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IME-5500

MULTIFUNCTIONAL CONVERTER

Ver.1.0 Jan. 2024

Operation manual

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This Operation Manual includes the Multi-Functional Converter, type IME-5500, specifications, and instructions on how to connect, use, and troubleshoot. Storage information are also included.

DESCRIPTION OF THE CONVERTER

1.1 PURPOSE

IME-5500 is designed to receive, multiplex, convert and multiply NMEA 0183 standard messages transmitted via RS-422 / RS-485 interfaces, Ethernet and USB with customized operation algorithm (= scheme).

1.2 TECHNICAL SPECIFICATIONS

Table 1.2

Parameter	Value
Electrical specifications	
Input voltage, VDC	9,5 to 36,0
Max. power consumption, W	7
Galvanic isolation of supply mains	yes
Protection against reverse polarity connection	yes
Overvoltage protection	yes
Connectors	
Quantity and type of input connectors, pcs.	2 x RS-422
Quantity and type of combined (input and output) connectors, pcs.	4 x RS-485, 1 x Ethernet, 1 x USB
Supported protocols and standards	IEC 61162-1 (version 5, 2016), IEC 61162-2 (version 1, 1998), IEC 61162-450 (version 2, 2018), NMEA-0183 (version 4.11, 2018-11)
Max. baud rate, bit/s	115200
General specifications	
Weight, kg	0.46
IP code	IP22
Operating temperature, °C	−15 to +55

1.3 STRUCTURE AND OPERATION

Figure 1 shows the exterior of the Converter and data connectors and terminals; for outline and installation dimensions, see appendix A. Table 2 describes the converter's terminals and connectors.

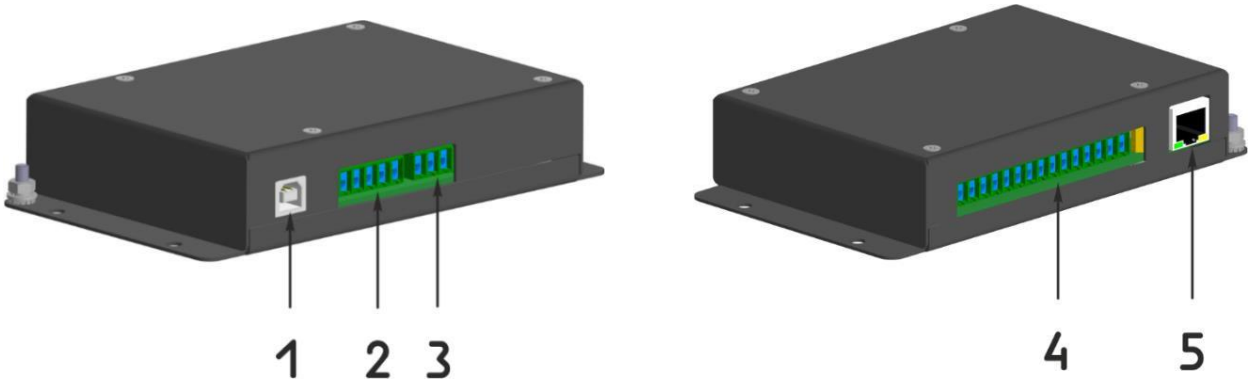


Figure 1 – The exterior of the Converter

Table 2 – Connectors and terminals

Designation	Name
1	USB connector Type B
2	Terminals for RS-422 input connectors; data = A & B ; CHS = cable shield
3	Power supply terminal 9-36V = positive (+) ; A=negative (-) ; CHS = cable shield
4	Terminals of RS-485 combined connectors; data = A & B ; CHS = cable shield
5	Ethernet connector RJ45

The converter receives data from several sources and transmits processed data to the assigned outputs. Configuration of the converter is performed via the MFC Studio software. For more detailed description of the Converter's configuration and operation, read the Configuration manual.

IME-5500 can operate in various modes, including the following:

- Multiport: 1 to 6 inputs Serial over Ethernet interface
- Multiplier & ETH : 2 inputs → 4 outputs with input priority encoding & Ethernet
- Multiplexer → ETH : 1 to 6 inputs to Ethernet
- Custom converter: baud rate, filter, frequency converter, with Ethernet
- Multifunctional converter: combination of above

2 SAFETY FEATURES

2.1 OPERATIONAL LIMITATIONS

The Converter is intended for application in dry indoor environment; select a place to install the Converter considering IP rating and operating temperature specified in table 1.

Attention! Distance between the installation site and magnetic compass shall not be less than 1 m

Only those who have read and understood this manual shall proceed with the installation and operation of the converter.

Only those who have read and understood this document and those who have had special training shall proceed with servicing the converter, according to the applicable regulations.

2.2 SAFETY FEATURES

After unpacking, inspect the Converter and make sure that it does not have any mechanical damage.

Ground the Converter before connection to a power supply.

External power supply shall comply with the requirements specified in table 1.

Replacing damaged parts of the converter is **prohibited** if the converter is connected to a power supply.

3 POTENTIAL MALFUNCTIONS

To provide diagnostics of the converter's malfunctions, use information in table 3. If you cannot detect a malfunction, contact the Manufacturer's service center.

Table 3 – The list of potential malfunctions and troubleshooting

Malfunction	Potential reasons	To be done
The Converter does not switch on	Power cable is not connected	Connect the cable
	No supply mains	Provide power supply
	Fuse is blown	Replace the fuse
	Input data source is not connected	Connect the data source

No output data	Operation scheme was not uploaded, or it is not correct	Connect the Converter to a PC and upload correct operation scheme to the Converter

4 STORAGE

The Converter shall be stored in the original packaging in enclosed areas complying with the required storage conditions (+5 to +40 °C).

After storage or transportation of the Converter below +10 °C, it shall be unpacked only in heated areas and left in normal climate conditions for 12 hours.

5 WARRANTY

The Manufacturer shall be liable for the warranty obligations if the Converter was used correctly according to this manual. The Manufacturer will not consider damage claims if the operating conditions have been violated.

APPENDIX A

OUTLINE AND INSTALLATION DIMENSIONS

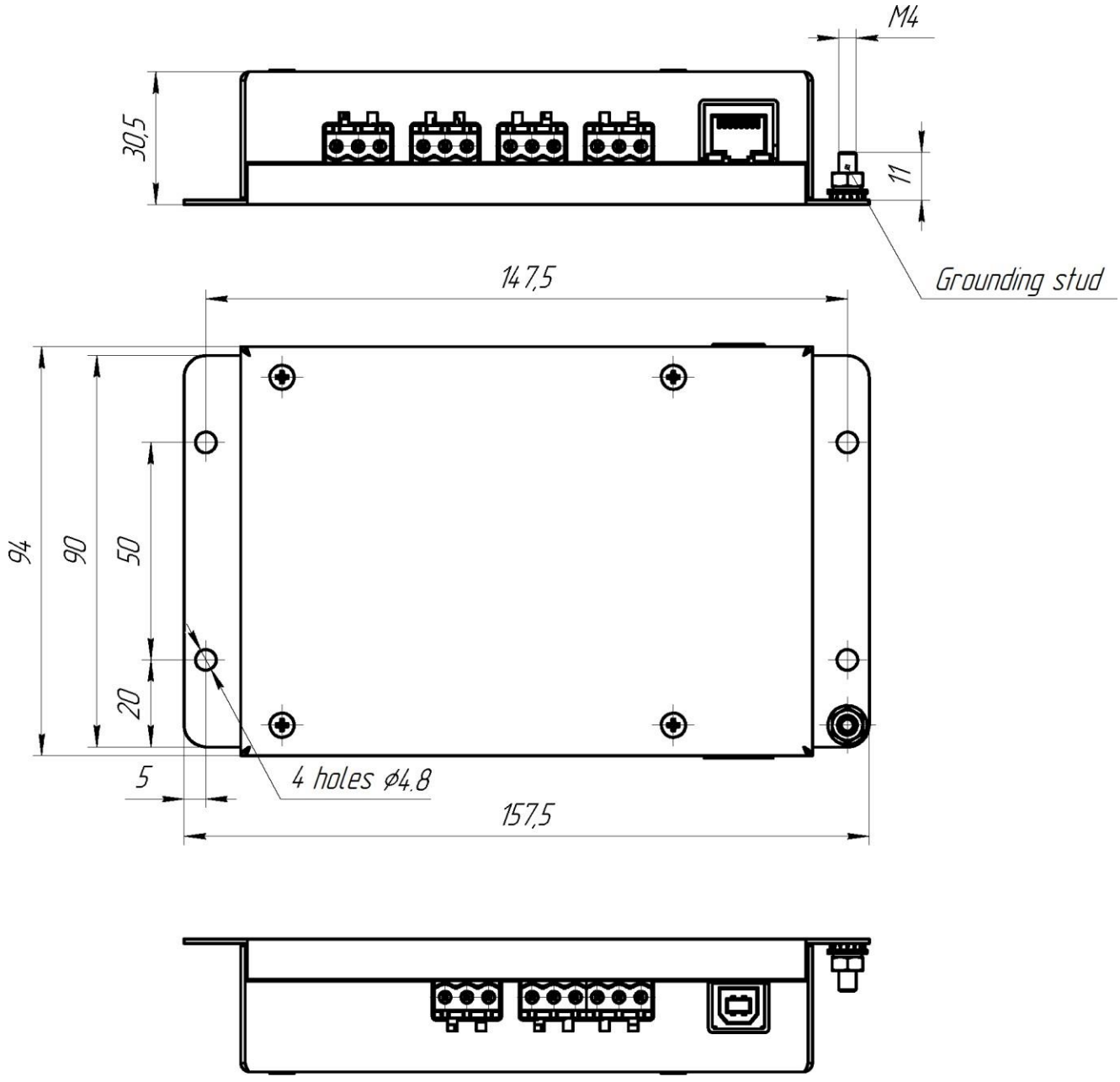


Figure A.1 – Outline and installation dimensions of the Converter

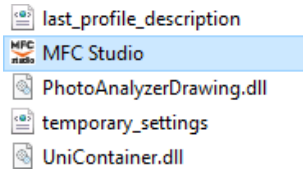
APPENDIX B

Quick Configuration Guide

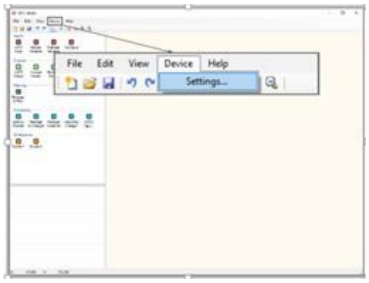
Multi Functional Converter

MFC-151

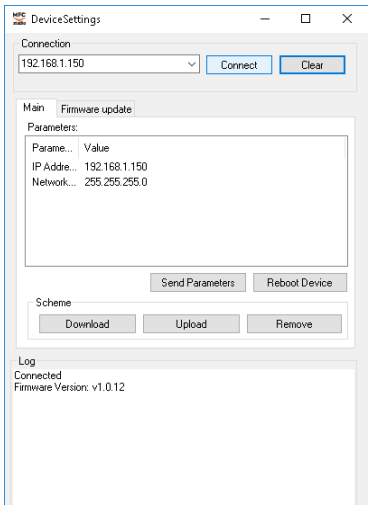
1. Connect power (24VDC nominal) to MFC-151
2. Connect MFC-151 to a WinOS PC via Ethernet
3. Run MFC Studio (no installation required)



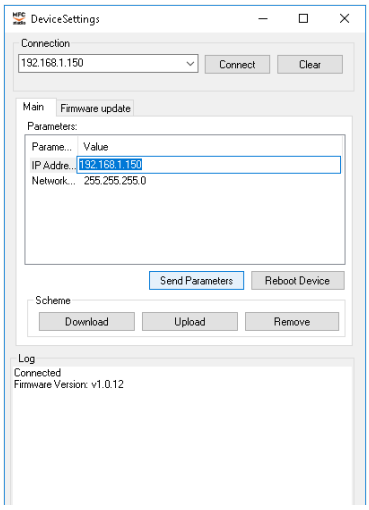
4. Select the "Device" section from the toolbar and click the "Settings" tab.



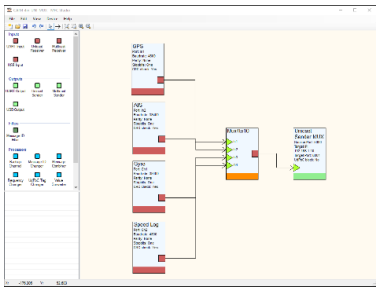
5. In the "Connection" drop down box, find or enter the IP address of the MFC-151 and click connect. Default IP is 192.168.1.150.



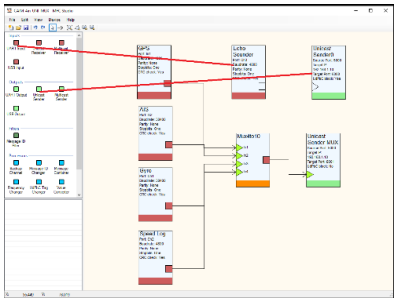
IP can be changed as required (Change IP, Send Parameters, Reboot Device).



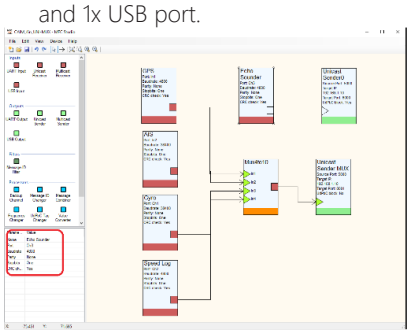
1. To download the converter existing configuration click the "Download" button.



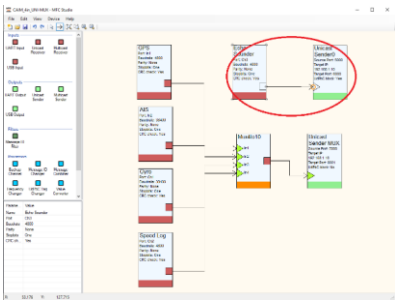
7. Use the "↖" pointer to drag and drop and delete inputs, outputs and other functional elements.



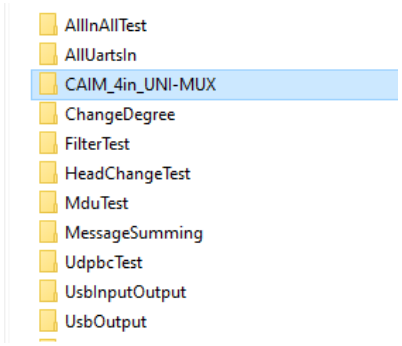
8. Change the parameters of each element as required (MFC-151 port number, baud rate, etc) MFC-151 includes 2x inputs, 4x I/Os, 1x Ethernet and 1x USB port.



9. Use the "→" connector to connect inputs, outputs an ıctional elements.

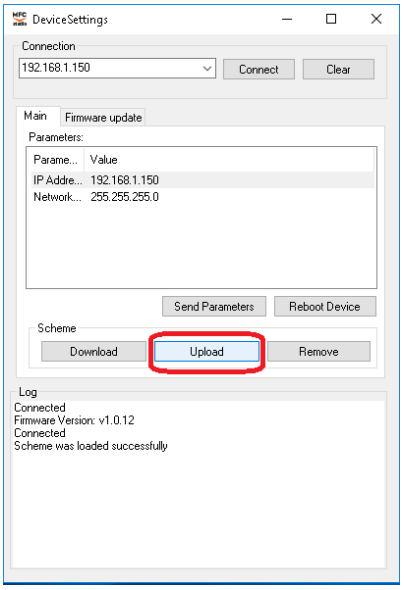


10. Save your configuration scheme at your local drive or external memory drive.



11. Repeat step#4 and step#5.

12. Click the "Upload" button to save your new configuration at the MFC-151



.Remove Power - Connect all required data input and output cables - Connect Power.