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# DTCO® 4.1

## Smart Tachograph Version 2

The new Smart Tachograph Version 2, called DTCO® 4.1, complies with the requirements of the updated EU Regulation No. 799/2016 as well as the changes in conjunction with the Mobility Package I. In particular, the device supports the new rules for posting of professional drivers and Cabotage operations.

DTCO® 4.1 uses a new hardware platform with enhanced security features that provides a solid technical base for the existing as well as the new legal functions.

Especially for international transport undertakings, fleets will benefit from the innovative GNSS receiver with integrated antenna. It is capable of receiving secured GNSS data via the Galileo OS-NMA service. Consequently, there is no longer the need to stop after crossing the border. Moreover, with this technology, positioning data of the vehicle is recorded at the beginning and end of the daily working time, after three hours of accumulated driving time and during a load/unload operation.

The DTCO® 4.1 DSRC interface (Dedicated Short Range Communication) enables control authorities to retrieve vehicle data and information remotely such as current speed, driver activity and recorded events while driving. The DTCO® 4.1 essentially consists of the proven registration unit incl. mass memory, two chip-card readers, an integrated printer and a display. In conjunction with a successfully paired KITAS 4.0 speed sensor, GNSS receiver information and an additional internal motion sensor, the DTCO® 4.1 uses multiple independent sources for motion detection.

Vehicle-related activities and positioning data are stored in the integrated mass memory, which has a capacity of approx. 365 days.

Driver related data is recorded on the personal driver card (chip card), which is inserted into the digital tachograph before the trip begins.

The integrated Bluetooth module does not only provide an ITS interface (Intelligent Transportation System), but also provides a convenient link to tachograph Apps that run on your mobile phone. Before data is transmitted, the driver and the co-driver respectively have to give their consent to transfer his or her personal data.

The DTCO® 4.1 also records digital data such as driving times, rest periods (business-friendly, 1-minute rule), speed, engine speed and additional events (via D1/D2 interface).

Tachograph data is made available via two independent CAN interfaces that provide cyclic as well as diagnostic data.

As another special feature, the VDO counter calculates the remaining driving and rest periods in real time. Moreover working time counters provide a perfect overview on the accumulated work times of the day and the week. The driver is also able to enter the begin and end time for a ferry / train crossing period.

The DTCO® 4.1 offers a full feature remote download functionality according to the latest standard in order to conveniently download driver card data as well as mass memory data.

**VDO**

# DTCO<sup>®</sup> 4.1

## Smart Tachograph

### System components of the digital tachograph

- DIN radio format, 2 chip-card readers, printer, display, real-time clock, operating elements and memory
- Intelligent speed sensor KITAS 4.0 R1.1x or R1.21 speed sensor
- Device internal motion sensor
- Global satellite navigation system (GNSS) for the acquisition of location data, including new Galileo OS-NMA service
- DSRC remote communication to check the truck while driving

### Classic Data Collection

The DTCO<sup>®</sup> 4.1 registers the driving, working, standby and rest times of drivers and co-drivers, the momentary velocity, the distance travelled and application-specific parameters such as speed engine and other work processes or additional events on the vehicle. Data is stored in relation to the vehicle. Driving times and rest periods are also registered on the personal driver card. Based on the new legal regulation, authenticated positioning data as well as a load or unload activities are also recorded.

### DTCO<sup>®</sup> 4.1 Highlights

- Enhanced GNSS receiver with Galileo OS-NMA service for authentication of the vehicle position and automated border-crossing detection
- Internal GNSS antenna compatible for easy integration of the system into existing vehicles
- Optional connector for external GNSS antenna
- Integrated Bluetooth module that supports the ITS interface as well as mobile tachograph Apps
- Various settings can be made by the driver via the DTCO<sup>®</sup> Configuration App (via Bluetooth) if a valid company card is in slot 1 or 2
- The updated VDO Counter keeps the driver constantly informed about the status of his drive and rest times like a personal assistant. "Team operation" and special conditions like ferry/train are also supported. Moreover, the new rules for international transports are considered
- Cabotage related functions like load/unload
- Working time counters ensure that the driver has full visibility over his daily and weekly working times
- Entrepreneur-friendly driving time calculation based on an interpretation accurate to the second (1-minute rule)
- Remote download/local download
- Context-sensitive menu and simplified user guidance
- Graphical printouts

### The following configuration parameters are available:

- Entry of the very 1st vehicle registration number
- Display of the VDO counter with extended information (historical data)
- Active remote control
- Change of driver related activities linked to ignition on/off
- Company logo for the printouts
- Downloads reminders
- Warnings about over speeding and working time limits

### Operation and functions

- Acquisition of additional data (e.g. 168 hours – speed recording, mileage at vehicle stop)
- Consideration of the driver's and co-driver's consent for the additional recording of personal data
- Early warnings (reference to periodic inspection, reference to expiry of tachograph cards, driver card download)
- Unique user guidance with menu text
- The download status is shown on the display

### Interfaces

- 2 independent CAN interfaces to the vehicle network
- External motion sensor interface (KITAS 4.0)
- Signal outputs (3x V pulse, 1x 4 pulse/m)
- Bluetooth interface (ITS interface and tachograph Apps)
- Ignition-independent info interface for telematics systems
- 6-pin front-interface for programming, calibration and data download

### Technical data (preliminary)

- 1-DIN radio slot format, installation dimensions:  
180 x 51 x 168 mm (W x H x D)
- Protection class: IP54
- Real time clock based on UTC time
- Negative display
- Operating voltage: 24V (optional 12V)
- Current consumption:  
Stand-by: typ. 12 mA (24 V) / 15 mA (12 V)\*  
Normal: typ. 150mA (24V) / 200mA (12V)  
Peak: typ. 3.2A (24V) / 4.5A (12V)
- Measuring range: 0 to 250 km/h
- Operating temp.: -20°C to +70°C
- Storage temp.: -40°C to +85°C  
(-20°C to +65°C in ADR)
- Pulse range: 2.400 to 25.000 pulse/km, max. 1.5 kHz
- Inputs: KITAS 4.0 2185, speed sensor (RPM), additional inputs
- Outputs: 3x V-pulses, 1x 4 pulses/m
- Accuracy: According to legislation approx. 600g.
- Weight: FAKRA Interface L- Coding (optional)
- DSRC: FAKRA Interface K- Coding (optional)
- GNSS: FAKRA Interface C- Coding (optional)

\* Stand-by: Averaged Average value over 24h of a standard DTCO variant.  
For ADR variants see technical manual.