



# MSG MS012 COM Tester for Diagnostics of Alternator's Voltage Regulators User Manual

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**MSG MS012 COM Tester for Diagnostics of Alternator's Voltage Regulators**



## INTRODUCTION

Thank you for choosing the product by TM MSG equipment.

The present user manual consists of the information on the application, supply slip, design, specifications and rules of usage of tester MS012 COM.

Prior to using the tester MS012 COM (hereinafter, "the tester"), study the present user manual thoroughly. If required, get the special training at tester manufacturer facilities.

Due to the permanent improvements of the bench, the design, supply slip and software are subject to modifications that are not included to the present user manual. Pre-installed bench software is subject to update. In future, its support may be terminated without a prior notice.

**WARNING!** The actual user manual does not contain information on how to diagnose voltage regulators and alternators with the tester. Follow the link MS012 COM Operation Manual or scan the QR-code to find this information.

## PURPOSE

The tester is used for evaluation of the technical condition of 12/24V voltage regulators with a preset value of the rotor resistance and connection terminals «L/FR», «SIG», «RLO», «RVC», «C KOREA», «P-D», «COM» («LIN», «BSS»), «C JAPAN», by the following criteria:

- continuity of the control lamp circuit;
- performance of the channel for output voltage setup;
- performance of the feedback channel;
- stabilizing voltage and its correspondence to the set point;
- engine speed rate for activation of the voltage regulator;
- voltage regulator-maintained load.

### For COM voltage regulators:

- voltage regulator ID;
- operability of the voltage regulator diagnostic system;
- type of data exchange protocol;
- speed of data exchange.

The tester also helps to select the voltage regulator analog for any particular alternator.

## TECHNICAL CHARACTERISTICS

General		
Supply voltage, V		230*
Supply net frequency, Hz		50 or 60
Supply type		Single-phase
Power demand (max.), W		500
Dimensions (L×W×H), mm		265×260×92
Weight, kg		4.1
IP rate		IP20
Voltage regulator diagnostics		
Rated voltage of the diagnosed voltage regulators, V		12, 24
Resistance of the imitating rotor winding coil, Ohm	12V	from 1,8 up to 22
	24V	from 4,1 up to 22
Stator winding coil speed (engine speed imitation), rpm		from 0 up to 6000
Voltage regulator load imitation, %		from 0 up to 100
Measured parameters		– Stabilization voltage; – Rotor winding coil current; – Control lamp (D+). Additionally, for the digital voltage regulators (COM): – ID; – Protocol; – Data exchange speed; – Data exchange protocol type; – Voltage regulator self-diagnostics errors.
Diagnosed voltage regulator types	12V	«L/FR», «SIG», «RLO», «RVC», «C KOREA», «P-D», «COM (LIN, BSS)», «C JAPAN»
	24V	«L/FR», «COM (LIN)»

<b>Additional functions</b>	
Short circuit protection	Available
Short circuit signal tone	Available
Software update	Available

SUPPLY SLIP

The equipment supply slip includes:

Item name	Number of pcs
Tester MS012 COM	1
MS0111 – Set of diagnostic wires: 10 pcs/set	1
Supply cable	1
Safety fuse (type: 5x20mm; current: 2A)	1
User Manual (card with QR code)	1

TESTER DESCRIPTION

The front panel of the tester contains (Fig.1).



Figure 1 - Front view

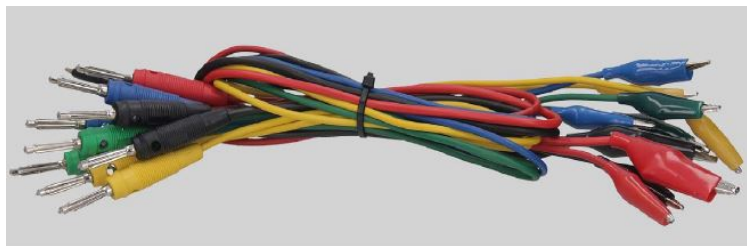
- LCD display:** a sensor screen where information on the voltage regulator is displayed and through which the tester is controlled.
- Adjustment knobs:** to set up parameters for voltage regulator diagnostics:
  - EL LOAD:** adjustment knob with two functions: 1) to set the required resistance of the simulated rotor in the main menu; 2) to change the load on the simulated alternator and on the tested voltage regulator respectively, in the range from 0 to 100%.
  - STATOR:** adjustment knob to change frequency of stator windings displayed as engine rpm in the range from 0 to 6000;
  - VOLTAGE:** adjustment knob to set the required voltage generated by the voltage regulator. Cannot be used with terminal mode L/FR.
- ON/OFF:** button to switch the tester ON/OFF.
- Terminals:** output terminals to connect the diagnostic cables:
  - B+:** voltage regulator plus (terminal 30 and terminal 15);
  - B-:** voltage regulator minus (earth, terminal 31);
  - D+:** control lamp terminal used for connection to the voltage regulator terminals: D+, L, IL, 61;

- **ST1, ST2:** output terminals of rotor windings of the simulated alternator to connect to the terminals of the voltage regulator stator: P, S, STA, Stator;
  - **GC:** output terminal to connect voltage regulator terminals: COM, SIG, and others;
  - **FR:** load control output terminal to connect to the voltage regulator terminals: FR, DFM, M;
  - **F1, F2:** rotor output terminals of the simulated alternator to connect to the voltage regulator brushes or their respective terminals: DF, F, FLD.
5. USB port: a socket to connect the tester to a computer or a laptop for the purpose of software update.
- The back panel of the tester contains (Fig.2) a terminal for connection of a supply cable 1 and a safety fuse 2.



**Figure 2 – Back view**

A set of 10 diagnostic cables is included in the tester set (Fig.3).



**Figure 3 - Set of diagnostic cables MS0111**

The color marking must be observed when connecting diagnostic cables to the tester terminals.

## **APPROPRIATE USE**

1. Use the tester as intended (see Section 1).
2. The tester is designed for indoor use. Be aware of the following operating constraints:
  1. The tester should be used in the spaces equipped at the temperature range from +10 °C up to +30 °C.
  2. Do not use the device when the air temperature is negative or the humidity is high (over 75%). Do not turn on the tester immediately after moving it from a cold room (or from outdoors) into a warm one as its components may be covered with a condensate. Keep it off at room temperature for at least 30 min.
  3. Avoid leaving the device in direct sunlight.
  4. Keep away from heating devices, microwaves, and other temperature-raising equipment.
  5. Avoid dropping the tester or spilling technical liquids on it.
  6. Any interference with the electric diagram of the device is strictly prohibited.
  7. Make sure the crocodile clips are completely insulated before connecting them to the voltage regulator terminals.

8. Avoid the crocodile clips short circuit between themselves.
9. Turn off the tester when it is not in operation.
3. In case of failures in the operation of the tester, stop further operation and contact the manufacturer or sales representative.

The manufacturer is not responsible for any damage from non-compliance with the requirements of this user manual.

### **Safety regulations**

1. The tester shall be operated by the persons who completed the special training on high-voltage battery safe operation and have the relevant electrical safety permit.
2. Turn off the tester for cleaning and in emergencies.
3. The work area must always be clean, with good light illumination, and spacious.

### **TESTER MAINTENANCE**

The TESTER is designed for a long operation life and doesn't have any special maintenance requirements. At the same time, to ensure the maximum operation life, the regular monitoring of the tester technical condition should be made as follows:

- conformity of the environmental conditions to the requirements for tester operation (temperature, humidity, etc.);
- diagnostic cable visual inspection;
- condition of the supply cable (visual inspection).

### **Software update**

The instruction for updating of the tester program is included in the file "Firmware Update". Download the file from the product detail page on [servicems.eu](http://servicems.eu).

### **Cleaning and care**

Use soft tissues or wipe cloths to clean the surface of the device with neutral detergents. Clean the display with a special fiber cloth and a cleaning spray for touch screens. To prevent corrosion, failure or damage to the tester, do not use any abrasives or solvents.

### **MAJOR FAULTS AND TROUBLESHOOTING**

The below chart contains the description of potential malfunctions and troubleshooting methods:

Failure symptom	Potential cause	Troubleshooting tips
1. Tester doesn't start.	Power supply failure.	Recover power supply.
	The power connector came loose.	Check the supply cable connection.
	Burnt safety fuse.	Replace the safety fuse (observe the specified rating).
2. Sound of short circuit alert (bleep) when the tester is switched on.	There is either a connector short circuit to the tester body or a short circuit between the connectors.	Disconnect the connectors.
3. The tested parameters are displayed incorrectly.	Loose connection.	Restore the connection.
	Damaged diagnostic cable(s).	Replace the diagnostic cable(s).
	Software error.	Contact the sales representative.

## EQUIPMENT DISPOSAL

European WEEE Directive 2002/96/EC (Waste Electrical and Electronic Equipment Directive) applies to tester disposal.

Obsolete electronic equipment and electric appliances including cables and hardware as well as batteries and accumulators must be disposed of separately from household wastes.

Use available waste collection systems to dispose of outdated equipment.

Proper disposal of old appliances prevents harm to the environment and personal health.

## Contacts

MSG equipment

HEADQUARTERS AND PRODUCTION 18 Biolohichna st.,  
61030 Kharkiv

Ukraine

+38 057 728 49 64

+38 063 745 19 68

E-mail: [sales@servicems.eu](mailto:sales@servicems.eu)

Website: [servicems.eu](http://servicems.eu)

REPRESENTATIVE OFFICE IN POLAND STS Sp. z o.o.

ul. Modlińska, 209,

Warszawa 03-120

+48 833 13 19 70

+48 886 89 30 56

E-mail: [sales@servicems.eu](mailto:sales@servicems.eu)


Website: [msgequipment.pl](http://msgequipment.pl)

TECHNICAL SUPPORT

+38 067 434 42 94

E-mail: [support@servicems.eu](mailto:support@servicems.eu)

## Documents / Resources

 <p>MSG MS012 COM TESTER FOR DIAGNOSTICS OF ALTERNATOR'S VOLTAGE REGULATORS INSTRUCTIONS TESTER DO DIAGNOSTYKI REGULATORÓW NAPIĘCIA ALTERNATORÓW INSTRUKCJA OBSŁUGI TESTER DLA DIAGNOSTYKI REGULATORÓW NAPIĘCIA ПРОВЕРКАТОР ДЛЯ ДИAGНОСТИКИ</p>	<p><a href="#">MSG MS012 COM Tester for Diagnostics of Alternator's Voltage Regulators</a> [pdf] User Manual</p> <p>MS012 COM Tester for Diagnostics of Alternator s Voltage Regulators, MS012 COM, Tester for Diagnostics of Alternator s Voltage Regulators, Tester, Diagnostics of Alternator s Voltage Regulators, Alternator s Voltage Regulators, Voltage Regulators, Regulators</p>
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References

- [MSG Equipment - wyposażenie warsztatów TM MSG equipment. - msgequipment.pl](#)