D563UDE-00

OPERATION MANUAL

Electric Pump Controller

PC-124

For safety purposes please be sure to read and follow the instructions contained within this manual before this product installation and operation.

PC-124

Introduction

Thank you for purchasing our products.

The Air Operated Level Controller output an air signal when it detects the fluid surface.

This document describes the right usage the product and cautions on spec. Read the document carefully before using the product.

Table of contents

If the product has remained unused for a long period or if you have any kind of misgivings about running the product please consult with your local our company distributor or contact our company directly

Important Items

For safe operation

● Before using the pump, be sure to read this document carefully, particularly the ″warnings and cautions,″ and be fully familiar with the correct operating procedures.

● Within this document all the warnings and cautions will be indicated by the following symbols.

WARNING If you ignore the warning described and operate the product in an improper manner, there is danger of serious bodily injury or death.

CAUTION If you ignore the caution described and operate the product in an improper manner, there is danger of personal injury or property damage.

Furthermore, to indicate the type of danger and damage, the following symbols are also used along with those mentioned above:

This symbol indicates a DON'T, and will be accompanied by an explanation on something you must not do.

This symbol indicates a DO, and will be accompanied by instructions on something you must do in a certain situation.

This symbol indicates important information is contained here.

Product information

1.Product parts and its function overview

1) Control Unit

Central touch panel lights up when DC 24V power is supplied.

2) Solenoid valve connector

Connects the solenoid valve (3pin)

3) AUX cord

Cords for remote controlling

4) Sensor connector

Connects the sensor (4pin) of pump

5) AC adapter

DC24V power adapter (accessory)

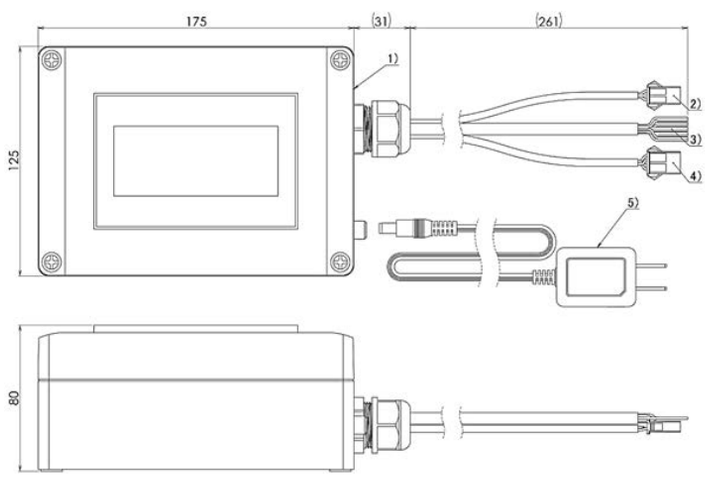


Fig.1 Names and external dimensions of each part

2.Accessories

☐ Operation Manual ..... 1 part

☐ AC adapter ..... 1 piece

3.Specifications

Model		PC-124
Rating	Power supply/Electricity consumption	DC24V ± 10%/0.5A less than 10W
Input	Sensor	NPN open collector input
	Signal	No voltage contact or open collector input
Output	Solenoid valve	Transistor output (DC24V:0.1A)
	Signal	DC24V / 0.25A (MAX)
Main unit	W × H × L	130mm × 33mm × 112mm
	Cable length	Approximately 300mm
Exterior		PC molded item
Temperature		0 ～ 50℃ (no freezing)
Humidity		10 ～ 85% (no condenstation)
Vibration resistance	Intermittent	5 ～ 8.4Hz (amplitude 3.50 mm,X,Y,Z)
	Continuos	5 ～ 8.4Hz (amplitude 1.75 mm,X,Y,Z)
Working atmosphere		Without oil fumes, corrosive gases, inflammable gases, and excessive conductive dusts
Installation location		Indoor
Mass		Approximately 900g (main unit)

Operation

1.Operating procedures

1) Pump Start/ Stop

① Connect the sensor and solenoid valve connectors to the PC-124 pump controller and AC adapter according to the instruction manual provided with the pump.

② Supply the power

③ Press START on the touch screen to start the pump operation.

④ Press STOP on the touch screen to stop the pump.

2) Clearing errors

Clear all the errors and press RESET on the error screen to return to the main screen.

3) Resetting the counter/timer

Press RESET on the main screen when the pump is stopped.

Both the counter and timer will be set to 0 or to the pre-set value

＊ If the counter/timer has been set, it will count down from the pre-set value. The pump will be stopped when it reaches 0.

2.Touch screen details

The touch screen cannot be switched while the pump is operating. The settings and resets can be made only when the pump is stopped. When an error is detected, the screen shifts to the error screen.

1) Main screen

This is the first screen that is displayed when the power is turned on if there is no error. The touch screen cannot be switched while the pump is operating. The settings and resets can be made only when the pump is stopped.

When an error is detected, the screen shifts to the error screen.

Fig.2 Main screen

①START or STOP

Press this button to start or stop the pump operation.

② RUN

Blinks when the pump is operating.

③RESET

Resets the count, time and errors.

④ SENSOR A/B

Displays the status of the sensors attached to the pump.

⑤ con

When lit, the main screen displays count only. The adjacent number depicts the set stroke count、

tim

When lit, the main screen displays only the timer. The adjacent number depicts the set time.

＊ When both con and tim are lit on or off, stroke count as well time is displayed.

⑥ CONFIG

This function provides various setting options. Switches to setting screen.

＊ 2） Refer to the setting option screen.

⑦ REMOTE START

Blinks when pump is operated remotely through AUX cord.

2) Setting option screen

Allows to switch to the various setting screens.

Fig.3 Setting option screen

⑧ STANDARD

Allows to set the standard operation settings.

Fig.4 Standard operation settings

A) Safety

When the safety is ON the pump stops if it does not operate after a certain period. When the pump stops, the screen shifts to the error screen, which can be cleared by RESET and restarted from the main screen.

Following are the possible causes when the pump is stopped due to safety.

■ The hose connection between the pump and solenoid valve is reversed.

■ There is an air leakage between the pump and solenoid valve.

■ There is an air leakage inside the pump.

B) Sensor Disconnection

When Sensor Disconnection is ON , the status of the sensor cable is monitored. When sensor disconnection is detected, it switches the screen to the error screen and stops the pump.

C) Moniitoring

When Monitoring is ON , the pump is monitored for dry operation. If it falls under dry running condition, the screen is switched to the error screen and stops the pump.

D) Buzzer

When Buzzer is ON , a buzzer sound is emitted from the main unit if the pump is stopped due to an error. Error can be cleared by RESET .

E) Time Out

The switching time of the strokes can be monitored by setting the Time out. If the stroke is not switched within the set time, the

error screen will be displayed, and the pump operation will be stopped.

Following are the possible causes when the pump is stopped due to Time out.

■ Stoppage of air supply

■ Failure of the solenoid valve used for switching the strokes.

■ Stoppage of pump due to damage in diaphragm.

When the set time is 0 [sec], Time out function will not be possible. Time can be set from 0 ～ 99 [sec].

⑨ COUNTER / TIMER

The counter helps set the number of counts after which pump can be stopped whereas timer helps set the time after which pump can be stopped.

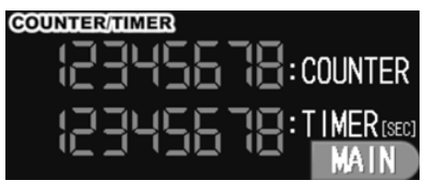
Set Value		Measured Value
COUNTER 0 ～ 20000000 [cycles] TIMER 0 ～ 99999999 [SEC]		COUNTER 0 ～ 99999999 [cycles] TIMER 0 ～ 99999999 [SEC]

Fig.5　Counter/Timer setting screen

By setting the COUNTER and TIMER values, the pump will be stopped when the count reaches the set value.

■ If STOP is pressed before the set value is reached, the pump will stop at the instantaneous count value, and if START is pressed again, operation will start from the count value at which pump is stopped.

■ When the pump is stopped, pressing RESET helps reset the count value and starts the count again.

＊ If the counter/timer has been set, the value is reset to the set value: if not, the value is reset to 0.

■ When the set value is reached, the pump will stop operating, and the pump cannot be restarted until RESET is pressed to reset the count value.

■ If both COUNTER and TIMER are set, the pump will stop when either of the set values is reached.

■ If the pump is stopped in the middle of counting and a new set value is entered, the new set value will be considered.

＊ count value when the pump is stopped will be reset.

■ When the COUNTER and TIMER are set to 0, it will continue to count unless RESET is pressed.

＊ Count value will be 0 after 99999999 counts.

⑩ MONITORING

Monitoring operation can be set to stop the pump during dry run.

The number of strokes during normal operation is compared with the strokes during dry run and monitored.

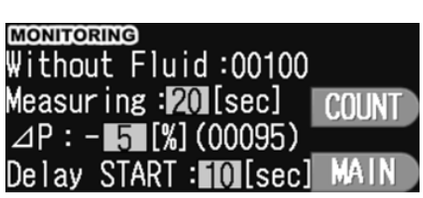
Set Value	A) B) C) E) 	Measured Value
Measuring : 0 ～ 99 [SEC] ⊿P : −0 ～ 99 [%] (0 ～ 99999) Delay START : 0 ～ 99 [SEC]		Without Fluid : 0 ～ 99999 [cycles]

Fig.6　Monitoring operation setting screen

A) Without Fluid

Number of strokes during dry run

B) Measuring

Set time for the dry run and monitored dry run time. (number of strokes are measured at each set time)

C) ⊿P

Threshold value, the number in () is the calculated number of strokes at threshold.

D) Delay START

Delay in the start of monitoring operation.

Setting Example : Figure 6. Monitoring operation setting screen

Operate the pump without blocking the inlet and outlet and without transferring the liquid. To set the measurement time, set Measuring to 20 [sec].

Press COUNT to start pump in dry run.

When the value on the measuring reaches 20 [sec], the pump will stop automatically. (Number of strokes is stored)

The value of Without Fluid is displayed as the measured value of the number of strokes in dry run. For example, 100 in the Figure 6. Set the threshold value ⊿P. For −5 [%], the number of strokes at threshold is 95, which is 100 (measured value) −100 (measured value) X0.05 (⊿P).

When pump is operated with Monitoring : ON on the STANDARD screen, it will start monitoring operation after 10 [sec] (Delay START in this case)

After every 20 [sec] of the measurement time, the number of strokes is compared with the number at threshold value. When the number of strokes exceeds the threshold, the screen shifts to the error screen and the pump stops.

⚠ CAUTION

- If you do not want to perform monitoring operation, please turn MONITORING OFF on the standard operation setting screen. (There is possibility of an unexpected operation from the monitoring operation settings)

3) Error screen

This screen is displayed when error is detected. ■ blinks for any error detected.

When Buzzer is set ON on the standard operation setting screen, the PC-124 buzzer rings continuously with the “beep” sound.

＊ The buzzer continues to ring until pressed ″Reset″.

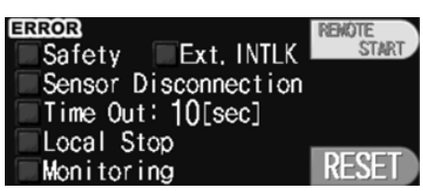


Fig.7 Error screen

■ Safety

Blinks when the pump does not operate after a certain period.

Only when ON is set on the standard setting screen.

■ Ext. INTLK

Blinks when the wiring for the external interlock of the AUX cord is not conducting due to loose connection or some other reasons.

■ Sensor Disconnection

Blinks when the disconnection of the sensor cable is detected.

Note: Only when ON is set on the standard setting screen.

■ Time Out

Blinks when strokes are not switched within the set time.

Only when setting time is more than 0 [sec] on the standard screen.

■ Local Stop

Blinks when the pump mis stopped by pressing STOP on the touch screen when the pump is being remotely operated using the AUX cord.

■ Monitoring

Blinks when the pump state matches the dry run condition.

Only when ON is set on the standard setting screen.

3.AUX cord （Input/output circuit）

The AUX cord can be used to remotely control the pump or to output signal in case of an error.

<Input circuit>

■ Remote pump operation

Make sure that the white and black （COM） are connected properly. The pump will continue to run if they are connected.

During remote operation, REMOTE START will blink on the upper right corner of the touch panel screen.(Figure 7. Error screen)

CAUTION

・Note that if you clear the error by RESET during remote operation, the pump will resume operation immediately.

＊ You can stop the pump from the PC-124 even during remote operation, but the screen switches to the error screen and stops the pump.

■ Remote reset of Counter/Timer

Connect red and green (COM) properly when the pump is stopped. The count and time value will be reset

＊ If the counter/ timer is set, the value will be reset to the set value: if not it will reset to 0.

＊ Resetting is completed at one time.

■ External interlock

Make sure that the orange and peach (COM) are connected properly. If the connection is loose, the pump will stop or will not operate.

CAUTION

・If the external interlock is not used, connect the two wires together.

Operation

<Output circuit>

■ When the pump is stopped by reaching the counter/timer set value, maximum current of 0.3 [A] / DC24 [V] is conducted between yellow and blue (+) cords.

■ When the pump is stopped due to error, maximum current of 0.3 [A] / DC24 [V] is conducted between brown and gray cords.

⚠ CAUTION

・The external input circuit, no voltage contacts or NPN open collector transistors should be connected properly. The input signal current is 6 [mA] / DC24 [V]. The black−, green− and peach−colored cords are common COM (−).

・If the AUX cord is not used, make sure that there is no contact among the cords and between the cords and the metal parts.

Caution

Please use correctly

■ Handling

⚠ CAUTION

- ・Do not modify or dissemble the controller. Doing so may results malfunctioning of the controller.
- ・Be sure to turn off the power of the controller before connecting or disconnecting the pump(sensor), solenoid valve and auxiliary cord.
- ・Do not allow auxiliary cords to encounter each other or with the metal parts when not being used.
- ・Supply power to the controller from the supplied AC adapter.

■ Power failure

⚠ CAUTION

- ・The START signal will be reset (pump will be stopped) in case of power failure or interruption in the power supply voltage. (If the pump is operated remotely, the pump will start when the power is restored) All settings and error alarms will remain, even during the power failure.

■ Operating environment

⚠ CAUTION

- ・Do not use same piping for input/output lines and power lines or high voltage lines. This may lead to unwanted noise.
- ・When wiring the auxiliary cord, use shielded wire with a rated voltage of 60V or more, or metal conduit but should shorten the length of the wire.
- ・Do not use this product for any other purposes. Please install the input devices such as sensors, signal lines, and the controller itself far away from the source of noise.
- ・Do not use this product at a place exposed to water or oil.