

# Ecomotive M1N1 Adapter

## Installation and Configuration Guide

Device model: **ECM1N1A**  
 Hardware version: **HW 1.3**  
 Firmware version: **FW 1.8**  
 Revision: **A**

This document defines the approved workshop installation, configuration, sealing, and final verification steps for the Ecomotive M1N1 Adapter. The product is intended only for applications where a conventional motion sensor cannot be installed in the standard mechanical location.



### Workshop-only installation

- Installation and calibration shall be performed only by approved tachograph fitters / workshops.
- All wiring shall be carried out with power switched off.
- Unused conductors shall be insulated and secured against short circuit or unintended contact.

## 1 Applicability and responsibility

Vehicle categories	M1 and N1 vehicles only, and only where a conventional motion sensor cannot be installed in the standard mechanical location.
Tachograph compatibility	All tachographs type-approved in accordance with Regulation (EU) No 165/2014
Compatible motion sensor	Lesikar M172, e5-0100
Installer qualification	Approved tachograph fitters / workshops only

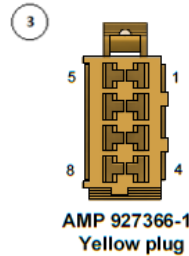
## 2 Required tools and materials

- Approved tachograph calibration equipment and workshop tooling required by the procedures in force in the installation country.
- Basic fastening tools suitable for the released mounting hardware.
- Multimeter / continuity check equipment.
- Sealing wire, workshop seals and protective label film where used.
- Vehicle service information required to identify the correct speed source (IMP or CAN)

### 3 Standard package contains

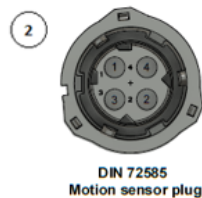
1	M1N1 Adapter unit with compatible motion sensor
2	Vehicle harness with tachograph plug, motion sensor plug and flying leads
3	Mounting hardware (bolts, nuts, screws)
4	Sealing items / protective items

PIN	Description
1	-
2	-
3	VU Sensor [+]
4	VU Sensor Real Time Signal
5	VU Sensor [-]
6	VU I/O Data Signal
7	GND
8	+BATT [KL30]
9	-
10	-
11	VU Sensor [+]
12	VU Sensor Real Time Signal
13	VU Sensor [-]
14	VU I/O Data Signal
15	CAN L / IMP
16	CAN H



PIN	Color	Description
1	Black	Sensor (+)
2	Brown	Sensor (-)
3	Blue	Real time Signal
4	White	I/O Data Signal
5	-	-
6	-	-
7	-	-
8	-	-

PIN	Description
1	Sensor (+)
2	Sensor (-)
3	Real time Signal
4	CAN-H



PIN	Color	Description
1	Black	GND
2	Red	12V power supply Adapter
3	Brown	CAN-L / IMP
4	Brown white	CAN-H

Figure 2. Connectors

Interface	Connection	Description	Connector
Power	Flying leads	Red: +12 V supply adapter; Black: GND	[4]
Speed input	Flying leads	Brown: CAN-L / IMP; Brown-white: CAN-H	[4]
Tachograph / VU	Yellow plug	Yellow plug to VU socket B	[3]
Motion sensor	DIN 72585	4-pin motion sensor plug	[2]

The Main connector [1] connects the adapter to the motion sensor, power supply and speed input. Harness lengths: [1]-[2] 10 cm; [1]-[3] 3 m; [1]-[4] 2 m.

For analogue input mode, connect the speed signal input to the IMP / CAN-L wire. For CAN input mode, connect both CAN-L and CAN-H according to vehicle service information and the released interface definition.

## 4 Configuration and installation steps

### Important safety and handling rules

- Do not open, modify, or repair the adapter electronics.
- If the device has been dropped or shows visible damage or tampering, do not install it; replace it.
- Route cables away from hot parts, moving parts, sharp edges, kinks, and chafing points.

### 4.1 Pre-installation checks

1. Confirm that the vehicle category is M1 or N1 and that a conventional motion sensor installation is mechanically not possible in the standard location.
2. Inspect the adapter, enclosure, harness, connectors, and labels for damage, tampering, or missing parts before installation.
3. Confirm that the product identification label is present and legible.
4. Confirm that the violet enclosure seals are present and secure on the rear side of the enclosure.
5. Identify the vehicle speed / distance signal source to be used: analogue pulse (IMP) or CAN-based source, according to vehicle service information.



Figure 3. Rear side label and violet seals

Do not install the unit if any seal is broken, missing, or shows visible evidence of tampering. If damage is observed, segregate the unit and replace it according to the applicable workshop / quality procedure.

### 4.2 Mechanical installation

6. Mount the adapter as close as practicable to the component that provides the incoming speed signal.
7. Use the enclosure holes and designated fastening hardware to achieve mechanically stable mounting.
8. Select an installation location that allows later inspection access and visibility of the information plate / plaque.
9. Provide cable harness support within less than 150 mm from the adapter mounting point.
10. Ensure the mounting point remains mechanically stable over time and does not loosen during service.

### 4.3 Electrical installation

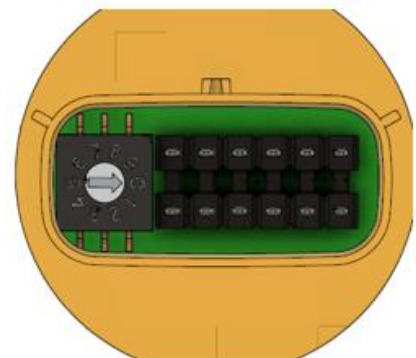
11. Perform all wiring with power switched off.
12. Connect the red wire to battery positive and the black wire to battery negative.
13. Route the tachograph harness to the VU location and connect the yellow connector to tachograph socket B.
14. Connect the vehicle speed source according to the selected input type: IMP or CAN.
15. Insulate and secure all unused conductors against short circuit or unintended contact.

### 4.4 Configuration and calibration

After pre-connection, determine the vehicle characteristic coefficient ( $w$ ) and perform tachograph calibration in accordance with the procedures in force in the installation country.

16. Perform an initial calibration to determine the vehicle  $w$  factor using the approved method / tool (for example rolling road or fixed-distance method, as permitted locally).
17. Record the measured  $w$  factor.
18. Select the rotary switch position corresponding to the measured  $w$  factor according to the released switch-position table below.
19. Program tachograph constant  $k$  according to the verified value and workshop procedure.

Switch Position	Function	Recommended use / range
P6	Multiply $\times 8$	Measured $w < 1500$ imp/km
P5	Multiply $\times 4$	$1500 \leq w < 3000$ imp/km
P4	Multiply $\times 2$	$3000 \leq w < 6000$ imp/km
P0	Multiply $\times 1$	$6000 \leq w < 12000$ imp/km
P1	Divide $1/2$	$12000 \leq w < 24000$ imp/km
P2	Divide $1/4$	$24000 \leq w < 48000$ imp/km
P3	Divide $1/8$	$w \geq 48000$ imp/km
P7	CAN	CAN-based speed source
P8	CAN SERVICE	Service position
P9	SERVICE	Service position



## 4.5 Field verification and acceptance

### Acceptance criterion

- Adapter operation is accepted only if the measured vehicle characteristic coefficient  $w$  does not differ from the tachograph constant  $k$  by more than  $\pm 1\%$ .

20. Re-measure the vehicle  $w$  factor using the approved test method / tool to verify correct operation of the complete system (adapter + VU).
21. Confirm that the tachograph displays correct speed during a controlled verification run.
22. Confirm that no motion sensor faults or related error events are present after the check.

## 4.6 Sealing and tamper protection

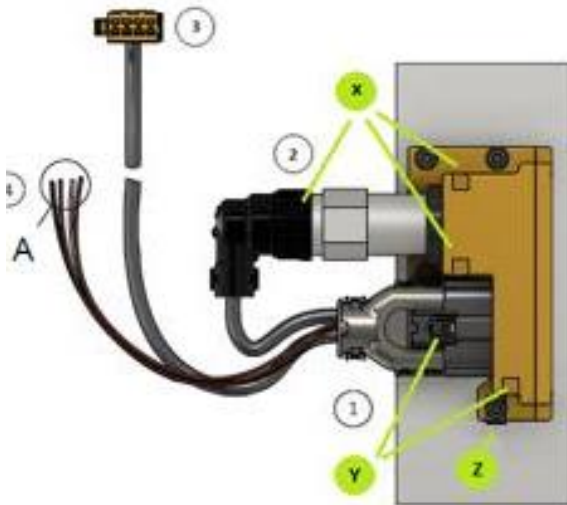


Figure 5. Sealing points X, Y, Z

After installation and configuration, seal all locations where access could enable manipulation of settings or signal paths. Sealing shall be performed by an approved workshop and recorded according to the local procedure.

- Seal the motion sensor to the adapter enclosure so that the sensor cannot be disconnected without visible seal damage (X).
- Seal the main connector to the adapter enclosure so that the adapter settings cannot be changed without visible seal damage (Y).
- Seal the adapter housing to the vehicle mounting point so that removal is evident (Z).
- After installation, the product identification label shall remain visible and legible.

## 4.7 Marking, traceability, and installation record

Complete the Installation traceability label with the Vehicle identification (VIN) and Installation date of the adapter.

**Ecomotive M1N1 Adapter**

Installation date:

VIN:

Figure 6. Installation traceability label

## 4.8 Final functional checks and troubleshooting

Final check item		Status
Tachograph shows correct speed during controlled test.		PASS / FAIL
No motion sensor error events or related faults are present.		PASS / FAIL
All seals are present, tight, and recorded.		PASS / FAIL
All labels / plaques are completed, protected, and installed in the approved location.		PASS / FAIL
Symptom	Check	Typical action
No speed displayed / intermittent speed	Incoming speed source; wiring; ground reference; connector stress	Correct wiring or signal source issue and repeat verification.
Motion sensor errors	Sensor connection / seal; configuration; calibration result	Check sensor connection and setup; replace unit if required by workshop procedure.
CAN source issue	CAN high / low wiring; power; selected vehicle CAN source	Confirm CAN-L / CAN-H wiring and the correct vehicle-specific signal source.

## 5 Applicable documents and regulatory references

Regulation (EU) No 165/2014

Commission Implementing Regulation (EU) 2016/799

M1N1-DS-01 Datasheet;