



TMS-4
QUICK START GUIDE

TMS-4 OVERVIEW

The Haltech TMS-4 is a simple, plug-and-play way to monitor tyre pressures through your Haltech ECU.

The TMS-4 system is available in two kit forms, with different tyre pressure sensors. These can be mounted inside the tyre (HT-011600) or externally (HT-011601).

Both sets of sensors are able to warn of air leaks, temperature variations, and when the pressure is over or under a set level.

The external pressure sensors provided with the TMS-4 External Sensor Kit (HT-011601) can be fitted directly to the valves on a car's tyres without the need to remove the tyres.

Haltech TMS-4 with internal sensors
Part No: HT-011600



- Plug'n'Play with Haltech ECUs using NSP or ESP software packages
- Receiver operating temperature: -40°C to 85°C (-40°F to 185°F)
- Receiver environmentally sealed to IP67 standard
- Internal sensors environmentally sealed to IP67 standard (HT-011600)
- External sensors environmentally sealed to IP69 standard (HT-011601)
- Sensor operating temperature: -40°C to 125°C (-40°F to 257°F)
- Capable of reading up to 116psi air pressure

Haltech TMS-4 with external sensors
Part No: HT-011601



What's in the box?

TMS-4 Internal Sensor Kit (HT-011600)

- Haltech TMS-4 receiver
- TE MCON to DTM-4 CAN cable
- 4 x internal tyre pressure sensors
- Mounting Hardware: nut and washer set
- Warning sticker set
- Quick Start Guide



What's in the box?

TMS-4 External Sensor Kit (HT-011601)

- Haltech TMS-4 receiver
- TE MCON to DTM-4 CAN cable
- 4 x external tyre pressure sensors
- Mounting Hardware: nut and washer set
- 4 x anti-theft lock nuts
- Lock nut spanner
- Quick Start Guide



TMS-4 INSTALLATION



TE MCON to DTM-4 CAN cable



Internal pressure sensor (HT-011600)

Receiver installation

Install the receiver in the vehicle using the mounting hardware supplied. For best results installation location should be high in the vehicle.

Connection

The TMS-4 receiver connects via the supplied TE MCON to DTM-4 CAN Cable.

Upon powering up an audible beep will be heard from the receiver to indicate it is on.

Sensor installation: Internal

1. Deflate each tyre and remove from the wheels
2. Remove the old tyre valve from each wheel
3. Install the sensor in the corresponding wheel according to the position sticker on the sensor
4. Re-install the tyre, ensuring sensor is not damaged during this process
5. Reinflate the tyre to the desired pressure
6. Perform a dynamic wheel balance

Sensor installation: External

1. Remove the valve cap from the valve
2. Inflate tyre to desired pressure
3. Thread the anti-theft lock nut onto the valve
4. Install the sensor in the corresponding tyre according to the position sticker on the sensor
5. Tighten the lock nut using the spanner provided
6. Check for leaks with soapy water

Enabling the TMS-4: NSP software

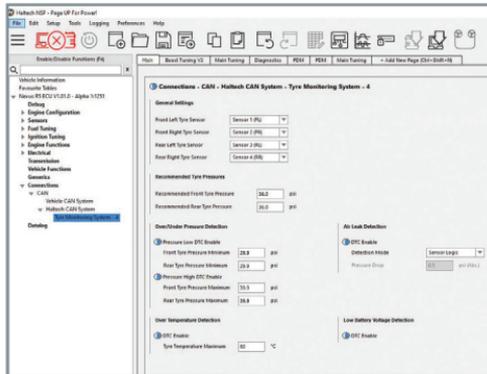
In NEXUS series ECUs the receiver is enabled through Connections > CAN > Haltech CAN System: Tyre Monitoring (TMS-4 Enable).

It should also appear in the menu tree once detected on the Haltech CAN Bus and enabled from there.

Enabling the TMS-4: ESP software

In Elite series ECUs the receiver is enabled via the Main Setup (F4 page), then Devices: Tyre Monitoring (TMS-4 Enable).

Once enabled it will appear next to CAN Devices.



TMS-4 OPERATION

Assigning sensors to wheels

Pressure sensors can be re-assigned to any wheel in the setup menu, which allows users swap wheels and re-assign sensors without physically swapping parts.

By default sensors are assigned as per the stickers on the sensors. Sensors can also be turned off in the software if monitoring that wheel is not required.

Channels

The following data channels are available in both NSP and ESP software, as shown in this image →

TMS-4 channels can be searched for by using the keywords "tyre", "tire", and "wheel".

Channels displayed:

- Per Tyre Pressure
- Per Tyre Temperature
- Per Tyre Sensor Voltage
- Per Sensor Pressure
- Per Sensor Temperature
- Per Sensor Battery Voltage
- Air Leak Detected (1 channel covers all 4 tyres)
- Recommended Tyre Pressures (for logging and display purposes only)

Channels		
TMS-4 Sensor 4 (RR) Temperature	22	°C
TMS-4 Sensor 4 (RR) Pres	0.0	kPa
TMS-4 Sensor 4 (RR) Battery Voltage	2.80	Volts
TMS-4 Sensor 3 (RL) Temperature	26	°C
TMS-4 Sensor 3 (RL) Pres	0.0	kPa
TMS-4 Sensor 3 (RL) Battery Voltage	2.80	Volts
TMS-4 Sensor 2 (FR) Temperature	23	°C
TMS-4 Sensor 2 (FR) Pres	273.0	kPa
TMS-4 Sensor 2 (FR) Battery Voltage	2.90	Volts
TMS-4 Sensor 1 (FL) Temperature	23	°C
TMS-4 Sensor 1 (FL) Pres	196.0	kPa
TMS-4 Sensor 1 (FL) Battery Voltage	2.80	Volts
Recommended Rear Tyre Pressure	248.0	kPa
Recommended Front Tyre Pressure	248.0	kPa
Rear Right Tyre Temperature	22	°C
Rear Right Tyre Sensor Battery Voltage	2.80	Volts
Rear Right Tyre Pressure	0.0	kPa
Rear Left Tyre Temperature	26	°C
Rear Left Tyre Sensor Battery Voltage	2.80	Volts
Rear Left Tyre Pressure	0.0	kPa
Front Right Tyre Temperature	23	°C
Front Right Tyre Sensor Battery Voltage	2.90	Volts
Front Right Tyre Pressure	273.0	kPa
Front Left Tyre Temperature	23	°C
Front Left Tyre Sensor Battery Voltage	2.80	Volts
Front Left Tyre Pressure	196.0	kPa
Air Leak Detected	No Leak	

NOTE: The recommended tyre pressures are values defined by users under the sensor setup and assignment tab of NSP and ESP software. These figures are only used for the convenience of display and are NOT used in any calculations.

Over/Under Pressure Detection		Air Leak Detection	
<input checked="" type="checkbox"/> Pressure Low DTC Enable		<input checked="" type="checkbox"/> DTC Enable	
Front Tyre Pressure Minimum	29.9 psi	Detection Mode	Sensor Logic ▾
Rear Tyre Pressure Minimum	29.9 psi	Pressure Drop	0.3 psi (0.1)
<input checked="" type="checkbox"/> Pressure High DTC Enable		Low Battery Voltage Detection	
Front Tyre Pressure Maximum	35.9 psi	<input checked="" type="checkbox"/> DTC Enable	
Rear Tyre Pressure Maximum	35.9 psi	Sensor Signal Loss Detection	
Over Temperature Detection		<input checked="" type="checkbox"/> DTC Enable	
<input checked="" type="checkbox"/> DTC Enable			
Tyre Temperature Maximum	80 °C		

Diagnostic Trouble Codes

The TMS-4 can trigger several optional DTCs, including:

- Pressure High / Pressure Low
- Temperature High
- Air Leak Detected
- Sensor Battery Voltage Low
- Sensor Signal Loss

DTCs can be enabled within the TMS-4 setup menu. If a sensor is not assigned to a tyre, it cannot trigger a DTC.

DTCs are referenced to the wheel the sensor is assigned to. For example, if Sensor 3 (RL) is assigned to the front left tyre and detects pressure is too low the "Front Left Tyre Pressure Low" DTC will trigger.

Over Temperature Alert

A DTC is flagged if any sensor is at or above the user defined maximum temperature entered.

Air Leak Detection

The TMS-4 system can warn of air leaks in tyres. Enabled by default in the software, Air Leak Detection can use sensor logic, or be manually user-defined.

Sensor logic relies on the sensor flagging an air leak, then signals a DTC based on that flag.

Users can also define their own pressure drop values in the TMS-4 setup menu. If a pressure drop of that value (or greater) occurs over a 5 second period then the ECU flags an air leak.

Over / Under Pressure Detection

A DTC can be flagged when the air pressure readings fall below, or rise above, the user-defined pressure values for the front and rear pairs of tyres.

Users can set maximum and minimum pressure values for pairs of tyres per-axle in the TMS-4 setup menu.

A DTC is triggered if the pressure drops or rises, to under or over the pre-set values for 3 seconds or more.

Both internal and external sensors have a working pressure range of 0-116 psi (0-800kpa).

Sensor Signal Loss Detection

A DTC triggers if signal loss is detected from any active sensors. Signal loss can only be detected when sensors are known to be awake so this requires vehicle speed to be enabled, as sensors activate during pressure change or when tyres are moving.

TMS-4 MAINTENANCE

Battery Replacement - external sensors

The CR1632 battery used in the external pressure sensors can be easily replaced.

1. Remove the sensor from the valve stem
2. Unscrew the cover from the sensor
3. Push the battery out of its holder
4. Gently push replacement battery in
5. Re-attach sensor to the valve stem

CR1632 batteries typically have a 1-2 year lifespan.



Battery replacement - internal sensors

The CR2023 batteries used in the internal tyre pressure sensors are not replaceable.

These units have an average lifespan of 3 years, which is longer than the average life of a tyre.

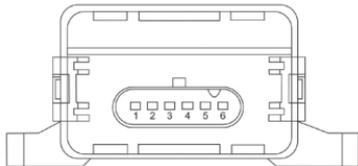
Low battery Voltage detection

A DTC will be triggered if any sensor battery falls below 2.3V. Individual battery voltages can be monitored by the associated TMS-4 battery voltage channels.





Rear View, Wire Side



Rear View, Receiver Side

Receiver wiring

The Haltech TMS-4 receiver uses a 6-pin TE MCON wiring connector. Both kits are supplied with a plug'n' play TE MCON to DTM adaptor cable, terminated with a four-pin DTM-4 connector.

CAN Connection: DTM-4 receptacle

Pin Number	Connection	Wire Colour
1	+12V Supply	Red
2	Battery Ground	Black
3	CAN High	Green
4	CAN Low	White

CAN Connection: TE MCON Connector

Pin Number	Connection	Wire Colour
1	CAN Low	White
2	CAN High	Green
3	-	-
4	-	-
5	+12V Supply	Red
6	Battery Ground	Black

TMS-4 SPECIFICATIONS

TMS-4 receiver

Size (without connector)	103.80 x 80.70 x 36.80mm
Operating Voltage	12V to 32V DC
Ambient Operating Current	50mA
Receiver frequency	433.92MHz + / - 50KHz
Ingress Protection	IP67
Operating Temperature	-40°C to +85°C (-40°F to 185°F)
Configuration	via Haltech NSP or ESP Software
CAN Connection	6-position TE MCON Connector

TMS-4 Internal Sensors (HT-011600)

Battery Model	CR2023, 380mAh (Not Replaceable)
Battery lifespan	Up to 3 years
Standby Current	<0.7uA
Pressure Measurement Range	0-800kpa (0-116psi)
Temperature Measurement Range	-40°C to +125°C (-40°F to 257°F)
Ingress Protection	IP67

TMS-4 External Sensors (HT-011601)

Battery Model	CR1632, 140mAh (Replaceable)
Battery Lifespan	1-2 years
Standby Current	<0.7uA
Pressure Measurement Range	0-800kpa (0-116psi)
Temperature Measurement Range	-40°C to +125°C (-40°F to 257°F)
Ingress Protection	IP69



WARRANTY CERTIFICATE

At Haltech we make every effort to design and manufacture fault-free products that perform up to or above the market expectations. All our products are covered by a Limited 12 Month Warranty.

Haltech Limited Warranty

Unless specified otherwise, Haltech warrants its products to be free from defects in material or workmanship for a period of 12 months from the date of purchase.

If the Haltech product is found to be defective as mentioned above, it will be replaced or repaired if returned prepaid along with proof of purchase. Proof of purchase in the form of a copy of the original purchase invoice, receipt or bill of sale which indicates that the product is within the warranty period, must be presented to obtain warranty service.

Replacement or repair of a defective product shall constitute the sole liability of Haltech. To the extent permitted by law, the foregoing is exclusive and in lieu of all other warranties or representations, either expressed or implied, including any implied warranty of merchantability or fitness. In no event shall Haltech, be liable for special or consequential damages.

Product Returns

Please include a copy of the original purchase invoice, receipt or bill of sale along with the unused, undamaged product and its original packaging. Any product returned with missing accessory items or packaging will incur extra charges to return the item to a re-saleable condition.

All product returns must be sent via a freight method with adequate tracking, insurance and proof of delivery services. Haltech will not be held responsible for product returns lost during transit.

Returns of Products Supplied in Sealed Packaging

The sale of any sensor or accessory supplied in sealed packaging is strictly non-refundable if the sealed packaging has been opened or tampered with. This will be clearly noted on the product packaging. If you do not accept these terms please return the sensor in its original unopened packaging within 30 days for a full refund.

A sensor or accessory product may be returned after 30 days of purchase (with its sealed packaging in tact) for credit only (no refunds given) and will be subject to a 10% restocking fee.

Installation of Haltech Products

No responsibility whatsoever is accepted by Haltech for the fitment of Haltech Products. The onus is clearly on the installer to ensure that both their knowledge and the parts selected are correct for that particular application. Any damage to parts or consequential damage or costs resulting from the incorrect installation of Haltech products are totally the responsibility of the installer.

Always disconnect the battery when doing electrical work on your vehicle. Avoid sparks, open flames or use of electrical devices near flammable substances. Do not run the engine with a battery charger connected as this could damage the ECU and other electrical equipment.

Do not overcharge the battery or reverse the polarity of the battery or any charging unit. Disconnect the Haltech ECU from the electrical system whenever doing any welding on the vehicle by unplugging the wiring harness connector from the ECU.

After completing the ECU installation, make sure there is no wiring left un-insulated. Uninsulated wiring can cause sparks, short circuits and in some cases fire. Before attempting to run the engine ensure there are no leaks in the fuel system. All fuel system components and wiring should be mounted away from heat sources, shielded if necessary and well ventilated. Always ensure that you follow workshop safety procedures. If you're working underneath a jacked-up car, always use safety stands!

Haltech Off-Road Usage Policy

In many states it is unlawful to tamper with your vehicle's emissions equipment. Haltech products are designed and sold for sanctioned off-road/competition non-emissions controlled vehicles only and may never be used on a public road or highway.

Using Haltech products for street/road use on public roads or highways is prohibited by law unless a specific regulatory exemption exists (more information can be found on the SEMA Action Network website www.semananet.com/emissions for state by state details in the USA).

It is the responsibility of the installer and/or user of this product to ensure compliance with all applicable local and federal laws and regulations. Please check with your local vehicle authority before purchasing, using or installing any Haltech product.

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