Operation manual

Evaluation unit VETAS 3 V3

Vehicle measuring system

Dear customer,

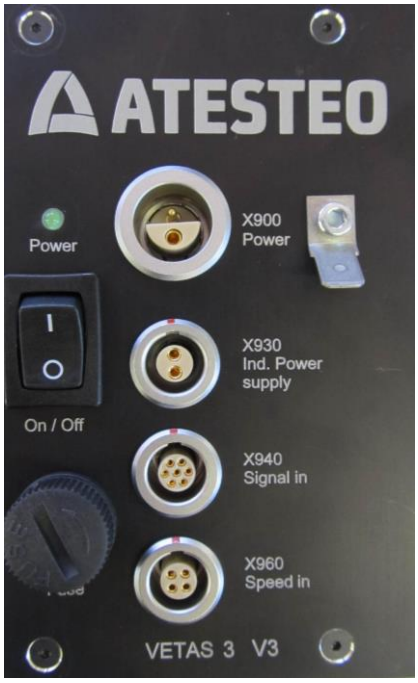
Before leaving our company, every unit is tested by extensive function and quality examinations, which guarantee that the system complies with the stated specifications. Nevertheless, should there be any problem, please contact us.

Before shipping a system, the serial number of each component of your configuration is registered by our company, so that an individual and short-term support can be guaranteed. It is understood that we will inform you about innovations and modifications of the system.

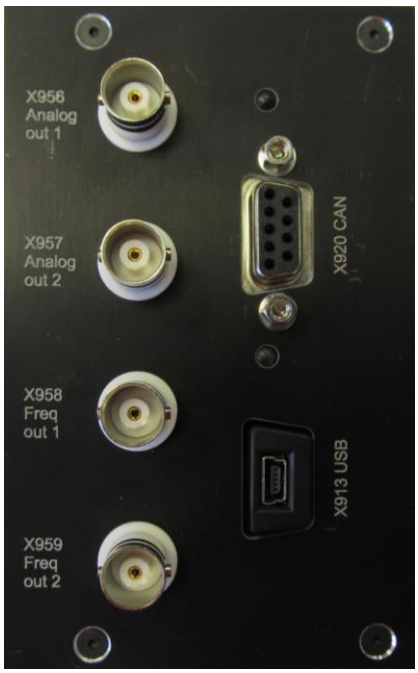
Warranty

In case of intended use, ATESTEO will issue a guarantee of 12 months according to warranty period regulated by law. In case of damages caused by improper use warranty claims cannot be submitted.

VETAS 3 V3



Rear Panel VETAS 3 V3



Front Panel VETAS 3 V3

CONTENTS

1 Introduction

In this manual, you will find all steps to be taken for electrical and software start-up of ATESTEO products, which are compatible with VETAS 3 (such as vehicle telemetry system or measuring steering wheel).

This manual is applicable for the following types of measuring systems:

- 1x torque, 1x speed
- 1x torque, 1x angle
- 1x torque, 1x temperature (rotor electronic temperature)
- 2x temperature (1x thermocouple, 1x rotor electronic temperature)
- 1x inductive torque
- 1x inductive temperature

For setting-up the corresponding measuring system refer to the appropriate appendix.

Each measuring system is thoroughly checked before delivery to its technical functioning. Compliance with the technical specification is a requirement to stand this end of line test. If a complete measurement system is ordered, all electrical and software parameters are pre-installed.

Upon reception of the shipment the units should be checked to be in a perfect condition otherwise a damage report must be generated in cooperation with the delivery company. In addition, the content of the delivery should be double-checked against the ordered items. The delivered parts depend on customer-specific orders.

2 Description

The evaluation unit VETAS 3 V3 provides all necessary supply interfaces for running the compatible ATESTEO measurement systems. The USB interface can be used for external monitoring and controlling by the VECTO software package. Necessary software updates and an extra data connection can be linked by this USB serial interface too.
All measurement systems work contactless and are maintenance-free. The data transmission can be realized by a frequency-modulated infrared or by an inductive transmitter. The electrical power supply of the rotating electronic circuit is established by wear-free inductive power transmission.

2.1 Features

- Power supply 9V...36V/ 2A max.
- Sample rate of max. 2,000 readings per second
- Digital filter
    - Digital IIR filter 1st order with selectable corner frequency
    - Moving average depth up to 199
- CAN
    - Bus speeds: 1,000, 500, 100, 10 kbps
    - 11/29 bit Identifier
    - Data formats: 32/16 bit signed integer, 32 bit IEEE floating point
    - Motorola or Intel bit order
    - Send and command identifier user selectable
    - Update interval 0.5…1,000ms
- Analog output
    - Output range: 0..5V, 0..10V, ±5V, ±10V
    - Adjustable offset voltage
    - Analog scaling (percentage of rated torque → full-scale)
    - 500Hz analog output filter

2.2 LEDs

LED coding:

Color	Frequency	Description
Green	0.5 Hz	System is working
Red	Permanent on	a) Torque signal oscillation. Ensure sensor plug is plugged properly. VECTO terminal error 0x4. b) Searching supply voltage. c) Calibration jump impossible after supply voltage searching. VECTO terminal error 0x10 d) “Continuous CAN transmission” active, but no CAN bus connected. VECTO terminal error 0x40

Table 1 LED coding

CAN errors can be reset by switch VETAS off and on. Pressing ‘E’ can reset other errors in the terminal.

3 Safety Instructions

Before starting up and maintenance or in case of other operations at the measurement system attention should be paid to the following instructions:

- Follow all safety instructions and directions denoted in the operation manual.
- Make sure that every precaution will be taken. It is a necessity that all safety appliances are functional attached to the measuring device. Only in this way, a safe and successful operation is guaranteed.

Reference to additional standards:

- Low Voltage Directive 73/23/EWG, Electromagnetic Compatibility Directive 89/336/EWG and the harmonized standards
- DIN EN 292-1 Safety of machinery
- DIN EN 292-2 Safety of machinery

Maintenance and inspection on the electrical equipment have to be executed by qualified personnel. Improper use and modifications of the measurement system will annul the EC declaration of conformity.

3.1 Accident prevention

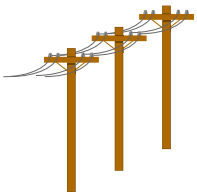
The usage of the equipment assumes keeping the general safety regulations in mind!

ATTENTION!

Application of the VETAS 3 V3 in conjunction with a measuring steering wheel (ML): Read the manual of the measuring steering wheel!

4 Electrical installation

4.1 Mains supply



The measuring system needs to be powered with DC voltage in a range of 9V to 36V. The power input depends on the transmitter system. The power consumption ranges between 12 and 36 watt. The power supply must be protected with a time-lag fuse of 3A against overcurrent.

4.2 Grounding

The housing of the evaluation unit is equipped with an earth connection terminal and must be connected to vehicle ground. The internal ground is separated from that earth. The stator unit must be connected to vehicle ground for proper operation too. The shielding of the connecting cables is connected at both ends.

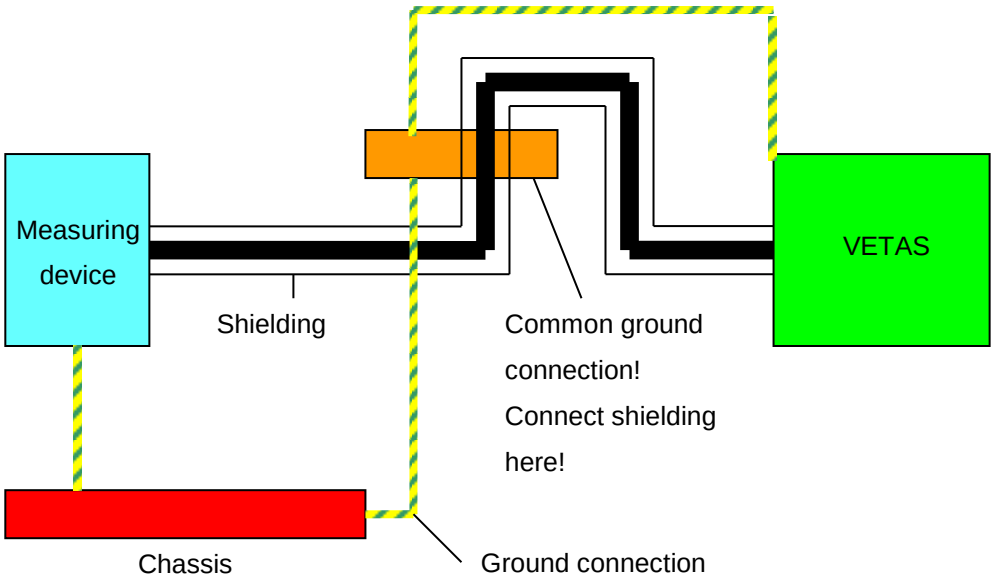


Figure 1 Ground and shielding

5 Plug connections

5.1 Plug connections at front side

The signal transferred by analog voltage outputs or frequency outputs depend on the connected measurement system. Please find information about the signal in the manual of the measurement system.

5.1.1 X920: CAN (9-pole)

D-Sub female connector

Pin	Signal
1	_
2	CANL
3	_
4	_
5	GND
6	GND
7	CANH
8	_
9	_

Table 2 X920 plug

5.1.2 X913: Serial port

Mini USB connector

5.1.3 X956: Analog out 1 (2-pole)

Socket BNC

Pin	Signal	Output range
Inner conductor	Analog out	-10V … +10V
Outer conductor	GND	

Table 3 X956 plug

5.1.4 X957: Analog out 2 (2-pole)

Socket BNC

Pin	Signal	Output range
Inner conductor	Analog out	-10V … +10V
Outer conductor	GND	

Table 4 X957 plug

5.1.5 X958: Frequency out 1 (2-pole)

Socket BNC

Pin	Signal
Inner conductor	Frequency out 5V TTL, 60±20 kHz for IR system, 10±5 kHz for inductive system
Outer conductor	GND

Table 5 X958 plug

5.1.6 X959: Frequency out 2 (2-pole)

Socket BNC

Pin	Signal
Inner conductor	Frequency out 5V TTL, 60±20 kHz for IR system, 10±5 kHz for inductive system
Outer conductor	GND

Table 6 X959 plug

5.2 Plug connections at rear side

5.2.1 X900: On-board vehicle power-supply voltage 12V (2-pole)

Socket LEMO ERA.2S.302.CLL female/male ** Plug LEMO FFP.2S.302.CLAC72

Pin	Signal
1	GND
2	+12V

Table 7 X900 plug

5.2.2 X930: Supply voltage for power transmission coil (2-pole)

Socket LEMO EGG.1B.302.CLL female ** Plug LEMO FGG.1B.302.CLAD52

Pin	Signal
1	PS1 (X703A)
2	PS2 (X703B)

Table 8 X930 plug

5.2.3 X940: Signal in (Speed sensor / IR torque sensor / IR temperature sensor) (7-pole)

Socket LEMO EGG.1B.307.CLL female ** Plug LEMO FGG.1B.307.CLAD52

Pin	Signal
1	IR+ (X702A Cathode)
2	IR- (X702B Anode)
3	N1 (X701C)
4	N2 (X701D)
5	GND (X701B)
6	+5V (X701A)
7	MDf2

Table 9 X940 plug

5.2.4 X960: Speed in (4-pole)

Socket LEMO EGG.1B.304.CLL female ** Plug LEMO FGG.1B.304 CLAD52

Pin	Signal
1	N1 (0 to 15V; H:>4,2V, L:<1,8V)
2	N2 (0 to 15V; H:>4,2V, L:<1,8V)
3	GND
4	+5V

Table 10 X960 plug

5.3 Connecting VETAS 3 V3 to PC

The evaluation unit VETAS 3 V3 can be connected to a PC via a Mini-USB slave connector socket. With help of VECTO software, the device can be configured. Please refer to the VECTO software manual for further setup instructions.

The availability of the setup options shown in the settings screen of VECTO depends on the connected measurement equipment. Not all options are available for all measurement devices. The available options are described in the settings menu of VECTO.

6 Miscellaneous

6.1 Overvoltage protection

To avoid damage the transmitter electronics on the rotating side will be switched off in case of overvoltage. As a result, the analog output of the measurement signal displays undefined values. In that case, the amplitude of the supply voltage must be reduced. Sometimes it is required to switch off the measuring system for several seconds to deactivate the overvoltage protection. All outputs are short-circuit-protected.

6.2 Hotline

In case of any trouble, you can contact our service:

Phone: **+49 2404 9870-580**

Email: **service-pm@atesteo.com**

6.3 Flash update

At the evaluation unit, a microcontroller with an internal Flash-ROM is used, so that a firmware update can easily be performed by special software applications via the USB interface.

Flash update:

1. Turn off the evaluation unit (switch off power supply).
2. Connect the evaluation unit via USB with the PC.
3. Run the Flash-programmer software and enter settings as shown below.

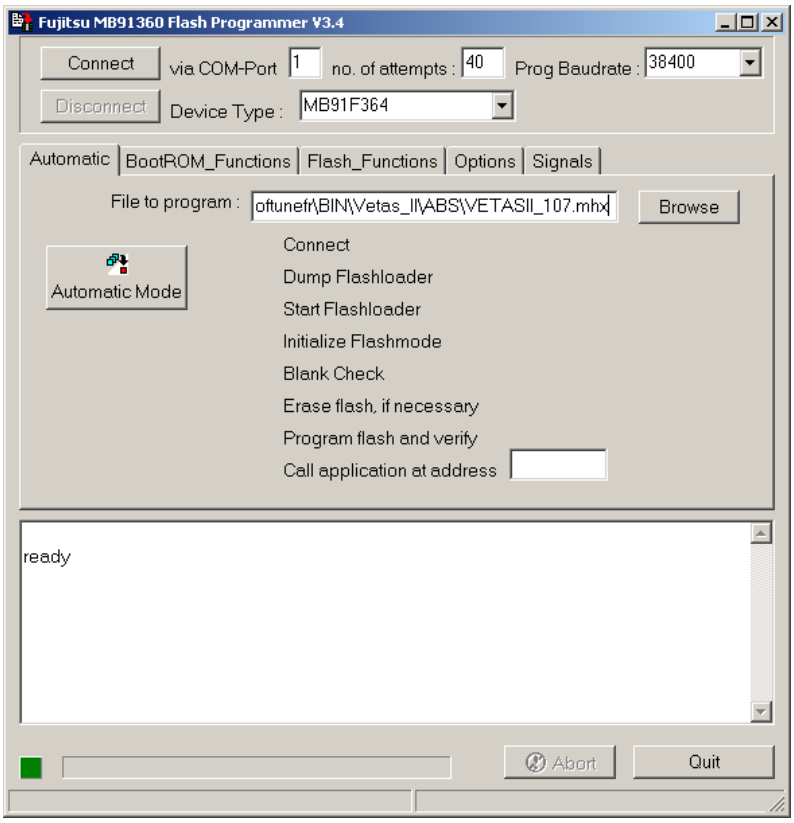


Figure 2 Flash update tool

4. Set Device Type = ‘MB91F364’ and choose the firmware file by pressing the button 'Browse'.
5. Press button 'Automatic Mode’ and turn on the evaluation unit in less than 2 seconds.
6. If the firmware is installed properly, the programmer software displays “ALL OK”.
7. Turn off the unit.
8. Turn on the unit.

The firmware update has been installed correctly.

6.4 List of figures

6.5 List of tables

7 Imprint

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