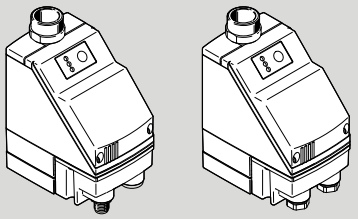
PWEA-AC/-AP
Condensate drain



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Instructions | Operating

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2018-06a
[8093864]

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Translation of the original instructions

1 Further applicable documents

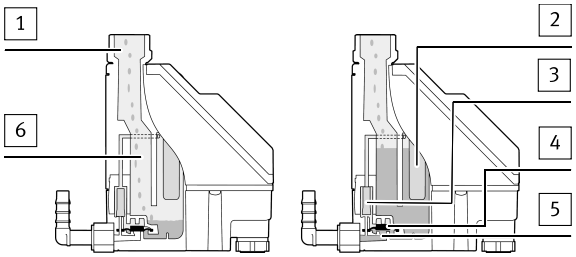
All available documents for the product ➔ www.festo.com/pk.

2 Safety

2.1 General safety instructions

- Only use the product in its original condition without unauthorised modifications.
- Only use the product if it is in perfect technical condition.
- Observe product labelling.
- Take into consideration the ambient conditions at the location of use.
- Before working on the product, switch off the power supply and secure it against being switched back on. Only switch on the power supply when the product has been assembled and installation work is complete.
- Comply with the handling specifications for electrostatically sensitive devices.
- Observe tightening torques. Unless otherwise specified, the tolerance is ± 20 %.

2.2 Intended use



1 Feed pipe	4 Diaphragm
2 Sensor	5 Drain pipe
3 Pilot valve	6 Housing

Fig. 1 Function

The intended purpose of the PWEA-AC/-AP condensate drain is to discharge condensate from compressed air systems. The condensate flows through the feed pipes 1 to the PWEA-AC/-AP and collects in the housing 6. A capacitive sensor 2 continuously monitors the fill level and sends a signal to the electronic controller when the reservoir is full. The pilot valve 3 is actuated and the diaphragm 4 opens the drain pipe to discharge the condensate 5. If the PWEA-AC/-AP is emptied, the drain pipe is closed before a loss in pressure can occur. The device is not intended to be used with fluids and gases.

2.3 Training of qualified personnel

- Installation, commissioning, service and disassembly should only be conducted by skilled personnel.
- The skilled personnel must be familiar with the installation of electrical and pneumatic control systems.

2.4 Approvals

The product fulfils the requirements of EU directives and comes with the CE marking CE.
The product-relevant EU directives and standards are listed in the declaration of conformity ➔ www.festo.com/sp.

2.5 Further information

- Accessories ➔ www.festo.com/catalogue.
- Spare parts ➔ www.festo.com/spareparts.
- Documents and literature ➔ www.festo.com/sp.

3 Product overview

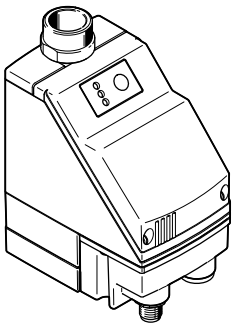


Fig. 2 Condensate drain PWEA-AP-3D

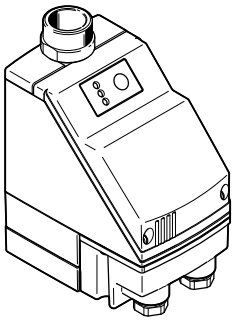
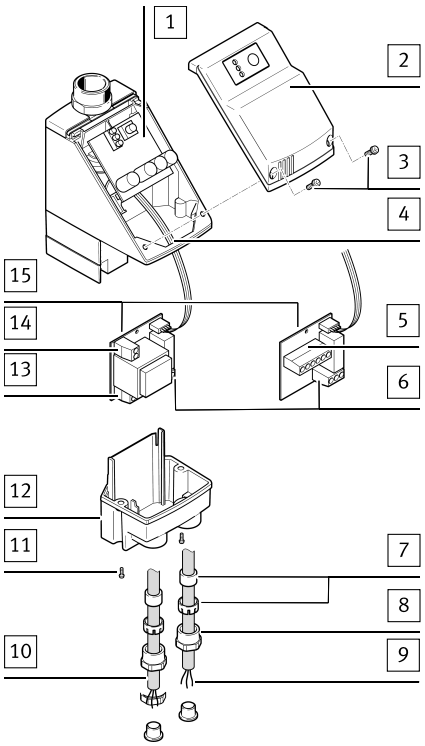


Fig. 3 Condensate drain PWEA-AC

3.1 Product design



1 Sensor board	9 Cable
2 Front hood	10 Cable
3 Screws	11 Screw
4 Cable connector	12 Power supply housing
5 Terminal KL 4	13 Terminal KL 1
6 Terminal KL 2	14 Terminal KL 5
7 Cable connector	15 Power supply board
8 Cable connector	

Fig. 4 Product design

4 Installation

4.1 Pneumatic installation

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Observe the pressure differences.

- Each condensate accumulation point must be drained separately.

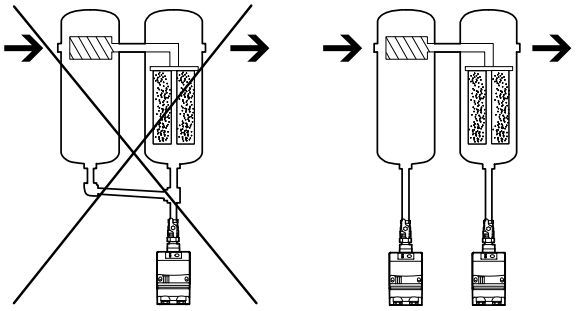
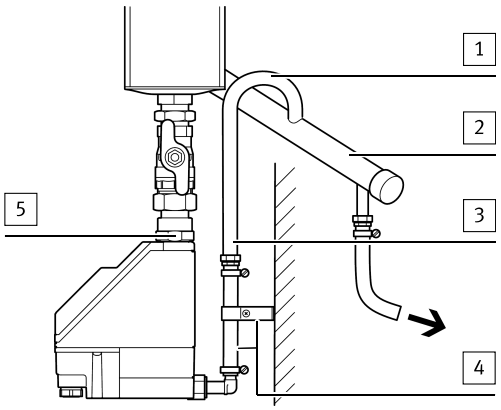


Fig. 5 Draining



1 Drain pipe
2 Collecting pipe
3 Max. 5 m inclination for drain pipe
4 Pneumatic tube, adjustment
5 Connecting thread, SW 27

Fig. 6 Pneumatic installation

1. Adjusting the pneumatic tube 4.
2. Mount the condensate drain PWEA-AC/-AP to the connection thread of the condensate feed 5 . ➔ The minimum pressure required in the drain pipe increases with every metre of inclination by 0.1 bar. Max. inclination of drain pipe is 5 m 3.
3. Lay the collecting pipe with a minimum gradient of 1% 2.
4. The drain pipe 1 must feed from the top into the collecting pipe.

4.2 Electrical installation

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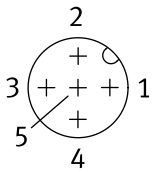
- Read and comply with the permissible mains voltage on the type plate!
- Carry out all installation work in accordance with VDE 0100.
- Observe the pin allocation.
- Do not install when powered.

Condensate drain PWEA-AC/-AP-3D

1. Loosen the screws 3 and remove the front hood 2 .
2. Remove the cable connector 4 from the sensor board 1 .
3. Loosen the screws 11 on the power supply housing 12 .
4. Remove the power supply board 15 .
5. Remove the cable connectors 7 and 8 and feed through cable 9 and 10 .
6. Connect cable 10 to terminals KL 1 and KL 4 and cable 9 to terminals KL 2 and KL 5.
7. Install the power supply board 15 in the power supply housing 12 . Tighten the cable and fasten with cable connectors 7 and 8 . Make sure the cable connector 4 leads upwards.
8. Plug the cable connector 4 into the sensor board 1 .
9. Replace the front hood 2 and tighten screws 3 .
10. Tighten the screws 11 on the power supply housing 12 .

PWEA-AP-3D	Plug connector ST1 (M12, 5-pin)[1]		
	1	+24 VDC	+24
	2	External test	IN1
	3	0 V	0 V
	4	Alarm signal, changeover contact	
	5	Alarm signal, N/C contact	

1) e.g. with connecting cable type SIM-M12-5GD-...

Tab. 1 Description of plug connector ST1 (M12, 5-polig)

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There is no galvanic isolation between the contacts of the plug connector ST1.1–3 and the condensate area.

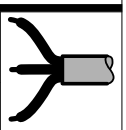
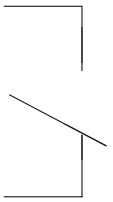
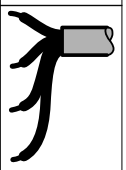
- Do not connect +24 VDC to ground.

Potential-free fault message contact	
ST1.4–5 N.O.–COM	Contact closed during normal operation.

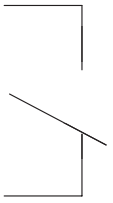
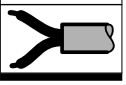
Tab. 2

External test ST1.2–3 0V–IN1	
Connect contacts	Test active = drain
Contacts open	Test inactive

Tab. 3

Device	Cable	Pin	Contact	Designation	
PWEA-AC-6A PWEA-AC-7A	KL1	2	Protective earth conductor	PE	
		3	Neutral conductor	N	
		4	External conductor	L	
	KL2	1	N/O contact		
		2	Converter		
		3	N/C contact		
	KL5	1	0 V	0 V	
		2	External test	IN1	

Tab. 4

Device	Cable	Pin	Contact	Designation	
PWEA-AC-3D	KL2	1	N/O contact		
		2	Converter		
		3	N/C contact		
	KL4	1	+24 VDC	+24	
		2	0 V	0 V	
		3	–	0T1	
		4	External test	IN1	
		5	+24 VDC (0 V)	±24	
		6	0 V (+24 VDC)	±24	

Tab. 5

- When connecting several PWEA-AC/-AP units to a single 24 VDC source: ensure the same polarity for the terminals KL4.5 and KL4.6.

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There is no galvanic isolation between the terminals KL4.1 ... 6 and the condensate area.

- At 24 VDC operation: do not connect + (plus) 24 VDC to ground as, inside the device, the potential of the housing is negative.

Potential-free fault message contact	
KL2.1–2 N.O.–COM	Contact closed during normal operation
KL2.3–2 N.C.–COM	Contact closed during malfunction or power failure (standby-current principle)

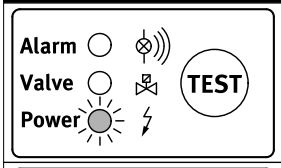
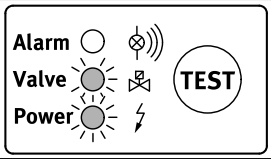
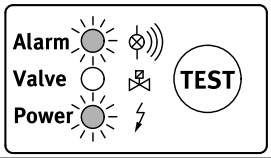
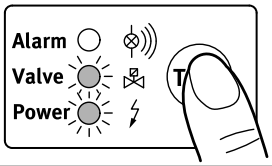
Tab. 6

External test KL5.1–2 or KL4.2-4 0V–IN1:	
Connect contacts	Test active = drain
Contacts open	Test inactive

Tab. 7

5 Commissioning

The condensate drain PWEA-AC/-AP can only be operated when powered
➔ 8.2 Technical data, electrical.3 LEDs indicate the different operating statuses:

Operating status LEDs	Function
	Ready for operation Voltage is present
	Drain sequence Feed pipe is open
	Malfunction/alarm If there is a malfunction in the condensate drain, the valve opens in cycles (approx. every 3 s) so that the malfunction can be automatically remedied.
	Test of valve function (manual draining): Actuate the pushbutton for approx. 2 s. Test of alarm function ➔ Alarm mode function: Actuate the pushbutton for at least 1 minute.

Tab. 8 Operating status LEDs

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Do not use the test pushbutton for continuous draining.

Alarm mode function
The PWEA-AC/-AP condensate drain also has an alarm mode function for malfunctions when draining the condensate. If the sensor is not free after 1 minute, a fault message is triggered.
– An alarm LED flashes.
– An alarm relay switches. The signal can be transmitted potential-free.
– The valve opens every 4 minutes for 7.5 s.

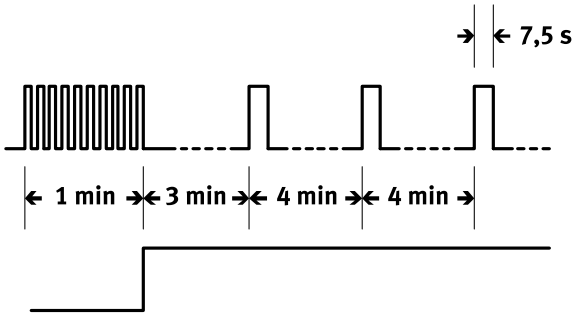

Fig. 7

If the malfunction is remedied, the PWEA-AC/-AP condensate drain automatically switches back to normal mode.

Potential-free fault message contact
The alarm signal can be forwarded via the potential-free contact (e.g. to a control station). The switching contact can, for example, be operated in failsafe mode.
– The PWEA-AC/-AP condensate drain works fault-free when powered ➔ The alarm relay is activated.
– If there is no operating voltage or if there is a fault message, the alarm relay switches off ➔ The working contact is open (alarm).

External test
Any existing condensate can be drained via remote control. The normal test pushbutton function also leads out of the PWEA-AC/-AD condensate drain here. If the external contact is closed, the valve opens. The connection can be connected to a switch, a relay contact or an open collector output.

6 Service

6.1 Cleaning and maintenance

• Clean the PWEA-AC/-AP condensate drain, if required, with a soft cloth. Cleaning agents include all non-abrasive media.

7 Malfunctions

Malfunction	Possible cause	Remedy
Minimum pressure not reached	Blocked drain pipe	Check compressor.
		Clean supply line.
	Error in the installation.	Perform installation in accordance with the instruction manual.
Condensate is too high	Overload	Observe maximum permissible operating pressure ➔ 8.1 Technical data, pneumatic.
	Extremely large quantities of dirt particles	

Tab. 9

8 Technical data

8.1 Technical data, pneumatic

Operating conditions		
Permissible temperature range	[°C]	+1 ... +60
Operating medium		Compressed air
Operating pressure	[bar]	0.8 ... 16
Mounting position		Standing upright ± 5°
Condensate feed		G½ inside
Condensate drain (tubing)		G¼ ⌀ 8 ... 9 mm angle nozzle e.g. type PUN-H-12x2-NT
Weight (empty)	[kg]	0.7
Materials		
Housing		Polymer
Condensate reservoir		Al
Seals		NBR, FPM, PU

Tab. 10

8.2 Technical data, electrical

Electrical data PWEA-AC/-AP		6A	7A	3D
Maximum power consumption		P < 2.0 VA		P < 2.0 W
Mains voltage		U_{AC} = 115 V ±10 % 50 ... 60Hz	U_{AC} = 230 V ±10 % 50 ... 60Hz	U_0 = 24 VDC +10 ... 25 %[1]
Recommended cable sheath	[ø]	5.8...8.5 mm		
Cable cross section	[mm²]	3 x 0.75, 5 x 0.25		
Fuse protection		0.5 A[2]		100 mA[1][2]
Contact load / potential-free fault message		0 V ... 250 V 0 mA ... 1000 mA		5 V ... 30 V 10 mA ... 1000 mA
External test IN1 and 0V Test active: Test inactive:		IN1: 0 ... 1 V contact closed IN1: 5 ... 36 V contact open		

1) Minimum voltage source internal resistance Ri 12 Ohm
2) medium time-lag

Tab. 11