



Nano Environmental Technology

SIL2



The Reliable Alternative in Gas Sensing Elements

IRNEX-P LOW POWER Dynamic range

high accuracy Methane and Propane ATEX & IECEx certified NDIR sensor

Key Features

- ◆ High sensitivity for superior accuracy over 0-100% Vol range of Methane
- ◆ Resolution of 0.01%Vol over 0-100% Vol range
- ◆ Dual gas digital output (Methane + Propane)
- ◆ Analogue (voltage or pellistor) standard output for Methane or Propane
- ◆ ATEX & IECEx certified NDIR sensor
- ◆ Fast response
- ◆ Chinese Mine standard compliant
- ◆ Wide operating temperature and humidity range
- ◆ Low power consumption
- ◆ SIL2 (TÜV approved)



Description

DYNAMIC sensor is designed to meet the necessity of costumers for a more accurate detection of Methane over 0-100%Vol range using the technique of NDIR (Non Dispersive Infrared).

Integrated electronics and factory calibration, of DYNAMIC sensor provide an output linearized and temperature compensated to reach the highest sensing accuracy ever seen on an IR Methane sensor.

DYNAMIC sensor also provide an optional digital output linearized and temperature compensated to detect Propane over 0-2.1% Vol range which is the best choice to detect other hydrocarbons using a cross-reference factor.

Digital, analogue or both output can be used to monitor the functionality. Using digital communication, concentration and status of the sensor can be easily monitored for a fast check of the system. Analogue output offers the fastest end easiest way to check the gas concentration; it can be set as: standard voltage type [0.4 V—2 V] dc (other voltages are available on request).

Rugged, fast, flexible and easy to use, DYNAMIC sensor is suited for instrument manufacturers that needs to detect Methane and Propane in compliance with Chinese Mine standard.

N.E.T. Srl

20010 Cornaredo (MI) ITALY Via Legnano, 2
Tel. +39.02.93544190 – Fax +39 .02. 93540347

C.F. e P. IVA (VAT) 03231490966

www.nenvitech.com
info@nenvitech.com

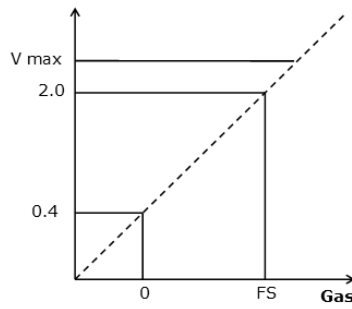
Dynamic IR sensor

DS4231 rev.0

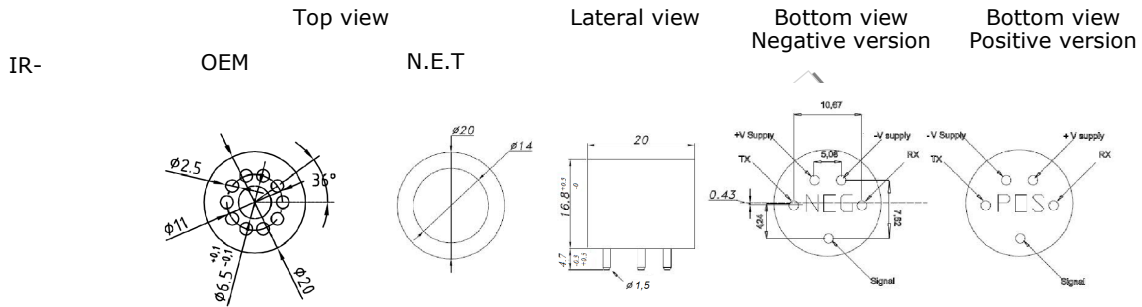
05/07/2017

Analogue output characteristic

Standard Voltage Output



Mechanical characteristic



All the dimensions in the figures are indicated in millimeters.
The 3 pins version without TX and RX pins (for MODBUS protocol communication), is available on request.

Certification details



ATEX certification	Certificate number:	CES111ATEX039U by Notified Body CESI
	Reference standards:	EN60079-0:2009, EN60079-1:2007, EN60079-11:2007, EN50303:2000
	ATEX marking:	II 2G Ex d IIC Gb I M2 Ex d I Mb I M1 Ex d + ia I Ma
	Rating:	V _{max} =5.5 V, I _{max} =100 mA, U _i =5.5 V, I _i =100 mA
IECEX certification	Certificate number:	IECEX CES 12.0008U by Notified Body CESI
	Reference standards:	IEC60079-0:2011, IEC60079-1:2007, IEC60079-11:2011, IEC60079-26:2006
	IECEX marking:	Ex d IIC Gb Ex d I Mb Ex d+ia I Ma
	Rating:	V _{max} =5.5 V, I _{max} =100 mA, U _i =5.5 V, I _i =100 mA

SIL certification and performance approval

Certification	SIL certification number	C-IS-245124-01
	Reference standards	EN 50402:2005 + A1:2007 and IEC EN 61508
	Systematic and random integrity	SIL3 capable, SIL2 or SIL3 depending on configuration
	Performance approval	Designed for use in a detector that complies to IEC EN 60079-29-1

N.E.T. Srl

20010 Cornaredo (MI) ITALY Via Legnano, 2
Tel.+39.02.93544190 – Fax +39 .02. 93540347

C.F. e P. IVA (VAT) 03231490966

www.nenvitech.com
info@nenvitech.com

Dynamic IR sensor

DS4231 rev.0

05/07/2017

Specifications

General	Operating temperature range	-20 to +60 °C		
	Storage temperature range	-40 to +85 °C		
	Operating humidity range	0-98% non condensing		
	Operating pressure range	800-1200 mBar		
	Gas types	CH ₄ , C ₃ H ₈		
	Weight	14 g		
	MTBF	≥ 5 years		
	Patent information	pending request MI2013A000478 , EP14001065, US14/219631, CA2.847.491		
	Firmware and digital technology	Designed for use in a detector that complies to EN 50271	SIL2 (TÜV approved)	
	Electromagnetic Compatibility (EMC)	Designed for use in a detector that complies to EN 50270		
	Optics	Metal optics treated to increase brightness and prevent oxidation		
	Enclosure	Stainless steel		
Calibration	Individually calibrated with temperature compensation. Test report supplied.			
Measurement	Sensing method	NDIR (dual beam technology)		
	Measurement range	0 - 100% Vol Methane	0 - 2.1% Vol Propane	
	Repeatability	±0.1% Vol @ 5% Vol ±2% Vol @ 100% Vol	±0.04% Vol @ 1% Vol	
	Accuracy *	±0.06% Vol for readings below 1% Vol ±6% of true value for readings between 1% - 100% Vol	±0.06% Vol for readings below 50% of range ±0.1% Vol for readings above 50% of range	
	Resolution	0.01% Vol		
	Long Term Zero Stability	±0.01% Vol / month	±0.01% Vol / month	
	Temperature Performance	±3% of FS range for readings below 50% of range ±5% of FS range above 50% of range	±3% of FS range for readings below 50% of range ±5% of FS range above 50% of range	
	Pressure dependence	0.1 % to 0.2 % value per hPa		
	Response time T ₉₀	< 20 s		
Electrical	Power voltage	3.0-5.5 Vdc		
	Operating current	45 mA Idc average		
	Warm up time	60 s for full operation @ 25 °C At least 45 min for full specification @ 25 °C		
	Max output current	±7.5 mA		
	DC output impedance	100 Ω		
	Max capacitance load	1000 pF		
Signal Output	Analog output (standard for voltage mode)	Standard voltage [0.4 V—2 V] dc (other voltages available on request)		
	Analog output (standard for bridge mode)	[Vcc/2 ± Δ] dc (Δ value is to be specified by the customer)		
	Digital communication	MODBUS protocol communication (documentation available on request) P2P communication available on request		

* Test conditions: 25°C ambient temperature and 1000hPa absolute pressure

N.E.T. Srl

20010 Cornaredo (MI) ITALY Via Legnano, 2
Tel.+39.02.93544190 – Fax +39 .02. 93540347

C.F. e P. IVA (VAT) 03231490966

www.nenvitech.com
info@nenvitech.com

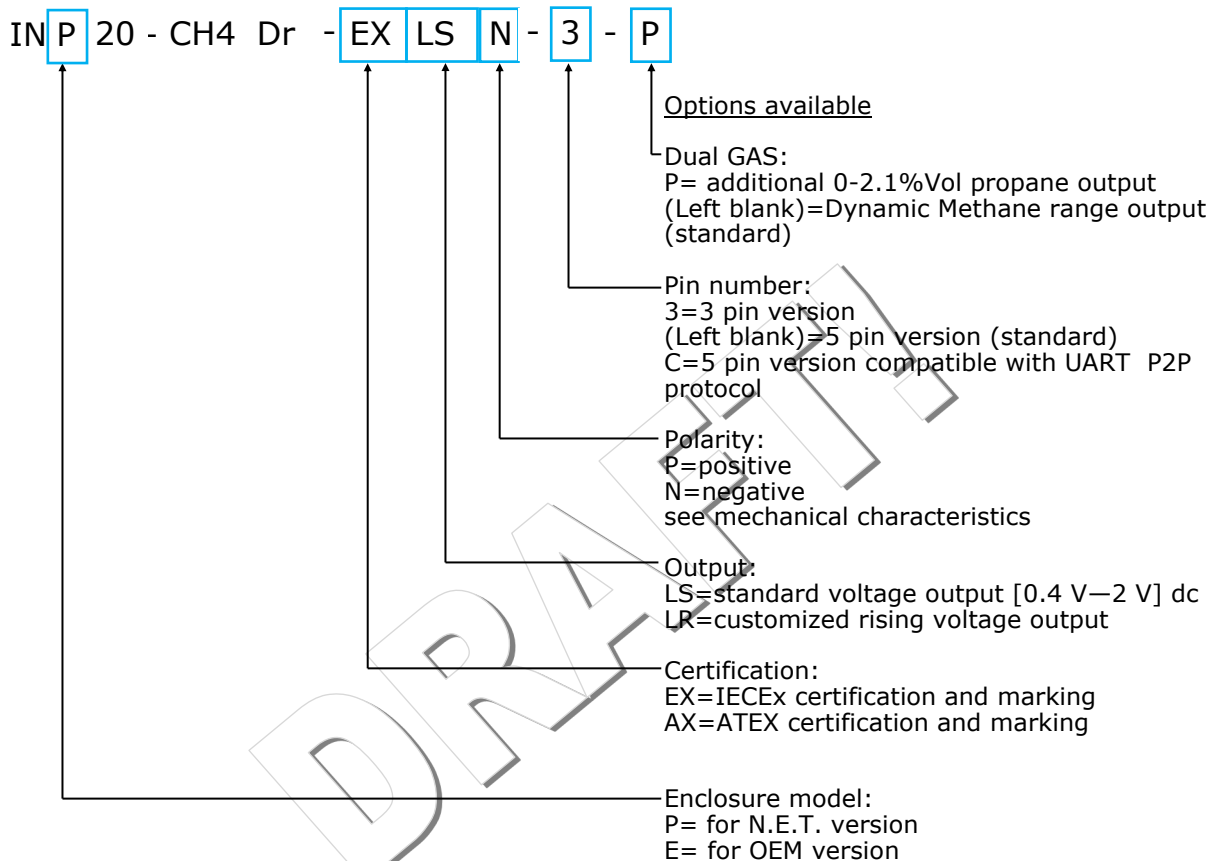
Dynamic IR sensor

DS4231 rev.0

05/07/2017

Ordering details

When making an order the customer must specify the basic physical and electrical properties that are needed for their specific application. This is made through the part number here below. The squared fields of the part number below can be modified according to the options on the right. See DS2203 for complete instructions on how to compile the part number for the entire IR series.



Note 1:
The bridge output is indicated to use when substituting a pellistor.

N.E.T. has a policy of continuous development and improvement of its products. As such the specification for the device outlined in the data sheet may be changed without notice.

N.E.T. Srl

20010 Cornaredo (MI) ITALY Via Legnano, 2
Tel.+39.02.93544190 – Fax +39 .02. 93540347

C.F. e P. IVA (VAT) 03231490966

www.nenvitech.com
info@nenvitech.com

Dynamic IR sensor

DS4231 rev.0

05/07/2017