



Treetech®



BM-2

BUSHING MONITOR

CATALOG

treetech.com.br

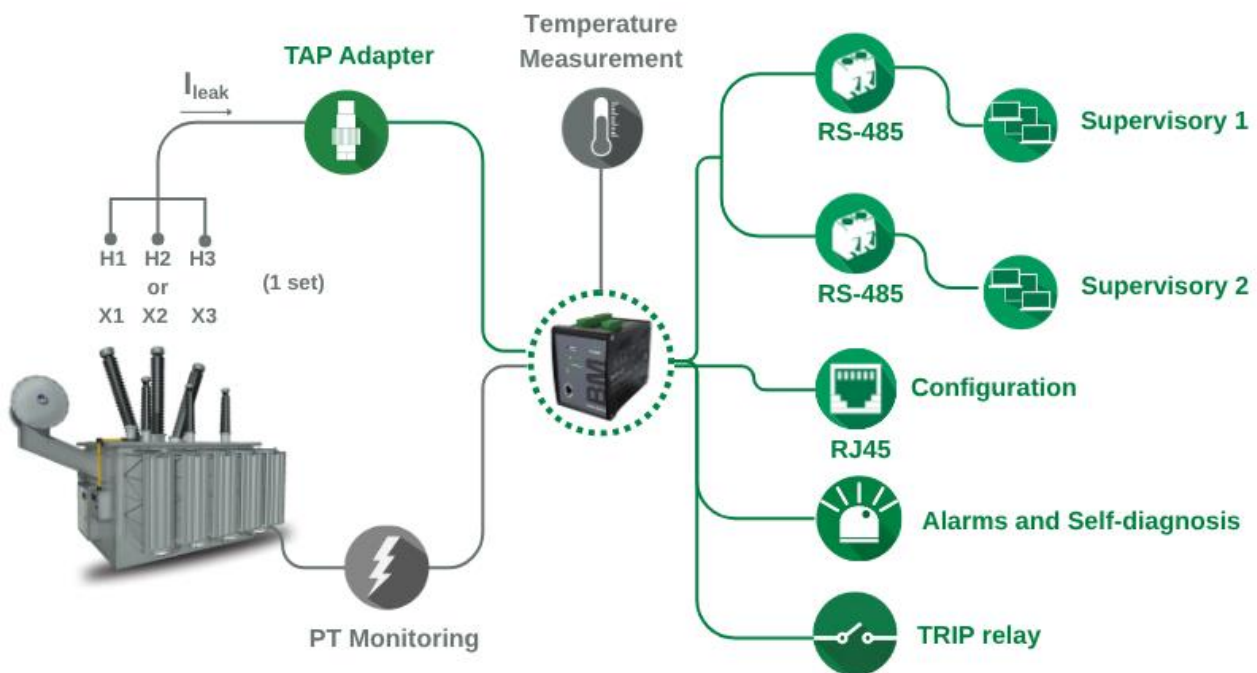
BM: Technological, compact, and reliable. The Bushing Monitor that combines simplicity and precision!



Did you know that a failure in insulation bushings can cause serious damage and millions of dollars in losses to high-voltage equipment? These components are fundamental to ensuring the safe operation of power transformers, reactors, and other high and extra-high voltage assets. When the insulation fails, the entire system is at risk; therefore, monitoring the integrity of the bushings is an essential measure to avoid surprises and maintain operational reliability.

With this in mind, Treetech developed the BM, ideal for detecting changes that compromise bushing insulation in their early stages. With compact dimensions, reliable algorithms, and high data processing capacity, our equipment delivers efficient, precise, and high-quality monitoring, as well as contributing to maintenance planning. BM, fits in the dashboard and in your pocket!

SYSTEM TOPOLOGY



FEATURES AND FUNCTIONS

IED

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

MODULAR SYSTEM

- ✓ Configurable for monitoring up to 3 bushings (1 set).

PT MONITORING

- ✓ RMS measurement of the PT and recording in memory to enhance event analysis.

ALARMS AND SELF-DIAGNOSIS

- ✓ Issuing alarms in case of abnormalities.
- ✓ Self-diagnosis for detecting internal faults.

COMMUNICATION PROTOCOL

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

INTERNAL CLOCK

- ✓ Adjustment maintained for a maximum of 3 days in case of power failure, without the use of batteries; maintenance-free equipment.

MASS MEMORY (Default)

- ✓ Non-volatile memory for storing measurements and alarm events.

RESET BUTTON

- ✓ The BM-2 has a button that, when pressed, allows the user to access the default communication parameters.

TRIP relay

- ✓ Relay equipped with TRIP function triggered by alarms due to currents.

TECHNICAL DATA

HARDWARE	
Supply voltage	85...250 Vac/Vdc
Frequency	50/60 Hz
Maximum consumption	<12 W
Operating temperature	-40...85 °C
Degree of protection	IP20
Mounting	Panel DIN Rail
INPUTS	
Current inputs (1 set)	0...100 mA
Three-phase voltage inputs (1 set)	0...185 Vac
1 RTD	PT100 Ω at 0°C with 3 wires, range -55...200°C
OUTPUTS	
2x Alarms	Normally Open (NO) relays Dielectric strength: 4000Vrms 5 A at 125 VAC 5 A at 250 VAC 5 A at 30 VDC
1x Self-diagnosis	Normally Closed (NC) relay Dielectric strength: 4000Vac 3 A at 125 VAC 3 A at 250 VAC 3 A at 30 VDC
1x Trip relay	Normally Open (NO) relays Dielectric strength: 4000Vrms 5 A at 125 VAC 5 A at 250 VAC 5 A at 30 VDC
COMMUNICATION INTERFACE	
Communication protocols	DNP3 Modbus® RTU
Communication ports	2 RS-485
Configuration port	1 RJ45
DIMENSIONS AND WEIGHT	DESCRIPTION
Dimensions	146.8 mm x 131.1 mm x 90 mm

BM

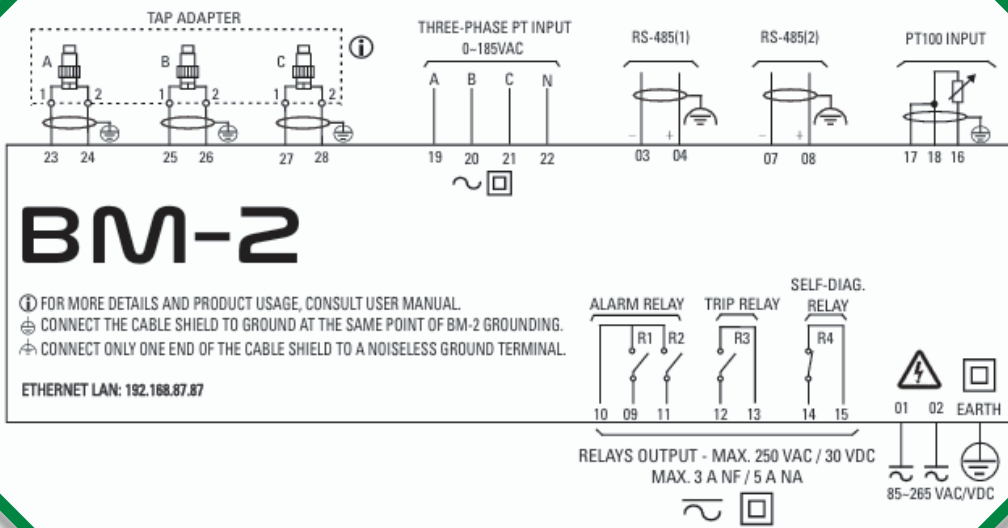
BUSHING MONITOR

Weight

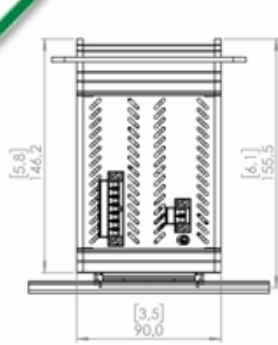
Approx. 1000g

ELECTROMAGNETIC TESTS

TESTS
Immunity to conducted emission (IEC-61000-4-6)
Immunity to voltage variations, short interruptions, and voltage dips (CEI-IEC-61000-4-11)
Immunity to fast electrical transients (IEC-61000-4-4)
Immunity to electrostatic discharge – ESD (IEC-61000-4-2)
Immunity to 60Hz magnetic field (IEC-61000-4-8)
Immunity to surges (IEC-61000-5-4)
Immunity to irradiated emissions (IEC 61000-4-3)
Radiated emission (CISPR 11)
Conducted emission (CISPR 11)
Power failure (IEC 61000-4-11)
Cold withstand (IEC 60068-2-1)
Dry heat withstand (IEC 60068-2-2)
Humid heat withstand (IEC 60068-2-78)
Thermal cycle (IEC 60068-2-14)
Response to vibration (IEC 60255-21-1)
Durability to vibration (IEC 60255-21-1)



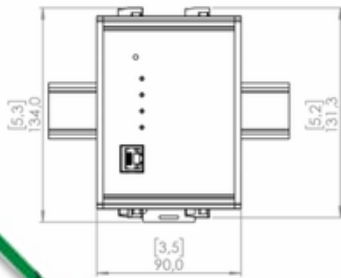
ELECTRICAL DIAGRAM



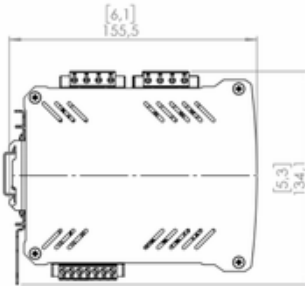
TOP VIEW



REAR VIEW



FRONT VIEW

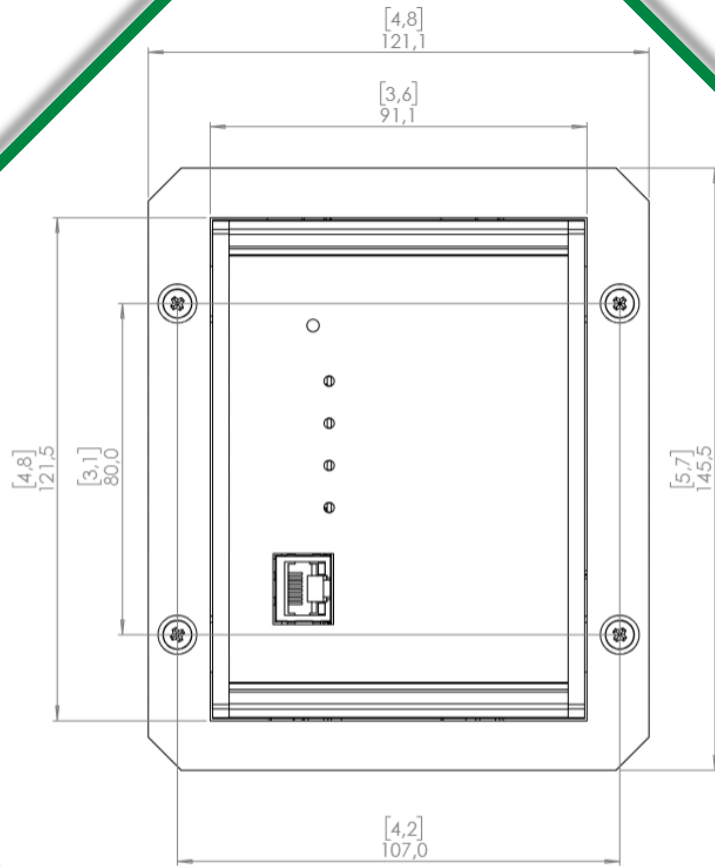


SIDE VIEW

DIMENSIONS (DIN)

FRONT





Panel mounting cutout for the IED
should be 91.1 x 121.5 mm

DIMENSIONS (PANEL)

ESSENTIAL ACCESSORIES

**TAP ADAPTER**

Tap adapters are essential accessories for the operation of the BM; their mechanical construction varies according to the model and manufacturer of the bushing. Treetech offers ready-made adapters for most bushings on the market, and other models are readily developed whenever necessary. For more information, request our catalog.

RECOMMENDED ACCESSORIES

**SIGMA ECM® MONITORING SOFTWARE**

In addition to online temperature monitoring of your assets, our monitoring system and specialized team allow you to track the condition of your assets beyond simply reading data.

Monitoring is done through analysis of information collected by the IEDs installed in your assets.

PT100 SENSORS

For ambient temperature measurements, it is recommended to select the type of Pt100 sensor according to the installation location. For indoor environments, sensors designed for protected locations should be used, ensuring stable and accurate measurements. For outdoor environments, it is recommended to use Pt100 sensors with robust construction and protection against weather exposure, ensuring reliability and durability. Both models can be purchased from Treetech.

**WEATHER SHELTER**

If ambient temperature measurement is required in exposed locations, it is recommended to use a weather shelter to protect the Pt100 sensor from direct exposure, minimizing measurement errors caused by inclement weather.

SPECIFICATIONS FOR ORDERS

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

- ✓ Product name;
- ✓ Quantity;
- ✓ Accessories.



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See the list of our distributors at:

www.treotech.com.br/contato/representantes/