

HIGH VISCOSITY & HIGH CAPACITY PR PUMP

Pump for PR Dispense

PUMP MANUAL

MODEL : TP-72S



TALON TECH CO. LTD.

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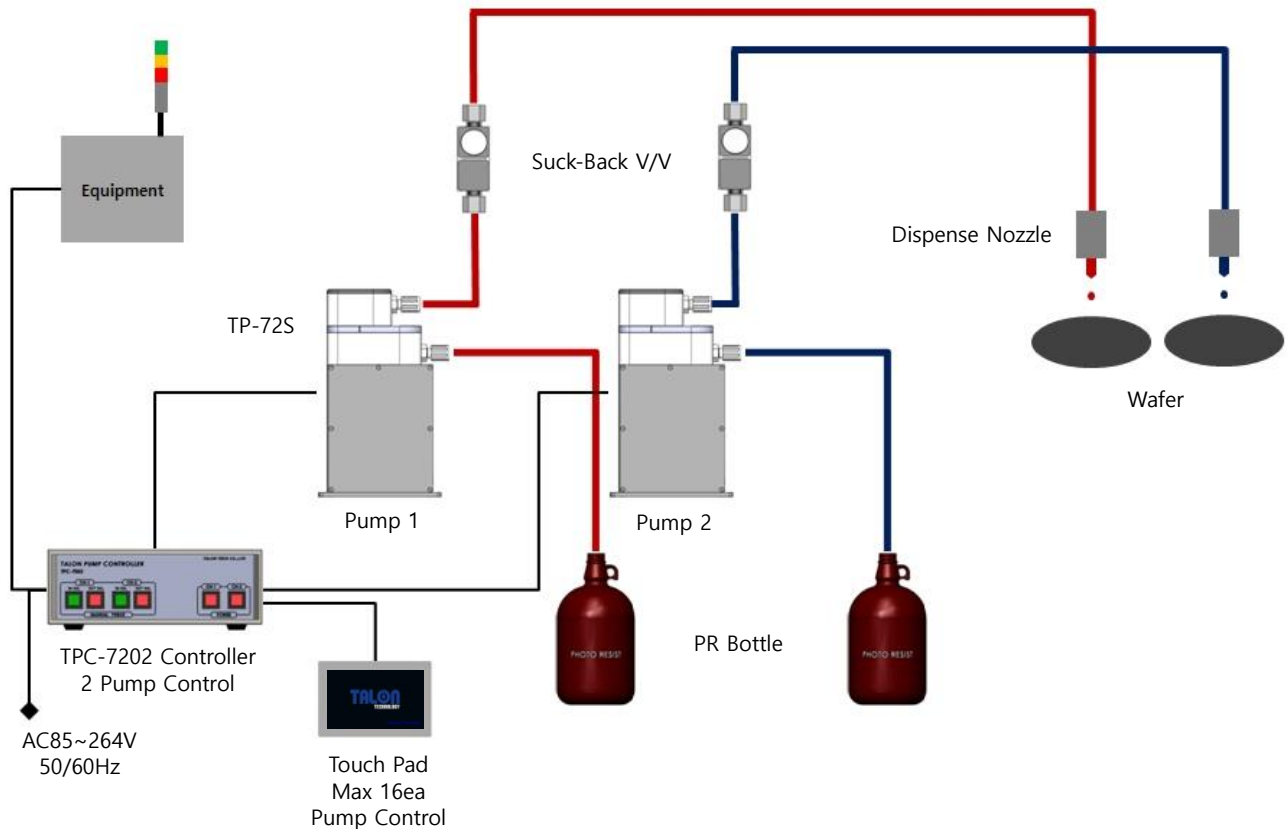
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System Configurations



TP-72S 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-70BS 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 : Cylinder & bubble trap technology / Outer type edgeless bellows.
3. Micro bubble control. (No Leak point)
4. Touch pad has the same function of controller & it can control upto16 pumps.
5. Encompass or Normal trigger signal.

2 System Specifications

2-1 Pump [TP-72S]

ITEM	SPEC	REMARKS
Dispense Volume Range	1.0cc ~ 20.0 cc	
Dispense/ Reload Rate	0.3 cc/sec ~ 1.2 cc/sec	
Dispense Volume Resolution	0.01 cc	
Dispense Repeatability	$\leq \pm 0.04$ (Polyimide PIX/PIQ)	
Viscosity	200 ~ 20,000cp	
Drive System	DC Servo Motor	
Pump Type	Outer Type Edgeless Bellows	
Motor Power	DC 24V (current consumption : 1.4A)	
Air	0.1 ~ 0.3Mpa	
Resist In/Out/Vent tube	$\frac{3}{8}$ " Inch Teflon	
Ambient Temperature	5 ~ 40 °C	
Weight	5.5kg	
Dimension	W : 87mm, D : 168mm, H : 286mm	

2-2 Controller [TPC-7202]

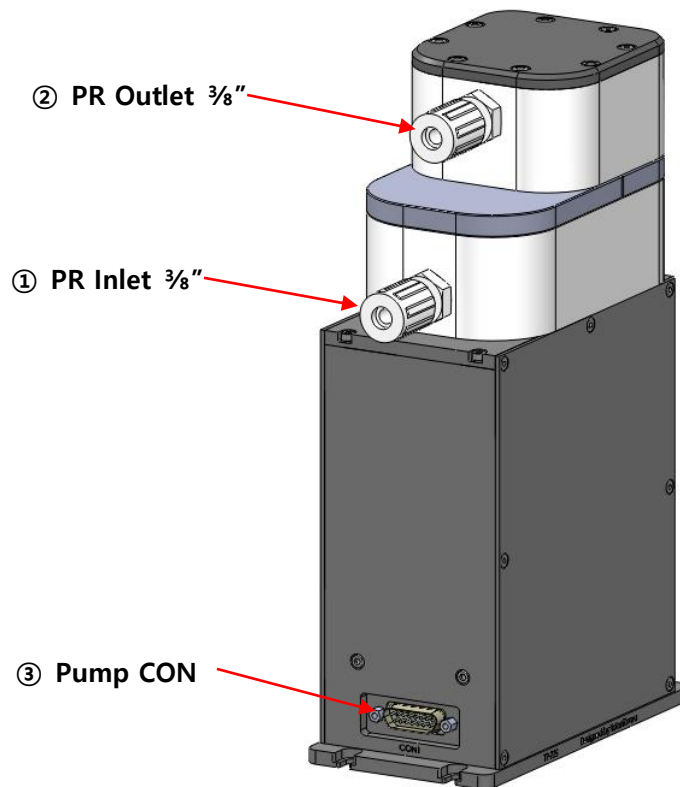
ITEM	SPEC	REMARKS
Electric Power	85VAC ~ 264VAC, 50~60Hz	
Controller Power	DC 24V (current consumption Max 1A)	Panel Use
Drive Pump No.	2 Pumps	
Pump Operation Mode	Fixed Mode	
Main CPU	80c296 (16bit Processor)	
Input Signal	1. Pump Driving Signal From Track M/C- Pump Start Signal.	
Output Signal	1. Home Signal & Pump Operation Completion Signal To Track M/C. 2. Air V/V controlled Sol V/V Signal. 3. Alarm Signal on Pump Error. 4. Outside Communication (RS 232,422,485).	
Weight	3.30kg	
Dimension	W : 250mm, D : 261mm, H : 94mm	

2-3 Touch Pad [TTP-7216]

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

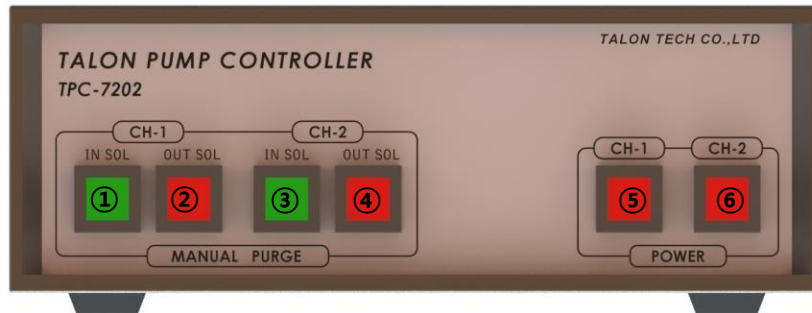
3-1 Pump Exterior Names



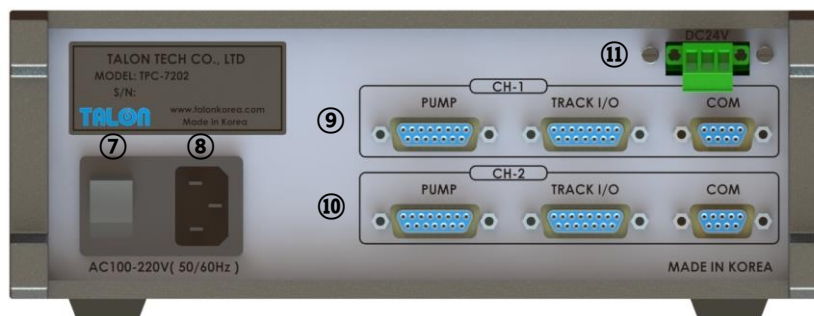
3-1-1 Pump Name Explanation

- ① **PR Inlet**
 - Chemical Supply. ($\frac{3}{8}$ Inch Teflon)
- ② **PR Outlet**
 - Chemical Dispense. ($\frac{3}{8}$ Inch Teflon)
- ③ **Pump CON**
 - Pump to Controller. Connector for Pump Operation. (D-SUB 15P Female)

3-2 Controller Exterior Names



[TPC-7202 Front View]



[TPC-7202 Rear View]

3-2-1 Controller Name Explanation

- ① **CH-1 In Sol S/W**
 - After CH-1 Pump Dispense, LED Lamp Switch for Reload Operation Condition.
- ② **CH-1 Out Sol S/W**
 - After CH-1 Manual Purge, Suck-Back Valve On-Switch.
- ③ **CH-2 In Sol S/W**
 - After CH-2 Pump Dispense, LED Lamp Switch for Reload Operation Condition.
- ④ **CH-2 Out Sol S/W**
 - CH-2 Manual Purge Suck-Back Valve On/Off Switch.
- ⑤ **CH-1 Power S/W**
 - CH-1 Power On / Off Switch
- ⑥ **CH-2 Power S/W**
 - CH-2 Power On / Off Switch.
- ⑦ **Controller Main S/W**
 - Main Power Switch for controller.
- ⑧ **Main AC-IN**
 - AC100~220V (50 / 60Hz) Power Connector.
- ⑨ **CH-1 Pump, Track I/O, COM**

- CH-1 Pump Connector. (D-SUB 15P Female)
- CH-1 Track I/O Connector. (D-SUB 15P Female)
- CH-1 Touch Pad RS-422 Communication Connector. (D-SUB 9P Female)

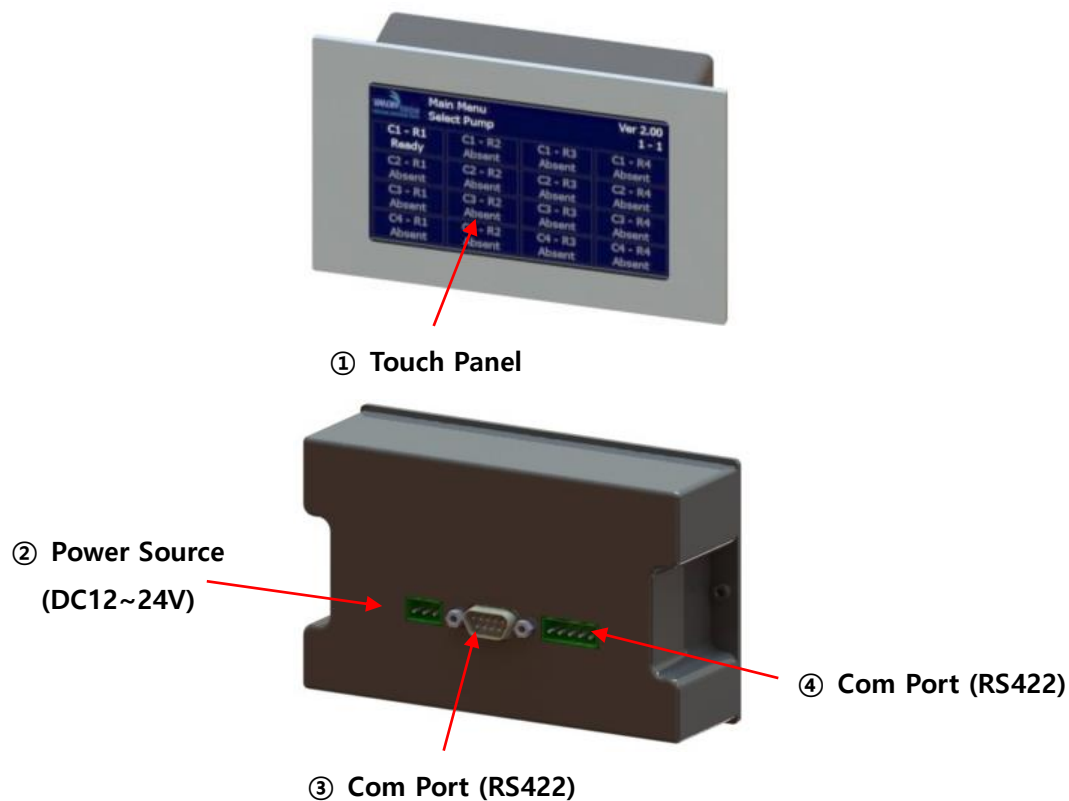
⑩ CH-2 Pump, Track I/O, COM

- CH-2 Pump Connector. (D-SUB 15P Female)
- CH-2 Track I/O Connector. (D-SUB 15P Female)
- CH-2 Touch Pad RS-422 Communication Connector. (D-SUB 9P Female)

⑪ DC 24V

- Touch Pad Power Connector.

3-3 Touch Pad Exterior Names



3-3-1 Touch Pad Name Explanation

① Touch Panel

- Touching area

② Power Source

- Touch Pad Power DC12~24V Connector.

③ Com Port

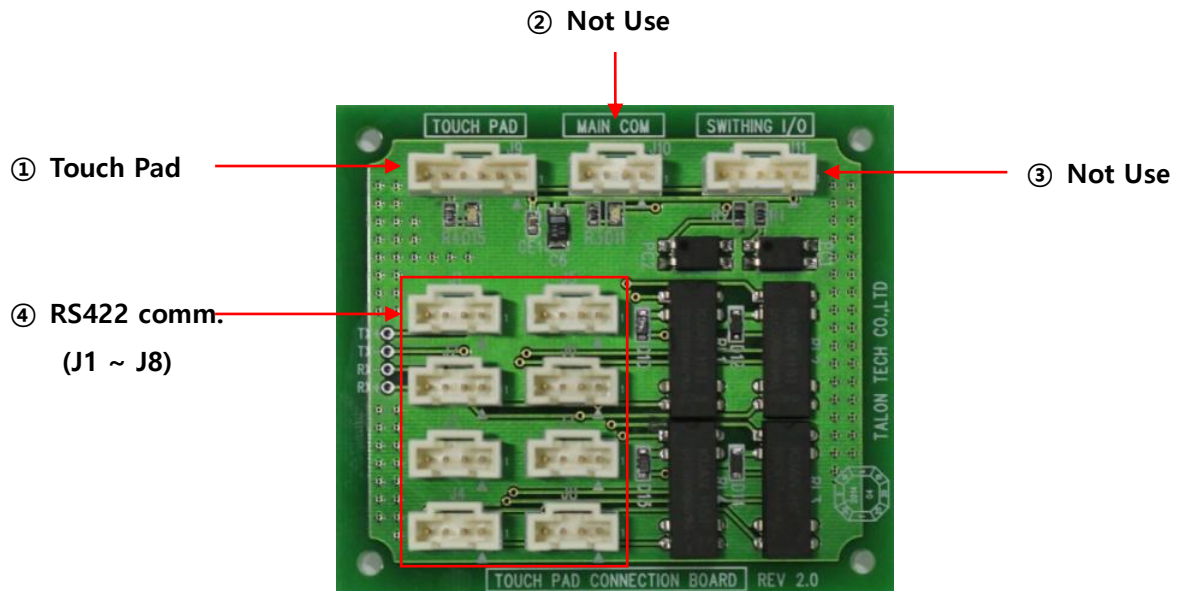
- Touch Pad RS422 Communication Connector. (D-SUB 9P Male)

④ Com Port

- Touch Pad RS-422 Communication Connector.

3-4 Touch Pad Connection Board Exterior Names

★ Just in case of over 3 pumps, Touch Pad Connection Board should be used.

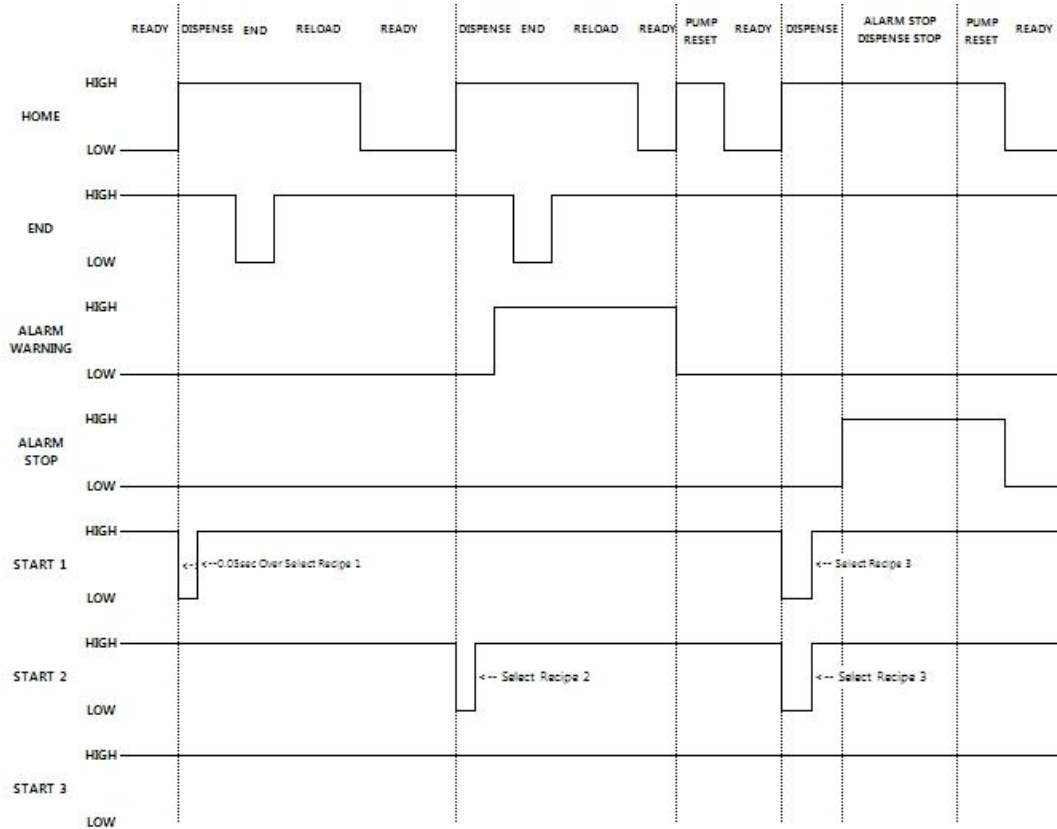


3-4-1 Touch Pad Connection Board Name Explanation

- ① **Touch Pad**
 - Touch Pad Communication Connector. (Molex 6P)
- ② **Main COM**
- ③ **Switching I/O**
- ④ **RS422 Communication**
 - Pump1 ~ Pump8 COM Cable Connection Connector. (Molex 4P)

4 Track / Auxiliary Interface

4-1 Track Interface Signal



Recipe Select Trigger

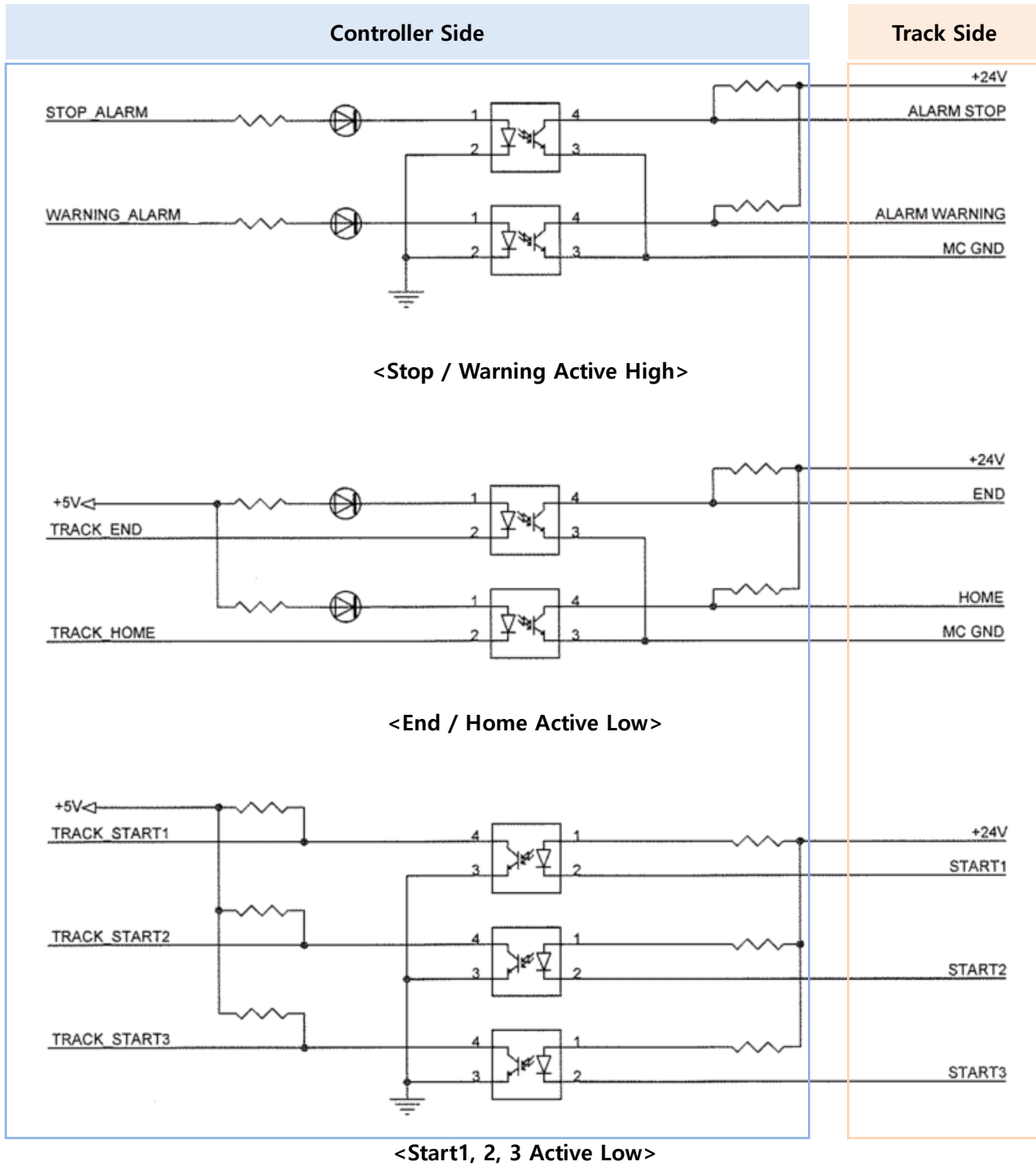
"0" Trigger Off

"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	

It is Timing Chart. On Ready condition, when Start Signal becomes active, each signal is same as the chart. When Stop Alarm occurs, all stop even during dispensing. But, the warning alarm does dispense. The alarm becomes clear by reset after pump clear.

4-2 Track Interface Wiring



4-3 Cable Pin Assign

4-3-1 Pump Cable

Pin Number	Standard Type(D-SUB 15P)	
	Controller	Pump
1	+5V	1 : 1
2	PUMP_CW	1 : 1
3	PUMP_CCW	1 : 1
4	+24V	1 : 1
5	E_HOME_SIGNAL	1 : 1
6	E_END_SIGNAL	1 : 1
7	E_MOTOR_ALARM	1 : 1
8	E_MOTOR_INPOSITION	1 : 1
9	GND	1 : 1
10	GND	1 : 1
11	Not Use	1 : 1
12	EX_IN_SOL V/V +24V	1 : 1
13	E_SUCK_BACK_SOL_V/V +24V	Suck-Back Output (+)
14	EX_IN_SOL V/V -24V	1 : 1
15	E_SUCK_BACK_SOL_V/V -24V	Suck-Back Output (-)

4-3-2 Track Cable

Pin Number	Pump Cable(D-SUB 15P)	
	Controller	Pump
1	+5V	1 : 1
2	PUMP_CW	1 : 1
3	PUMP_CCW	1 : 1
4	+24V	1 : 1
5	E_HOME_SIGNAL	1 : 1
6	E_END_SIGNAL	1 : 1
7	E_MOTOR_ALARM	1 : 1
8	E_MOTOR_INPOSITION	1 : 1
9	GND	1 : 1
10	GND	1 : 1
11	Not Use	1 : 1
12	EX_IN_SOL V/V +24V	Sol V/V Connector share
13	E_SUCK_BACK_SOL_V/V +24V	1 : 1
14	EX_IN_SOL V/V -24V	Sol V/V Connector share
15	E_SUCK_BACK_SOL_V/V -24V	1 : 1

Pin Number	Track Cable(D-SUB 15P)	N2 Type	Connecting Way
	Controller	Track (ACT-12)	Track (ACT-12)
1	N.C	Not Use	Alarm is only for Stop. After disconnecting EXT High 5, link NO/COM with EXT 2P cable. Dispense Trigger links Suck-Back V/V Cable from the system after checking (+, -).
2	COM	EXT High 5 (link after disconnect)	
3	N.O	EXT High 5 (link after disconnect)	
4	START 3	Not Use	
5	START 1	Dispense Trigger (-) 2P	
6	START 2	Not Use	
7	IN SOL	Not Use	
8	ALARM STOP	Not Use	
9	ALARM WARNING	Not Use	
10	HOME	Not Use	
11	END	Not Use	
12	OUT SOL	Not Use	
13	+24V	Not Use	
14	+24V	Dispense Trigger (+24) 2P	
15	MC GND	Not Use	

Pin Number	Encompass Type(Hirose 20P)		
	Controller	Track (ACT-12)	Connecting Way
1	Not Use	X	Pump I/O Board ↓ Pump I/O CONN Board ↓ I/F Board ↓ CN3, 4, 6, 7 ↓ J164~167(Track1~4) (Refer to Electric Diagram)
2	Not Use	X	
3	Not Use	X	
4	Not Use	X	
5	START 1	18	
6	START 2	17	
7	OUT SOL V/V	6 => Jump to END 7	
8	ALARM STOP	5	
9	ALARM WARNING	4	
10	HOME	3	
11	END	7 => Jump from 6	
12	IN SOL V/V	8	
13	+5VA	2	
14	MC POWER		
15	GND	20	

4-3-3 Touch Pad Cable

Pin Number	Touch Pad Cable(D-SUB 9P)		
	Signal Name	I/O	Description
1	Not Use	Not Use	
2	Not Use	Not Use	
3	Not Use	Not Use	
4	TX+	Output	RS422
5	TX-	Output	
6	RX+	Input	
7	RX-	Input	
8	Not Use	Not Use	
9	Not Use	Not Use	
1	+VCC	Input	Touch Pad Power(12V~24V)
2	Not Use	Not Use	
3	GND	Input	

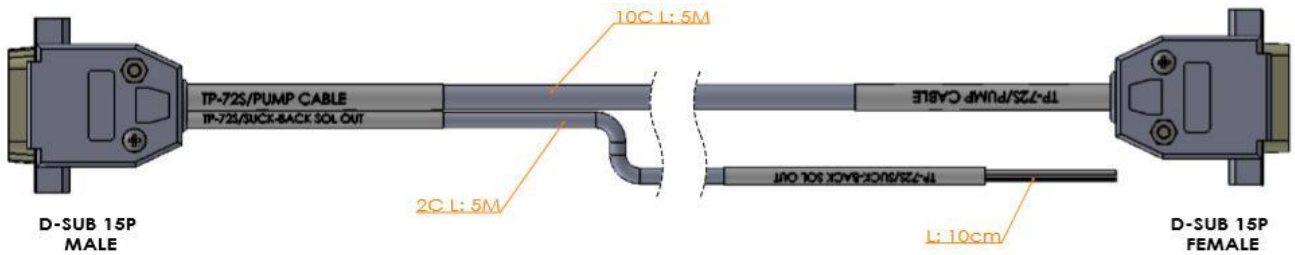
Touch Pad Power Pin Assign [3P]			
Pin NO.	Signal Name	I/O	Description
1	MC +24V	Input	Touch Pad Supply Power
2	Not Use	Not Use	
3	MC_GND	Input	Touch Pad Supply Power

4-3-4 COM Cable

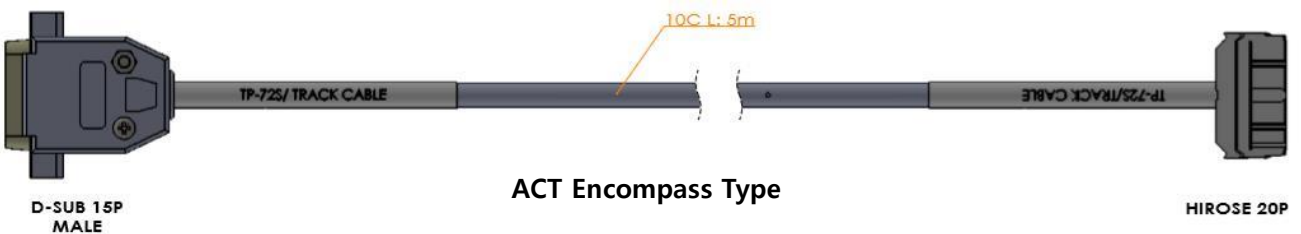
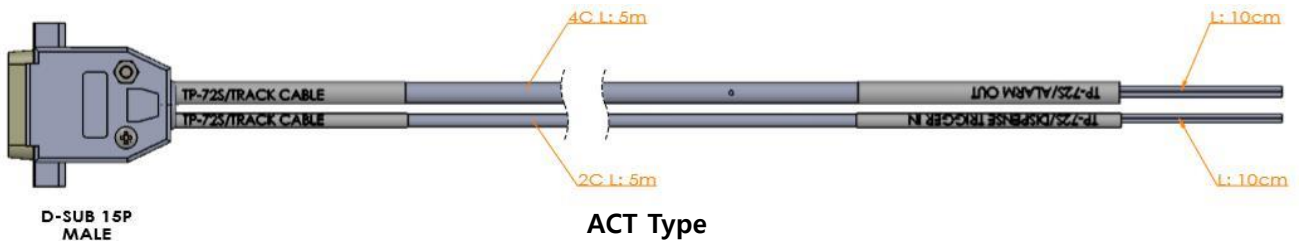
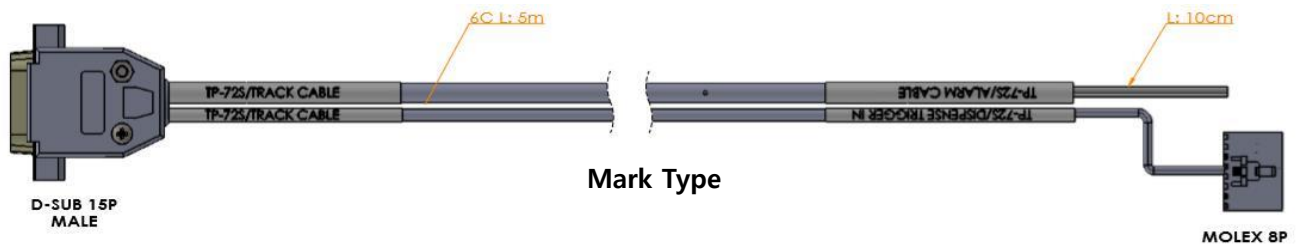
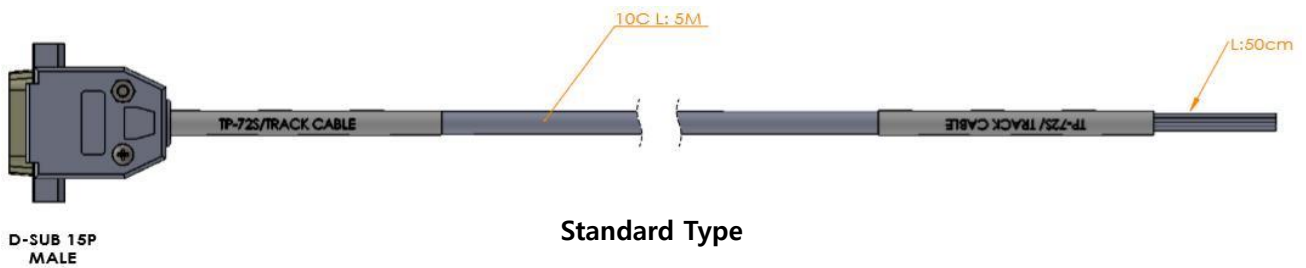
Touch Pad RS422 Pin Assign [Male Type D-SUB 9P]			
Pin NO.	Signal Name	I/O	Description
1	Not Use	Not Use	
2	Not Use	Not Use	
3	Not Use	Not Use	
4	RX+	Input	RS422 Receive + (Pump side)
5	RX-	Input	RS422 Receive - (Pump side)
6	TX+	Output	RS422 Send + (Pump side)
7	TX-	Output	RS422 Send - (Pump side)
8	Not Use	Not Use	
9	Not Use	Not Use	

5 External Cable Length

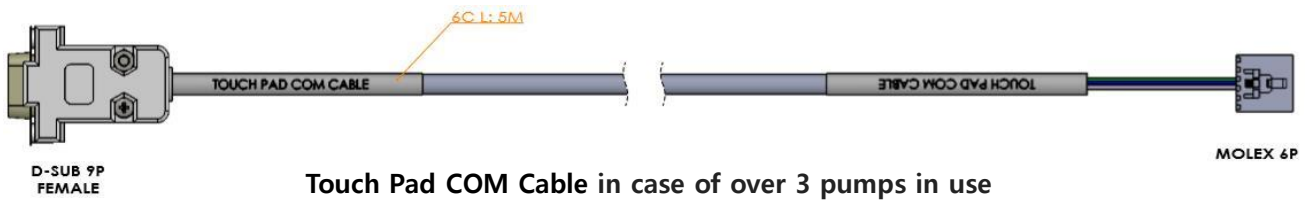
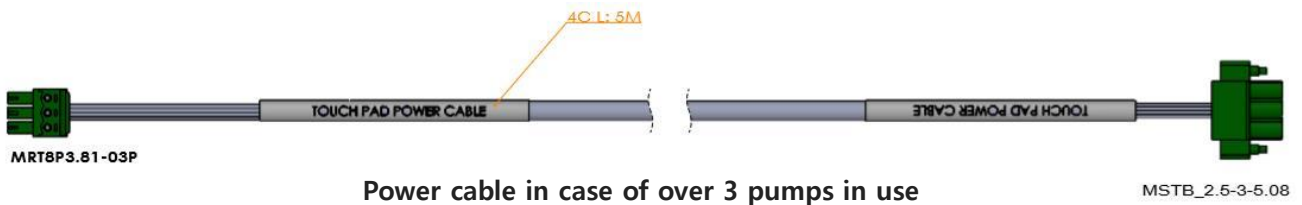
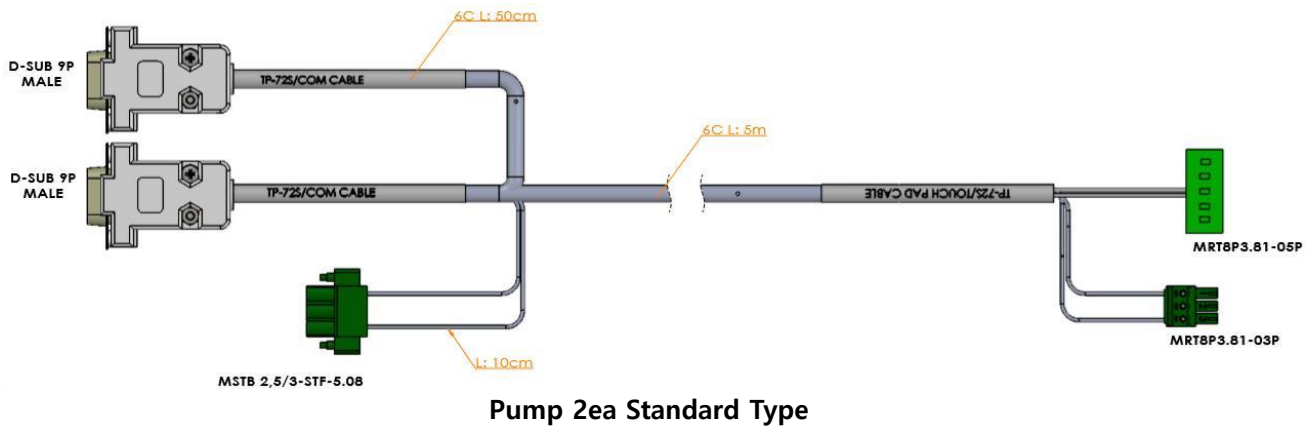
5-1 Pump Cable



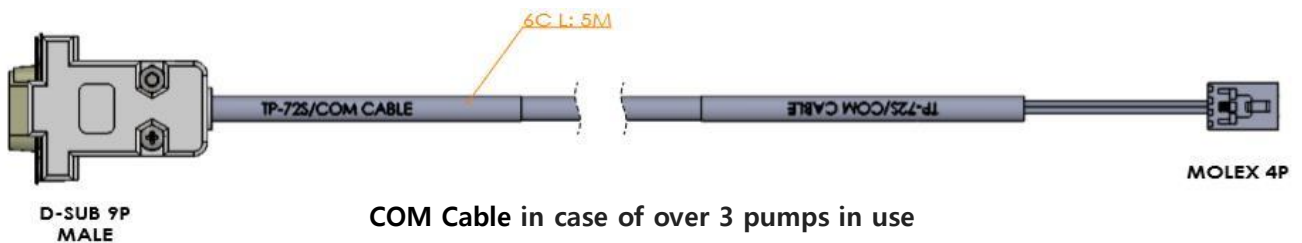
5-2 Track Cable



5-3 Touch Pad Cable



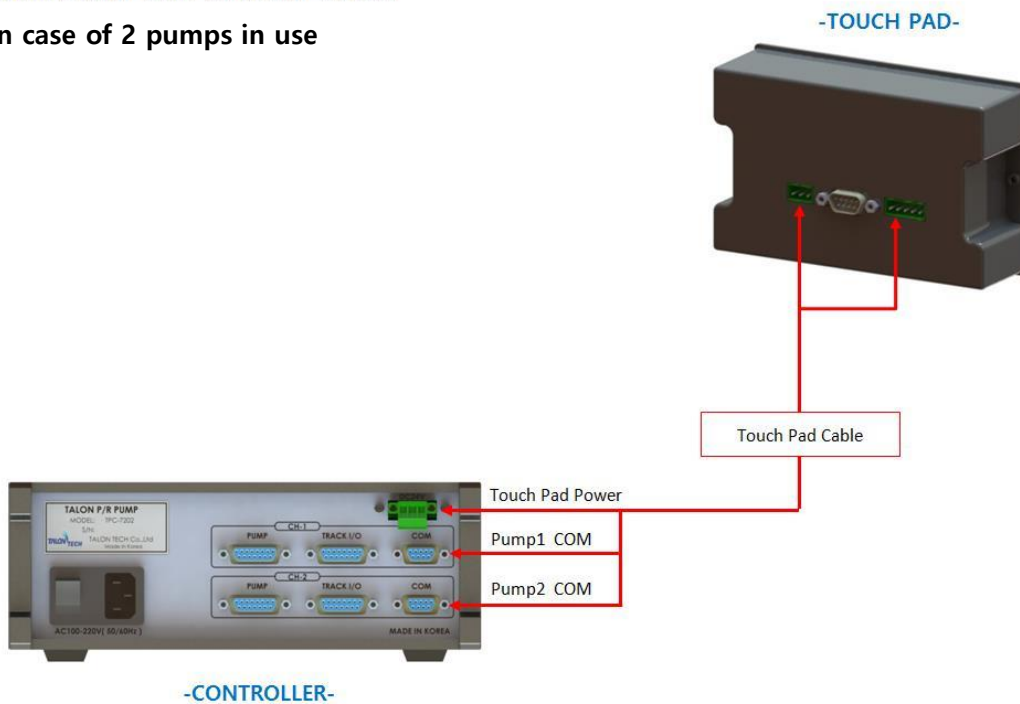
5-4 COM Cable



5-5 Communication Cable Connection Method

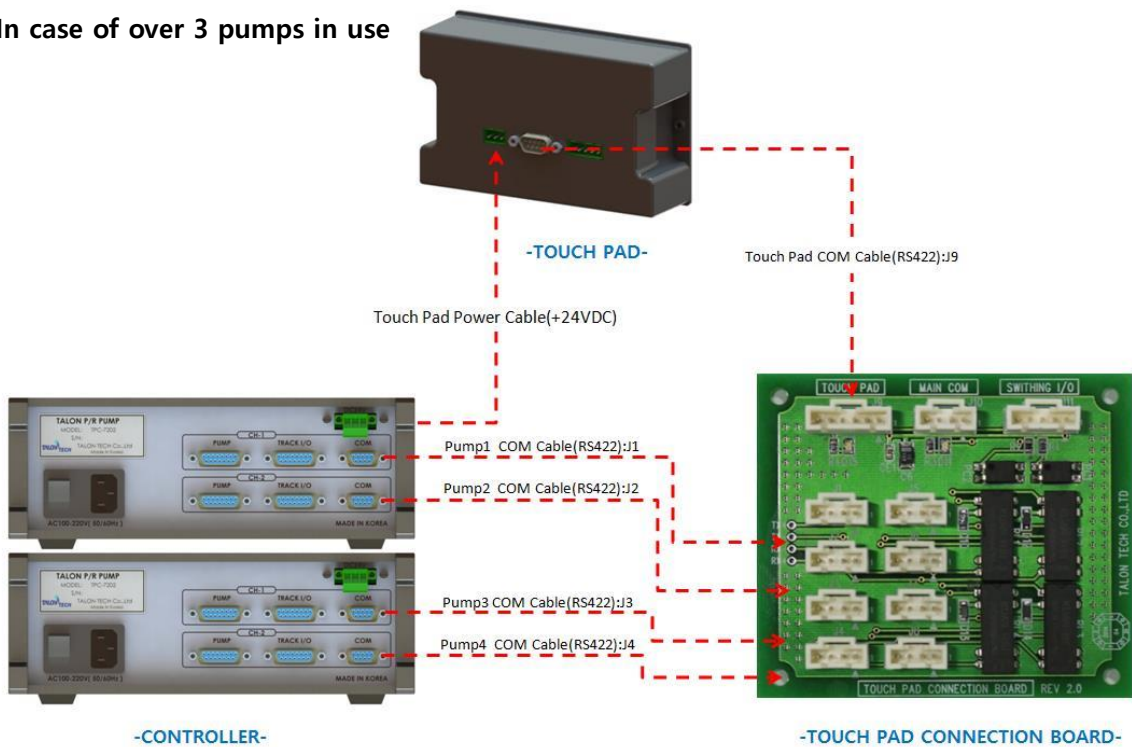
Communication Cable Connection Method

In case of 2 pumps in use



Communication Cable Connection Method

In case of over 3 pumps in use



6 Touch Pad Operation

6-1 Operation

6-1-1 Notice

Main Menu Select Pump		TTP-5060 Ver 2.03 1 - 1	
C1 - R1 Ready	C1 - R2 NotUse	C1 - R3 NotUse	C1 - R4 NotUse
C2 - R1 NotUse	C2 - R2 NotUse	C2 - R3 NotUse	C2 - R4 NotUse
C3 - R1 NotUse	C3 - R2 NotUse	C3 - R3 NotUse	C3 - R4 NotUse
C4 - R1 NotUse	C4 - R2 NotUse	C4 - R3 NotUse	C4 - R4 NotUse

The pumps' ID, which are cable-connected to touch pad, are auto-searched every 5 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 - R2 NotUse
<Dispense>	< Ready >	<Not Connect>

6-1-3 Select Function

ESC	Select Function 1 - 1
Dispense	Config
Recipe	Calibration
Degas	Purge

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. |
| Degas | - Not Use |
| Config | - Pump Mode, Reset, Error & ID Setting. |
| Calibration | - Each recipe's calibration setting. |
| Purge | - Not Use. |

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 Setting

ESC	Recipe Setting		<	>
	1 - 1			
No.	Step :	Disp.	Reload	Count
1	Volume :	700	700	
Set	Time :	700	2400	0

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

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

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

- | | | |
|--------------|---|--|
| 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 | - | Not Use |
| Maint Mode | - | Change Pump Mode to Maint. |
| Run Mode | - | Change Pump Mode to Run |
| Pump Reset | - | Reset Pump. It means Pump Restart, not Data Reset. |
| Error Mark | - | Not Use |

6-1-6-1 ID Setting

ID changes without any discussion could make the controller error. It is much better to ask Talon Tech.

6-1-6-2 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.

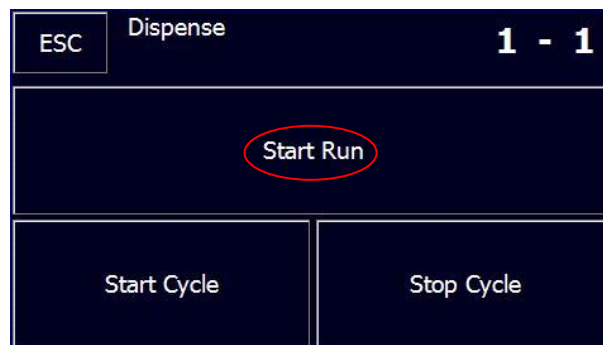
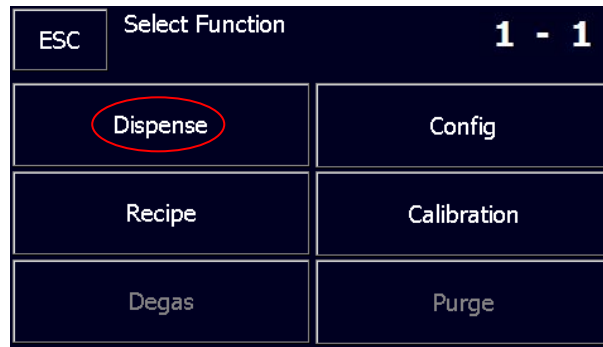
6-1-7 Calibration

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

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.

6-2 사용 예제

6-2-1 Dispense Test



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 Setting

ESC	Select Function	1 - 1
Dispense		Config
Recipe		Calibration
Degas		Purge



ESC	Recipe Setting		<	>
1 - 1				
No.	Step :	Disp.	Reload	Count
1	Volume :	700	700	
Set	Time :	700	2400	0



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

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

ESC	Recipe Setting		<	>
1 - 1				
No.	Step :	Disp.	Reload	Count
1	Volume :	700	700	
Set	Time :	700	2400	0

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

6-3 Cycle Purge 방법

Main Menu Select Pump		TTP-5060 Ver 2.03 1 - 1	
C1 - R1 Ready	C1 - R2 NotUse	C1 - R3 NotUse	C1 - R4 NotUse
C2 - R1 NotUse	C2 - R2 NotUse	C2 - R3 NotUse	C2 - R4 NotUse
C3 - R1 NotUse	C3 - R2 NotUse	C3 - R3 NotUse	C3 - R4 NotUse
C4 - R1 NotUse	C4 - R2 NotUse	C4 - R3 NotUse	C4 - R4 NotUse

[PIC 1]

ESC	Select Function 1 - 1	
Dispense		Config
Recipe		Calibration
Degas		Purge

[PIC 2]

ESC	Recipe Setting 1 - 1		<	>
No.	Step :	Disp.	Reload	Count
1	Volume :	700	700	
Set	Time :	700	2400	0

[PIC 3]

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

[PIC 4]

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

[PIC 5]

1. Choose the pump nozzle for the cycle purge.

- Pump condition is same as Ready of [PIC 1].

* On Busy condition, Cycle Start cannot be done on the screen.

2. Under Select Function, touch Recipe button. .

- Move to [PIC 3] and automatically, No.1 Recipe Data is shown.

* In case of no read Data, Recipe window cannot disappear.

3. Touch # under no. to read Cycle Recipe.

* Dispense Recipe can be changed on this menu. So, watch out.

4. Touch #4.

- Each # means Recipe Number.

* Run Recipe : 1 or 2, Cycle Recipe : 4.

5. Touch Ent button.

- When touch Ent button, the related Recipe shows automatically.

* In case of no read Data, Recipe window cannot disappear.

ESC	Recipe Setting 1 - 1					<	>
No.	Step :	Disp.	Reload	Count			
4	Volume :	700	700				
Set	Time :	700	2400	0			

[PIC 6]

ESC	Recipe Setting 1 - 1					<	>
No.	Step :	Disp.	Reload	Count			
4	Volume :	700	700				
Set	Time :	700	2400	0			

[PIC 7]

ESC	Select Function		1 - 1
Dispense		Config	
Recipe		Calibration	
Degas		Purge	

[PIC 8]

ESC	Dispense		1 - 1
Start Run			
Start Cycle		Stop Cycle	

[PIC 9]

ESC	Dispense		1 - 1
Start Run			
Start Cycle		Stop Cycle	

[PIC 10]

6. Input Recipe Data to be changed.

- Count means Dispense #.
- In case of Count #10 and Start Cycle on Dispense menu, Recipe #4 executes 10 times of Dispense.
- Reload Volume inputs same as Disp. Volume automatically.

7. Touch Set button.

- When touch Set button, the related Recipe Data stores on Pump.

8. Touch ESC button.

9. Touch Dispense button under Select Function.

10. Touch Start Cycle button.

- #4 Recipe (Cycle Recipe), which input on [PIC 6], [PIC 7], executes as many as Dispense counts.

11. Touch Stop Cycle for a forced Dispense finish.

- In case '**Stop Cycle..Busy**' window shows, keep touching Stop Cycle button until disappear.

6-4 Reset on Pump Error

Main Menu Select Pump				TTP-5060 Ver 2.03 1 - 1
C1 - R1 Ready	C1 - R2 NotUse	C1 - R3 NotUse	C1 - R4 NotUse	
C2 - R1 NotUse	C2 - R2 NotUse	C2 - R3 NotUse	C2 - R4 NotUse	
C3 - R1 NotUse	C3 - R2 NotUse	C3 - R3 NotUse	C3 - R4 NotUse	
C4 - R1 NotUse	C4 - R2 NotUse	C4 - R3 NotUse	C4 - R4 NotUse	

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	
Degas		

2. Touch Config button on Select Function menu.

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

3. Touch Pump Reset button.

ESC	Config Pump	1 - 1
RecList 511RV01...[o]	Pump Reset Are You Sure?	Error Status
	Cancel	Set ID
	OK	Run Mode
	Pump Reset	Error Mask

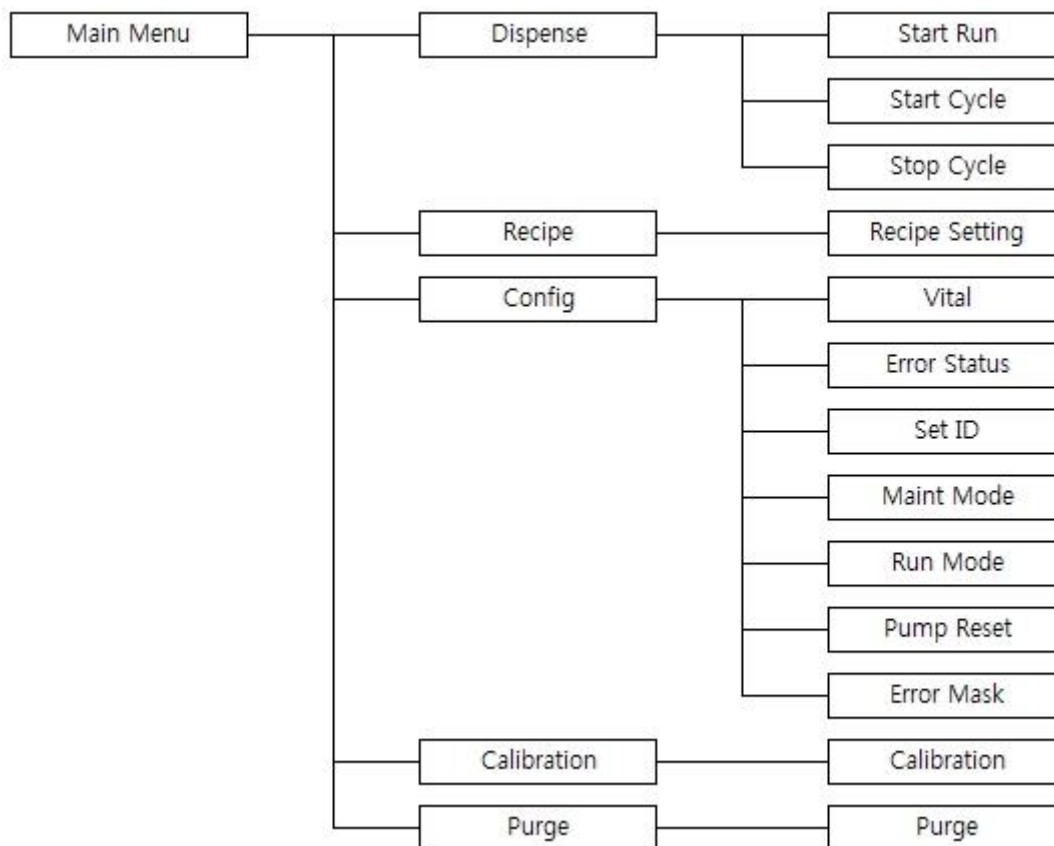
4. Touch OK button "Are you Sure?" window.

- 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.

6-5 Touch Pad Menu Tree



6-6 Notice

6-6-1 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.

6-6-2 Pump ID Setting

ID change without discuss with Talon Tech Co., Ltd. can cause the controller operation problem. Please discuss with Talon Tech Co., Ltd

6-6-3 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.

6-7 Notice on Pump Operation

1. During Pump is under process (RUN OR CYCLE) don't try to modify the data.

(Please do it after Pump had stop properly)

- ▶ In this term of "modify data" means changing recipe, cycle, cal value etc. If you modified the data during pump operation, BUSY screen will be pop-up and it will be not saved.
- ▶ Screen moving in touch pad is OK.

2. For Pump Recipe Setting, Recipe 1 and 4 are applied same.

- ▶ Dispense Volume => set the volume range between 100(1cc) ~ 2000(20cc)
- ▶ Reason : For protect the pump , upper limit alarm set.
- ▶ Dispense Time => It should be bigger than Dispense Volume. It should be smaller than system recipe step time.
- ▶ Reason : As using the high cp PR , sudden pump operation could have the motor damaged and could cause the MICRO BUBBLE.
- ▶ Reload Time => depend on PR cp.
- ▶ Typically, high cp PR case, adjust 3~8 times reload time than dispense volume.

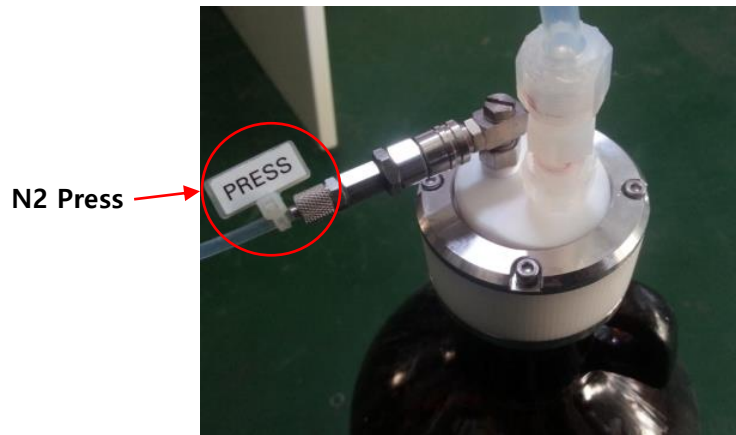
ex) Dispense Reload 900 ~ 2400
 Vol[300] Time[500] Vol[300] Time[900]



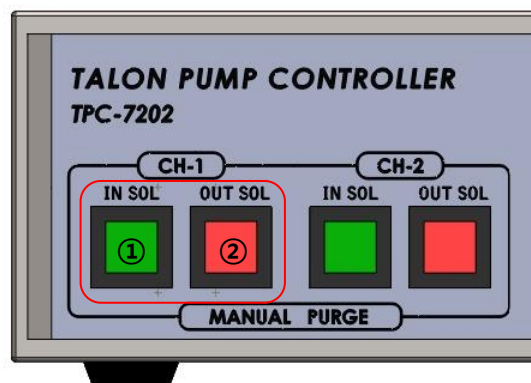
- ▶ **This would be main reason of bubble issues. So please watch out for this.**

7 Maintenance

7-1 Manual Purge Method



[PIC 1]



[PIC 2]

In order to purge, press N2 into PR bottle as per [PIC 1] and push ② (OUT SOL) Button of Manual Purge S/W as per [PIC 2] to open Suck Back Valve.

After Purge finishes, push ② (OUT SOL) Button of Manual Purge S/W to close Suck Back Valve and stop N2 pressure into PR Bottle.

7-2 Pump Parts Dis/Assembly

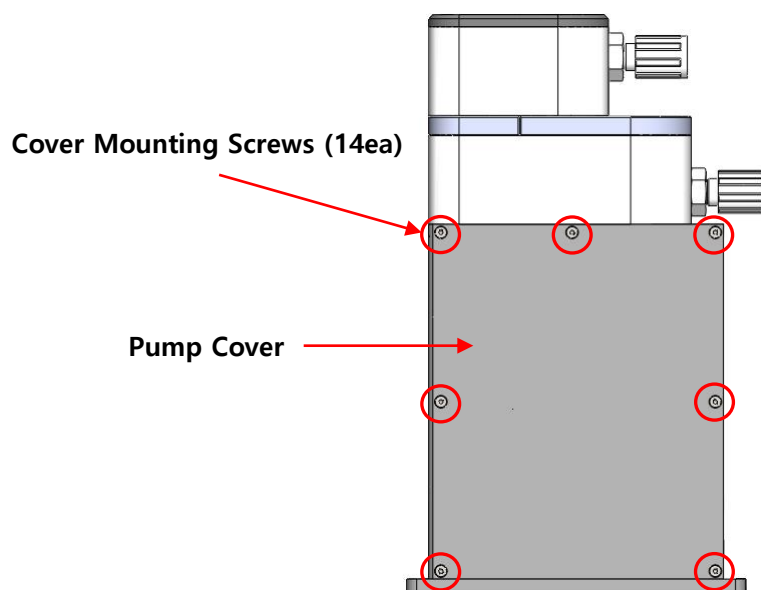
7-2-1 Pump Cover Dis/Assembly

1. As per the below [PIC 1], use 2mm wrench to release Pump Cover Mounting M3 Screw(14ea) 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.

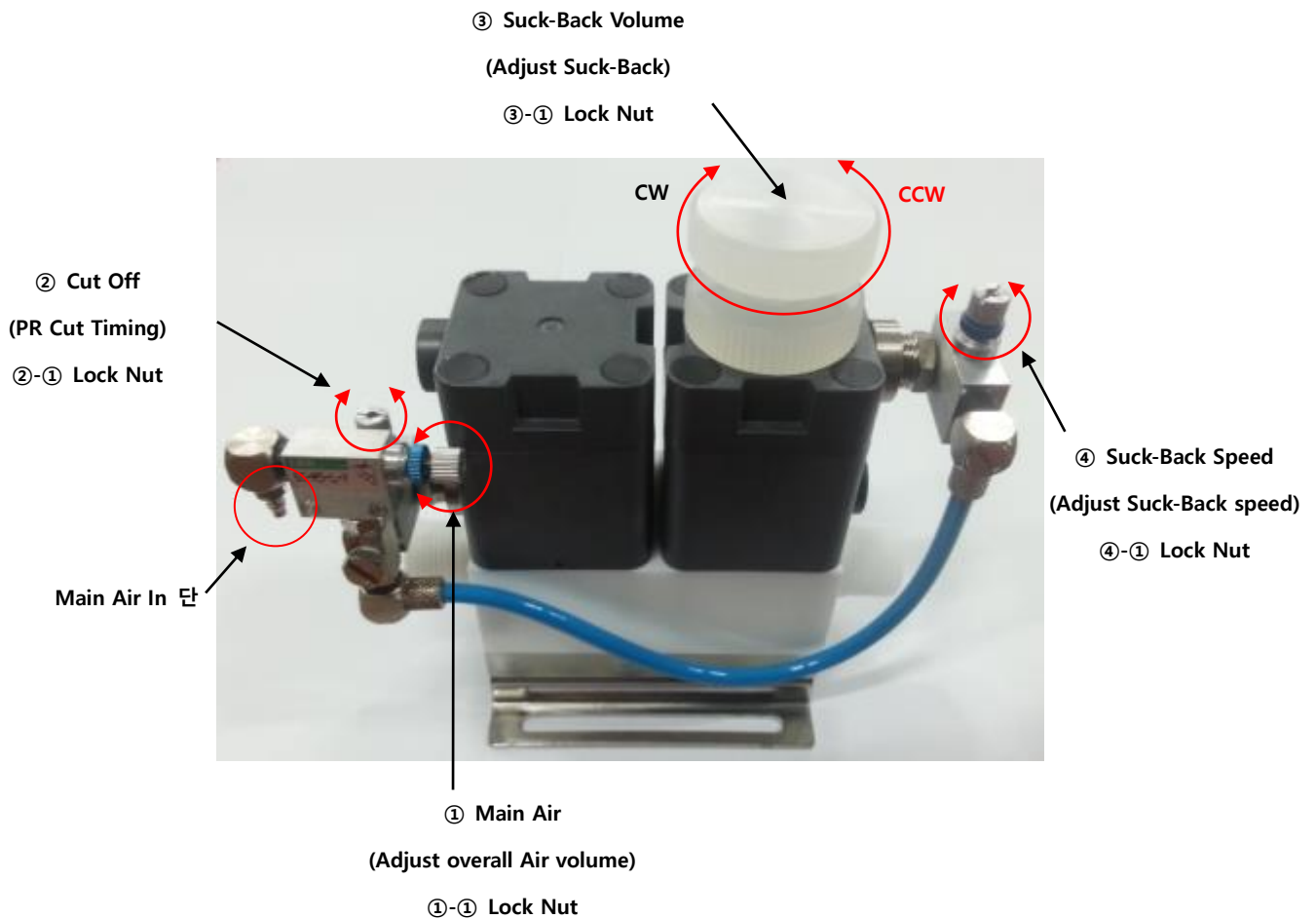


[PIC 1]

7-2-2 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.

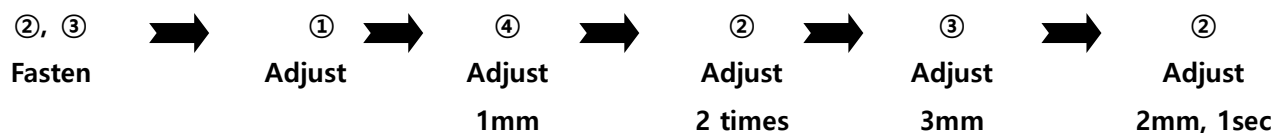
7-3 Suck-Back Setting



1. Un-fasten Lock Nut②-①, ③-① and fasten the knob ②, ③ make it close perfectly.
2. Once Dispense signal is on, un-fasten lock-nut①-① to dispense PR and adjust speed control knob①
(Want to delay dispense timing rotate the knob to CW, want to make quick dispense rotate CCW)
3. Once Dispense signal going "Off" please un-fasten Lock nut④-① for consume the liquid just 1mm ahead of nozzle, rotate speed control knob④ and adjust.
4. Un-fasten Lock Nut②-① and close speed control knob②, rotate 2 times toward CCW.
5. Un-fasten Lock Nut③-① and rotate the suck-back control knob③, resist in nozzle will move up and down. Please make resist place about 3mm from nozzle tip.
(Increase Suck-Back flow, turn CW, decrease suck-back flow, turn CCW)
6. Un-fasten Lock Nut②-① and after 1 sec open the operate suck-back, make the suck-back about 2mm in 1 sec to rotate the speed control knob②.
7. If Suck-Back Speed ④ is too fast, turn it CW, too slow, turn it CCW.

8. Fasten every knob's lock nut. (①-①, ②-①, ③-①, ④-①)
9. Dispense resist again to final check.
10. If value is not correct, go back to order NO.3

● REFERENCES FOR WORKING SEQUENCE



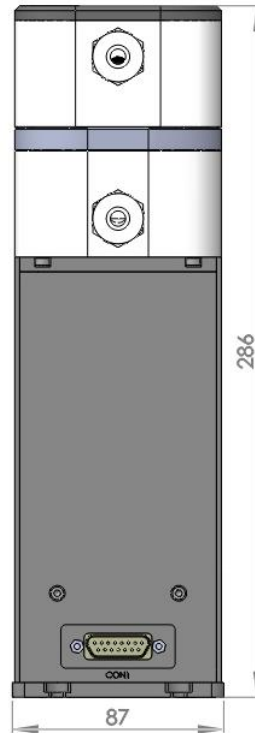
8 Recommended Spares / Mechanical Dimensions

8-1 TP-72S Spare Parts

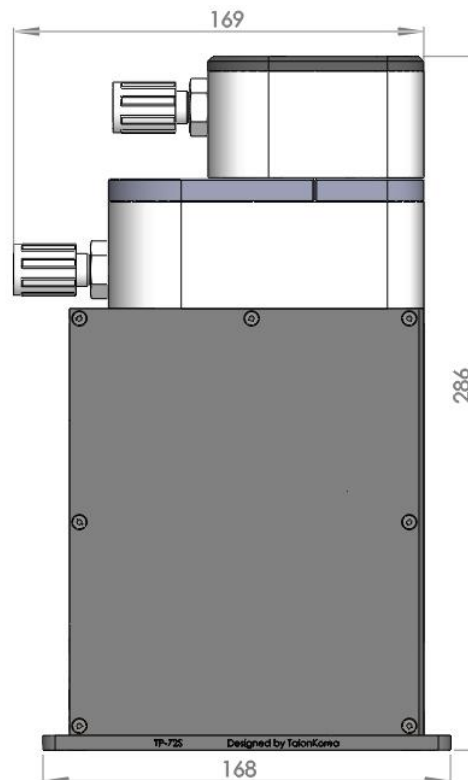
Division	Part NO.	Description	Qty
Pump	TL-72S-TA-001	Cylinder	1
	TL-72S-TA-006	Outer Type Edgeless Bellows	1
	TL-72S-MA-001	Ball Screw	1
	TL-72S-MA-002	Support Unit	1
	TL-72S-EB-001	Motor	1
	TL-72S-MA-003	LM Guide	1
	TL-72S-ET-001	Timing Belt	1
	TL-72S-CA-001	Sol Valve (Option)	1
	TL-72S-ET-003	O-Ring (144)	1
	TL-72S-ET-004	O-Ring (018)	1
	TL-72S-EA-001	Photo Sensor	1
	TL-72S-CA-002	Suck-Back Valve (Option)	1
Controller	TL-72S-EB-002	SMPS	1
	TL-72S-EA-003	Push Switch (Red, Green)	1
	TL-72S-EA-004	Fuse (5X20 5A)	1
	TL-72S-EB-003	Controller Main Board Ass'y	1
Touch Pad	TL-72S-EB-004	Touch Pad Ass'y	1
CONN B/D	TL-72S-EB-005	Touch Pad Connection Board Ass'y (Option)	1

8-2 Pump Dimensions

8-2-1 Front View

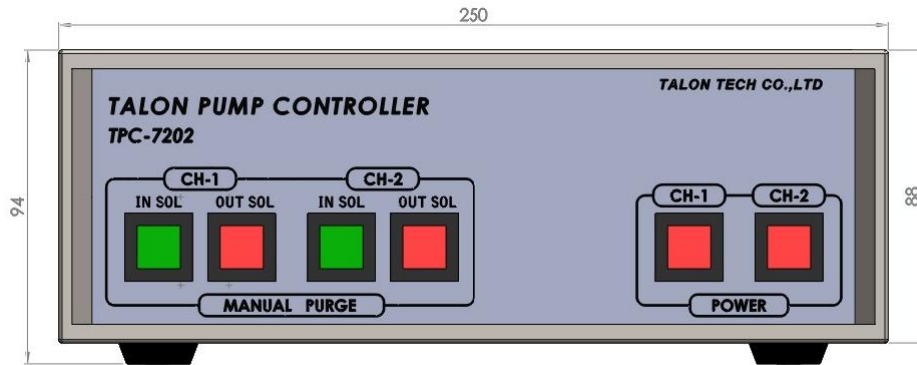


8-2-2 Side View

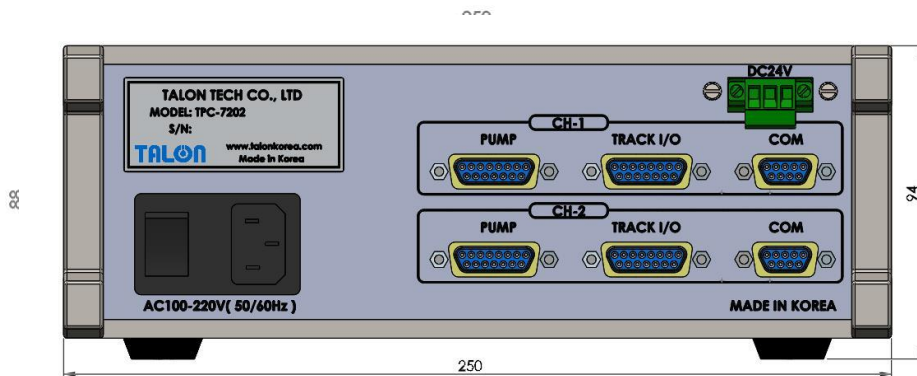


8-3 Controller Dimensions

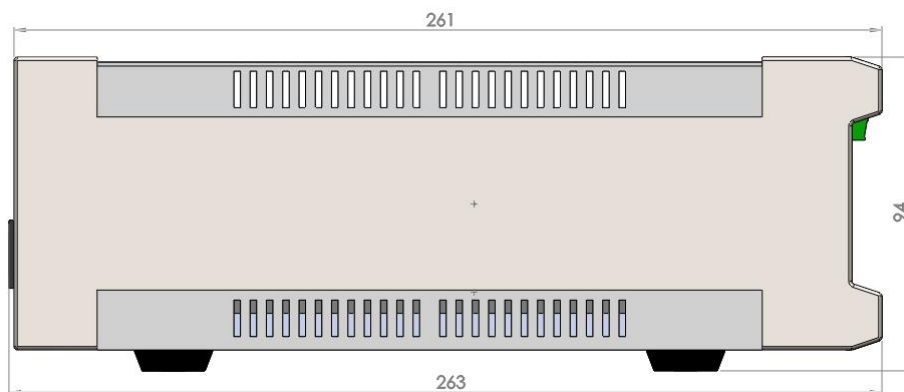
8-3-1 Front View



8-3-2 Rear View

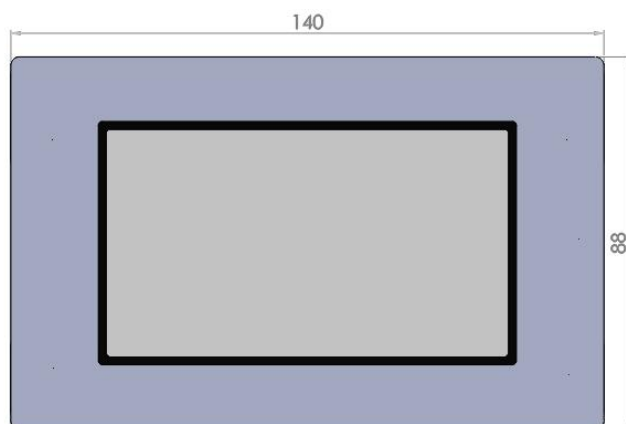


8-3-3 Side View

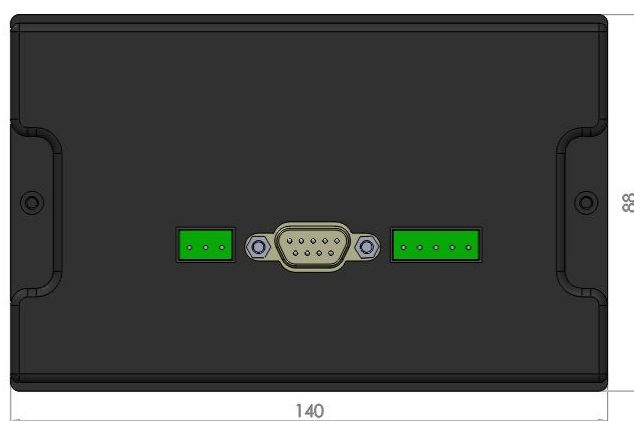


8-4 Touch Pad Dimensions

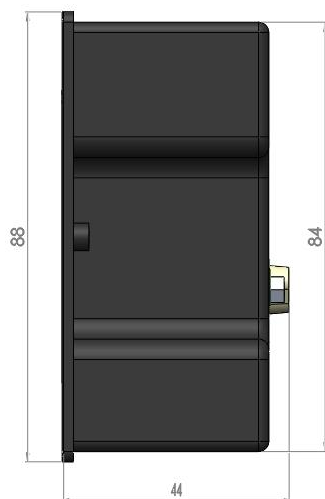
8-4-1 Front View



8-4-2 Rear View

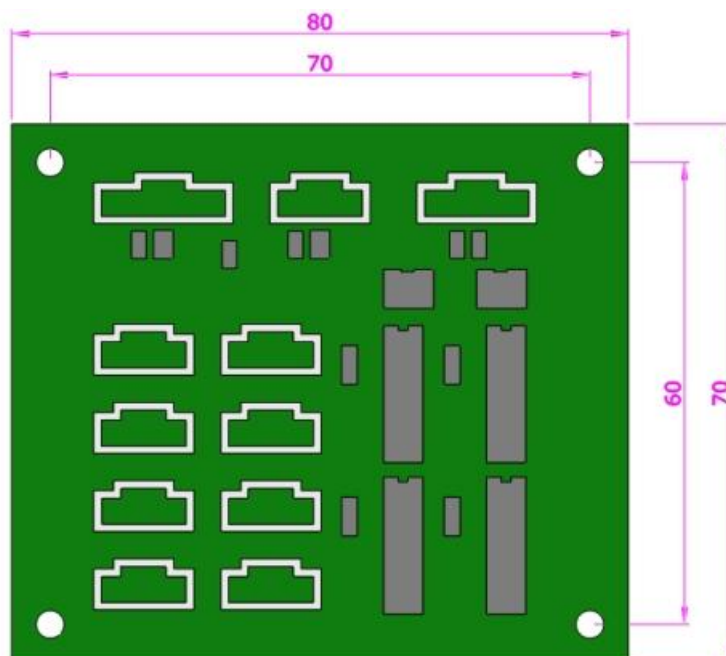


8-4-3 Side View



8-5 Touch Pad Connection Board Dimensions

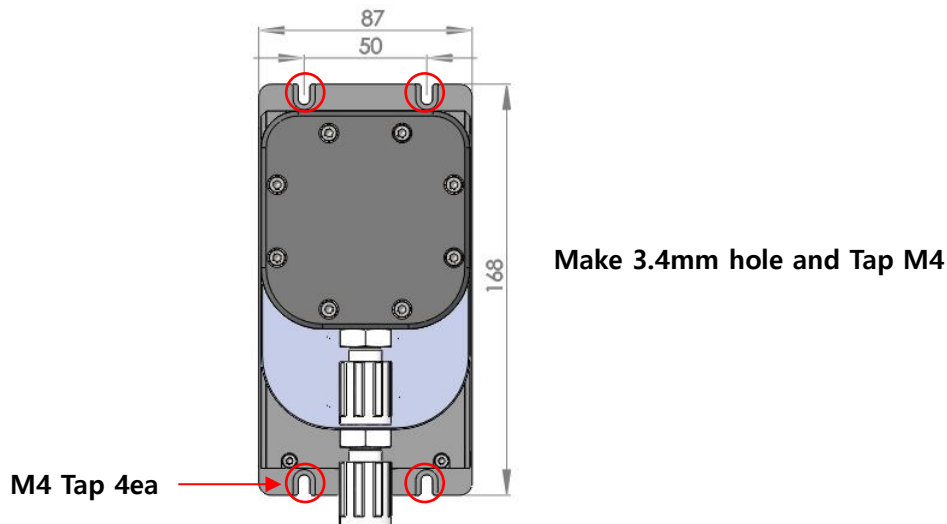
8-5-1 Top View



8-6 Installation Method

8-6-1 Pump Installation Sequence

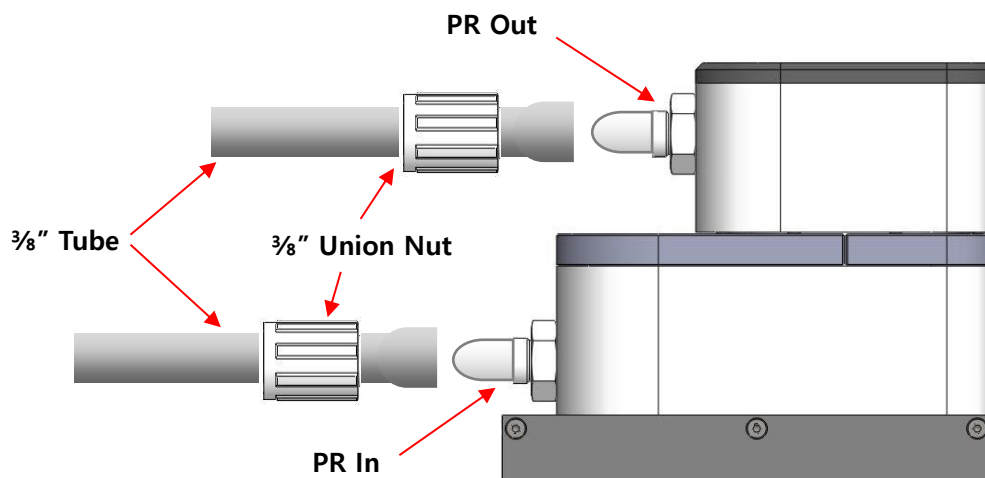
1. Prepare the space for the pump installation.
2. As per the below picture, tighten the panel base plate with 4 pieces of M4 screw.



8-6-2 Piping Method

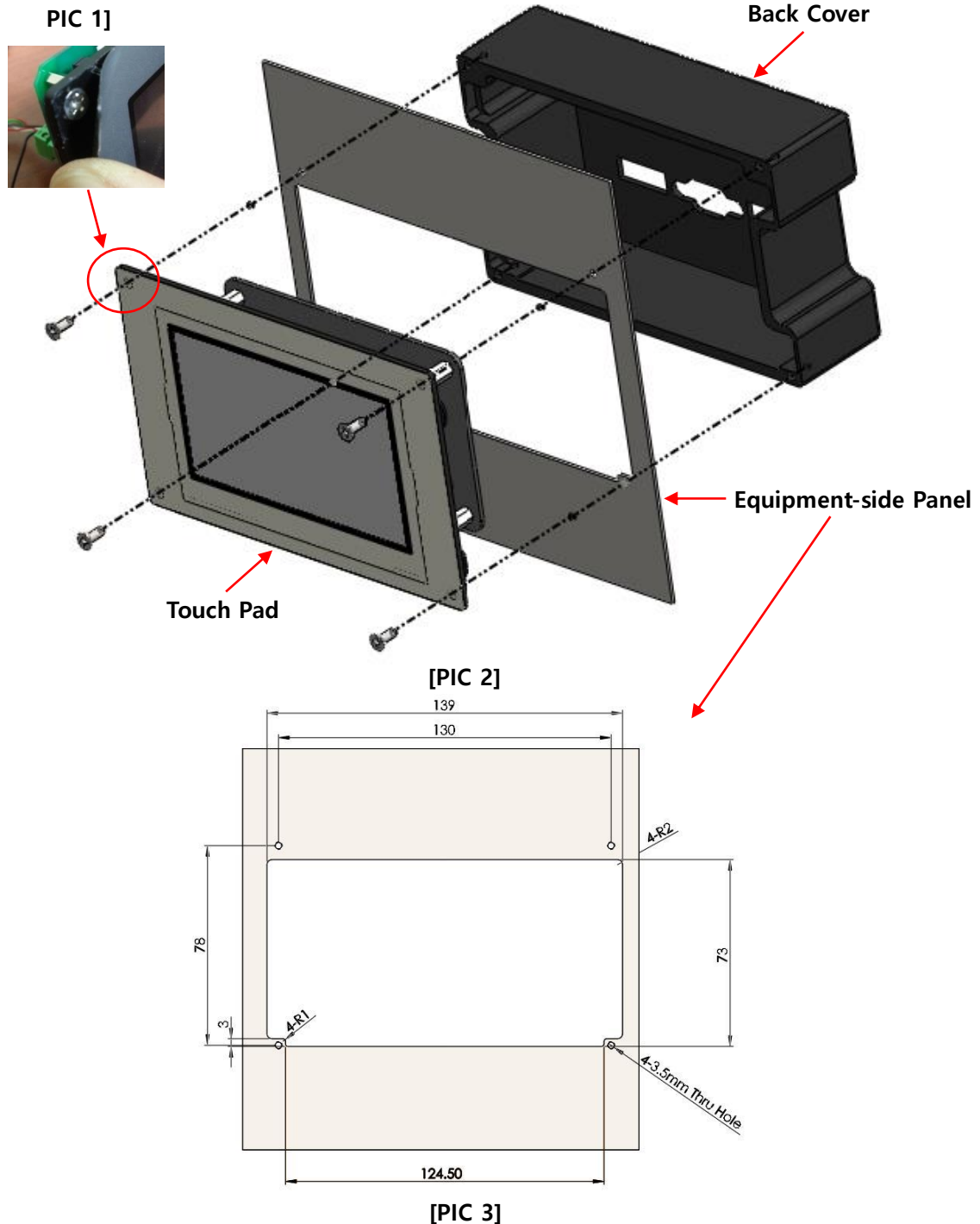
1. PR Tube Piping

- 1) Insert $\frac{3}{8}$ " union nuts on tube at PR In / Out / Vent areas.
- 2) When "PR IN" is connected, the tube length must be less than 1.2meters.
- 3) At the vent area, insert $\frac{3}{8}$ " sleeve into tube after enlarging tube with the tube expansion tool and then tighten nut.



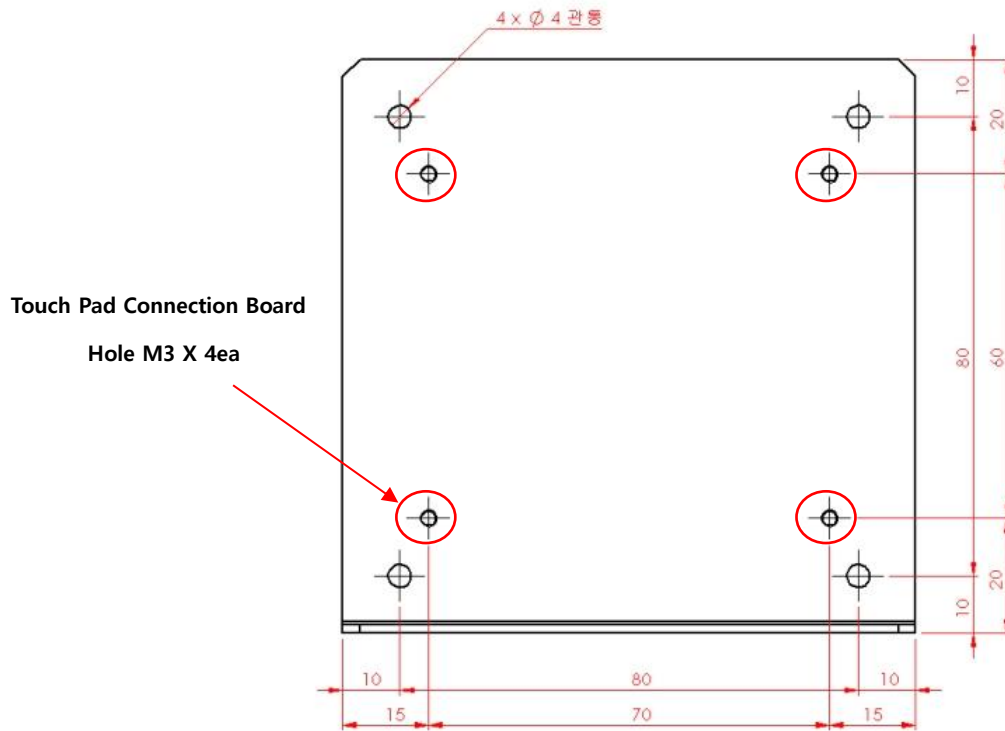
8-6-3 Touch Pad Installation Method

EX)



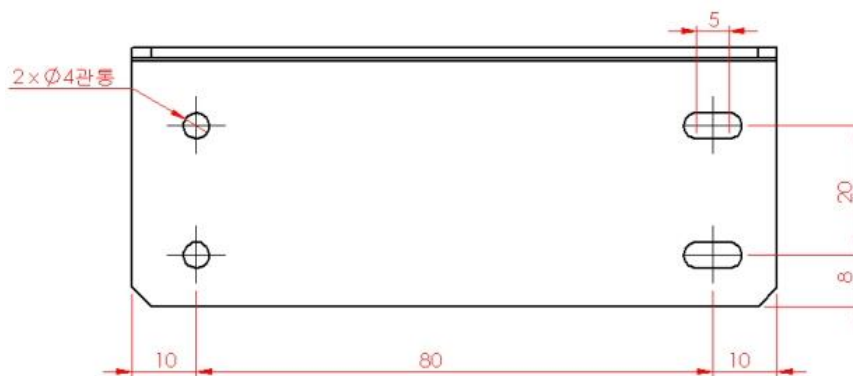
1. As per [PIC 1], peel the sticker a little until the screw is seen. And loose the screw to take the back cover apart.
2. Prepare the panel to make the square hole by matching [PIC 3].
3. As per [PIC 2], install the touch pad on the equipment.
4. The panel type can be changed up to the equipment's position.

8-6-4 Touch Pad Connection Board Bracket Installation Method



[PIC 1]

[INSTALLATION SUGGESTION 1]



[PIC 2]

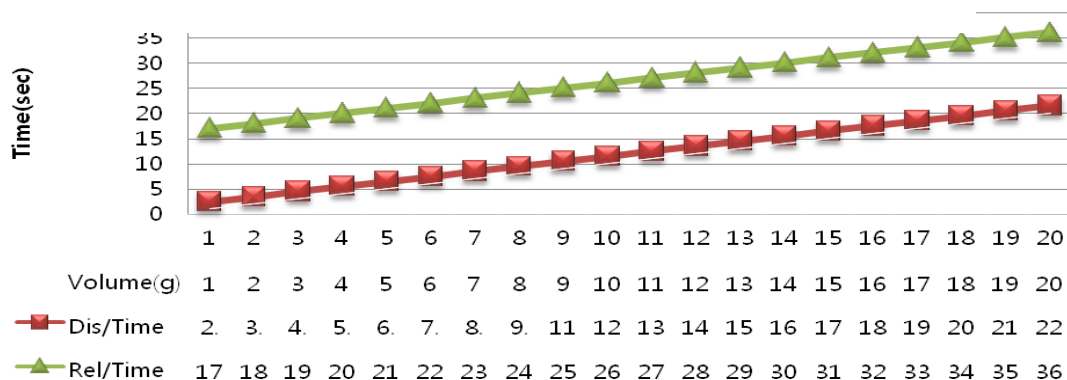
[INSTALLATION SUGGESTION 2]

1. Refer to [PIC 1] / [PIC 2]. Install the bracket on the panel on the equipment.
2. In case the bracket is installed, [PIC 1] or [PIC 2] can be used.

8-6-5 Suggested Recipe Setting Value (PR viscosity: 1,800cP)

Volume (g)	Data Input	Dispense/Time (Sec)	Data Input	Reload/Time (Sec)	Data Input
1	100	2.5	250	17	1700
2	200	3.5	350	18	1800
3	300	4.5	450	19	1900
4	400	5.5	550	20	2000
5	500	6.5	650	21	2100
6	600	7.5	750	22	2200
7	700	8.5	850	23	2300
8	800	9.5	950	24	2400
9	900	10.5	1050	25	2500
10	1000	11.5	1150	26	2600
11	1100	12.5	1250	27	2700
12	1200	13.5	1350	28	2800
13	1300	14.5	1450	29	2900
14	1400	15.5	1550	30	3000
15	1500	16.5	1650	31	3100
16	1600	17.5	1750	32	3200
17	1700	18.5	1850	33	3300
18	1800	19.5	1950	34	3400
19	1900	20.5	2050	35	3500
20	2000	21.5	2150	36	3600

Suggested setting value as per time



※ The above data is based on 1,800cP. It is supposed to be changed upon cP.

8-6-6 Suggested Recipe Setting Value (PR viscosity: 4,000cP)

Volume (g)	Data 입력	Dispense/Time (Sec)	Data 입력	Reload/Time (Sec)	Data 입력
1	100	2.5	250	5	500
2	200	3.5	350	10	1000
3	300	4.5	450	15	1500
4	400	5.5	550	20	2000
5	500	6.5	650	25	2500
6	600	7.5	750	30	3000
7	700	8.5	850	35	3500
8	800	9.5	950	40	4000
9	900	10.5	1050	45	4500
10	1000	11.5	1150	50	5000
11	1100	12.5	1250	60	6000
12	1200	13.5	1350	70	7000
13	1300	14.5	1450	80	8000
14	1400	15.5	1550	90	9000
15	1500	16.5	1650	100	10000
16	1600	17.5	1750	110	11000
17	1700	18.5	1850	120	12000
18	1800	19.5	1950	130	13000
19	1900	20.5	2050	140	14000
20	2000	21.5	2150	150	15000

< THE END >