Receptor
User Manual

RECEPTOR

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INTRODUCTION

The **Receptor** is the main part of the TMS EMI Analyser system which is especially developed for EMI research on hybrid and electric (racing) vehicles.

The EMI Analyser software application is used to visualize the measurements and control the Receptor. **Please refer to the EMI Analyser Application User Manual for more detailed information on performing EMI measurements.**

The Receptor can be set to 3 different operational modes:

Analyse Mode
The Receptor works as a dedicated spectrum analyser and the analyser application shows magnitude versus frequency in real time from DC to 10 MHz
All measurements can be recorded in an EMI-file. A PNG-image can be exported and the Analyser application can replay the EMI-file. This mode is used in combination with handheld antennas to find EMI sources.

Scan Mode
The Receptor works as a logarithmic amplifier and the Analyser logs the magnitude versus time for 0.16 seconds after each trigger. The trigger is a user defined trigger level on the signal. All measurements are timestamped in UTC time and can be saved in an SCN-file. The SCN-file can be read back with the Analyser for post analysis purpose.
This mode is used in combination with a track loop antenna to get EMI signatures from different vehicles passing at over the loop.
When also connected to a MYLAPS X2 Server and with GPS locked it is possible to sync the scans with Timing Transponder passing's.
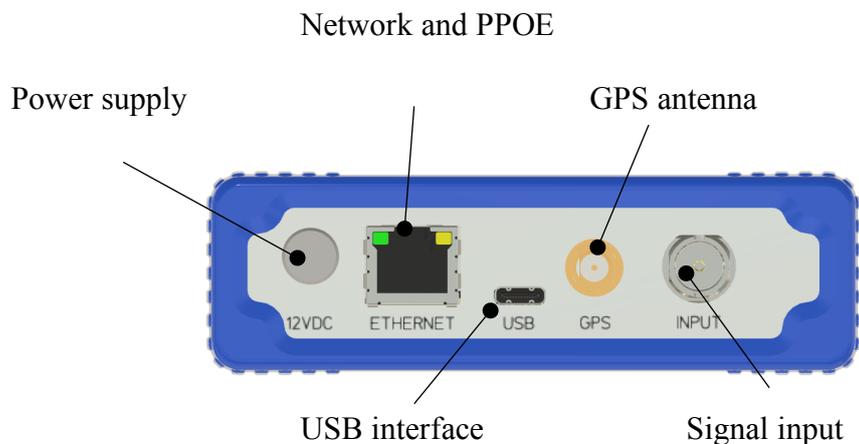
Rolling Peak Mode
The Receptor works as in Analyse mode except that it works with a peak hold of 0.02 seconds. This mode is used in combination with a loop antenna on the floor to get an EMI signature from a stationary/slow vehicle.

Installation

Connections

Network and PPOE

Power supply

GPS antenna

USB interface

Signal input

Power supply

A LEMO EGG-0B-302 type connector is used to power the Receptor with a 12 VDC power supply.

Operating voltage range	7 to 16VDC typical 12VDC
Power consumption	appr. 2.5W, 0.2A@12V

Network and PPOE

An RJ-45 network connector is used to power the Receptor with PPOE (Passive Power Over Ethernet) and make a network connection to it.

PPOE	12VDC, pins 4/5 (+) and 7/8 (−)
Network	Ethernet 10-100Mbit

USB interface

A USB-C connector is used to make a data connection to the Receptor and/or power the Receptor

Protocol	USB2.0

GPS antenna

A Female SMA connector is used to connect an active GPS antenna

Power out	3VDC, max 0.1A

Signal input

A BNC connector is used to make connection to different signal sources and antennas

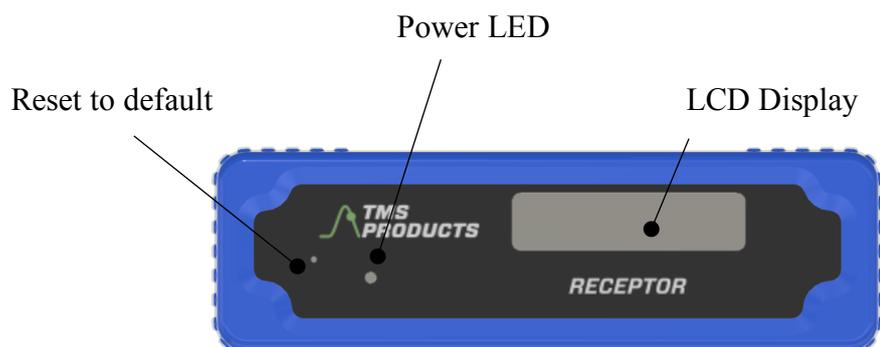|	
Frequency	0-10MHz
Input power	Typical -100dBm to -15dBm Absolute Maximum +10dBm
Impedance	75 Ω
Sample rate	48 MSPS

⚠️ *Signal levels exceeding the absolute maximum ratings will cause irreversible damage to the Receptor and will void the warranty.*

Power LED

Reset to default

LCD Display

Reset to default

Use a small pin type device to push and hold the reset to defaults button for a few seconds in order to switch the Receptor to its factory default settings.

Default IP Address	192.168.11.1

Power LED

When power is applied through one of the three power supply options (DC, USB, PPOE) the Power LED will light up green immediately.

LCD Display

The LCD Display will show information after the Receptor has gone through the start-up sequence which may take up to 20 seconds.

De display will show:
- IP address
- Mode
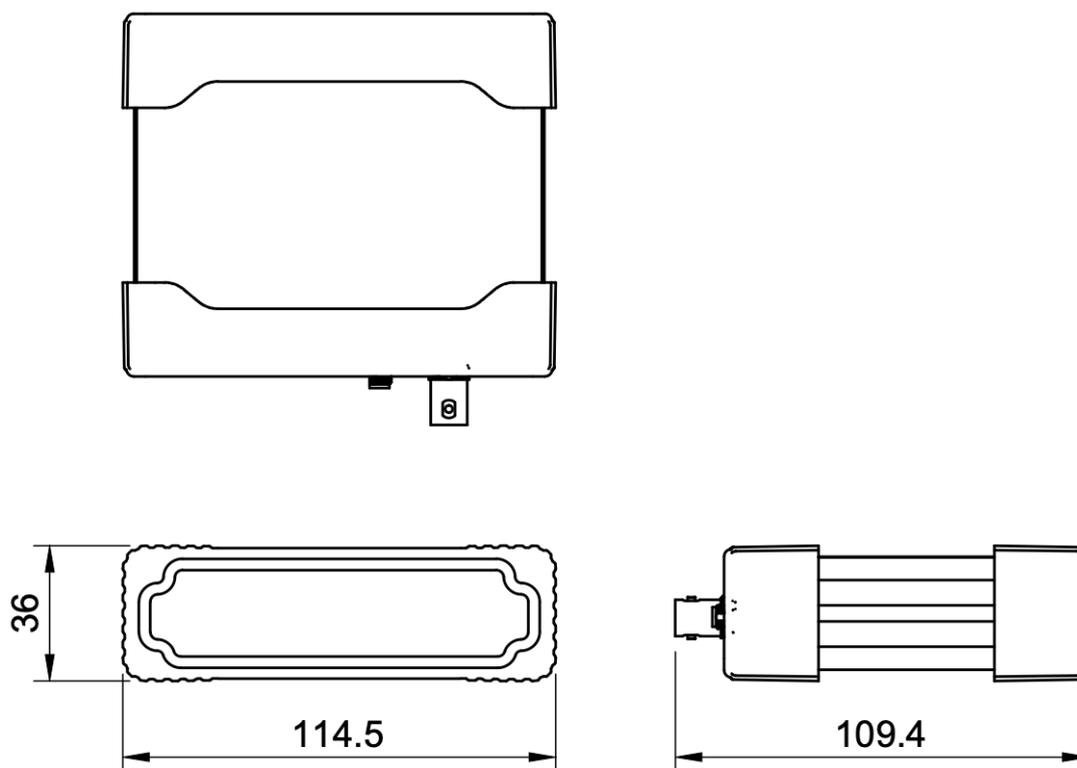- Blinking icon indicating that the Receptor is active

Network Settings

To configure the network settings go to the web interface of the Receptor by typing the IP-address (default 192.168.11.1) in a web browser. Click 'Apply' after changing the Network settings to activate the new settings.
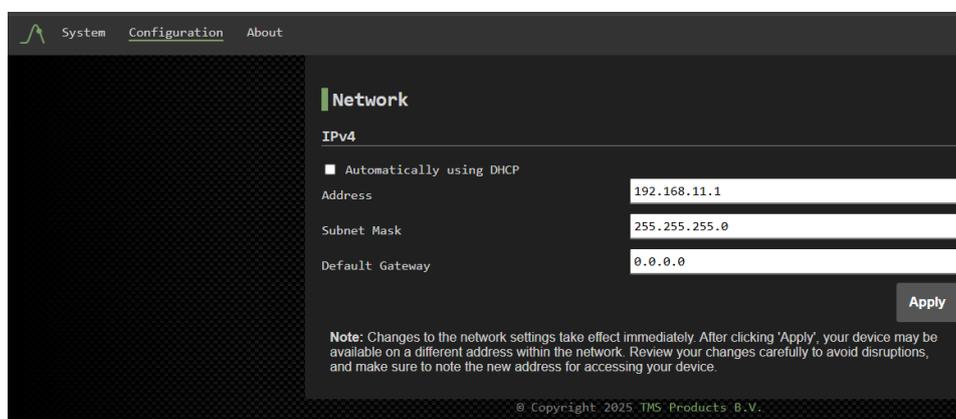
Mechanical Specification

Dimensions are in mm

Dimensions	109.4 x 114.5 x 36mm
Weight	appr. 0.2kg
Operating temperature range	10 to 70°C
Ingress Protection	IP52
Humidity range	10% to 75% relative, non-condensing

Absolute maximum ratings

Power Supply voltage	24VDC
Input power	+15dBm
Operating temperature	80°C
Humidity	85% relative

⚠️ *Exceeding the absolute maximum ratings will cause irreversible damage to the Receptor and will void the warranty.*

Annual calibration & test

As this is an accurate and sensitive measuring product a yearly product check and calibration is needed. The specifications of the Receptor cannot be guaranteed without the annual calibration and test.

Handling Precautions

- Since the display window is made of glass, avoid mechanical impacts such as dropping from a high position
- If pressure is applied to the display window surface it may be damaged

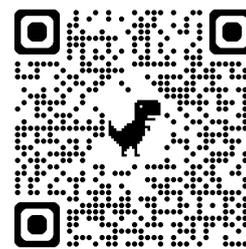⚠️ *Failure to observe the above precautions may void the warranty.*

Disclaimer

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We make every effort to provide correct and up-to-date information about our products however, no liability is accepted for incomplete or incorrect information in this manual.

This product is designed, among other things, to improve safety and performance in motorsport. However, it is only an aid to the user which, when everything is fully functional, may make the situation on a track safer. However, the user remains responsible for his own safety at all times and cannot claim any liability in case of malfunction of the product or the products linked to it.

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