

TXpert™ BM, real-time transformer bushing monitoring enabled by CoreTec 4, the TXpert Hub



— Online condition monitoring with CoreTec™ 4, the TXpert Hub data aggregator, is a better way to manage your transformers.

CoreTec 4 featuring bushing monitoring

Our CoreTec 4 has laid the foundation of our digital journey that allowed select transformer monitoring features and plug and play of select sensors. With the newest updates we are extending our monitoring functionality also to real time bushing monitoring.

What you get?

With TXpert™ BM solution for bushing monitoring you get support for 1, 3 or 6 bushing configurations. The bushing monitoring acquisition hardware connects to the CoreTec 4 through the ethernet expansion port. Digital sensor implements real time monitoring through:

- Leakage current analysis
- Capacitance
- Dissipation factor ($\tan \delta$, $\Delta \tan \delta$)

How?

These parameters are then used by the algorithms in the CoreTec 4 version 2 firmware to give you an early warning of incipient faults developing in a bushing.

Application:

The TXpert™ BM is available for installation in both new transformer applications as well as retrofit. It is designed for an effective lifetime of 20 years.

Our newest solution for bushing monitoring **combines our TXpert Hub data aggregator with TXpert Ready sensors** to provide a turnkey solution for digital bushing monitoring. You get a powerful insight into the condition of the bushing - a critical component in all electrical networks, as it brings current at high voltage through a grounded barrier - and an early warning of incipient faults to assure a transformer continuously delivers optimal performance.

Why TXpert™ BM solution?

- Reliable and robust products
- Easy to install
- Based on an industry standard method
- Improved algorithms using pattern matching to identify bushing faults
- Integration into a single dashboard, the CoreTec 4
- Scalable system - from the smallest to a complete offering (Plug-and-play)
- A monitoring system, not a “control system”
- State of the art Cyber Security
- Avoidance of expensive unplanned outages
- Reduction in time-based inspection costs
- Reduction in human error; reduction of risk
- Health and safety benefits

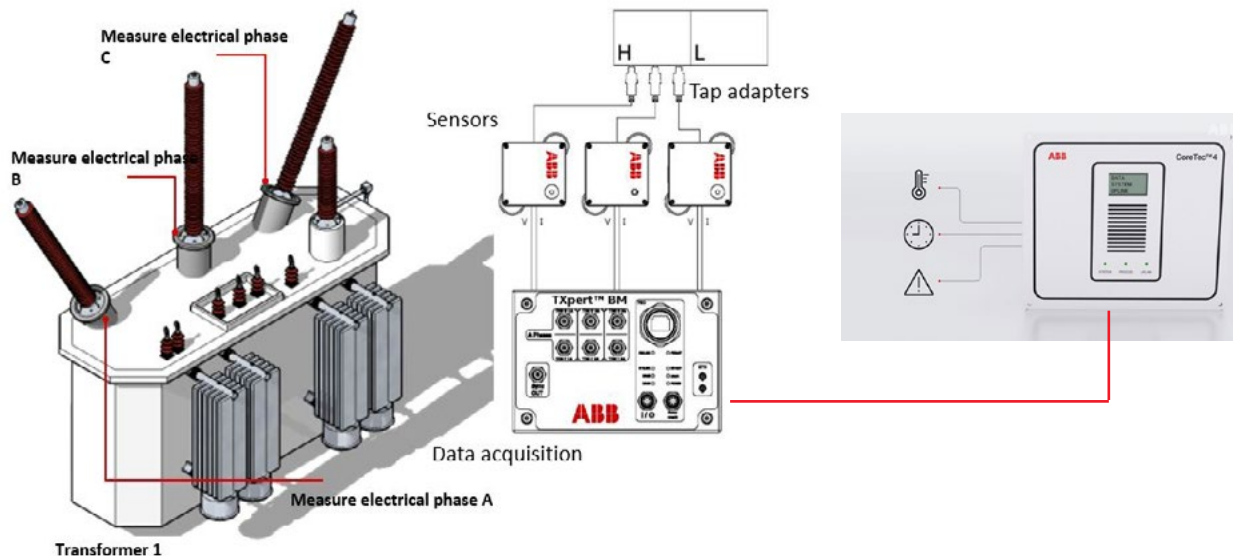
Why Hitachi ABB Power Grids?

- Expertize in bushing technology & transformer monitoring
- Unique understanding of how to set the alarms to maximize the value of the system
- Expertize in data interpretation, possibility to interpret collected data through our own APM Edge software
- Rapid response time & local support guaranteed through the largest service organization throughout the complete lifetime of your transformer
- Unique one-stop-shop supplier with the broadest range of bushings, tap-changers, insulation, measurement & safety & monitoring devices, and Asset Performance Management.

Functionalities	
Measure	Bushing health readings and other parameters depending on device selection: - TXpert BM SC: Industry standard sum of currents algorithm - TXpert BM VR: Voltage reference method
Model	TXpert BM
Application	All bushing types (oil filled or dry) with tap connector; (some bushing models may require a custom tap adapter)
Electrical specifications	
Voltage input	Sensors: 12 VDC ; Evaluation unit: 24 VDC
Max current	max 2.0 A
Measurement specifications	
Number of bushings	3 – 6 – one evaluation unit, 3 bushing plus 3 reference VT signal
Measured parameters	Dissipation factor (tan d), Leakage current, capacitance
Bushing capacitance	Range: 1pF – 100nF with accuracy 1%
Dissipation factor (tan δ , Δ tan δ)	10 ⁻⁴ to 1, \pm 0.00001
Resistance	10M Ω to 100T Ω , \pm 1%
Communication specifications	
Communication protocols	MODBUS, Connectivity through CoreTec 4: Modbus, DNP 3, IEC60870, IEC61850
CyberSecurity	Applicable only with CoreTec 4: EEE 1686, IEC 62443-4-1, IEC 62443-4-2
Environmental specifications	
Operating ambient temperature	-10°C to 60°C (-50 to +60C with optional cabinet heater)
Operating ambient humidity	5% to 95% RH non-condensing

02 TXpert BM - bushing monitoring solution

03 CoreTec 4 - data aggregator



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