Absent	C4 - R4 Absent	

The pumps' ID, which are cable-connected to touch pad, are auto-searched every 20 sec. On every lower menu, if there isn't any input for 1 min, the initial screen is back. The pump, which is not searched, cannot be chosen.

6-1-2 Pump Condition Indicate In Use

C1 - R1 Busy	C1 - R1 Ready	C1 - R1 Absent
Dispense	Ready	Not Connect

6-1-3 Select Function

ESC	Select Function 1 - 1	
Dispense	Config	
Recipe	Calibration	

When ID is chosen, the above screen is shown.

- ESC - go to the previous menu.
- Dispense - Dispense by touching the pad.
- Recipe - Run Recipe & Dispense Recipe Setting.
- Config - Pump Mode, Reset, Error & ID Setting.
- Calibration - Each recipe's calibration setting.

6-1-4 Dispense

ESC	Dispense	1 - 1
Start Run		
Start Cycle	Stop Cycle	

On executing Start Run, Run Recipe runs one time dispense. In case of Start Cycle, Cycle Recipe (4th Recipe) works as many as set counts.

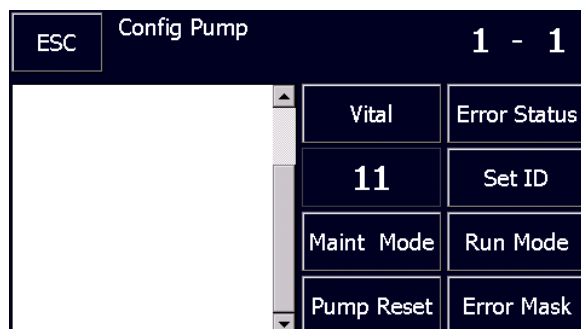
6-1-5 Recipe

ESC	Recipe Setting		<	>
	1 - 1			
No.	Step :	Disp.	Reload	Count
1	Volume :	0	0	
Set	Time :	0	0	0
Run Recipe No. :		1	Set	

For Recipe Setting, touch # under No. and input recipe # that you want to go in and touch 'Ent'. At this time, Recipe Data is automatically shown on the screen. And you can input the data that you want and touch 'set' button for setting. 'Count' is only for 4th recipe(cycle recipe). Total recipes are 1~7. Recipes are automatically chosen by each trigger signal.

However, 4th recipe is for cycle recipe and which works only by Start Cycle of Dispense on touch pad. Run Recipe No. is Recipe No. used by Start Run under Dispense menu.

6-1-6 Configuration of Pump



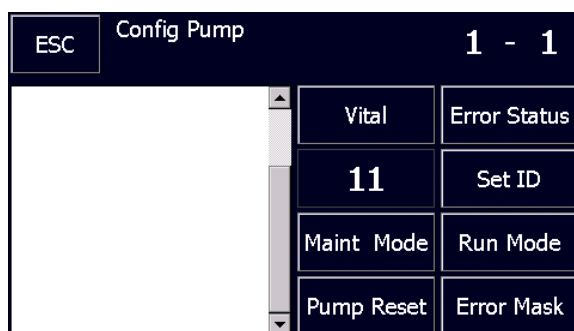
On Config Pump, the password needs for the important items' set.

The password is set as '0901'.

- | | | |
|--------------|---|--|
| Vital | - | Check pump's response and in case of response, 'vital' window activates and disappears right away. At the left window, the response data is shown. |
| Error Status | - | Shown Error Code Data. |
| Set ID | - | Change Pump ID. [Discuss with Talon Tech] |
| Maint Mode | - | Change Pump Mode to Maint. |
| Run Mode | - | Change Pump Mode to Run |
| Purge Mode | - | Change Pump Mode to Purge |
| Pump Reset | - | Reset Pump. It means Pump Restart, not Data Reset. |
| Error Mark | - | Stop Error Setting. [Discuss with Talon Tech] |

6-1-7 ID Setting

For ID Setting, Click no. next to Set ID window. On the below screen, input ID and touch Ent.



ESC		Input New ID Range: [11 - 44]			Ent	
					1	C
1	2	3	0			
4	5	6				
7	8	9				

On Config Pump screen, when you touch 'Set ID', Password input screen shows and input '0901' and touch Ent. And then, 'Check ID' 'Set ID' screen shows and disappears right away so the initial starts.

ESC		Enter Password -			Ent	
					1	C
1	2	3	0			
4	5	6				
7	8	9				

ESC		Config Pump		1 - 1	
		Vital	Error Status		
		11	Set ID		
		Maint Mode	Run Mode		
		Pump Reset	Error Mask		

If there is no response from the pump, the window keeps showing. If there is already the same pump ID, the window – 'Conflict' shows and push 'OK' and reset.

6-1-8 Maint Mode, Run Mode, Pump Reset Setting

Main Mode is to show the message of pump operation on the text window. Run Mode only shows as data code. The setting method is to touch Maint Mode, Run Mode button and input password and touch 'Ent'. In case of no response from pump, message of mode keeps showing. Pump reset works right after input password. It goes to the initial screen same as power off and on. It takes about 20sec.

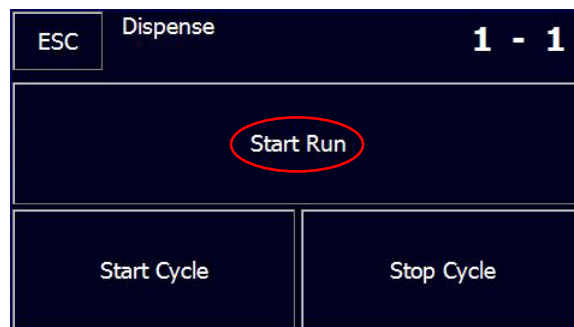
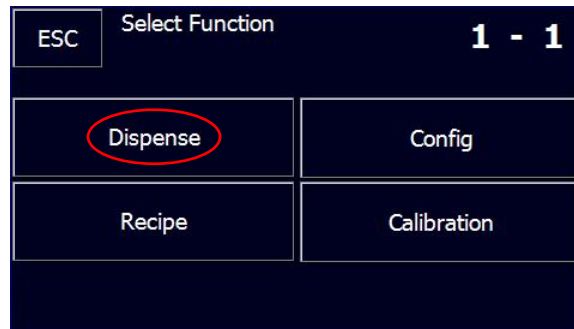
6-1-9 Calibration

Calibration – Per each Recipe, it is possible to set the calibration value. If there is the differences between the real value and the setting value, set the calibration value higher or lower % at the standard- 100.

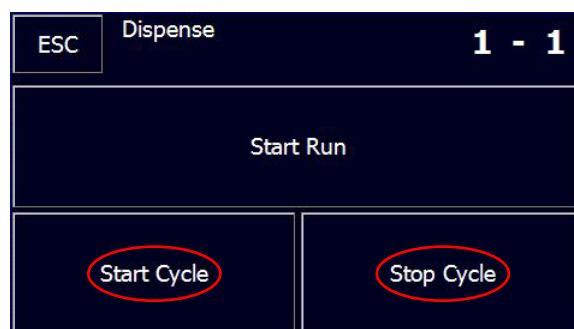
ESC		Calibration		1 - 1	
		Recipe No.	Value		
Calibration :		1	100	Set	

6-2 Example

6-2-1 Dispense



If you want to dispense one time, use Start Run. This recipe is Run recipe which set on Recipe menu. Start Cycle below is 4th Recipe.



Stop Cycle only works the case of using Start Cycle. Keep touching Stop Cycle button.

6-2-2 Recipe

ESC	Select Function	1 - 1
Dispense		Config
Recipe		Calibration

ESC	Recipe Setting	<		>	
1 - 1					
No.	Step :	Disp.	Reload	Count	
1	Volume :	0	0		
Set	Time :	0	0	0	
Run Recipe No. :		1	Set		

Choose the recipe # and touch 'Ent' button. The chosen recipe data is automatically read from the pump.

ESC	Recipe No.	Ent	
Range: [1 -7]			
1		C	
1	2	3	0
4	5	6	
7	8	9	

Set the recipe's volume & time and touch 'Set' button.

ESC	Recipe Setting	<		>	
1 - 1					
No.	Step :	Disp.	Reload	Count	
1	Volume :	100	100		
Set	Time :	100	150	0	
Run Recipe No. :		1	Set		

6-2-3 ID Setting

ESC	Select Function	1 - 1
Dispense		Config
Recipe		Calibration

ESC	Config Pump	1 - 1
	Vital	Error Status
	11	Set ID
	Maint Mode	Run Mode
	Pump Reset	Error Mask

Choose ID # which you want to change from 11~44. ID consists of 2 digits. The 2nd digit means Coater# and the 1st digit means Nozzle#. Total 16 ID setting is possible.

ESC	Input New ID Range: [11 - 44]	Ent
1		C
1	2	3
4	5	6
7	8	9
		0

ESC	Config Pump	1 - 1
	Vital	Error Status
	11	Set ID
	Maint Mode	Run Mode
	Pump Reset	Error Mask

After inputting ID & touch 'Set ID', input the password and enter.

ESC		Enter Password		-		Ent	
						1	
1		2		3		0	
4		5		6			
7		8		9			

After exchanging new ID, the pump is automatically initialized.

6-3 Reset on Pump Error

Main Menu		TP-34A Ver 2.01	
Select Pump		1 - 1	
C1 - R1 Ready	C1 - R2 Absent	C1 - R3 Absent	C1 - R4 Absent
C2 - R1 Absent	C2 - R2 Absent	C2 - R3 Absent	C2 - R4 Absent
C3 - R1 Absent	C3 - R2 Absent	C3 - R3 Absent	C3 - R4 Absent
C4 - R1 Absent	C4 - R2 Absent	C4 - R3 Absent	C4 - R4 Absent

[PIC 1]

1. Choose the alarmed pump.

Check the errored pump before Pump Reset.

When the alarm occurs on the pump, you can check the alarm

Thru the alarm LED beside Sub Panel and check the nozzle on the system's Panel.

ESC		Select Function		1 - 1	
Dispense		Config			
Recipe		Calibration			

[PIC 2]

2. Touch Config button on Select Function menu.

ESC		Config Pump		1 - 1	
		Vital	Error Status		
		11	Set ID		
		Maint Mode	Run Mode		
		Pump Reset	Error Mask		

[PIC 3]

3. . Touch OK button "Are you Sure?" window.

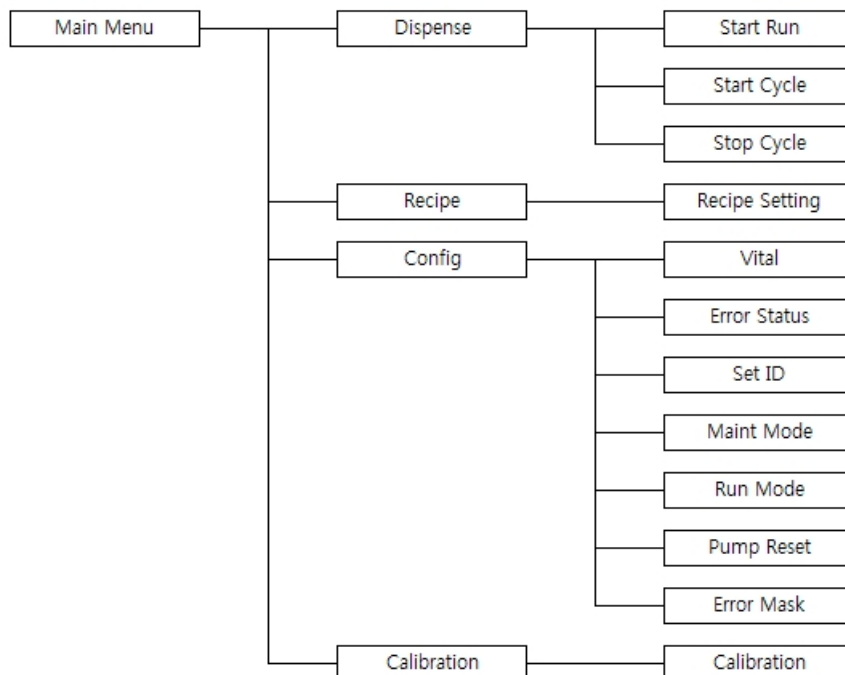
- Right after touching OK, Reset progresses and Alarm is clear.

- On left Text window, #0 means Initial finish.

* Reset makes the system occur the alarm.

Never use this function when the alarm doesn't happen.

6-4 Touch Pad Menu Tree



6-5 Notice

6-5-1 Dispense Cycle

During the system or the manual dispense, the pump doesn't save Recipe changes and setting changes. At this time, 'Busy' window is shown normally.

6-5-2 Pump ID Setting

The basic ID is '11'. If pump & touch pad is set in the first time, connect pump & touch pad as 1:1 not to double ID. ex) Pump1 : [11], Pump2 : [12], Pump3 : [13], Pump4 : [14], Pump5 : [21]. Otherwise, pump cannot be searched or although pump is searched, the setting data are overlapped or Data Error / System Error occur. Before setting Pump ID, check that ID is valid or not.

6-5-3 Recipe Setting

In case Recipe is not set properly, there is "Write Recipe Error" window.

But, this window is shown in only case each total dispense volume is not same as reload volume.
Other cases are applied as normal. So, be careful for "Dispense Time" setting.

7

Maintenance

7-1 Pump Parts Dis/Assembly

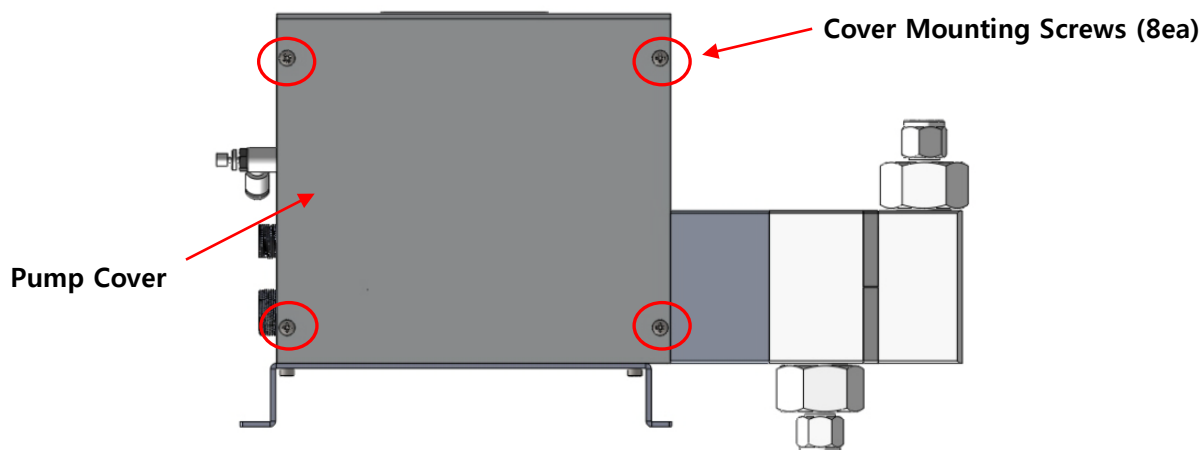
7-1-1 Pump Cover Dis/Assembly

1. As per the below [PIC 1], use 2mm wrench to release Pump Cover Mounting M3 Screw(8ea) to open the cover.
2. The assembly is the reverse order of the disassembly.

[Notice]

When the cover opens, be careful not to cut the finger.

Don't dis/assemble the interior parts inside the pump.



[PIC 1]

7-1-2 Driving Shaft Condition Check & Grease up on Ball Screw

1. Check the motor's vibration & noise when the pump works.
2. Check the bolts tightening condition and ball screw worn-out condition.
3. Check any interruption between cables & moving parts.
4. Check the conditions of linear bushing /shaft when the pump works.
5. Grease up on ball screw & LM linear bushing.
6. Grease up every 6 months.
7. The assembly is the reverse order of the disassembly.

[Notice]

Don't disassemble the moving parts, which can be the root cause of any problems.

8

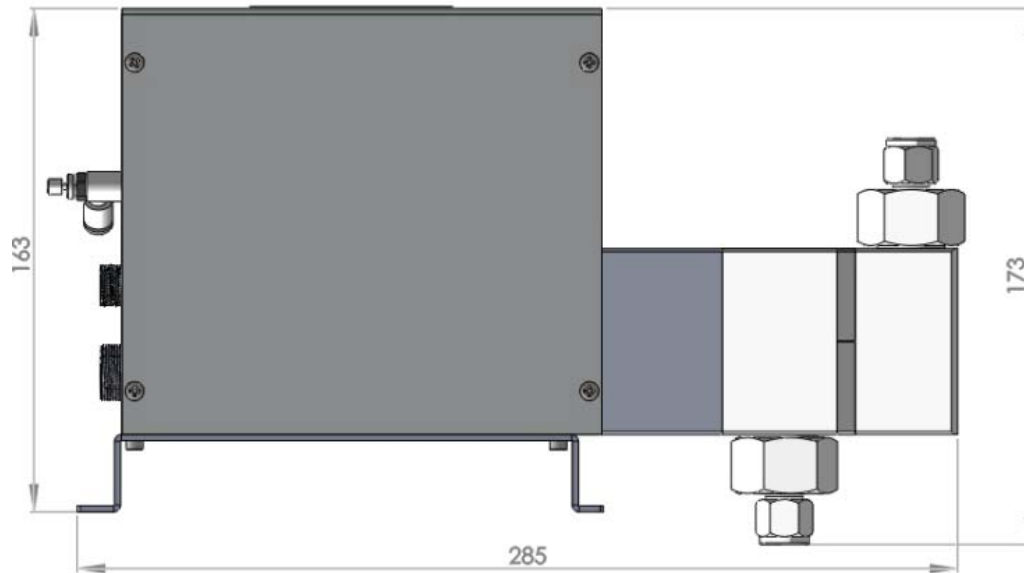
Recommended Spares / Mechanical Dimensions

8-1 TP-34A Spare Parts

Division	Part NO.	Description	Qty
Pump	TL-34A-TA-001	Cylinder	1
	TL-34A-TA-002	Outer Type Edgeless Bellows (10cc)	1
	TL-34A-TA-003	Check Valve Ass'y	2
	TL-34A-TA-004	Nut	2
	TL-34A-TA-005	Fitting	2
	TL-34A-TA-006	¼ Inch PFA Fitting Nut	2
	TL-34A-EB-001	Motor	1
	TL-34A-MA-001	Ball Screw	1
	TL-34A-MA-002	Support Unit	1
	TL-34A-MA-003	LM Guide	1
	TL-34A-ET-001	Motor Pulley	1
	TL-34A-ET-002	Ball Screw Pulley	1
	TL-34A-ET-003	Timing Belt	1
	TL-34A-ET-004	O-Ring (Cylinder)	1
	TL-34A-ET-005	O-Ring (Check Valve)	2
	TL-34A-EB-002	Encoder	1
	TL-34A-EA-001	Photo Sensor	1
	TL-34A-CA-001	Air Speed Control	1
Touch Pad	TL-34A-EB-003	Touch Pad Ass'y	1
Main Board	TL-34A-EB-004	Main Board Ass'y	1

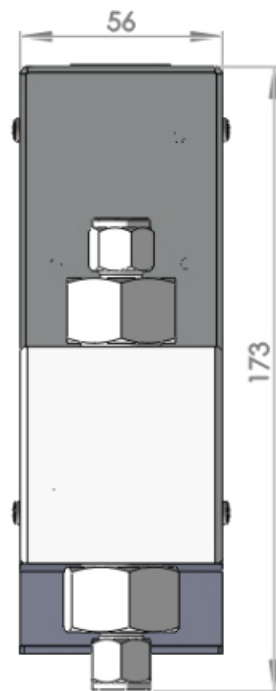
8-2 Pump Dimensions

8-2-1 Side View

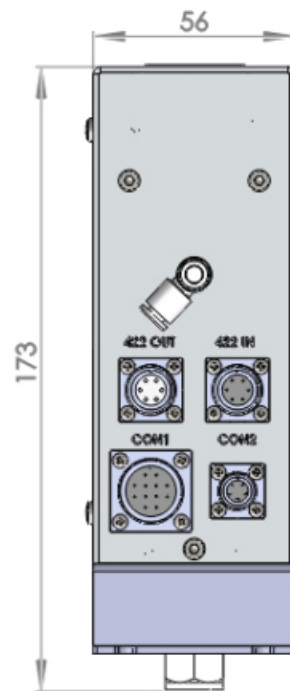


[Side View]

8-2-2 Front / Rear View



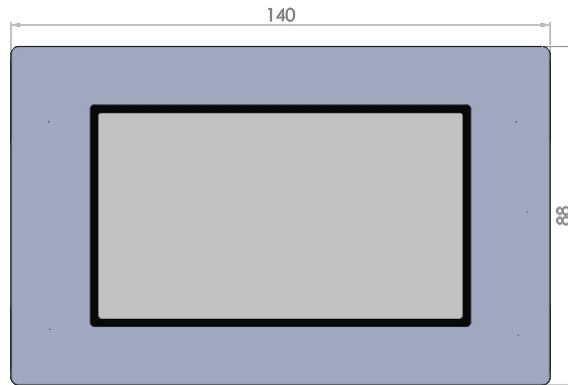
[Front View]



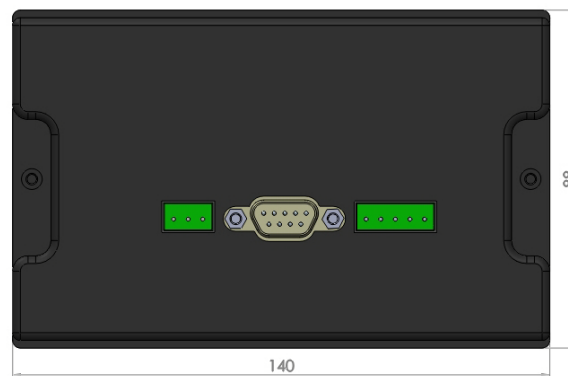
[Rear View]

8-3 Touch Pad Dimensions

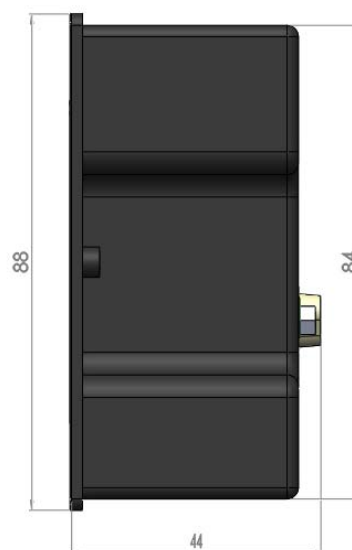
8-3-1 Front View



8-3-2 Rear View



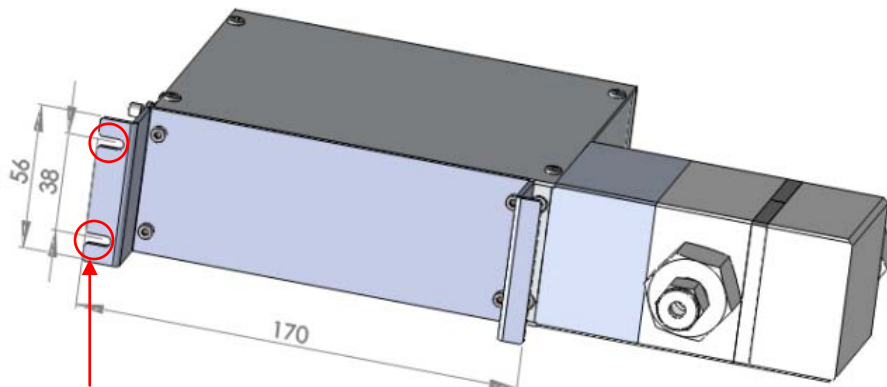
8-3-3 Side View



8-4 Installation Method

8-4-1 Pump Installation Sequence

1. Prepare the space for the pump installation.
2. As per the below picture, tighten the panel base plate with 4 pieces of M4 screw.



Make 2.6mm hole and Tap M3.

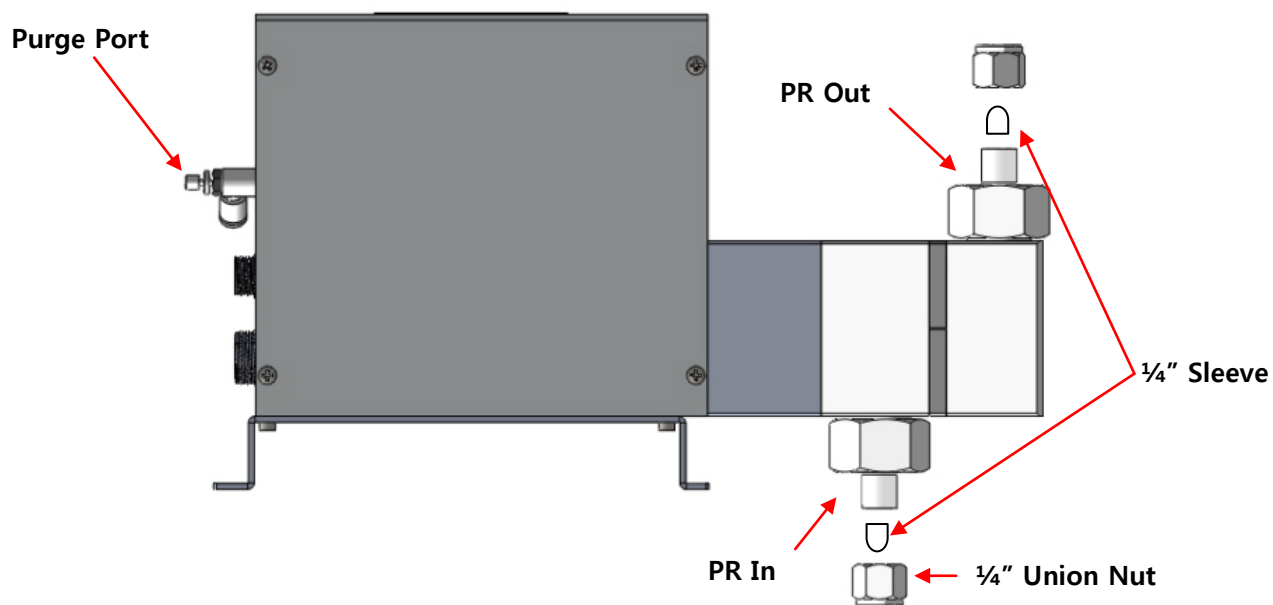
8-4-2 Piping Method

1. PR Tube Piping

- 1) Insert 1/4" union nuts on tube at PR In / Out.
- 2) At the vent area, insert 1/4" sleeve into tube after enlarging tube with the tube expansion tool and then tighten nut.

2. Purge Line Piping

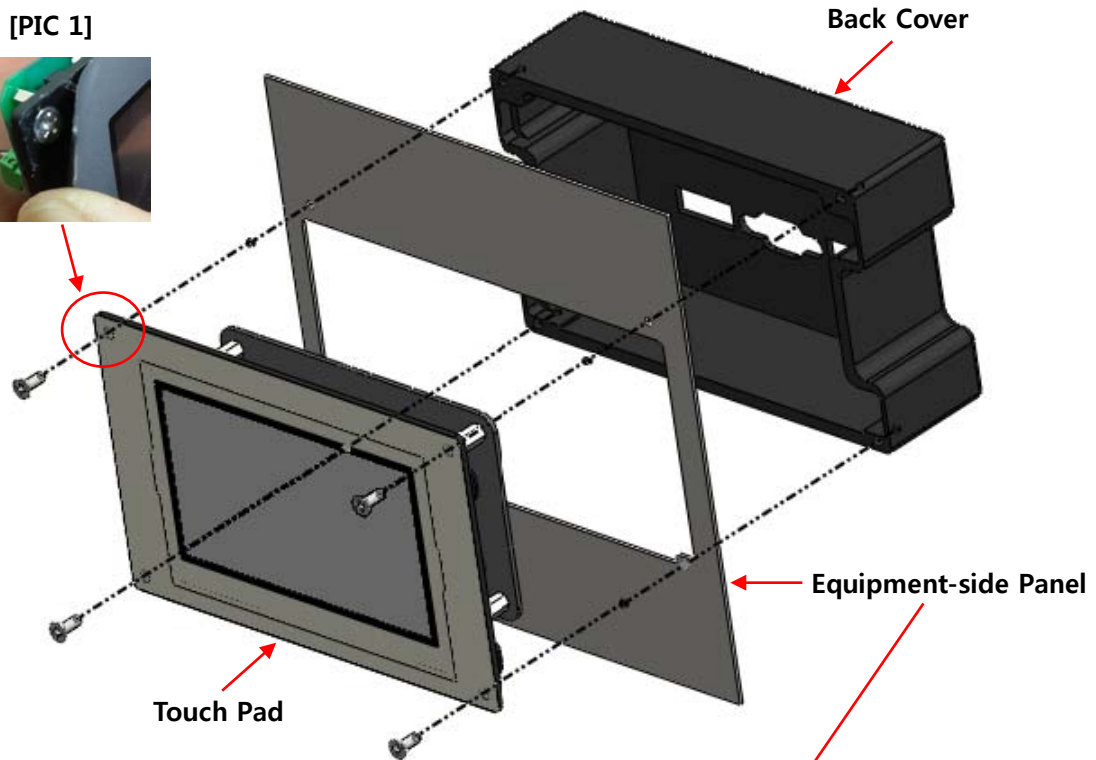
- 1) Connect 4Ø Air Tube to Speed Control Valve for air control.



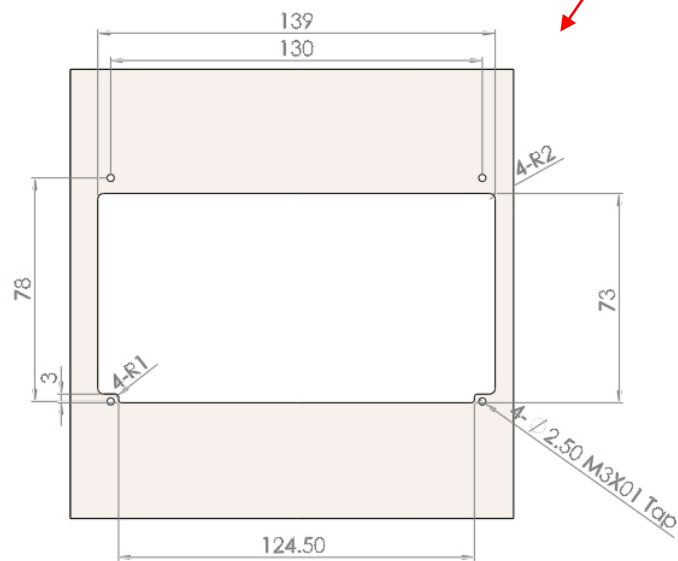
8-4-3 Touch Pad Installation Method

EX)

[PIC 1]



[PIC 2]



[PIC 3]

1. As per [PIC 1], peel the sticker a little until the screw is seen. And loose the screw to take the back cover apart.
2. Prepare the panel to make the square hole by matching [PIC 3].
3. As per [PIC 2], install the touch pad on the equipment.
4. The panel type can be changed up to the equipment's position.

<The End>