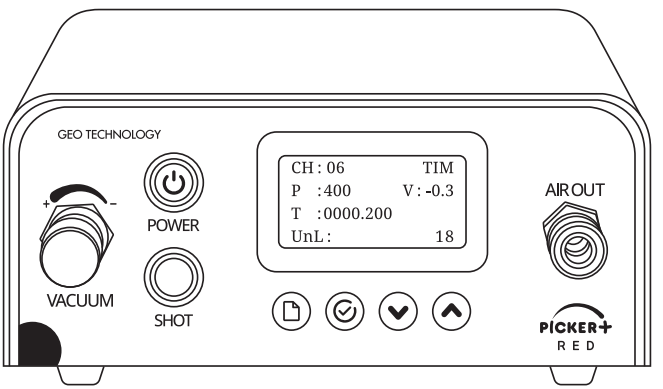
PICKER+®

Picker Plus User Manual

IoT Pneumatic Dispenser



GEO TECHNOLOGY CO.,LTD.


PICKER®

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Ⅰ. Precautions

Be familiar with the safety precautions and operating methods listed below to prevent damage to this product and any other products connected to it, and use it within the scope of the regulations of this product to avoid any dangers.

- Use the power code indicated in the user manual. Use the dedicated electric wire enclosed with this product, check that the power is correct before use, and check that damaged or short circuit before use.
- Keep the product clean and dry, and avoid environments with high humidity or risk of corrosion.
- Do not disassemble the machine personally. It is risk of electric shock. If not so, we are not responsible for the consequences that occur thereafter.
- Since the air source maintains a clean state and there should be no foreign matter and water in the organic matter, it is recommended to attach a filter paper to the air source. In addition, it is recommended to use a separate regulator for the stable supply of compressed air.
- In case of an error, contact our technical sales department. (+82-32-832-5920)

Precautions are divided into two categories: **'WARNING'** and **'CAUTION'**, and the meaning of **'WARNING'** and **'CAUTION'** is as follows.

WARNING: Violation of instructions can result in immediate serious injury or death.

CAUTION: Violation of instructions may cause minor injury or damage to the product.

Ⅱ. Installation

The precision pneumatic dispenser is a device for dispensing fixed quantities of liquid that can be used independently or mounted on equipment used in the manufacturing process of precision machines and advanced products.
It provides stable dispenser through line dispense optimization technology adoption, control of dispense amount equally, dispense environment monitor function, etc. Set the pressure, vacuum, and dispense time to dispense the wanted amount from the connected syringe. This device that maximizes user's convenience through empty syringe detect function, and equipped with manager mode / channel expansion option.

1. Specifications

Item	Picker Plus
Dispenser Type	AIR Pulse Type
Dispensing System	Microcomputer Digital Control System
Display	2.4inch OLED Light Color
Dispense Mode	TIMED / MANUAL Mode
Pressure Range	BLUE: 5~100kPa / RED: 5~500kPa
Time Range	0.010~9999.999sec
Vacuum Range	-20.0~0kPa
Vacuum control system	Standard Needle Plate
Basic Function	Dispense Counter, Repeat Function, Simple Remaining Amount Alarm, Pressure Abnormal, Key Sound On/Off, Dispense Mode (TIMED/MANUAL), Taper Function, Electric Valve Alarm, Channel Copy/Clear, Communication System Settings

Number of Channel		40
Serial Communication		RS232 Port (DSub9 Female)
Power Supply		DC 24V(2A)
Dimension		198 x 85 x 200mm(W x H x D)
Weight		Approximately 2.3kg
External Input / Output Signal (DSub I/O)	**Connector**	DSub25 (Female)
	Input	Photo coupler Input DC24V, 5mA Dispense, Channel Select, Dispense Signal, Maintain select (20msec)
	Output	Electric Valve Alarm, Boot complete, Ready to Dispense of less than 10mA, Ready to Dispense, Residual detection alarm, Photocoupler Open Collector Output DC24V
Air in	**Range**	BLUE: Min.200 ~ Max.300kPa RED: Min.600 ~ Max.700kPa
Environment (Indoor Only)	Temperature: 15~35°C Humidity: 5~75% (No Condensation)	
Preservation Environment	Temperature: 1~60°C Humidity: 30~80% (No Condensation)	

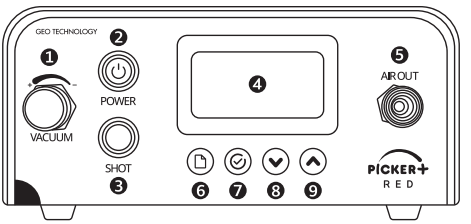
NOTE : Specifications and technical details are subject to change without prior notification

2. Components

No.	ITEM	Quantity
1	Picker Plus Body	1set
2	Power Cable	1ea
3	Silencer	1ea
4	User Manual	1ea

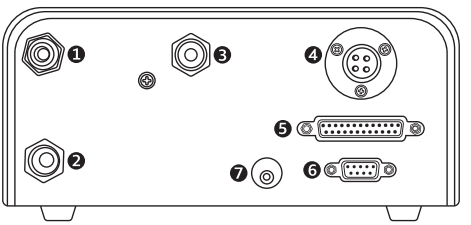
3. Features

Frontside



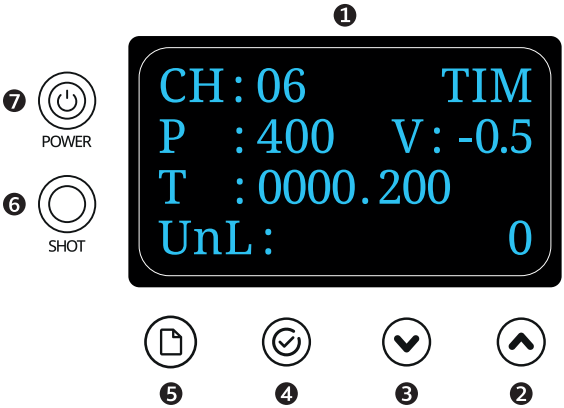
1. Vacuum Dial
2. Power Key
3. Shot Key
4. Screen
5. Air Out
6. Mode Key
7. Select Key
8. Decrease Key
9. Increase Key

Backside



1. Air In
2. Exhaust 1
3. Exhaust 2
4. 4P I/O Connector
5. DSub25 Connector
6. RS232 Connector
7. Power

4. Display and Switches



❶ **Screen**
- Display parameters for user settings configured with 5 screens (SHOT, REPEAT, AUX, TAPER, UTILITY)
- Display Error/Warning Message
- Shading the selection menu
- Display other Information

❷ **Increase Key** — Specified Value Increase or YES/NO Move

❸ **Decrease Key** — Specified Value Decrease or YES/NO Move

❹ **Select Key** — Select Item or YES/NO

❺ **Mode Key** — Change Screen

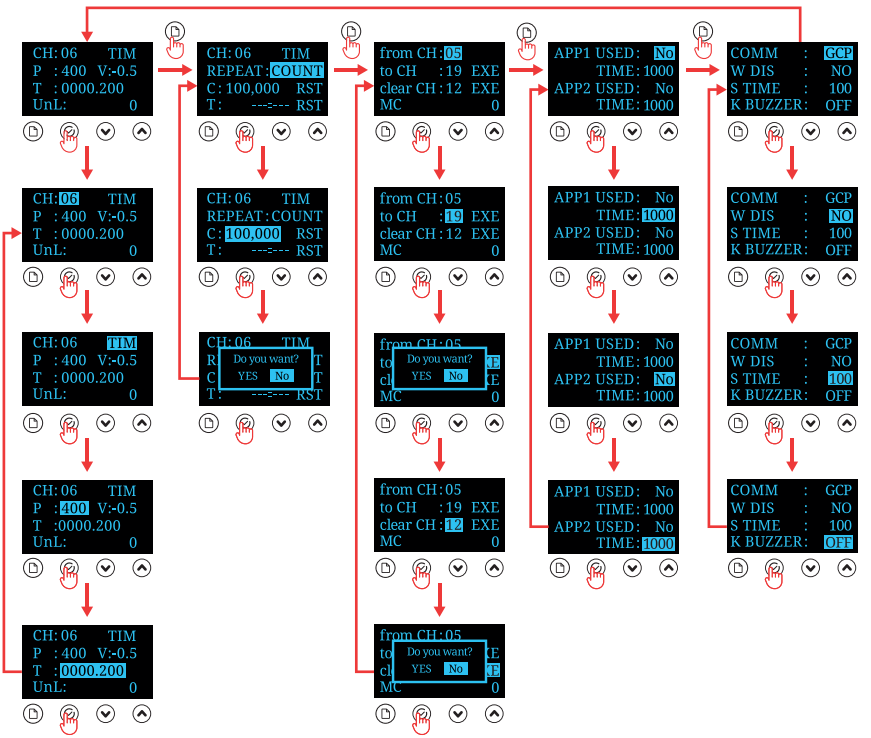
❻ **SHOT Key** — Execution 1 Shot

❼ **Power Key** — Power On/Off

5. Menu

(1) Tree

The flow of the screen and menu is as allows.
(Except Administrator Mode Screen)



(2) Parameter and initial values

Screen name	Menu	Meaning	Unit	Input Range	Initial Value
SHOT	CH	Setting Channel	—	1~40	1
	TIM	TIMED/MANUAL	—	TIM(ED)/MAN(AUL)	TIMED
	P	Dispense Pressure	kPa	5~500	400
	V	Vacuum Pressure	kPa	-20~0.0	—
	T	Dispense Time	sec	0.010~9999.999	0.200
	CNT	Dispense Count	—	NUM Monitor	—
REPEAT	CH, TIM	Display Channel/Mode	—	CH/TIM Monitor	—
	REPEAT	Repeat Type	—	UnLMT-C/UnLMT-T/ COUNT/TIME	UnLMT -C
	C	Set Repeat Counter	count	0~99,999,999	10,000
	RST	Reset Repeat Counter Present Value	—	Yes/No	No
	T	Set Repeat Time	min	1~1000:00	10:00
	RST	Reset Repeat Time Present Value	—	Yes/No	No
AUX	From CH	Channel	—	1~40	14
	To CH	Destination Channel	—	1~40	15
	EXE	Copy	—	Yes/No	—
	Clear CH	Channel to initialization	—	1~40	14
	EXE	Execute Channel initialization	—	Yes/No	—
TAPER	M/C	Machine Counter Value	count	NUM Monitor	—
	Used	APP1 Application	—	Yes/No	No
	T	Taper Time	msec	1~9999	1,000
	Used	APP2 Application	—	Yes/No	No
	T	Taper Time	msec	1~9999	1,000
UTILITY	COMM	Select Comm Type	—	GCP/DIO/MOD	GCP
	W DIS	Warning Display	—	Yes/No	Yes
	S TIME	Taper Sampling Time	msec	1~9999	100
	K BUZZER	Key Buzzer On/Off	—	Yes/No	Yes

6. Function List

No	Name	Functional Descriptions
1	Setting Channel	Use Channels to Manage Dispense Data
2	Save Time/Pressure by Channel	Dispense Time/Pressure Save by Channels
3	Setting Mode	Set TIMED / MANUAL Mode
4	Setting Repeat Data	Save Repeat Data Values
5	Setting Repeat Type	Set Repeat Type (Count/Time)
6	Setting Repeat Count	Set Repeat Count
7	Reset Repeat Counter	Reset Repeat Counter (Current Counter 0)
8	Setting Repeat Time	Set Repeat Time
9	Reset Repeat Timer	Reset Repeat Timer (Current Timer 0)
10	Copy Channel	Copy Function Between Channels
11	Clear Channel	Initialize the Specified Channels
12	Warning Clear	SOL Check Linkage Function
13	Vacuum Monitor	Display Vacuum Value
14	Alarm Monitor	Display Alarm
15	SOL Counter Monitor	Solenoid Counter Display/Management
16	Key BUZZER	Key Buzzer Sound On/Off
17	Save User Data	Backup Data for Dispense Data (Channel)
18	*GCP Communication	GEO Technology's Protocol
19	DIO Communication	DIO Map Protocol
20	@ModBus Communication	Modbus Protocol
21	1 Shot Function	Execute Dispense by SHOT Key
22	Taper1 Function	Taper Function by Start/End Position
23	Taper2 Function	Taper Function by Channel
24	Empty syringe detect function	Low Sample Alarm Function
25	@Channel Expansion	Add-on External Memory
26	Simple DIO Communication	Simple DIO (4Pin Circular)
27	Administrator	Administrator settings

***Add Extra Manual @Option Function**

Ⅲ. Operation

1. Preparation

① Connect the air supply source to the 'AIR IN' Connector at the backside of the equipment to supply air to the equipment.

② Connect the syringe of the desired size and the adapter tube to the dispense connector on the backside of the equipment.

③ Connect the dispense interlocking device such as a robot to the 4p connector on the backside of the equipment.

④ After connecting the power cord to the AC power at the backside, turn it on by pressing the front ON/OFF switch.

(!) **WARNING :** You must connect to the set power codes and connectors. Failure to do so will result in product damage.

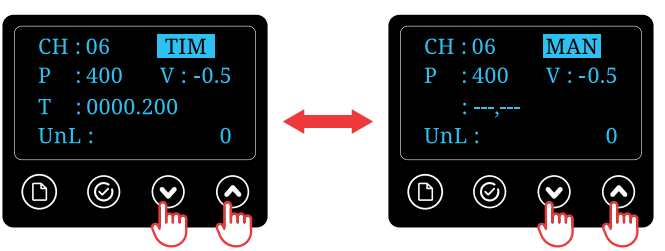
2. Dispense Mode

① TIMED Mode

It is a mode that dispensed as much as you set for time (1000msec=1sec) by pressing the shot key. Set the TIMED/MANUAL on the screen to be displayed as "TIM" and then dispense.

② MANUAL Mode

It is a mode that continuously dispense while pressing the shot key. Set the TIMED/MANUAL on the screen to be displayed as "MAN" and then dispense



3. Dispense Operation

① If you move to the desired Menu on the display, it is marked by shaded display.

② Select the desired channel (1~40)

③ Move to the mode part through the selection key and select the TIMED or MANUAL mode for the operating mode.

④ Input the dispense pressure and dispense time according to the desired dispense amount.
(In MAN mode, when dispensing, the dispense time (T) displays the elapsed dispense time at the position of the Menu)

⑤ Adjust the VACUUM value to the desired vacuum pressure.

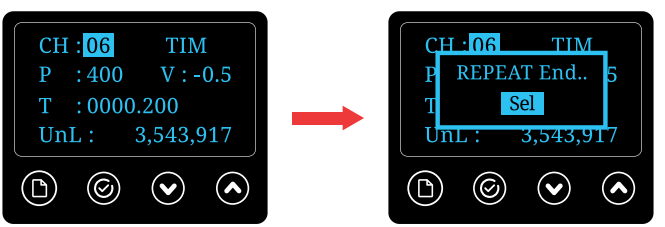
⑥ Press the SHOT key to check the dispense amount.

⑦ Repeat ④~⑥ until the desired dispense amount is ready.

⑧ Set the number of repeats on the repeat screen and view the count.

4. Dispense Time

① When the setting counter or time is completed, “REPEAT End..” is displayed and a buzzer sounds. When the selection key is pressed, the buzzer sound is muted and the dispensing is terminated.
(However, only one channel can be operated)



② Depending on the repetition type selection,
the decision to terminate the dispense operation is as follows

Menu	Display	Meaning
UnLimit - Count	UnLMT-C	Infinite Count
UnLimit - Time	UnLMT-T	Infinite Time
Count	Count	Stop after running up to the set count value
Time	Time	Stop after running up to the set time value

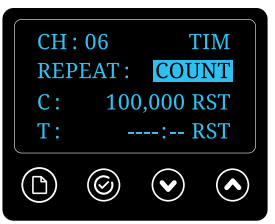
③ Counter/Time Start Point: Starts the counter from the time the RESET of the selected channel is run.

⚠ **CAUTION :** Dispensing is performed only when the SHOT screen is displayed.
The main data used by the dispenser when operating or dispensing is not lost even when the power is turned OFF.
When the product is shipped, the menu value for each screen is set to the initial value before shipment

5. User settings Parameters

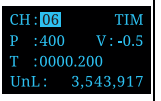
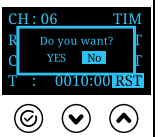
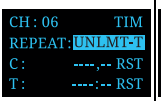
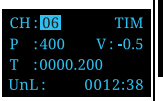
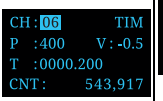
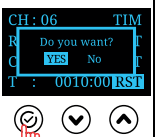
(1) Repeat Screen

First, set the repeat stop method by setting the REPEAT menu.
If the REPEAT menu is set to COUNT, it is based on the number of dispenses, and if it is set to TIME, repetition and display are set based on the dispense time.
UnLMT is set to No limited for infinite repetition.
Repeat (RST) reset is a function to set the repeat value (COUNT or TIME) of the setting channel to 0, and the initial value is 10,000 (cts) for COUNT and 10:00 (600 min) for TIME.



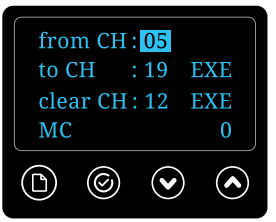
When “RST” function is performed, the current counter value of the channel is set to 0.

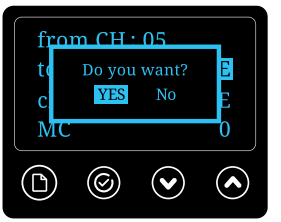
Depending on the repetition condition setting,
the screen display changes as shown below.

Screen Name	Setting Menu	AUX Screen	Operation Screen	Reset Method	After Select YES
REPEAT	UnLimit COUNT (UnLMT-C)				The setting value remains the same, and the current value is set to 0
	UnLimit TIME (UnLMT-T)				
	COUNT				
	TIME				

(2) Auxiliary Screen

The channel copy function refers to the function of copying the pressure setting and time setting values of the copy target channel (from CH)and inputting them to the setting channel (to CH). The channel clear function is to set the value of the set channel to the default value. Execution (EXE) function determines whether copy and clear functions are executed.



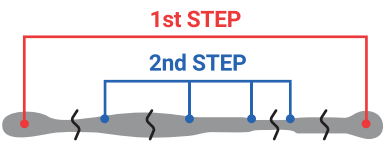


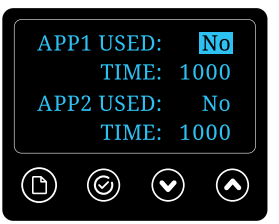
⚠ **CAUTION :** Channels in operation cannot be cleared.

(3) Taper Function

It is a dispensing rate control function that controls rapid changes smoothly in dispensing volume due to pressure changes.
In the first step, it is possible to designate the dispense start and end point.
In the second stage, channels and channels or pressure and pressure change points are possible. For application, select YES or NO in step-by-step application selection.
TIME refers to the application time of the application algorithm,
the unit is msec, and only Line dispense is applicable

① Taper Function applicable target





1st STEP : Dispense Start and End points
2nd STEP : Channel and channel or pressure and pressure change location.

② Application (YES/NO): Step-by-step application selection (YES/NO)

③ T(Time): Algorithm Application Time
UNIT: msec (Appropriate time measurement according to actual Regulator change)
Line (MANUAL Mode) dispense applicable only.

(4) Utility Screen

Utility settings can be divided into the following tables

Screen name	Menu	Meaning	Unit	Input Range
UTILITY	COMM	Select Communication Type	—	GCP/DIO/MOD
	W DIS	How to Display Errors	—	YES/NO
	S TIME	Sampling of Taper Function	msec	1~9,999
	K BUZZER	Key Buzzer Sound On/Off	—	YES/NO

① COMM(Communication Type)

- GCP(GEO Communication Protocol): Set the upper system and dispense data using the protocol method developed by GEO.
  (Refer to the separate communication manual)

- DIO method: Digital depending on the input/output settings,
  it can be operated from an external device.

- Modbus: React Smart Factory (Option)

② W_DIS : Function to set whether to display alarms that have occurred.

③ S TIME : Function to set the gradient of dispense change in TAPER mode.

④ K BUZZER : Specifies ON/OFF of the sound generated each time a key is pressed.

Ⅳ. Communication Settings

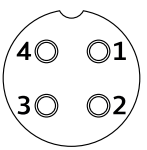
1. External Communication Setting

① Simple DIGITAL I/O Connection using 4P Connector

Alias	I/O 4P
Comm Type	Digital I/O
Connection HW	Circular 4P

Communication Settings(Fixed)	Non-Voltage Non-polar connection
Connection System	PLC, SW ETC..
Length	~1.5Km
Note	Sequence Chart

Product Side	4Pin Circular Connector male	K - 16 -4R
User Side (Recommend)	4Pin Circular Connector female	K - 16 -4P



PIN No.	Map
1	GND (SHOT)
2	I/O IN (SHOT)
3	OUT (END)
4	GND (END)

K - 16 -4R

K - 16 -4P

② Access by Communication Type

Value	Alias	Type	Device	Communication Settings (Fixed)	Connection System	Range
0	GCP	RS232	DSub9	9600, 8, None, 1stop	PC, PLC, ..	~2m
1	DIO	Digital I/O	DSub25	—	PLC	User
2	Modbus	RS485	DSub9	9600, 8, None, 1stop	PLC, PC, ..	~1.5Km
Note		0: Communication Manual / 1: Sequence Chart / 2: Option				

Product Side	9Pin DSub Connector female	R/AType W/BoardLock
User Side (Recommended)	9Pin DSub Connector male	(Recommended: UPort 1110 USB to RS232, MOXA)

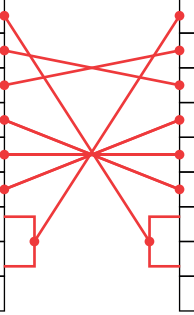
Product Side	25Pin DSub Connector female	AMPLIMITE* PCB Mounted Connectors
User Side (Recommended)	25Pin DSub Connector male	DB25P-DB25P(M/M)

2. RS232C Cable & DIO Map

(1) DSub9 Pin Wiring Diagram

For GCP communication, RS232 cables must be prepared as follows.

No.	Signal Name
1	CD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	CI



No.	Signal Name
1	CD
2	RxD
3	TxD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	CI

⚠ **CAUTION:** Failure to connect according to the wiring diagram may damage the equipment.

For communication with the Picker Plus, the communication settings of the connection system are as follow.

Baud rate	9,600 bps
Data bits	8
Parity	None
Stop bits	1

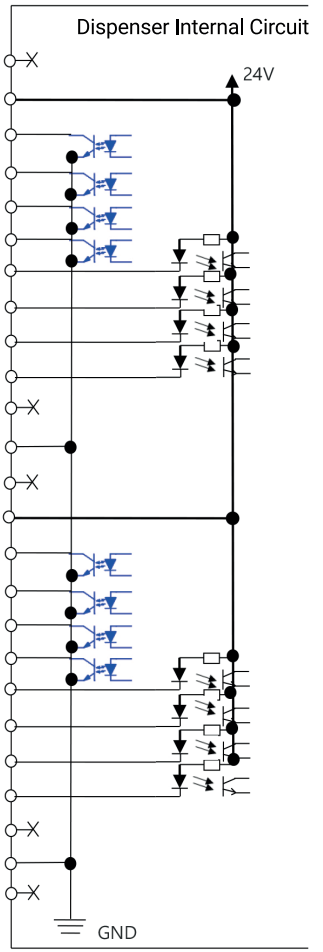
- Refer to the communication manual for GCP communication using RS232C

(2) DSub25 Pin Map

DSub25 Pin No	I/O Type	Signal Name	Function
1	—	—	Forbidden
2	—	24V	24V
3	O	Dispense Complete	Dispense Complete Signal
4	O	Solenoid Valve alarm	Solenoid Valve alarm
5	O	Boot complete	System Booting complete
6	O	Ready to Dispense	Ready to Dispense
7	I	Dispense Signal	Dispense Operation Signal
8	I	Change CH	10ms
9	I	Channel 2^0	1
10	I	Channel 2^1	2
11	—	—	Forbidden
12	FG	GND	GND
13	—	—	Forbidden
14	—	24V	24V
15	O	Remaining amount Warning	Remaining amount Warning
16	O	TIMED/MAN	Display Mode
17	O	NONE	NONE
18	O	DIO/GCP	Display DIO or GCP
19	I	Channel 2^2	4
20	I	Channel 2^3	8
21	I	Channel 2^4	16
22	I	Select Comm Type	Select DIO or GCP
23	—	—	Forbidden
24	FG	GND	GND
25	—	—	Forbidden

(O : Output, I : Input, FG : Frame Ground)

Signal Name	25Pin No
—	1
24V	2
OUT 0	3
OUT 1	4
OUT 2	5
OUT 3	6
IN 0	7
IN 1	8
IN 2	9
IN 3	10
—	11
GND	12
—	13
24V	14
OUT 4	15
OUT 5	16
OUT 6	17
OUT 7	18
IN 4	19
IN 5	20
IN 6	21
IN 7	22
—	23
GND	24
—	25



	Signal name	Contents	
Input	IN0 ~ IN7	Circuit	Photocoupler Insulated Circuit
		Through current	DC24V, Under 10mA
Output	OUT0 ~ OUT7	Circuit	Photocoupler Insulated Circuit
		Capacitance	Max Voltage: DC24V Drive Current: Under 80mA

- The input signal must be suspended for more than 10msec.

V. Repair

Trouble	Troubleshoot
When the vacuum becomes weaker than the set value	1.Check if anything is blocking the backside exhaust port and remove it. 2.Check if the air supply is smooth
When you press the shot key or give a dispense signal, but the dispense does not work	1.Check if the display shows the operation screen 2.Check if the air supply is smooth 3.Check if the dispense time is properly entered 4.Check if the pressure setting is correct

- LCD In the event of an abnormal situation, take measures in order from the first response method.
- If the LCD screen is corrupt, turn the power off and on again.
- If the abnormal situation is not resolved after taking the above measures or if any other abnormality occurs, please contact our technical sales department (+82-32-832-5350)

Type	Signal	Buzzer Alarm	Cause	Measure	ICON	Clear
ERROR	O	O	Supply pressure is lower than the recommended pressure	Adjust the supply pressure to the recommended pressure		—
			Time to replace the solenoid valve	Solenoid valve must be replaced		Disable by selecting (YES/NO) apply W DIS in utility settings
WARNING	O	X	Solenoid valve performance degradation	Solenoid valve may be replaced		

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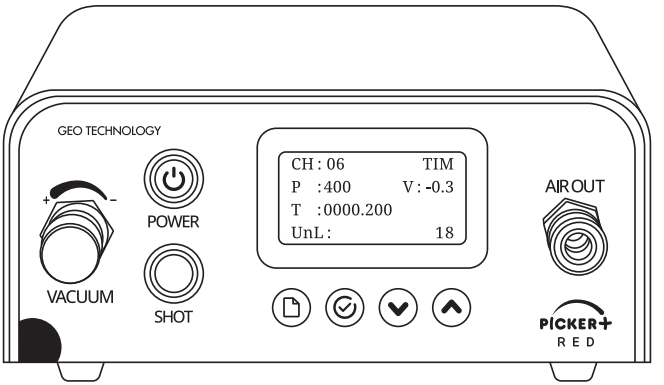

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