

COLOR PR PUMP(CIS)

Pump & Controller System

PUMP MANUAL

MODEL : TP-52S

**TALON TECH CO. LTD.**

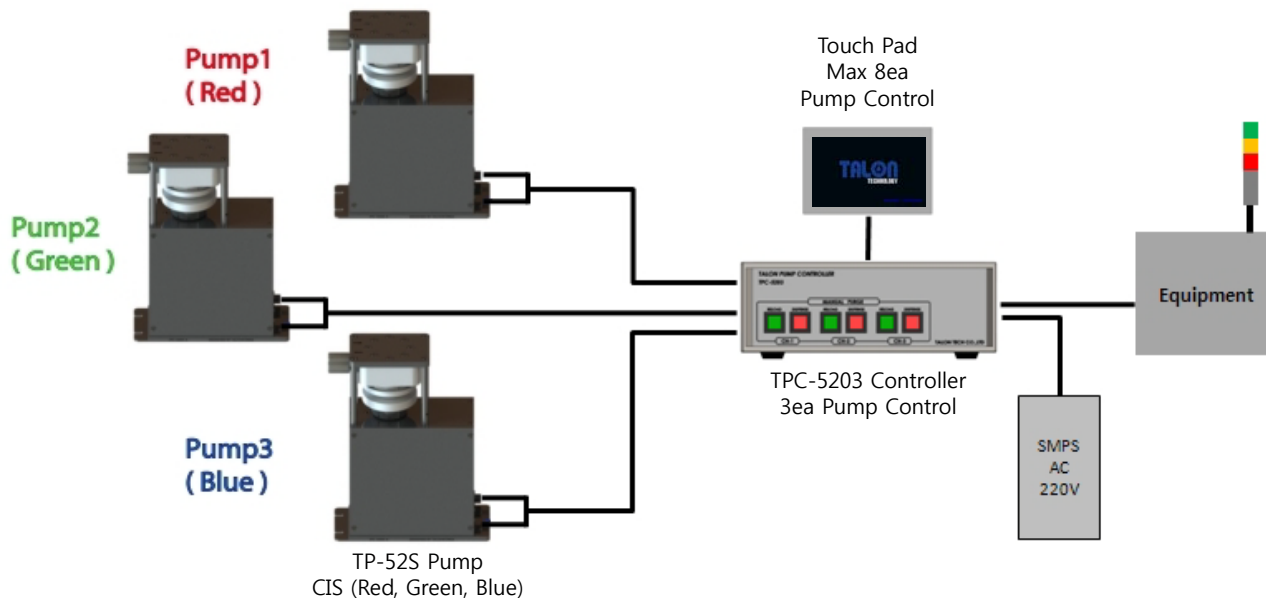
CONTENTS

1. System Configurations.....	1
2. System Specifications.....	2
2-1. Pump [TP-52S].....	2
2-2. Controller [TPC-5203].....	3
2-3. Touch pad.....	3
3. System In/Exterior Names.....	4
3-1. Pump In/Exterior Names.....	4
3-1-1. Pump Name Explanation.....	4
3-2. Controller Exterior Names.....	5
3-2-1. Controller Name Explanation.....	5
3-3. Touch Pad Exterior Names.....	7
3-3-1. Touch Pad Name Explanation.....	7
4. Wiring & Signal Interface.....	8
4-1. Track Interface Signal.....	8
4-2. Track Timing Chart.....	9
4-3. Dispense Trigger Select.....	9
4-4. Pump Cable Pin Assign.....	10
4-5. Touch Pad Cable Pin Assign.....	10
4-6. Track Cable Pin Assign.....	11
5. External Cable Length.....	12
5-1. Pump Cable.....	12
5-2. Track Cable.....	12
5-3. Touch Pad Cable.....	12
6. Touch Pad Operation.....	13
6-1. Operation.....	13
6-1-1. Initial Screen.....	13
6-1-2. Pump Condition Indicate In Use.....	13
6-1-3. Select Function.....	13
6-1-4. Dispense.....	14
6-1-5. Recipe.....	14
6-1-6. Configuration of Pump.....	15
6-1-7. ID Setting.....	15
6-1-8. Maint Mode, Run Mode, Pump Reset Setting.....	17

6-1-9. Calibration.....	17
6-2. Example.....	18
6-2-1. Dispense.....	18
6-2-2. Recipe Setting.....	19
6-2-3. ID Setting.....	20
6-3. Reset on Pump Error.....	21
6-4. Touch Pad Menu Tree.....	22
6-5. Notice.....	22
6-5-1. Dispense Cycle.....	22
6-5-2. Pump ID Setting.....	22
6-5-3. Recipe Setting.....	22
7. Maintenance.....	23
7-1. Pump Parts Dis/Assembly.....	23
7-1-1. Pump Cover Dis/Assembly.....	23
7-1-2. Driving Shaft Condition Check & Grease up on Ball Screw.....	23
7-1-3. Diaphragm Ass'y Dis/Assembly.....	23
8. Recommended Spares/Mechanical Dimensions.....	24
8-1. TP-52S Spare Parts.....	24
8-2. Pump Dimensions.....	25
8-2-1. Front View.....	25
8-2-2. Side View.....	25
8-3. Controller Dimensions.....	26
8-3-1. Front View.....	26
8-3-2. Rear View.....	26
8-3-3. Side View.....	26
8-4. Touch Pad Dimensions.....	27
8-4-1. Front View.....	27
8-4-2. Rear View.....	27
8-4-3. Side View.....	27
8-5. Installation Method.....	28
8-5-1. Pump Installation Sequence.....	28
8-5-2. Piping Method.....	28
8-5-3. Touch Pad Installation Method.....	29

1

System Configurations



TP-52S 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-52S 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 : Simple Diaphragm, Supply Additional Diaphragm
3. Separated controller and touch pad / Touch pad can control up to 8pumps.
4. 7 Recipes can be applied.
5. Compact sized resist pump and controller. (1 Controller covers 3pumps)
6. Save Maintenance Time : Easy to dis/assemble the diaphragm.
7. Useful PR : normal PR & CMOS IMAGE SENSOR (Color PR)

2 System Specifications

2-1 Pump [TP-52S]

ITEM	SPEC	
	TP-52S-07	TP-52S-10
Dispense Volume Range	0.5cc ~ 7.0cc	0.5cc ~ 10.0cc
Dispense Pressure	0.2Mpa (2kgf/cm ²)	0.2Mpa (2kgf/cm ²)
Dispense Volume Resolution	±0.05cc	±0.05cc
Dispense / Reload Rate	0.5cc/sec ~ 4.0cc/sec	0.5cc/sec ~ 4.0cc/sec
Dispense Repeatability	≤±0.05 (2.2cp, 23°C)	≤±0.05 (2.2cp, 23°C)
Viscosity	Max : 1,000cp	Max : 1,000cp
Driver System	DC Servo Motor	DC Servo Motor
Control System Power	Motor Power :DC24V, Home Sensor : DC5V	Motor Power :DC24V, Home Sensor : DC5V
Resist In/Out	¼ Inch Teflon(Parker)	¼ Inch Teflon(Parker)
Ambient Temperature	0 ~ 40°C	0 ~ 40°C
Weight	3.30kg	3.35kg
Pump Dimension	W : 72mm, L : 175mm, H : 230mm	W : 72mm, L : 175mm, H : 239mm

2-2 Controller [TPC-5203]

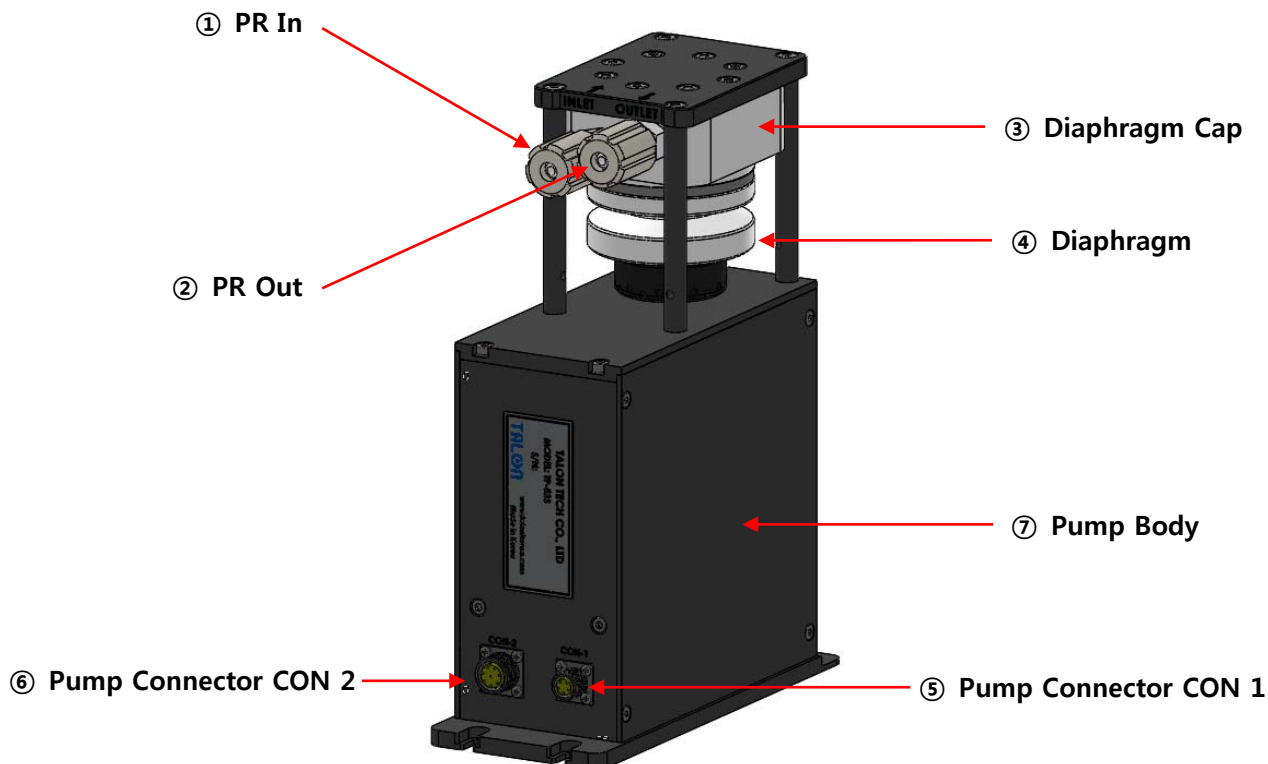
ITEM	SPEC	REMARKS
Electric Power	85VAC ~ 264VAC, 50~60Hz	
Controller Power	DC 24V (current consumption Max 1A)	Panel Use
Drive Pump No.	3 Pumps	
Pump Operation Mode	Fixed Mode	
Main CPU	80c296 (16bit Processor)	
Input Signal	1. Pump Driving Signal From Track M/C- Pump Start Signal.	
Output Signal	1. 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	3.43kg	
Dimension	W : 250mm, D : 261mm, H : 94mm	

2-3 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

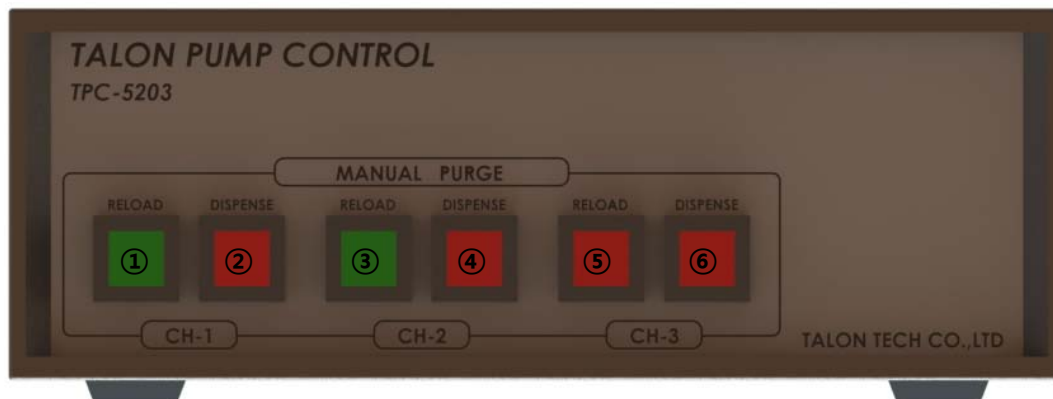
3-1 Pump In/Exterior Names



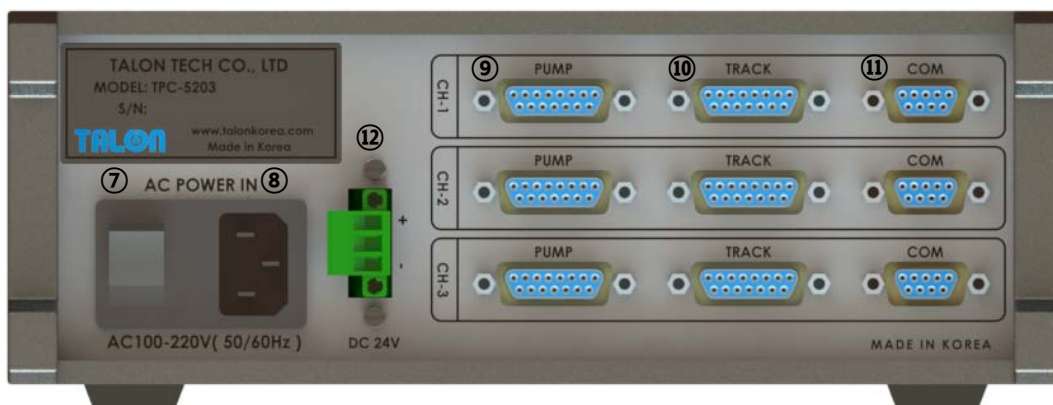
3-1-1 Pump Name Explanation

- ① **PR In(Parker)**
 - Chemical Supply. (1/4 Inch Teflon)
- ② **PR Out(Parker)**
 - Chemical Dispense. (1/4 Inch Teflon)
- ③ **Diaphragm Cap**
 - Container for chemical divided to In/Outlet.
- ④ **Diaphragm**
 - To dispense Chemical
- ⑤ **Pump Connector CON1**
 - CN1(Motor) : Connector for Pump Operation (Round Panel Mount 5P Female)
- ⑥ **Pump Connector CON2**
 - CN2(Track) : Connector for Pump Operation (Round Panel Mount 8P Female)
- ⑦ **Pump Body**
 - Container to include motor, Ball screw, etc.

3-3 Controller Exterior Names



[TPC-5203 Front View]



[TPC-5203 Rear View]

3-3-1 Controller Name Explanation

- ① **CH-1 Reload**
 - CH-1 Reload Operation Condition Indicate LED.
- ② **CH-1 Dispense**
 - CH-1 Dispense Operation Condition Indicate LED
- ③ **CH-2 Reload**
 - CH-2 Reload Operation Condition Indicate LED.
- ④ **CH-2 Dispense**
 - CH-2 Dispense Operation Condition Indicate LED
- ⑤ **CH-3 Reload**
 - CH-3 Reload Operation Condition Indicate LED.

⑥ CH-3 Dispense

- CH-3 Dispense Operation Condition Indicate LED.

⑦ Controller Main S/W

- Main Power Switch to use for Controller.

⑧ Main AC-IN

- AC100~220V (50 / 60Hz) Power Connector.

⑨ CH-1, 2, 3 Pump Connector

- CH-1, 2, 3 Pump Connector. (D-SUB 15P Female)

⑩ CH-1, 2, 3 Track I/O Connector

- CH-1, 2, 3 Track I/O Connector. (D-SUB 15P Female)

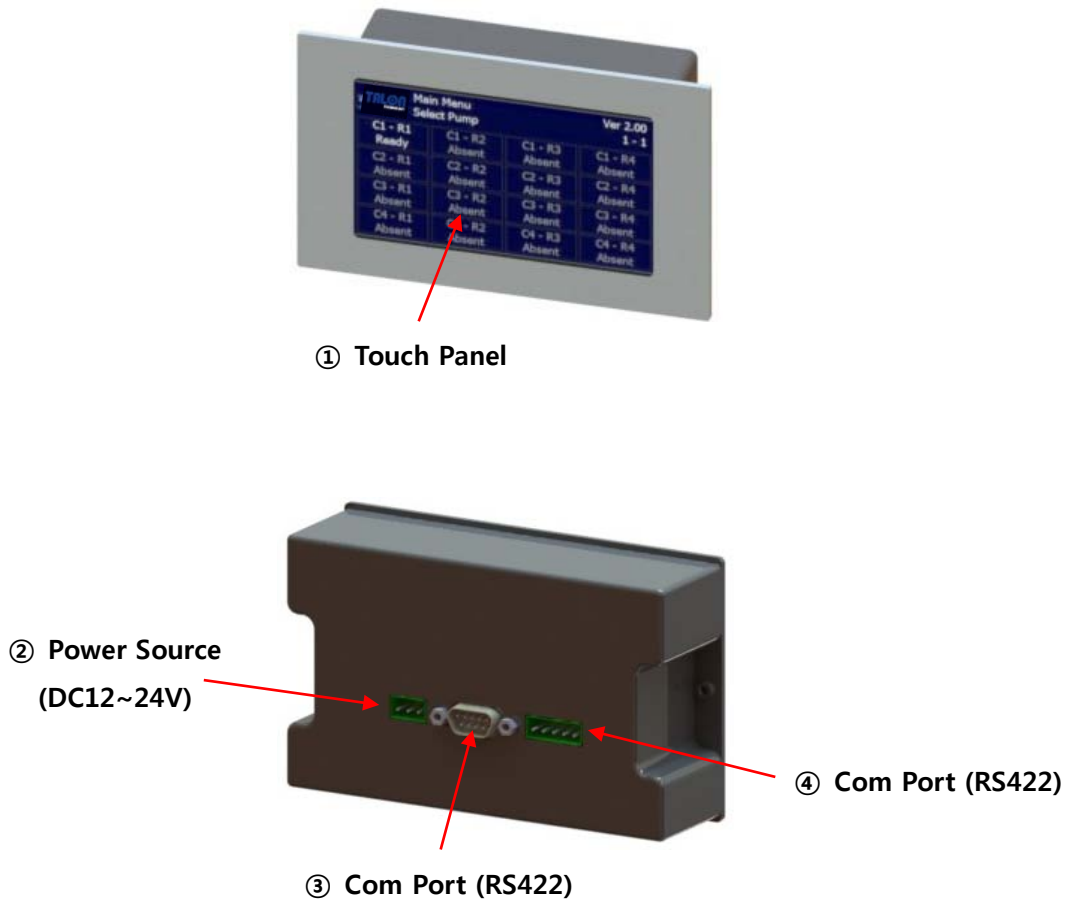
⑪ CH-1, 2, 3 COM Connector

- CH-1, 2, 3 Touch Pad RS-422 Communication Connector. (D-SUB 15P Female)

⑫ DC 24V Connector

- Touch Pad Power Connector.

3-2 Touch Pad Exterior Names

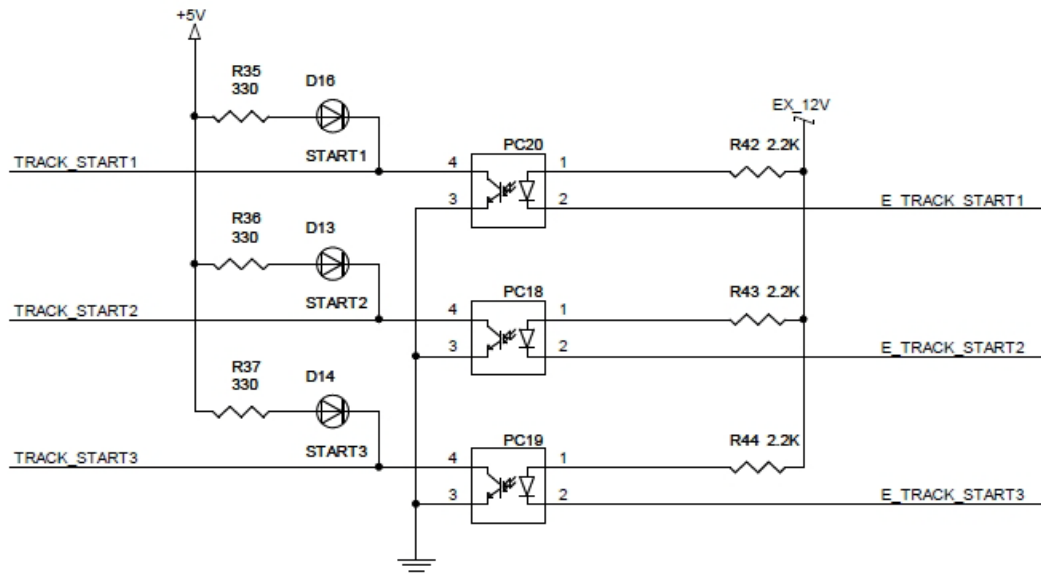


3-2-1 Touch Pad Name Explanation

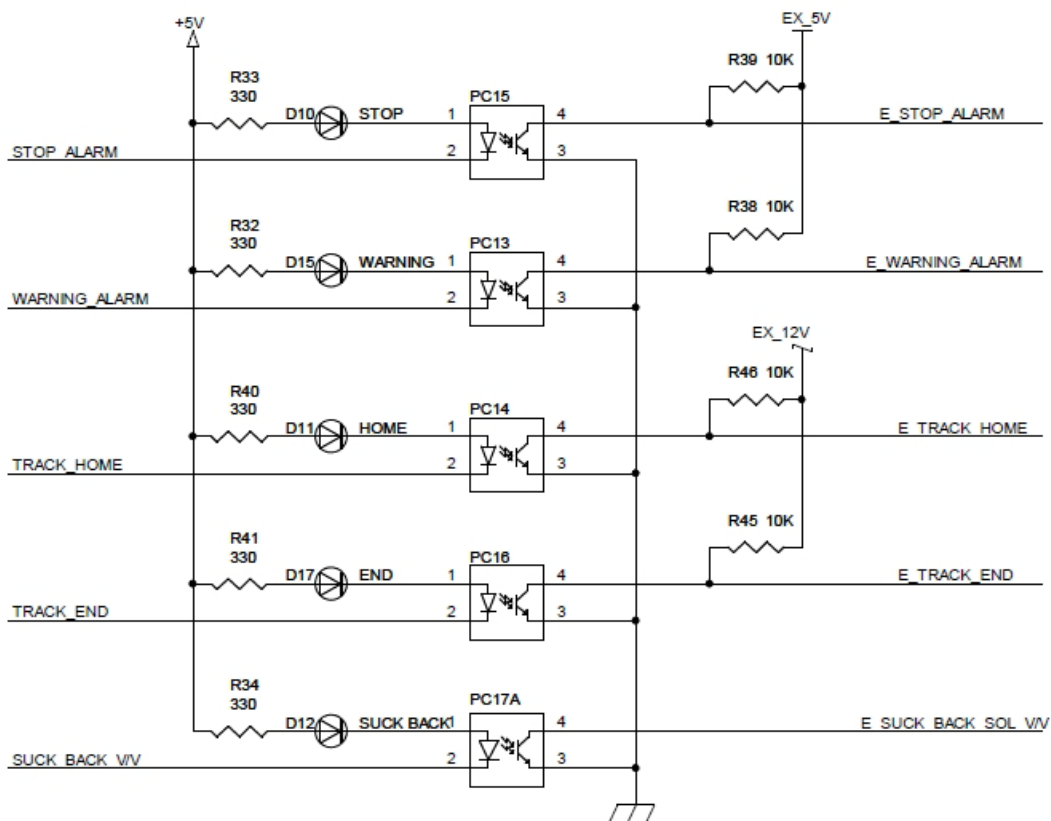
- ① **Touch Panel**
 - Touching area
- ② **Power In**
 - Touch Pad Power DC12~24V Connector.
- ③ **Com Port**
 - Touch Pad RS422 Communication Connector. (D-SUB 9P Male)
- ④ **Com Port**
 - Touch Pad RS422 Communication Connector.

4 Wiring & Signal Interface

4-1 Track Interface Signal

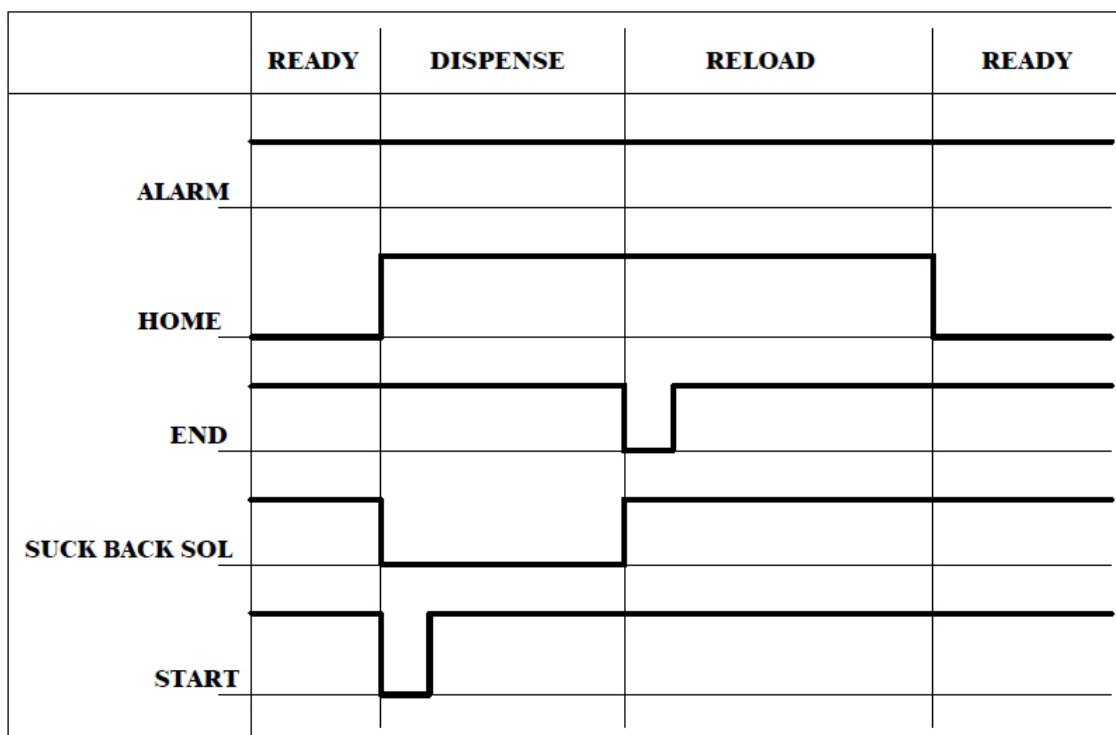


[Input Signal]



[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 Pump Cable Pin Assign

Controller Pin Assign [Male D-SUB 15P]		Pump CON1 / CON2 Pin Assign [Male Round 5P] / [Male Round 8P]	
Pin NO.	Signal Name	Pump CON NO.	Pin NO.
1	CW/CCW +5V	CON1	A
2	CCW -	CON1	B
3	CW -	CON1	C
4	+24V	CON1	D
5	Home Sensor	CON2	F
6	Limits Sensor	CON2	H
7	A Motor Alarm	CON2	A
8	Motor Inposition	CON2	B
9	GND	CON1	E
10	GND	CON2	E
11	Not Use	Not Use	Not Use
12	+24V	CON2	G
13	Not Use	Not Use	Not Use
14	Not Use	Not Use	Not Use
15	Not Use	Not Use	Not Use

4-5 Track Cable Pin Assign

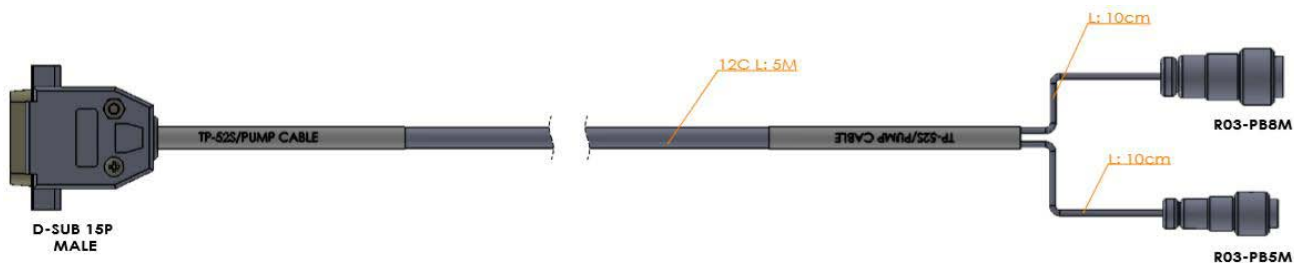
Mark Track Cable Pin Assign [Male D-SUB 15P]			
Pin NO.	Signal Name	I/O	Description
1	Not Use	Not Use	
2	Not Use	Not Use	
3	Not Use	Not Use	
4	Not Use	Not Use	
5	Track Strat1	Input	Start Trigger In
6	Not Use	Not Use	
7	Suck-Back-	Output	Suck-Back Sol Out
8	Not Use	Not Use	
9	Not Use	Not Use	
10	Home	Output	Home/End Signal Out
11	End	Output	Home/End Signal Out
12	Not Use	Not Use	
13	+5V	Output	Home/End Signal In
14	+12V/Suck-Back+	Output	Start Trigger In/Suck-Back Sol Out
15	GND	Input	Home/End Signal In

4-6 Touch Pad Cable Pin Assign

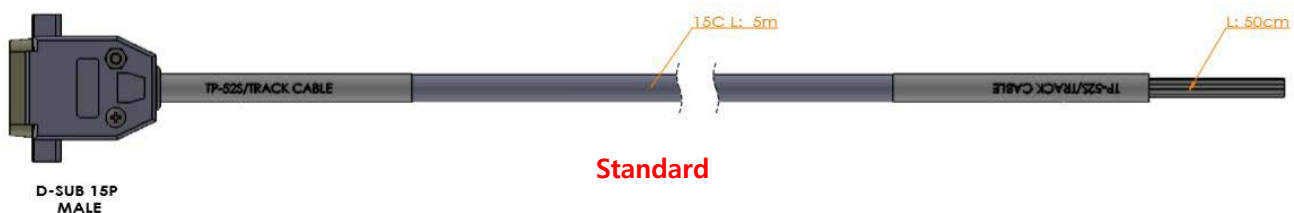
Touch Pad Cable Pin Assign [Male D-SUB 9P]			
Pin NO.	Signal Name	I/O	Description
1	Not Use	Not Use	
2	Not Use	Not Use	
3	Not Use	Not Use	
4	TX+	Output	RS422 Communication Cable
5	TX-	Output	
6	RX+	Input	
7	RX-	Input	
8	Not Use	Not Use	
9	Not Use	Not Use	
Touch Pad Power Cable Pin Assign			
Pin NO.	Signal Name	I/O	Description
1	+24V	Input	Touch Pad Power
3	GND	Input	

5 External Cable Length

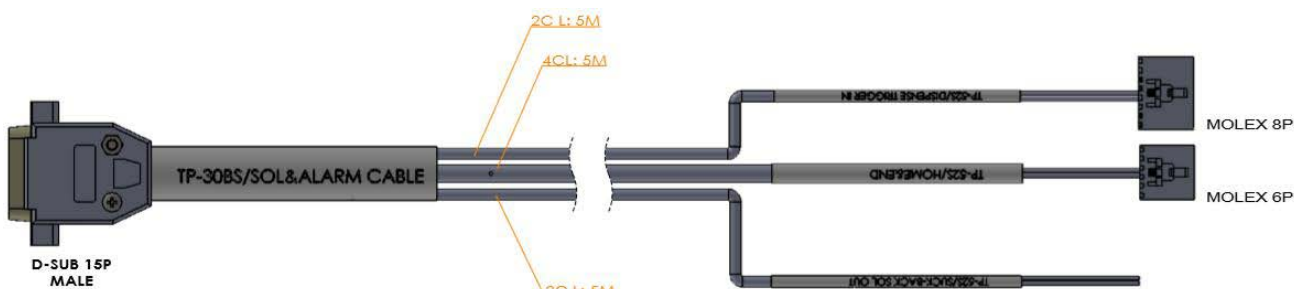
5-1 Pump Cable



5-2 Track Cable

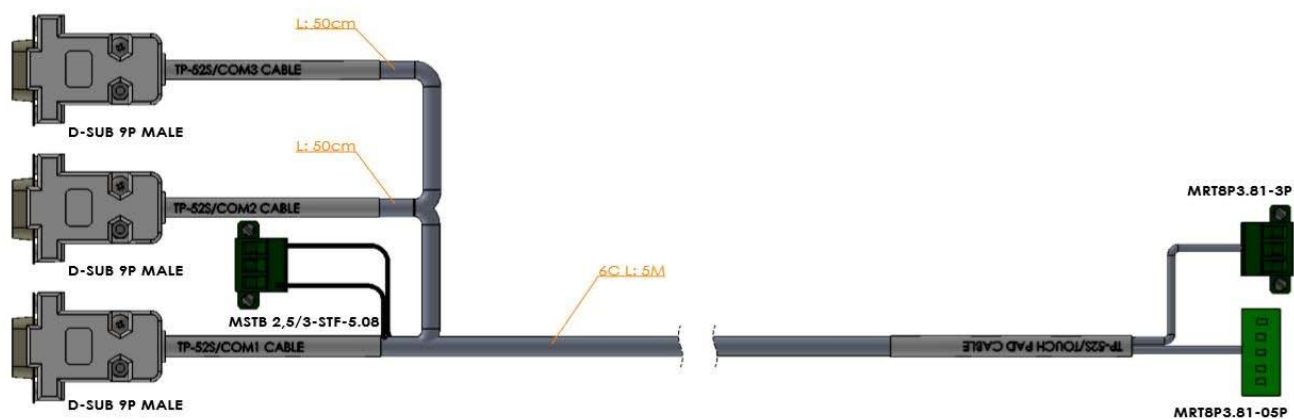


Standard



Mark Type

5-3 Touch Pad Cable



6 Touch Pad Operation

6-1 Operation

6-1-1 Initial Screen

TALON TECHNOLOGY Main Menu Select Pump		TP-52S SK Hynix COT 2-1 Resist 1	
COT 2-1 Resist 1	Ready	COT 2-2 Resist 1	NotUse
COT 2-1 Resist 2	NotUse	COT 2-2 Resist 2	NotUse
COT 2-1 Resist 3	NotUse	COT 2-2 Resist 3	NotUse
COT 2-1 Resist 4	NotUse	COT 2-2 Resist 4	NotUse

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

COT 2-1 Resist 1 Busy	COT 2-1 Resist 1 Ready	COT 2-2 Resist 1 NotUse
Dispense	Ready	Not Connect

6-1-3 Select Function

ESC	Select Function	COT 2-1 Resist 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.
- Purge - Not Use.

6-1-4 Dispense

ESC	Dispense	COT 2-1 Resist 1
Start Run		
Start Cycle	Stop Cycle	

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.

6-1-5 Recipe

ESC	Recipe Setting		<	>
	COT 2-1 Resist 1			
No.	Step :	Disp.	Reload	Count
1	Volume :	100	100	
Set	Time :	100	100	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

ESC		Config Pump		COT 2-1 Resist 1	
RecList		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 |
| Purge Mode | - | Change Pump Mode to Purge |
| Pump Reset | - | Reset Pump. It means Pump Restart, not Data Reset. |
| Error Mark | - | Not Use |

6-1-7 ID Setting

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

ESC		Config Pump		COT 2-1 Resist 1	
RecList		Vital	Error Status		
		11	Set ID		
		Maint Mode	Run Mode		
		Pump Reset	Error Mask		

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

On Config Pump screen, after touching Set ID, Password window is shown and input Password and touch Ent. "Check ID" & "Set ID" windows show up and disappear and the initial is in progress .

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

ESC		Config Pump		COT 2-1 Resist 1	
ReclList		Vital	Error Status		
		11	Set ID		
		Maint Mode	Run Mode		
		Pump Reset	Error Mask		

In case of no response from Pump, the window is shown. If ID is overlapped, 'Conflict' window pops up. After touching 'OK', reset it.

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 inputting password. It goes to the initial screen same as power off and on.

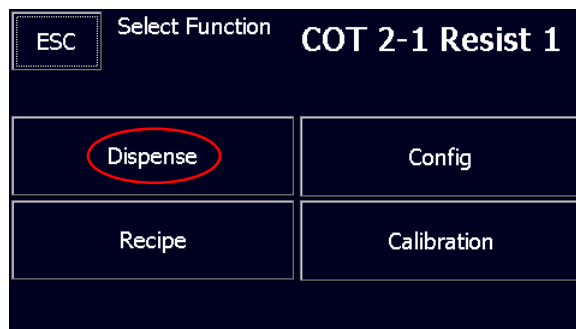
6-1-9 Calibration

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		COT 2-1 Resist 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 Setting

ESC	Select Function	COT 2-1 Resist 1	
Dispense		Config	
Recipe		Calibration	

ESC	Recipe Setting		<	>
COT 2-1 Resist 1				
No.	Step :	Disp.	Reload	Count
1	Volume :	100	100	
Set	Time :	100	100	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		<	>
COT 2-1 Resist 1				
No.	Step :	Disp.	Reload	Count
1	Volume :	100	100	
Set	Time :	100	100	0
Run Recipe No. :		1	Set	

6-2-3 ID Setting

ESC	Select Function	COT 2-1 Resist 1	
Dispense		Config	
Recipe		Calibration	

ESC	Config Pump	COT 2-1 Resist 1	
RecList	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	0	
4	5	6		
7	8	9		

ESC	Config Pump	COT 2-1 Resist 1	
RecList	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		C	
4		5		6		0	
7		8		9			

After exchanging new ID, the pump is automatically initialized.

6-3 Reset on Pump Error

Main Menu Select Pump		TP-52S SK Hynix COT 2-1 Resist 1	
COT 2-1 Resist 1 Ready	COT 2-2 Resist 1 NotUse		
COT 2-1 Resist 2 NotUse	COT 2-2 Resist 2 NotUse		
COT 2-1 Resist 3 NotUse	COT 2-2 Resist 3 NotUse		
COT 2-1 Resist 4 NotUse	COT 2-2 Resist 4 NotUse		

[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		COT 2-1 Resist 1	
Dispense		Config			
Recipe		Calibration			

[PIC 2]

2. Touch Config button on Select Function menu.

ESC		Config Pump		COT 2-1 Resist 1	
Reclst		Vital	Error Status		
		11	Set ID		
		Maint Mode	Run Mode		
		Pump Reset	Error Mask		

[PIC 3]

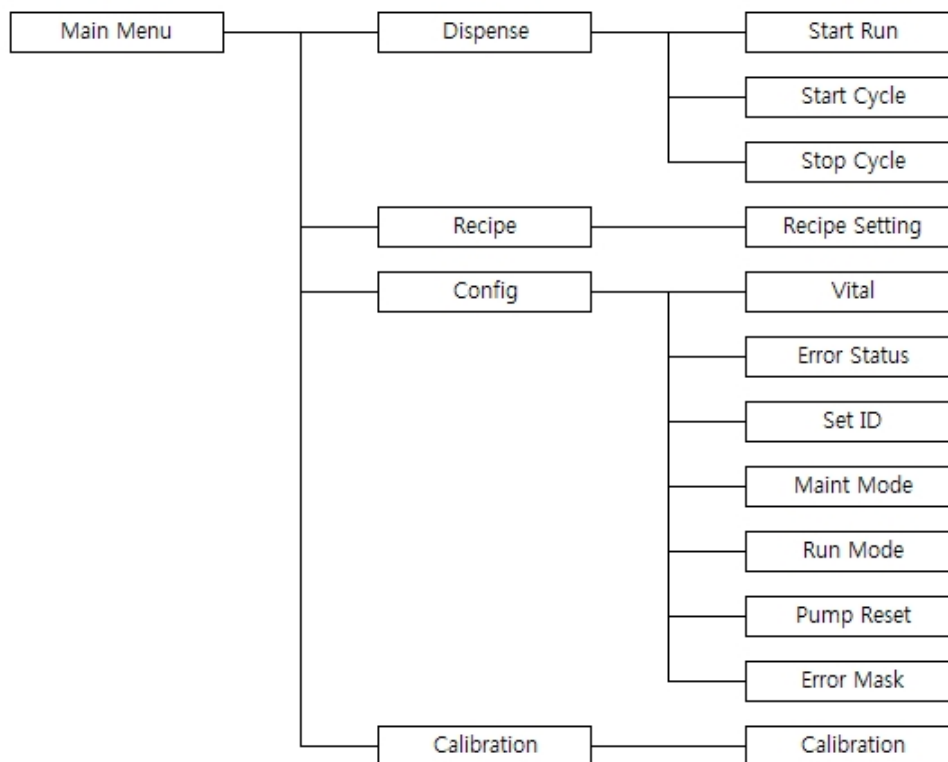
3. Touch OK button "Are you Sure?" window.

- 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 overlap 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

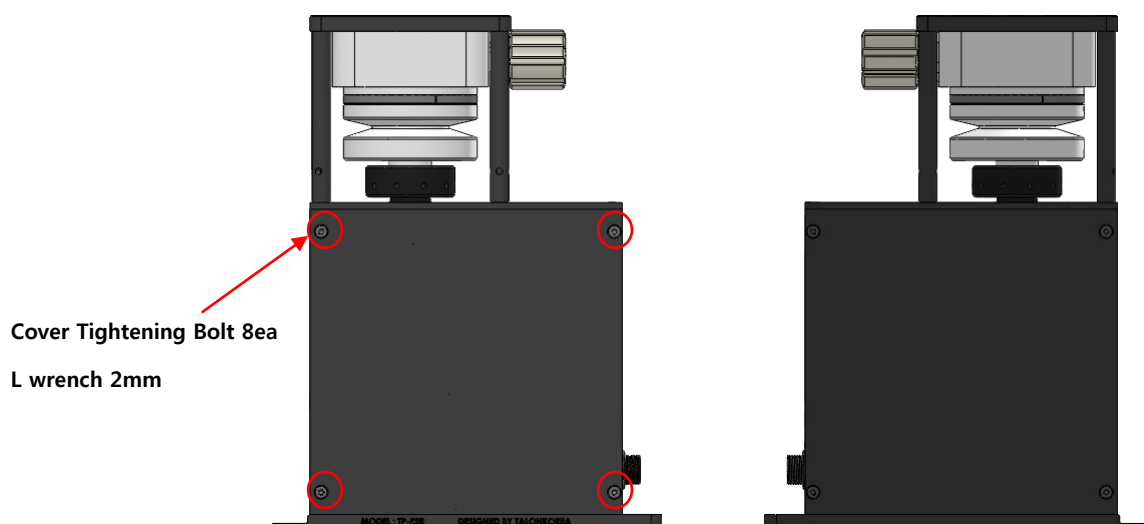
7-1-1 Pump Cover Dis/Assembly

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.



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.

7-1-3 Diaphragm Ass'y Dis/Assembly

Refer to the attached manual for diaphragm dis/assembly.

8

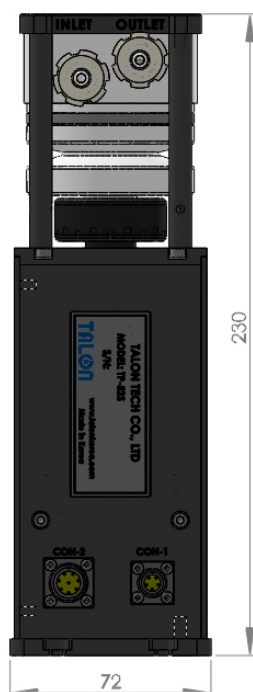
Recommended Spares / Mechanical Dimensions

8-1 TP-52S Spare Parts

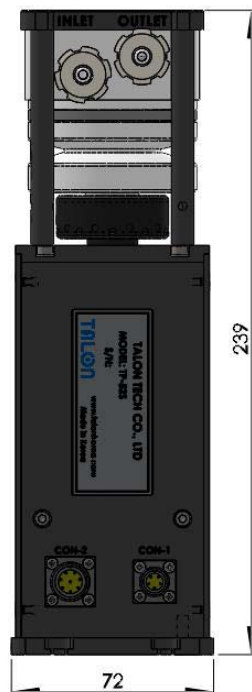
Division	Part NO.	Description	Qty
Pump	TL-52S-TA-001	Diaphragm Cap	1
	TL-52S-TA-002	Blank Cover	2
	TL-52S-TA-003	Inner Nipple	1
	TL-52S-TA-004	Diaphragm (7cc or 10cc)	1
	TL-52S-TA-005	PFA Tube Fitting	2
	TL-52S-TA-006	PFA Nut	2
	TL-52S-MA-001	Ball Screw (7cc)	1
	TL-52S-MA-002	Support Unit	1
	TL-52S-MA-003	Linear Shaft (Straight)	2
	TL-52S-MA-004	Linear Ball Bushing (Straight)	2
	TL-52S-EB-001	DC Servo Motor	1
	TL-52S-EB-002	Encoder	1
	TL-52S-ET-001	O-Ring (028)	1
	TL-52S-ET-002	O-Ring (014)	2
	TL-52S-ET-003	Ball Screw Pulley	1
	TL-52S-ET-004	Motor Pulley	1
	TL-52S-ET-005	Timing Belt	1
	TL-52S-EA-001	Photo Sensor	2
Controller	TL-52S-EB-003	SMPS	1
	TL-52S-EA-002	Push Switch (Red, Green)	6
	TL-52S-EA-003	Fuse (5X20 5A)	1
	TL-52S-EB-004	Controller Main Board Ass'y	3
Ass'y	TL-52S-TA-003	Diaphragm Ass'y	1
Touch Pad	TL-52S-EB-005	Touch Pad Ass'y	1

8-2 Pump Dimensions

8-2-1 Front View

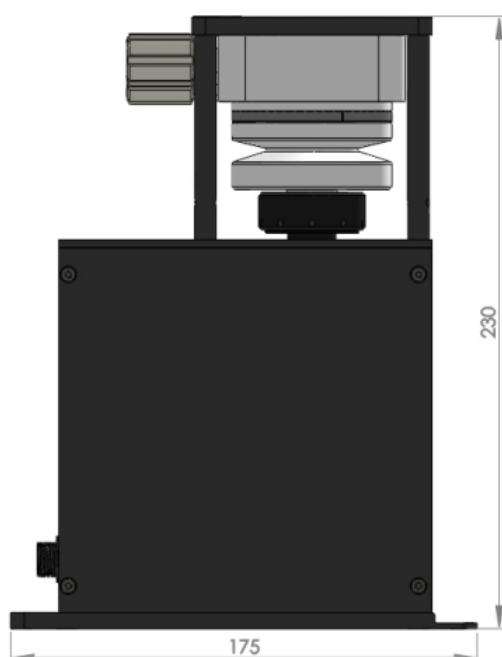


[TP-52S-07]

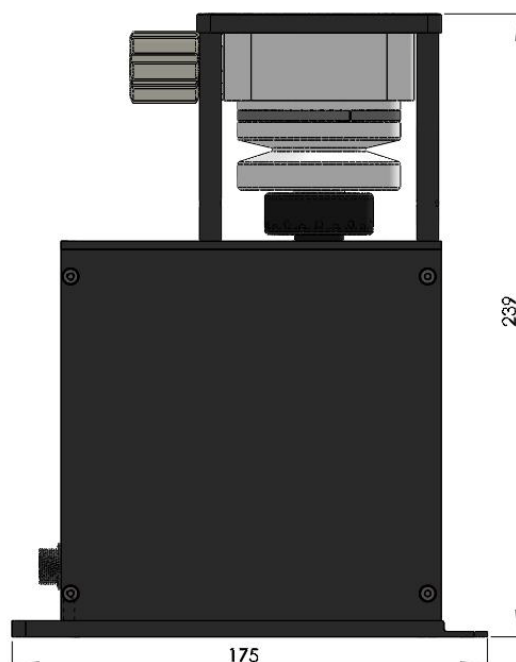


[TP-52S-10]

8-2-2 Side View



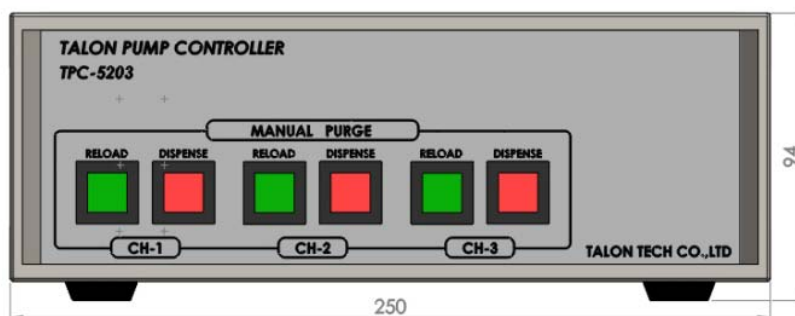
[TP-52S-07]



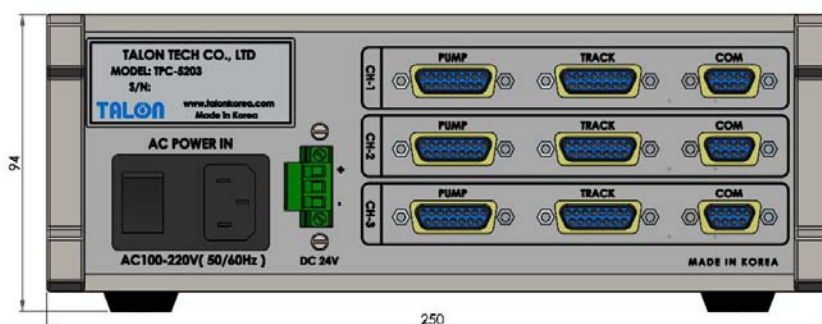
[TP-52S-10]

8-3 Controller Dimensions

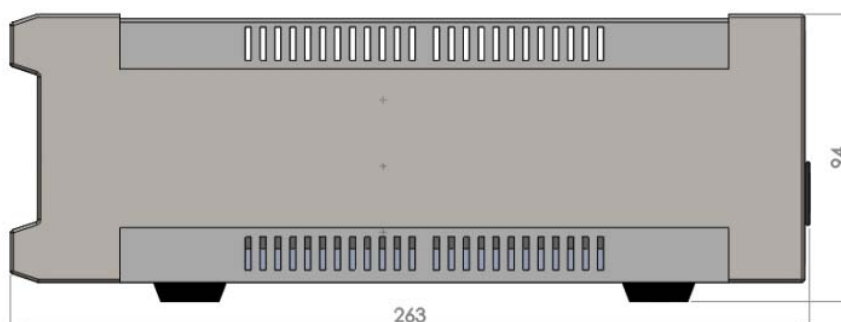
8-3-1 Front View



8-3-2 Rear View

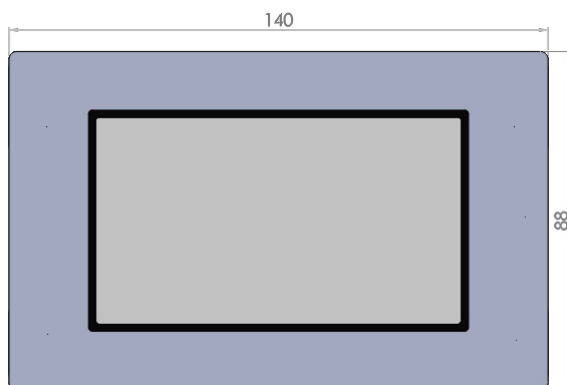


8-3-3 Side View

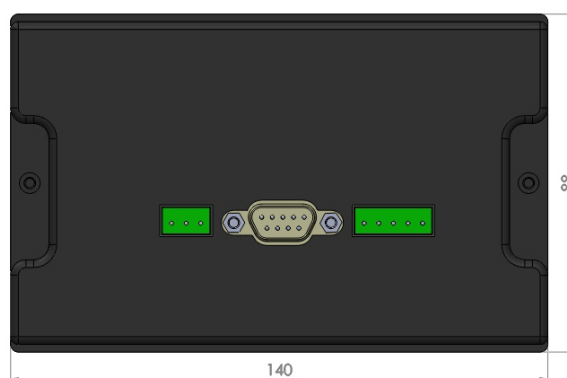


8-4 Touch Pad Dimensions

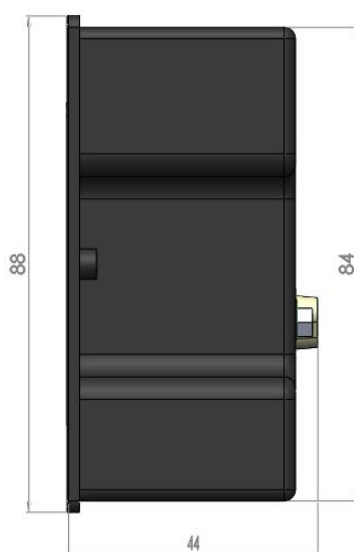
8-4-1 Front View



8-4-2 Rear View



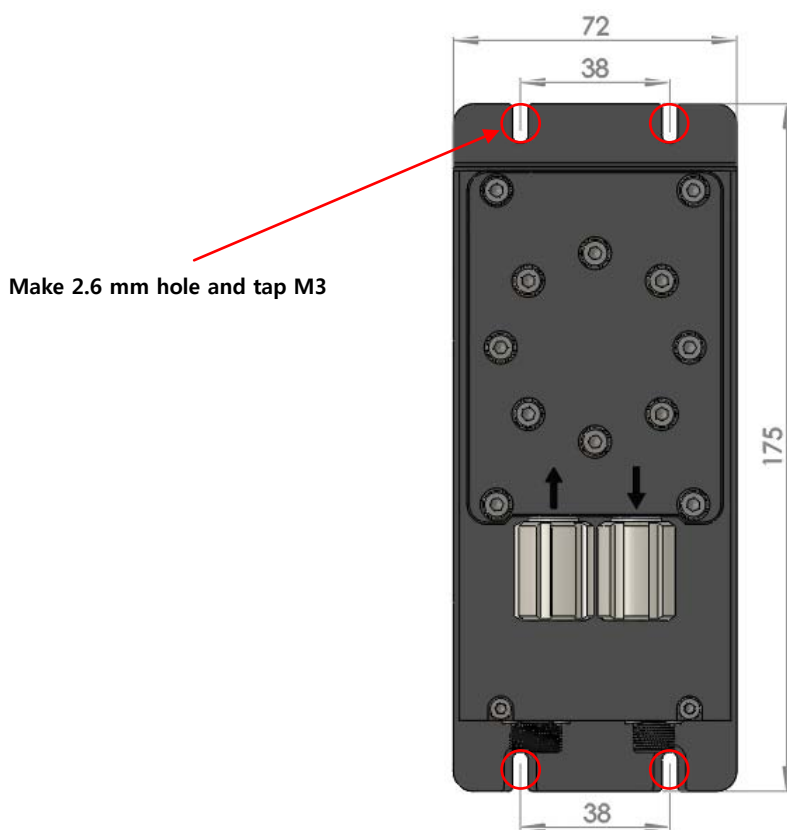
8-4-3 Side View



8-5 Installation Method

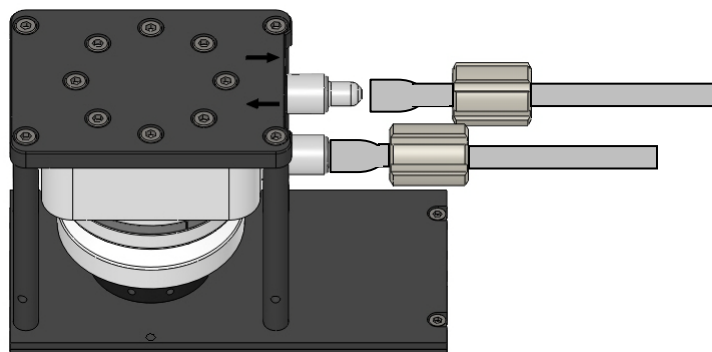
8-5-1 Pump Installation Sequence

1. Prepare the space for the pump installation.
2. Tighten the panel base plate with 4 pieces of M3 screw.



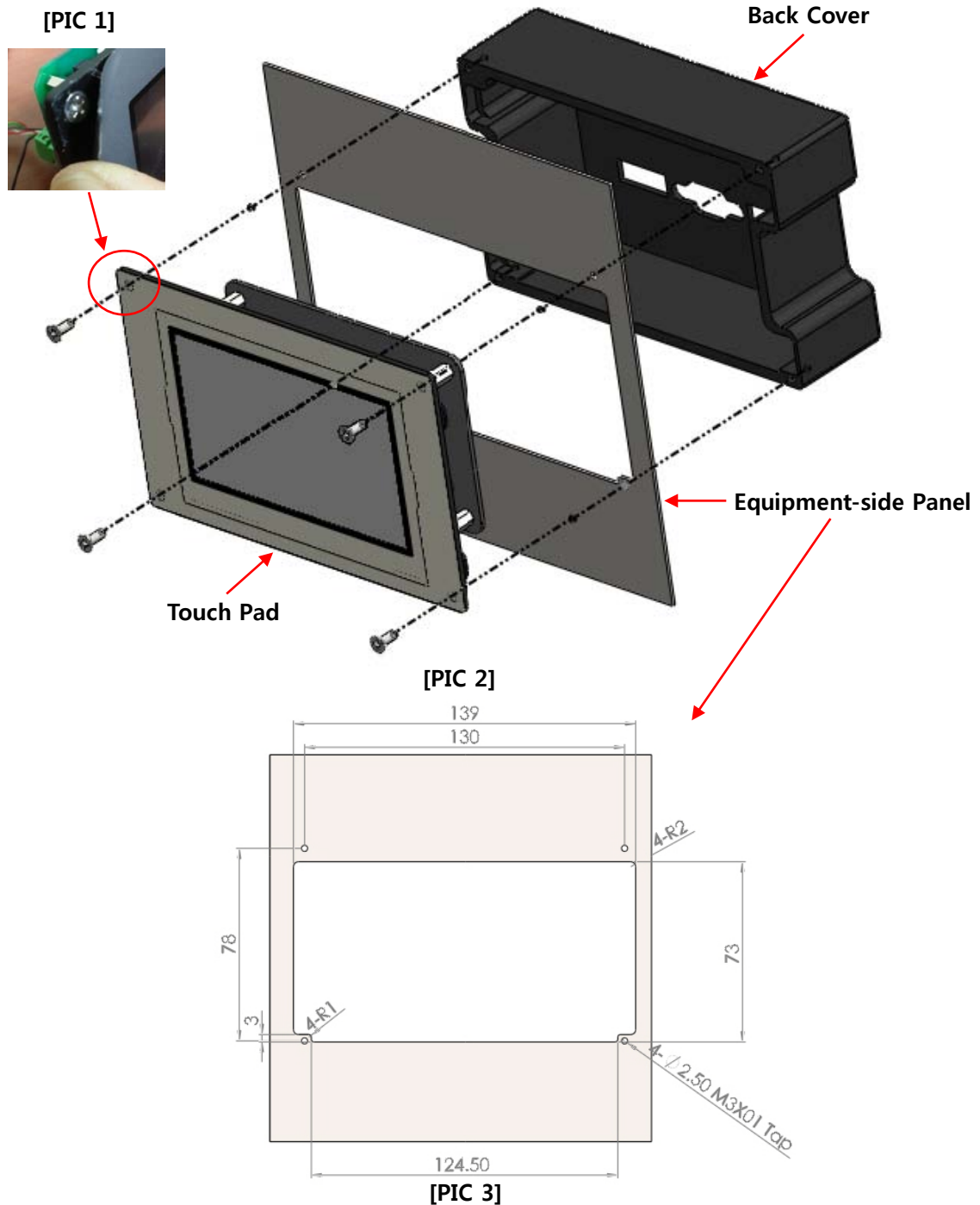
8-5-2 Piping Method

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



8-5-3 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.

<THEN END>