USER MANUAL – BMR
BAG AND MEMBRANE RELAY

SUMMARY

INTRODUCTION

The Bag and Membrane Relay – BMR, was developed to supervise the presence of liquids (Oil, Water...) on power transformers purses and/or sealer membrane spots in order to monitor their integrity continuously, to prevent insulation oil contamination in cases of sealing rupture. It can also detect leakage and liquid presence on containment tanks. The liquid temperature can reach a range of -40°C up to 125°C.

The Relay module circuit is activated by a microprocessor, totally isolated and protected against electrical surges and electrical inductions. It was built obeying strict quality patterns and it uses last generation electronic components (SMD), its hardware was designed to stand to severe work conditions. It can be installed directly on Reactors and Power Transformers, on panels of substations courtyards, maritime platforms and chemical plans. It attends to requirement levels, supportability and reliability according with the standards IEC, DIN, IEEE and ABNT.

Besides monitoring the liquid detection locally through a frontal indicative LED, the BMR have a reversible relay that can commutate until 6 and with programmable logic operation. It has a RS-485 Serial port with protocol selection option between MODBUS RTU and DNP 3 Level 1, that allows remote access to the instrument and to online monitoring through the supervisory system (SCADA)

MAIN CHARACTERISTICS

- Universal Power Supply with 48 up to 265 Vdc/Vac Range;
- Micro Processed Relay Module and with High Speed operation;
- Compact enclosure with 22,5x100x113,5mm (8,85x39,37x44,68 inches) on ABS to 35 mm DIN rails;
- Stainless steel Sensor AISI-304, Dimensions; 14x70 / M16x70mm;
- A 6A Relay with NOC contacts and with programmable logic;
- A 6A NC Contact Relay for instrument failure indication or on Watchdog Sensor;
- Exclusive Connectors with Pluggable System;
- RS-485 digital output with Modbus RTU and DNP3 L1;
- Auto Baud Rate with automatic detection and automatic selection between a 2.400 up to 57.600 bps range;
- Frontal Micro USB for UseEasy™ Software Setting;
- Easy Application and Installation;
- 2 Years Warranty;

TECHNICAL DATA - RBM

BAG AND MEMBRANE RELAY	
Power Supply	48 to 265 Vdc/Vac 50/60 Hz
Sensor Input	SLE
Switch Temperature operation	-40 to +85°C
Switch maximum capacity	70W/250VA
Maximum electrical current conduction	6.0 Amperes
Output Contact	1 NAF and 1NF
Serial Communication Port	RS-485
Communication Protocol	MODBUS-RTU and DNP3.0 Lv.1
Auto Baud Rate Range (Automatic detection and selection)	2.400 to 57.600 bps
Fixation	DIN Rail
Enclosure	25,5 x 100 x 113,5 mm

TECHNICAL DATA - SLE

Liquid Sensor – SLE	
Sensor Type	Photo Transistor
Dimension	Dia. 14x70mm / M16x70mm
Material	Stainless Steel AISI-304
Sensor Operation Temperature	-40 to +125°C
Protection Level	IP67
Response time	50 µSec
Working Pressure	0 to 5bar
Fixation	With Thread or Smooth Body
Cable	3x18 AWG with grounding shield

TYPE TEST MEASURED

- Applied Voltage (IEC 60255-5): 2KV / 60Hz / 1 min. (Against Earth);

- Voltage Impulse (IEC 60255-5): 1,2/50 µseg. / 3 neg. e 3 pos. / 5 segs. Intervalo;

- Immunity to Electrical Transitory (IEC 60255-4) (IEC 60255-6): 2,5 KV / 1,1 MHz / 2 sec, 400 outbreaks/seg. – Cycles;

DIMENSIONS RBM

DIMENSIONS SLE

SLE
Smooth Sensor

70mm / 2,75 inches

Stainless Steel Sensor

14mm / 0.55 inches

DIMENSIONS CPC

Dia. 32mm / 3,22 inches

3/4"-1/2" BSP

Thread 3/4" BSP*   Terminal*

*Circle Terminal
4 Wires
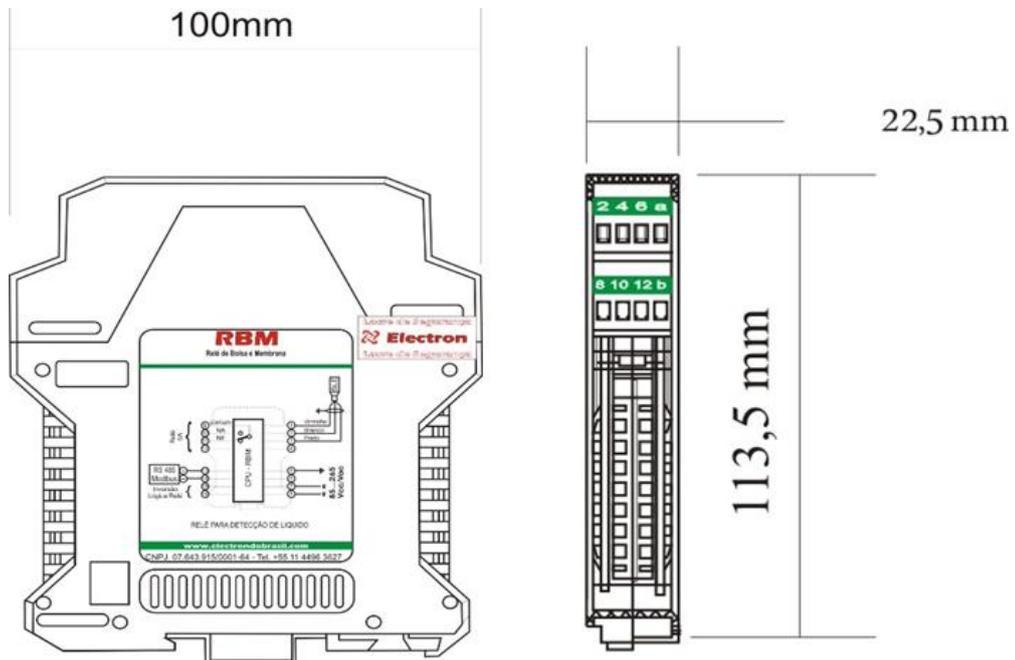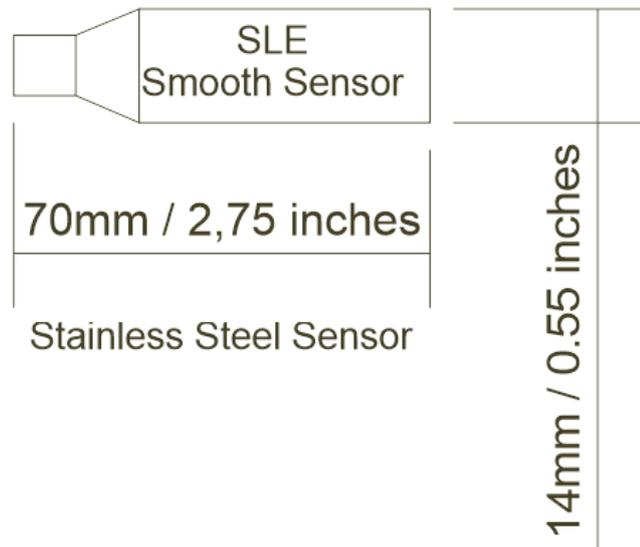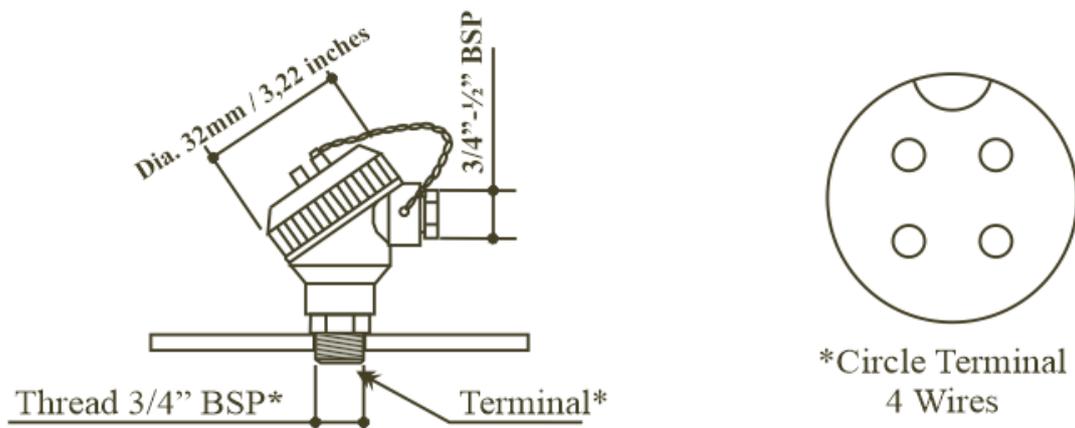
CONNECTION DIAGRAM
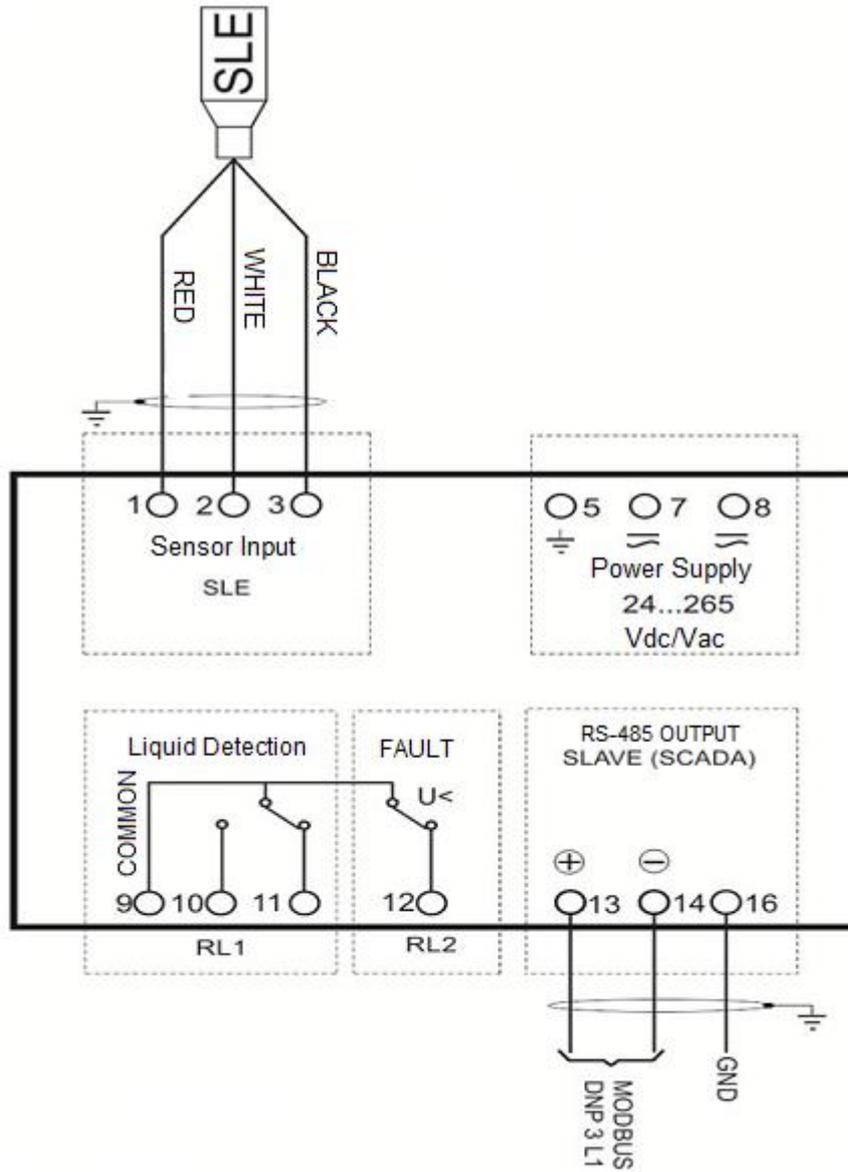
JUNCTION BOX HEAD TYPE CONNECTION DIAGRAM
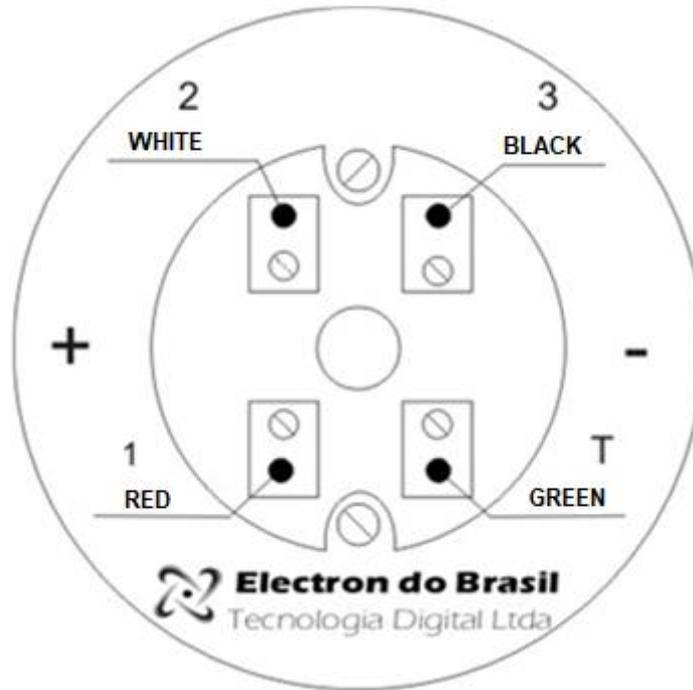
ORDER SPECIFICATION

MBR - MOD.

Input Sensor	
0	No Sensor
1	Sensor with connector
2	Sensor without connector
3	Special Sensor

Junction Box	
0	Without Junction Box
1	With Junction Box

Sensor Cable Length (Meters)
XX

Electron

KNOWING RBM
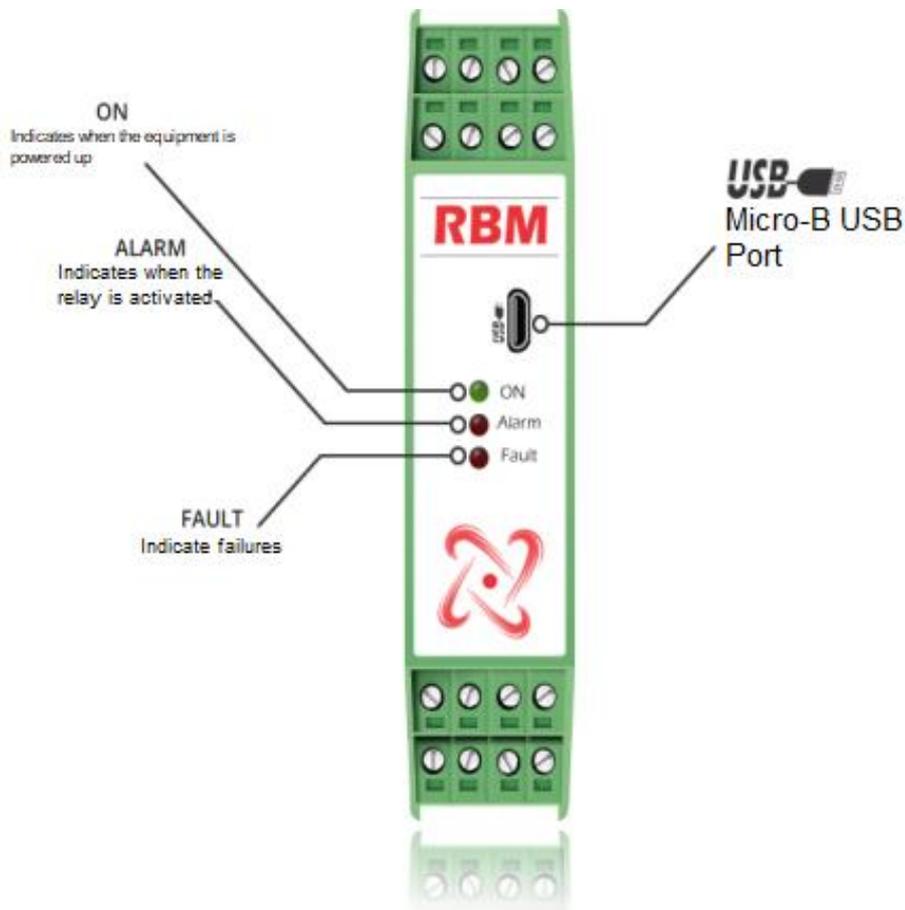
The equipment settings are made through RBM Software by a Micro-B USB port

RBM SOFTWARE INSTALLATION STEPS ON WINDOWS 10

1) Access our website https://electron.com.br/pt-br/produtos/rbm/ and click on tab downloads on product page and after this click on "Software" Tab, to initialize the BMR Software;

RBM SOFTWARE INSTALLATION STEPS ON WINDOWS 10

2) After downloading this application, execute the **'RB-Cloud.exe'** file.

IMPORTANT: If Case your browser or your antivirus takes a few minutes to conclude this download. The same precedent should be repeated to execute this file, because some antivirus softwares or even the Windows defender can block our Software functionality.

On Microsoft Windows 10 platform the same windows should appear on your computer screen requiring the right permissions to access our application. Our applications and files are totally free and secure of malwares.
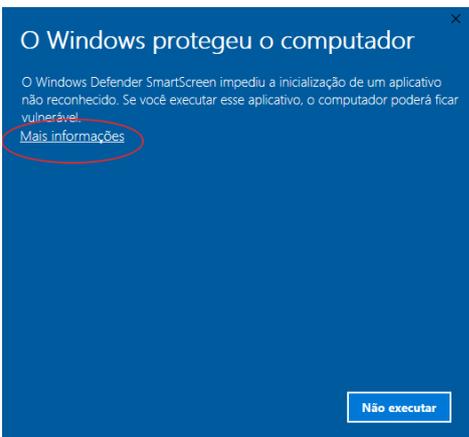
3) If this Windows already appeared on your computer, click on the "**More information**" underlined option and then go to 4th Step.
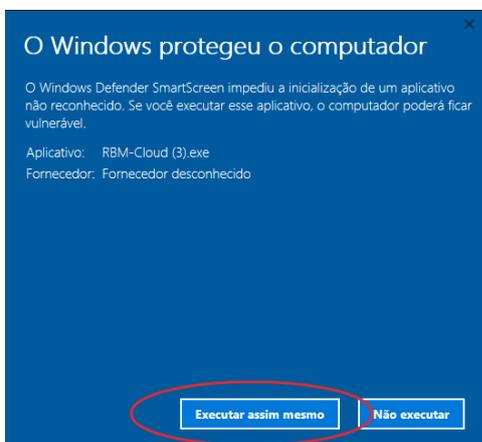
4) Now click on "Execute anyway", in this way, you're allowing our application resources access.

RBM SOFTWARE INSTALLATION STEPS ON WINDOWS 10
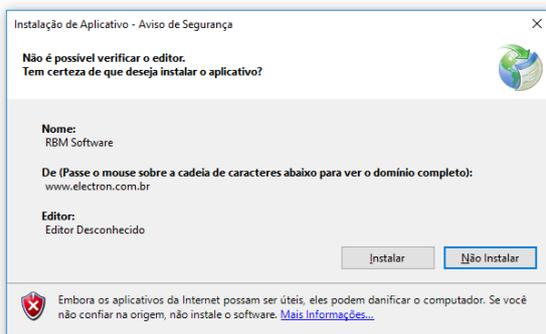
5) On this Step, click on **"Install"** button.
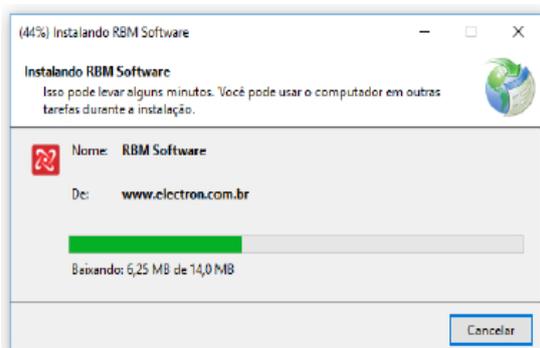
6) Await the download conclusion.

SETTING RBM BY SOFTWARE

At the end of the download and installation of the BMR Software, the main Screen will appear as the following image:
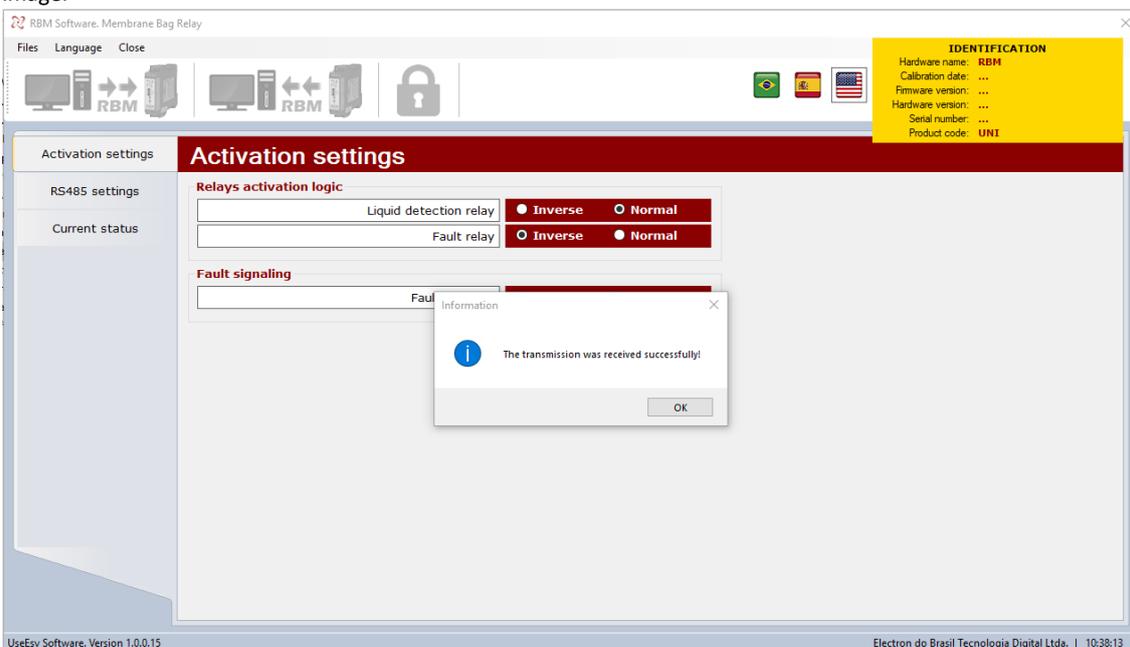
SETTING RBM BY SOFTWARE

Connect your BMR equipment using a micro-B USB Cable, connect the other extremity in a computer or notebook so the BMR Software can recognize it.

When connecting the equipment, the software will show an information window with the following message: **The transmission was successfully received,** as the following figure example. Click **OK**.

Note that the setting options at the top of the software window, that were unavailable before will turn to available to equipment setting.
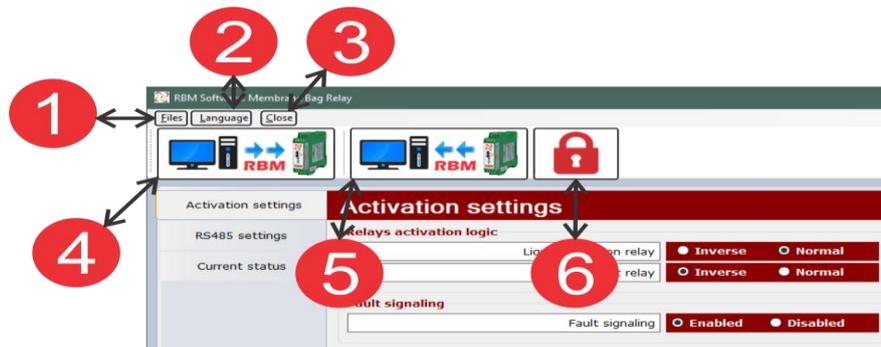
SETTING RBM BY SOFTWARE

1 – Files

Open parameters file...
Allows open the BMR equipment parameters file on software.

Save Parameters File...
Export your equipment current parameters creating a .RBM. format file.

Print the BMR Parameters Value...
Allows the equipment parameter printing RBM.

2 – Languages

Português – Standard
Defines Portuguese as Software language.

Español
Defines Spanish as Software language.

English
Defines English as Software language.

3 – Close Software
Close Software.

4 – Send Parameters
Send Equipment Parameters to the software.
PS: A window will appear asking for the password, by the manufacturing pattern, the password is **"0000"** (zero, zero,zero,zero), if the typed password is wrong, the parameters shall not be sent to the software.

5 – Receive Parameters
It Receives the equipment parameters on the software.

6 – Change Password

To do so, Type the current password and on the following fields type your new password and click in **OK** to confirm it. As shown on the figure below
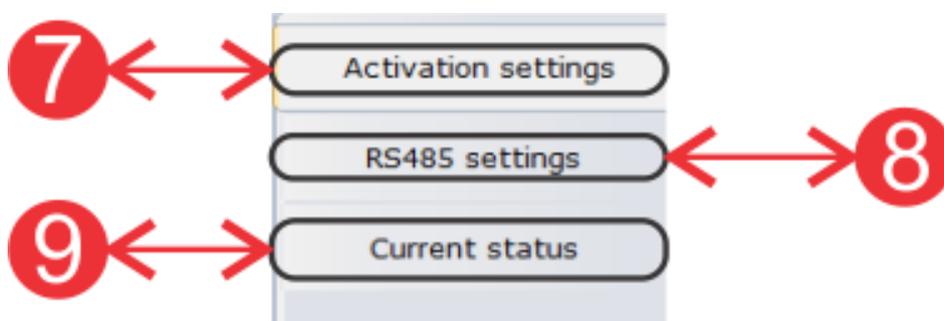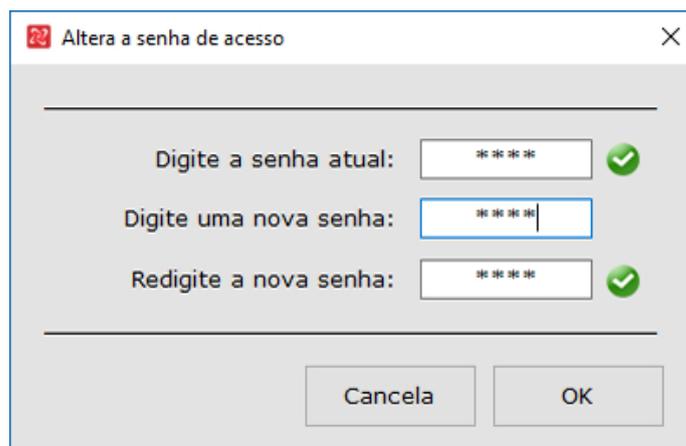
SETTING RBM BY SOFTWARE

7 – Actuation Settings

Liquid Detection Relay:

INVERSE
When the operation is inverse, the Relay initial conditions is set.

NORMAL
When the operation is inverse, the Relay initial conditions is off.

Failure Relay:

INVERSE
When the operation is inverse, the Relay initial conditions is set.

NORMAL
When the operation is inverse, the Relay initial conditions is off.

SETTING RBM BY SOFTWARE

8 – RS-485 Setting

DNP 3 – Level 1
Selects DNP 3.0 Lv.1 as the Communication Protocol

Modbus RTU
Selects Modbus RTU as the Communication Protocol
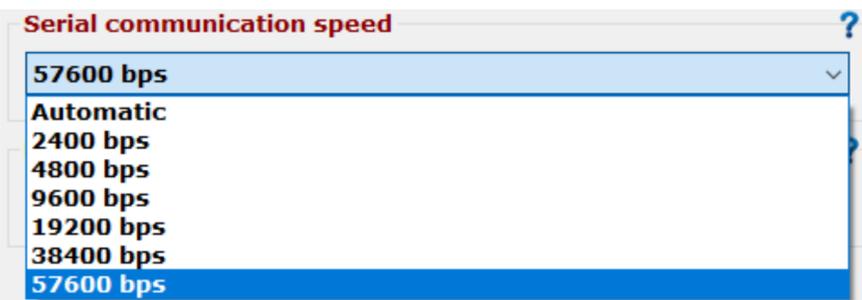
Baud Rate
Select the automatic mode that will identify the network speed automatically, or, select one of the available values to fix the serial communication speed (2.400 bps, 4.800 bps, 9.600 bps, 19.200 bps, 38.400 bps or 57.600bps).

Parameters Change Protection
To inhibit the register parameters writing.

Protection Against Parameters Changes
To configure the serial network address, each equipment connected to the RS-485 network must have a singular number address, different among them.

SETTING RBM BY SOFTWARE

Communication Parity

To communication parity setting, that is, the last message bit to be transmitted for data integrity verification.

Password Reminder

In case of loss or forgotten password, please, get in touch with Electron to Brasil and provide us the equipment password reminder.

9 – Current Status
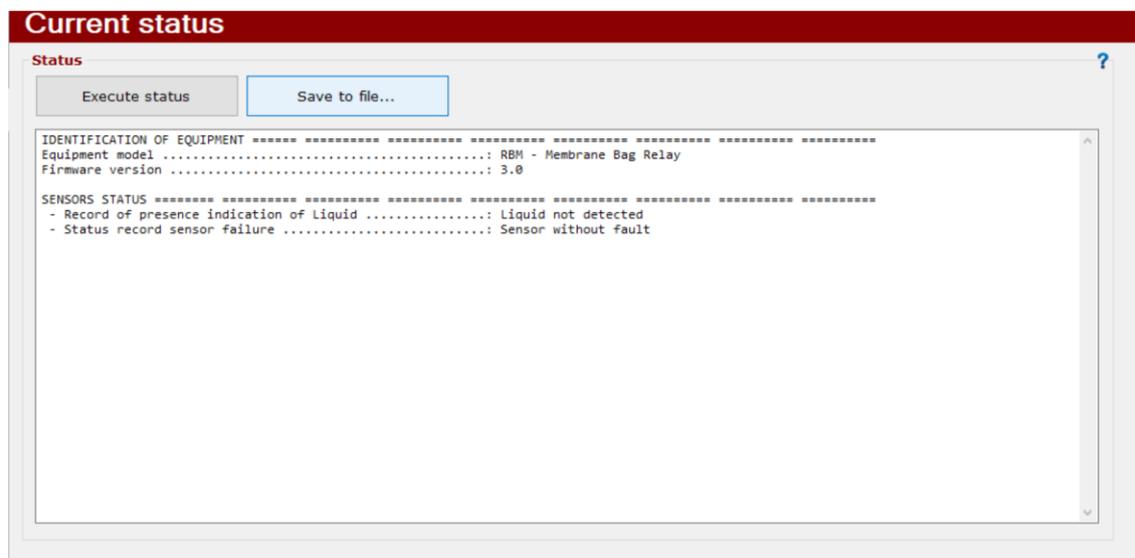
Execute status

Executes equipment showing the sensors status

Save to file

It does a relay current condition upload, generating an RBM File

IMPORTANT RECOMMENDATIONS

Before operating this equipment, consider the following recommendations:

1. The sensor as the equipment must be grounded, do not use the same grounding point for the power supply, in order to not generate potential differential;

2. The sensor and the power supply correctly grounded avoids bad operation or damaging in cases of electrical disturbances, electrical surges and electrical induction;

3. Use 120 Ohms resistors in both extremities in the transmission line of the RS-485 communication network in order to generate the potential difference necessary to ensure the right operation of the communication network;

4. Do not use the liquid sensor on temperatures above 125°C or lower than -40°C;

WARRANTY TERM

The Bag and Membrane Relay – Has a Warranty Term of two years counted since the sale date stated on the invoice, with cover for eventualities, such as manufactory defects that makes this equipment unproperly for its application.

Warranty exclusion

The Warranty Term does not cover logistics fees to the technical assistance, freight or product safety shipping for with indication of bad operation or defects. Are also not covered the following events: Natural wear caused by the continuous and frequent use; damages on the equipment external parts caused by falls or unproper storage; fixing/seal violation attempt with damages caused by unauthorized people and with disagree with this document and with the Electron do Brasil technical Staff.

Warranty Loss

This product will automatically loose its warranty when:

- If the utilization and assembly instructions contained in this manual and the NBR 5410 norm procedures are not followed;
- Subjected to conditions out from the respective specified limits;
- Violated or fixed by unauthorized people that do not belong to the Electron do Brasil Technical Staff;
- If the damage is caused by water or any other liquid infiltration;
- Components and other product parts degradation caused by Overloads**;**

Warranty Utilization

To use this warranty term the costumer should send the product to Electron do Brasil with the buying invoice properly stored to avoid transportation damages. For a prompt service is recommended to describe all the information possible in order to understand the reported defect. This will be analyzed and submitted to full operations tests;

The product analysis and its eventual maintenance will be done only by the Electron do Brasil technical Staff on our HQ.

CONFORMITY LETTER

Available for download at our website in the following link:
http://www.electron.com.br/downloads/artigos-tecnicos/