INSTRUCTION MANUAL

PowerBox Systems®
Industrial


# ENGINE MANAGER PRO

## PRODUCT DESCRIPTION

The **Engine Manager Pro** handles all tasks related to controlling and monitoring a petrol engine. Its primary functions include switching and power supply for up to two ignitions. The ignition can be supplied with **up to 35V**, while the output can be set to 6.0 V, 8.0 V or 12.0 V. A double LC filter and overvoltage protection completely decouple the ignition supply from the rest of the on-board electronics.

In addition, three servo outputs are available, which are controlled via the **CAN bus input** and/or the RC bus input. These can be used to control the throttle, choke flap and starter motor, for example. The **CAN bus** and RC bus are linked in such a way that if one system fails, the other automatically takes over control.

The telemetry data available includes speed, 4x temperature, voltage and current of the ignition input. A flow sensor can be connected via the **P²-BUS input** as an option, which can also be used to measure the remaining tank content.

All telemetry data is available via **DroneCAN** and the RC protocols P²-BUS, EX-BUS and S.BUS2.

Parameterisation can also be carried out via **DroneCAN**, the aforementioned RC protocols or the **Mobile Terminal** (Order No. 9025). The **Mobile Terminal** can also be used to perform updates, save settings and transfer them to other devices.

## FEATURES

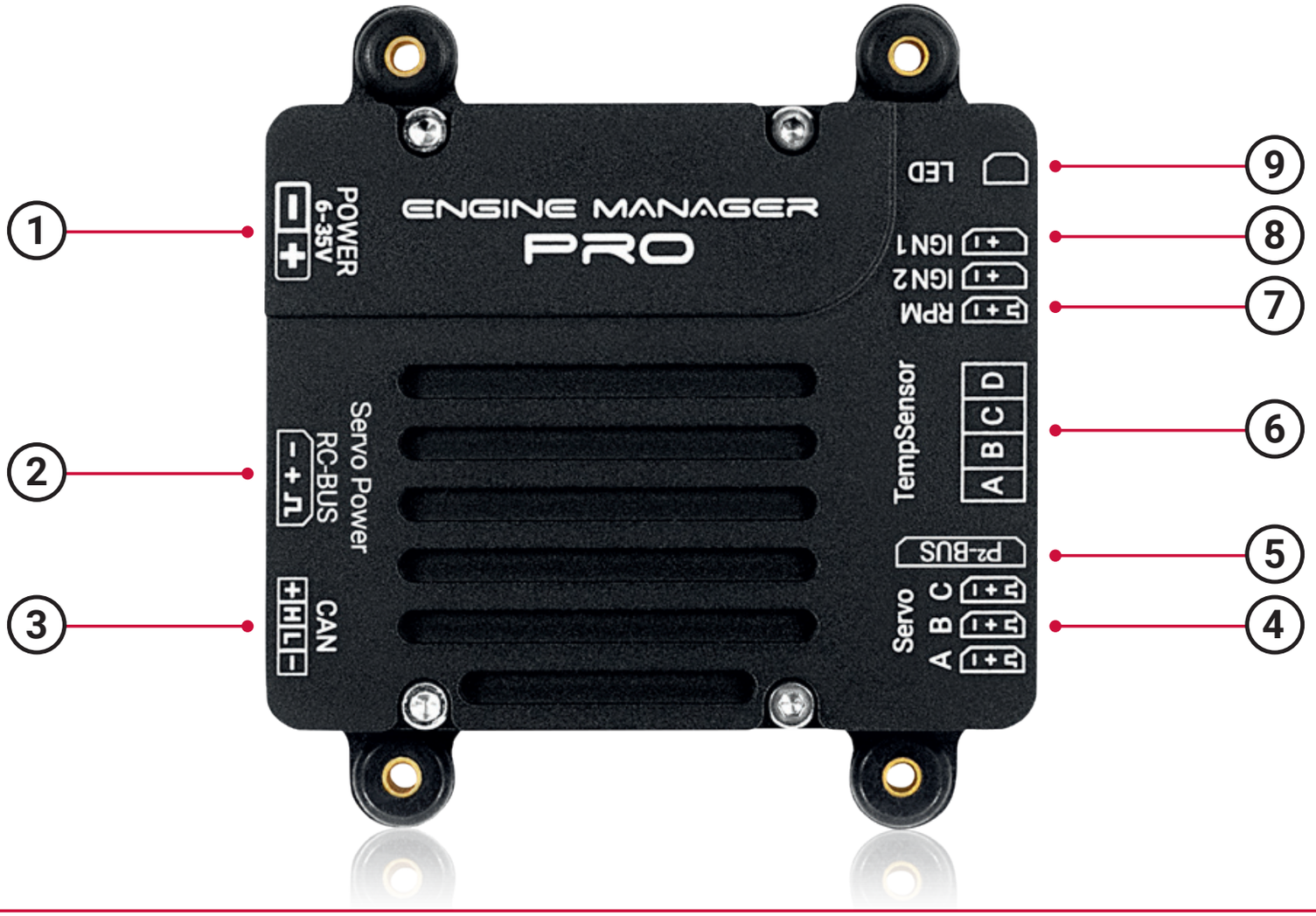
+ Control for two ignitions
+ Input voltage up to 35 V
+ Output voltage selectable between 6.0 V / 8.0 V / 12.0 V
+ Effectively suppresses interference from the ignition
+ Control via DroneCan and/or P²-BUS / EX-BUS / S.BUS
+ DroneCan/RC bus operate as redundant signal sources
+ 3 servo outputs for throttle/choke and starter motor
+ Telemetry for DroneCan and P²-BUS / EX-BUS / S.BUS2
+ 4x temperature, speed, current/voltage
+ P²-BUS connection for additional external sensors
+ Updateable with the Mobile Terminal

## 1. INSTALLATION

Ideally, attach the **Engine Manager Pro** to a sturdy wooden board using the 4 screws provided. When installing in GRP hulls, wooden supports should also be glued in place to ensure that the **Engine Manager Pro** is securely positioned. Due to its low weight, the **Engine Manager Pro** can also be attached to flat, smooth surfaces using double-sided adhesive tape.

## 2. CONNECTING

The connections on the **Engine Manager Pro** are clearly labeled. A detailed explanation of the connections is provided below:



## ① Power

This is where you connect your power supply for the ignition. Suitable batteries or generator-generated power sources from 6V to 35V can be used as the voltage source. The internal DC/DC converter regulates the incoming voltage down to the set output voltage (6V / 8V / 12V). A double RC filter in the **Engine Manager Pro** keeps all interference from the ignition away from the power input. This connection can therefore also be supplied directly from the on-board power supply.

## ② Servo Power / Bus

This is where the power supply for the 3 servo outputs A / B / C is connected. The 2-wire JR/JR patch lead is connected to the power supply for all other servos in the aircraft.

If the **Engine Manager Pro** is to be controlled additionally or exclusively with an RC-BUS (P²-BUS/EX-BUS/S.BUS), connect this connection to the respective bus output from your receiver or flight control system.

## ③ CAN

Connect the flight control CAN bus here. The CAN bus is set up as described in the Quick Guide and is plug-and-play with DroneCAN. Contact us for further protocols.

## ④ Servo A / B / C

These PWM outputs can be used, for example, for the throttle, choke servo, and starter. The channels to be output are set via the CAN-BUS menu or via the menu of your RC system (P²-BUS and Jeti only). Please note that the servos must be powered via the separate servo power/BUS input.

### ⑤ P²-BUS

The **Engine Manager Pro** functions as a P²-BUS master here, and a fuel flow sensor from Smoke-EL can be connected to it. The **Engine Manager Pro** takes this data and forwards it to the CAN bus and the connected RC bus.

### ⑥ TempSensor

Up to 4 temperature sensors can be connected here. The temperature sensors are available in various versions from PowerBox-Systems.

### ⑦ RPM

The RPM input can be connected directly to ignitions with speedometer output. The input has a very high impedance, so that the speed can also be tapped directly from the magnetic sensor. With DC motors, it is also possible to tap the induction sensor without any problems. Use a Y-harness for this purpose.

### ⑧ IGN1 / IGN2

These connections supply one or two ignitions with power. The output voltage is regulated and can be set in the CAN or RC menu. Please refer to the data sheet for your ignition to determine which output voltage is suitable for your ignition.

### ⑨ LED

The LED indicates the ignition switch status and should be clearly visible to the engine operator.

## 3. INSTALLATION POSITION

Place the **Engine Manager Pro** close to the ignition and under no circumstances near the flight control system or the receiver. The cable length to the ignition should be as short as possible.
The cable to the flight control system or receiver, on the other hand, can be any length.

## 4. POWER SUPPLY FOR THE IGNITION

Both batteries and the on-board power supply can be connected. Ensure sufficient capacity. The input voltage should be higher than the desired output voltage. The output voltage has a dropout loss of approx. 0.8V.
The ignition battery can remain permanently connected to the **Engine Manager Pro**. A very low current consumption (1 µA) when switched off prevents the battery from discharging, even over months.

## 5. SPEED DIVIDER / MULTIPLIER

Depending on the type of speed sensor, it is necessary to set a divider or multiplier for the speed. The multiplier can be set in the CAN bus menu or in the RC system.

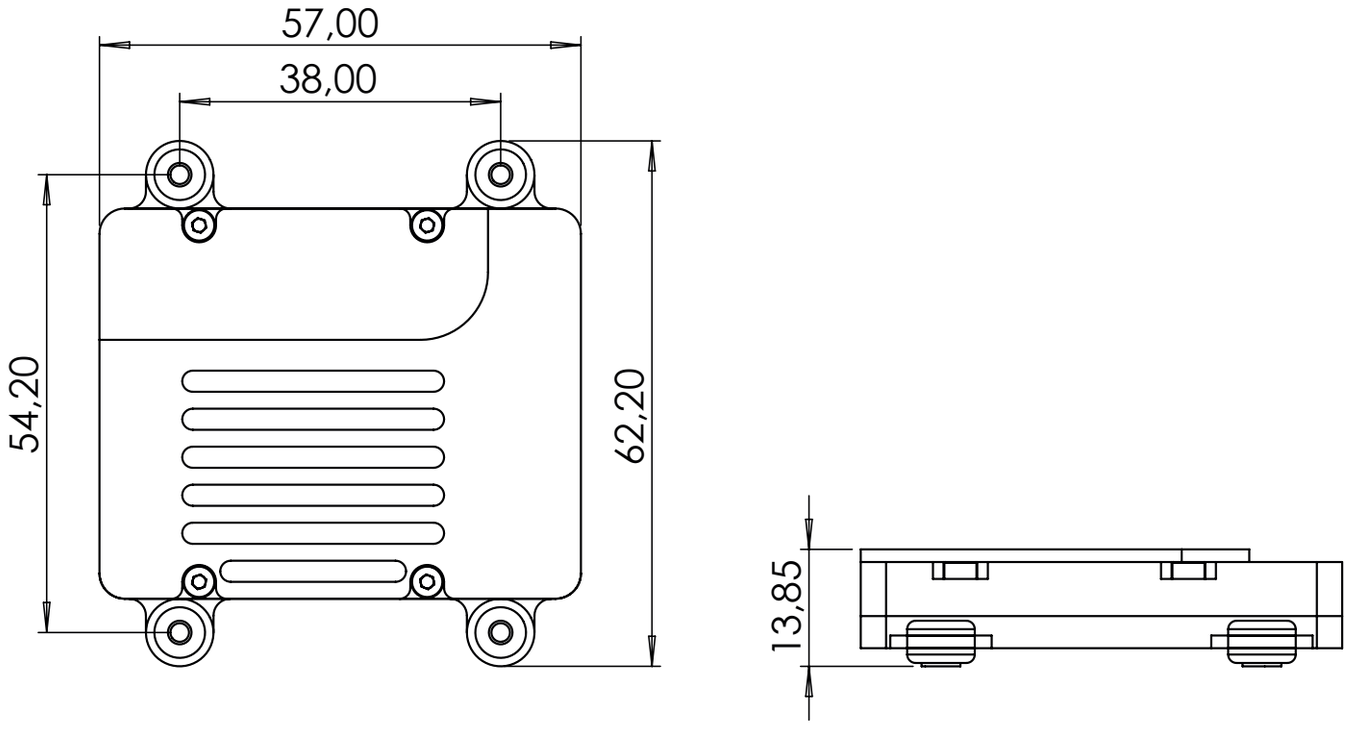
## 6. SPECIFICATION

| | |
|---|---|
| Operating voltage | 6.0 to 35.0 V |
| Current drain Power-on state | 25 mA |
| Ignition standby consumption | 0.1 µA |
| Ignition max. current | max. 2.5 A |
| Output voltage | 6.0 V / 8.0 V / 12.0 V |
| Signal input | DroneCan, P²-BUS, EX-BUS, S.BUS2 |
| Telemetry systems | DroneCan, P²-BUS, EX-BUS, S.BUS2 |
| Telemetry data | Speed, 4x temperature, voltage, current, optional low rate |
| Temperature measuring range | 0 – 250 °C |
| Speed measuring range | 100 – 12000 U/min |
| Parameter settings | CAN-Bus, RC-Bus or Mobile Terminal |
| Dimensions | 57 x 62 x 12 mm |
| Weight | 40 g |
| Temperature range | -40 °C to +105 °C |

## 7. SET CONTENTS

- 1x **Engine Manager Pro**
- 4x Fixing screws
- 4x Rubber grommets
- 4x Brass sleeves
- 1x JR/JR Patch Lead
- 1x LED
- Operating instructions in English and German

## 8. DIMENSIONS




## 9. SERVICE NOTE

For technical questions you can contact us here:
**industrialsupport@powerbox-systems.com**

**SERVICE ADDRESS**

**PowerBox-Systems GmbH**
Dr.-Friedrich-Drechsler-Str. 35
86609 Donauwörth
Germany

## 10. EU DECLARATION OF CONFORMITY

This device complies with the essential requirements and other relevant provisions of Directives 2011/65/EU + 2015/863/EU (RoHS) and 2014/30/EU (EMC). The EU Declaration of Conformity for the **Engine Manager Pro** can be found under the following link:

**www.powerbox-systems.com/en/content/certificates**

## 11. GUARANTEE CONDITIONS

At **PowerBox-Systems** we insist on the highest possible quality standards in the development and manufacture of our products. They are guaranteed **“Made in Germany”**!

That is why we are able to grant a **24 month guarantee** on our **PowerBox Engine Manager Pro** from the initial date of purchase. The guarantee covers proven material faults, which will be corrected by us at no charge to you. As a precautionary measure, we are obliged to point out that we reserve the right to replace the unit if we deem the repair to be economically unviable. Repairs which our Service department carries out for you do not extend the original guarantee period.

The guarantee does not cover damage caused by incorrect usage, e.g. reverse polarity, excessive vibration, excessive voltage, damp, fuel, and short-circuits. The same applies to defects due to severe wear. We accept no liability for transit damage or loss of your shipment. If you wish to make a claim under guarantee, please send the device to our service address, together with proof of purchase and a description of the defect.

# 12. SAFETY INFORMATION FOR THE INTENDED USE OF THE POWERBOX ENGINE MANAGER PRO

## a) Intended use

- The **PowerBox Engine Manager Pro** is intended exclusively for use in remote-controlled aircraft applications – in particular for remote-controlled ignition switching of combustion engines in conjunction with PowerBox systems.
- The device is not intended for use in manned aviation or medical applications.
- It may only be used by competent persons who are familiar with the handling of ignition systems.

## b) General safety instructions

- Before commissioning, read and observe the complete operating instructions carefully.
- Only connect and install the device when the system is switched off.
- Protect the device from moisture, rain, wet conditions and excessive heat.
- Keep away from open flames, sparks, petrol vapours and hot surfaces (> 60 °C).
- Do not open, modify or dismantle the device – this will invalidate the warranty and may lead to malfunctions.

## c) Installation

- Install the device in the aircraft so that it is mechanically tension-free and subject to minimal vibration.
- Lay the cables carefully to avoid chafing, kinking or tensile stress.
- Select the installation location so that there is no electromagnetic interference from the ignition, regulator or high-current lines.
- Route ignition cables separately from receiver and servo cables to minimise interference.
- Ensure adequate ventilation, especially in confined installation spaces.

## d) Operation

- Before each flight, check that the **Engine Manager Pro** and the connected ignition are functioning correctly.
- Only use within the specified operating conditions (voltage, temperature, current carrying capacity).
- Never open or repair the device yourself.
- The switching status (on/off) must be clearly checked before take-off.
- Only perform firmware updates via the designated PowerBox interfaces.
- Only activate the ignition voltage after a successful function check.

## e) Approval information

- This device complies with the requirements of Directives 2011/65/EU + 2015/863/EU (RoHS) and 2014/30/EU (EMC).
- When operating in other countries, the country-specific regulations and approvals must be observed.

## f) Transport & storage

- Protect the device from vibration, moisture and contamination during transport.
- Secure plug connections and cables against damage.
- Store in a cool, dry and dust-free place.
- Avoid extreme temperatures (below –40 °C or above +105 °C).

## g) Disposal

- This product must not be disposed of with household waste.
- Take it to an appropriate collection point for proper disposal (in accordance with the WEEE Directive).

## 13. LIABILITY EXCLUSION

We are not in a position to ensure that you observe our instructions regarding installation of the **PowerBox Engine Manager Pro**, fulfil the recommended conditions when using the unit, or maintain the entire radio control system competently.

For this reason we deny liability for loss, damage or costs which arise due to the use or operation of the **PowerBox Engine Manager Pro**, or which are connected with such use in any way. Regardless of the legal arguments employed, our obligation to pay compensation is limited to the invoice total of our products which were involved in the event, insofar as this is deemed legally permissible.

We wish you every success with your new **PowerBox Engine Manager Pro**.

Donauwörth, February 2026

02/2026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