



DPC-10

Water Pump Digital Pressure Controller
Installation and Operation Manual



EVAK PUMP TECHNOLOGY CORP.

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EC DECLARATION OF CONFORMITY

Applicant : EVAK PUMP TECHNOLOGY CORP.
Address of Applicant : No.551, Zhongshan Rd., Qingshui Dist., Taichung City 436, Taiwan (R.O.C.)
Product Name : Water Pump Digital Pressure Controller
Model No. : DPC-10
Test Report No.: E14060543
Directive : 2004/108/EC Electromagnetic Compatibility Directive

For the most specific risks of this machine, safety and compliance with the essential requirements of the Directive has been based on elements of:

- EN 61000-6-3:2007/A1:2011 / Electromagnetic compatibility (EMC) -- Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments
- EN 55011:2009/A1:2010 / Industrial, scientific and medical equipment - Radio-frequency disturbance characteristics - Limits and methods of measurement CISPR 11:2009 (Modified)
- EN 61000-6-1:2007 / Electromagnetic compatibility (EMC) -- Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments
- IEC 61000-4-2:2008 / Electromagnetic compatibility (EMC) - Part 4-2: Testing and measurement techniques - Electrostatic discharge immunity test
- IEC 61000-4-3:2006/A1:2007+A2:2010 / Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test
- IEC 61000-4-8:2009 / Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test



Date : _____

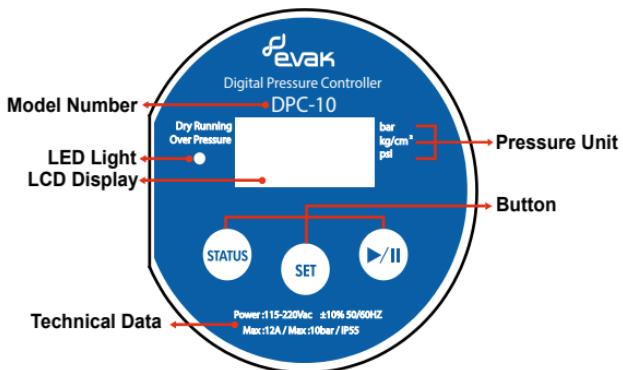
Signature : Kengku

Qualification : General Manager

Place : Taichung City, Taiwan



1.DPC-10 Panel introduction



2.Technical data

- Supply voltage: 115~220Vac ± 10% 50/60HZ
- Maximum ambient temperature: +40°C
- Maximum liquid temperature: +65°C
- Maximum system pressure: 10bar
- Maximum contact load AMP: 12A
- Ingress Protection Rating: IP55
- Relay Capacity: 1HP in 110V or 2HP in 220V
- The Max. motor size is 1HP in 110V or 2HP in 220V, but if connect to contactor in the control panel then DPC-10 controller can fit the pump over 2HP.

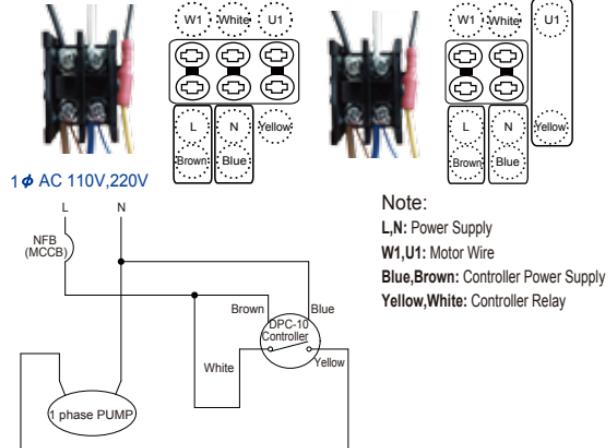
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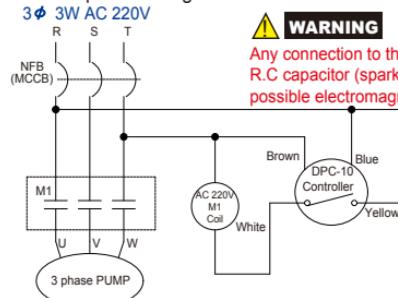
3.Wiring diagram

WARNING Incorrect wiring could cause damage to the pressure controller, confirm the color of the wires with the operation manual before wiring.

a. Single phase wiring connection

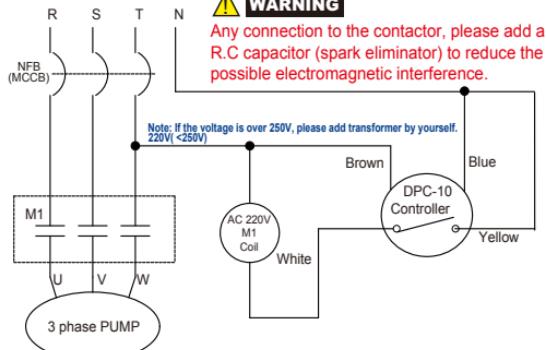


b. Three phase wiring connection-220V



c. Three phase wiring connection-380V

3φ 4W AC 380V



* If installing DPC-10 with a varistor, please connect varistor wire in parallel with thin Brown and Blue wires of the DPC-10.

WARNING If connecting to a pump driven by 3ph/380V pump (Please note the power voltage is not allowed over 400V.), the blue and yellow wires of DPC-10 are forbidden connecting to R or S wire, otherwise the DPC-10 controller will be burned out.

4.Button Function Introduction

Button Icon	Function	Possible with Button
	Browsing original pressure value.	
	Downward adjustment of the parameter value.	
	Short press once: Switch to Basic parameter setting.	
	Long press for 3 seconds: Switch to Advance parameter setting.	
	After entering the parameter setting, short press once again: Switch to next setting mode and enter the set value.	
	Pump start and stop operation.	
	Upward adjustment of the parameter value.	

5. The status of LED lights

Item	Light	Message indication	Pump status
1	Non	Control loop off from the system	Pump off
2	Green	Control loop is loaded into the system	Pump standby
3	Orange	Control loop command the pump of system to start running	Pump on
4	Red	Warning message to shut down the system temporarily	Pump auto stop and display the fault message(Dry running or Over pressure)

6. Parameter display and settings

“  ” (Pressure value display)

Item	Parameter	Display Code	Default Unit	Description
1	Max. Pressure setting display	P-max	kg/cm ²	» Press once: To see the Max. pressure setting value. » Or stay on this screen for 5 seconds it will return to the actual pressure status display automatically.
2	Min. Pressure setting display	P-min	kg/cm ²	» Press again: To see the Min. pressure setting value. » Or stay on this screen for 5 seconds it will return to the actual pressure status display automatically.
3	Pressure of water shortage setting display (Dry running)	P-Dry	kg/cm ²	» Press again: To see the pressure of water shortage setting value. » Or stay on this screen for 5 seconds it will return to the actual pressure status display automatically.

“  ” (Restart or stop the pump running)

Item	Parameter	Pump action	Light	Description
1	Restart (ON)	Pump on	Orange	Press once to restart the pump running.
2	Stop (OFF)	Pump off	Non	Long press for 3 seconds to stop the pump running.

“  ” (Short press once to enter Basic Setting Mode)

Setting procedure : **Max. pressure** → **Min. start pressure** → **Time-Delay**

Item	Parameters	Display Code	Default Unit	Data Range	Description
1	Max. pressure setting (high pressure)	P-max	kg/cm ²	0.01~10.00	a. Select to modify Max. Pressure, press the left or right button to adjust the value, after finishing the setting, press the SET button once and go to Min. start pressure setting. b. Stay on this screen for 30 seconds, the display screen will back to the actual pressure conditions automatically and the preset data value is not stored. c. Choose not to modify the pressure, press the SET button, and go to next parameter setting.
2	Min. start pressure setting (low pressure)	P-min	kg/cm ²	0.01~10.00	a. Select to modify Min. start pressure , press the left or right button to adjust the value, after finishing the setting, press the SET button once and go to Time-Delay setting . b. Stay on this screen for 30 seconds, the display screen will back to the actual pressure conditions automatically and the preset data value is not stored. c. Choose not to modify the pressure, press the SET button, and go to next parameter setting.
3	Time-Delay setting when reaching the Max. Pressure	Delay	sec	0~60	a. Select to modify the Time-delay setting when reaching the Max. Pressure, press the left or right button to adjust the value, after finishing the setting, press the SET button and go to “ loAd ” display. b. Stay on this screen for 30 seconds, the display screen will back to the actual pressure conditions automatically and the preset data value is not stored. c. Choose not to modify the delay time, press the SET button, and LCD display “ loAd ”
4	Load for 3 seconds to store setting value	loAd	-	-	Above setting value are stored and 3 seconds later, go to the actual pressure value display automatically.

" long press for 3 seconds (Advanced setting Mode)

Item	Parameters	Display Code	Default Unit	Data Range	Description
1	Switch the display working pressure unit	Unit	-	-	<p>a. Select to switch the Unit of working pressure, press the right button to change the pressure unit (Cycle : kg/cm² → Psi → bar → g/cm²), then press the SET button once and go to next parameter setting.</p> <p>b. Stay on this screen for 30 seconds, the display screen will back to the actual pressure conditions automatically and the preset data value is not stored.</p> <p>c. Choose not to modify the working pressure unit, press the SET button once, and go to next parameter setting.</p>
2	Detection time setting of water shortage	P-Dry	sec	1~120	<p>a. Select to modify the detection time after reaching the pressure setting of water shortage (Dry running), press the left or right button to adjust the value, after finishing the setting, press the SET button and go to next parameter setting.</p> <p>b. Stay on this screen for 30 seconds, the display screen will back to the actual pressure conditions automatically and the preset data value is not stored.</p> <p>c. Choose not to modify P-Dry detection time setting, press the SET button once, and go to next parameter setting.</p>
3	Pressure of water shortage setting (Dry running)	P-Dry	kg/cm ²	0.01~10.00	<p>a. Select to modify the Pressure of water shortage, press the left or right button to adjust the value, after finishing the setting, press the SET button and go to next parameter setting.</p> <p>b. Stay on this screen for 30 seconds, the display screen will back to the actual pressure conditions automatically and the preset data value is not stored.</p> <p>c. Choose not to modify the pressure of water shortage, press the SET button, and go to next parameter setting.</p>

Item	Parameters	Display Code	Default Unit	Data Range	Description
4	Time setting of automatic re-start running after warning shutdown (Dry running or Over pressure) (α value)	Auto Reset	sec	1~600	<p>a. Select to modify automatic re-start time, press the left or right button to adjust the value, after finish the setting, press the SET button, and go to next parameter setting. The time of automatic re-start = (automatic time setting) * (trip times)³ (Cumulative trip times is up to 10 times, if press the right button to re-start, then the trip times can be re-calculated.)</p> <p>b. Stay on this screen for 30 seconds, the display screen will back to the actual pressure conditions automatically and the preset data value is not stored.</p> <p>c. Choose not to modify the automatic re-start time, press the SET button, and go to next parameter setting.</p>
5	Auto shutdown setting after continuous running	Auto	hour	St-0 St-5 St-1 ~ St-5	<p>a. Select to modify the auto shutdown setting after continuous running, press the left or right button to adjust the value, after finishing the setting, press the SET button and go to next parameter setting.</p> <p>St-0: Pressure controller keeps running and won't shut down automatically.</p> <p>St-5: Pressure controller will auto shut down after continuously running 0.5 hours and won't auto restart after the shutdown.</p> <p>St-1~5: Pressure controller will auto shut down after continuously running 1~5 hours and won't auto restart after the shutdown.</p> <p>b. Stay on this screen for 30 seconds, the display screen will back to the actual pressure conditions automatically and the preset data value is not stored.</p> <p>c. Choose not to modify the automatic re-start time, press the SET button, and go to next parameter setting.</p>

Item	Parameters	Display Code	Default Unit	Data Range	Description
6	Restore to default value setting	dF-n dF-y	-	-	<p>a. Select to restore default value settings (dF-y), press the right button and adjust the parameter value from dF-n to dF-y. After finishing the setting, press the SET button, then all the advanced value settings are returned to default value. LCD screen display "----" for 3 seconds and back to the actual pressure conditions.</p> <p>b. Stay on this screen for 30 seconds, the display screen will back to the actual pressure conditions automatically and the preset data value is not stored.</p> <p>c. Choose not to return to default value settings (dF-n), select dF-n and press the SET button again, LCD screen display "IoAd" for 3 seconds and will back to the actual pressure conditions automatically.</p>
7	LCD screen display "IoAd" or "----" for 3 seconds to store and finish the setting	---- or IoAd	-	-	After LCD screen display "IoAd" or "----" for 3 seconds later, above setting value are stored and go to the actual pressure value automatically.

7. Standard default value (Factory preset settings)

- a. Max. pressure value : 2.5kg/cm²
- b. Min. pressure value : 1.5kg/cm²
- c. Delay Time when reaching the Max. Pressure : 15seconds
- d. The pressure unit : kg/cm²
- e. Detection time of water shortage : 30 seconds
- f. Pressure of water shortage : 0.5kg/cm²
- g. Time of automatic re-start running after warning shutdown (a value) : 60 seconds
- h. Auto shutdown setting after continuous running : St-0
- i. Over pressure value is fixed in 10bar and cannot modify

8. Setting value range

- a. Pressure setting range : 0.01 ~ 10.00bar
- b. Time-Delay setting range : 0 ~ 60 seconds
- c. Detection time after Dry-running setting range: 1~120 seconds
- d. Time of automatic re-start running after warning shutdown (a value) setting range : 1 ~ 600 seconds
- e. Auto shutdown setting range: St-0~St-5 (None and 0.5~5Hours)

9. The actual operating parameters display

a. Press  once to browse original pressure value

1).Max. pressure setting display (high pressure) (Show code P-max)



↓ Press  once

2).Min. start pressure setting display (low pressure) (Show code P-min)



↓ Press  once

3). Pressure of water shortage setting display (Dry running)
(Show code P-Dry)



↓ Press again

b. Press once to enter basic setting

1). Max. pressure setting (high pressure) (Show code P-max)



Press to adjust the value upward

Press to adjust the value downward

↓ Press once

4). Actual pressure status display



2). Min. Start pressure setting (low pressure) (Show code P-min)



Press to adjust the value upward

Press to adjust the value downward

↓ Press once

3).Time-Delay setting after reaching the Max. Pressure(Show code Delay)



Press **▶/II** to adjust the value upward
Press **STATUS** to adjust the value downward
↓ Press **SET** once

5).After finishing above setting, 3 seconds later will go to the actual pressure status display automatically.

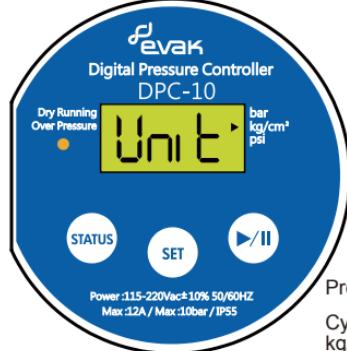


c. Press **SET** for 3 seconds to enter advanced setting

1).Change the display working pressure unit (Show code Unit)



↓ 3 seconds later



Press **▶/II** to set up unit

Cycle of working pressure unit:
kg/cm² → psi → bar → kg/cm²

↓ Press **SET** once

2).Detection time setting of water shortage (Show code P-Dry & sec)



Press to adjust the value upward
Press to adjust the value downward
↓ Press once

3).Pressure of water shortage setting (Show code P-Dry)



Press to adjust the value upward
Press to adjust the value downward
↓ Press once

4).Time setting of automatic re-start running after warning shutdown (Dry running or Over pressure) (α value) (Show code Auto reset)



Press to adjust the value upward
Press to adjust the value downward
↓ Press once

5). Auto shutdown setting after continuous running (Show code Auto)

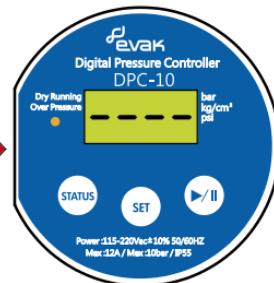
- » St-0: Pressure controller keeps running and won't shut down automatically.
- » St-.5&St-1~5: Pressure controller will auto shut down after continuously running 0.5 or 1~5 hours and won't auto restart after the shutdown.



Press to adjust the value upward
Press to adjust the value downward
↓ Press once

6).Restore to default value setting or not

» Restore to default value settings (show code dF-y)



Press ▶/II to adjust the value to dF-y

Press SET once and restore to default value (Show code ----)

»Not restore to default value settings (show code dF-n)



Press ▶/II to set the value to dF-n

Press SET once then all settings are stored. (Show code loAd)

7).After finishing above settings, LCD screen display "loAd" or "----"
3 seconds later, go to the actual pressure status display automatically .

10.Fault Display

a).EEEE



Pressure controller display "EEEE"
It means the failure of pressure sensor.

b).FFFF



Pressure controller display "FFFF"
It means the failure of temperature sensor.

c).EEFF



Pressure controller display "EEFF"
It means the failure of pressure and temperature sensor.