



**20** twenty years  
of advanced solutions for gas detection

Gas Sensing Elements  
Proudly 100% Developed and Manufactured in Italy

# NETC3 HEAD with 4-20mA output

## Full conformity ATEX/IECEx heads with electronics and sensor

D53991 rev. 8 dated 15/02/2024



### Key Features

- Industry-standard 4-20mA analogue output
- MODBUS protocol on RS-485, for digital addressable systems
- Supplied ready-to-use with a sensor configured and pre-calibrated
- ATEX/IECEx certified stainless steel or aluminium flameproof Ex d enclosure
- II 2GD marking available with NET-GD3 adapter
- Simple calibration in the field, with software, calibration pad or Modbus commands
- Local Threshold alarm outputs
- Watchdog and local fault outputs
- Special ranges supplied on request
- 3/4", 1" or M20 back thread for connection to the detector's main body
- Front M46 thread for connection to flanges and calibration caps

### General Description

The NET3 Cyber Head from N.E.T. is an ATEX/IECEx certified stainless steel enclosure complete with sensor and electronics, designed to be used as a component of a fixed gas detection system or as a full conformity standalone field device.

NET3 Cyber Head is ideal solutions for gas detection system manufacturers who prefer not to invest in:

- Developing a sensor or finding it on the market,
- Developing electronics and firmware to process signals, compensate it and linearize it,
- Designing their own detection head,
- Obtaining ATEX/IECEx certification for the device.

NET3 Cyber Head is a ready-made solution, bringing you a complete sensor+electronics+housing package to be integrated in your next gas detector project or even to be used as a complete standalone field device directly connected to a controller.

The units are available for the full N.E.T. comprehensive detection range (Infrared sensors, Elec-

trochemical cells and Catalytic Pellistors) and the unit will be configured and pre-calibrated with the requested sensor.

The full Cyber version features 4...20mA output and RS-485 Modbus output, along with fault and alarm contacts, over a 10-30 Vdc power supply.

The flameproof enclosure is equipped with an integral stainless steel sinter filter, guaranteeing safe entry of the atmosphere being detected (II 2G protection).

Combustible dust and IP65 protection is available on request, using an optional adapter (II 2GD protection).

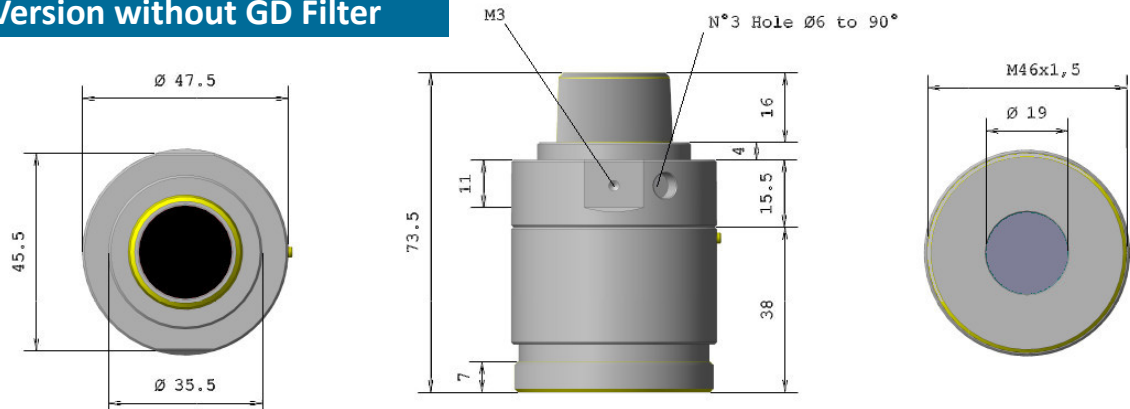
The NET3 model is decomposable and the sensor can be replaced at the end of its life time.

The enclosure is fitted with an external M46 thread at the front end to allow easy fitting of accessories and comes with three possible threads at the rear to fit in most detector housings (3/4", 1" or M20).

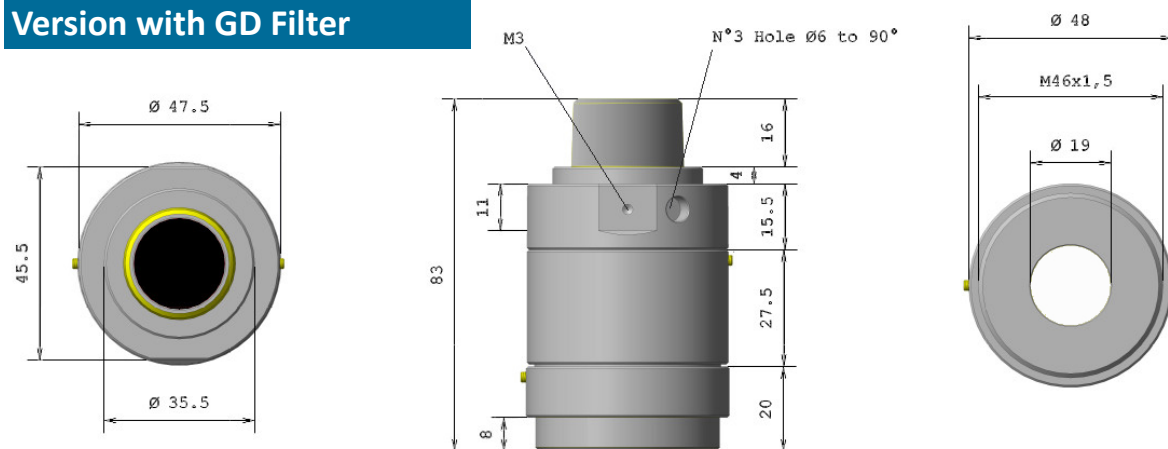
Full PC software and connection boards are available to plot live readings, perform calibrations and modify the unit's settings.

## Mechanical specifications

### Version without GD Filter

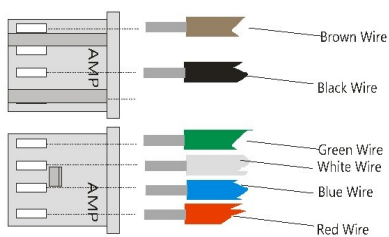


### Version with GD Filter



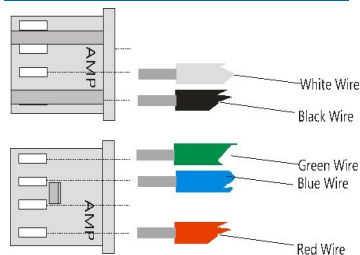
## Wiring scheme

### Full Cyber version



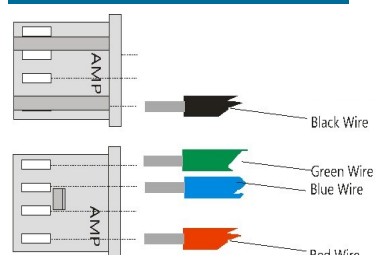
Wire colour	Cyber 4-20mA Version
Red	Vcc (12/24V)
Black	Gnd
Green	RS485 B
White	RS485 A
Blue	Signal (4-20mA current)
Brown	Fault

### 4-20mA XIN version



Wire colour	IR Sensor + 4-20mA board Version
Red	Vcc (12/24V)
White	Signal (4-20mA current)
Black	Gnd
Green	RS485A
Blue	RS485B

### RS485 DIN version



Wire colour	IR Sensor board Version
Red	Vcc (12/24V)
Black	Gnd
Green	RS485A
Blue	RS485B

Connector type: AMPMODU II 280365  
Mating connector: AMPMODU II 280384-1

## Certification details

ATEX/IECEx certification details	<b>Certificate number</b>	CESI 10 ATEX 032X	IECEx CES 12.0009X
	<b>Marking (only gas)</b>	II 2G Ex db IIC T6 or T5 Gb <sup>(1)</sup>	Ex db IIC T6 or T5 Gb <sup>(1)</sup>
	<b>Marking (gas and dust, with dust cover)</b>	II 2D Ex tb IIIC T85°C or T100°C Db IP65 <sup>(1)</sup>	Ex tb IIIC T85°C or T100°C Db IP65 <sup>(1)</sup>

<sup>(1)</sup> The temperature class (T6 or T5) depends on the sensor power dissipation inside the sensor head and is thus dependent on the type of sensor used. See certificate for details.

## Product specifications

General	<b>Product type:</b>	<b>Cyber 4-20mA</b>	<b>XIN/DIN 4-20mA</b>
	<b>Sensing Element:</b>	IR sensor, EC cell, catalytic bead	NDIRsensor
	<b>Operating temperature range</b>	Depend by the sensor technology ( See Sensor specification )	
	<b>Storage temperature range</b>	Depend by the sensor technology ( See Sensor specification )	
	<b>Maximum temperature cycle variations</b>	± 1°C/min	
	<b>Operating humidity range</b>	0-95% NDIR & catalytic 20-90% EC cell	0-95% non condensing
	<b>Operating pressure range</b>	800-1200 mBar NDIR sensor 900-1100 mBar EC cell & catalytic	800-1200 mBar
	<b>Enclosure</b>	Stainless Steel	
	<b>Calibration</b>	Individually calibrated with temperature compensation. Test report supplied.	
Measurement	<b>Range</b>	ppm; %vol; %lel	ppm; %vol
	<b>Response time</b>	Depend by the sensor	<60 seconds
	<b>Digital to analog error</b>	±3%F.S	±2%F.S
	<b>Digital error</b>	±5%F.S	Depend by the sensor
Electrical	<b>Power Voltage</b>	Nominal 12-24Vdc	
	<b>Current Consumption @12V</b>	20-25mA with EC cell 75-85mA with NDIR 40-60mA with catalytic bead	<80 mA Idc
	<b>Current Consumption @24V</b>	25-35mA with EC cell 40-50mA with NDIR 20-30mA with catalytic bead	<40 mA Idc
	<b>Warm up time</b>	90 s for full operation @ 25 °C 1 hour for full specification @25°C	60 s for full operation @ 25 °C 1 hour for full specification @ 25 °C
	<b>Max output current</b>	24 mA	
	<b>Output load resistor range</b>	330Ω with Vin between 12-15V 500Ω with Vin between 15-24V	100-350 Ω
	<b>DC output impedance</b>	100 Ω	30 Ω
Signal Output	<b>Analog output</b>	4-20mA	4-20mA *not available in DIN version
	<b>Digital communication</b>	Modbus protocol RS485	Modbus protocol RS485
	<b>Baud Rate</b>	9600 bps	4800;9600;19200;38400 bps

## Examples of Head part numbers

Gas		Technology	Range	Part number
Methane	CH <sub>4</sub>	XIN version	0-5%Vol	NETC3X-XIN-INP32-CH45
Carbon Dioxide	CO <sub>2</sub>	XIN version	0-5% Vol	NETC3X-XIN-INP32-CO25
R-134a	CH <sub>2</sub> FCF <sub>3</sub>	XIN version	0-2000ppm	NETC3X-XIN-IFP32-134B
Hydrocarbons	HC	CYBER+Pellistor	0-100% LEL	NETC3X-AFL-NP-17SHM
Ammonia	NH <sub>3</sub>	CYBER+Pellistor	0-100% LEL	NETC3X-AFL-NP-ANS
Hydrogen	H <sub>2</sub>	CYBER+Pellistor	0-100% LEL	NETC3X-AFL-NP-AHS
Methane	CH <sub>4</sub>	CYBER+NDIR	0-100% LEL (5%Vol)	NETC3X-AIN-INP32-CH45
Propane	C <sub>3</sub> H <sub>8</sub>	CYBER+NDIR	0-100% LEL (2,1%Vol)	NETC3X-AIN-INP32-PRO2
Carbon Dioxide	CO <sub>2</sub>	CYBER+NDIR	0-5000 ppm	NETC3X-AIN-INP32-CO2P
Carbon Dioxide	CO <sub>2</sub>	CYBER+NDIR	0-5% vol	NETC3X-AIN-INP32-CO25
Sulfur Hexafluoride	SF <sub>6</sub>	CYBER+NDIR	0-2000ppm	NETC3X-AIN-IFP32-SF6B
R-134a	CH <sub>2</sub> FCF <sub>3</sub>	CYBER+NDIR	0-2000ppm	NETC3X-AIN-IFP32-134B
Carbon Monoxide	CO	CYBER+Electrochemical cell	0-300 ppm	NETC3X-ATX-CO-PL1000
Hydrogen Sulfide	H <sub>2</sub> S	CYBER+Electrochemical cell	0-100 ppm	NETC3X-ATX-H2S-PL100
Ammonia	NH <sub>3</sub>	CYBER+Electrochemical cell	0-100 ppm	NETC3X-ATX-NH3-PL100
Nitrogen Oxide	NO	CYBER+Electrochemical cell	0-300 ppm	NETC3X-ATX-NO-PL300
Chlorine	Cl <sub>2</sub>	CYBER+Electrochemical cell	0-10 ppm	NETC3X-ATX-CL2-PL10
Sulfur Dioxide	SO <sub>2</sub>	CYBER+Electrochemical cell	0-20 ppm	NETC3X-ATX-SO2-PL20
Oxygen	O <sub>2</sub>	CYBER+Electrochemical cell	0-25% vol	NETC3X-AO2-O2-A2

## Warranty and warning

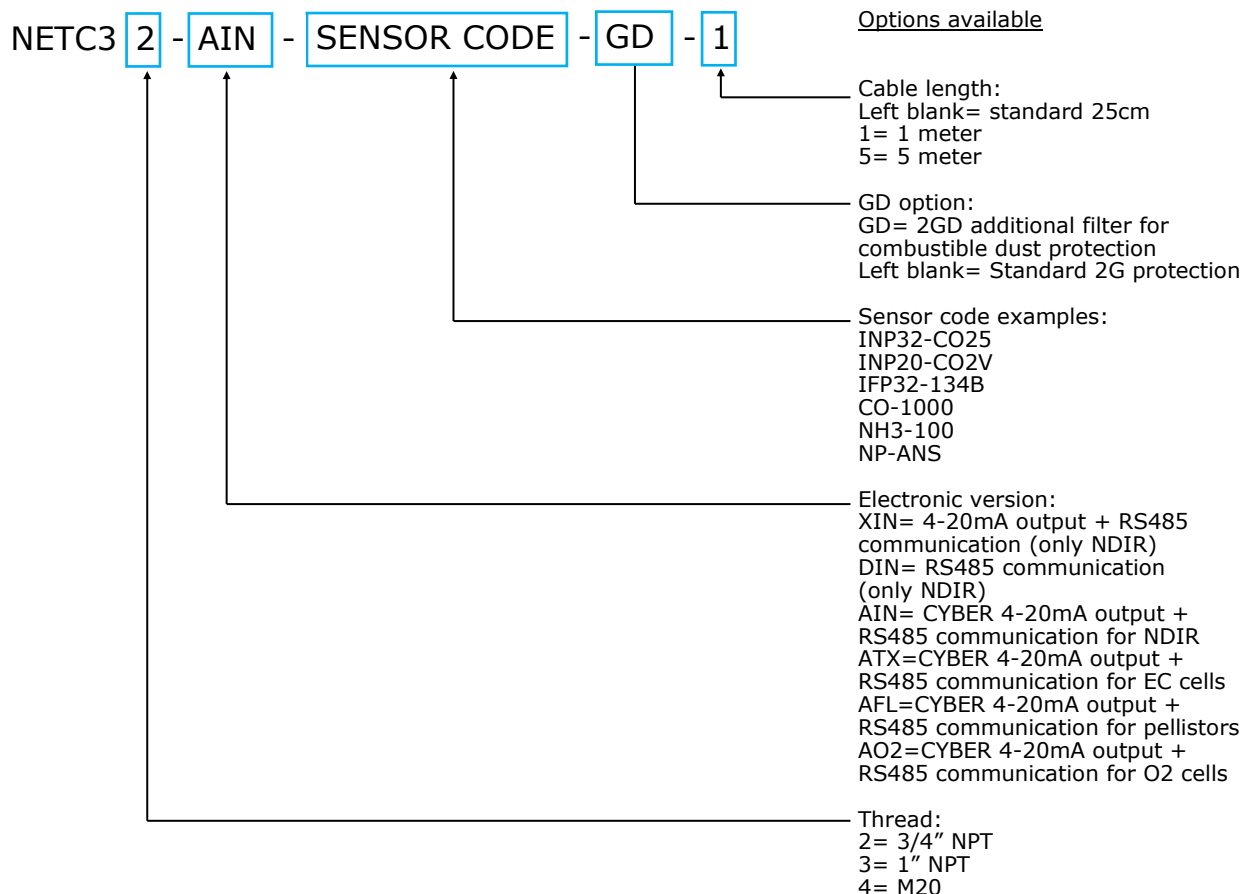
The WARRANTY of the product is 3 years from the purchased date against defects in materials or production. This warranty however is not valid for articles that have been broken, repaired by a third person or not used according to the instructions contained in this document or supplied with the products, related to the storage, installation, operation, maintenance, or servicing of the products.

The WARRANTY on the specific sensor coupled with the CYBER board is specified in the relevant data sheet available at [www.nenvitech.com](http://www.nenvitech.com)

Recalibration of the sensor will void the calibration warranty

## Ordering details

When making an order, we kindly ask our customers to 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.



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. In case of modification of the product, N.E.T. disclaims all liability.

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