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



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- ELECTRODES**
- Single pole
 - Three poles.



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



LEVEL CONTROL RELAYS

PRIORITY CHANGE RELAY FOR 2 MOTORS

	LVM20	LVM25	LVM30	LVM40	LV1E	LV2E	LVMP05	LVMP10	CSP2E
Modular version	●(2U)	●(1U)	●(3U)	●(3U)			●(1U)	●(3U)	
Plug-in version					●	●			●
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								●	●
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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.



PLANET - DIN

Level monitoring relays

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Start-up priority change relays

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Modular single-voltage relay



LVM20...



Order code	Auxiliary supply voltage	Type of output contacts	Qty per pkg	Weight
	[V] 50/60Hz	1 C/O	n°	[kg]
Automatic resetting.				
LVM20 A024	24VAC	1 C/O	1	0.220
LVM20 A127	110-127VAC	1 C/O	1	0.220
LVM20 A240	220-240VAC	1 C/O	1	0.220
LVM20 A415	380-415VAC	1 C/O	1	0.220

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 modules
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance

Certifications obtained: cULus, GOST.
Compliant with standards: IEC/EN 60255-6, IEC/EN 61000-6-2 and IEC/EN 61000-6-3.

Electrodes and electrode holders

Use electrodes or electrode holders type: SN1/PS31/PS3S/SCM/CGL or similar. See page 12-5.

Modular multi-voltage relay



LVM25...



Order code	Auxiliary supply voltage	Type of output contacts	Qty per pkg	Weight
	[V]	1 C/O	n°	[kg]
Emptying or filling function. Automatic resetting.				
LVM25 240	24-240VAC/DC	1 C/O	1	0.090

Operational characteristics

- Use with 3 sensing electrodes, MIN, MAX and COM
- 2.5-100kOhm adjustable sensitivity
- Insensitivity 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
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance

Certifications obtained: cULus, GOST.
Compliant with standards: IEC/EN 60255-6, IEC/EN 61000-6-2 and IEC/EN 61000-6-3.

Electrodes and electrode holders

Use electrodes or electrode holders type: SN1/PS31/PS3S/SCM/CGL or similar. See page 12-5.

Modular dual-voltage relay



LVM30...



Order code	Auxiliary supply voltage	Type of output contacts	Qty per pkg	Weight
	[V] 50/60Hz	1 C/O	n°	[kg]
Emptying or filling function. Automatic resetting.				
LVM30 A240	24/220-240VAC	2 C/O	1	0.300
LVM30 A415	110-127VAC 380-415VAC	2 C/O	1	0.300

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: 0-5min
- Green LED indicator for power on
- Red LED indicator for output relay state
- Modular DIN 43880 housing, 3 modules
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance

Certifications obtained: cULus, GOST.
Compliant with standards: IEC/EN 60255-6, IEC/EN 61000-6-2 and IEC/EN 61000-6-3.

Electrodes and electrode holders

Use electrodes or electrode holders type: SN1/PS31/PS3S/SCM/CGL or similar. See page 12-5.

Level control relays for conductive liquids Modular version

Modular single-voltage multifunction relay



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LVM40...

Order code	Auxiliary supply voltage	Type of output contacts	Qty per pkg	Weight
	[V] 50/60Hz	1 C/O 1 N/O	n°	[kg]

Multifunctions.
Automatic resetting.

LVM40 A024	24VAC	1 C/O + 1 N/O	1	0.260
LVM40 A127	110-127VAC	1 C/O + 1 N/O	1	0.260
LVM40 A240	220-240VAC	1 C/O + 1 N/O	1	0.260
LVM40 A415	380-415VAC	1 C/O + 1 N/O	1	0.260

① Two relay outputs.

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 modules
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance

Certifications obtained: cULus, GOST.
Compliant with standards: IEC/EN 60255-6.
IEC/EN 61000-6-2 and IEC/EN 61000-6-3.

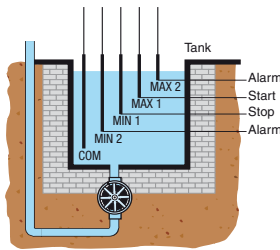
Electrodes and electrode holders

Use electrodes or electrode holders type: SN1/PS31/PS3S/SCM/CGL or similar. See page 12-5.

FUNCTIONS

A- Emptying with MIN and/or MAX alarms.

B- Filling with MIN and/or MAX alarms.



EXAMPLE OF EMPTYNG OPERATION

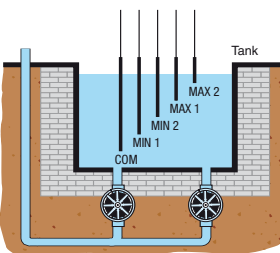
To achieve this type of operation, two electrodes are used to control the liquid between the fixed limits using MIN1 and MAX1 and two alarm levels using MIN2 and MAX2. When one of the alarm electrodes is wet, the alarm relay is de-energised.

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.



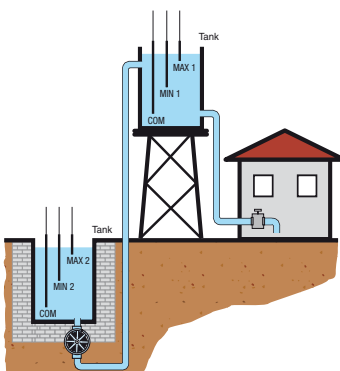
EXAMPLE OF EMPTYNG OPERATION

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 maintained at the best efficiency and optimise their 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 activated 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.

Kit



Order code	Description	Qty per pkg	Wt
	[mm]	n°	[kg]
LVMKIT25	Level control kit complete with LVM25 240 relay and two SN1 electrodes	1	0.190

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 modules
- 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 6mm² to warrant perfect sealing of the PG7 gland.

Cable connection: screw.

Maximum operating temperature: +60°C.

Application: tanks and deep wells.

Certifications and compliance

Level control relay only

Certifications obtained: cULus, GOST.

Compliant with standards: IEC/EN 60255-6, IEC/EN 61000-6-2 and IEC/EN 61000-6-3.

Plug-in single-voltage relay



31 LV1E...

Order code	Auxiliary supply voltage	Type of output contact	Qty per pkg	Weight
	[V] 50/60Hz	$\frac{1}{1}$	n°	[kg]
Automatic reset.				
31 LV1E 24	24VAC	1 C/O	1	0.180
31 LV1E 110	110-120VAC	1 C/O	1	0.180
31 LV1E 230	220-240VAC	1 C/O	1	0.180
31 LV1E 400	380-415VAC	1 C/O	1	0.180

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 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 12-7
- Flush mounting with mount frame 31 G216 and loose 31 L48 P8 socket; see page 12-7
- Degree of protection: IP30.

Reference standards

Compliant with standards: IEC/EN 60255-6.

Electrodes and electrode holders

Use electrodes or electrode holders type:

SN1/PS31/PS3S/SCM/CGL or similar. See page 12-5.

Plug-in dual-voltage relay



31 LV2E...

Order code	Auxiliary supply voltage	Type of output contact	Qty per pkg	Weight
	[V] 50/60Hz	$\frac{1}{1}$	n°	[kg]
Automatic reset.				
31 LV2E 48	24-48VAC	1 C/O	1	0.180
31 LV2E 220	110-220VAC/ 220-240VAC	1 C/O	1	0.180
31 LV2E 400	220-240/ 380-415VAC	1 C/O	1	0.180

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 using single-core double insulated cables
- 11-pin plug-in housing
- Mounting on 35mm (IEC/EN 60715) DIN rail using 31 S8 socket; see page 12-7
- Flush mounting using mount frame 31 G216 and loose 31 L48 P11 socket; see page 12-7
- Degree of protection: IP30.

Reference standards

Compliant with standards: IEC/EN 60255-6.

Electrodes and electrode holders

Use electrodes or electrode holders type:

SN1/PS31/PS3S/SCM/CGL or similar. See page 12-7.

Level electrodes and electrode holders for conductive liquids. Rod probes.

Electrodes and electrode holder



11 SN1



31 SCM...



31 CGL125...



31 PS31



31 PS3S

Order code	Rod probe included	Rod probe length [mm]	Qty per pkg n°	Wt [kg]
Single pole electrodes.				
11 SN1	yes	10	10	0.050
31 SCM 04	yes	43	1	0.065
31 SCM 50	yes	500	1	0.116
31 SCM 100	yes	1000	1	0.151
31 CGL125 3	yes	327	1	0.128
31 CGL125 5	yes	500	1	0.174
31 CGL125 7	yes	700	1	0.330
31 CGL125 10	yes	1000	1	0.452
Three pole electrode.				
31 PS31	yes	300	1	0.117
Electrode holder (for 3 rod probes).				
31 PS3S	no	—	1	0.210

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 prevent water from entering the cable terminal connector and causing its oxidation.

The external cable diameter must be 2.5 to 6mm² to warrant perfect sealing of the PG7 gland.

Cable connection: screw.

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: screw.

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.

3/8" GAS threaded terminal.

Maximum operating temperature: +180°C.

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.

1/2" GAS threaded coupling

Faston termination for cable connection; relative lugs supplied

Maximum operating temperature: +70°C.

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.

1/2" GAS threaded coupling.

Maximum operating temperature is +100°C.

Cable connection: screw.

Application: tanks.

Rod probes

Order code	Rod probe length [mm]	Qty per pkg n°	Wt [kg]
For SCM electrodes.			
31 ASTA 460 MM4	460	1	0.045
31 ASTA 960 MM4	960	1	0.093
For PS3S electrode holder.			
31 ASTA 460 MM6	460	1	0.100
31 ASTA 960 MM6	960	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.

Start-up priority change relays

Modular version

Plug-in version

Modular priority change relay



LVMP05

moduLo

Order code	Auxiliary supply voltage	Type of output contacts	Qty per pkg	Weight
	[V]	∩	n°	[kg]
2 outputs. AC/DC supply voltage.				
LVMP05	24/48VDC 24-240VAC	2 N/O	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
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance

Certifications obtained: cULus, GOST.
Compliant with standards: IEC/EN 60255-6, IEC/EN 61000-6-1 and IEC/EN 61000-6-3.



LVMP10...

moduLo

Order code	Auxiliary supply voltage	Type of output contacts	Qty per pkg	Weight
	[V] 50/60Hz	∩	n°	[kg]
2 outputs. AC supply voltage.				
LVMP10 A024	24VAC	2 N/O	1	0.250
LVMP10 A127	110-127VAC	2 N/O	1	0.250
LVMP10 A240	220-240VAC	2 N/O	1	0.250
LVMP10 A415	380-415VAC	2 N/O	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 modules
- Degree of protection: IP40 on front (only when mounted in housing or electric board with IP40); IP20 on terminals.

Certifications and compliance

Certifications obtained: cULus, GOST.
Compliant with standards: IEC/EN 60255-6, IEC/EN 61000-6-2 and IEC/EN 61000-6-3.

Plug-in priority change relay



31 CSP2E...

Order code	Auxiliary supply voltage	Type of output contacts	Qty per pkg	Weight
	[V] 50/60Hz	∩	n°	[kg]
2 outputs. AC supply voltage.				
31 CSP2E 24	24VAC	2 N/O	1	0.150
31 CSP2E 110	110VAC	2 N/O	1	0.150
31 CSP2E 220	220VAC	2 N/O	1	0.150
31 CSP2E 230	230/240VAC	2 N/O	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 Ue
- 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.
- Degree of protection: IP30.

Reference standards

Compliant with standards: IEC/EN 60255-6.

Accessories

Order code	Description	Qty per pkg	Wt
		n°	[kg]
31 RE213	Coupler unit for extensions rod probe ASTA...MM4	1	0.004
31 S8	8-pin socket for screw fixing or mounting on 35mm DIN rail (IEC/EN 60715), used with LV1E... relay. Screw terminals.	10	0.042
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	0.047
31 RE014	Relay-socket retention bracket; S8 or S11 types only.	10	0.002
31 L48 P8	8-pin loose socket. Screw terminals.	10	0.018
31 L48 P11	11-pin loose socket. Screw terminals.	10	0.019
31 G216	Flush-mount frame complete with fixing accessories for plug-in relays.	1	0.080