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In accordance with	The Metrologiewet (Stb. 2006, 137) as Dutch implementation of Directive 2004/22/EC on measuring instruments (MID).
Manufacturer	OPUS Prodox AB Bäckerstengatan 11C, SE-431 49 Mölndal, Sweden
Authorised representative	OPUS Prodox AB Bäckerstengatan 11C, SE-431 49 Mölndal, Sweden
Measuring instrument	A model of an Exhaust Gas Analyzer . Type : OPUS 400 Destined for the measurement of : the volume fractions of specified components of the exhaust gas of a motor vehicle engine with spark ignition at the moisture level of the sample analysed. These gas components are carbon monoxide (CO), carbon dioxide (CO ₂), oxygen (O ₂) and hydrocarbons (HC). Accuracy class : 00 + 0 Environment classes : M1 / E2 Temperature range : 5 °C / +40 °C Further properties are described in the annexes – Description T10493 revision 0 – Documentation folder T10493-1
Valid until	25 May 2022

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Description

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1 General information about the exhaust gas analyzer

All properties of the exhaust gas analyzer, whether mentioned or not, may not be in conflict with the legislation.

1.1 Essential parts

Description	Drawing number	Rev.	Remarks
Block diagram of the electronic signal handling	T10493/0-01	-	-
OPUS400 MPU	T10493/0-02	-	Drawing incl. partslist
OPUS400 Power	T10493/0-03	-	Drawing incl. partslist
OPUS400 Display	T10493/0-04	-	Drawing incl. partslist

Oxygen sensor		
Manufacturer	Type	Remarks
Teledyne	R-22A	-
City Technology	AO2	-
EnviteC	Oxiplus A OOA101	-

Gasbench:

- Crestline 7911, Non-dispersive Infrared Spectrometer, drawing T10493/0-05 (2 pages).

EMC protection measures:

- Metal housing;
- 4-layers PCB boards with ground planes and PCB mounted EMI filters;
- Power In cable located on rear panel, Axial ferrite bead, 2 turns;
- Smoke input located on rear panel, Axial ferrite bead, 1 turn;
- RPM signal from RPM board to MPU board, Axial ferrite bead, 1 turn;
- O2 signal cable to gas bench 7911, Axial ferrite bead;
- Printer power cable to Power board, Axial ferrite bead, 1 turn;
- Printer signal cable to MPU board, Axial ferrite bead, 1 turn;
- Bench cable from 7911, J1 to MPU, 2 x Flat ferrite core;
- Cable display to MPU board, Flat ferrite core;
- Power board to MPU board, Flat ferrite core;
- Accessory input to MPU board, Flat ferrite core;
- EMI Power filter Schurter 5500-2223;
- EMI Gasket sheet between display plate and enclosure.

1.2 Essential characteristics

Measuring ranges:

Gas component	Display range	Resolution
CO	0 – 15 % vol	0,01 % vol
CO ₂	0 – 20 % vol	0,01 % vol
O ₂	0 – 25 % vol	0,01 % vol
HC	0 - 15000 ppm vol	1 ppm vol

Software:

Software specification			
Software item	Version number	Checksum	Indication
Gas analyser firmware	0.30	2fc4	During start-up or P89 printout

The software version and identification number will be displayed on the PC display.

- Calibration period, 12 months;
- Functions:
 - Lambda calculation;
 - PEF in display;
 - Automatic zero setting;
 - Automatic calibration device;
 - Drift compensation;
 - Low flow signaling.

- Protections:
 - Warm-up check;
 - Control of automatic devices;
 - Detection of HC residue;
 - Leak-test;
 - Control of O₂ channel;
 - Detection of adjustments that are necessary;
 - Signaling for ending of the calibration period;
 - Software sealing (last calibration date) for the gas calibration.
- Parameters:
 - Warm-up time : 2 min.
 - Temperature range : +5 °C / +40 °C
 - Minimal flow : 5,5 l/min.
- Power supply voltage 100 – 240 Vac, 50 – 60 Hz.

1.3 Essential shapes

The exhaust gas analyzer is built according to the drawings:

- Front view, drawing number T10493/0-06;
- Rear view, drawing number T10493/0-07;
- Exploded view, drawing number T10493/0-08.

Markings:

- The markings have to fulfill the requirements stated in the legislation.
- The data plate is fixed to the exhaust gas analyzer and secured against removal by sealing or will be destroyed when removed.
- Near the display the inscriptions belonging to the function as exhaust gas analyzer must be present.

To secure components that may not be dismantled or adjusted by the user, the exhaust gas analyzer has to be secured in a suitable manner on the locations indicated in the drawing:

- Sealing, drawing number T10493/0-09.

The securing component has to bear either:

- A mark of the manufacturer laid down in a by a Notified Body approved quality system, or;
- A mark of a Notified Body.

1.4 Conditional parts

- User manual exhaust gas analyzer version 09-16-2010, 25 pages;
- Pump, manufacturer, Schwarzer Precision, type SP 670 EC-TH-HR
- Filters, manufacturer, Autotrib, type PE 12/47 & GL 12/32.
- Power supply, manufacturer Power-Win Technology Cor., type AD-A52;
- Gas probe, drawing number T10493/0-10.



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The exhaust gas analyzer may be equipped with one or more of the following protective interfaces that have not to be secured:

- USB (1x);
- RS232 (1x);
- Blue Tooth;
- Accessories (Extended I2C).

1.5 Non-essential parts

- Optional NO_x sensor.

The exhaust gas analyzer may be connected to non-essential devices, for example but not limited to external printers, second display's, etc. provided that:

- They do not present primary data;
- They do not lead to an instrument having other essential characteristics than those fixed by this type-examination document.

2 Approval conditions, seals and verification marks

See chapter 1.2, essential characteristics and 1.3, essential shapes.