CONDUCTIVE MULTIPLE LIMIT SWITCH
VESA

SAFETY INSTRUCTIONS

- Installation, initial start-up and maintenance may only be performed by trained personnel!
- The device may only be connected to supply power which complies with the specifications included in the technical data and on the serial plate!
- The device must be disconnected from all sources of power during installation and maintenance work!
- The device may only be operated under the conditions specified in the operating instructions.

DESCRIPTION

The VESA electrode control system operates on the conductive principle, i.e. the electrical conductivity of the liquids to be monitored is used as an electrical connection between the immersed electrodes to detect two or four limit values.
This conductive limit switch is not suitable for liquids that contain oil or grease, or in which electrically conductive or insulating deposits can form.
Measuring ranges: The VESA electrode controller can be used with liquids whose resistance between the electrodes is less than 120kΩ.
The device is available with up to 5 electrode rods.
Control: Two different operating modes can be set:
- Direct monitoring of up to 4 fill levels
- Interval switching (MIN/MAX control) with self-holding
  with electrodes E2, E3 and reference electrode, and additionally with electrodes E1 and E4 as overfill and dry run monitoring.

Metal containers can be connected to the E0 electrode and used as an extended reference electrode.

TECHNICAL DATA

Supply voltage	10...30V DC
Connection power	~2W
Ambient temperature	-20...+60°C
Media temperature	max. 100°C
Connection head	PBT glass fibre reinforced, IP65 according to EN 60 529
Max. operating pressure	6bar at +20°C, 1bar at +100°C, higher pressure on request
Process connection	PP, G2"
Electrode rods	316L stainless steel, min. 45mm, max. 2000mm, also available with partial insulation
Measuring circuit	Galvanically isolated, AC voltage <5V / <1mA
Sensitivity	Selectable with DIP switch Low <10kΩ >0,1mS Medium ~60kΩ ~16µS High >120kΩ <8µS
Reset hysteresis	Approximately 10% of the set sensitivity value
Sensor input	2...5 rods for up to 4 limit values
Signalling	LED for relay switching status
Operation	6-position DIP switch for operating mode and sensitivity

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TECHNICAL DATA (continuation)

Relay outputs	4 normally open contacts with common root, potential-free AC: max. 250V, 5A, 500VA DC: max. 30V, 1A, 40W

Please note:
The maximum permissible current is the sum of the individual currents through the common root. When the supply voltage is switched off, all relay contacts are open.

Operating principle	Operating/standby current, reversible with DIP switch
Delay	Pick-up/drop-out delay selectable 0.5s or 5s

CE mark: The device fulfils the legal requirements of the applicable EU directives.

INSTALLATION AND COMMISSIONING

Response sensitivity:
DIP switches 1 to 3 for adjustment to the conductivity of the respective liquid.
Principle:
The lower the conductivity of the liquids used and the greater the distance between the electrodes, the higher the response sensitivity must be set.

Note:
The low response sensitivity (DIP 1=ON, low) is for highly conductive liquids.
The medium response sensitivity (DIP 2=ON, med) is the right one for most liquids.
The high response sensitivity (DIP3=ON, high) is for liquids with very poor conductivity.
Please note:
Excessive sensitivity can lead to incorrect switching!
Always set only one of the DIP switches 1 to 3 to ON, e.g. medium response sensitivity = OFF/ON/OFF

Working current and quiescent current circuit:
DIP switch 5
All relay contacts are controlled in inverted mode.

Pick-up/drop-out delay time:
DIP switch 6
Flutter protection to prevent multiple switching in the event of fluctuating liquid surfaces.

Operating modes:
DIP switch 4 can be used to switch between the two basic operating modes.
Mode Niv (Level monitoring):
DIP switch 4 = OFF: Level monitoring.
Each electrode E is assigned to a relay A.
When the switching electrode is in electrical contact with the medium, the corresponding relay is activated.
MIN/MAX mode:
DIP switch 4 = ON: MIN/MAX control with self-locking for automated filling or draining.
Relays A1 and A4 are still assigned to electrodes E1 and E4.
Relays A2 and A3 are controlled alternately like a changeover contact.

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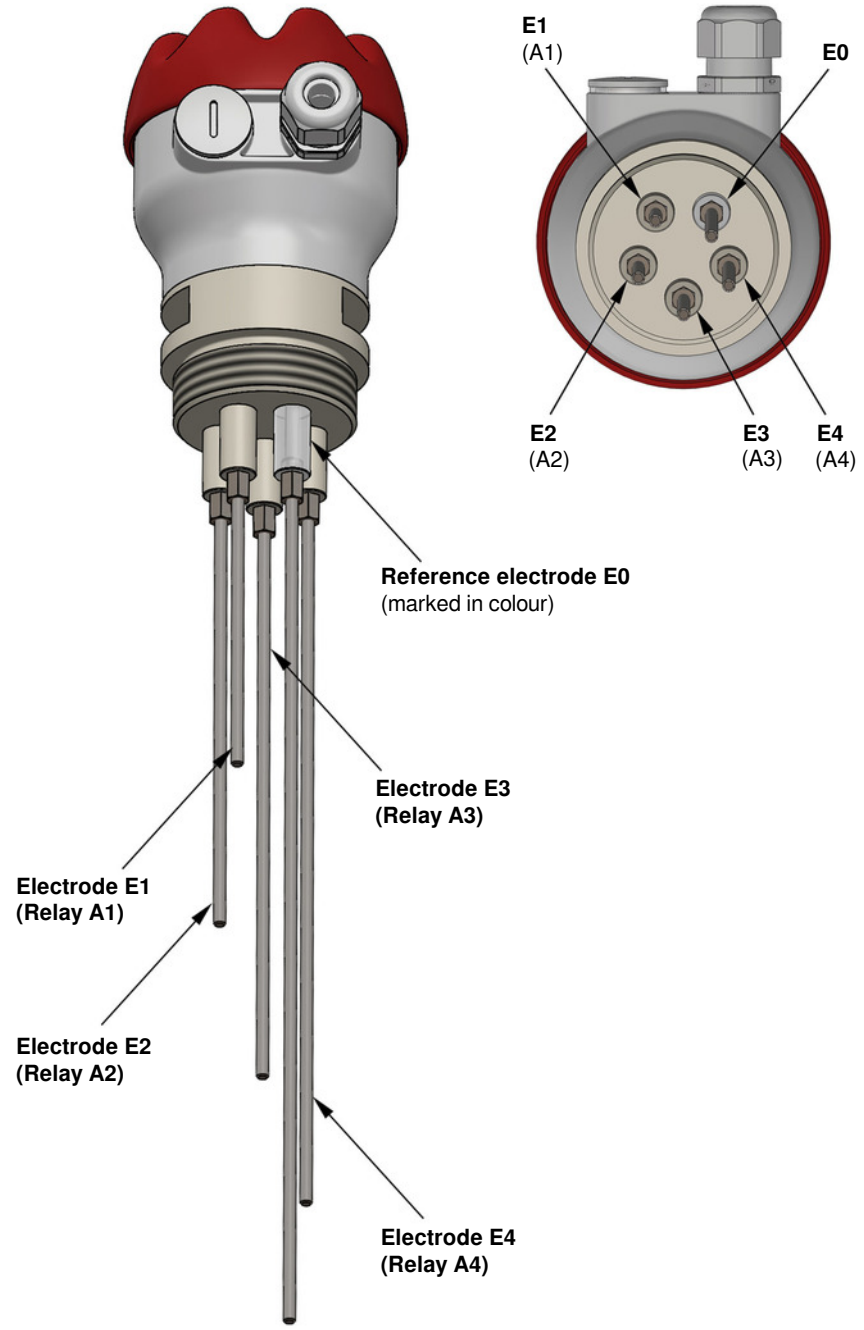
ELECTRODE ADJUSTMENT

The electrodes can be shortened manually as required. The electrodes are assigned to the relays as follows:



The electrode sequence begins with the colour-coded reference electrode E0 and then runs in ascending order from short to long (E1, E2, E3, E4) in a counterclockwise direction (as shown in the pictures viewed from below).

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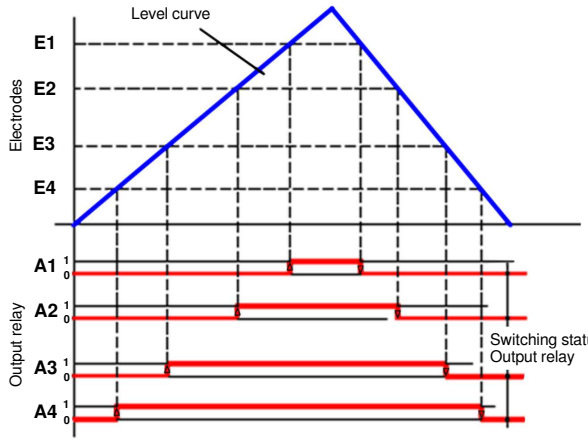
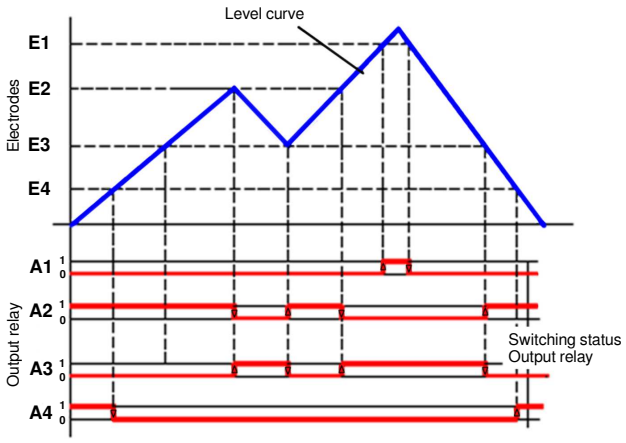
FUNCTIONAL DIAGRAM



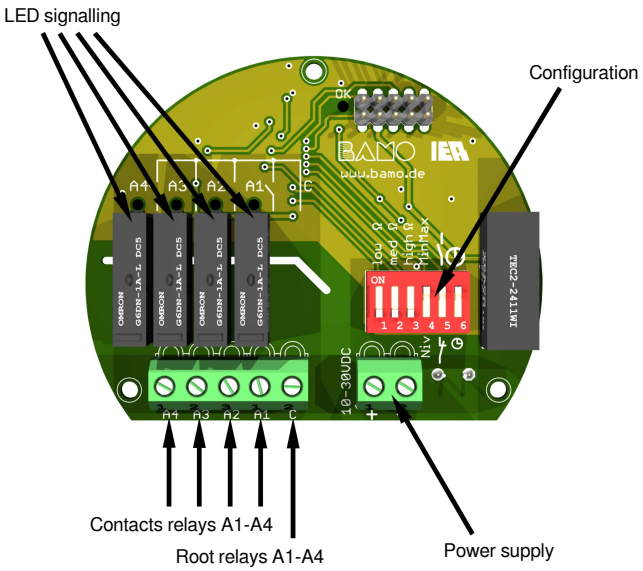
Level monitoring



MIN/MAX control with electrodes E2/E3,
Electrode E1 as overfill monitoring
and electrode E4 as dry-running monitoring

Note: when the power supply is switched off, all relay contacts are open!

OPERATION / ELECTRICAL CONNECTION



DIP	OFF	ON	Function
1 *)	-	<10kΩ	Low
2 *)	-	~60kΩ	Medium
3 *)	-	>120kΩ	High
4	Level	MIN/MAX	Mode
5	Normally open contact	Normally closed contact	Relay
6	0.5s	5s	Time

*) Only switch one of the DIP switches 1-3 to ON at a time!

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10-12-2025 M-540.05-EN-AA

LEV

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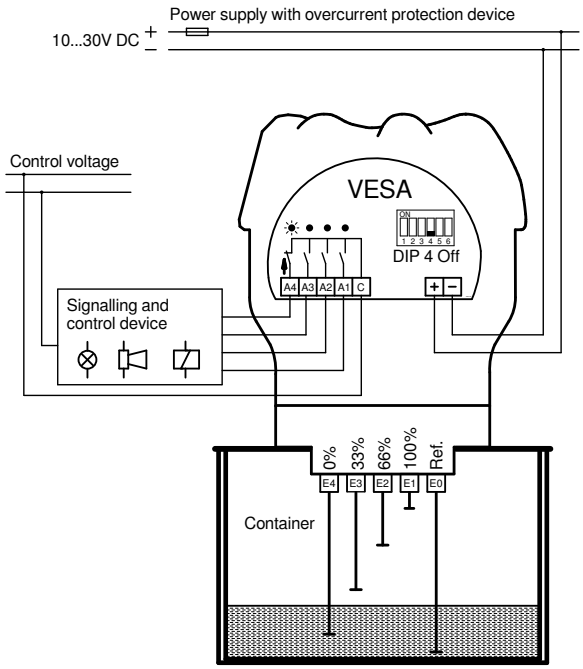
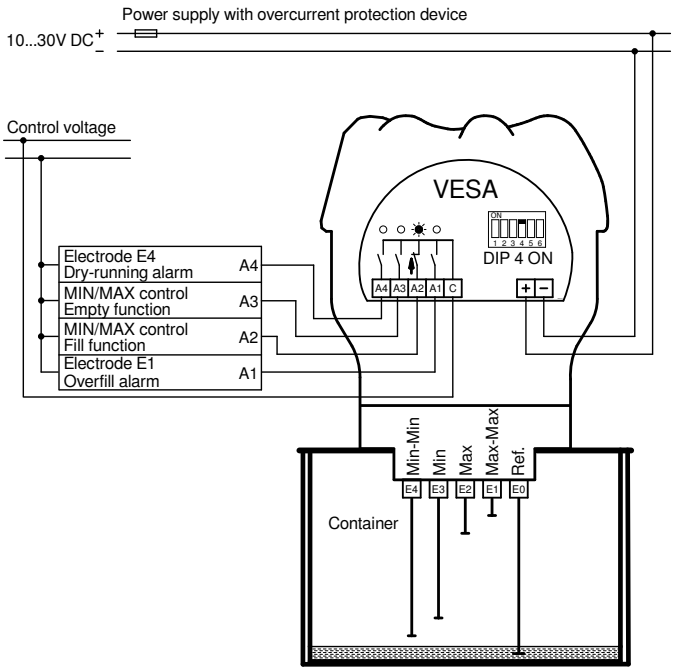
ELECTRICAL CONNECTION

Level monitoring

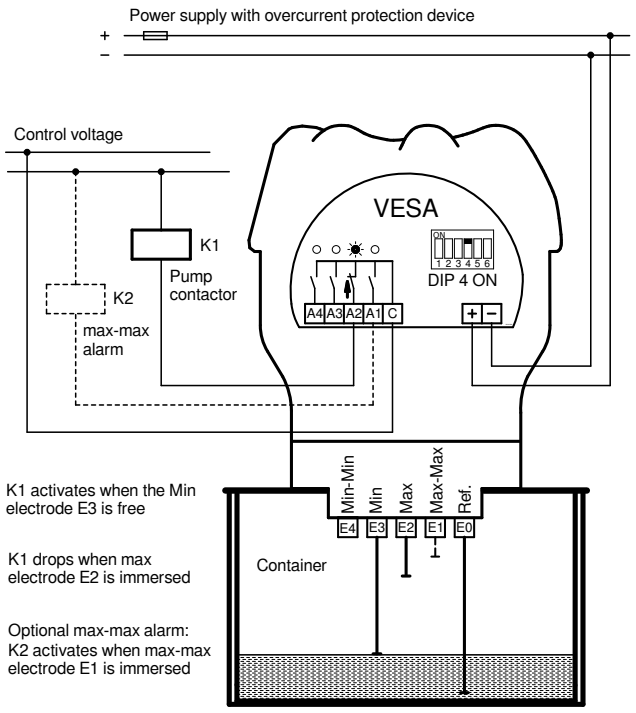


MIN/MAX control with overfill and dry-run alarm



Note: E1 is always the shortest electrode.

Min/Max function automatic filling with optional max-max alarm

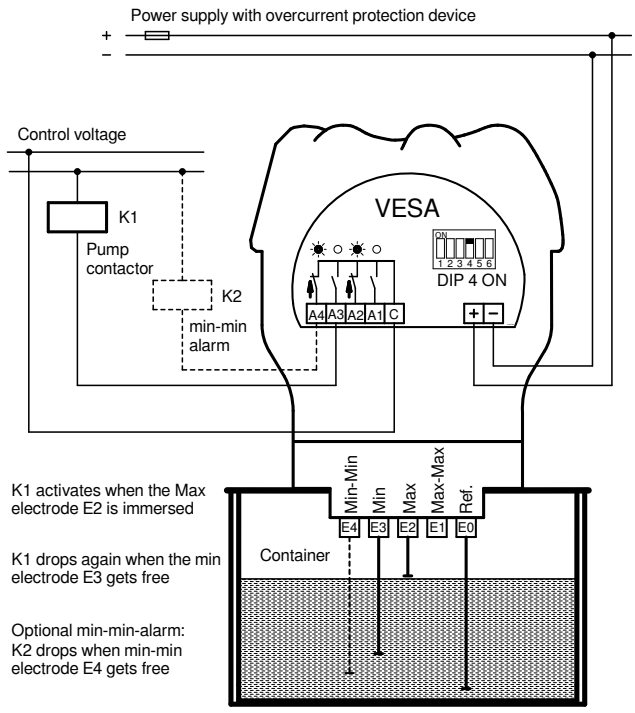


K1 activates when the Min electrode E3 is free

K1 drops when max electrode E2 is immersed

Optional max-max alarm: K2 activates when max-max electrode E1 is immersed

Min/Max function automatic emptying with optional min-min alarm



K1 activates when the Max electrode E2 is immersed

K1 drops again when the min electrode E3 gets free

Optional min-min-alarm: K2 drops when min-min electrode E4 gets free

Note: E1 is always the shortest electrode.

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