



The driver is powered by two 9V batteries or external DC power supply.

Batteries may remain in the driver when external power supply is used.

The batteries will not be charged or otherwise connected to the circuit when the driver is connected to external power supply. A switch in the power jack disconnects the batteries when external power supply is connected.

### Installation of batteries

To install batteries open the battery compartment on the backside of the driver. Use Philips size 2 cross screwdriver to open the lid



Take care not to mix up the polarity of the batteries.

### Connection to the external power supply

1. Connect the stepper motor to the terminals or to the M12 connector. Do not connect two stepper motors at the same time. Match the wire colour to the colour indicated on the driver. The driver is intended to be use with Danfoss ETS and KVS valve. Any bipolar stepper motor accepting 100mA/coil and with max 75Ω/coil can be tested with the driver. Phase 1 should be connected to the L1+ and L1- terminals, Phase 2 should be connected to the L2+ and L2- terminals.
2. Select speed
3. Push the ACTIVATE toggle in close direction to close the valve
4. Push the ACTIVATE toggle in open direction to open the valve  
**Note:** KVS 15 - 35 opens and closes in the opposite direction of all ETS sizes and KVS 42- 54.
5. Make sure that the POWER LED is lit. If not change the batteries or make sure the external power supply is connected and switches on.
6. Observe the terminal indicator LEDs  
 At Speed above 1 step/sec the LEDs will flash quickly.  
 At 1 step/sec the LEDs will indicate how the phases are energized.  
 Only one LED per phase should lit at a time.  
 At higher speeds all LEDs seems to light up continuously.

Operating the valve at speed 1 step/sec will show how the phases are energized.

The LEDs will light in the following sequence:

	ETS KVS 42 -54	Black L1+	White L1-	Green L2+	Red L2-	KVS 15 - 35
1	open ↓		•		•	open ↑
2		•			•	
3		•		•		
4			•	•		

If only one LED is on, the other phase is disconnected or broken.

If two LEDs lights but in a different sequence, the phases have been mixed, e.g. green and white wire swapped.

### Specification

*Speed [step/sec]*

1, 18, 37, 75, 150 and 300 can be selected

*Motor Connector*

Spring clamp connectors on front cover, and M12 connector on back panel.

*Power*

2 x 9V batteries type 6L61 or 12V-18Volt external supply, e.g. Mascot adaptor no.9883000047

*Power connector*

standard 5.5 mm adaptor connector, centre contact positive.

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