



**Description**

EngineBox is an NMEA 2000® gateway suited for motor boat refitting. EngineBox is able to convert various signals into NMEA 2000 strings so that all data is shared with all devices (gauges, display, etc.) in the NMEA 2000 network. Converted signals are: analog engine RPM, analog 4-20 mA, 0-5 V, 0-400 Ω and SAE J1939 signals. The single engine version can manage: one engine with output in frequency, one engine with SAE J1939 output and eight analog inputs. The dual engine version can manage: two engines with output in frequency, two engines with SAE J1939 output and 14 analog inputs. Designed according to international standards, it is suited for installation in an engine room, in coincidental presence of gas and high pressure liquids at high temperatures and flammable. It manages various sensors, both VDO and third party that can be set and calibrated via the VDO Marine Configuration Tool.

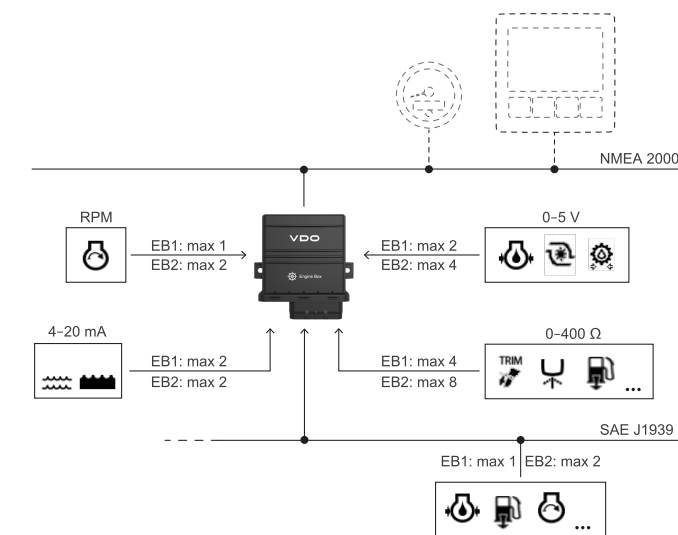
**Box contents**

- EngineBox
- Cable with MW 100 32 pin connector and lock device
- Installation Kit A2C1470220001
- These instructions with safety instructions

**Inputs**

EB1	EB2
<ul style="list-style-type: none"> <li>• 4 analog inputs 0-400 Ω</li> <li>• 2 analog inputs 0-5 V</li> <li>• 2 analog inputs 4-20 mA</li> <li>• 1 frequency input 0-4 kHz</li> <li>• 1 SAE J1939 input</li> <li>• 1 NMEA 2000</li> </ul>	<ul style="list-style-type: none"> <li>• 8 analog inputs 0-400 Ω</li> <li>• 4 analog inputs 0-5 V</li> <li>• 2 analog inputs 4-20 mA</li> <li>• 2 frequency inputs 0-4 kHz</li> <li>• 2 SAE J1939 input</li> <li>• 1 NMEA 2000</li> </ul>

**Architecture**



**Accessories**

Part number	Description
A2C96243700	NMEA2000 cable 0.5 m
A2C96243800	NMEA2000 cable 2 m
A2C96244000	NMEA2000 cable 6 m
A2C39312700	NMEA 2000 T splitter
A2C39312500	NMEA 2000 inline terminal

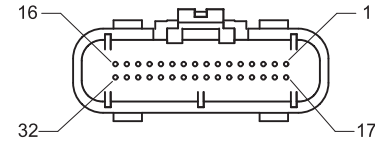
**Before assembly**

**NOTICE:** short circuit. Cable burning, battery explosion. Remove the ignition key and detach the battery negative pole terminal. Refer to the safety instructions on the back of this sheet.  
**NOTICE:** place the device at least 50 cm away from any magnetic compass.

**Assembly**

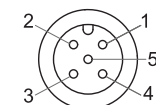
1. Place the device on the wall with the connector and LED facing down.
2. Secure the device with the two supplied screws.
3. Wire all sensors.
4. Insert the connector and lock it with the specific device.
5. Set and calibrate sensors using the VDO Marine Configuration Tool.

**Micro-pack MW100 connector pinout (female, cable side)**



Pin	EB1		EB2		Range
	Function	Color	Function	Color	
1	Power Supply GND	Black	Power supply GND	Black	-
2	Power Supply GND	Black	Power supply GND	Black	-
3	-	-	Engine 2 frequency	White/Black	0-4 kHz
4	Engine frequency GND	Green/White	Engine 1 frequency GND	Green/White	-
5	NMEA 2000: CAN_L	Blue	NMEA 2000: CAN_L	Blue	-
6	NMEA 2000: CAN_H	White	NMEA 2000: CAN_H	White	-
7	NMEA 2000: SHIELD	-	NMEA 2000: SHIELD	-	-
8	Engine resistive sensor	Blue	Engine 1 resistive sensor	Blue	0-400 Ω
9	Engine resistive sensor	Pink	Engine 1 resistive sensor	Pink	0-400 Ω
10	Engine resistive sensor	Orange	Engine 1 resistive sensor	Orange	0-400 Ω
11	Engine resistive sensor	Violet	Engine 1 resistive sensor	Violet	0-400 Ω
12	Engine pressure sensor	Gray	Engine 1 pressure sensor	Gray	0-5 V
13	-	-	Engine 2 pressure sensor	Turquoise	0-5 V
14	Engine capacitive sensor	Brown/White	Engine 2 capacitive sensor	Brown/White	4-20 mA
15	-	-	Engine 2 J1939:CAN_L	Fuchsia/white	-
16	J1939:CAN_L	Light Blue/White	Engine 1 J1939:CAN_L	Light Blue/White	-
17	Power Supply 12/24 V dc	Red	Power supply 12/24 V dc	Red	8-32 V dc
18	Ignition	Yellow	Ignition	Yellow	12/24 V dc
19	-	-	Engine 2 frequency GND	White	-
20	Engine Frequency	Green	Engine 1 frequency	Green	0-4 kHz
21	NMEA 2000: GND	Black	NMEA 2000: GND	Black	-
22	NMEA 2000: Power	Red	NMEA 2000: Power	Red	12 V dc
23	-	-	Engine 2 resistive sensor	Blue/White	0-400 Ω
24	-	-	Engine 2 resistive sensor	Pink/White	0-400 Ω
25	-	-	Engine 2 resistive sensor	Orange/White	0-400 Ω
26	-	-	Engine 2 resistive sensor	Violet/White	0-400 Ω
27	0-5 V	Gray/White	Engine 1 pressure sensor	Gray/White	0-5 V
28	-	-	Engine 2 pressure sensor	Turquoise/White	0-5 V
29	-	-	-	Red/White	-
30	Engine capacitive sensor	Brown	Engine 1 capacitive sensor	Brown	4-20 mA
31	-	-	Engine 2 J1939:CAN_H	Fuchsia	-
32	J1939:CAN_H	Light Blue	Engine 1 J1939:CAN_H	Light Blue	-

**M12 NMEA 2000 connector pinout (male, cable side)**



Pin	Function	Color
1	Shield	-
2	Signal NET-S	Red
3	Power NET-C	Black
4	Signal NET-H	White
5	Signal NET-L	Blue

**Used sensors**

Input type	Input type	Max inputs for EB2	Sensor	Range
0-400 Ω (*)	4	8	Trim	167-10 Ω
			Engine coolant pressure	0-400 Ω
			Engine oil pressure	240-33 Ω
				0-400 Ω
				10-184 Ω
				240-33,5 Ω
			Engine oil temperature	0-400 Ω
			Transmission oil pressure	0-400 Ω
				10-184 Ω
				240-33,5 Ω
Transmission oil temperature	0-400 Ω			
Fresh water level	0-400 Ω			
Rudder angle	0-400 Ω			
	0-180 Ω			
	0-90 Ω			
Fuel level	0-400 Ω			
	240-33,5 Ω			
0-5 V (*)	2	4	Pressure 365-100-010-121C	10 bar
			Pressure 365-100-016-121C	16 bar
			Pressure 365-100-030-121C	30 bar
4-20 mA (*)	2	2	Fresh water level	4-20 mA
			Waste water level	4-20 mA
0-4 kHz	1	2	Engine rpm	Based on the pulse per rpm factor. Configured with VDO Marine Configuration Tool.
			SAE J1939	1
NMEA 2000	1	1	See Supported NMEA 2000 messages	-

**Note (\*):** ranges configured via VDO Marine Configuration Tool.

**Supported SAE J1939 messages**

PGN	SPN	Descrizione
61444	190	Engine Speed
65226	624	Amber Warning
65226	623	Red Stop
65226	987	Protect lamp
65226	3098	MIL
65253	247	Engine Total Hours of Operation
65262	110	Engine Coolant Temperature
65262	175	Engine Oil Temperature 1
65263	100	Engine Oil Pressure
65263	109	Engine Coolant Pressure
65266	183	Engine Fuel Rate
65270	102	Engine Turbocharger Boost Pressure
65270	173	Engine Exhaust Gas Temperature
65272	177	Transmission Oil Temperature
65272	127	Transmission Oil Pressure
65276	96	Fuel Consumption
65279	97	Water In Fuel Indicator

**Supported NMEA 2000 messages**

PGN	Descrizione
127245	Rudder
127488	Engine Parameters, Rapid Update
127489	Engine Parameters, Dynamic
127493	Transmission Parameters, Dynamic
127497	Trip Fuel Econsumption, Engine
127505	Fluid level
127508	Battery status
130576	Trim Tab Status

**General features**

<b>Material</b>	PA6-GF30
<b>Dimension [mm]</b>	See figures
<b>Protection grade</b>	IP X9K-f IEC 60945 protected
<b>Flammability</b>	UL-94 V0
<b>Connectors</b>	<ul style="list-style-type: none"> <li>• Micro-Pack MW100</li> <li>• NMEA 2000 Micro-C M12</li> </ul>
<b>Status LED</b>	<b>Off:</b> not powered, <b>green fixed:</b> powered without data transmission, <b>green flashing:</b> data transmission underway
<b>Available variations (*)</b>	EB1: single engine, EB2: dual engine
<b>Input data</b>	NMEA 2000, SAE J1939, frequency 0-4 kHz, resistive 0-400 Ω, capacitive 4-20 mA, 0-5 V.
<b>Output data</b>	NMEA 2000
<b>Start-up time</b>	< 1 s

**Note:** Engine Box detects the presence of the single or double engine cable.

**Environmental specifications**

<b>Working temperature</b>	From -25 to +70 °C
<b>Storage temperature</b>	From -40 to +85 °C

**Electrical specifications**

<b>Rated voltage</b>	12 / 24 V dc
<b>Voltage tolerance</b>	9-32 V dc
<b>Working current</b>	150 mA @ 12V
<b>Reverse polarity protection</b>	Yes
<b>Short circuit protection</b>	Yes, 1 minute

**Conformity**

<b>Conformity</b>	
<b>Directives</b>	2011/65/EU (Electrical-electronic equipment hazardous substances)
<b>Reference standards</b>	<ul style="list-style-type: none"> <li>• EN 60945:2002</li> <li>• ISO 8846:1990</li> <li>• IEC 60079-0:1983</li> <li>• DIN EN 60079-11</li> <li>• EN ISO 15584:2001</li> </ul>

**Disposal instructions**

Separate waste and use the collection centers indicated by the government or local public agencies. Correct disposal and recycling help to prevent potentially harmful consequences to the environment and population.

**Dimensions**

