

NVSDGM

Transformer Oil Dissolved Gas Monitor



Your Trustworthy Partner
For Electrical Diagnostic System

Dissolved gas monitor device measuring gas concentration and H₂O for oil-immersed transformers provides real-time inspection for early fault detection in transformers.

➤ BENEFITS

❑ PAS (Photo Acoustic Spectroscopy)

- Enhanced product life cycle
- Easy & affordable maintenance
- No need for carrier gas
- Minimized spare parts
- Simple structure, high accuracy, less failure
- Stabilized with wide measuring range

❖ **PAS (Photo Acoustic Spectroscopy)** :
 a most cutting-edge method of analyzing gas by means of the effect of absorbed light energy on gas with acoustic detection.

❑ Intelligent Dissolved Gas Monitoring System

- Local S/W allows data collecting program for transformer faults
- Operation settings, graphics and data management
- Set up a diagnostic criteria

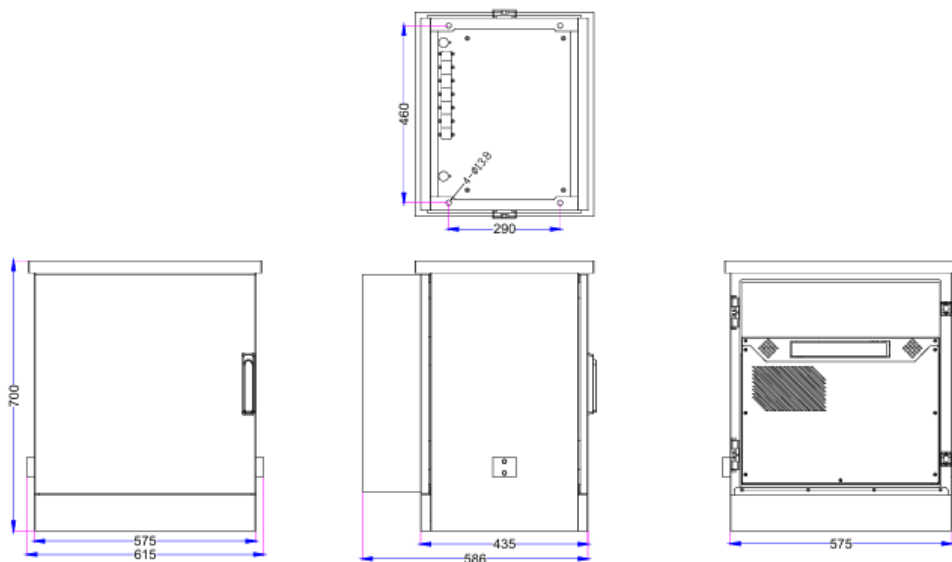
❑ Specification Upon Needs

- Select up to 7 gases
- Gas selection considering transformer capacity, Faults to be detected and types of insulation oil
- Transformer capacity:
 1 gas type, 3~7 gases type, Multi-tank type
- Fault gases detected:
 H₂ / C₂H₂ / C_nH_m type, etc.
- Insulation oil(vegetable oil, non flammable oil):
 H₂ / C₂H₆ type, etc.

❑ Total Dissolved Gas Monitoring System

- Online DGMS allows monitoring and remote controlling in real-time
- Compatible with Online Electrical Asset Monitoring System

➤ SYSTEM CONFIGURATION



APPROVALS		THIS DRAWING MAY NOT BE USED OR REPRODUCED WITHOUT CONSENT FROM NV SUBPOWER MANUFACTURING UNDER THE CLIENT		MATERIAL:		PROJECT:	
 Stay ahead in Monitoring	DESIGNED BY:	VIRAJ P.	METRIC SYSTEM	TOLERANCE:	WEIGHT	SCALE	PROJECT: 700 RACK OUTLINE DRAWING DESCRIPTION: OIL AND GAS ONLINE MONITORING SYSTEM OUTSOURCED
	DRAWN BY:	VIRAJ P.	(MM)			1:1	
	VERIFIED BY AND APPROVED BY:	M.K					PART NUMBER: REVISION: 01

NVSDGM 3-7

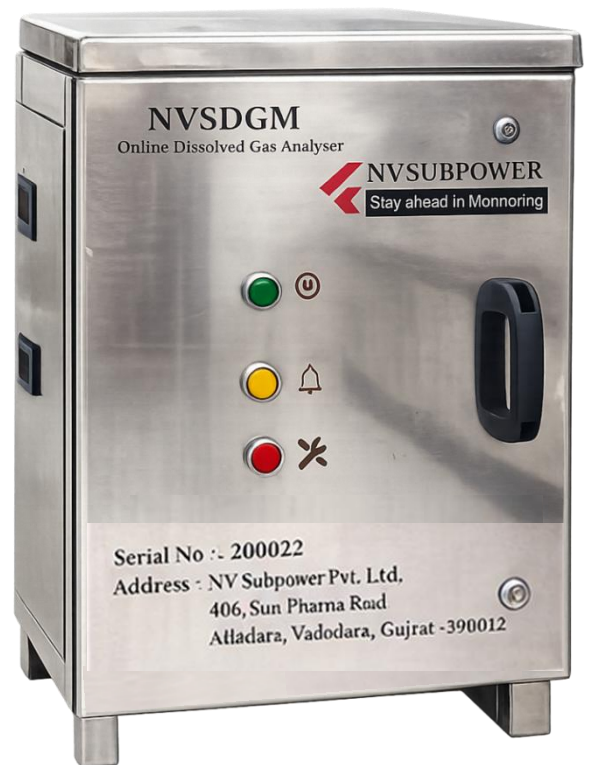
➤ FEATURES

- Measuring gases : H₂, CH₄, C₂H₆, C₂H₄, C₂H₂, CO, CO₂ (H₂O)
- Measuring method : PAS, Semiconductor sensor
- LCD (7.0") : operational data, test & diagnosis result
- LED indicators: Power / Device Error / Gas Alarm
- Settings: Operating time & cycle,
Diagnostic criterion
- Measuring cycle: Min 1 hr
- Diagnosis of transformer fault
based on gas concentration & trend

NVSDGM 3T

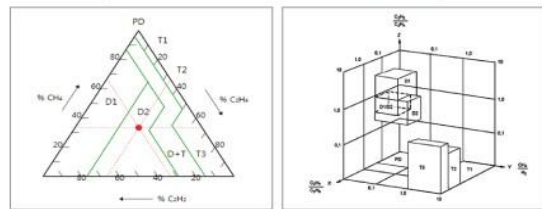
➤ FEATURES

- 3 tanks in 1 monitor – minimized installation space
- Measuring without contamination of gas
- LCD (7.0") : operational data, test & diagnosis result
- LED : Power / Device Error / Phase A, B, C Gas Alarm
- Measuring cycle: Min. 3hr
- Applicable to 3 phase transformer



➤ **Online DGA Monitoring Software-Optional**

- Remote monitoring in real-time
- Remote control of operational data & settings
- Diagnose concentration & trend in fault gases
Normal / Abnormal / Warning
- Evaluates degradation via CO & CO₂
- Creates a report on diagnosis result with DB and graphics
- Event alert with diagnosis transformer
- Integrated diagnostic methods:
Algorithm learning from accumulated test results
IEC, IEEE, Duval's Triangle
Analyze faults in transformer
(PD, thermal degradation, arcing, etc.)

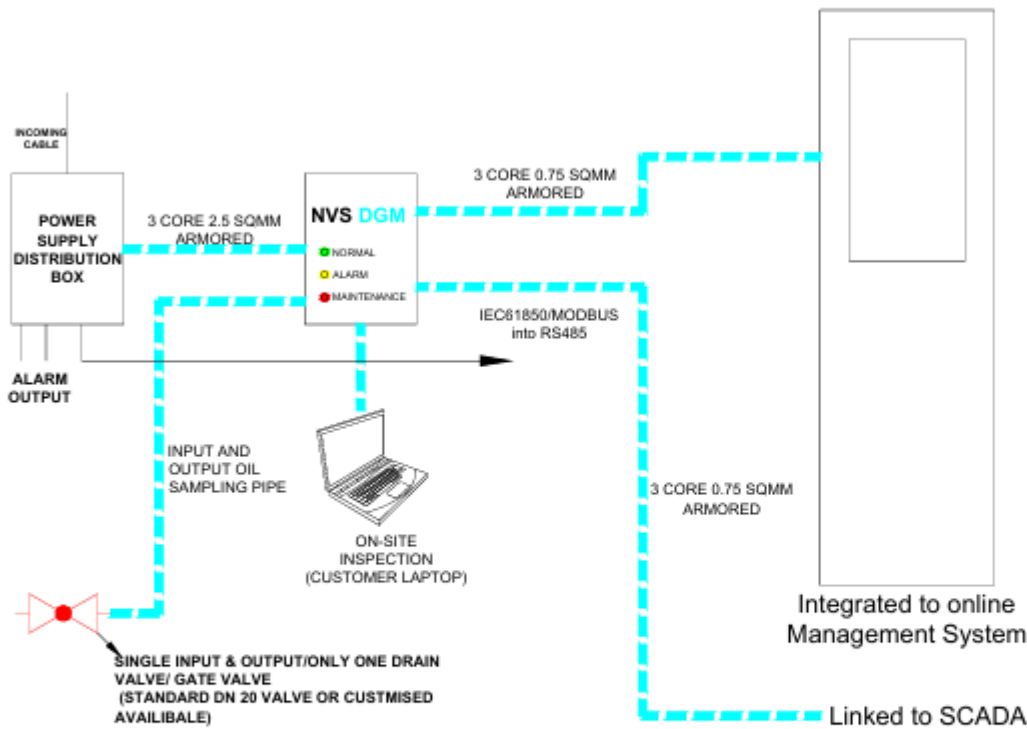


Category	Test
IEC 60950-1-2013	Radiated Electromagnetic Hi Frequency Field Immunity Test
IEC 61000-5-4-2014	Surge Immunity Test (Table Top Equipment)
IEC 61000-2-4-2008	Immunity to Electrostatic Discharges
IEC 61000-6-4-2013	Conducted Disturbance Induced by RF Fields
IEC 61000-8-4-2009	Power Frequency Magnetic Field Test
IEC 61000 Part 4 Section 4-2012	Electrical Fast Transient/Burst Immunity Test
IEC 61000 Part 4 Section 5-2005	Surge Immunity Test (Electrical & Electronics Equipment)
IEC 61000-11-4-2004	AC Voltage Dips & Interruption Test
IEC Standard	AC Voltage Dips & Interruption Test

TECHNICAL SPECIFICATIONS

	Composition	Measuring Range (customizable)	Model	
			NVSDGM	NVSDGM 3T
Measuring Gases	H ₂ (Hydrogen)	5 - 5,000 ppm	0	0
	CH ₄ (Methane)	1 - 5,000 ppm	0	0
	C ₂ H ₆ (Ethane)	1 - 5,000 ppm	0	0
	C ₂ H ₄ (Ethylene)	1 ~5,000 ppm	0	0
	C ₂ H ₂ (Acetylene)	0.1~ 5,000 ppm	0	0
	CO (Carbon monoxide)	1 - 10,000 ppm	0	0
	CO ₂ (Carbon dioxide)	0 - 10,000 ppm	0	0
	O ₂ (Oxygen), N ₂ (Nitrogen)	* Optional		
	H ₂ O (Moisture)		0	0
Measuring Range	Min. ~ Max. (full range calibration) / H ₂ O: 0~100 % (Relative Humidity) (in ppm)			
Measuring Cycle	User Selectable - Minimum 1 hour			
Dimensions/ Weight	700mm x 615mm x 485mm / 98Kgs			
LED Alert	Enclosure Embedded			
LCD Display	screen with 6 function keys			
Measuring Method	Photo Acoustic Spectroscopy(PAS), Semiconductor Sensor			
*Accuracy	Less ±5 % or LDL (Repeatability: 1%)			
Operating Ambient Conditions	Temperature	-40 ~ 60 °C		
	Humidity	0 ~ 95 % RH		
	Oil Temperature	-20 to +100.c		
	Altitude	Under 1,500m		
Software	Online Monitoring Software			
Diagnosing Methods	IEC, IEEE, Duval's Triangle, Roger's Ratio, Key Gas,			
Power	110-240 Vac/ 50-60 Hz or 120 ± 20% Vdc			
Enclosure	IP56, Stainless Steel			
Communication	Protocol	IEC61850@, MODBUS@, MOD BUS/TCP, DNP3.0, RS485		
	Port	Standard 1Gb Ethernet (RJ45)		
Output	3 Digital Relay Output (Output sorts and quantities are customizable) 1 Lan port for local connection to PC			
Optional Accessories	Mounting Stand, Communication Box			

*Accuracy is based on test results from standard gas in calibration.



- NOTE -
1. REQUIRED TO OBTAIN A LIVED VISUAL ALARM FOR GAS LEVEL "ALERT (SO2)" & "ALARM (GAS ABNORMAL LEVEL)" AND "SYSTEM FAULT".
 2. THE CABLE OF REQUIRED LENGTH AS PER SITE CONDITION SHALL BE LAID IN HDPE CONDUITS IN TRENCH AS WELL AS IN GROUND.
 3. DEGREE OF PROTECTION CLASS OF IP-65.
 4. THE BDC (MATERIAL OF CONSTRUCTION) OF THE ENCLOSURE SHALL BE SS.
 5. PROVISION SHALL BE MADE AVAILABLE FOR COLLECTION OIL SAMPLES FOR DGA AND MOISTURE ANALYSIS WITHOUT DISTURBING SMALL DGA UNIT OR ITS CONNECTIONS.
 6. THE SMALL DGA UNIT FOR MONITORING 3 HSE GASES AND MOISTURE SHALL BE PROVIDED WITH USER CONFIGURABLE MINIMUM & ALARM CONTACTS AND FRONT PANEL LCD DISPLAY.
 7. IF SHALL BE POSSIBLE TO CONFIGURE SAMPLING RATES HOURLY/DAILY FOR SMALL DGA UNIT.
 8. THE UNIT SHALL BE MOUNTED SEPARATELY ON POWDER COATED MS STAND.

	APPROVALS		DATE: (YYYYMMDD)	THIS DRAWING MAY NOT BE USED OR REPRODUCED WITHOUT CONSENT FROM RUGGED MANUFACTURING AND/OR THE CLIENT			PROJECT: DGA SLD & CONNECTION DRAWING	
	DESIGNED BY:-	VIRAJ P.		 METRIC SYSTEM (mm)				DESCRIPTION: DGA Connection Drawing
	DRAWN BY:-	VIRAJ P.						
	VERIFIED BY:-	CHIRAG P.						
	APPROVED BY:-	POOJA PAREKH						
							DWG No: NVS0010	