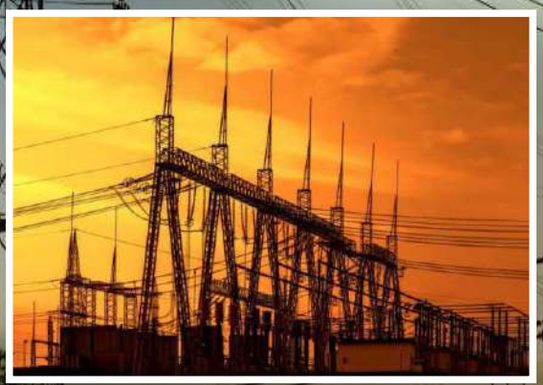
NVSUBPOWER

Stay Ahead in Monitoring

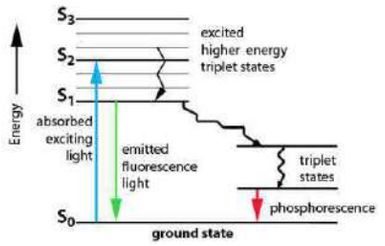
NV SUBPOWER PRIVATE LIMITED



ONLINE FIBRE OPTIC TEMPERATURE MONITORING

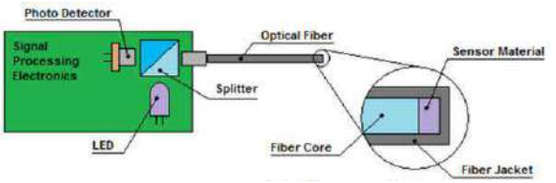
FLUORESCENT TECHNOLOGY OVERVIEW

The scientific principle is Fluorescent Time Decay



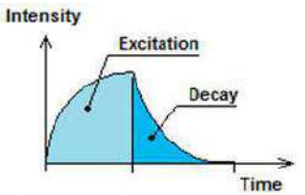
OSENSAs technology leads the world in accuracy

A special fluorescent phosphor is excited with light



OSENSA uses an exceptionally long -life LED source

Electronics measure the time - constant (<) for the glowing phosphor which is proportional to temperature



$$I_{(t)} = I_o e^{-t/\tau}$$

A shorter decay time means higher temperature

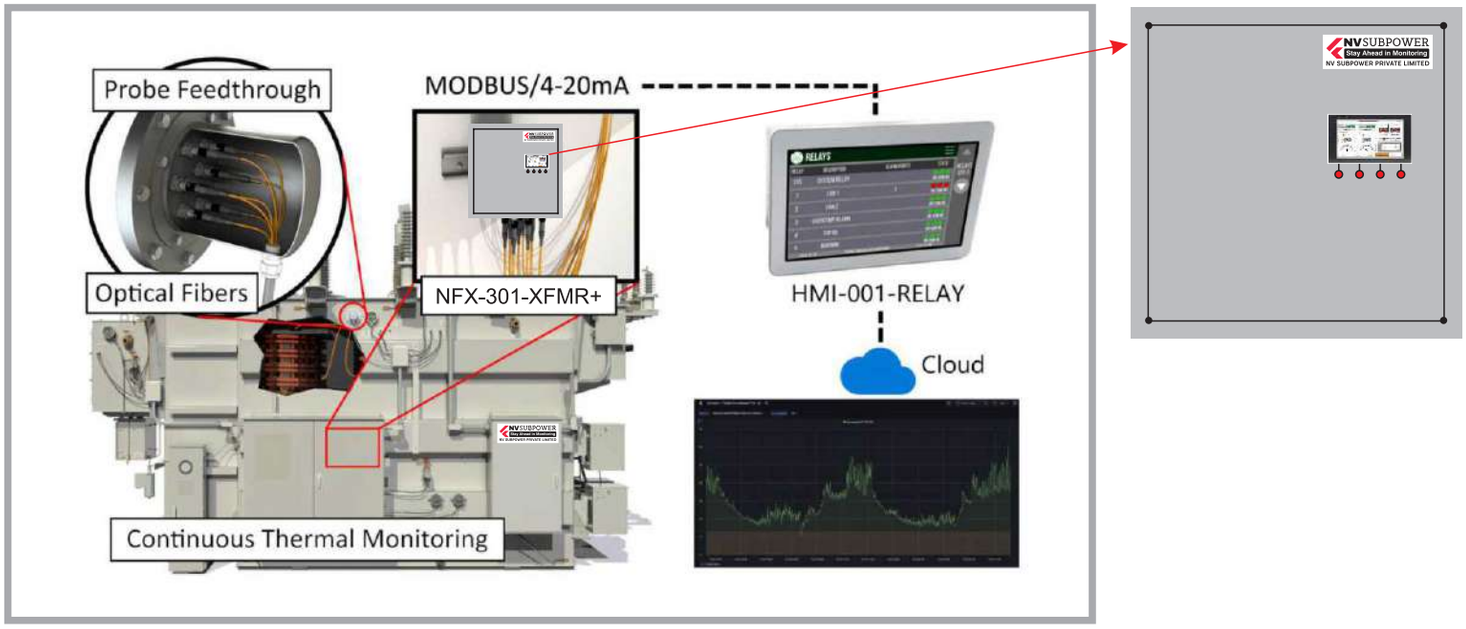
NV SUBPOWER
Stay Ahead in Monitoring
NV SUBPOWER PRIVATE LIMITED

NV Subpower : NFX Model Technical Parameters

[II]	OPTIC FIBER TEMPERATURE SYSTEM	
	MAKE & TYPE	Fiber Optic Temperature Monitoring System NV Subpower Private Limited make
	Address of FO system supplier	NV Subpower Private Limited 406, V3 Landmark, Sun Pharma Road Vadodara 390012, India
	Nos. of channels	16 number or customised up to 99 channel
	Sensors per channel	1
	Channel switching frequency	20ms
	Sampling sensor rate	20ms
	Switching reliablity	100%
	Wave length operational length	650nm
		inbuilt USB, Gigabyte ethernet; RS485
	PC output interdace	Optional: Ethernet 10/100BASE-fx (Duplex, for 50 or 62.5 µ fibers
	Data display	Touch screen HMI Display
	Self Diagnositc	Yes
	Temp range & resolution	Temp Range :-'-80 to 250 C (-112 to 572 F) instrument Resolution: 0.1 Deg C
	Accuracy	±1.0 °C(1.6 F)
	Response time	20ms switching rate
	Front Panel display	Touch screen HMI Display
	Probe single strength readout	yes, available into software
	input power	Universal Power converter included
	Serial Output	modbus RTU, ASCII
	Fiber type	Glass/Qurtz fiber with internal 200 polyimide coating
	Nos. of relays	Fully programmable from A relay customsable one per channel as per user requirements
	Temprature Data stronge	5 years at 10 sec interval rate (4GB), customizable
	LED alarm indicators	Indcators of power, alarm and system fault into trasreciever and into softerware
	System fault relay	Fully programmable from A relay customer specific one per channel as per user requirements
	System fault status indicator	Yes, LED indicators and relay
	Surge protection	Meets IEC 61000-4-5 sugare
	Connectors	Input channels : Optical: Standard ST connector
	Operating tempurature range	-40 to 65 Deg C
	Storage temperature	-40 to 70 Deg C
	Probes material & dimensions	Fiber optical phosphor based precise probes, PTFE/FEG Probes Polyamide coating
	Analog output	used based customisable one per channel
	SCADA compatibility	Yes, customisable
	Nos. of probes	uptp 18 max single NFX unit - user customisable

NV SUBPOWER
Stay Ahead in Monitoring
NV SUBPOWER PRIVATE LIMITED

POWER T & D TRANSFORMER WINDING HOT-SPOT MONITORING



- Real-time local and cloud monitoring for early detection of fault conditions.
- Maximize peak capacity and extend life of the transformer.
- Optimize maintenance schedules & extend equipment lifetime.
- Immune to EM interference & switching noise.
- Historical data and alarms.

SENSOR INSTALLATION IN WINDINGS

- Probe tip is secured adjacent to windings hottest spot.
  - Typically, 1-3 windings down from the top.
  - Center phase typically installed with 2+ sensors / windings (HV +LV)
  - Lateral phases typically installed with 1+ sensors / winding (HV +LV)
- Probe tip should be secured in the spaces (most common) or on a conductor (less common), Free from excessive force caused by changes in current or from adjacent coils
  - Recommended to locate the tip in the center of the spacer.
  - Most transformer manufacturers install their sensors in radial spacers.
- Sensors should not be in direct contact with circulating oil.

(A)

(B)

©

(D)

1) Fig (A) Fiber optic sensor in axial spacer.

2) Fig (B) Inserting spacer into cooling duct.

3) Fig (C) Spacers fixed in cooling ducts.

4) Fig (D) Probe leads are taken out between two parts of the electrostic sheield to prevent the sensor leads from blocking oil flow.

NV SUBPOWER
Stay Ahead in Monitoring
NV SUBPOWER PRIVATE LIMITED

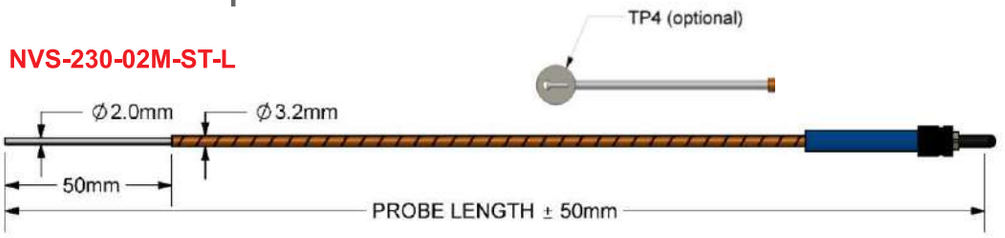
Oil-Filled Transformer Winding Temperature Measurement

Non-conducting, fiber optic probes with exceptionally long life

OSENSA's PRB-230 fiber optic temperature probes are specifically designed for oil-filled transformer applications where long life and accuracy are paramount. Not only are these probes stable and repeatable over the life of the transformer (no calibration required), they also offer industry leading accuracy, precision, and reliability. The PRB-230 style probes are fully compatible with all transformer oil types and kerosene desorption processes.

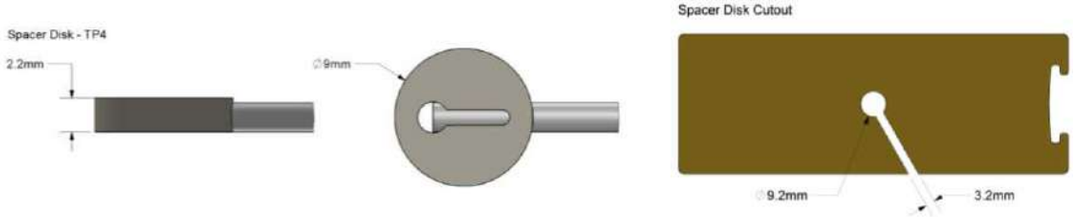
Product Specifications

NVS-230-02M-ST-L



System Specifications	PRB-230-02M-ST-L/TP4
Measurement Range	-40°C to 230°C
Accuracy	± 1.0°C
Immersion Response Time Constant	2.0s
Tip Diameter	2.0mm
Minimum Bend Radius	50mm
Probe Materials	PFTE & Polyimide
Dielectric Strength ASTM-D149	10 kV/mm
Partial Discharge IEC 60270	Less than 10pC

NVS-230-02M-ST-L-TP4



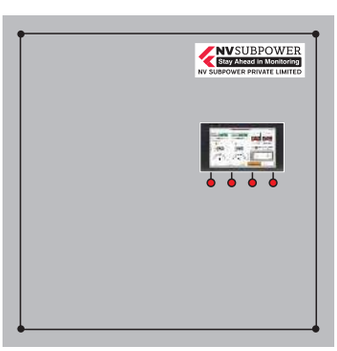
Notes:

1. Compatible with OSENSA's FTX-101-XFMR+, FTX-201-XFMR+, FTX-301-XFMR+, FTX-402-XFMR+, FTX-602-XFMR+ fiber optic temperature transmitters.
2. Probe lengths can be specified from 0.5m to 10m.
3. Install in combination with tank wall feedthrough ACC-FEEDTHRU-NPT-200 and extension cable EXT-230-02M-ST-ST

NV SUBPOWER
Stay Ahead in Monitoring
NV SUBPOWER PRIVATE LIMITED

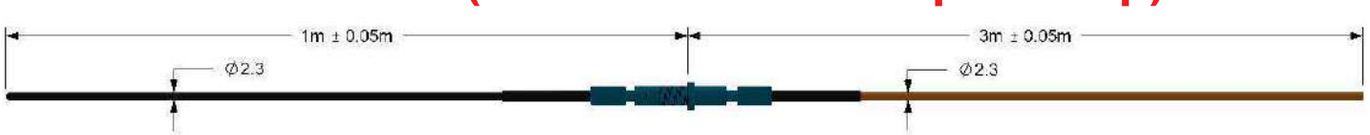
INDUSTRIAL CAST RESIN TRANSFORMER MONITORING

- FTX - 310 - PWR + R 3 Channel Temp Transmitter
- FTX - 610 - PWR + R 6 Channel Temp Transmitter
- FTX - 910 - PWR + R 9 Channel Temp Transmitter



Measurement Range	-40^{0}C to +200^{0}C
Resolution	0.1^{0}C
Accuracy	± 0.1.0^{0}C
Programmable Alarms	2x Form A Relays

PRB - 910 (200^{0}C Max. for 1m probe tip)

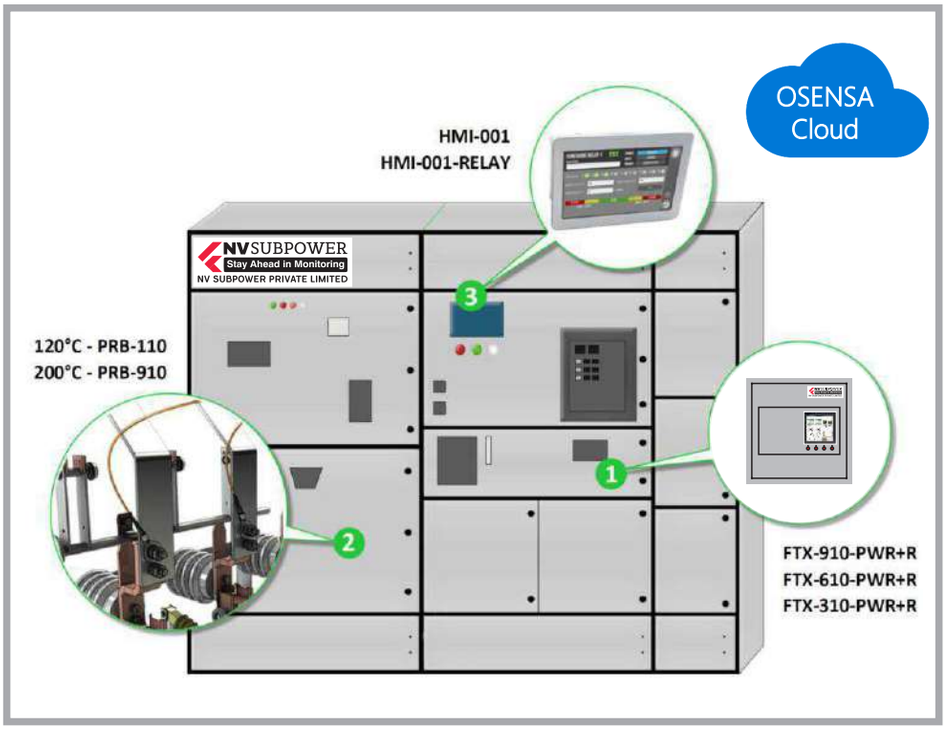


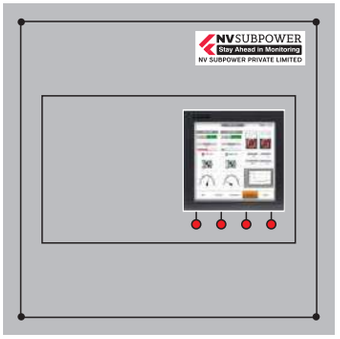
SWITCHGEAR AND BUSBAR THERMAL MONITORING

Osensa has developed the worlds most reliable temperature sensing solution for switchgear and busbar monitoring.

- ✓ No calibration, no maintenance.
- ✓ High accuracy.
- ✓ Wide sensing range.
- ✓ High reliability technology.
- ✓ Simple installation.
- ✓ Long Life.

  (Designed to last for the life of the switchgear)





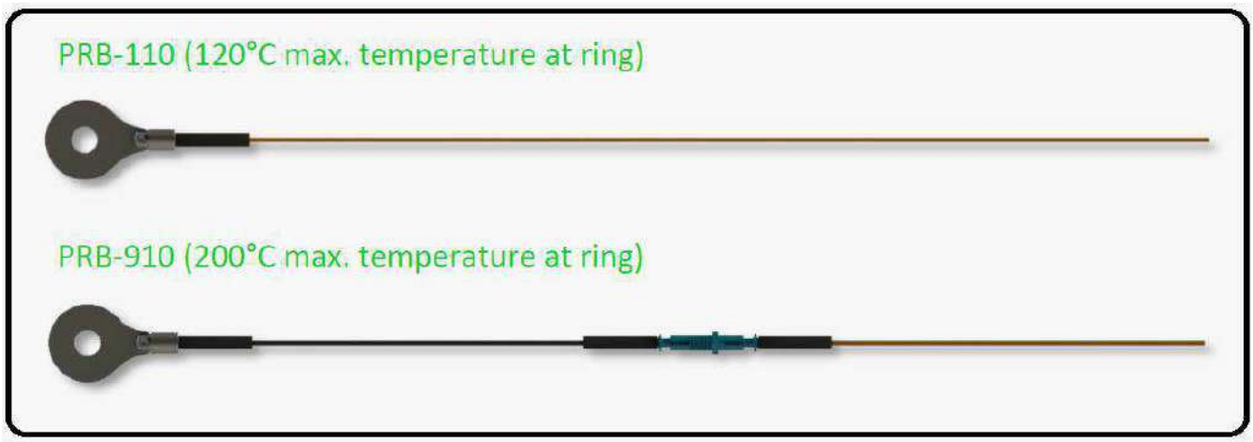
SWITCH GEAR SENSOR

3,6, or 9 Channel transmitters with 2 relay outputs for alarms

- FTX - 310 - PWR + R
- FTX - 610 - PWR + R
- FTX - 910 - PWR + R

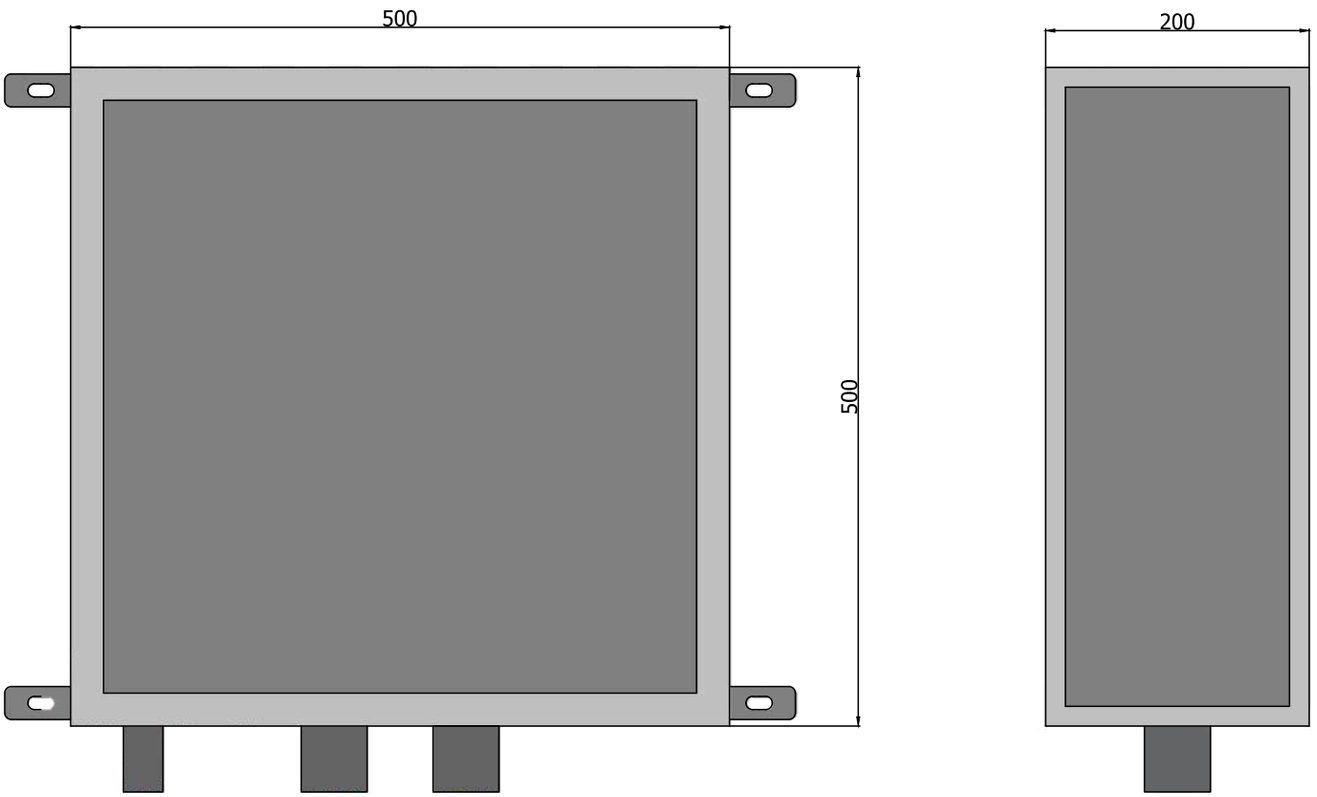
Two 38kV fiber optic probe options

- PRB - 110 - 5M - ST - TP2
- PRB - 910 - 5M - ST - TP2



Measurement Range	-40°C to +200°C
Resolution	0.1°C
Accuracy	± 0.1.0°C

XXXXXXXXXXXXXX



2" Pipe for Gland

NV SUBPOWER
Stay Ahead in Monitoring
NV SUBPOWER PRIVATE LIMITED

REGISTERED ADDRESS

NV SUBPOWER PRIVATE LIMITED

406, V3 Landmark, Sun Pharma Road, Atladra, Vadodara - 390 012.

M : +91 81409 80160, +91 265 3557650

Email : info@nvsubpower.com

CIN : U43211GJ2023PTC144123 • TAN : BRDNO4251C • 24AAJCN0860H1ZK