Nederlands Meetinstituut

EC-type examination certificate

Number **T10102** revision 2
Project number 808846

Issued by	NMi Certin B.V. Hugo de Grootplein 1 3314 EG Dordrecht The Netherlands Notified Body number 0122
In accordance with	The Metrologiewet (Stb. 2006, 137) as Dutch implementation of Directive 2004/22/EC on measuring instruments (MID).
Manufacturer	Robert Bosch GmbH Robert-Bosch-Straße 10 73207 Plochingen Germany
In respect of	A model of an **Exhaust Gas Analyzer**. Type : BEA 050 & BEA 460
Characteristics	Accuracy class 0 Mechanical environment class M1 Electromagnetic environment class E2 Temperature range +5 °C / +40 °C In the description number T10102 revision 2 further characteristics are described.
Valid until	30 January 2018
Description and documentation	The instrument is described in the description number T10102 revision 2 and documented in the documentation folder T10102-1, appertaining to this EC-type examination certificate.
Remarks	This revision replaces the earlier version, except for its documentation folder.

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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	Blockdiagramm BEA 050 Blockdiagramm BEA 460	- -	1 page 1 page
Pneumatic diagram	1 687 023 419	4	1 page
Main board	1 688 400 223 Stueckliste 1 688 400 223	1 -	layout, 1 page parts list, 3 pages
Board layout Andros 6510 gas bench	Model 6500/6510 Circuit Board Connector Locations Andros 6500 Bill of Materials Model 6510 Service and Repair Schedule	- - -	layout, 1 page parts list, 2 pages assembly, 1 page

Oxygen sensor		
Manufacturer	Type	Remarks
Teledyne	Bosch R17-A	part number 1 687 224 732
Envitec	Bosch A7-11.5	part number 1 687 224 843

1.2 Essential characteristics

Operation, indication and control:
- BEA 050:
  - Operation, indication and control via personal computer with CE marking. Communication between gas analyzer and personal computer via RS232 connection or optional via wireless BlueTooth connection;
- BEA460:
  - Operation, indication and control via personal computer with CE marking. Communication between gas analyzer and personal computer via wireless BlueTooth connection or usage of a RS232 cable.

Measuring ranges:

Gas component	Display range	Resolution
CO	0 – 10 % vol	0.001 % vol
CO_2	0 – 18 % vol	0.01 % vol
O_2	0 – 22 % vol	0.01 % vol
HC	0 - 9999 ppm vol	1 ppm vol

Software:

Software specification			
Software item	Version number	Checksum	Indication
Gas bench firmware	000-B6	$F54B	MID-Screen
Gas analyzer firmware BEA050	2.01 or 2.02	$30E5 $3AA3	MID-Screen
Gas analyzer firmware BEA460	2.01 or 2.02	$3BA3 $3871	MID-Screen
PC program 1: EsaResEp.dll	1.0 or 1.10	$3DA0 $F04F	MID-Screen
PC program 2: EsaIO_Amo_Ep.dll	1.0 or 1.10	$C37C $C59D	MID-Screen
PC program 3: ScsCrc32.dll	1.0	$CCF6	MID-Screen
PC program 4: WartAMM.exe	1.45 or 1.46	$8872 $856D	MID-Screen

The software versions and identification numbers will be displayed on the PC, in the ESA MID screen. The only legally relevant software is the MID part of the software (see module table above).

Re-calibration period:
- The calibration period is 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 O_2 channel;
- Pump test:
- Filter test;
- Detection of adjustments that are necessary;
- Signaling for ending of the calibration period;
- Hardware sealing for firmware update;
- Password protection for gas calibration.

Parameters:

- Warm-up time	:	max. 5 min
- Temperature range	:	+5 °C / +40 °C
- Minimal flow	:	140 l/h

Power supply voltage:
- The power supply voltage is 230 V AC, 50 Hz (optional: 110V AC, 60Hz).

1.3 Essential shapes

The exhaust gas analyzer is built according to the drawings:
- Front / rear view BEA050, drawing number 1 687 023 418, revision 1 of 7 May 2007;
- Front / rear view BEA460, drawing number 0 684 105 462 of 25 April 2007;
- Front / rear view AMM module, see "pneumatic diagram" drawing number 1 687 023 419, revision 4 of 31 May 2007.

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.

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 drawings:
- Sealing BEA050, drawing number "Sealing BEA050";
- Sealing BEA460, drawing number "Sealing BEA460".

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 BEA050, dated 30 January 2008, 13 pages;
  Exhaust gas analyzer BEA460, dated 25 January 2008, 15 pages;
  ESA software, dated 28 November 2007, 85 pages;
- Pump, manufacturer, Rietschle Thomas Puchheim GmbH, Type 5002 VD / 5010 F;
- Filters, manufacturer, Mahle, type KL13;
- Gas probe, see drawing number 1 680 790 049, revision 4 of 24 March 2004 or drawing number 1 680 790 052, revision 3 of 24 March 2004;
- Motor measurement board (BEA 460 only) see drawing number 1 688 410 201.

The exhaust gas analyzer may be equipped with one or more of the following protective interfaces that have not to be secured:
- RS232 (1x);
- Centronics;
- PS/2 keyboard (not used with BEA050 and BEA460).

1.5 Non-essential parts

- Optional NO_x sensor.
- Integrated revolution counter based on:
  - Optical sensor;
  - Induction clamp;
  - UDP sensor;
  - Adaptor for dynamo ripple on board voltage;
- Oil temperature meter;
- OBD-Connector (BEA 460);
- RTM-Connector.

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.