

EM15-221 mercury cable float switch

Complete English instruction manual and relay-connection reference

1. Product overview

This cable float switch provides liquid-level signals for water supply and drainage, sewage treatment, chemical and petroleum applications within its temperature and material limits. Cable suspension and an adjustable counterweight support installation in tanks, reservoirs and compatible industrial-liquid containers.

2. Operating principle and features

A counterweight balances buoyancy and gravity. A sensitive mercury switch is sealed inside a polypropylene chamber and connected to an external receiving circuit through the cable. Liquid-level changes tilt the float, causing mercury movement to open or close the contacts. The mercury element has no mechanical contact mechanism and avoids mechanical contact wear; no numerical electrical-life rating is given.

The manual describes temperature resistance from -20°C to 80°C and a maximum pressure of 0.3MPa. Polypropylene housing and silicone cable are intended for compatible mildly corrosive liquids, including weak acid and alkali solutions.

3. Complete technical specification

Parameter	Chinese manual value
Operating voltage	0-24VAC/DC
Maximum current	0.5A
Operating angle	Approximately $\pm 10^{\circ}$
Float-body density	0.34g/cm^3
Protection rating	IP65
Working temperature	-20°C to 80°C
Maximum pressure	0.3MPa
Housing	Non-toxic polypropylene
Cable	Silicone insulation with copper conductors

The source’s “non-toxic polypropylene” description is not a drinking-water approval. Product design and specifications may change without notice.

4. Comparison with the Chinese product page

The webpage lists $0-80^{\circ}\text{C}$, density 0.69g/cm^3 , 0.5mm^2 / 1.0mm^2 conductors, 5m / 10m / 20m or custom cables, orange/black versions and a level difference greater than 0.3m; its FAQ recommends more than 0.4m for stable operation. The manual’s density is 0.34g/cm^3 . The webpage also prints “ $<750\text{W}$ / 1500W ,” while its FAQ calls for a contactor above 12W. Those pump-power figures must not be interpreted as mercury-contact switching ratings: observe 24VAC/DC and 0.5A and the sensing-only precaution.

Installation and signal operation

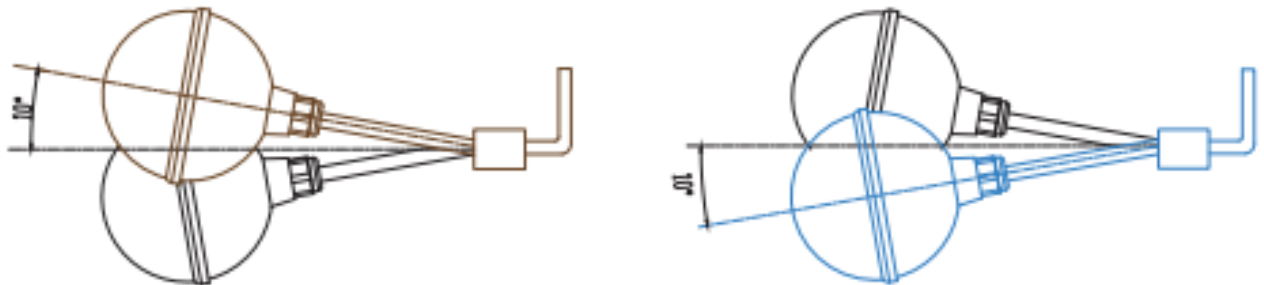
5. Installation method

Disconnect power before installation. Verify that the model, specifications, operating voltage and load current suit the application.

1. Pass the cable through the recessed circular hole at the bottom of the counterweight. Set the free cable length between float and weight to approximately 0.7 times the desired high-to-low level difference.
2. Connect blue for the lower-level signal, brown for the upper-level signal and black as common. Use an external relay when the controlled load exceeds the switch's voltage or current specification; keep the float contact circuit itself within its rating. Completely insulate and secure the unused wire with electrical insulating tape. Waterproof the cable joints to prevent condensation from running back into the float.

6. Signal identification

Conductor / state	Meaning
Black	Common
Blue	Filling connection; closes at the lower level
Brown	Drainage connection; closes at the upper level
Float tilted upward by 10°	Upper contact closes, indicating rising level
Float tilted downward by 10°	Lower contact closes, indicating falling level
Between -10° and +10°	Retains the previous switching state

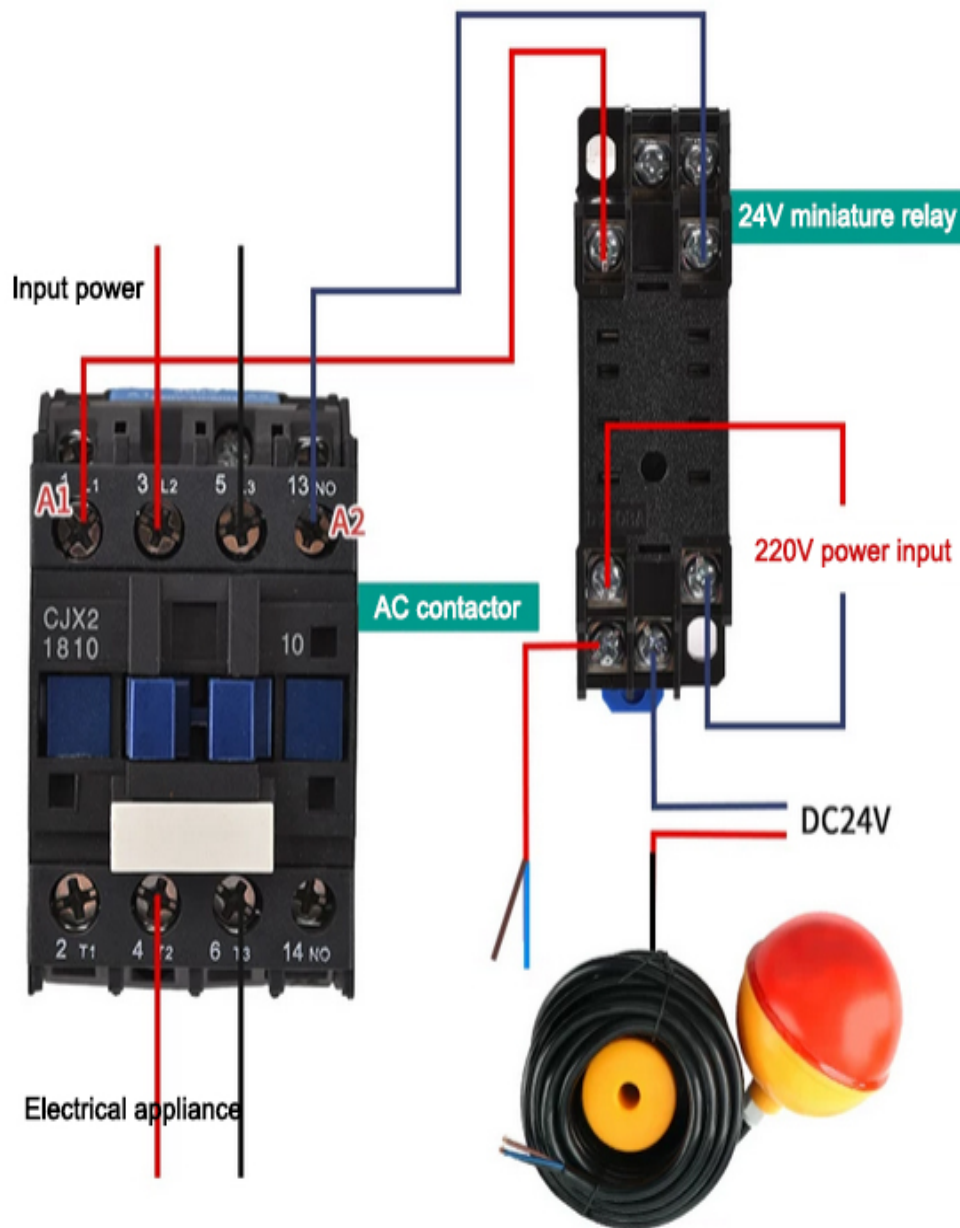


Left: rising liquid level closes the upper contact. Right: falling liquid level closes the lower contact. The diagrams show the approximately 10° switching positions.

7. Precautions — complete list

1. Strictly observe the maximum operating limits of 24VAC/DC and 0.5A.
2. Because the operating angle is only $\pm 10^\circ$, use is recommended only for liquid-level sensing and indication.
3. Do not apply force at the housing seam. Stop using the instrument if the enclosure is dented, deformed or leaking.
4. Do not puncture or cut the cable with sharp objects; insulation damage can cause electrical leakage.
5. Inspect regularly and do not use the instrument with damaged housing or wires.
6. The mercury switch contains metallic mercury. At end of life, handle it under hazardous-waste procedures; do not discard it indiscriminately.
7. Keep the instrument and packaging out of children's reach.

Relay and contactor connection reference



Original English wiring illustration supplied with the Chinese product page. It shows a 24V miniature relay between the float signal and an AC contactor. The separate power labels are 24VDC for the signal circuit and 220V for the illustrated contactor control circuit; “input power” and “electrical appliance” identify the main load path.

Select blue for a lower-level signal or brown for an upper-level signal, with black as common, and insulate the unused wire. Keep the float circuit within 24VAC/DC and 0.5A. Verify the actual relay socket, coil polarity, contact terminals and contactor coil voltage against their own markings; the photograph is not a universal relay pinout. Isolate all supplies before wiring.

8. Manual identification

Original Chinese manual VI-EM15-221-250902; sheet size 142×210mm. Manufacturer and trademark holder: Yueqing ELECALL Electric Co., Ltd., No.246 Weishi Road, Yueqing Economic Development Zone, Zhejiang, China. Telephone: 4006-111-323; website: www.elecall.cn. Slogan: “ELECALL — producing high-quality products”; “Do Better Forever.”