Page 19-2

**LEVEL CONTROL RELAYS**
- For conductive liquids
- Single, dual or multivoltage
- Emptying or filling functions
- Multifunction
- Automatic resetting
- Modular and plug-in versions.

Page 19-5

**ELECTRODES**
- Single pole
- Three pole.

Page 19-6

**START-UP PRIORITY CHANGE RELAY**
- 2 outputs
- Single or multivoltage
- Modular and plug-in versions.

| Description | LEVEL CONTROL RELAYS | | | | | | PRIORITY CHANGE RELAYS FOR 2 MOTORS | | |
|---|---|---|---|---|---|---|---|---|---|
| | LVM20 | LVM25 | LVM30 | LVM40 | LV1E | LV2E | LVMP05 | LVMP10 | CSP2E |
| Modular version | ●(2U) | ●(1U) | ●(3U) | ●(3U) | | | ●(1U) | ●(3U) | |
| Plug-in version | | | | | ● (8 pin) | ● (11 pin) | | | ● (11 pin) |
| 3 detecting electrodes (MIN, MAX and COM) | ● | ● | ● | | ● | ● | | | |
| 5 detecting electrodes (MIN1, MAX1, MIN2, MAX2 and COM) | | | | ● | | | | | |
| Sensitivity adjustment 2.5...50kΩ | ● | | ● | | | | | | |
| Sensitivity adjustment 2.5...100kΩ | | ● | | | | | | | |
| Sensitivity adjustment 2.5...200kΩ | | | | ● | | | | | |
| Fixed sensitivity: 7...8kΩ | | | | | ● | ● | | | |
| Adjustable sensitivity full-scale value 25-50-100-200 kΩ | | | | ● | | | | | |
| Separate sensitivity adjustment of MAX probe (foam detection) | | | | ● | | | | | |
| Emptying function and alarms | ● | ● | ● | ● | ● | ● | | | |
| Filling function and alarms | | ● | ● | ● | | | | | |
| Emptying function with Extra-MIN and/or Extra-MAX alarm relays | | | | ● | | | | | |
| Filling function with Extra-MIN and Extra-MAX alarm relays | | | | ● | | | | | |
| Emptying function with pump start change control | | | | ● | | | | | |
| Filling function with pump start change control | | | | ● | | | | | |
| Tank filling, well drawing functions and alarm | | | | ● | | | | | |
| Filling-emptying adjustment selector | | ● | ● | | | | | | |
| 5 function adjustment selector | | | | ● | | | | | |
| Motor start-up priority change | | | | | | | ● | | |
| Motor start-up priority change with stand-by motor function | | | | | | | | ● | ● |
| Page | 19-2 | | | 19-3 | 19-4 | | 19-6 | | |

# Level control relays

Switches Unlimited
sales@switchesunlimited.com
Phone: 800-221-0487
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- Level monitoring for electrically conductive liquids
- Modular and plug-in versions
- Adjustable 2.5-200kΩ sensitivity
- Single and three-pole electrodes
- Startup priority change relays.

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## Single-voltage relay

LVM20…

| Order code | Supply voltage | Type of output contacts | Qty per pkg | Weight |
|---|---|---|---|---|
| | [V] 50/60Hz | ⅂' | n° | [kg] |
| Automatic resetting. | | | | |
| **LVM20 A024** | 24VAC | 1 C/O (SPDT) | 1 | 0.215 |
| **LVM20 A127** | 110-127VAC | 1 C/O (SPDT) | 1 | 0.215 |
| **LVM20 A240** | 220-240VAC | 1 C/O (SPDT) | 1 | 0.215 |
| **LVM20 A415** | 380-415VAC | 1 C/O (SPDT) | 1 | 0.215 |

**Operational characteristics**
- Use with 3 sensing electrodes, MIN, MAX and COM
- 2.5-50kOhm adjustable sensitivity
- Double insulation between supply, electrodes and output relay circuit
- Fixed probe signal delay: <1s
- Green LED indicator for power on
- Red LED indicator for output relay state
- Modular DIN 43880 housing, 2 module
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

**Certifications and compliance**
Certifications obtained: EAC, UL Listed, for USA and Canada (cULus-File E93601), as Auxiliary Devices - Level control relays.
Compliant with standards: IEC/EN 60255-5, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL508, CSA C22.2 n° 14.

**Electrodes and electrode holders**
Use electrodes or electrode holders type: SN1/PS31/PS3S/SCM/CGL or similar. See page 19-5.

## Multi-voltage relay

LVM25 240

| Order code | Supply voltage | Type of output contacts | Qty per pkg | Weight |
|---|---|---|---|---|
| | [V] | ⅂' | n° | [kg] |
| Emptying or filling function. Automatic resetting. | | | | |
| **LVM25 240** | 24-240VAC/DC | 1 C/O (SPDT) | 1 | 0.095 |

**Operational characteristics**
- Use with 3 sensing electrodes, MIN, MAX and COM
- 2.5-100kOhm adjustable sensitivity
- Insensivity to stray electrode-cable capacitance
- Programming selector for emptying or filling function with fail-safe operation
- Double insulation between supply, electrodes and output relay circuit
- Fixed probe signal delay: <1s
- Green LED indicator for power on
- Red LED indicator for output relay state
- Modular DIN 43880 housing, 1 module
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

**Certifications and compliance**
Certifications obtained: EAC, UL Listed, for USA and Canada (cULus-File E93601), as Auxiliary Devices - Level control relays.
Compliant with standards: IEC/EN 60255-5, IEC/EN 61000-6-2, IEC/EN 61000-6-4, UL508, CSA C22.2 n° 14.

**Electrodes and electrode holders**
Use electrodes or electrode holders type: SN1/PS31/PS3S/SCM/CGL or similar. See page 19-5.

## Dual-voltage relay

LVM30…

| Order code | Supply voltage | Type of output contacts | Qty per pkg | Weight |
|---|---|---|---|---|
| | [V] 50/60Hz | ⅂' | n° | [kg] |
| Emptying or filling function. Automatic resetting. | | | | |
| **LVM30 A240** | 24/220-240VAC | 2 C/O (SPDT) | 1 | 0.315 |
| **LVM30 A415** | 110-127VAC 380-415VAC | 2 C/O (SPDT) | 1 | 0.315 |

**Operational characteristics**
- Use with 3 sensing electrodes, MIN, MAX and COM
- 2.5-50kOhm adjustable sensitivity
- Programming selector for emptying or filling function with fail-safe operation
- Double insulation between each supply, electrode and output relay circuit
- Adjustable probe signal delay: 1-10s
- Adjustable pump start delay: 0-300s
- Green LED indicator for power on
- Red LED indicator for output relay state
- Modular DIN 43880 housing, 3 module
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

**Certifications and compliance**
Certifications obtained: EAC, UL Listed, for USA and Canada (cULus-File E93601), as Auxiliary Devices - Level control relays.
Compliant with standards: IEC/EN 60255-5, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL508, CSA C22.2 n° 14.

**Electrodes and electrode holders**
Use electrodes or electrode holders type: SN1/PS31/PS3S/SCM/CGL or similar. See page 19-5.

## Single-voltage multifunction relay

LVM40...

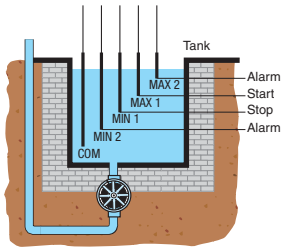
| Order code | Auxiliary supply voltage | Type of output contacts | Qty per pkg | Weight |
|---|---|---|---|---|
| | [V] 50/60Hz | ❶ | n° | [kg] |
| Multifunctions. Automatic resetting. | | | | |
| **LVM40 A024** | 24VAC | 1 C/O +1 N/O | 1 | 0.278 |
| **LVM40 A127** | 110-127VAC | 1 C/O +1 N/O | 1 | 0.278 |
| **LVM40 A240** | 220-240VAC | 1 C/O +1 N/O | 1 | 0.278 |
| **LVM40 A415** | 380-415VAC | 1 C/O +1 N/O | 1 | 0.278 |

❶ Two relay outputs; one with c/o (SPDT) and the other with N/O (SPST).

FUNCTIONS

A- Emptying with MIN and/or MAX alarms.

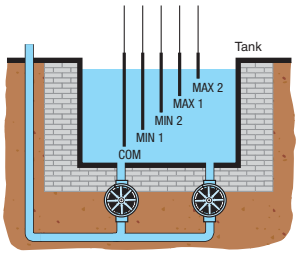
B- Filling with MIN and/or MAX alarms.




EXAMPLE OF EMPTYNG OPERATION
To achieve this type of operation, two electrodes are used to control the liquid between the fixed limits using MIN1 and MAX1 and two alarm levels using MIN2 and MAX2.
When one of the alarm electrodes is wet, the alarm relay is de-energised.
The alarm can be caused by pump malfunction, insufficient pump delivery capacity, MAX control level failure or MIN level electrode shorted.
With a proper connection, only the MIN alarm or MAX alarm can be activated or neither of the two can be activated so the relative output contacts can be used for pump control.

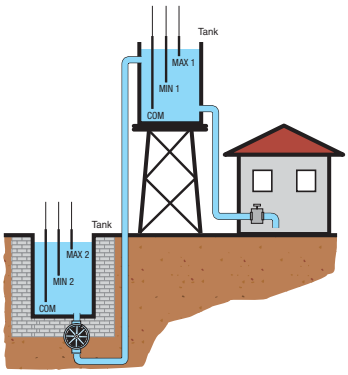
C- Emptying with pump priority change.

D- Filling with pump priority change.




EXAMPLE OF EMPTYNG OPERATION
This operation is obtained by using four electrodes positioned at four different levels and two relay outputs to control two pumps.
For example, one can place the four electrodes, MIN1, MIN2, MAX1 and MAX2, in increasing order from the lowest to the highest levels and must control the tank emptying. Usually. The level is controlled between the MIN1 and MAX1 levels by starting one of the two pumps but this case is different so the pumps can be mainteined at the best efficiency and optimise thei wear.
When the liquid wets the MAX2 level and because the first pump is faulty or else a higher delivery capacity is needed, the second stand-by pump is activiated to back up the first pump. When the liquid lowers and no longer wets the MIN2 level, the second pump is stopped and then when the MIN1 level is no longer wet, the first pump is stopped too.

E- Tank filling and well drawing with alarm.




EXAMPLE OF OPERATION
Two electrodes are used in this operation to control the tank level and another two for the well. One relay is used to activate the pump while the other for dry running / no water alarm.
When the well liquid wets the MAX2 level and the liquid wets the MIN1 tank level, the tank-filling pump is activated. When the tank MAX1 level is wet, the pump is stopped.
During the tank filling, the pump could stop before the MAX1 level is wet because the well MIN2 level is no longer wet.
Should the tank MIN1 level no longer be wet at which the pump should restart but the well MIN2 level is also no longer wet, then the alarm relay is de-energised.

**Operational characteristics**
- Use with 5 sensing electrodes, MIN1, MAX1, MIN2, MAX2 and COM
- 2.5-200kOhm adjustable sensitivity
- Sensitivity adjustment: 25-50-100-200kOhm
- Separate sensitivity adjustment of MAX electrodes for foam detection
- Insensitivity to stray electrode-cable capacitance
- Programming selector for 5 different functions:
  - Standard emptying and alarms
  - Standard filling and alarms
  - Emptying and filling with priority start-up change control
  - Filling with priority start-up change pump
  - Well draining and tank filling and alarms
- Double insulation between each supply, electrodes and output relay circuits
- Adjustable probe signal delay: 1-10s
- Adjustable pump start delay: 0-30min
- Green LED indicator for power on
- Red LED indicators for output relay and electrode state
- Modular DIN 43880 housing, 3 module
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

**Certifications and compliance**
Certifications obtained: EAC, UL Listed, for USA and Canada (cULus-File E93601), as Auxiliary Devices - Level control relays.
Compliant with standards: IEC/EN 60255-5, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL508, CSA C22.2 n° 14.

**Electrodes and electrode holders**
Use electrodes or electrode holders type: SN1/PS31/PS3S/SCM/CGL or similar. See page 19-5.

## Starter kit

| Order code | Description | Qty per pkg | Wt |
|---|---|---|---|
| | [mm] | n° | [kg] |
| **LVMKIT25** | Level control starter kit complete with LVM25 240 relay and two SN1 electrodes | 1 | 0.192 |

**General characteristics**
LVM25 240
- Use with 2 sensing electrodes, MIN and COM
- 2.5-50kOhm adjustable sensitivity
- Double insulation between supply, electrodes and output relay circuit
- Fixed probe signal delay: <1s
- Green LED indicator for power on
- Red LED indicator for output relay state
- Modular DIN 43880 housing, 2 module
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

SN1 SINGLE POLE ELECTRODE
A single pole electrode used for level control in wells or storage tanks. It comprises an AISI 303 stainless steel probe, a plastic (PPOX) holder and a cable gland.
A seal ring and the tightening of the cable gland prevent water from entering the cable terminal connector and causing its oxidation.
The external cable diameter must be 2.5 to 6mm/Ø0.1 to 0.24" to warrant perfect sealing of the PG7 gland.
Maximum cable section: 2.5mm²/14AWG.
Maximum operating temperature: +60°C.
Application: tanks and deep wells.

**Certifications and compliance**
Level control relay only:
Certifications obtained: EAC, UL Listed, for USA and Canada (cULus-File E93601), as Auxiliary Devices - Level control relays.
Compliant with standards: IEC/EN 60255-5, IEC/EN 61000-6-2, IEC/EN 61000-6-4, UL508, CSA C22.2 n° 14.

## Plug-in single-voltage relay

31 LV1E...

| Order code | Auxiliary supply voltage | Type of output contact | Qty per pkg | Wt |
|---|---|---|---|---|
| | [V] 50/60Hz | 4) | n° | [kg] |
| Automatic reset. | | | | |
| **31 LV1E 24** | 24VAC | 1 C/O (SPDT) | 1 | 0.263 |
| **31 LV1E 110** | 110-120VAC | 1 C/O (SPDT) | 1 | 0.263 |
| **31 LV1E 230** | 220-240VAC | 1 C/O (SPDT) | 1 | 0.263 |
| **31 LV1E 400** | 380-415VAC | 1 C/O (SPDT) | 1 | 0.263 |

**Operational characteristics**
- Used with 3 sensing electrodes, MIN, MAX and COM
- 7-8kOhm fixed sensitivity
- Red LED indicator for output relay state
- Maximum relay-electrode cable length: 500m/547yd using single-core double insulated cables
- 8-pin plug-in housing
- Mounting on 35mm (IEC/EN 60715) DIN rail using 31 S8 socket; see page 19-7
- Flush mounting with mount frame 31 G216 and loose 31 L48 P8 socket; see page 19-7
- IEC degree of protection: IP30.

**Reference standards**
Compliant with standards: IEC/EN 60255-5.

**Electrodes and electrode holders**
Use electrodes or electrode holders type:
SN1/PS31/PS3S/SCM/CGL or similar. See page 19-5.

## Plug-in dual-voltage relay

31 LV2E...

| Order code | Auxiliary supply voltage | Type of output contact | Qty per pkg | Wt |
|---|---|---|---|---|
| | [V] 50/60Hz | 4) | n° | [kg] |
| Automatic reset. | | | | |
| **31 LV2E 48** | 24-48VAC | 1 C/O (SPDT) | 1 | 0.266 |
| **31 LV2E 220** | 110-120VAC/ 220-240VAC | 1 C/O (SPDT) | 1 | 0.266 |
| **31 LV2E 400** | 220-240/ 380-415VAC | 1 C/O (SPDT) | 1 | 0.266 |

**Operational characteristics**
- Used with 3 sensing electrodes, MIN, MAX and COM
- 7-8kOhm fixed sensitivity
- Red LED indicator for output relay state
- Maximum relay-electrode cable length: 500m/547yd using single-core double insulated cables
- 11-pin plug-in housing
- Mounting on 35mm (IEC/EN 60715) DIN rail using 31 S11 socket; see page 19-7
- Flush mounting using mount frame 31 G216 and loose 31 L48 P11 socket; see page 19-7
- IEC degree of protection: IP30.

**Reference standards**
Compliant with standards: IEC/EN 60255-5.

**Electrodes and electrode holders**
Use electrodes or electrode holders type:
SN1/PS31/PS3S/SCM/CGL or similar. See page 19-7.

## Electrodes and electrode holder

11 SN1

31 SCM…

31 CGL125…

31 PS31

31 PS3S

| Order code | Rod probe included | Rod probe length | Qty per pkg | Wt |
|---|---|---|---|---|
| | | [mm/in] | n° | [kg] |
| Single pole electrodes. | | | | |
| **11 SN1** | Yes | 100❶/3.9 | 10 | 0.050 |
| **31 SCM 04** | Yes | 43/1.7 | 1 | 0.060 |
| **31 SCM 50** | Yes | 500/19.7 | 1 | 0.115 |
| **31 SCM 100** | Yes | 1000/39.4 | 1 | 0.162 |
| **31 CGL125 3** | Yes | 327/12.9 | 1 | 0.126 |
| **31 CGL125 5** | Yes | 500/19.7 | 1 | 0.158 |
| **31 CGL125 7** | Yes | 700/27.6 | 1 | 0.208 |
| **31 CGL125 10** | Yes | 1000/39.4 | 1 | 0.281 |
| Three pole electrode. | | | | |
| **31 PS31** | Yes | 300/11.8 | 1 | 0.120 |
| Electrode holder (for 3 rod probes). | | | | |
| **31 PS3S** | No | — | 1 | 0.184 |

❶ Total electrode length.

**General characteristics**
SN1 SINGLE POLE ELECTRODE
A single pole electrode used for level control in wells or storage tanks. It comprises an AISI 303 stainless steel probe, a plastic (PPOX) holder and a cable gland.
A seal ring and the tightening of the cable gland PG7 prevent water from entering the cable terminal connector and causing its oxidation.
Cable connection: screw.
The external cable diameter must be 2.5 to 6mm/Ø0.1 to 0.24" to warrant perfect sealing.
Maximum connection cable section: 2.5mm²/14 AWG.
Maximum operating temperature: +60°C.
Application: Tanks and deep wells.

SCM ELECTRODE
A single pole electrode used for level control on boilers, autoclaves and in general where pressure (10 bar maximum) and high temperature (+100°C maximum) are present.
It comprises an AISI 303 stainless steel probe embedded in an alumina oxide body and a 3/8" GAS threaded metal support holder.
Cable connection: Threaded rod with nut.
Application: Tanks, pressurised tanks and boilers.

CGL 125… ELECTRODE
A single pole electrode with AISI 302 probe, used for level control on boilers and autoclaves and in general wherever pressure is up to 10 bar maximum.
Maximum operating temperature: +180°C.
3/8" GAS threaded terminal.
Cable connection threaded rod with nut.
Application: Tanks, pressurised tanks and boilers.

PS31 ELECTRODE
A small electrode holder, complete with three AISI 304 stainless steel probes.
Particularly suited to small containers whenever pressure is maximum up to 2 bar.
Maximum operating temperature: +70°C.
1/2" GAS threaded coupling
Faston termination; relative lugs standard supplied
Application: Tanks and automatic dispensers.

PS3S ELECTRODE HOLDER
A thermoset resin electrode holder to be used with three probes (rods probes to be ordered separately) and complete with terminal cover.
Maximum operating temperature is +100°C.
2" GAS threaded coupling.
Cable connection: screw.
Application: tanks.

**Reference standards**
Compliant with standards: IEC/EN 60255-5.

## Rod probes

| Order code | Rod probe length | Qty per pkg | Wt |
|---|---|---|---|
| | [mm/in] | n° | [kg] |
| For SCM electrodes. | | | |
| **31 ASTA 460 MM4** | 460/18.11 | 1 | 0.053 |
| **31 ASTA 960 MM4** | 960/37.8 | 1 | 0.103 |
| For PS3S electrode holder. | | | |
| **31 ASTA 460 MM6** | 460/18.11 | 1 | 0.100 |
| **31 ASTA 960 MM6** | 960/37.8 | 1 | 0.210 |

**General characteristics**
Stainless steel AISI 304 probes with 4M or 6M threaded extremity suitable as extensions for SCM electrode or as rod probe for PS3S a holder.
See page 19-7 for SCM electrode extension coupler unit.

## Modular version

LVMP05

| Order code | Auxiliary supply voltage | Type of output contacts | Qty per pkg | Wt |
|---|---|---|---|---|
| | [V] | ⍳ | n° | [kg] |
| 2 outputs. AC/DC supply voltage. | | | | |
| **LVMP05** | 24/48VDC 24-240VAC | 2 N/O (SPST) | 1 | 0.090 |

**General characteristics**
The relays are designed to balance the operating time, and hence the wear of pumps, compressors, generators, when two units – primary and stand-by – are installed.

**Operational characteristics**
- Operating limit: 0.85-1.1 Ue
- Connection: permanent
- Green LED indicator for power on
- Red LED indicators for output relay state
- Modular DIN 43880 housing, 1 module
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

**Certifications and compliance**
Certifications obtained: EAC, UL Listed, for USA and Canada (cULus-File E93601), as Auxiliary Devices - Automatic starting control.
Compliant with standards: IEC/EN 60255-5, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL508, CSA C22.2 n° 14.

LVMP10...

| Order code | Auxiliary supply voltage | Type of output contacts | Qty per pkg | Wt |
|---|---|---|---|---|
| | [V] 50/60Hz | ⍳ | n° | [kg] |
| 2 outputs. AC supply voltage. | | | | |
| **LVMP10 A024** | 24VAC | 2 N/O (SPST) | 1 | 0.250 |
| **LVMP10 A127** | 110-127VAC | 2 N/O (SPST) | 1 | 0.250 |
| **LVMP10 A240** | 220-240VAC | 2 N/O (SPST) | 1 | 0.250 |
| **LVMP10 A415** | 380-415VAC | 2 N/O (SPST) | 1 | 0.250 |

**General characteristics**
The relays are designed to balance the operating time, and hence the wear of pumps, compressors, generators, when two units – primary and stand-by – are installed.

**Operational characteristics**
- Operating limit: 0.85-1.1 Ue
- Connection: permanent
- Green LED indicator for power on
- Red LED indicators for output relay state
- Modular DIN 43880 housing, 3 module
- IEC degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

**Certifications and compliance**
Certifications obtained: EAC, UL Listed, for USA and Canada (cULus-File E93601), as Auxiliary Devices - Automatic starting control.
Compliant with standards: IEC/EN 60255-5, IEC/EN 61000-6-2, IEC/EN 61000-6-3, UL508, CSA C22.2 n° 14.

## Plug-in version

31 CSP2E...

| Order code | Auxiliary supply voltage | Type of output contacts | Qty per pkg | Wt |
|---|---|---|---|---|
| | [V] 50/60Hz | ⍳ | n° | [kg] |
| 2 outputs. AC supply voltage. | | | | |
| **31 CSP2E 24** | 24VAC | 2 N/O (SPST) | 1 | 0.150 |
| **31 CSP2E 110** | 110VAC | 2 N/O (SPST) | 1 | 0.150 |
| **31 CSP2E 220** | 220VAC | 2 N/O (SPST) | 1 | 0.150 |
| **31 CSP2E 230** | 230/240VAC | 2 N/O (SPST) | 1 | 0.150 |

**General characteristics**
The relays are designed to balance the operating time, and hence the wear of pumps, compressors, generators, when two units – primary and stand-by – are installed.

**Operational characteristics**
- Operating limit: 0.85-1.1 Us
- Connection: permanent
- Voltage applied across input contacts: 15VDC not isolated with respect to supply.
- Current consumption, input contacts: about 1mA.
- Plug-in housing for use with 31 S11 socket; suitable for screw fixing or fixing on 35mm DIN rail.
- IEC degree of protection: IP30.

**Reference standards**
Compliant with standards: IEC/EN 60255-5.

## Accessories

31 S8

31 S11

| Order code | Description | Qty per pkg | Wt |
|---|---|---|---|
| | | n° | [kg] |
| **31 RE213** | Coupler unit for extension rod probe ASTA...MM4 | 1 | 0.008 |
| **31 S8** | 8-pin socket for screw fixing or mounting on 35mm DIN rail (IEC/EN 60715), used with LV1E... relay. Screw terminals. | 10 | 0.061 |
| **31 S11** | 11-pin socket for screw fixing or mounting on 35mm DIN rail (IEC/EN 60715), used with LV2E... and CSP2E... relays. Screw terminals. | 10 | 0.064 |
| **31 RE014** | Relay-socket retention bracket; S8 or S11 types only. | 10 | 0.001 |
| **31 L48 P8** | 8-pin loose socket. Screw terminals. | 10 | 0.040 |
| **31 L48 P11** | 11-pin loose socket. Screw terminals. | 10 | 0.048 |
| **31 G216** | Flush-mount frame complete with fixing accessories for plug-in relays. | 1 | 0.080 |

**Operational characteristics**
SOCKETS
- Tightening torque: 0.8Nm/7.1lbin
- Conductor cross-section max (2 wires): 2.5 mm²/ 14 AWG.

Switches Unlimited
Contact: sales@switchesunlimited.com
Phone: 800-221-0487 * Fax: 718-672-6370
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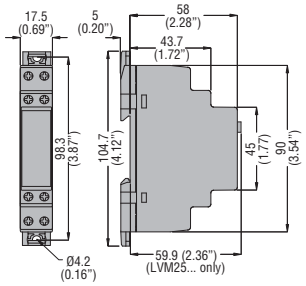
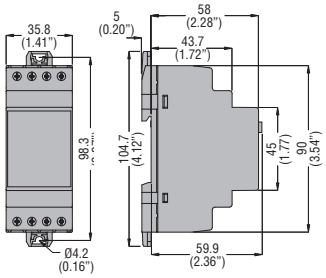
LEVEL CONTROL AND PRIORITY CHANGE RELAYS

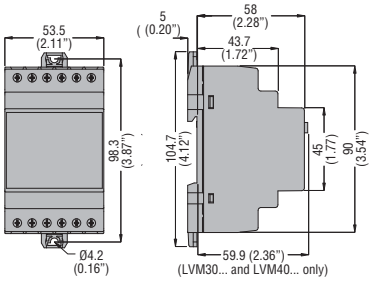
**LVM25... - LVMP05**



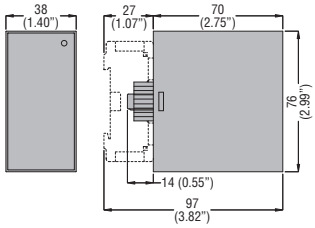

**LVM20...**




**LVM30... - LVM40... - LVMP10**

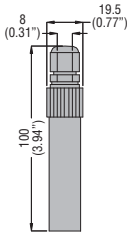



**LV1E... - LV2E... - CSP2E...**

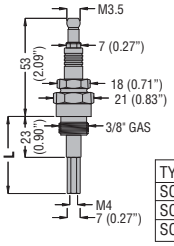



Electrodes and electrode holders for conductive liquids

**SN1**

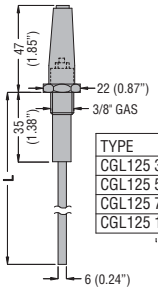



**SCM...**



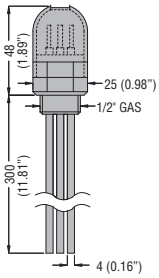

| TYPE | L |
|---|---|
| SCM04 | 43 (1.69") |
| SCM50 | 500 (19.68") |
| SCM100 | 1000 (39.37") |

**CGL125...**

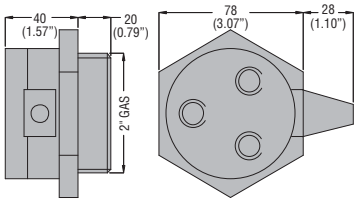



| TYPE | L |
|---|---|
| CGL125 3 | 327 (12.87") |
| CGL125 5 | 500 (19.68") |
| CGL125 7 | 700 (27.56") |
| CGL125 10 | 1000 (39.37") |

**PS31**

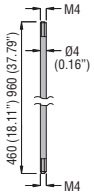



**PS3S**

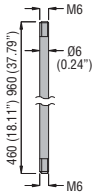



Rod probes

**ASTA 460 MM4**
**ASTA 960 MM4**

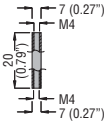



**ASTA 460 MM6**
**ASTA 960 MM6**



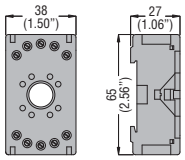

Coupler unit

**RE213**

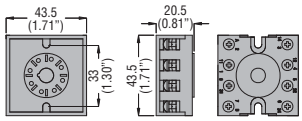



Accessories

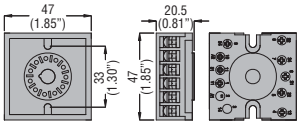
**S8 - S11**



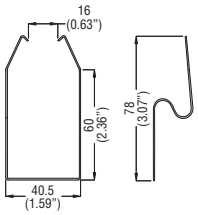

**L48 P8**



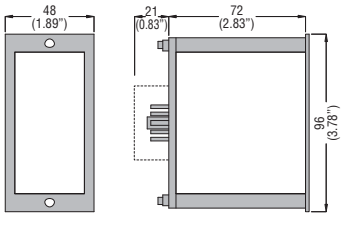

**L48 P11**



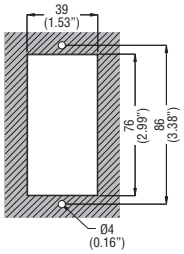

**RE014**




**G216**




Cutout



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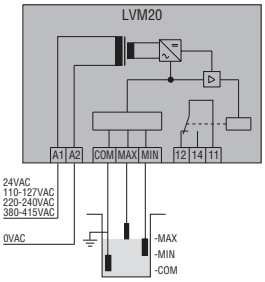
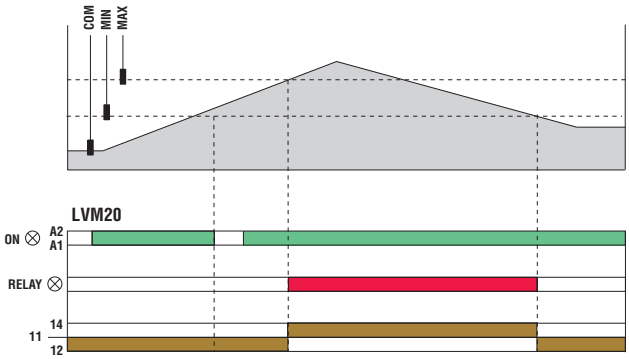
Emptying function

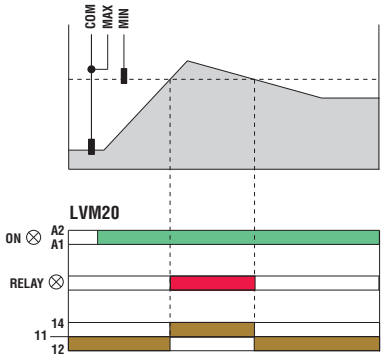
## LVM20




Emptying function with 3 electrodes

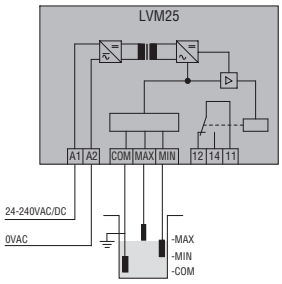



Emptying function with 2 electrodes

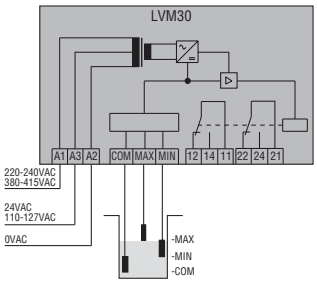



Emptying or filling functions

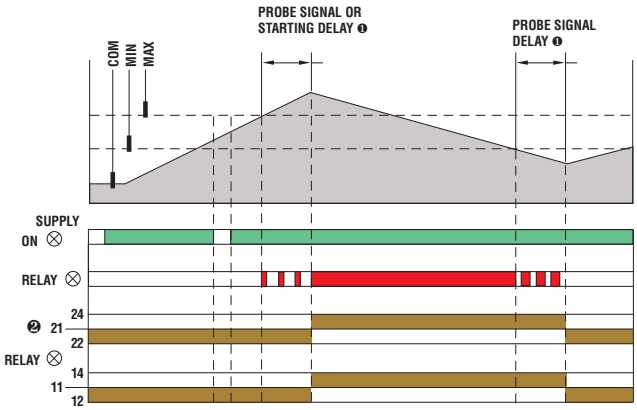
## LVM25



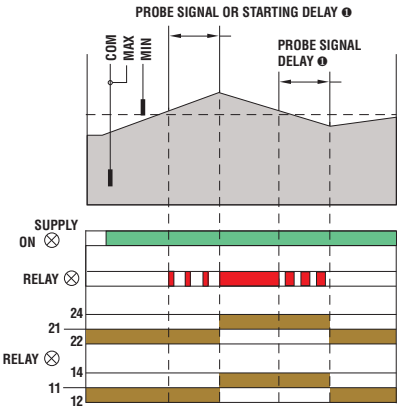

## LVM30




Emptying function (DOWN)
Connection with 3 electrodes

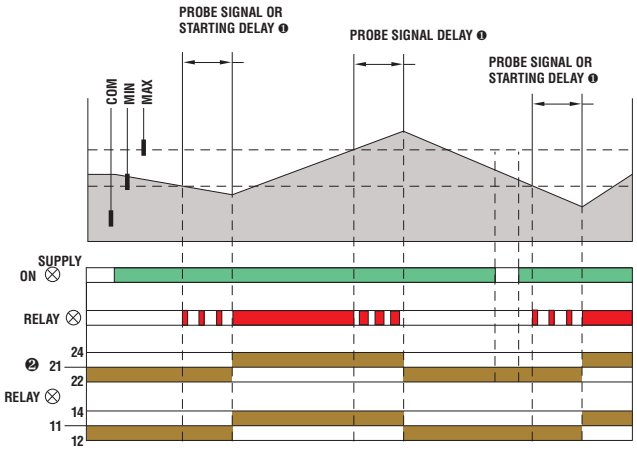



Connection with 2 electrodes

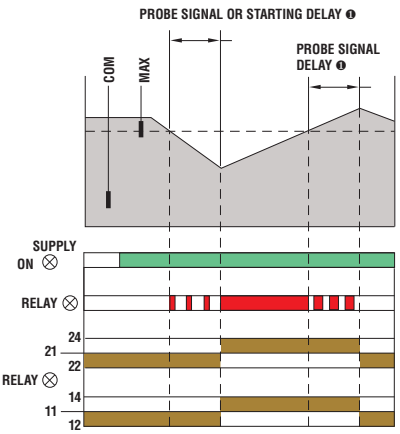



❶ Delay for LVM30 only.
❷ Changeover contact (SPDT) for LVM30 only.

Filling function (UP)
Connection with 3 electrodes




Connection with 2 electrodes




❶ Delay for LVM30 only.
❷ Changeover contact (SPDT) for LVM30 only.

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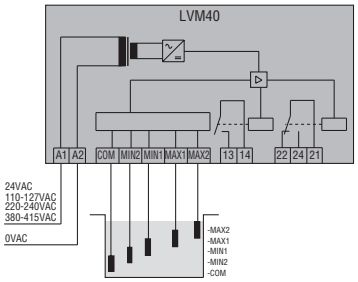
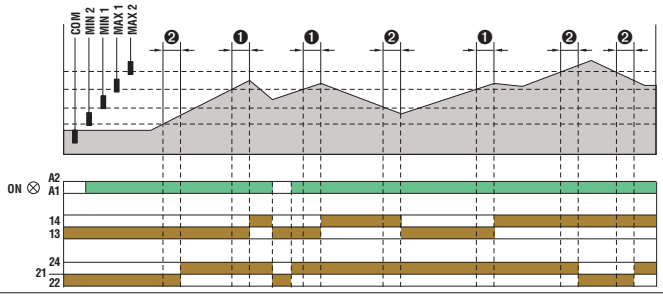
Multiple functions

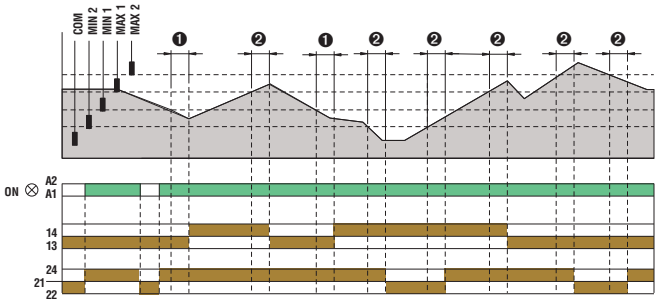
**LVM40**



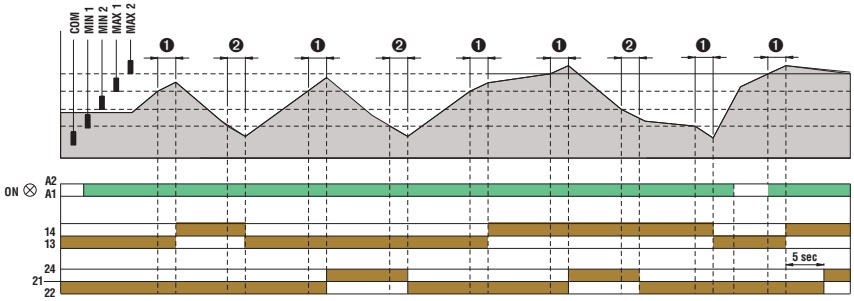

Emptying function + alarms



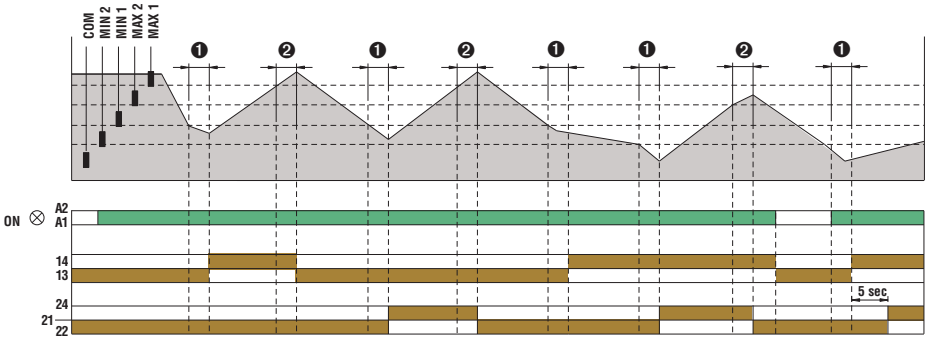

Filling function + alarms



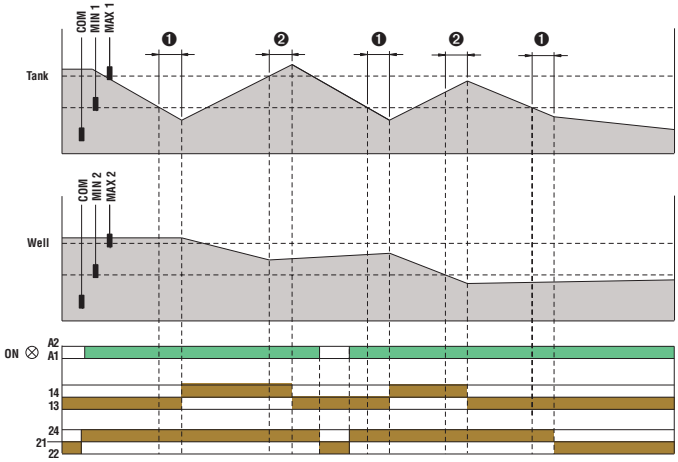

Filling function + pump start change




Filling function + pump start change




Filling tank and draining well function + alarm




❶ Probe signal and starting delay
❷ Probe signal delay

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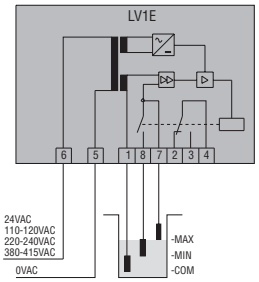
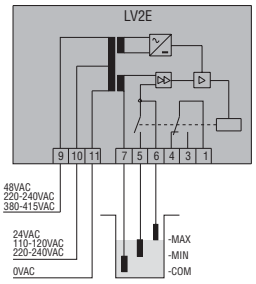
Emptying function

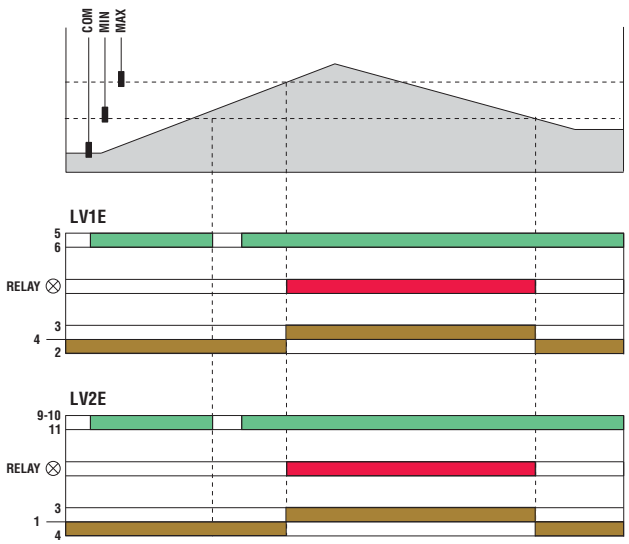
**LV1E**



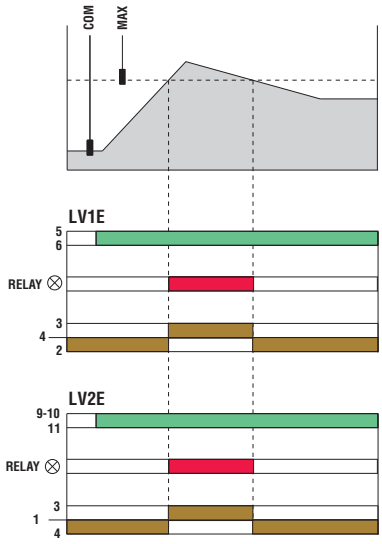

**LV2E**




Emptying function with 3 electrodes

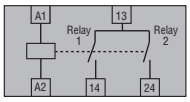


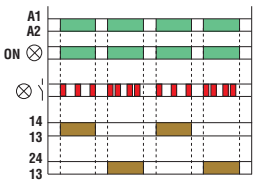

Emptying function with 2 electrodes




Start-up priority change monitoring

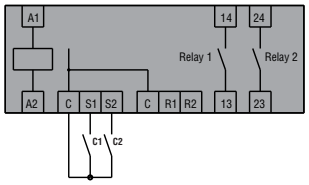
**LVMP05**



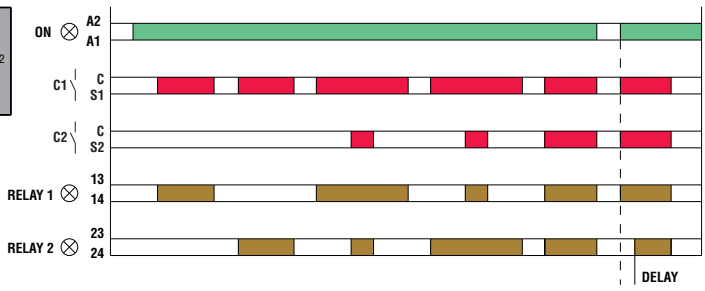




**LVMP10**

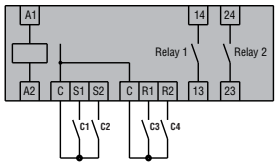
2-wire connection



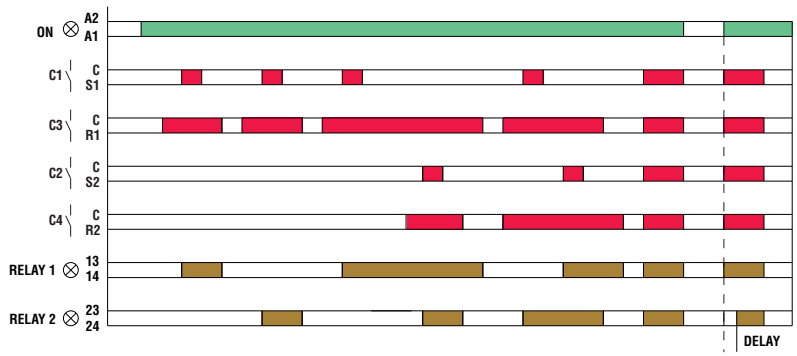

C1 = Primary
C2 = Secondary / Standby



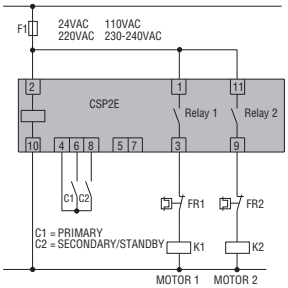

3-wire connection




C1 = Start Primary
C2 = Start Standby
C3 = Stop Primary
C4 = Stop Standby




**CSP2E**



| TYPE | LVM20… | LVM25… | LVM30… | LVM40… |
|---|---|---|---|---|
| DESCRIPTION | | | | |
| | Modular | | | |
| | Automatic resetting | | | |
| | Single voltage | Multi voltage | Dual voltage | Single voltage |
| Application (examples) | Empting function | Emptying or filling functions | Emptying or filling functions | Multiple functions |
| Operating principle | Electrical conductivity of liquids | | | |
| AUXILIARY SUPPLY | | | | |
| Supply voltage Us | 24VAC<br>110-127VAC<br>220-240VAC<br>380-415VAC | 24-240VAC/DC | 24/220-240VAC<br>110-127/380-415VAC | 24VAC<br>110-127VAC<br>220-240VAC<br>380-415VAC |
| Operating voltage range | 0.85-1.1 Ue 50/60Hz ±5% | | | |
| Power consumption (maximum) | 3.5VA | 3VA | 5.5VA | 4.5VA |
| Power dissipation (maximum) | 1.8W | 1.2W | 2.8W | 2.8W |
| OUTPUTS | | | | |
| Number of connectable electrodes | 3 | 3 | 3 | 5 |
| Type of electrode | Electrodes and electrode holders: SN1 / SCM / CGL / PS31 / PS3S or similar | | | |
| Electrode voltage | 7.5VAC | 5VPP | 7.5VAC | 5VPP |
| Sensitivity | 2.5-50kohm | 2.5-100kohm | 2.5-50kohm | 2.5-200kohm |
| TIME DELAYS | | | | |
| Tripping time (minimum) | ≤600ms | ≤ 1s | 1s | 1s |
| Resetting time (minimum) | ≤750ms | ≤ 1s | 1s | 1s |
| Probe tripping delay | — | — | OFF-10s | 1-10s |
| Relay energising delay | — | — | OFF-300s | 0-30min |
| RELAY OUTPUTS | | | | |
| Number of relays | 1 | 1 | 1 | 2 |
| Relay state | Normally de-energised, energises at tripping | | | |
| Contact arrangement | 1 changeover / SPDT | 1 changeover / SPDT | 2 changeover / SPDT each | 1 changeover / SPDT and 1 with 1 N/O - SPST |
| Rated utilisation voltage | 250VAC | | | |
| Maximum switching voltage | 400VAC | | | |
| IEC conventional free air thermal current Ith | 8A | | | |
| UL/CSA and IEC/EN 60947-5-1 designation | B300 | | | |
| Electrical life (with rated load) | $10^5$ cycles | | | |
| Mechanical life | $30x10^6$ cycles | | | |
| Indications | 1 green LED for power on<br>1 red LED for relay state | 1 green LED for power on<br>1 red LED for relay state | 1 green LED for power on<br>1 red LED for relay state | 1 green LED for power on<br>2 red LEDs for relay state<br>2 red LEDs for probe state |
| CONNECTIONS | | | | |
| Tightening torque maximum | 0.8Nm (7lbin; 7-9lbin er UL/CSA) | | | |
| Conductor section min-max | 0.2-4mm² (24-12AWG; 18-12 AWG per UL/CSA) | | | |
| INSULATION | | | | |
| IEC rated insulation voltage Ui | 415VAC | 240VAC | 415VAC | 415VAC |
| IEC rated impulse wihstand voltage Uimp | 6kV | 4kV | 6kV | 6kV |
| IEC power frequency withstand voltage | 4kV | 2kV | 4kV | 4kV |
| Double insulation Supply/relay/electrode | ≤250VAC | ≤250VAC❶ | ≤250VAC | ≤250VAC |
| AMBIENT CONDITIONS | | | | |
| Operating temperature | –20...+60°C | | | |
| Storage temperature | –30...+80°C | | | |
| HOUSING | | | | |
| Material | Self-extinguishing polyamide | | | |
| Typical configuration (examples) | LVM20 + n° 3 SN1 electrodes LVM25 + n° 3 SN1 electrodes<br>LVM30 + n° 3 SN1 electrodes LVM40 + n° 5 SN1 electrodes | | | |
| Maximum cable length | ❸ | | | |

❶ Double insulaton between supply, electrodes and output relay circuit.
❷ Voltage applied to input contacts, not insulated at power supply.
❸ Consult Customer Service; see contact details on inside front cover.

| | LV1E... | LV2E... | LVMP 05 | LVMP 10 | CSP2E |
|---|---|---|---|---|---|
| | Plug-in | | Modular | | Plug-in |
| | Automatic resetting | Automatic resetting | — | — | — |
| | Single voltage | Dual voltage | Multivoltage | Multivoltage | Single voltage |
| | – Minimum-maximum level threshold<br>– Maintains level between minimum and maximum<br>– Protection against dry pump running | | Priority change relay for motors | | |
| | Electrical conductivity of liquids | | — | | |
| | 24VAC | 24-48VAC | 24-48VDC | 24VAC | 24VAC❷ |
| | 110-120VAC | 110-120VAC/220-240VAC | 24-240VAC | 110-127VAC | 48VAC❷ |
| | 220-240VAC | 220-240VAC/380-415VAC | | 220-240VAC | 110VAC❷ |
| | 380-415VAC | | | 380-415VAC | 220VAC❷ |
| | 0.8-1.1 Ue 50/60Hz | | | | |
| | 5.5VA | | 1.6VA | 4.8VA | 5VA |
| | 2.8W | | 0.9W | 3W | 3W |
| | 3 | | — | — | — |
| | Electrodes and electrode holders: SN1 / SCM / CGL / PS31 / PS3S / or similar | | — | — | — |
| | 9VAC (voltage between probes) | | — | — | — |
| | 7 - 8kohm adjustable | | — | — | — |
| | ≤50ms | | — | — | — |
| | ≤100ms | | — | — | — |
| | — | | — | — | — |
| | — | | — | — | — |
| | 1 | | 2 | 2 | 2 |
| | Normally de-energised, energises at tripping | | | | |
| | 1 changeover contact / SPDT | | 1 N/O - SPST | 1 N/O - SPST | 1 N/O - SPST |
| | 220VAC | | 250VAC | 250VAC | 250VAC |
| | 380VAC | | — | — | — |
| | 5A | | 8A | 8A | 5A |
| | B300 | | B300 | B300 | B300 |
| | 2,5x$10^5$ cycles | | $10^5$ cycles | $10^5$ cycles | $10^5$ cycles |
| | 50x$10^6$ cycles | | 30x$10^6$ cycles | 30x$10^6$ cycles | 30x$10^6$ cycles |
| | 1 red LED for relay tripping | | 1 green LED for power on<br>1 red LED for relay state | 1 green LED for power on<br>1 red LED for relay state | 1 green LED for power on<br>1 red LED for relay state |
| | — | | 0.8Nm (7lbin; 7-9lbin er UL/CSA) | | — |
| | — | | 0.2-4.0mm$^2$ (24-12AWG; 18-12 AWG per UL/CSA) | | — |
| | 415VAC | | 250VAC | 415VAC | 250VAC |
| | 5kV | | 4kV | 4kV | 4kV |
| | 2kV | | 2kV | 2.5kV | 2.5kV |
| | — | | | | |
| | –20...+60°C | | | | |
| | -30...+80°C | | | | |
| | Self-extinguishing polycarbonate | | Self-extinguishing polyamide | Self-extinguishing polyamide | Self-extinguishing polycarbonate |
| | LV1E + n° 3 SN1 electrode<br>LV2E + n° 2 SN1 electrodes + reset button | | — | — | — |
| | 500m/547yd single-core, double insulated cables | | — | — | — |