Treetech®

MBR

Membrane/Bladder Rupture Relay

PRODUCT CATALOG

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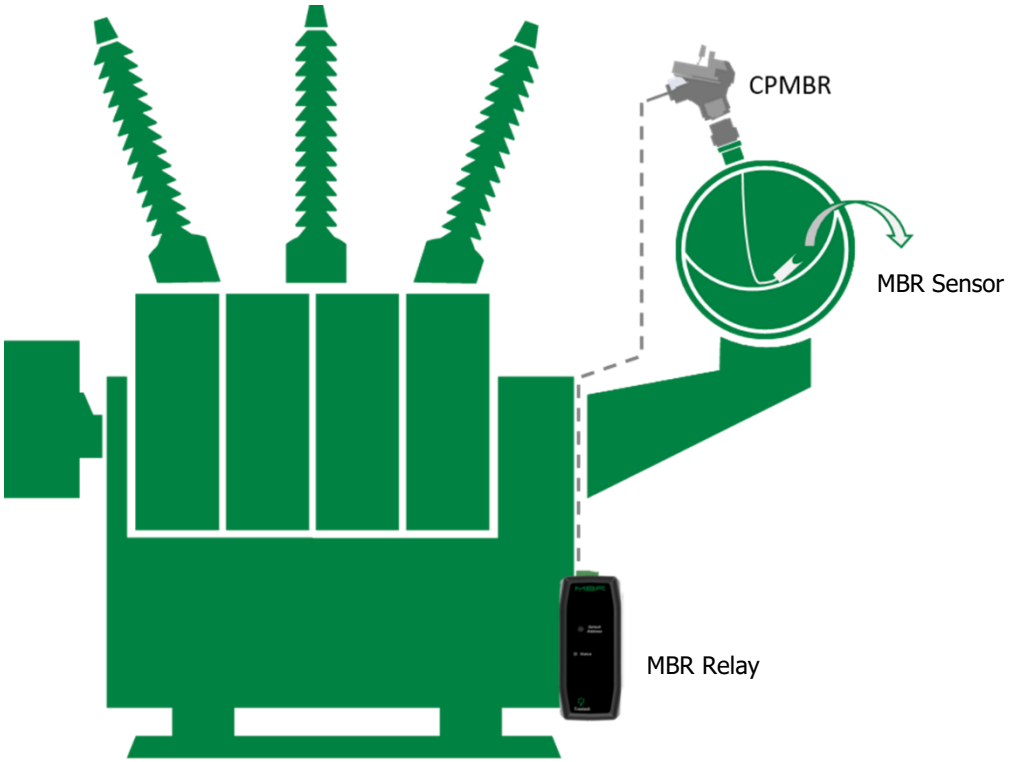
MEMBRANE/BLADDER RUPTURE RELAY

The Membrane/Bladder Rupture Relay – MBR is a device capable of detecting the rupture of the membrane or rubber bladder used in oil preservation systems in power transformers and reactors.

The MBR consists of an optical sensor that must be mounted on the membrane or inside the rubber bladder (air side), a control unit located on the transformer panel. The sensor is provided with a polysulfone capsule containing an emitting LED and a trigger circuit. The control unit has a changeover contact and two LEDs: one for signaling the active MBR and one for signaling membrane rupture.

The MBR operates based on the principle of light reflection. When there is no oil present, the light emitted by the LED-emitter is completely reflected by the capsule dome and captured by the optical receiver. If, in the event of a leak, the oil covers the capsule, part of the emitted light is scattered in the oil and the amount of light reaching the optical receiver is reduced, causing the coupling circuits to become unbalanced and the signaling contact to operate. The output contact is reversible and its operating mode can be configured to operate or return to standby in the event of a membrane failure using an external jumper.

SYSTEM TOPOLOGY



FEATURES AND FUNCTIONS

IED

- ✓ This IED (Intelligent Electronic Device) has a modern and compact design, being specifically planned for applications in transformers in substations and industrial or commercial installations.

ALARMS AND SELF-DIAGNOSIS

- ✓ Issuance of alarms in case of anomalies;
- ✓ Self-diagnosis for detection of internal faults and integration with other sensors.

COMMUNICATION PROTOCOL

- ✓ RS-485 serial communication port for integration into supervisory or remote monitoring systems. Open communication protocols Modbus® RTU or DNP3.

RGB LED

- ✓ The Membrane/Bladder Rupture Relay (MBR) includes a user-available LED that plays an important role in signaling status.

MASS MEMORY (Default)

- ✓ Non-volatile memory for storing measurements and alarm events, shutdowns and others. User programmable interval between recordings.

RELAYS FOR REMOTE INFORMATION

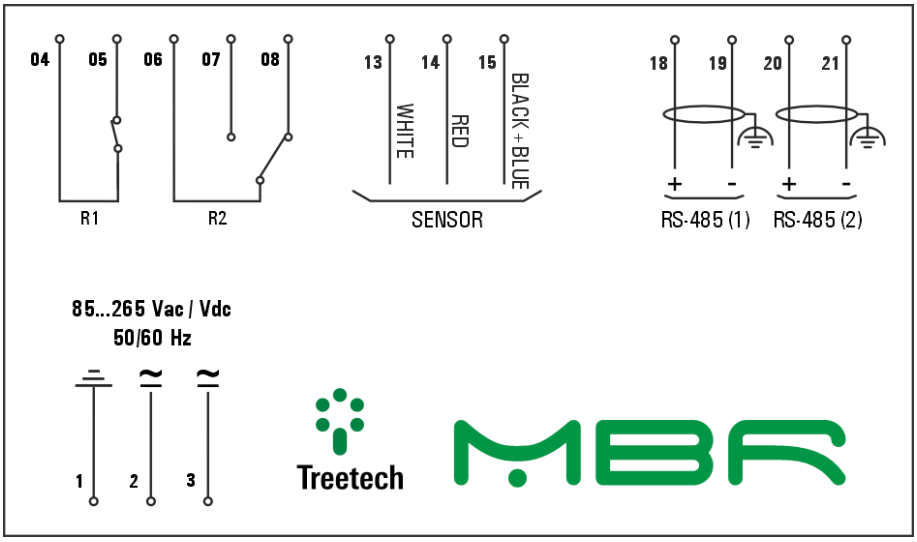
- ✓ The product has three remote information indication relays.

BUTTON TO ACCESS DEFAULT IP

- ✓ The Membrane/Bladder Rupture Relay (MBR) includes a user-available button that allows the factory default IP to be used when network parameters are forgotten.

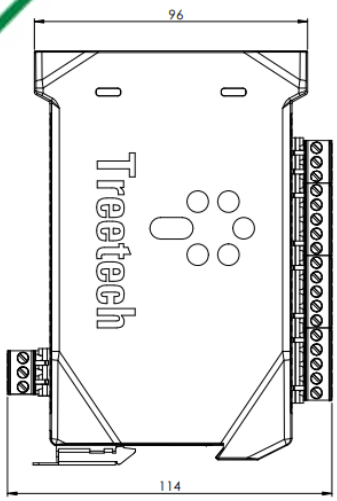
TECHNICAL DATA

HARDWARE	RANGE/DESCRIPTION
Supply voltage	85...265 Vac/Vdc
Frequency	50/60 Hz
Maximum consumption	<3 W
Operating temperature	-40...85 °C
Degree of protection	IP20
Connections	0,3...2,5 mm², 22...12 AWG
Fixing	DIN rail (35mm)
MEASUREMENT INPUTS	
1 MBR Sensor (required)	Operating temperature: -40...+100 °C
	Degree of protection: IP67
	Cable: 4 x 0,5 mm², 200 °C
OUTPUTS	
Relay outputs	1 NC (Normally Closed) relay + 1 NO and NC (Normally Open and Normally Closed) relay
Dielectric strength	1000 Vrms between contacts 4000 Vrms between contact and coil
Maximum switching voltage	400 Vac 30 Vdc
Maximum witching current	5,0 A @ 250 Vac 5,0 A @ 30 Vdc
Maximum switching power	1250 VA
Resistive load	1,0 A @ 60 Vdc; 60 W 2,0 A @ 40 Vdc; 80 W
COMMUNICATION INTERFACE	
Communication protocols	DNP3 Modbus® RTU
Communication ports	2 RS-485 (based on TIA-485-A standard)
DIMENSION AND WEIGHT	
Dimension	38mm x 114 mm x 146 mm
Weight	250 grams

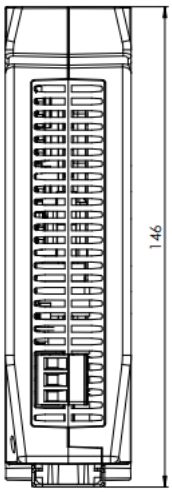


ELECTRICAL DIAGRAM

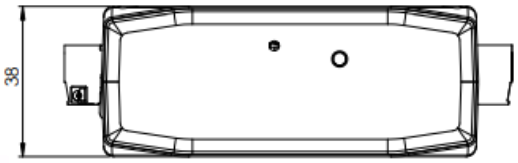
PRODUCT DIMENSIONS



SIDE VIEW



BOTTOM VIEW

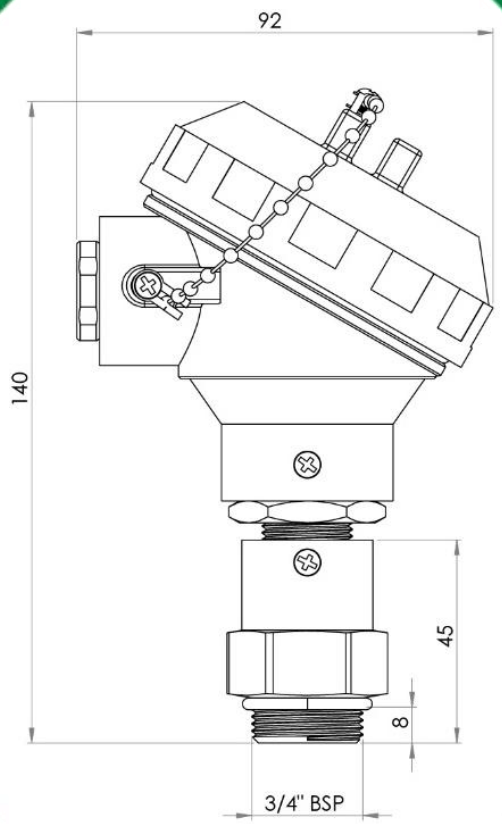


FRONT VIEW

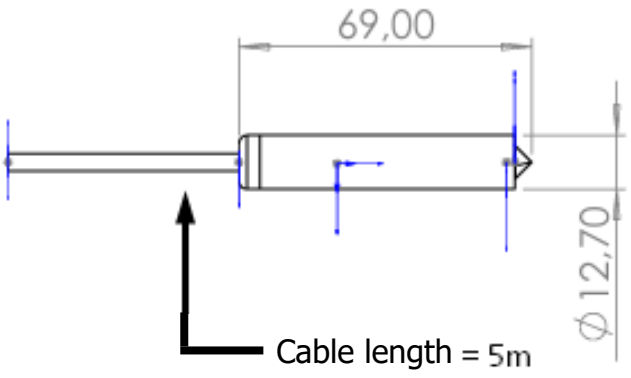
ALL DIMENSIONS IN mm

PRODUCT FRONT

CP-MBR DIMENSIONS



SENSOR DIMENSIONS



ESSENTIAL ACCESSORIES

JUNCTION BOX CP-MBR

The CP-MBR junction box facilitates the connection between the sensor installed inside the expansion tank and the MBR relay, maintaining the system's tightness.

The CP-MBR must be installed in a threaded hole or 3/4" BSP valve (optional NPT) that allows direct access to the expansion tank. The four MBR sensor cable leads can be connected to the pressure terminal with or without connection terminals.

RECOMMENDED ACCESSORIES

SIGMA ECM® MONITORING SOFTWARE

In addition to online monitoring of the temperature of your assets, with our monitoring system and our specialized team, it is possible to keep track of the status of your assets beyond reading data.

Monitoring carried out based on analyses of information collected by IEDs installed in your assets.

INSTALLATION PANEL 200x200x250

IEDs must always be installed sheltered from the elements and can be supplied in an easily installed weatherproof enclosure.

ORDERING SPECIFICATION

In the product purchase order, it is necessary to specify:

1. PRODUCT NAME

- Membrane/Bladder Rupture Relay – MBR.

2. QUANTITY

- The number of **relay** units must be specified. The relay, MBR sensor and junction box (CP-MBR) are sold separately.

3. COMMUNICATION PROTOCOL

- Specify the communication protocol to be configured in the MBR:
  - ✓ Modbus® RTU;
  - ✓ DNP3;

4. MBR SENSOR

a) QUANTITY

- The number of **MBR sensor** units must be specified.

b) CABLE LENGTH

- The default is 5 meters.

5. ACCESSORY

a) QUANTITY

- The number of **junction box** units **(CP-MBR)** must be specified.

b) THREAD

- **Thread option:** Standard 3/4” BSP (British Standard Pipe) or optional 3/4” NPT (National Pipe Thread).

Treetech®

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