



HELSINKI, FINLAND, 2017

**STARDEX® MASTER ULTIMA  
COMMON RAIL, UIS/UPS, HEUI  
PUMP AND INJECTOR TESTER  
WITH EMBEDDED FLOWMETER**



## Safety rules for working with STARDEX MASTER ULTIMA device.

Before using the device STARDEX MASTER ULTIMA (further “the device”), read this manual carefully.

The device should be plugged only in a circuit of alternative current mentioned in the passport of the device. In order to power up the device, use only supply cable from the delivery kit.

Getting the electrical charges on device body is strongly prohibited!

Ingress of moisture inside the device is strictly unacceptable!

Device body is constructed to protect its components from mechanical impact, while operating. Avoid body damage, do not drop the device and do not put any heavy objects on its cover.

At any sign of device defect, as smoke, sparking or specific smell, unplug the device immediately and contact the nearest STARDEX service center.

All cables connected to the device must be supplied with standard plugs without mechanical damage.

There are no self-repairable parts inside of the device. It is strongly prohibited to open the device.

Store and use away from children and pets.

The device is designed to work with high pressure systems. A user must understand the structure and principle of operation of injection systems.

Incorrect use of the device can lead to breakage of the equipment or user's injury.

**WARNING!!! Flow sensors are extremely sensitive to the ingress of foreign matter (dirt, chips, etc.). Even a small amount of foreign matter can permanently damage the flow sensor. The use of filters at the inputs of the device is absolutely necessary. The user is responsible for the cleanliness of the test fluid and the timely replacement of filters. The guarantee does not apply to the flow sensors. Possible repair or replacement is carried out by the user.**

## Specifications and operation directions

Dimensions	470x430x190 mm
Device weight	12 Kg
AC power supply	220V 50Hz (110V 60Hz on demand)
Power consumption in stand-by mode	40 Watt
Power consumption in load mode	Up to 400 Watt
Operating temperature	from +10 <sup>0</sup> C to +40 <sup>0</sup> C
Relative air humidity	Not more than 90% at 25 <sup>0</sup> C

Embedded delay sensor module	True
Embedded flow meter module	True
Embedded RLC measurement module	True
Embedded PC	True
Additional front panel touchscreen	True
New STARDEX SISU software compatible	True
Number of simultaneously testing injectors	1
Pressure regulator out	3
Pressure sensor in	1
RPM sensor in	1

Delay sensor in	1
Injector digital flow measurement	True
Pump digital flow measurement	True
Common Rail coil injectors	True
Common Rail piezo injectors (including Delphi piezo)	True
Double coil injectors	True
Common Rail pumps (except Denso HP 0)	True
UIS/UPS PDE/PLD	True
Repair code generation for coil injectors Bosch IMA, Delphi C2I C3I, Denso QR	True
Repair code generation for Bosch piezo	In developing
HEUI support	In developing

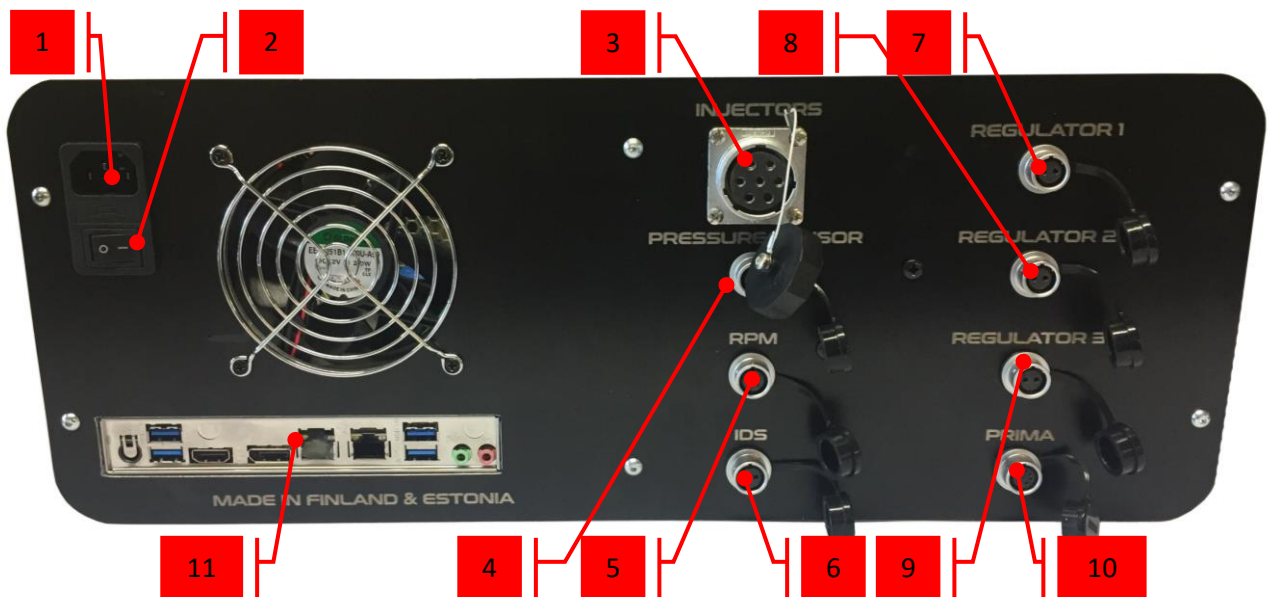
## Purpose and range of application

- STARDEX MASTER ULTIMA is a highly professional universal device for testing pumps and injectors of Common Rail, UIS/UPS, PDE/PLD systems.
- The device is designed to work with **Bosch, Delphi, Denso, Siemens, Caterpillar, Cummins, Detroit, AZPI** electronic systems and is also able to test all mechanical injectors as well as nozzles of the unit-injectors.
- It works both with electromagnetic and piezoelectric injectors (including Delphi piezo injectors).
- STARDEX MASTER ULTIMA enables to test current characteristics of an injector displaying a high-precision current graph on the screen and also measures the resistance, capacitance, inductance and the response time of the injectors.
- The device is equipped with a full-fledged industrial PC system powered by Ubuntu Linux, allowing you to connect a keyboard, mouse, printer, monitor and other peripheral devices.
- The device is equipped with digital flowmeters to measure the flow and return flow of injectors and pumps. The use of this technology allows assigning new repair codes for injectors.
- The memory of the device contains more than 3000 test-plans for checking Common Rail, UIS/UPS, PDE/PLD pumps and injectors and over 10000 test-plans for checking mechanical injectors of different manufactures.
- The device is suitable for fitting out any high pressure pump test bench including test benches without measuring unit.
- The device can work with CamBox from different manufacturers.
- STARDEX MASTER ULTIMA combined with a hand pump enables to make an express test of Common Rail injectors as well as mechanical injectors and nozzles of the unit injectors on the following parameters: efficiency, leakage, quality of injection,

pressure at the beginning of the injection, state of electromagnetic coil (solenoid) or piezo element.

- The device STARDEX MASTER ULTIMA combined with the high pressure pump test bench is a full-fledged highly professional solution which enables completed test and setting of modern electronic diesel injection systems.

## Connectors and control buttons



- ① Power cable connector.
- ② Power switch.
- ③ Injector cable connector.
- ④ Pressure sensor connector.
- ⑤ RPM sensor connector.
- ⑥ Injector delay sensor.
- ⑦ Regulator connector 1.
- ⑧ Regulator connector 2.
- ⑨ Regulator connector 3.
- ⑩ STARDEX Prima connector.
- ⑪ PC back panel.



- ① Pump direct flow inlet (rail pressure regulator back flow).
- ② Pump back flow inlet.
- ③ Common pump and injectors outlet to tank.
- ④ Injector direct flow inlet.
- ⑤ Injector back flow inlet.
- ⑥ Additional touchscreen.
- ⑦ Power button.

**When connecting the injector and / or pump to the flow meter, it is necessary to activate the output to the tank of the test bench!!! Otherwise, the internal lines of the device will be damaged !!!**



## Switching on/off the device

Completely free the device from packaging.

Plug in the device using the power cable from the supply kit.

Connect mouse, keyboard, printer and monitor to appropriate connectors on the PC back panel of the device.

Connect the pressure sensor to the pressure sensor connector by the appropriate cable.

Connect the fuel rail pressure regulator to regulator 1 connector by appropriate cable.

Connect pump pressure regulators to regulator connectors 2 and 3 by appropriate cables.

Connect injectors to the injector cable connector by the appropriate cable.

Turn on the power switch on back panel of the device.

Run the operating system using on/off button on the front panel.

Once the operating system is loaded the device is ready to be used.

To switch off the device press the on/off button on the front panel of the device.

## Supply kit

Common Rail supply kit	
STARDEX MASTER ULTIMA	1 piece
Monitor	1 piece
Keyboard	1 piece
Mouse	1 piece
Main cable for connecting injectors	1 piece
Adapter for main cable to test Bosch injectors	1 piece
Adapter for main cable to test Delphi type 1 injectors	1 piece
Adapter for main cable to test Delphi type 2 injectors	1 piece
Adapter for main cable to test Denso type 1 injectors	1 piece
Adapter for main cable to test Denso type 2 injectors	1 piece
Adapter for main cable to test piezoelectric Siemens injectors	1 piece
Adapter for main cable to test piezoelectric Bosch injectors	1 piece
Adapter for main cable multisystem 1	1 piece
Adapter for main cable multisystem 2	1 piece
Cable for connecting Bosch pressure sensor (old style)	1 piece
Cable for connecting Bosch pressure sensor (new style)	1 piece
Cable for connecting Bosch pressure regulator	1 piece
Cable for connecting Bosch Mercedes pressure regulator	1 piece
Cable for connecting Delphi/Siemens pressure regulator	1 piece
Cable for connecting Denso pressure regulator	1 piece
RPM sensor with cable and connector	1 piece
Fuel tube $\varnothing$ 6 mm	4 m
Fuel tube $\varnothing$ 8 mm	4 m
Fuel tube $\varnothing$ 10 mm	3 m
Fast connectors for fuel tubes $\varnothing$ 6 mm	2 pieces
Fast connectors for fuel tubes $\varnothing$ 8 mm	2 pieces
Fast connectors for fuel tubes $\varnothing$ 10 mm	1 piece
Technical description	1 piece

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**The UIS/UPS test kit is included with the CamBox supply kit.**

**HEUI test kit in developing.**

## Supply kit photo



## Warranty and technical support

The equipment has 1 year warranty. The manufacturer is not responsible for the damage due to violation of the operation terms, misuse including unskillful or mistaken personnel actions and if there are traces of mechanical impact. Post-warranty service of device is performed at cost components and the work. The manufacturer reserves the right to design modifications, equipment and the warranty period without advance notice.

## Shipping details

The device is packed into a bubble wrap and a carton box.