OMICRON	**Product Data Sheet** **ROBO/21** **Level Indicator with Functional Stop**	Technical Department

ROBO/21 Level Indicator

Smart Protection for Traction Batteries - Safety and Performance Under Control

The new ROBO/21 level indicator is the professional solution designed to ensure maximum operating safety and protect forklift truck batteries from the risk of damage caused by an insufficient electrolyte level.

Why ROBO/21?

Maintaining the correct water level in the battery cells is essential to preserve battery life and efficiency and to prevent costly failures. ROBO/21 constantly monitors the electrolyte status and automatically intervenes when the level is no longer optimal.

Funzionalità principali

- **Automatic intervention in case of low level**
  When the water level drops below the limit, ROBO/21 can activate one or more forklift truck faults to require the operator to top up the battery.
  Programmable actions include:

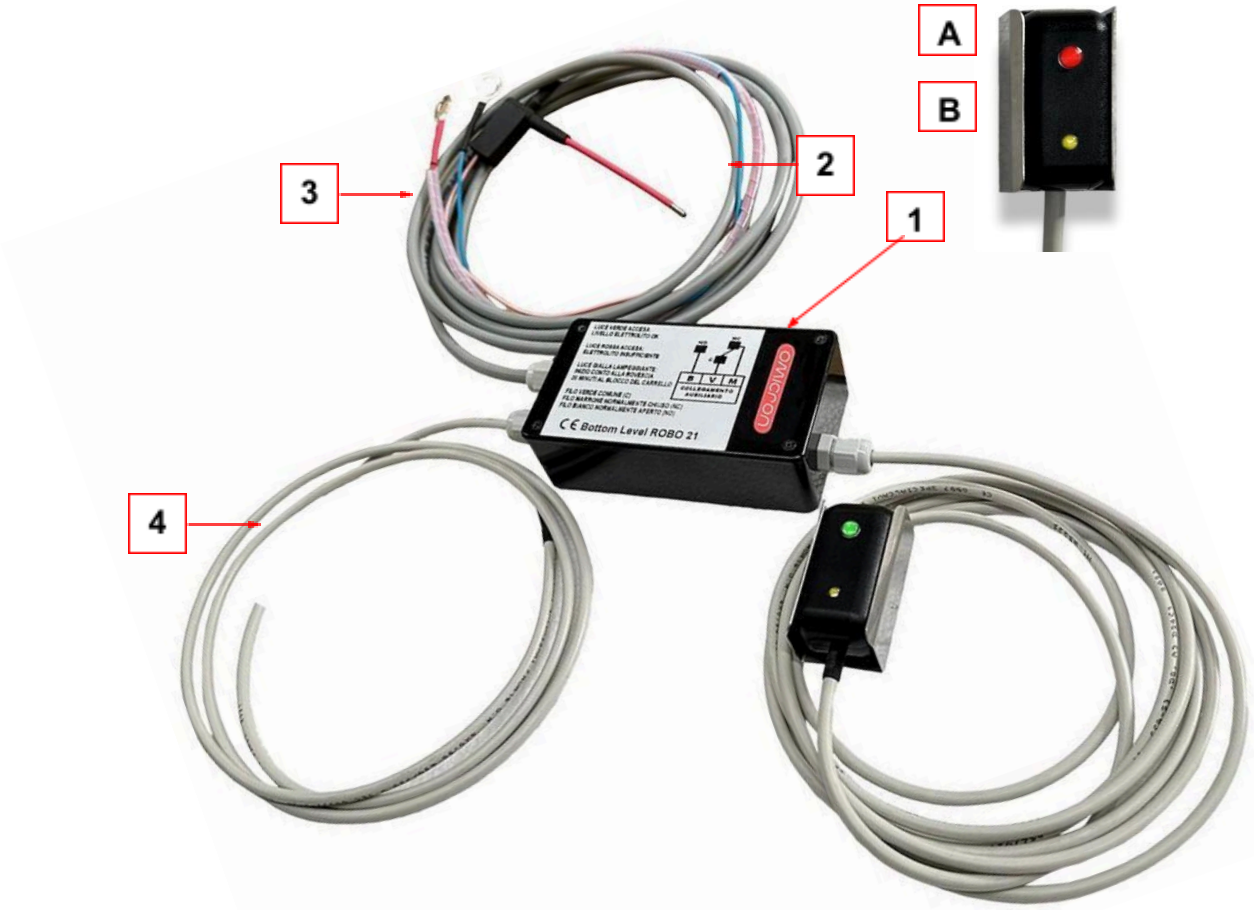
- Forklift truck slowdown
- Fork lift lockout

- **Custom programming**
  The indicator can be programmed for up to 20 minutes, during which the system continuously warns the operator of the insufficient level with a yellow LED.
  If topping up is not carried out within the set time, the electronics intervene by limiting or blocking the forklift truck.
- **Immediate and visible warning**
  Low water level is indicated by a **red LED**, which remains on throughout the programmed period, clearly showing that maintenance is required.

Operational Benefits

- Protects batteries from damage that is often irreversible
- Reduces battery maintenance and replacement costs
- Prevents operator errors and oversights
- Improves overall fleet safety
- Simplifies topping-up management

COMPOSIZIONE DEL DISPOSITIVO



Ref.	*Description*
1	INDICATOR LIGHT - 1A RED/GREEN LED - 1B FLASHING YELLOW LED
2	TIMED SWITCH
3	GREY POWER SUPPLY CABLE, DETECTION PROBE
4	GREY CABLE FOR TIMED SWITCH ACTIVATION

Description of the Main Device Components

Indicator Body

The level indicator body, which houses the components, is made of ABS. The body contains all the functional elements of the indicator: electronic detection circuit and power supply wires.

Indicator Probe

The level indicator is equipped with a signal detection probe. The probe is inserted into the cell cap or into the hole made in the cell.

Low-Level Indicator Light

The indicator light is installed inside the forklift truck and indicates whether water is present in the battery: green when the level is normal and red when water is missing.

Electrical Equipment

The electrical system consists simply of two power supply cables fitted with eyelets for connection to the battery electrodes.

Technical Characteristics

Materials

Component	Materials
Body	ABS
Detection probe	PVC/Lead

Mechanical Characteristics

Mechanical Characteristics	Specification
Electronic switch height	mm 30,00
Electronic switch width	mm 125,00
Electronic switch width	mm 70,00
Power supply and probe cable length	mm 3100,00
Timed switch activation cable length	mm 1500,00
Indicator light cable length	mm 3100,00

Electrical Characteristics

Electrical Characteristics	Robo 21
Power supply	12V

INDICATOR OPERATION

WARNING!

THIS DEVICE BLOCKS ONE OF THE FORKLIFT TRUCK FUNCTIONS

The Robo 21 level indicator checks the water level inside the battery. It is factory-programmed with a limited time of 20 minutes to allow the operator to top up the battery.
When the time has elapsed, the forklift truck stops.

WARNING!

FAILURE TO OBSERVE THE LOCKOUT TIME MAY CREATE CRITICAL SITUATIONS.

Robo 21 allows the user to choose the type of fault to generate if the battery is not topped up, for example switching on a flashing light, blocking fork lifting or stopping the forklift truck.

Preparation for Operation

Warning!	*Installation operations must be carried out by qualified and specialised personnel who have been instructed according to the instructions in this manual and are fully familiar with the use of the indicator.*

Warning!	*Appropriate personal protective equipment must be used* *Before installation, the following PPE must be worn:* safety goggles grembiule o tuta antiacido guanti antiacido - Do not smoke or use open flames. - Avoid sparks. - Do not consume food.

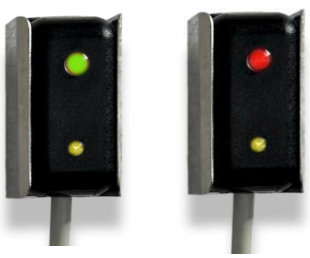
FASTENING THE ELECTRONIC SWITCH

Warning!	**TO INSTALL THIS DEVICE, THE OPERATOR MUST BE EQUIPPED WITH A VOLTMETER IN ORDER TO SELECT EXACTLY THE 12 V SUPPLY FOR THE CONTROL BOX AND THE 6 V SUPPLY FOR THE PROBE.**

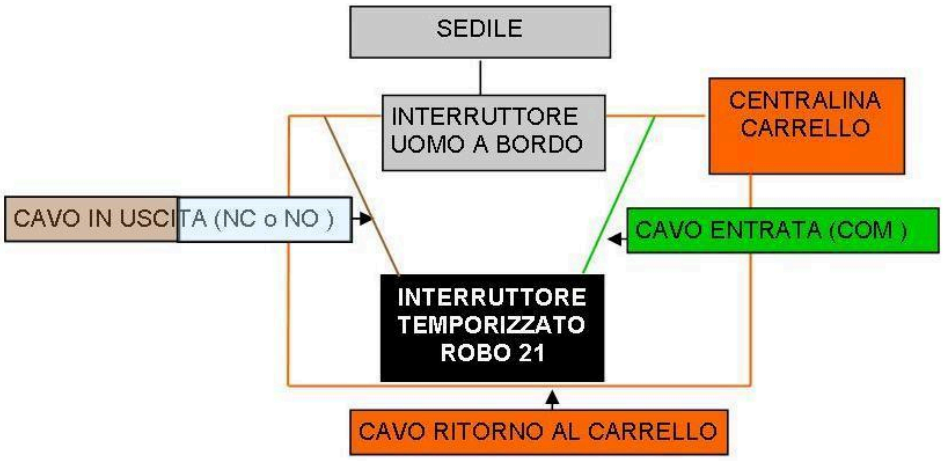
Fasten the control box inside the forklift truck, usually in the contactor compartment.

Fastening the Indicator Light

The indicator light is fastened on board the forklift truck. It allows the water level in the cell to be monitored.



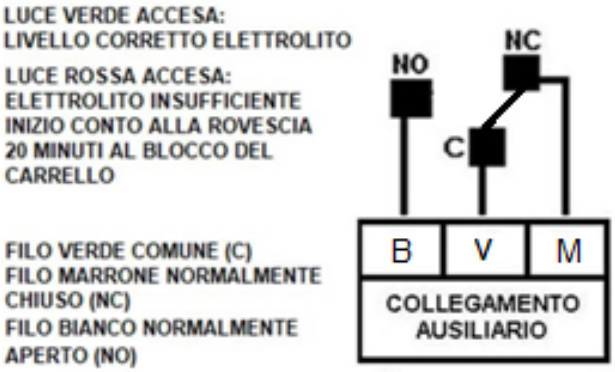
Connection Example for Forklift Function Lockout



Creating the Forklift Function Lockout

The ROBO/21 level indicator can alter or block one or more forklift truck functions when the water level in the battery cell is not optimal, thereby preventing deterioration or very serious damage to the battery.

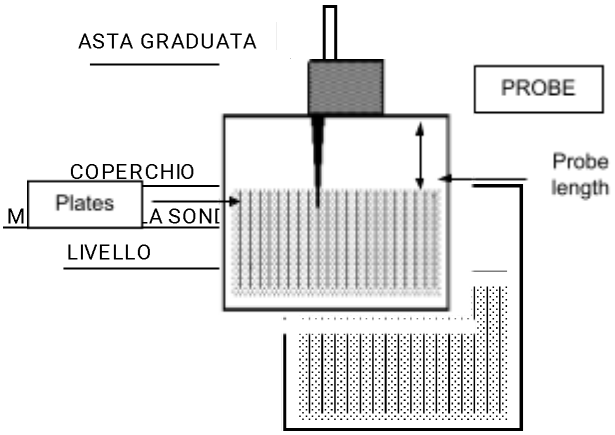
- Determine the type of fault to generate when water is missing from the battery, for example fork lifting lockout, forklift truck lockout, etc.
- Route cable No. 4 to the switch that controls the function to be altered.
- Connect the incoming cable to the green cable (COM)
- Replace one of the two cables coming out of the switch with the NC or NO cable
- Insert the replaced switch cable into the NO position of the electronic switch if the contact is normally open, or into the NC position if the contact is normally closed.
- Cut off the third unused cable



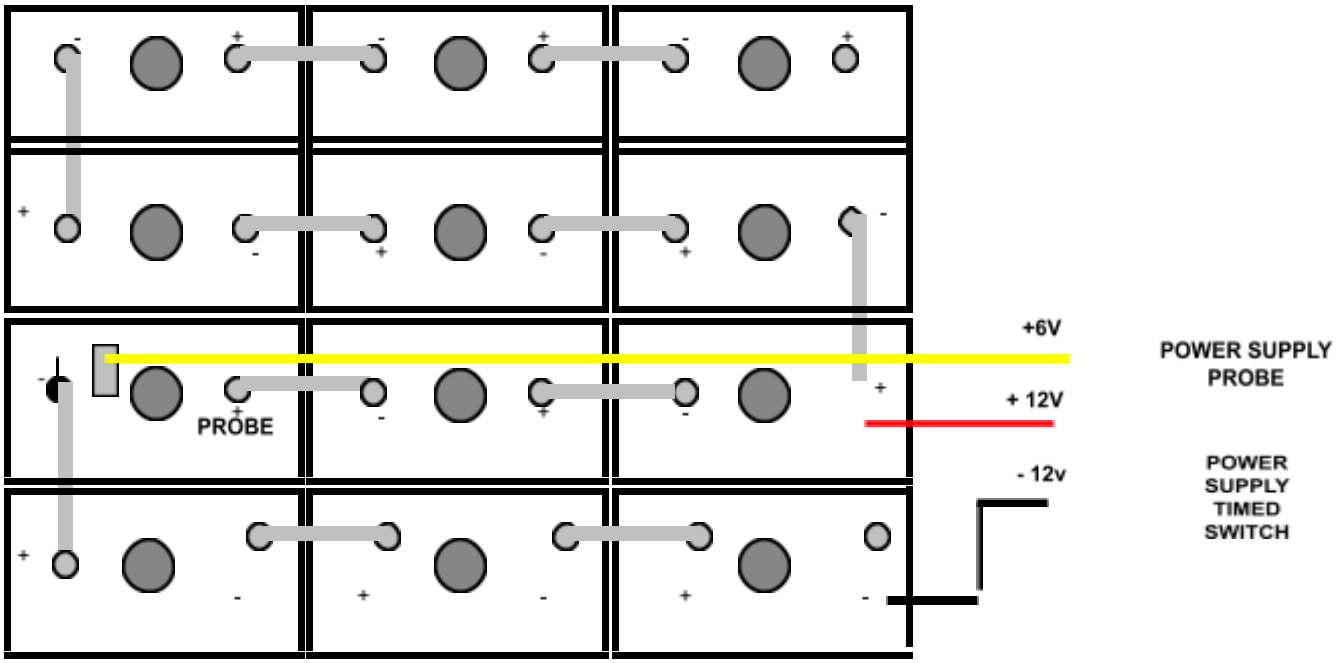
Electronic Switch Connection

Probe Preparation

1. It is essential that the cell selected for probe installation is correctly levelled (5 mm above the plates).
2. Using the supplied graduated rod, measure the distance between the cell cover and the acid surface.
3. Cut the probe to the same measured length. Cut it at an angle.
4. Insert the probe into the cap cover, or drill the cell with a 7.4 mm bit and insert the probe into the hole, applying light pressure to ensure correct seating.



Electronic Switch Power Supply



12 V Power Supply Diagram

- Connect the red cable to the positive terminal of the cell.
- Connect the blue cable to the negative terminal of the battery or to the common ground point of the forklift truck.

After the previous steps have been completed, the indicator LED briefly lights up green to signal correct connection.
If electrolyte solution is present, the light will remain green.
If electrolyte solution is not present, the light will turn red.

Inserting the Probe into the Cell Cap

Warning!	*Take particular care not to accidentally touch the plates with the indicator probe or with metal tools used to check the level. Always cut the probe so that it only just touches the electrolyte. Please note that accidental contact with the cell plates may cause serious injury to the operator and serious damage to the battery.*

Operation

The Robo 21 Bottom Level control indicates a lack of water inside the battery cells with a red LED.

- **GREEN LIGHT ON: DEVICE OPERATING, BATTERY CORRECTLY LEVELLED**
- **RED LIGHT ON: INSUFFICIENT WATER LEVEL**
  The operator must top up within 20 MINUTES

  FORKLIFT TRUCK LOCKED - TOW OR CALL AUTHORISED SERVICE

When water is missing from the battery, the forklift truck stops.

After topping up and recharging the battery, the forklift truck returns to operation.