ecoloxtech

FLOAT SWITCH

INSTALLATION & WIRING GUIDE

FD-650PI-2AH12-PVDF | Dual-level PVDF float switch

Setup, PCB connection, schematic and dimensional drawing

ECOLOXTECH JULY 2025

OVERVIEW

The float switch has two floats on one 650 mm PVDF stem. Each float operates its own reed switch and has its own pair of wires. Float B (upper) gives the **High Level** signal and float A (lower) gives the **Low Level** signal. Both are set so that the switch is **closed when the float touches its top ring** and **open when it touches its bottom ring**.

WIRE CONNECTIONS AT A GLANCE

Wire	Float	PCB label	PCB silkscreen	Terminal (left to right)
Black	A (lower)	LL2	GND	1
Red	A (lower)	LL1	SEN1	2
White	B (upper)	HL2	GND	3
Green	B (upper)	HL1	SEN2	4

LL = Low Level, HL = High Level. Wire is UL1007 22 AWG.

BEFORE YOU START

- Switch off and disconnect the controller from mains power before connecting or disconnecting any wire.
- You need: a multimeter set to resistance (Ω), a small flat screwdriver for the terminal screws, and small pliers or a screwdriver to remove a stop ring (E-ring).
- The reed switches are signal contacts: 1.0 A, 220 V DC and 50 W maximum. Connect them only to the PCB inputs, never directly to a pump or motor.

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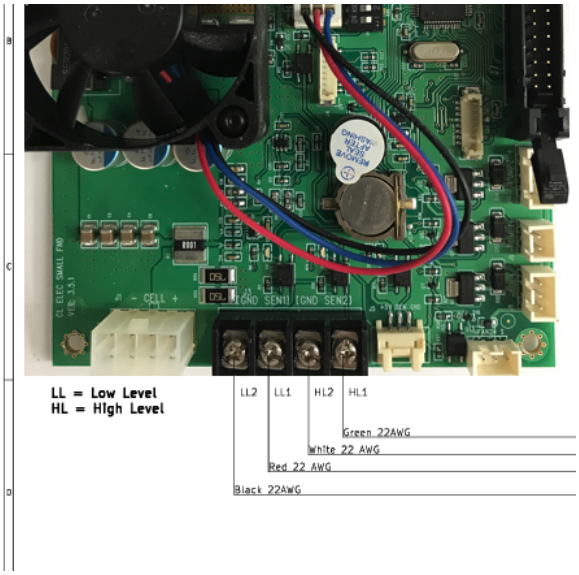
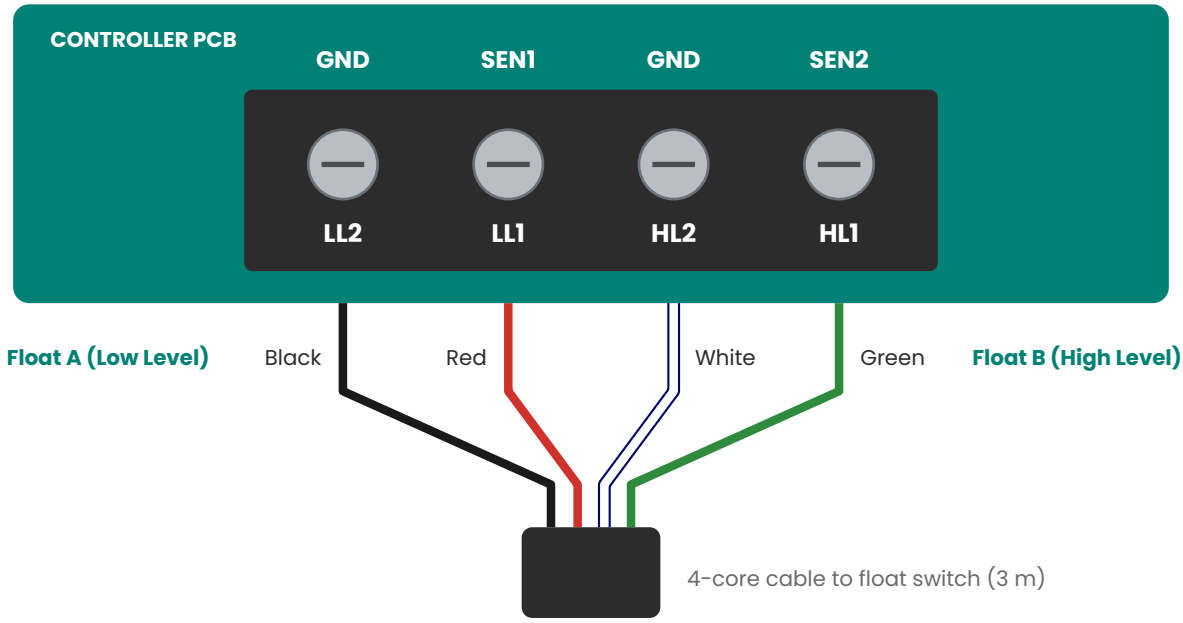
1. CONNECTING THE WIRES TO THE PCB

The float switch connects to the 4-way screw terminal marked **GND SEN1 GND SEN2** at the bottom edge of the controller board.



Controller PCB with the float switch terminal block.

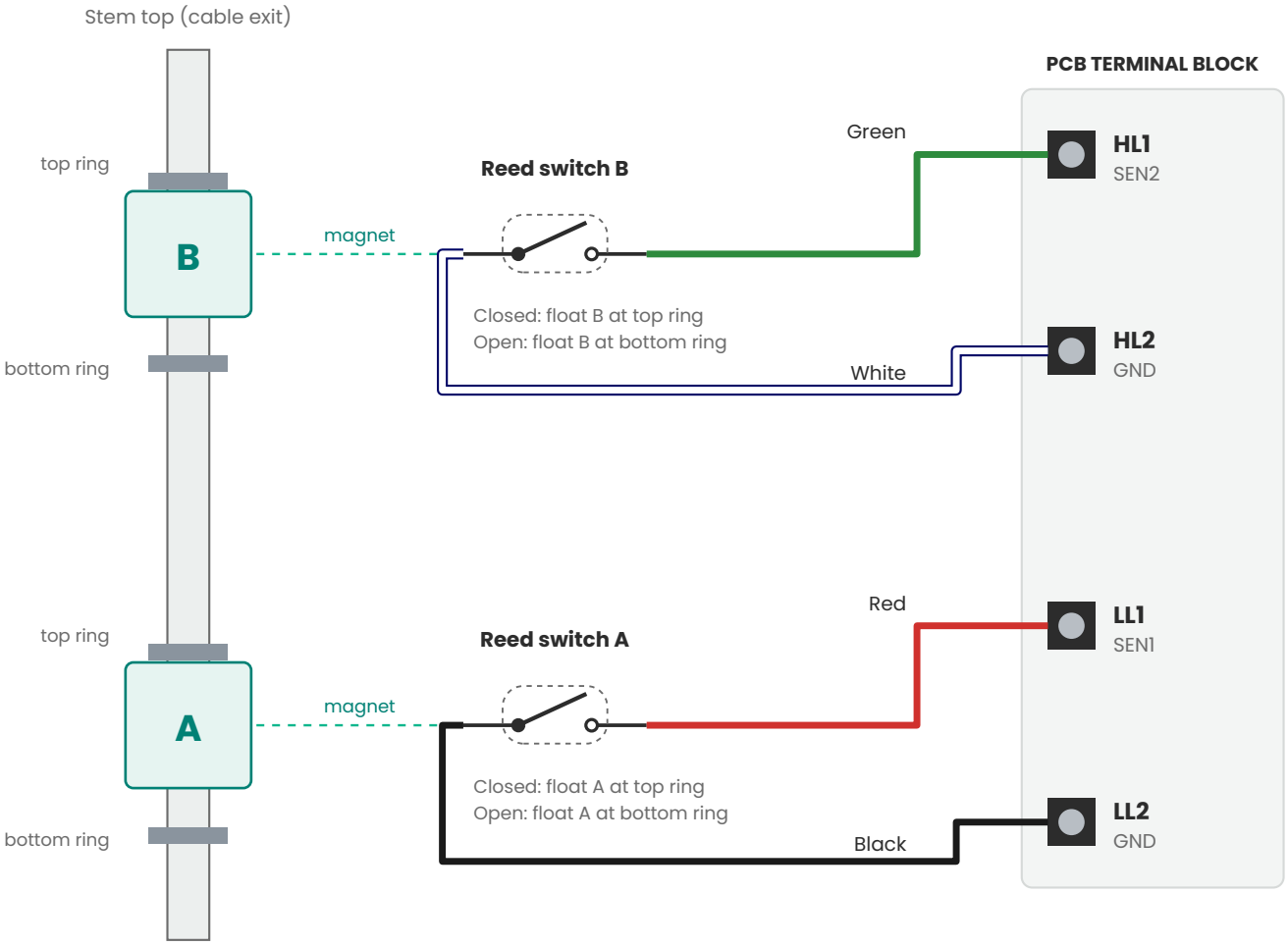


CONNECTION STEPS

1. Strip about 5 mm of insulation from each wire if needed (the wires are supplied pre-stripped 5 mm).
2. Loosen the four terminal screws.
3. Insert **Black** into terminal 1 (LL2 / GND) and **Red** into terminal 2 (LL1 / SEN1).
4. Insert **White** into terminal 3 (HL2 / GND) and **Green** into terminal 4 (HL1 / SEN2).
5. Tighten each screw and pull gently on each wire to check it is held firmly. No bare copper should show outside the terminal.

2. SCHEMATIC

Each float carries a magnet that operates a normally-open reed switch sealed inside the stem. The two circuits are independent: float A switches between LL2 and LL1, float B between HL2 and HL1.



Float B: as supplied. Float A: turned upside down.

SWITCH STATES AFTER SETUP

Float	PCB input	Float at top ring	Float at bottom ring	What it tells the controller
B (upper)	HL1 / HL2	Closed	Open	Closed = water at the high level
A (lower)	LL1 / LL2	Closed	Open	Open = water has dropped to the low level

The contact changes 2–4 mm before the float reaches the ring and stays in that state while the float rests on it. Check that the controller is set up to read the inputs this way.

3. ADJUSTING THE FLOATS

From the factory, float B already closes at its top ring. Float A works the opposite way, so it must be turned upside down. Turning a float over reverses its switching point.

Float	From the factory	Required	Action
B (Green / White)	Closed at top ring	Closed at top ring	None
A (Black / Red)	Closed at bottom ring	Closed at top ring	Turn upside down

TURN FLOAT A UPSIDE DOWN

1. Disconnect the switch from the PCB and lay it on the bench, cable end at the top.
2. Remove the bottom stop ring (E-ring) at the end of the stem, under float A.
3. Slide float A off the stem, turn it upside down and slide it back on.
4. Refit the stop ring in exactly the same position. Check that float A slides freely between its two rings.

Do not move any stop ring to a new position. The rings keep each float over its reed switch inside the stem. If a ring is moved the switch may stop working.

4. TESTING WITH A MULTIMETER

Set the multimeter to resistance (Ω), lowest range. Hold the switch upright, cable end at the top.

Meter shows	Meaning
About 0 Ω (under 1 Ω)	Switch closed
OL or 1 (no reading)	Switch open

1. Put the probes on **Black + Red**. Slide float A slowly up to its top ring, then down to its bottom ring.
2. Put the probes on **Green + White**. Slide float B slowly up to its top ring, then down to its bottom ring.
3. Compare your readings with the table below.

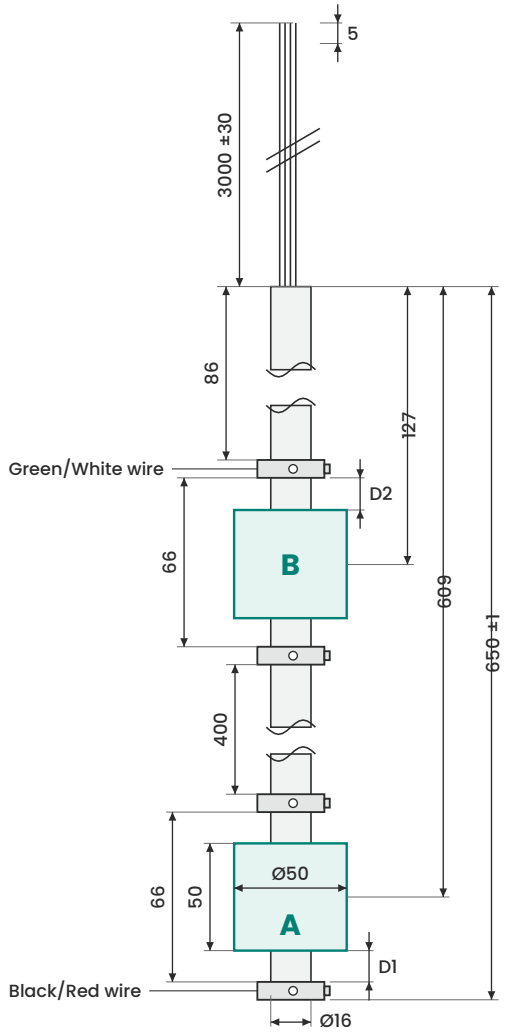
Float	Probes on	At top ring	At bottom ring
A	Black + Red	About 0 Ω (closed)	OL (open)
B	Green + White	About 0 Ω (closed)	OL (open)

If float A still reads the wrong way, check that it was turned fully upside down and refitted. When both floats read correctly, connect the wires to the PCB as shown in section 1.

5. DIMENSIONAL DRAWING

FD-650PI-2AH12-PVDF, edition A0, 2025-12-06. Dimensions in mm. Floats shown as supplied.

CUSTOMER	Ecoloxtech	TYPE	Float switch	PART NO.	FD-650PI-2AH12-PVDF



OPERATION

1. When float A moves down from the top to position D1, the switch closes at 2 mm ≤ D1 ≤ 4 mm and stays closed until D1 = 0 mm (black/red wires).

2. When float B moves up from the bottom to position D2, the switch closes at 2 mm ≤ D2 ≤ 4 mm and stays closed until D2 = 0 mm (green/white wires).

3. Turning a float upside down reverses its action point.

FLOAT DIMENSIONS

Ø50 × 50 mm, Ø18 mm bore

UNITS AND TOLERANCES

Unit: mm
X ±0.5 mm
X.X ±0.3 mm

MATERIAL SPECIFICATION		SWITCH CHARACTERISTICS		OPERATING CHARACTERISTICS	
1. Float body	PVDF	1. Contact form	A (normally open)	1. Max shock	150 g
2. Float ball	PVDF	2. Max contact rating	50 W	2. Max vibration	20 g (1–2000 Hz)
3. E-ring	PVDF	3. Max switching voltage	220 V DC	3. Operating temp.	-30 to +80 °C
4. O-ring (gasket)	–	4. Min breakdown voltage	350 V DC	4. Humidity	95 % RH (80 °C)
5. Screw nut	–	5. Max switching current	1.0 A	5. Water absorption (float)	±3 % (1000 h)
6. Wire	UL1007 22 AWG, black / red / white / green	6. Max contact resistance	100 mΩ	6. Application	Water float sensor
7. Terminal	–	7. Min insulation resistance	10^{10} Ω	7. Corrosion	Corrosion resistant
				8. Acid / alkali	Resistant to acid and alkali

Approved by	Rechecked by	Checked by	Drawn by ZXF	Drawing date 2025-12-06	Scale 1:2
ecoloxtech		File name	FD-650PI-2AH12-Ecoloxtech-2025-12-06		
		Drawing no.	FD-650PI-2AH12-PVDF	Edition A0	Sheet 1/1