Service Information

Technical Managers / Service Technicians

Internal use only!

Product / System:	DTCO 1381
Keywords:	M1N1, M1 N1, Adapter, DTCO, 4.0, 4.1
SI-No.:	**116474**

Date: 12. Mar 2026

Version: V1.7

Internet: fleet.vdo.com

FAQ: www.dtco-user.com/faq/

M1N1 adapter for smart tachographs

Scope

This service information is applicable to the M1N1 adapter Gen2. It contains the technical data and important information on installation and inspecting of the adapter kit.

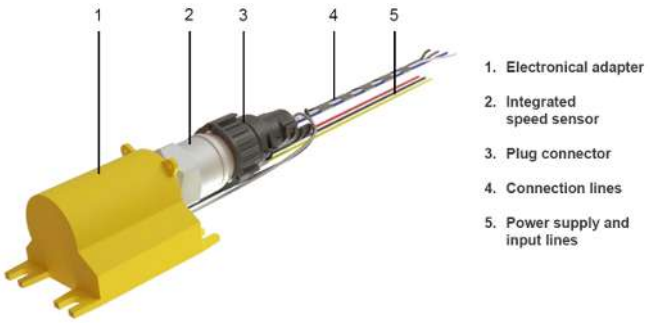
This service information replaces SI 116348 and complies with the amendments set out in Annex 1C, Appendix 16.

Product description

The M1N1 adapter may only be installed in vehicles of class M1 or N1 and only if the installation of a speed sensor is mechanically impossible.

The M1N1 adapter with the integrated speed sensor KITAS 4.0 2185 is used for vehicle classes M1 and N1 with smart tachographs from DTCO® 4.0 and higher.

The adapter consists of a printed circuit board, wiring harnesses, a speed sensor, and a housing to accommodate these components and protect them from tampering.



The printed circuit board generates a signal that represents the vehicle speed and/or the distance travelled. This signal is received via the KITAS and transmitted to the tachograph via an electrical signal.

The M1N1 adapter is intended for use with digital and smart tachographs that comply with Regulation (EU) No. 165/2014.

The adapter is backwards compatible and may also be used with DTCO generations 1.x, 2.x and 3.x.

AUMOVIO Aftermarket GmbH
Guerickestraße 7
60488 Frankfurt am Main

Registered Court: Amtsgericht Königstein im Taunus,
HRB 7796, VAT-ID-No. DE171884444
MD: Enno Straten, Kris Janssen, Horst Markert

Vehicles categories

Category M1: motor vehicles designed and constructed for the carriage of passengers with a maximum of eight seats in addition to the driver's seat.

Category N1: motor vehicles designed and constructed for the carriage of goods with a maximum authorized mass not exceeding 3.5 tons.

Built-in speed sensor

Model name: KITAS 4.0 2185

Approval number: e1 0002

Identification of the adapter

M1N1 adapter

1 Manufacturer: NAP automotive Produkte GmbH

2 Manufacturer Part Number

3 Manufacturing date

Serial number of the adapter

5 Type approval EMC

6 Pulse ratio

7 Approval number

KITAS sensor

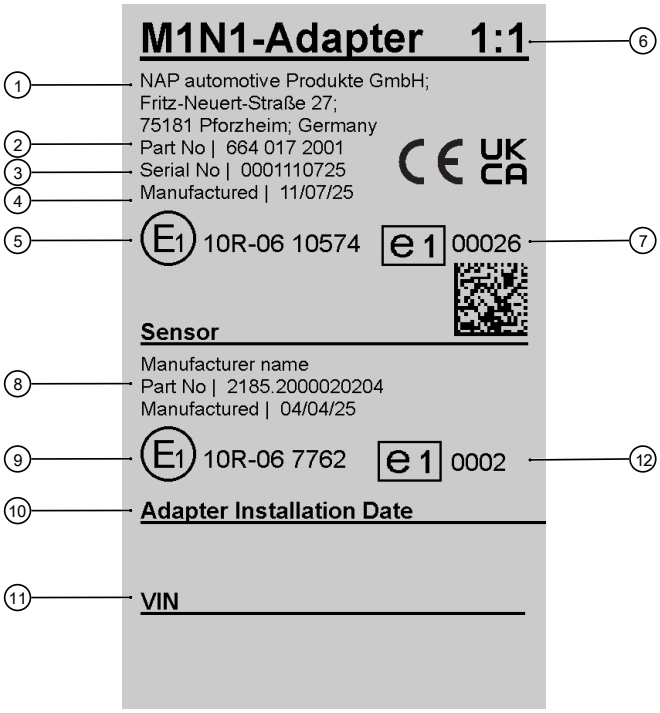
8 Manufacturer: Continental Automotive GmbH

9 Type approval EMC

10 Adapter installation date*

11 Vehicle identification number

12 Approval number *



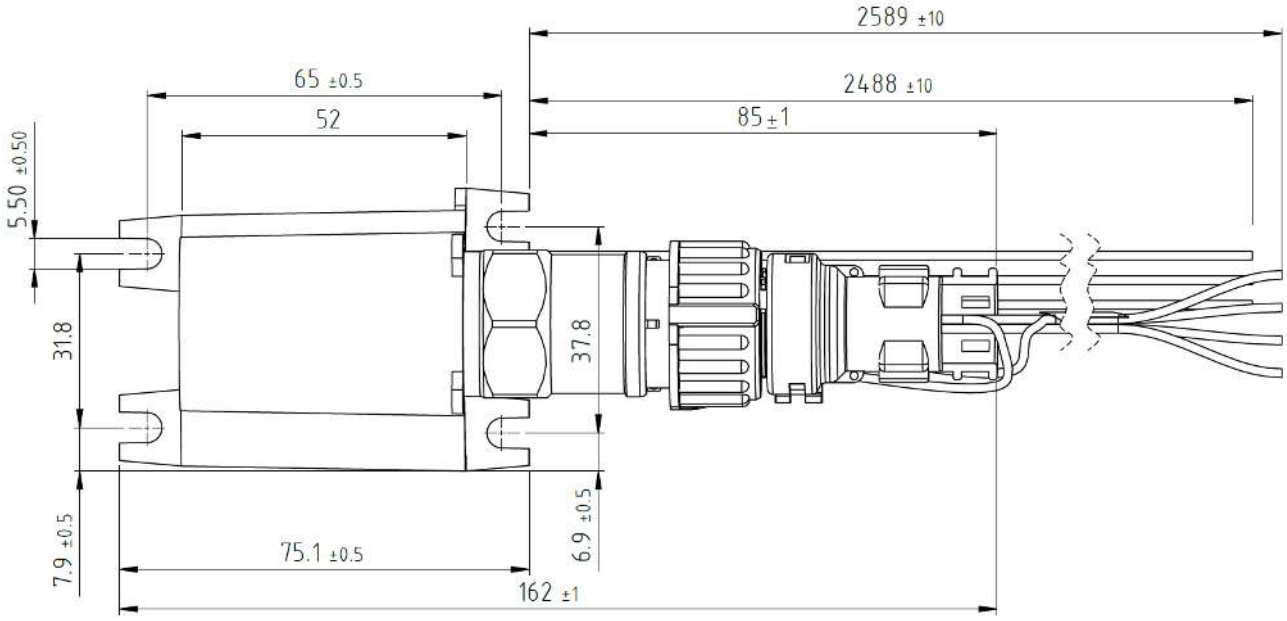
* To be filled out document-proof during installation

Specifications

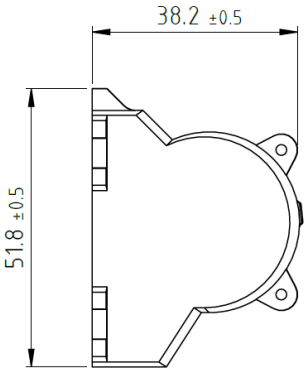
Electrical data and parameters

Description			Min.	Typ.	Max.
General					
Nominal voltage				12 V	
Supply voltage, allowable range			10,5 V		16 V
Ripple (DIN 40839, Part 1)					± 2 V
Current consumption during operation				150 mA	250 mA
Current consumption in idle mode					4 mA
Current consumption KITAS sensor					15 mA
Outputs					
Frequency range			0 Hz		2 kHz
Inputs					
Frequency range		1:1 1:2 1:4 2:1 3:1 4:1	0,5 Hz 0,5 Hz 0,5 Hz 0,5 Hz 0,5 Hz 0,5 Hz		2 kHz 1 kHz 0,5 kHz 4 kHz 6 kHz 8 kHz
Voltage range			0 V		16 V
Signal Form – Rectangle	Voltage Peak-Peak		2 V		
	Duty Cycle		30 %		80 %
Signal Form – Sinus	Voltage Peak-Peak		5,6 V		
Signal Form – Triangle	Voltage Peak-Peak		6 V		
Operating temperature			–20°C ... +70°C		
Storage temperature			–30°C ... +85°C		
Interference voltage protection			ISO 7637-2 (pulse 1-4)		
Radiation resistance			ISO 11452-2 (100V/m)		
Reverse polarity protection			DIN 16750-2, 4.7		
Short-circuit proof			DIN 16750-2, 4.10		
Ingress protection code			EN 60529-IP56		
EMC			ECE R10		
Oscillation			Noise oscillation according to IEC 60068-2-64		
Case			Plastic		
Mass			~ 280 g		

Geometric dimensions



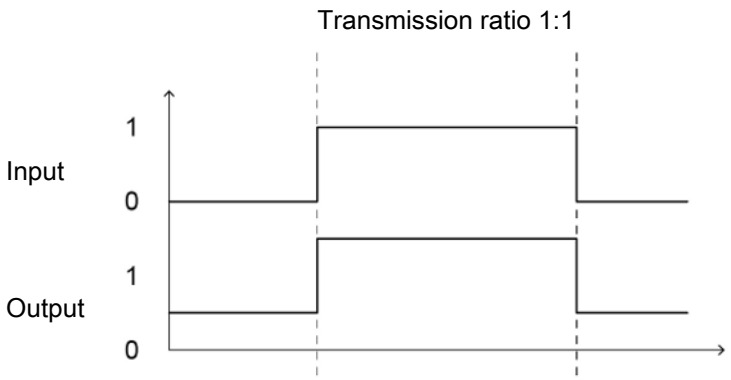
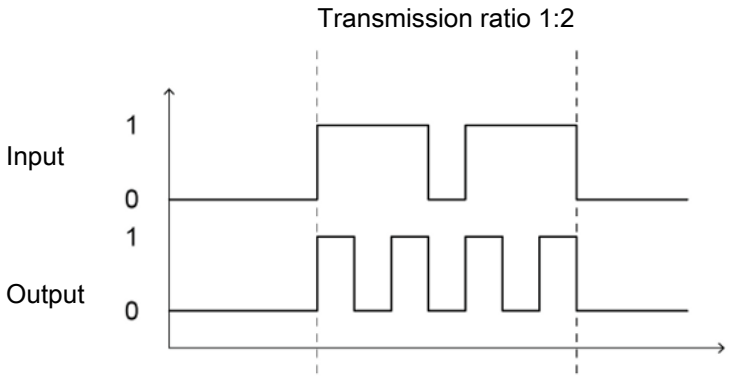
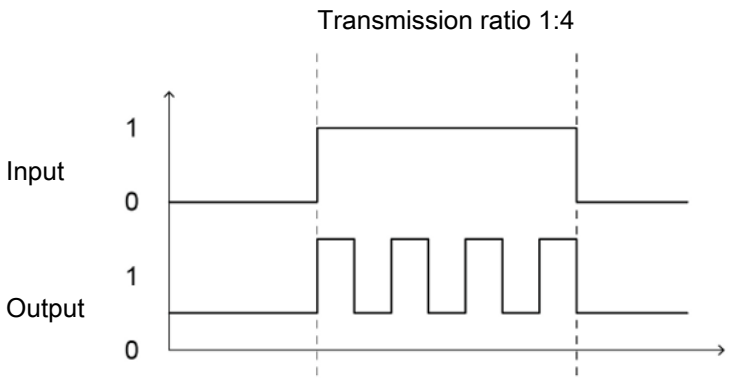
Top view



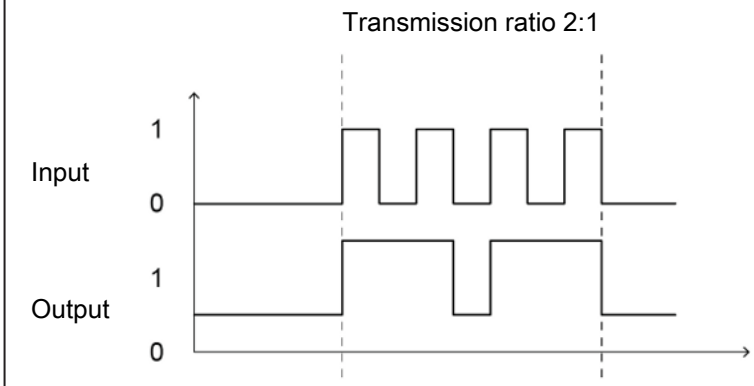
Left side view

Variants

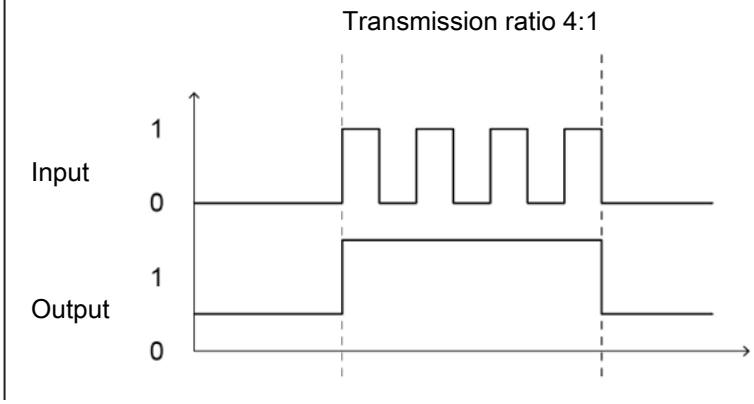
The M1N1 adapter is available in different variants with different transmission ratio (All item numbers for the various versions of the M1N1 adapter can be found in the sales and delivery approval):

1 : 1	
1 : 2 multiplier	
1 : 4 multiplier	

2 : 1 devider



4 : 1 devider



When using the M1N1 adapter variant with a transmission ratio of 1:1, it is also possible to program the divider of the KITAS sensor using the WorkshopTab and KITAS Direkt.

In the KITAS sensor, the transmission ratios can be set to 1:1 / 2:1 / 4:1 or 8:1, but only when not activated. This means that, if necessary, an M1N1 adapter with a ratio of 1:1 can also be used for vehicles that would potentially have required a 2:1 or 4:1 variant.

Installation instructions

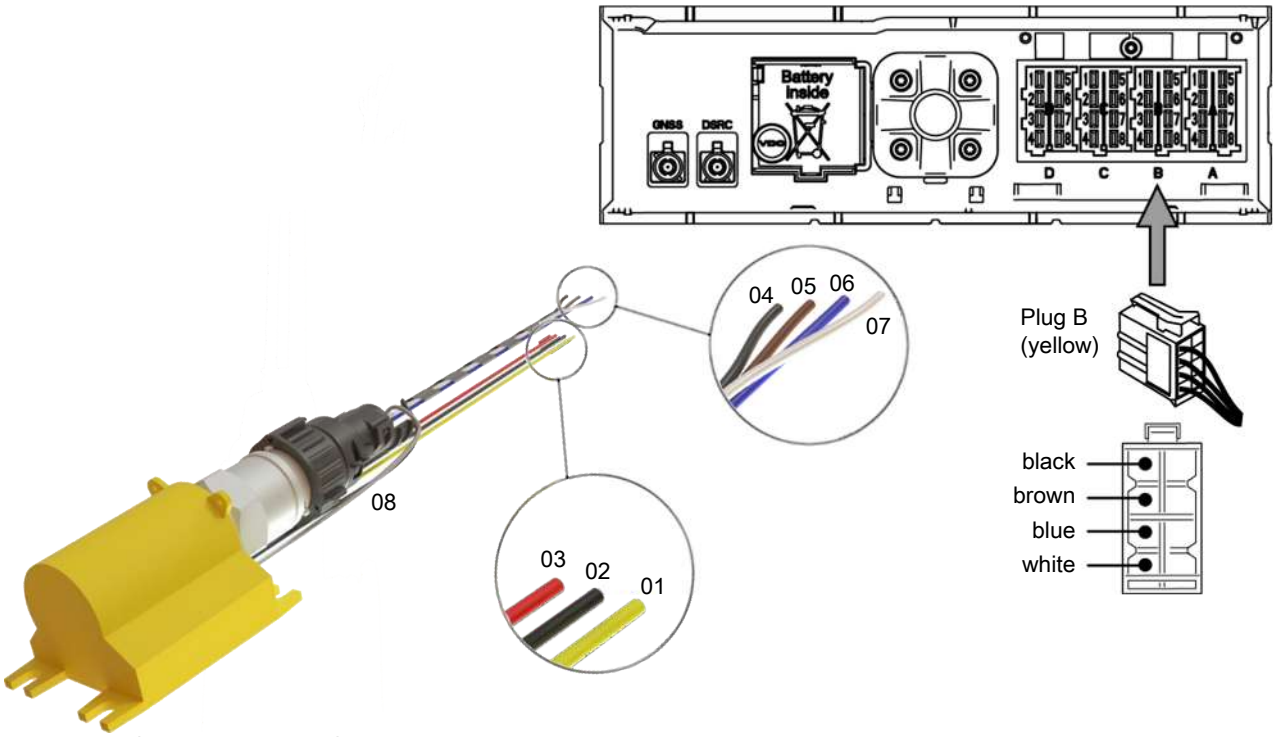
Attaching

- Ensure flatness of the screw connection point of 0.5 mm.
- Make sure that the screw connection does not loosen on its own.
- The wiring harness must be mechanically supported (distance < 100 mm from the mounting point).
- Stimulate the wiring harness the same way as the device.
- Note the maximum tightening torque of the fastening screws: 3 N·m (ISO 4762 - Socket head cap screw and ISO 7089 - Plain washer).

Installation position

- Do not install the device airtight.
- Keep your distance from heat-sensitive materials and components.

Electrical connections



No.	Color	Description
01	yellow	Speed signal ((real-time) e.g.: Gala signal)
02	black	Mass
03	red	12 V power supply adapter *
04	black	9 V v-encoder supply +
05	brown	v-encoder supply -
06	blue	Real-time signal
07	white	Data signal I/O
08	grey	Switched power supply KITAS sensor (see block diagram)

* May only be connected to the vehicle's electrical system using a 5 A fuse.

Security information

General information

The device heats up above the ambient temperature level during operation.

Hot surfaces can cause burns.

1. Mount the device in an area where users won*t be able to touch the device.
2. If installed in other areas attach warning symbol to the device.
3. Allow to cool before servicing.

- The circuit proposals do not include any technical responsibility for the system.
- Incorrect wiring can cause unforeseen signals at the outputs of the electronics.
- Do not open the product or make any changes or repairs to the electronics. Modifications or re-pairs to the wiring can lead to dangerous malfunctions. Repairs to the product and the electronics may only be carried out by us or by authorised contractors.
- Ensure that the adapter does not lead to safety-relevant malfunctions of the overall system in the event of a failure or malfunction. Such system behaviour can endanger lives or result in serious damage to property.
- System developments, installation and commissioning of electronic systems for drive control may only be carried out by trained and experienced specialists who are sufficiently familiar with the handling of the components used and the overall system.
- The machine may pose unforeseen hazards during commissioning and maintenance of the electronic device. Therefore, before starting commissioning, ensure that the machine and the connected systems are in a safe condition.
- Ensure that no persons are present in the danger zone of the machine.
- No defective or incorrectly working components may be used. If components fail or malfunction, they must be replaced immediately.
- Do not kink or squeeze the adapter cables. Do not pull on the cables to move or connect the adapter.

Notes on installation and location

- Do not install the adapter near parts that generate considerable heat (e.g. exhaust pipe).
- The distance to radio equipment must be sufficiently large.
- All connectors must be disconnected from the device during electronic welding and painting work.
- The electronic devices must not be electrostatically charged, e.g. during painting work.
- It must be ensured that no water/moisture can get into the device.
- We recommend installing the device with the plug pointing downwards so that any condensation water can drain away.

Notes on transport and storage

- If the device has been dropped, it must not be used again, as non-visible damage may impair its reliability.
- The electronic devices must be stored at an average relative humidity of 60 % and a temperature between -40 °C and +85 °C.
- After a storage period of more than 5 years, the electronic device must be checked by the manufacturer before use.

Notes on wiring and cable routing

Overvoltage can lead to a short circuit inside the device

Excessive current consumption is the result.

The product's power supply line may only be connected to the vehicle's electrical system ***using a 5A fuse****.*

- The electronics and the power outputs of a device must be supplied from the same power supply system.
- The product may only be wired when it is de-energised.
- Cables to the electronics must not be routed close to other power-carrying cables in the device or vehicle.
- The wiring harness must be mechanically supported in the area in which the device is installed (distance < 150 mm). The wiring harness must be intercepted in such a way that the excitation is in phase with the device (e.g. at the mounting point of the device).
- Cables must not be kinked or twisted, must not rub against edges, and must not be routed through sharp-edged feedthroughs without protection.
- Cables must be routed at a sufficient distance from hot and moving vehicle parts.
- The sensor supplies can be "pulled up" by external circuitry, e.g. by applying a higher voltage, since they only work as a voltage source and not as a voltage sink! Pulling up a voltage source can lead to unpredictable malfunctions and, in the case of continuous operation, to damage to the electronic device.

Intended use

- The device must generally be operated within the operating ranges specified and approved in this data sheet, in particular with regard to voltage, current, temperature, vibration, shock, and other described environmental influences.
- Use outside the specified and approved boundary conditions may endanger life and/or cause damage to the components or result in consequential damage to the vehicle.

Non-intended use

- Any use of the electronic device other than that described in the chapter ‘Intended use’ is considered not intended use.
- Use in potentially explosive atmospheres is not permitted.
- Damage resulting from improper use and/or unauthorised interventions not provided for in this data sheet invalidates all warranty and liability claims against the manufacturer.

Use in security-relevant functions

- The device must not be used for safety-relevant functions
- It is the customer's responsibility to carry out a risk analysis and determine the possible safety-relevant functions.
- It is the customer's responsibility to take suitable measures to achieve safety in safety-relevant applications (sensor redundancy, plausibility check, emergency switch, etc.).
- For example, suitable assignment of input variables (e.g. connection of the signal to be detected to two independent analogue inputs) can be used to detect faults and activate specially programmed reactions.
- Product data required for the safety assessment of the machine can be provided on request or are listed in this data sheet.

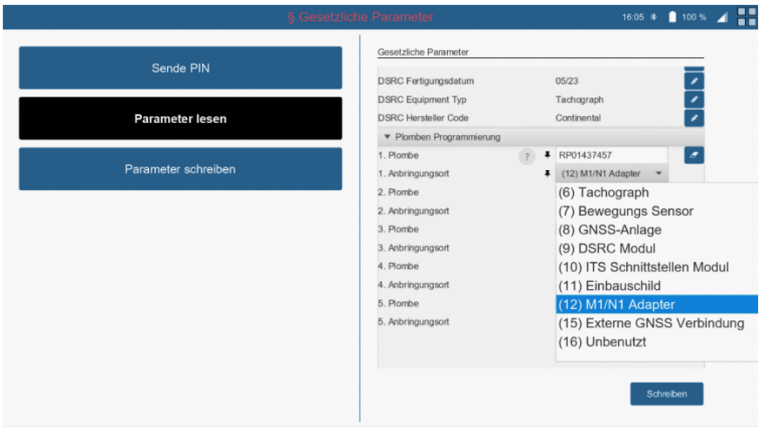
Notes on the adapter

- The traceability of the KITAS sensor must be guaranteed (record the serial number of the KITAS sensor in e.g. VDO SealBase).
- As part of the tachograph test, the serial number of the embedded motion sensor (KITAS) must be checked and documented on the installation label (the serial number of the adapter does not need to be recorded).
- If it is necessary to replace the vehicle unit in case of a defect, the complete adapter must also be replaced.
- In connection with the Intelligent Tachograph, the KITAS sensor must be sealed with the adapter housing using a seal according to the specifications of Appendix 1C.
- This seal must be checked and replaced as part of the regular inspection, regardless of the condition of the seal. The sealing regulations according to Annex 1C apply.

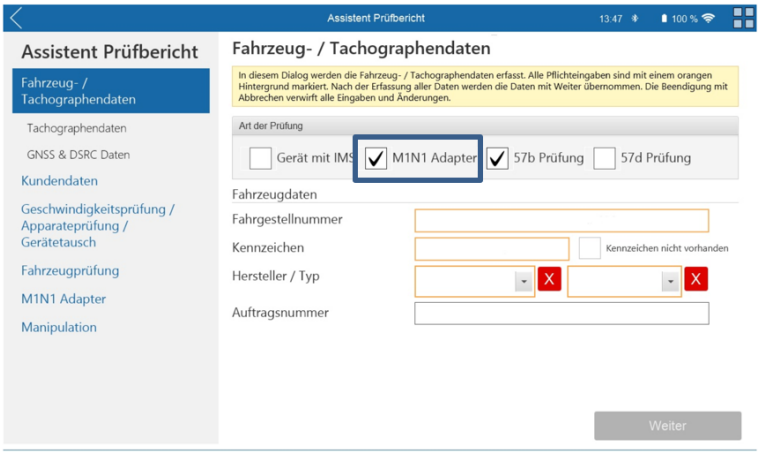
Calibration with the WorkshopTab

Specific steps in the calibration wizard

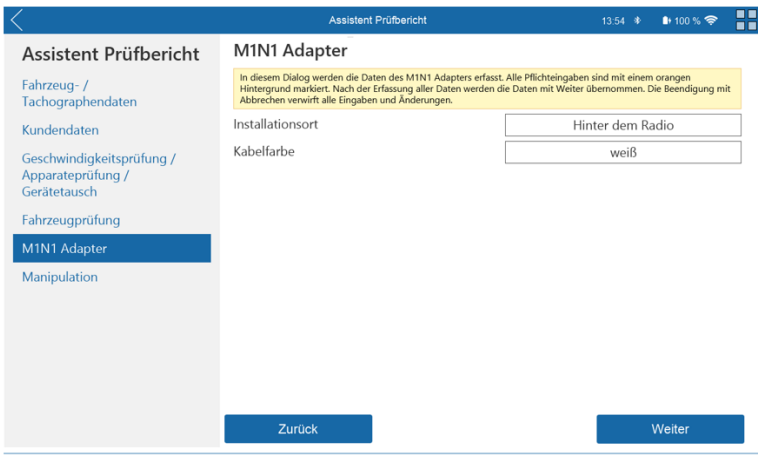
1. Open the menu ”Read parameters“.



2. When editing the legal parameters: Set the location of the KITAS seal to "M1N1-Andapter".

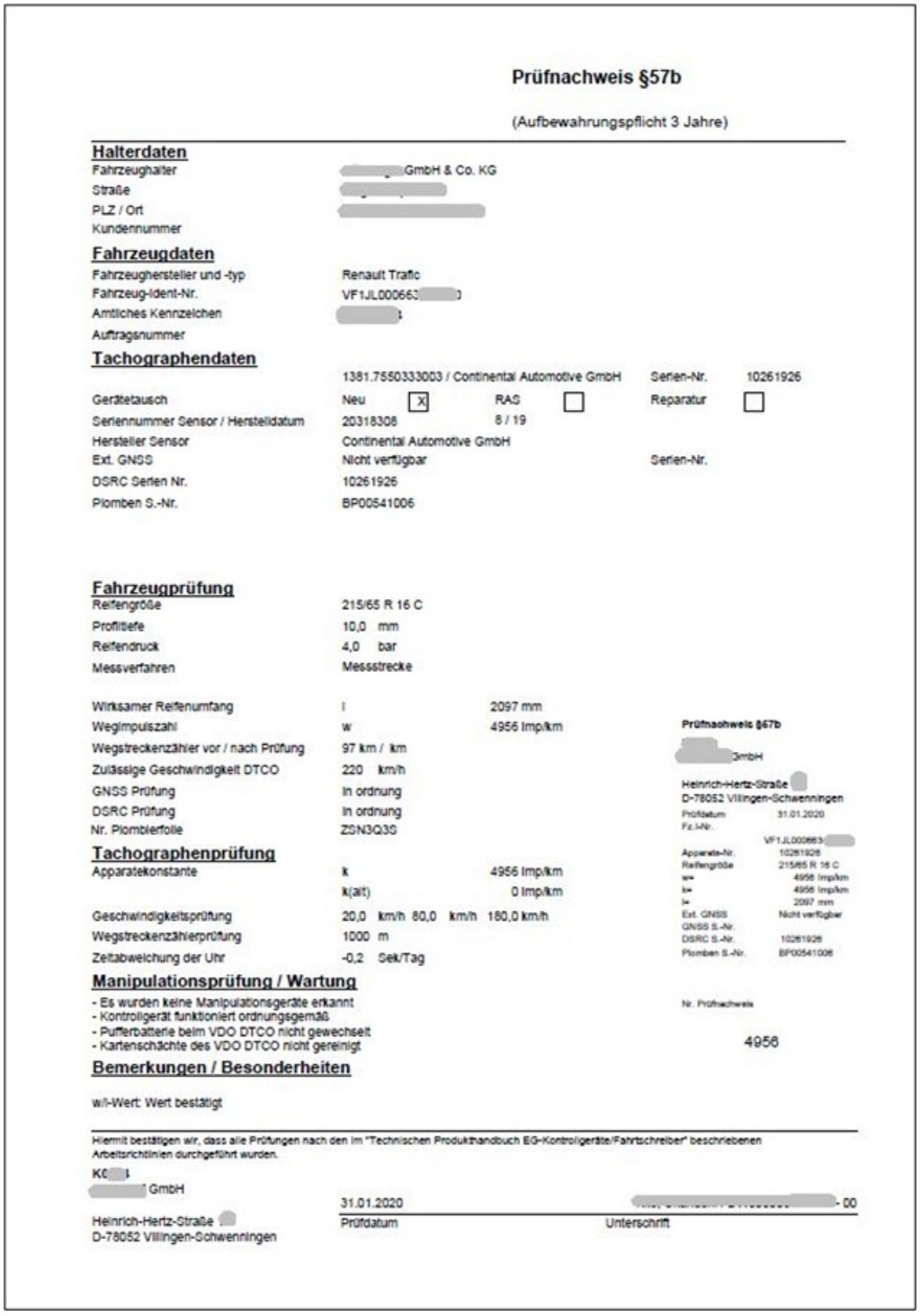


3. When creating the test report: Check the M1N1 adapter checkmark.



4. Later, enter the data of the M1N1 adapter "Installation location" and "Cable colour".

   ⇨ After that, the second installation plate for the M1N1 adapter is also created:



Prüfnachweis §57b

(Aufbewahrungspflicht 3 Jahre)

Halterdaten

Fahrzeughalter	[redacted] GmbH & Co. KG
Straße	[redacted]
PLZ / Ort	[redacted]
Kundennummer	

Fahrzeugdaten

Fahrzeughersteller und -typ	Renault Trafic
Fahrzeug-Ident-Nr.	VF1JL000663[redacted]
Amtliches Kennzeichen	[redacted]
Auftragsnummer	

Tachographendaten

	1381.7550333003 / Continental Automotive GmbH			Serien-Nr.	10261926
Gerätetausch	Neu	X	RAS ☐	Reparatur	☐
Seriennummer Sensor / Herstelldatum	20318308		8 / 19		
Hersteller Sensor	Continental Automotive GmbH				
Ext. GNSS	Nicht verfügbar			Serien-Nr.	
DSRC Serien Nr.	10261926				
Plomben S.-Nr.	BP00541006				

Fahrzeugprüfung

Reifengröße	215/65 R 16 C	
Profiltiefe	10,0 mm	
Reifendruck	4,0 bar	
Messverfahren	Messstrecke	
Wirksamer Reifenumfang	l	2097 mm
Wegimpulszahl	w	4956 Imp/km
Wegstreckenzähler vor / nach Prüfung	97 km / km	
Zulässige Geschwindigkeit DTCO	220 km/h	
GNSS Prüfung	In ordnung	
DSRC Prüfung	In ordnung	
Nr. Plombierfolie	ZSN3Q3S	

Tachographenprüfung

Apparatekonstante	k	4956 Imp/km
	k(alt)	0 Imp/km
Geschwindigkeitsprüfung	20,0 km/h 80,0 km/h 180,0 km/h	
Wegstreckenzählerprüfung	1000 m	
Zeitabweichung der Uhr	-0,2 Sek/Tag	

Manipulationsprüfung / Wartung

- Es wurden keine Manipulationsgeräte erkannt
- Kontrollgerät funktioniert ordnungsgemäß
- Pufferbatterie beim VDO DTCO nicht gewechselt
- Kartenschächte des VDO DTCO nicht gereinigt

Bemerkungen / Besonderheiten

w/l-Wert: Wert bestätigt

Hiermit bestätigen wir, dass alle Prüfungen nach den im "Technischen Produkthandbuch EG-Kontrollgeräte/Fahrtschreiber" beschriebenen Arbeitsrichtlinien durchgeführt wurden.

[redacted] GmbH

Heinrich-Hertz-Straße [redacted]
D-78052 Villingen-Schwenningen

31.01.2020 Prüfdatum

[redacted] - 00 Unterschrift

Prüfnachweis §57b

[redacted] GmbH

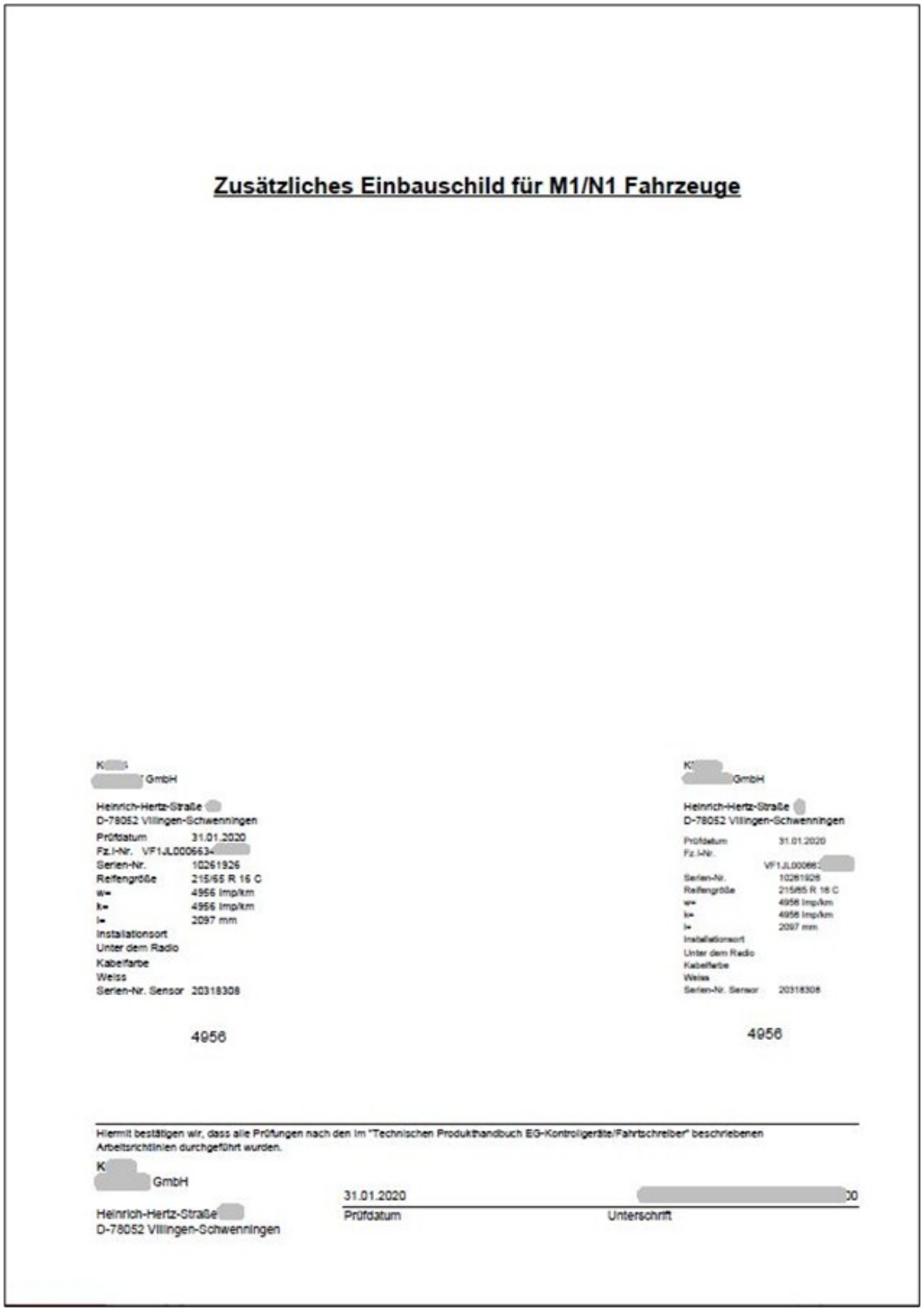
Heinrich-Hertz-Straße [redacted]
D-78052 Villingen-Schwenningen

Prüfdatum	31.01.2020
Fz.-Nr.	VF1JL000663[redacted]
Apparate-Nr.	10261926
Reifengröße	215/65 R 16 C
w=	4956 Imp/km
k=	4956 Imp/km
l=	2097 mm
Ext. GNSS	Nicht verfügbar
GNSS S.-Nr.	
DSRC S.-Nr.	10261926
Plomben S.-Nr.	BP00541006

Nr. Prüfnachweis

4956

Example test certificate periodic inspection §57b with M1N1 adapter



Zusätzliches Einbauschild für M1/N1 Fahrzeuge

[redacted] GmbH
Heinrich-Hertz-Straße [redacted]
D-78052 Villingen-Schwenningen
Prüfdatum 31.01.2020
Fz.-Nr. VF1JL000663[redacted]
Serien-Nr. 10261926
Reifengröße 215/65 R 16 C
w= 4956 Imp/km
k= 4956 Imp/km
l= 2097 mm
Installationsort
Unter dem Radio
Kabelfarbe
Weiss
Serien-Nr. Sensor 20318308

4956

[redacted] GmbH
Heinrich-Hertz-Straße [redacted]
D-78052 Villingen-Schwenningen
Prüfdatum 31.01.2020
Fz.-Nr.
VF1JL00066[redacted]
Serien-Nr. 10261926
Reifengröße 215/65 R 16 C
w= 4956 Imp/km
k= 4956 Imp/km
l= 2097 mm
Installationsort
Unter dem Radio
Kabelfarbe
Weiss
Serien-Nr. Sensor 20318308

4956

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[redacted] GmbH
Heinrich-Hertz-Straße [redacted]
D-78052 Villingen-Schwenningen

31.01.2020
Prüfdatum

[redacted]
Unterschrift

Example of an additional installation plate

Sealing of the KITAS sensor with the housing

The workshops are responsible for the sealing.

The seal number can be used to uniquely identify each company.