GESTRA® Industrial Electronics

Amplifier VR 16

Issue Date: 7/97

VR 16 **B 1**

Purpose

The amplifier is used in conjunction with the multiple level-control electrodes type ER 50 or ER 56 for signalling levels of conductive liquids.

Application

On-off control (discharge or fill control), signalling of low or high levels in vessels and boilers.

Main application for pump switching in condensate collecting and return systems.

As oil detector for cooling water (see separate data sheet ER 50/VR 16).

Design

The electronic circuit of the amplifier type VR 16 is mounted on a panel of glass-fibre reinforced epoxy resin (printed circuit) and enclosed in a case of ABS plastics. The connecting terminals are provided on the lid. The case is available

a) design -a
in a case for field installation:
type VR 16-a.
Sheet-steel case, in grey hammertone finish, with 3 cable glands Pg 11;

b) design -b
for snapping onto a supporting rail TS 35 for installation in switch cabinets:
type VR 16-b.

Operation

Every liquid possesses a certain conductivity which is used to signal its level. On immersion of two electrode tips a current flows between them which, via a threshold amplifier, energizes a relay.

The electrodes types ER 50 and ER 56 are designed such that the resistance of the submerged electrode is clearly different from the resistance formed by the liquid film remaining on the electrode when exposed. Continuous adjustment of the sensitivity is therefore not required. However, to be able to cover the complete conductivity range from 10 µS/cm to 100000 µS/cm in the case of low conductivities (< 1000 µS/cm) the sensitivity must be increased. For this purpose a wire link in the amplifier simply has to be removed.

For on-off control the relay is provided with an auxiliary contact, ensuring that the relay is not released until the lower electrode tip connected to terminal 3 is exposed.

The electrode circuit is not superposed by d.c., so that the electrodes stay free from electrolytic deposits. Electrode and supply circuits are galvanically separated. The electrode circuit is short-circuited protected.

Technical Data

Mains supply
230 V + 10/ – 15 %, 48 ... 62 Hz

Input
for two or three electrode tips of a multiple level-control electrode type ER 50 or ER 56, or for one or two single electrodes; screened cable I-Y (ST) Y, FMGCG or similar.

Output
1 potential free change-over contact, 250 V, 4 A, 700 W

Min. conductivity of liquid required
Range I: 1000 ... 100000 µS/cm
Range II: 10 ... 10000 µS/cm, after removal of an external wire link
(The conductivity indicated refers to service temperature)

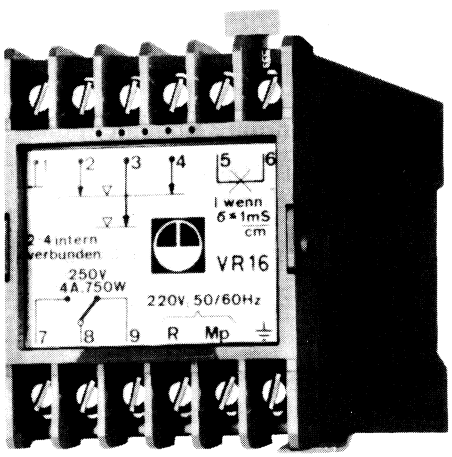
Electrode circuit
no-load voltage 7 V a.c.
short-circuited 0.022 A

Ambient temperature
0 ... 70 °C

Protection
VR 16-a: IP 65
VR 16-b: IP 50

Approx. weight
VR 16-a: 1 kg
VR 16-b: 0.4 kg

Case (VR 16-a)



Plastic case for snapping onto a supporting rail TS 35 (VR 16-b)

B1 VR 16

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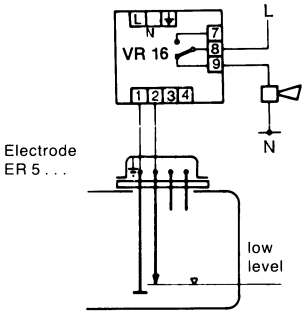
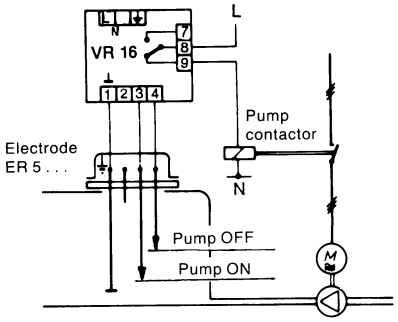
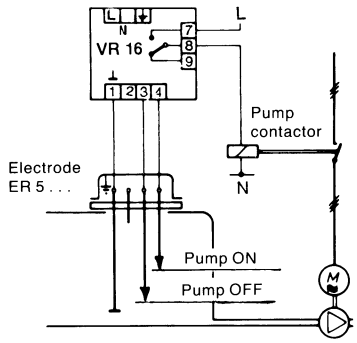
Wiring Diagrams (drawn position of contacts: electrode exposed or power supply off)



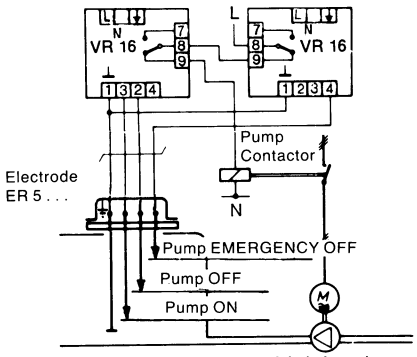
Signalling of low level with amplifier type VR 16 and multiple level-control electrode type ER 50 or ER 56



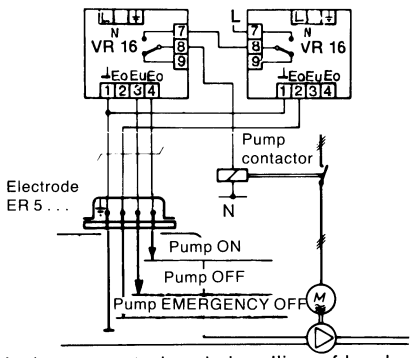
Fill control with amplifier type VR 16 and multiple level-control electrode type ER 50 or ER 56



Discharge control with amplifier type VR 16 and multiple level-control electrode type ER 50 or ER 56

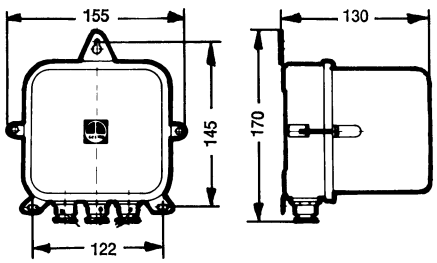


Fill control and signalling of high level with 2 amplifiers type VR 16 and multiple level-control electrode ER 50 or ER 56



Discharge control and signalling of low level with 2 amplifiers type VR 16 and multiple level-control electrode type ER 50 or ER 56

Dimensions



Amplifier type VR 16-a (field case)

Order and Enquiry Specifications

GESTRA amplifier type VR 16:
VR 16-a (field case)
or
VR 16-b (plastic case for snapping onto supporting rail TS 35)

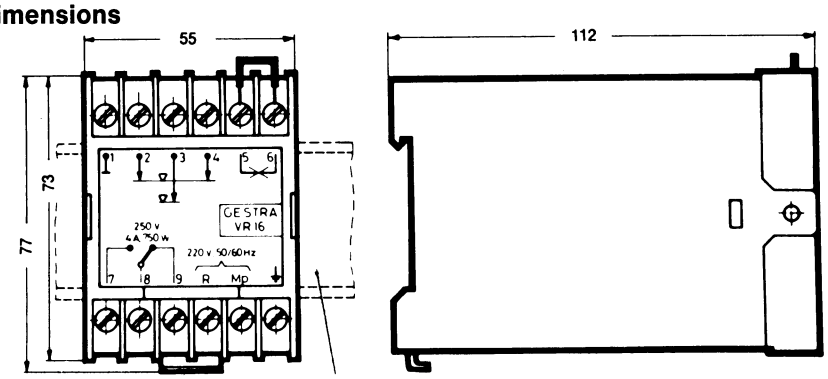
Mains supply: 220 V, 48 ... 62 Hz

Recommended GESTRA Equipment

Multiple level-control electrodes type ER 50 or ER 56.

Control valves

Dimensions



supporting rail TS 35 to DIN 46277

Amplifier type VR 16-b (plastic case for snapping onto a supporting rail TS 35)

Technical modifications reserved.

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