Treetech®

SDB

SMART DEVICE BUSHING

CATALOG

treetech.com.br

SDB: Complete, robust, and intelligent! The ideal bushing monitor for those who demand high performance!

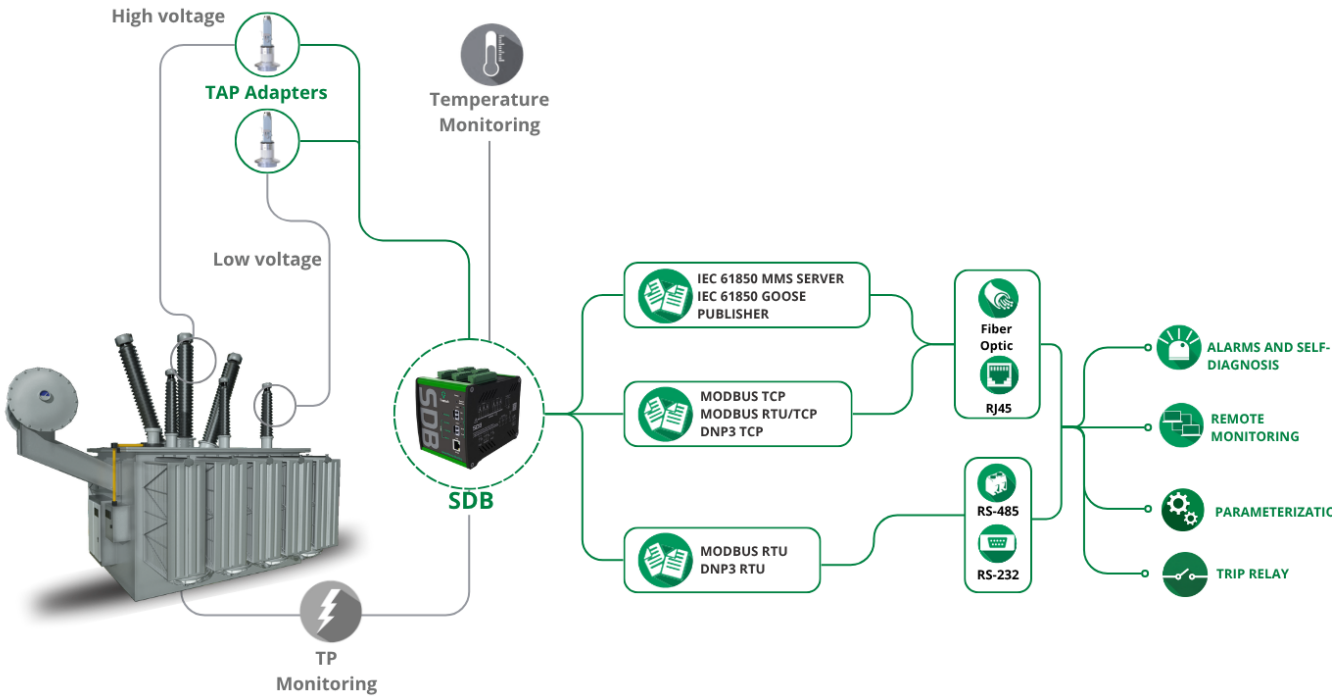
Insulation bushings are present in major high and extra-high voltage assets such as power transformers and shunt reactors, and they play a vital role: ensuring safe and continuous electrical insulation of the system. But did you know that a failure in this insulation can cause catastrophic damage and incalculable losses?

With this in mind, Treetech developed SDB (Smart Device Bushing), an intelligent solution for those who can't take risks. With it, you can identify changes in key bushing insulation parameters early on, such as leakage current, tangent delta, and capacitance, before they become a real problem.

Equipped with robust hardware, high data processing capacity, and reliable algorithms, the SDB offers precise and continuous monitoring, integrating easily and efficiently into your maintenance plan.

More complete, smarter, safer.

SYSTEM TOPOLOGY

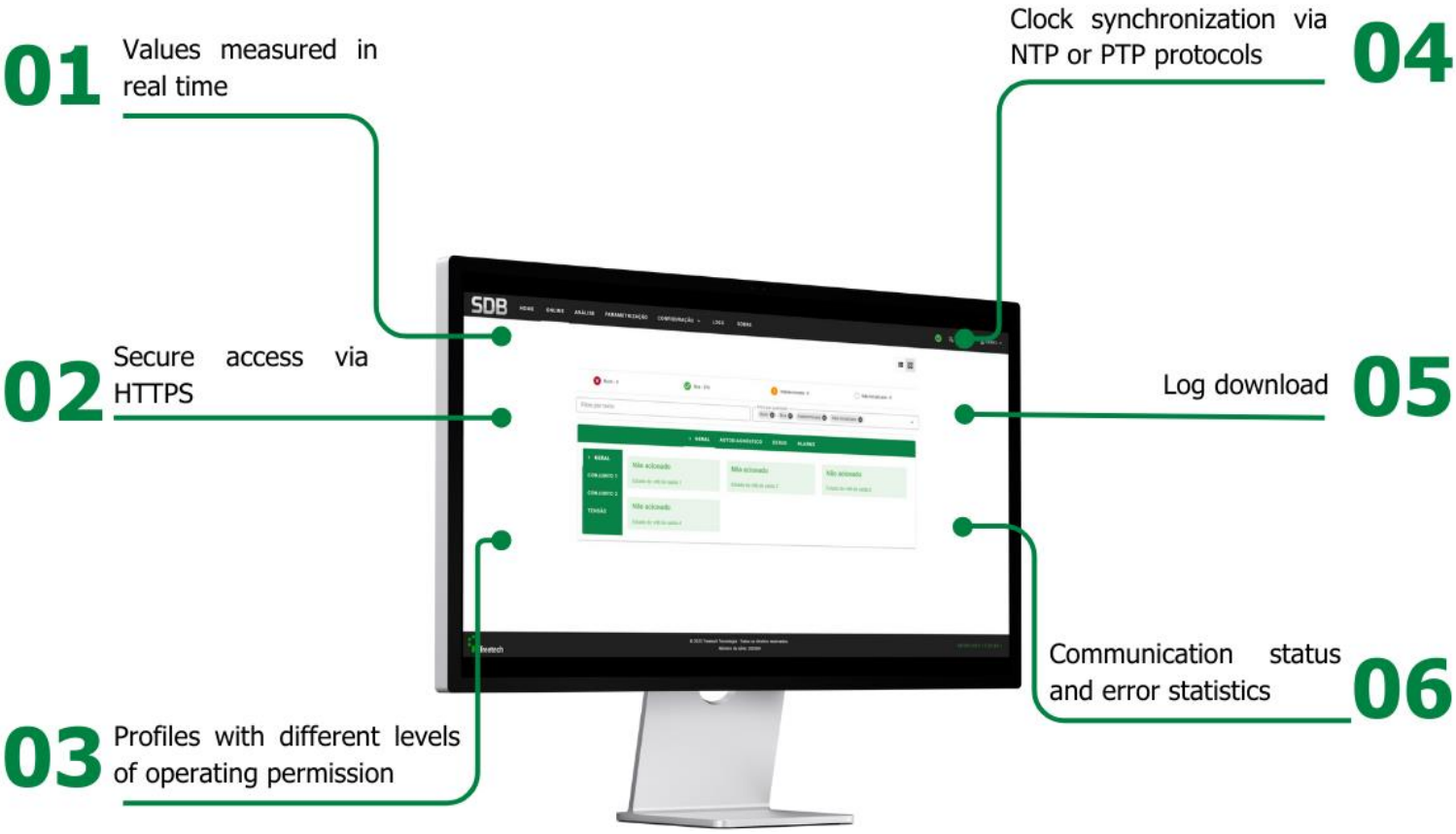


INDEPENDENT COMMUNICATION PORTS

- ✓ The SDB is equipped with independent Ethernet communication ports, each associated with a specific IP address.

PROTOCOLS FOR CLOCK SYNCHRONIZATION

- ✓ The equipment has different time protocols for clock synchronization, which are:
  - NTP (Network Times Protocol);
  - PTP (Precision Time Protocol).



FEATURES AND FUNCTIONS

SMART DEVICE

- ✓ This Smart Device features a modern and compact design, specifically designed for transformer applications, whether in substations or industrial facilities.

MODULAR SYSTEM

- ✓ Configurable for monitoring 3 or 6 bushings.

ALARMS AND SELF-DIAGNOSIS

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

COMMUNICATION PROTOCOL

- ✓ RS-485 serial communication port for integration with remote monitoring or supervisory systems. Open communication protocols Modbus® RTU or DNP3.
- ✓ Fiber optic or RJ45 communication port for integration with remote monitoring or supervisory systems. Communication protocols: IEC MMS server or IEC GOOSE Publisher.

INTERNAL CLOCK

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

MASS MEMORY (Default)

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

REMOTE INFORMATION

- ✓ All equipment configuration and management is done directly through a web interface, allowing for simple and intuitive updates, all without the need for licenses or software installation.

EXTENDED COMMUNICATION

- ✓ High-speed communication via Ethernet or serial;
- ✓ Redundancy or distribution to multiple systems via multiple outputs.

DEFAULT IP ACCESS BUTTON

✓ The SDB has a button that, when pressed, allows the user to access the factory default IP address if the settings are forgotten.

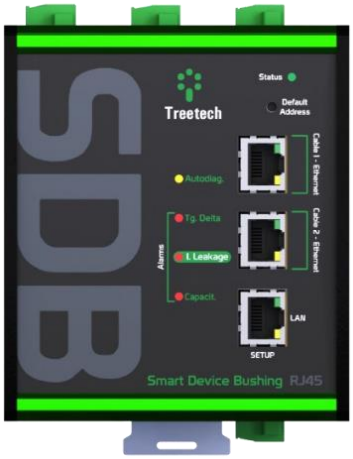
VARIETY OF COMMUNICATION PORTS

✓ The SDB offers 3 models with different combinations of Ethernet ports:

- **FO FO:** 2 Ethernet Fiber Optics

- **FO SR**: 1 Ethernet Fiber Optic + 1 Serial Fiber Optic

- **RJ45:** 2 Ethernet RJ45



All the models mentioned comply with the following communication protocols:

- Modbus RTU®, Modbus TCP®, Modbus RTU/TCP®;
- DNP3 RTU, DNP3 TCP;
- IEC 61850 MMS Server;
- IEC 61580 GOOSE Publisher.

The SDB also features two serial ports that support the Modbus RTU® and DNP3 RTU protocols, being:

- 1 RS-485/RS-232 serial communication port;
- 1 RS-485 serial communication port;

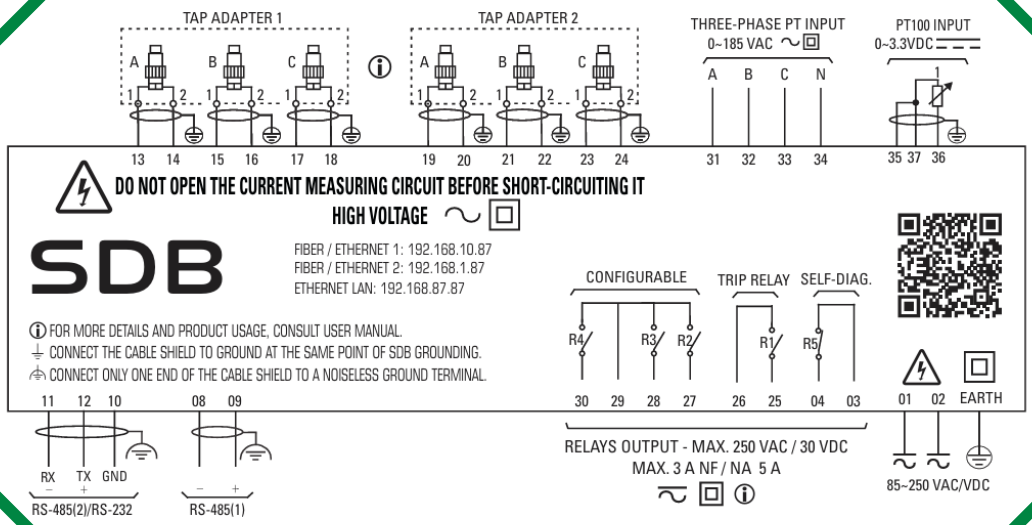
TECHNICAL DATA

HARDWARE	
Supply voltage	85...250 Vac/Vdc
Frequency	50/60 Hz
Maximum consumption	<12 W
Operating temperature	-40...85 °C
Protection rating	IP20
Mounting	Panel DIN rail
INPUTS	
Current inputs (2 sets)	0...100mA
Three-phase voltage inputs (1 set)	0...185 Vac
1 RTD	PT100 Ω at 0ºC with 3 wires, range -55...200°C
OUTPUTS	
1x Self-diagnosis	NC (Normally Closed) Dielectric strength: 4000 Vrms 3 A at 125 VAC 3 A at 250 VAC 3 A at 30 VDC
1x Trip	NO (Normally Open) Dielectric strength: 4000 Vac 5 A at 125 VAC 5 A at 250 VAC 5 A at 30 VDC
3x Signaling	NO (Normally Open) Dielectric strength: 4000 Vac 5 A at 125 VAC 5 A at 250 VAC 5 A at 30 VDC
COMMUNICATION INTERFACE	
Communication protocols	DNP3 Modbus® RTU IEC MMS server IEC GOOSE Publisher
Communication ports	1 RS-485 (based on TIA-485-A standard), 1 RS-485 (TIA-485-A) or 1 RS-232 (TIA-232-F)
IEEE 802.3 (10/100 Mbps) communication ports[1]	Available models: RJ45: 2 Ethernet RJ45 (10/100BASE-T),

	FOFO: 2 Ethernet Fiber Optic (10/100BASE-FX; MM 1310nm LC connector) (UL certified), FOSR: 1 Ethernet Fiber Optic (10/100BASE-FX; MM 1310nm LC connector) + 1 Serial Fiber Optic (MM 850nm SC connector).
Parameterization port	RJ45: 1 Ethernet RJ45 (10/100BASE-T)
Master Protocol / Client	Modbus® (RTU and TCP) and DNP3 (RTU and TCP)
Slave/Server Protocol	Modbus® (RTU and TCP) and DNP3 (RTU and TCP) IEC 61850 (MMS server / GOOSE Publisher)[2]
DIMENSIONS AND WEIGHT	**DESCRIPTION**
Dimension	156x134x103
Weight	1000g

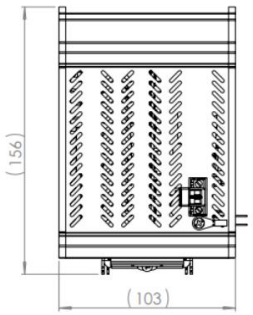
ELECTROMAGNETIC TESTS

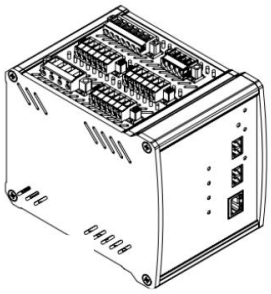
TESTS
Immunity to high-energy surges (IEC 60255-26:2023)
Immunity to electrical transients (IEC 60255-26:2023)
Applied voltage (IEC 60255-26:2023)
Immunity to radiated electromagnetic fields (IEC 60255-26:2023)
Immunity to conducted electromagnetic disturbances (IEC 60255-26:2023)
Immunity to industrial frequency magnetic fields (IEC 61000-4-8)
Electrostatic discharges (IEC 60255-26:2023)
Immunity to fast electrical transients (IEC 60255-26:2023)
Radiated emission (IEC 60255-26:2023)
Emission guided (IEC 60255-25)
Power failure (IEC 61000-4-11)
Cold withstand capability (IEC 60068-2-1)
Dry heat withstand capability (IEC 60068-2-2)
Humid heat withstand capability (IEC 60068-2-78)
Thermal cycle (IEC 60068-2-14)
Vibration response (IEC 60255-21-1)
Vibration durability (IEC 60255-21-1)

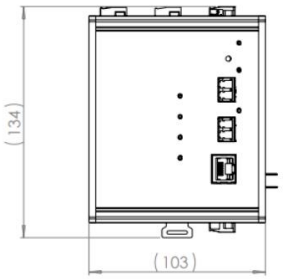


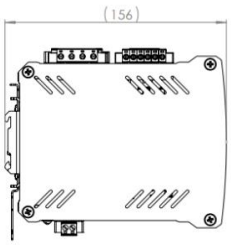
ELECTRICAL DIAGRAM

DIMENSIONS (DIN)

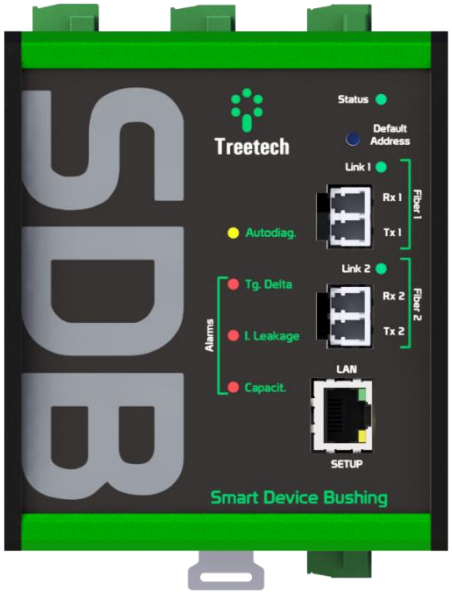


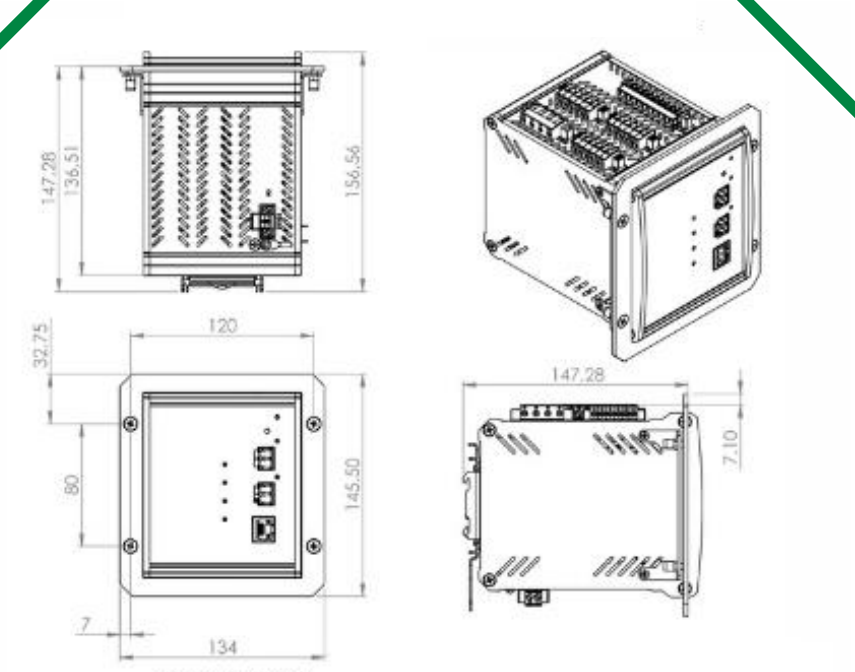






FRONT





DIMENSIONS (PANEL)

ESSENTIAL ACCESSORIES

TAP ADAPTER

Tap adapters are essential accessories for the operation of the SDB, their mechanical construction varies according to the model and manufacturer of the bushing. Treetech offers ready-made adapters for most taps on the market, and other models are readily developed whenever necessary.

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;
- ✓ Model:
  - **FO FO:** 2 Ethernet Fiber Optics;
  - **FO SR:** 1 Ethernet Fiber Optic + 1 Serial Fiber Optic;
  - **RJ45:** 2 Ethernet RJ45.
- ✓ Accessories.

Treetech®

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See the list of our distributors at:

www.treetech.com.br/contato/representantes/