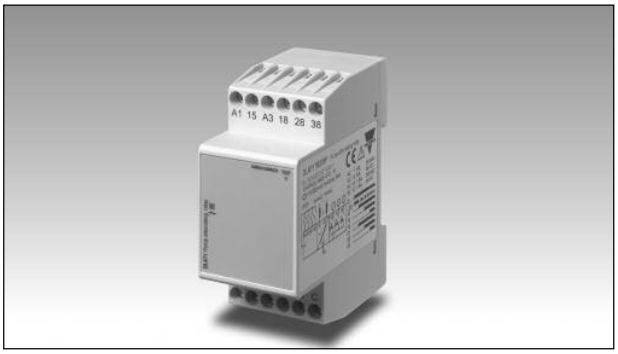
# Monitoring Relays
# Pump alternating
# Type DLA71



- **Pump alternating relay for 2 or 3 pumps**
- **Output: 2 x 5 A SPST relay or 3 x 5 A SPST**
- **For mounting on DIN-rail in accordance with DIN/EN 50 022**
- **35.5 mm DIN-rail housing**
- **LED indication for relay and power supply ON**
- **Galvanically separated power supply**
- **Built-in delay for the second or third pump in case of simultaneous activation is required**
- **Built-in function for automatic rotation of the pumps**

## Product Description

DLA71 is relay made to alternate 2 or 3 pumps in a multiple pump system. In case of need (i.e.: overflow) the second, or even the third pump can be activated together with the first one.
In case more than one pump is required to start at the same time, the pumps start 10 s after the previous to avoid big inrush current.

The LED indicates the state of the alarm and the output relay.

35.5 mm wide housing suitable both for back and front panel mounting.

## Ordering Key

**DLA 71 T B23 3P**

- **Housing**
- **Function**
- **Type**
- **Item number**
- **Output**
- **Power supply**
- **Number of pumps**

## Type Selection

| Mounting | Output | Function | Supply: 24/48 VAC | Supply: 115/230 VAC |
|---|---|---|---|---|
| DIN-rail | 2 x SPST | For two pumps | **DLA 71 D B48 2P** | **DLA 71 D B23 2P** |
| DIN-rail | 3 x SPST | For three pumps | **DLA 71 T B48 3P** | **DLA 71 T B23 3P** |

## Input Specifications

| | |
|---|---|
| **Contact input** | Terminals |
| DLA71...2P (normal mode) | |
| ON/OFF 1 pump | C, S1 |
| ON/OFF 2 pumps | C, S2 |
| DLA71...2P (differential mode) | |
| first pump starts | C, S1 |
| first pump stops | C, S3 |
| second pump start | C, S2 |
| second pump stop | C, S4 |
| DLA71...3P (normal mode) | |
| ON/OFF 1 pump | C, S1 |
| ON/OFF 2 pumps | C, S2 |
| ON/OFF 3 pumps | C, S3 |
| DLA71...3P (full mode) | |
| ON 1 pump | C, S1 |
| ON 2 pumps | C, S2 |
| ON 3 pumps | C, S3 |
| OFF all pumps | C, S4 |
| Disabled | > 10 kΩ |
| Enabled | < 1 kΩ |
| Voltage | < 25 V |
| Current | < 2 mA |
| Empting mode | N.O. contacts |
| Filling mode | N.C. contacts |

## Output Specifications

| | | |
|---|---|---|
| **Output** | DLA71...2P | 2 x SPST NO relay |
| | DLA71...3P | 3 x SPST NO relay |
| Rated insulation voltage | | 250 VAC |
| **Contact ratings** ($AgSnO_2$) | | μ |
| Resistive loads | AC 1 | 5 A @ 250 VAC |
| | DC 12 | 5 A @ 24 VDC |
| Small inductive loads | AC 15 | 1.5 A @ 250 VAC |
| | DC 13 | 1.5 A @ 24 VDC |
| **Mechanical life** | | ≥ 30 x $10^6$ operations |
| **Electrical life** | | ≥ $10^5$ operations (at 5 A, 250 V, cos φ = 1) |
| **Operating frequency** | | ≤ 7200 operations/h |
| **Dielectric strength** | | |
| Dielectric voltage | | 2 kVAC (rms) |
| Rated impulse withstand volt. | | 4 kV (1.2/50 μs) |



Downloaded from Elcodis.com electronic components distributor

CARLO GAVAZZI

## Supply Specifications

| | |
|---|---|
| **Power supply** | Overvoltage cat. III |
| Rated operational voltage through terminals: | (IEC 60664, IEC 60038) |
| A1, A2 or A3, A2 | |
| B48: | 24/48 VAC ± 15%<br>45 to 65 Hz, insulated |
| B23: | 115/230 VAC ± 15%<br>45 to 65 Hz, insulated |
| **Dielectric voltage** | |
| Supply to input | 4 kV (1.2/50 µs) |
| Supply to output | 4 kV (1.2/50 µs) |
| Input to output | 4 kV (1.2/50 µs) |
| **Rated operational power** | |
| AC | 3 VA |

## General Specifications

| | |
|---|---|
| **Reaction time** | |
| Closing input | < 100 ms |
| Opening input | < 100 ms |
| Minimum delay to activate the rescue pumps | 10 s |
| **Continous working time to activate the rotation pumps** | 6 h ± 10% |

## General Specifications

| | |
|---|---|
| **Indication for** | |
| Power supply ON | LED, green, steady |
| One Pump ON | as above, flashing 1 Hz |
| Two Pumps ON | as above, flashing 2 Hz |
| Three Pumps ON(DLA71...3P) | as above, flashing 3 Hz<br>Note: if more than one pump is active, the indication refers to the pump started last. |
| **First pump activated after power up** | Random |
| **Environment** | (EN 60529) |
| Degree of protection | IP 20 |
| Pollution degree | 3 |
| Operating temperature | -20 to 60°C, R.H. < 95% |
| Storage temperature | -30 to 80°C, R.H. < 95% |
| **Housing** | |
| Dimensions | 35.5 x 81 x 67.2 mm |
| Material | PA 66 |
| **Weight** | Approx. 135 g |
| **Screw terminals** | |
| Tightening torque | Max. 0.5 Nm<br>acc. to IEC 60947 |
| **Approvals** | UL, CSA |
| **CE Marking** | Yes |
| **EMC** | Electromagnetic Compatibillity |
| Immunity | According to EN 61000-6-2 |
| Emission | According to EN 61000-6-3 |

## Mode of Operation

DLA71 is made for pumping systems where 2 or 3 pumps are in parallel. It lets the pumps work alternatively, allowing more pumps to work togheter in case of need.

**Example 1**
(emptying a basin, 2-pump system)
As soon as the liquid reaches switch S1 one pump starts. As soon as S1 switches back the pump stops. When switch S1 is activated again the other pump starts allowing uniform wear and tear of all the pumps. If switch S2 is activated both pumps start (2 pumps running at the same time). When S2 switches back the pump running since most time stops.

**Example 2**
(emptying a basin, 2-pump system, differential mode)
In this case the pumps are separately started and stopped by the two pairs of switches S1, S2 and S3, S4. Appropriate positioning allows the pumps to work together in case of need.

**Note** (2-pump system)
If the system is continuously working with only one pump, after working for 6 hours, DLA71 stops the pump and the second one automatically starts.
This rotation is repeated every 6 hours of single and continuative work of a pump.

**Example 3**
(emptying a basin, 3-pump system, normal mode)
The system works exactly as described in example 1 except that if switch S3 is reached three pumps work at the same time. When they switch back the pumps are turned off in sequence starting from the one running longer.

**Example 4**
(emptying a basin, 3-pump system, full mode)
As soon as the liquid reaches switch S1 one pump starts. When it drops below switch S4 it stops. If switch S1 is triggered again another pump starts. If switch S2 is activated a second pump starts (rescue function). If switch S3 is activated all the pumps operate. The only switch to stop all the pumps active at a certain time is S4.

**Note** (3-pump system)
If the system is continuously working with only one pump, after working for 6 hours, DLA71 stops the pump and the second one automatically starts. If also the second pump works continuously alone for 6 hours, it is stopped and the third pump is then started.
If a couple of pumps is continuously working for 6 hours, the one running for more time stops and the free one starts.
This rotation is repeated every 6 hours of continuative work of a pump or a couple of pumps.

**Note** (2 and 3-pump systems)
In case the task is to fill a basin, all the switches are reversed in the basin itself.

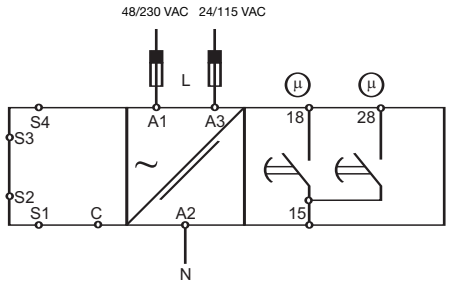




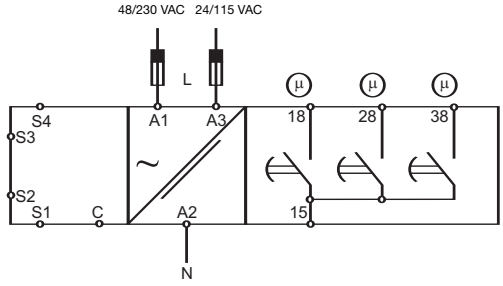
Downloaded from Elcodis.com electronic components distributor

## Wiring Diagrams

**DLA71...2P**

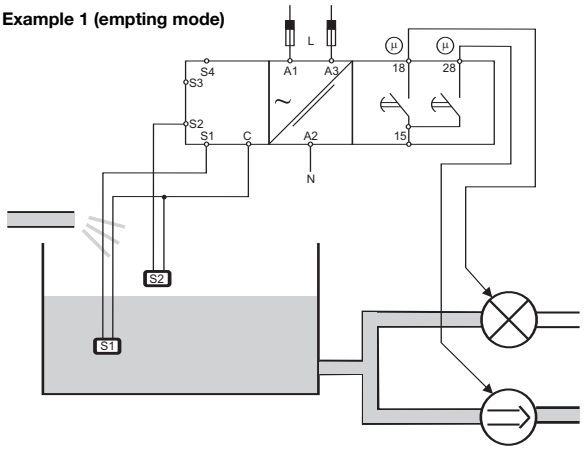


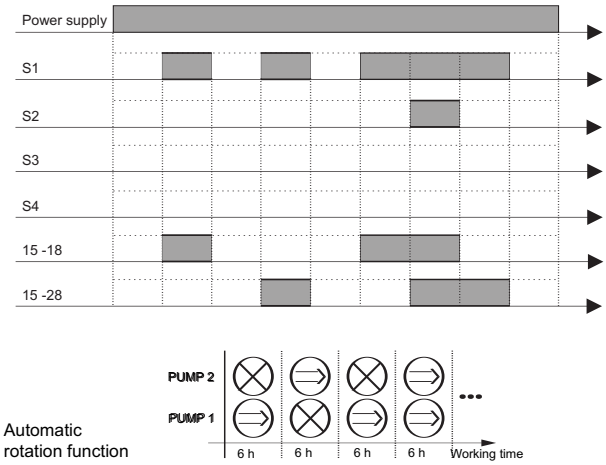

**DLA71...3P**




## Operation Diagrams

**Example 1 (empting mode)**

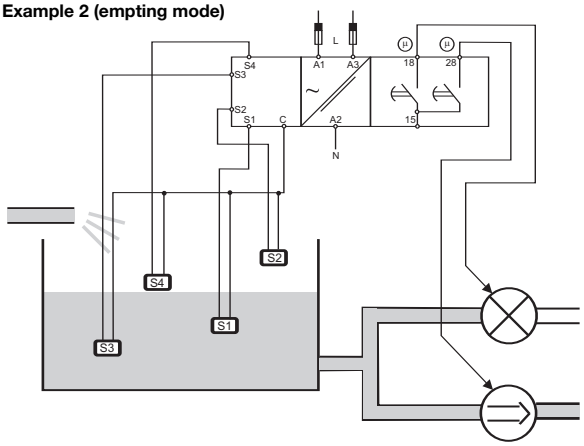


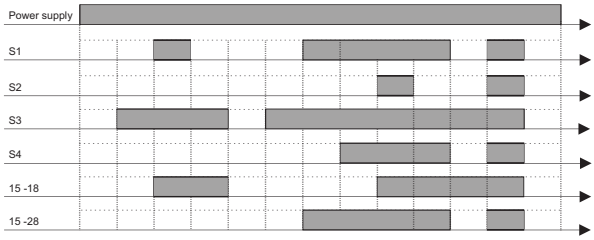




Automatic rotation function

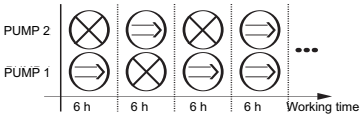



**Example 2 (empting mode)**




Automatic rotation function



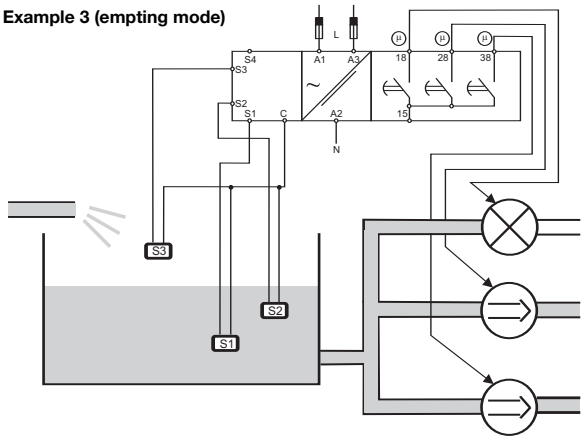


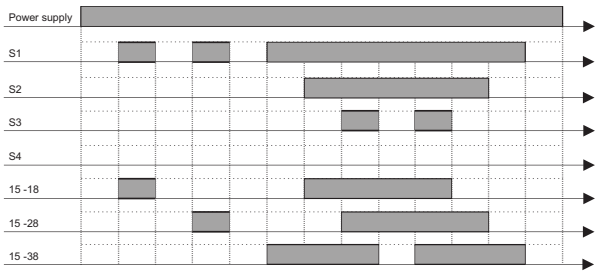

Downloaded from Elcodis.com electronic components distributor

CARLO GAVAZZI

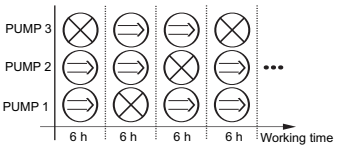
# Operation Diagrams

**Example 3 (empting mode)**

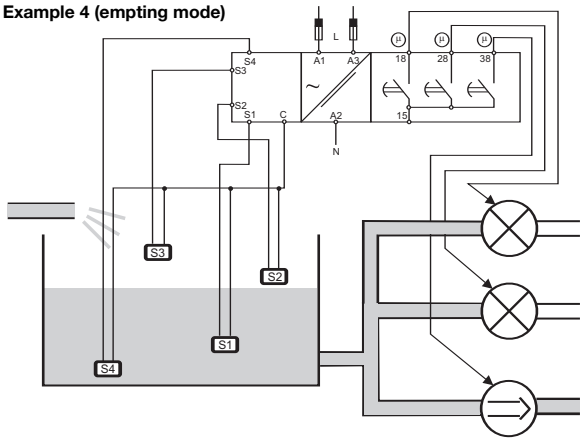


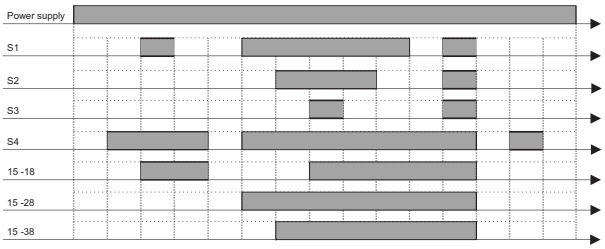




Automatic rotation function

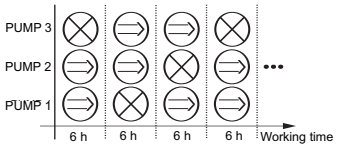



**Example 4 (empting mode)**

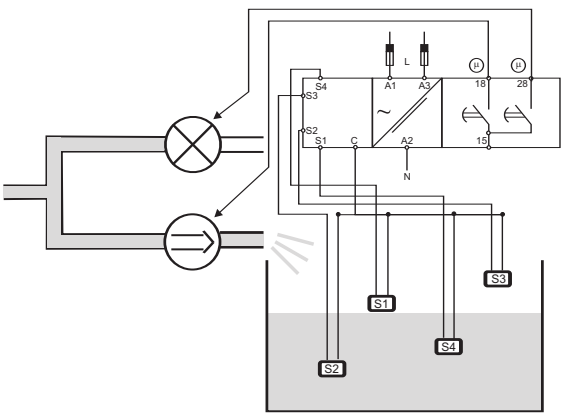


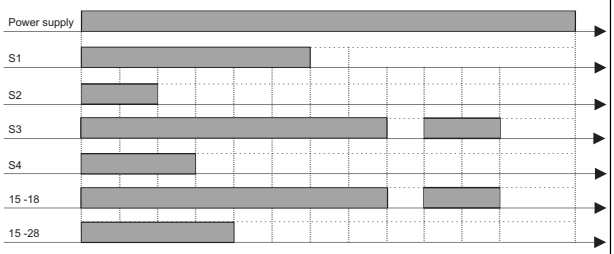




Automatic rotation function

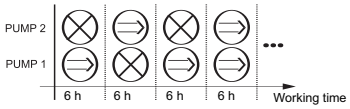



**Example 5 (filling mode)**




Automatic rotation function

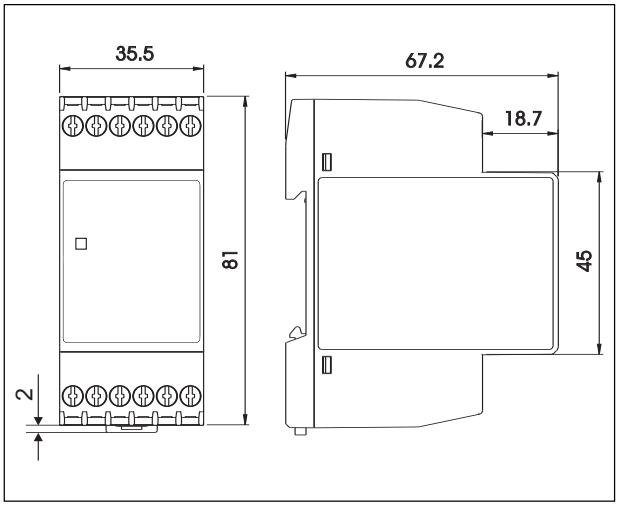







Downloaded from Elcodis.com electronic components distributor

## Dimensions






Downloaded from Elcodis.com electronic components distributor