



Bag & Membrane Relay

Manual

INDEX

INDEX.....	2
INTRODUCTION	3
MAIN FEATURES	3
TECHNICAL DATA - RBM	4
TECHNICAL DATA – sle	4
TECHNICAL DATA – CPC.....	4
TYPE TESTS ATTENDED	5
RBM DIMENSIONS.....	5
SLE DIMENSIONS	6
CPC DIMENSIONS	6
CONNECTION DIAGRAM	7
CYLINDER HEAD JUNCTION BOX CONNECTION DIAGRAM	8
OPERATION CHART.....	9
PREVENTIVE MAINTENANCE	Erro! Indicador não definido.
GETTING TO KNOW RBM	11
INSTALLATION OF RBM SOFTWARE ON WINDOWS 10.....	11
INSTALLATION OF RBM SOFTWARE ON WINDOWS 10.....	12
INSTALLATION OF RBM SOFTWARE ON WINDOWS 10.....	13
CONFIGURING RBM VIA SOFTWARE	13
CONFIGURING RBM VIA SOFTWARE	14
CONFIGURING RBM VIA SOFTWARE	15
CONFIGURING RBM VIA SOFTWARE	16
CONFIGURING RBM VIA SOFTWARE	17
CONFIGURING RBM VIA SOFTWARE	18
SPECIFICATION FOR ORDER.....	19
IMPORTANT RECOMMENDATIONS.....	19
WARRANTY TERM	19
LETTER OF CONFORMITY.....	20

INTRODUCTION

The Bag and Membrane Relay – RBM, was developed to supervise the presence of liquid (Oil, Water, etc.) in places such as transformer sealing bags and/or membranes in order to continuously monitor their integrity, so that there is no contamination of the insulating oil in case of seal rupture and used for leak detection and presence of liquids in containment tanks, liquid temperatures can range from -40 to 125°C.

The circuit of the Relay module is Microprocessed, fully isolated and protected against electrical surges and inductions, it was built according to strict quality standards and use state-of-the-art electronic components (SMD), its hardware was designed to withstand severe working conditions, and can be installed directly in Power Transformers and Reactors, in panels in the yard of power substations, offshore platforms and chemical industries. It meets the levels of requirements, supportability and reliability according to IEC, DIN, IEEE and ABNT standards.

In addition to monitoring the detection of liquids locally through an indicative LED on the front, the RBM has a reversible relay that can switch even with inverted logic, also an RS-485 Serial port with Modbus RTU protocol and DNP 3 L1 that allows remote access to the instrument so that monitoring can be done online through a supervisory system.

MAIN FEATURES

- Universal power supply 24 to 265 Vdc/Vac;
- Microprocessor and High Speed Operation Relay Module;
- Compact Box with 22.5x100x113.5 mm in ABS for DIN rail 35 mm;
- AISI-304 Stainless Steel Sensor, dimensions 14x70mm;
- 1 x 6A relay with NAF contact with programmable logic;
- 1 x 6A relay with NC contact for indication of instrument or sensor faults (watchdog)
- Pluggable Connectors;
- RS485 Digital Output with Modbus RTU and DNP 3 L1 protocol;
- Auto Baud Rate, communication speed with automatic detection and selection from 2,400 to 57,600 bps
- Front USB 2.0 for parameterization via UseEasy™ software;
- Easy Installation and Application;
- 2 years warranty.

25.5 X 100 X 113.5 MM

Relé de Bolsa e Membrana	
Alimentação	48 a 265 Vcc/Vac 50/60 Hz
Entrada de Sensor	SLE
Temperatura de Operação de Chaveamento	-40 a +85°C
Capacidade Máxima de Chaveamento	70W/250VA
Corrente Máxima de Condução	6.0 Amperes
Contato de Saída	1 NAF e 1NF
Porta de Comunicação Serial	RS-485
Protocolo de Comunicação	MODBUS-RTU e DNP3.0 Lv.1
Auto Baud Rate (detecção e seleção automática)	2.400 a 57.600 bps
Fixação	Trilho DIN
Caixa	25,5 x 100 x 113,5 mm

Table 1 – RBM technical data

3X18 AWG WITH GROUND MESH

Sensor de Líquido – SLE	
Tipo de Sensor	Foto Transistor
Dimensão	Dia. 14x70mm / M16x70mm
Material	Aço Inoxidável AISI-304
Temperatura de Operação do Sensor	-40 a +125°C
Grau de Proteção	IP67
Tempo de Resposta	50 µs
Pressão de Trabalho	0 a 5bar
Fixação	Corpo Liso
Cabo	3x18 AWG com malha de aterramento

Table 2 – SLE Technical Data

4 WIRES

Caixa de Passagem tipo Cabeçote	
Material	Alumínio injetado
Grau de Proteção	IP 65
Cabeçote de Ligação	4 fios

Table 3 – CPC Technical Data

TYPE TESTS ATTENDED

- Applied Voltage (IEC 60255-5): 2KV / 60Hz / 1 min. (against the ground);
- Voltage Impulse (IEC 60255-5): 1.2/50µsec. / 5KV/ 3neg. and 3 pos. / 5 secs. Interval;
- Immunity to Electrical Transients (IEC 60255-4) (IEC 60255-6): 2.5KV / 1.1 MHz / 2sec, 400 surges / sec. – Cycles;

RBM DIMENSIONS

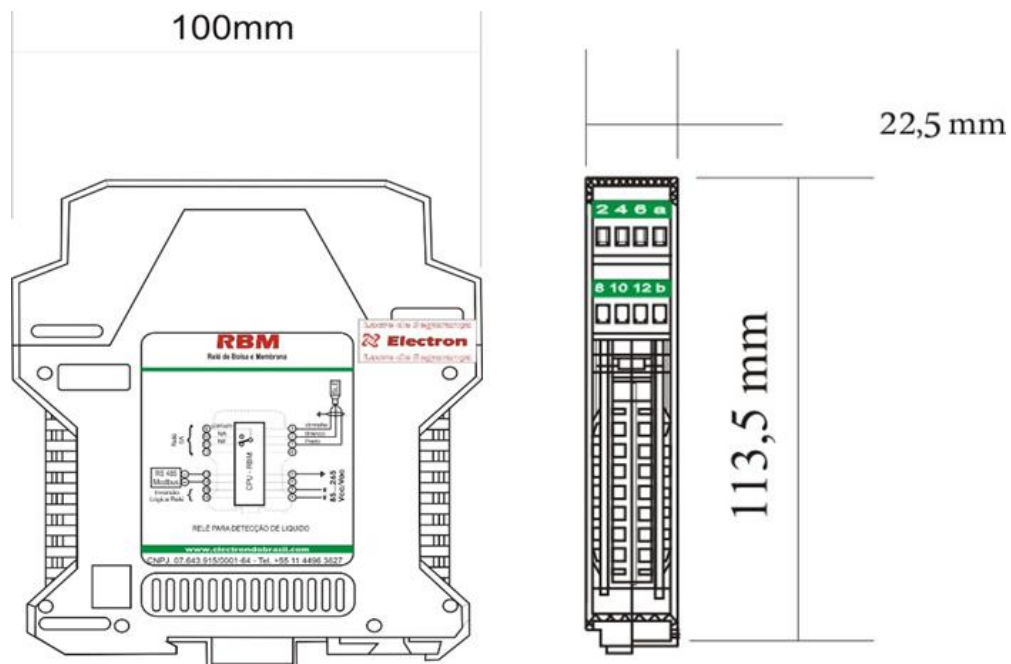


Figure 1 – RBM Dimension

SLE DIMENSIONS

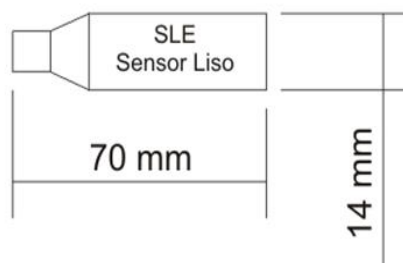


Figure 2 – SLC Dimension

CPC DIMENSIONS

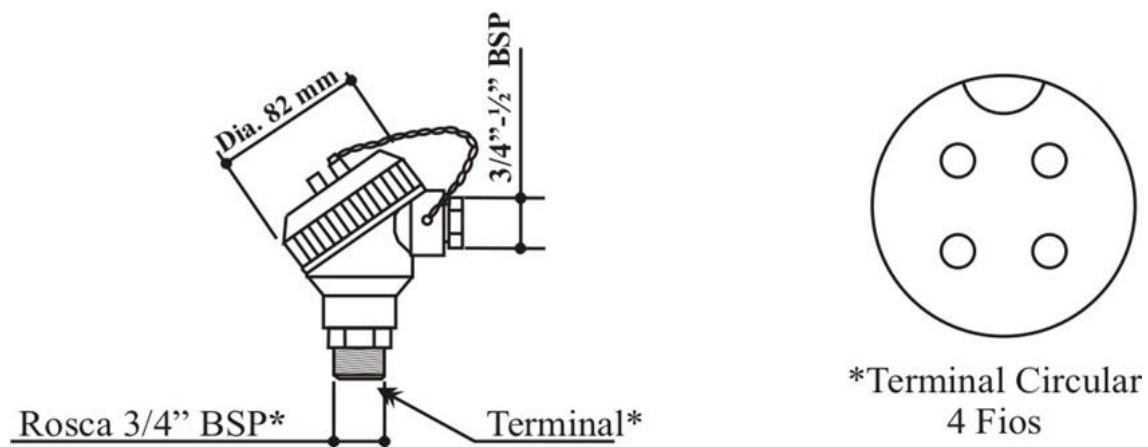


Figure 3 – CPC Dimension

CONNECTION DIAGRAM

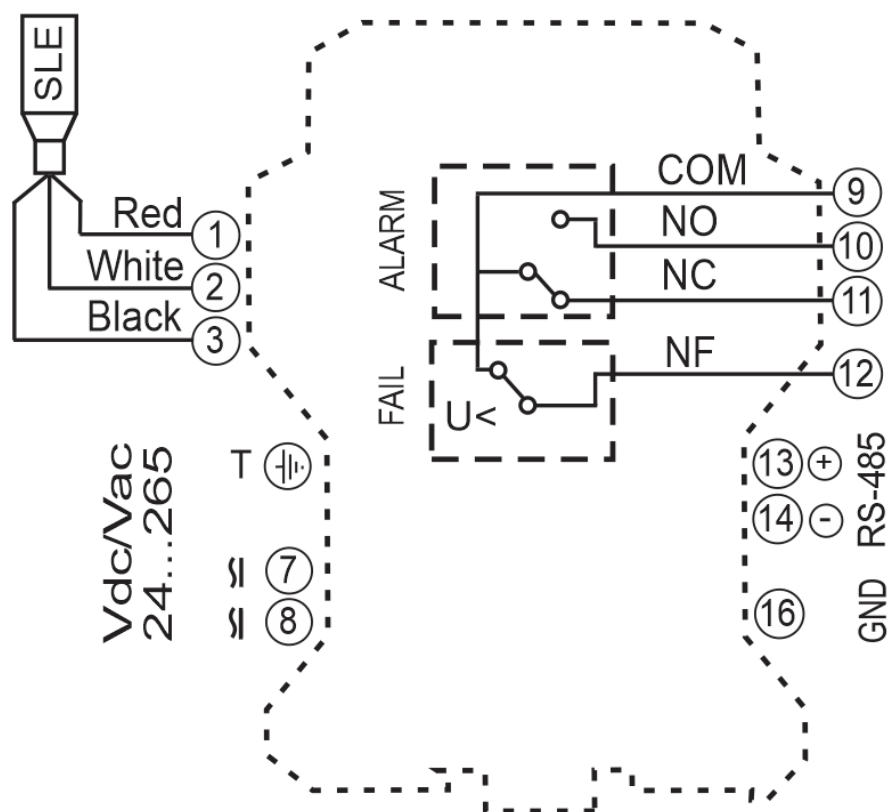


Figure 4 – RBM Linkage Diagram

CYLINDER HEAD JUNCTION BOX CONNECTION DIAGRAM



Figure 5 – Junction Box Connection Diagram

OPERATION CHART

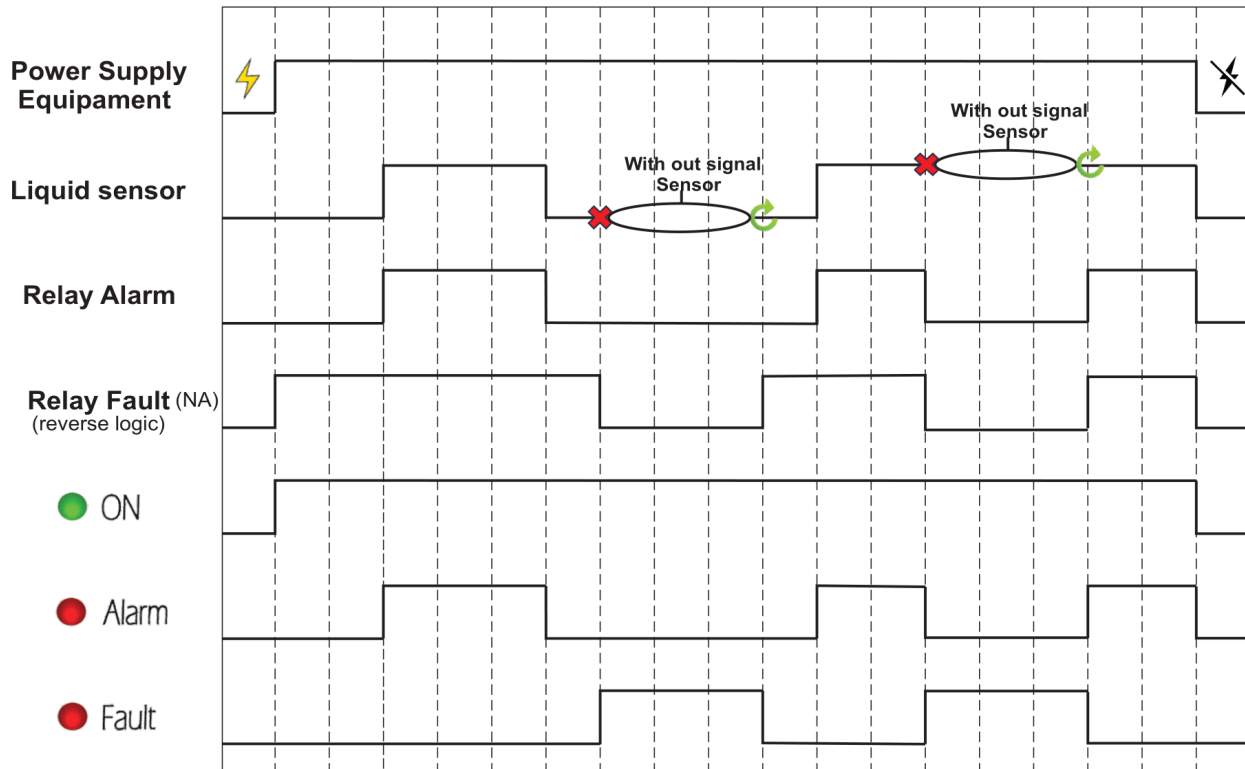


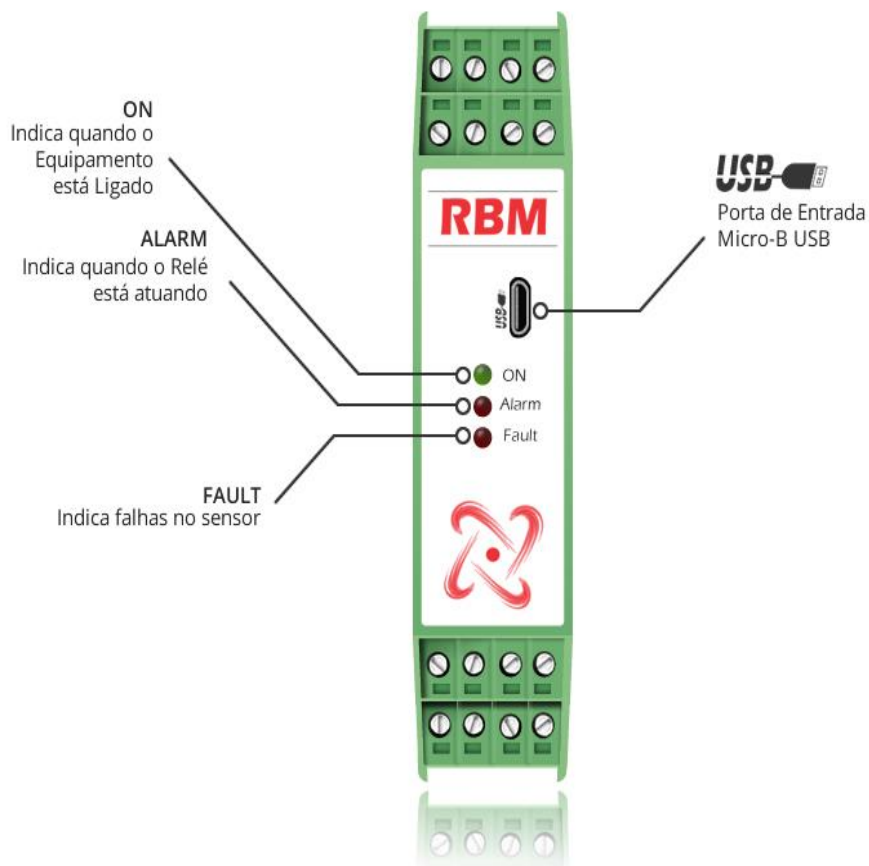
Figure 6 – Operation chart

MANUTENÇÃO PREVENTIVA

MANUTENÇÃO PREVENTIVA E CORRETIVA							
Itens para serem verificados preventivamente			Frequência de Verificação				Ação corretiva
AÇÃO	Elementos de Verificação	ATIVIDADES	Todo Mês	A cada 3 Meses	A cada 6 Meses	A cada 1 Ano	Quando Necessário
VERIFICAÇÃO	Presilha de fixação e encaixe no trilho	Fixação na porta do painel ou fundo do painel		X			Reaperto, Encaixe, troca de terminais ou troca de parafusos
	Bornes e Pente de conectores	Fixação e encaixe no equipamento		X			
		Aperto dos parafusos na fixação dos condutores		X			
	Sensores	Integridade / Posicionamento / fixação			X		Substituição, Reposicionamento e ou fixação dos sensores
	Poço do sensor em transformadores à Óleo	Nível do óleo no poço			X		Preenchimento com óleo até o nível indicado
TESTES & MEDIÇÕES	Reles e Saídas Digitais	Teste de acionamento Individual			X		Encaminhar para assistência técnica da Electron do Brasil
	Led's e Displays	Teste acionamento Led's e segmentos do display			X		
	Botões de navegação	Teste de navegação dos botões de navegação			X		
	Entrada dos Sensores	Aferir as entradas de sensores com uso de um padrão				X	
	Entrada tensão de Alimentação do equipamento	Medir Tensão de entrada de alimentação			X		Substituir valores de entrada de tensão conforme modelo do equipamento
	Saídas de comunicação RS-485	Teste de comunicação e comando no sistema supervísório			X		Encaminhar para assistência técnica da Electron do Brasil
	Entradas de Sinal de corrente miliampere	Medir, comparar e aferir sinal de entrada no modo passivo e ou ativo			X		
	Saídas de Sinal de corrente miliampere	Medir, comparar e aferir sinal de entrada no modo passivo e ou ativo			X		
LIMPEZA	Bornes e Pente de conectores e caixa de ligação	Detritos, Impurezas e Umidade	X				Limpeza com pano seco ar comprimido e aspirador de pó
	Gabinete de alumínio do equipamento		X				
	Frontal do Display do equipamento		X				
 ATENÇÃO	1 - Manter o equipamento dentro da temperatura ideal de trabalho (50°C até 60°C) prolonga a vida útil e evita manutenções corretivas. 2 - O acúmulo de poeira e impurezas nas instalações podem causar curto-circuito e queima dos equipamentos e sensores. 3 - Após 10 anos de uso é recomendado substituir o equipamento.						

Table 4 – Preventive maintenance table

GETTING TO KNOW RBM



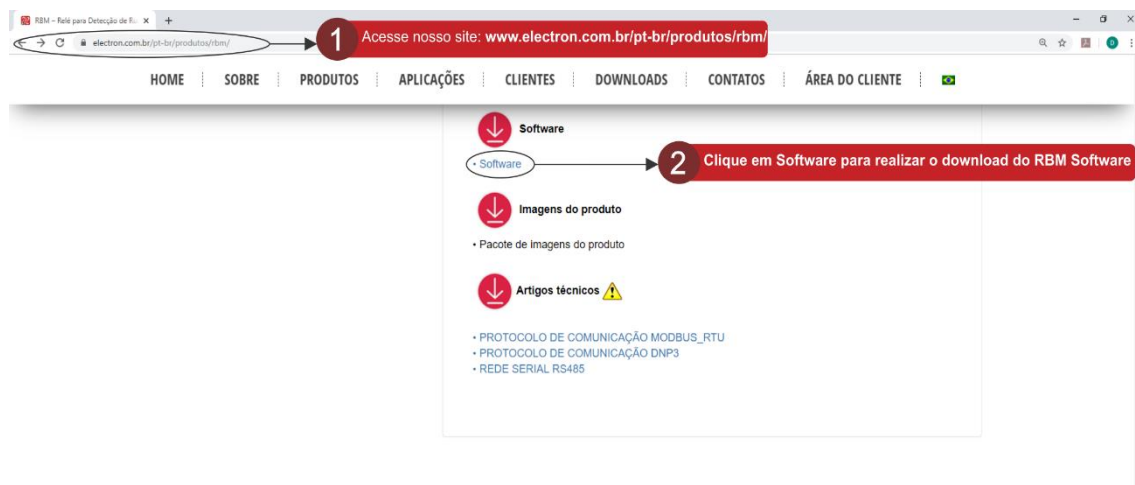
The configurations of the Equipment are made through the RBM Software through the Micro-B USB port

INSTALLATION OF RBM SOFTWARE ON WINDOWS 10



1) Go to our Website <https://electron.com.br/pt-br/produtos/rbm/> in the menu and click on the Downloads tab of the product page and then click on "Software" to initialize the RBM software download.

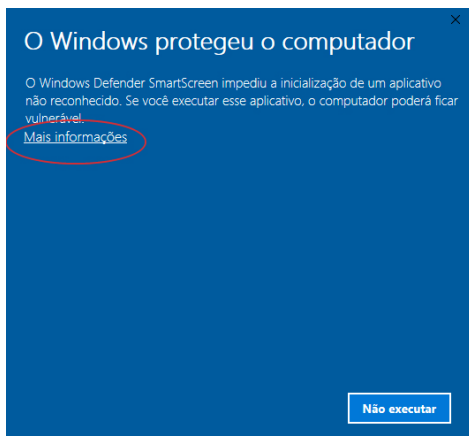
INSTALLATION OF RBM SOFTWARE ON WINDOWS 10



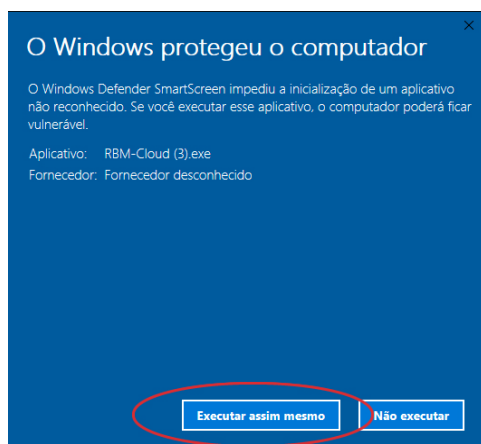
2) After downloading the application, run the file '**RB-Cloud.exe**'.

IMPORTANT: Hold your browser or your anti-virus for a few minutes to complete the download. The same procedure should be repeated when running the file, as some anti-viruses or even Windows Defender block functions of our software.

If you are using Windows 10, the same windows should appear on your computer, requiring the appropriate permissions to continue and access our application. Our applications and files are completely safe and free from malicious resources.

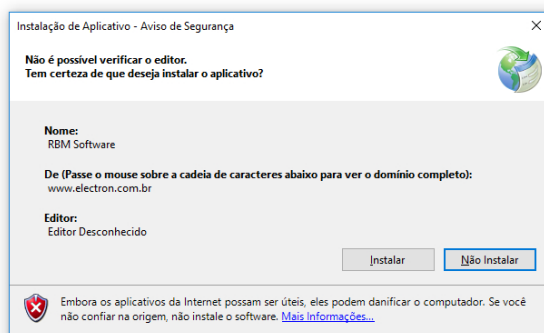


3) If this window has appeared on your computer, click on the underlined option "**More Info**" and then, Go to step 4.

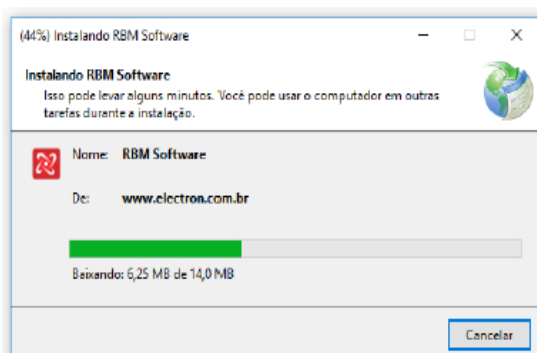


4) Now click on the 'Run Anyway' button allowing the features of our application to be accessed.

INSTALLATION OF RBM SOFTWARE ON WINDOWS 10



5) In this step, click on the "**Install**".



6) Wait for the download to finish.

CONFIGURING RBM VIA SOFTWARE

Upon completion of the download and installation of RBM Software, the home screen opened as shown in the image below:

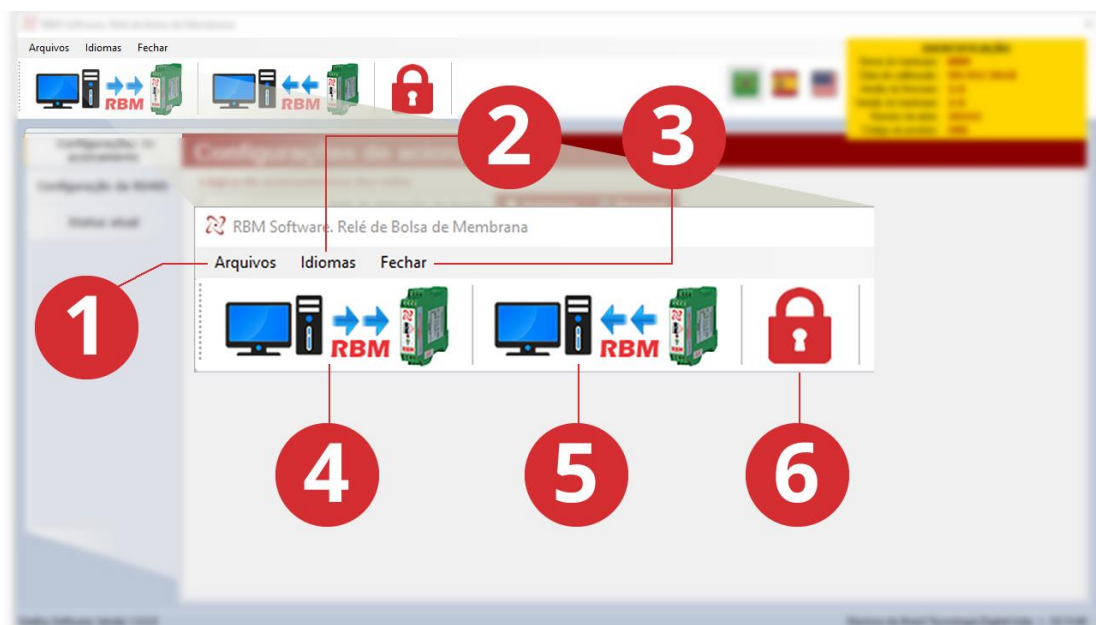
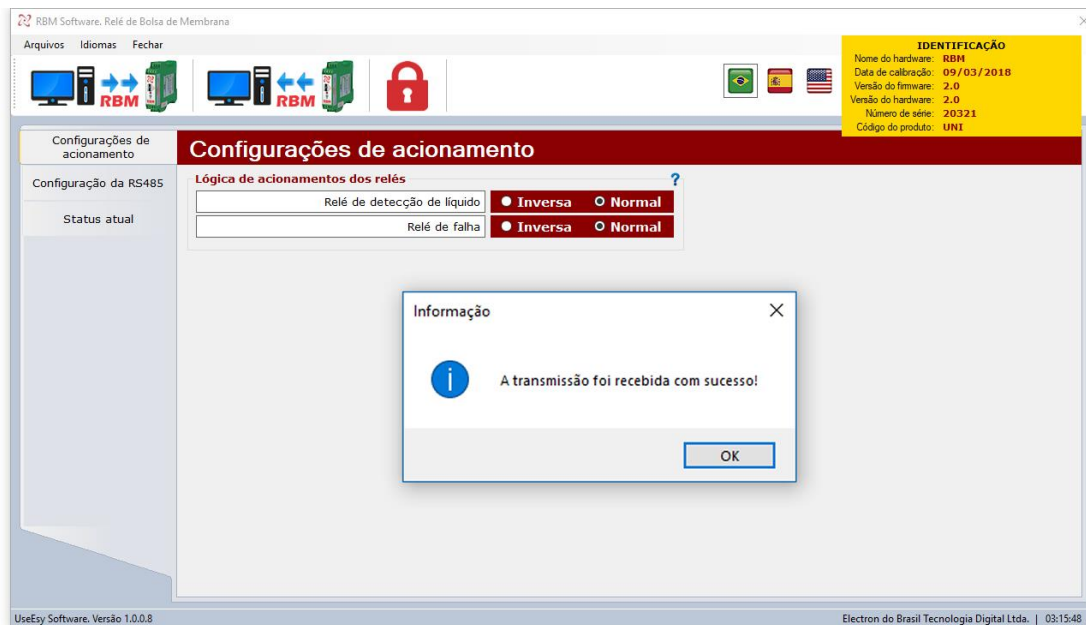


CONFIGURING RBM VIA SOFTWARE

Connect your RBM equipment using the USB micro-B cable, after plugging it into your equipment, plug the USB end into a computer or notebook so that the software can identify it.

When connecting the machine, the software will display an Information window with the following message: **The transmission was successfully received.**, as shown in the figure below. Click **OK**.

Note that the settings options at the top of the software that were previously unavailable will be available for the device setup.



CONFIGURING RBM VIA SOFTWARE**1 – Files****Open Parameters File...**

It allows you to open a file of RBM equipment parameters in the software.

Save Parameters File...

Export the current parameters of your device by creating a file in the format . RBM.

Print the RBM Parameter Values ...

Allows printing with the machine's parameters. RBM.

2 – Languages**Portuguese – Standard**

Sets the software to the Portuguese language.

Spanish

Sets the software to the Spanish language.

English

Sets the software to the English language.

3 – Close the software

Close the software.

4 – Send parameters

Sends equipment parameters to the Software.

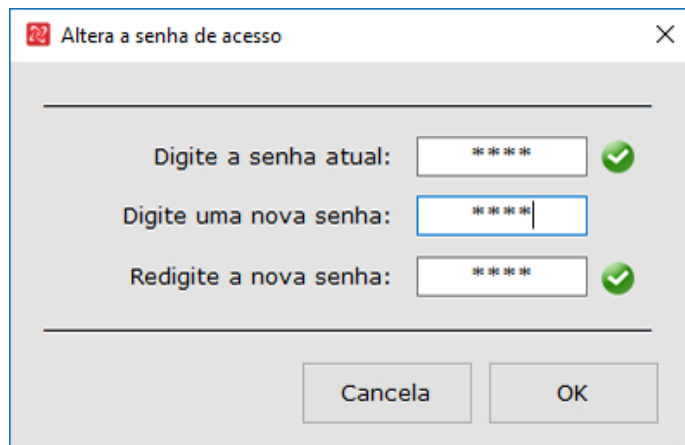
NOTE: A window will appear asking for the password, by default manufacture, the password is 0000. If the password entered is incorrect, no parameter will be sent to the Software.

5 – Receive parameters

Receives parameters from the equipment in the Software.

6 – Change access password

Change your password to a new password. To do this, enter the current password and in the following fields, enter your new password and click the OK button, as illustrated in the figure below.



Alterar a senha de acesso

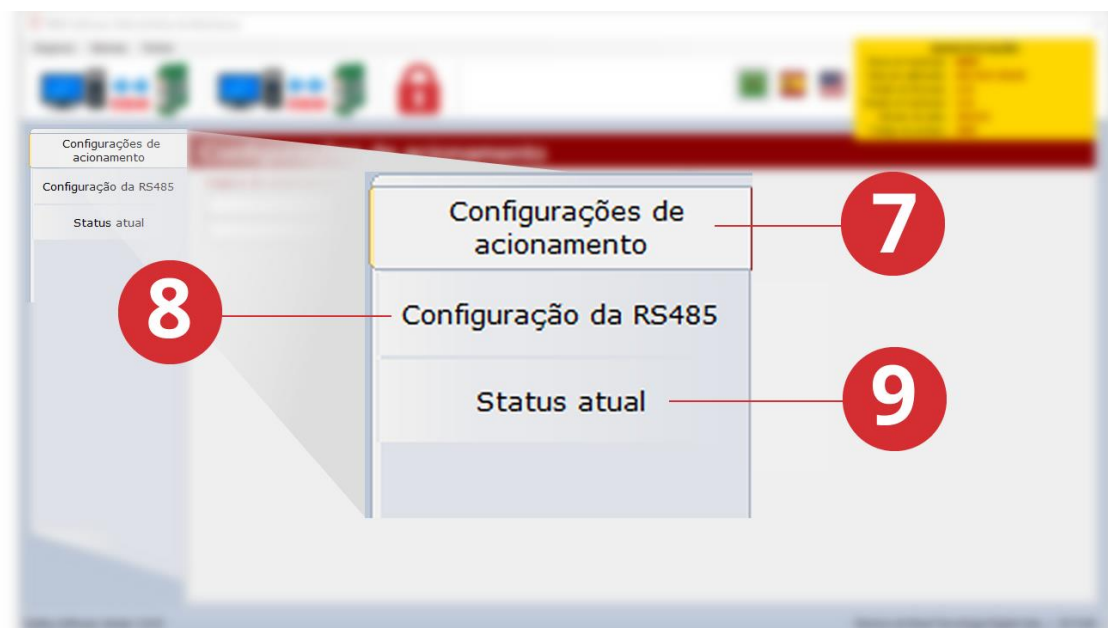
Digite a senha atual: ☒

Digite uma nova senha: ☐

Redigite a nova senha: ☒

Cancela OK

CONFIGURING RBM VIA SOFTWARE



7 – Trigger Settings

Lógica de acionamentos dos relés ?

Relé de detecção de líquido	☐ Inversa	☐ Normal
Relé de falha	☐ Inversa	☐ Normal

Liquid Detection Relay:

REVERSE

When the operation is reversed, the initial conditions of the Relay is triggered.

NORMAL When operation is normal, the initial conditions of the Relay is turned off

Lógica de acionamentos dos relés ?

Relé de detecção de líquido	☐ Inversa	☐ Normal
Relé de falha	☐ Inversa	☐ Normal

Fault Relay:

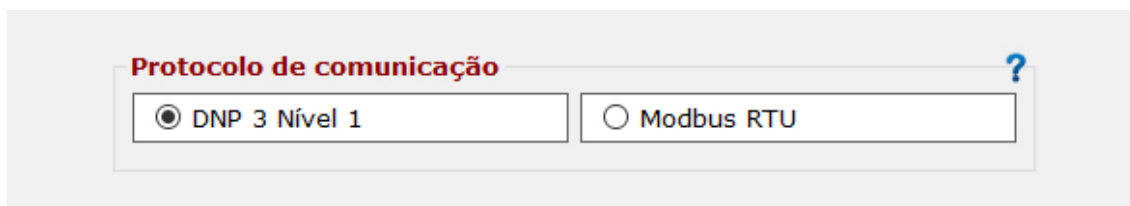
REVERSE

When the operation is reversed, the initial conditions of the Relay is triggered.

NORMAL When operation is normal, the initial conditions of the Relay is turned off

CONFIGURING RBM VIA SOFTWARE

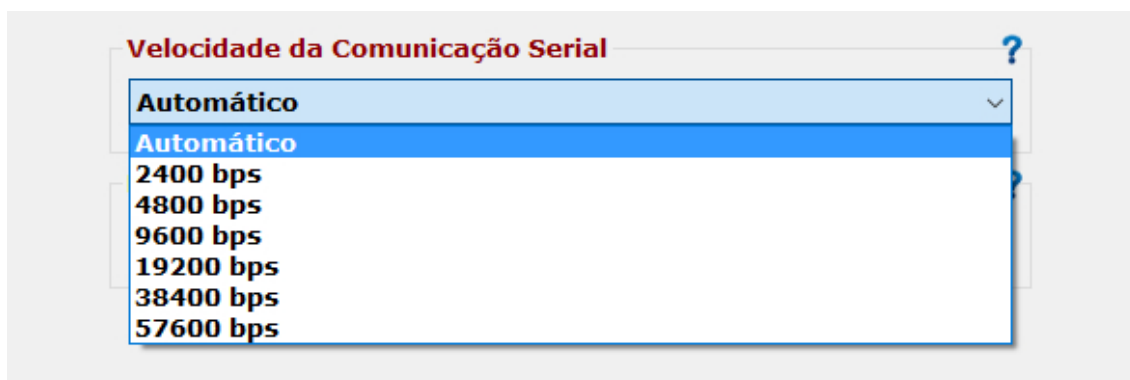
8 – RS-485 Settings

**DNP 3 – Level 1**

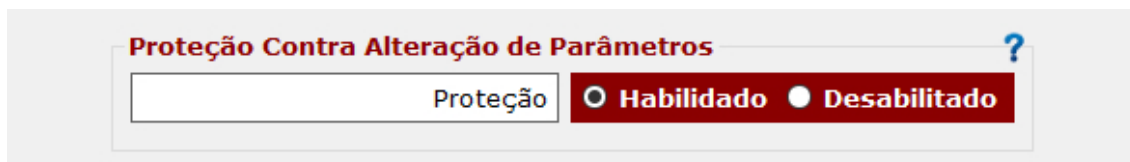
DNP 3.0 Lv.1 Communication Protocol Selection

Modbus RTU

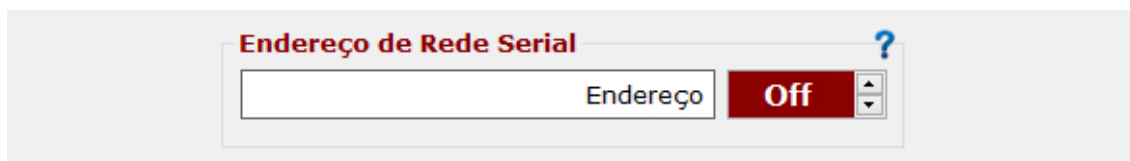
MODBUS RTU Communication Protocol Selection

**Serial Communication Speed**

Select the Auto 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 57,600 bps).

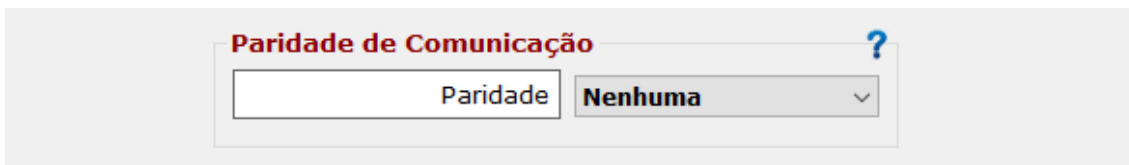
**Parameter Change Protection**

To inhibit writing on the recorder parameters.

**Parameter Change Protection**

To configure the serial network address, each equipment connected to the RS485 network must have only a single address that is different from the others. So that the supervisor can identify you.

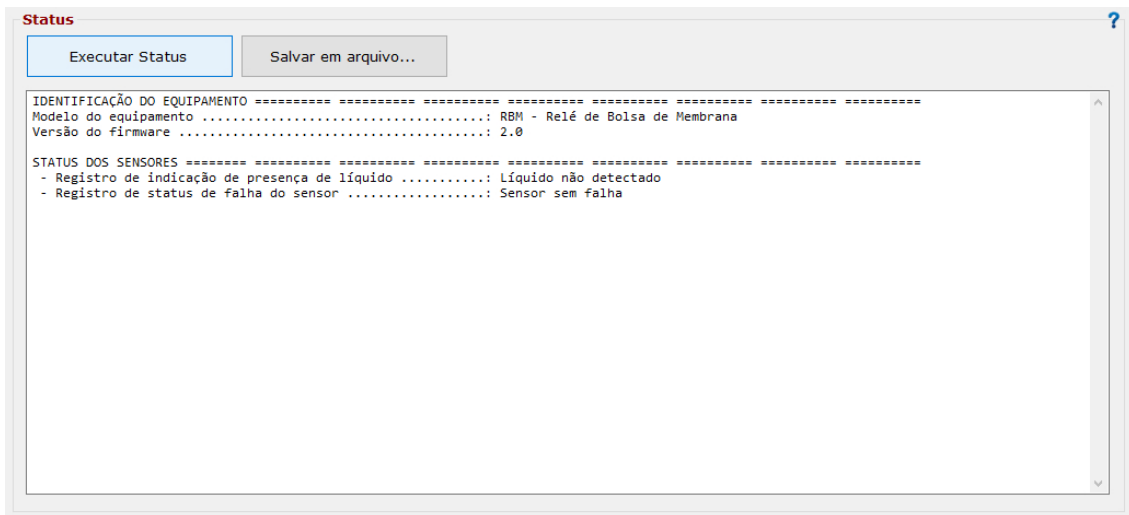
CONFIGURING RBM VIA SOFTWARE

**Communication Parity**

For parity setting, i.e. the last bit to be transmitted in the message to check the integrity of the data.

**Password reminder**

In case of loss or forgetfulness of password, please contact Electron do Brasil and provide the connection

9 – Current Status**Run Status**

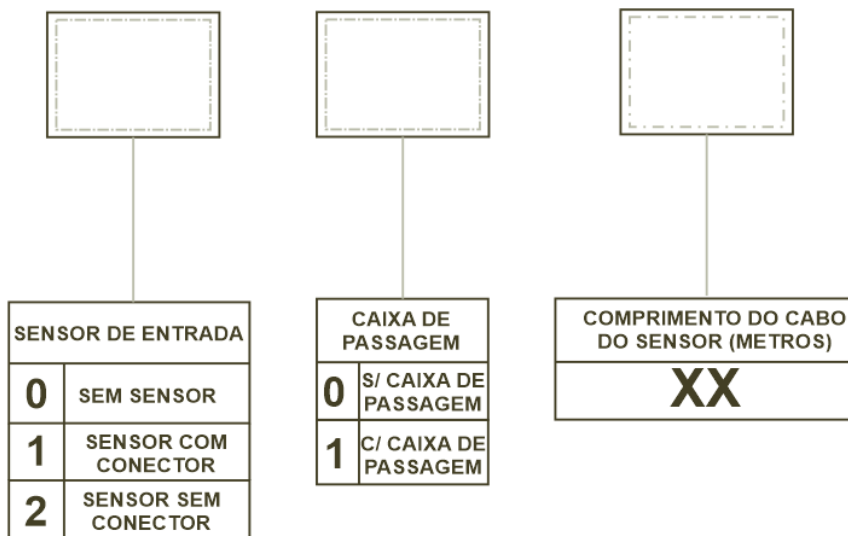
Runs the equipment showing the status of the sensors

Save to file

Uploads the current condition of the Relay by generating a . RBM

SPECIFICATION FOR ORDER

RBM - MOD.



IMPORTANT RECOMMENDATIONS

Before putting the equipment into operation, check the following recommendations:

1. The sensor as well as the equipment must be grounded, do not use the same point of grounding for the power supply and the sensor so that there is no potential difference.
2. The correctly grounded sensor and power prevent malfunction or damage in cases of disturbances, surges, and inductions in the equipment.
3. Use 120 Ohm resistors at the 2 ends of the line in the communication network (Rs485) transmission (start and end) in order to generate potential difference necessary for the correct functioning of the communication network.
4. Do not use the sensor in liquids with temperatures above 125°C or below -40°C.

WARRANTY TERM

The Bag and Membrane Relay – has a warranty period of two years from the date of sale stated on the invoice, with coverage for any manufacturing defects that make it unsuitable or unsuitable for the applications for which it is intended.

Disclaimer of Warranty

The warranty does not cover transportation expenses for technical assistance, freight, and insurance for shipment of a product with evidence of defect or malfunction. The following events are also not covered: Natural wear and tear of parts due to continuous and frequent use, damage to the outside caused by falls or improper packaging; attempt to repair/violate a seal with damage caused by people not authorized by Electron do Brasil and in disagreement with the instructions that are part of the technical description.

Loss of Warranty

Product will automatically lose warranty when:

- If the instructions for use and assembly contained in this manual and the installation procedures of the NBR 5410 standard are not observed;
- Subjected to conditions outside the limits specified by the respective technicians;
- Tampered with or repaired by a person who is not part of the technical team of Electron do Brasil;

- The damage is caused by water or any other liquid;
- Infiltration of water or any other liquid;
- Overload occurs that causes degradation of the components and parts of the product;

Use of the Warranty

To take advantage of this warranty, the customer must send the product to Electron do Brasil along with a copy of the purchase invoice, properly packaged, so that no damage occurs during transport. For an emergency service, it is recommended to send as much information as possible regarding the defect detected. This will be analysed and subjected to full functional testing.

The analysis of the product and its eventual maintenance will only be carried out by the technical team of Electron do Brasil at its headquarters.

LETTER OF CONFORMITY

Available for Downloads on the Website:
<http://www.electron.com.br/downloads/artigos-tecnicos/>