RTB

# TOPO

# VEHICLE CLASSIFICATION

# ACCURATE TRAFFIC DATA AQUISITION

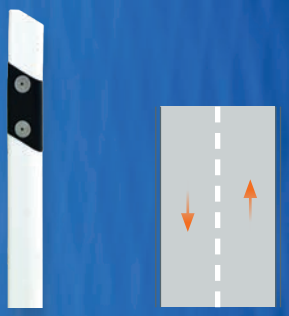
Increasing traffic safety, preventing traffic congestion, and measuring emissions and immissions to protect the environment is becoming more and more important. However, the optimal management of traffic flow is possible and effective only if a solid pool of data is available.

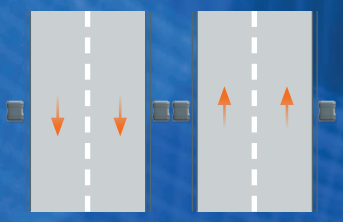
The TOPO product family from RTB provides accurate and reliable traffic data. This has been most recently confirmed by the Federal Highway Research Institute (BASt). Having been presented for TZ 4 recertification, the TOPO systems have now been labeled “Best in Class”. They achieved such good results that they have reached the next quality level up, TZ 5. As such, the devices satisfy the BASt requirements for official traffic payments, and can be used unrestrictedly in this area.

| **Quantity classes/ groups** | | **Name of vehicle classes/groups (with code)** | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| TZ2 | | Vehicle (64)<br>Other vehicle | | | | | | Heavy vehicle (40) | | | | |
| TZ4 | | Light vehicle (37)<br>Other vehicle | | | | | | HGV (34) | | | Bus (5) | Motorcycle/ moped (10) |
| TZ5 | | Light vehicle (37)<br>Other vehicle | | | | | | Truck (3) | Truck combinations (4) | | Bus (5) | Motorcycle/ moped (10) |
| Basic classification | Bicycle (230) | Other vehicle (6) | Partially covered vehicle (250) | Car (7) | Car trailer (2) | Van (11) | | Truck (3) | Truck trailer (8) | Tractor vehicle (9) | Bus (5) | Motorcycle/ moped (10) |

# MODELS

| CLASSIFICATION SYSTEM | SYSTEM INTEGRATION |
|---|---|
| TOPO.slp 4G | ▶ Integration of the system in a standard reflector post<br>▶ For installation on roads outside of urban areas<br>▶ Can be integrated discreetly in the streetscape |
| TOPO.box 4G<br>TOPO.bigbox 4G | ▶ Easy installation on various pole systems<br>▶ For installation on city and rural roads |
| TOPO.slp 4G<br>TOPO.box 4G<br>TOPO.bigbox 4G | ▶ Easy installation on various pole systems<br>▶ For installation on city and rural roads |





TOPO

# TECHNOLOGY & USAGE


One of our first reference projects is already successfully in use in Bavaria on the A94 interstate highway. It enables traffic to be recorded accurately and directly at the device on interstate highways and federal roads (2 lanes in one direction) as well.

TOPO.slp 4G and TOPO.box 4G/TOPO.bigbox 4G are based on hybrid technology and are used to survey traffic for a variety of purposes.

The exact classification of 8+1 vehicle classes according to TLS 2012 (technical terms of delivery for roadside data collection facilities) uses a variety of measurement characteristics:

The different versions and models allow for implementation in almost any setting.

TOPO systems take increasing demands to reduce noise head on by making it possible to measure noise directly at the device, so that in addition to traffic data, noise emissions can also be measured.

- Length of the vehicles
- Number of vehicle axles
- Vehicle axle configuration
- Axle spacings
- Position of the motor block
- Measurement of sound pressure level dB (A)

The new, fast TOPO 4G generation offers various device types that can be used in various scenarios and under different circumstances at the site.

VEHICLE CLASSIFICATION ACCORDING TO 8+2 CLASSES

- Certification to TZ5 (BASt)
- Sound pressure level dB (A)

POWER SUPPLY:

- Battery/exchangeable battery
- Charging via streetlights
- Solar charge
- 230 V power cable

OTHER FEATURES

- Use inside or outside city limits
- Device memory up to 950,000 data records
- FSK technology for hiding reflections
- Real-time traffic data via Ethernet or LTE mobile network

Also for TOPO.slp 4G: Inconspicuous use in standard poles

# CLIMATE PROTECTION

WELL EQUIPPED FOR CLIMATE PROTECTION

The new generation of the TOPO product range is the only detector system that can integrate not only length and speed measurements and axle recognition, but also an environment sensor.

Alongside the certified capture and classification of traffic data, they can now measure environmental data such as temperature, air pressure, humidity, fine particulate matter classes PM1, PM2.5, PM4 and PM10, and the combination of nitrogen oxides and ozone. In these times, when decision makers are increasingly looking at climate change, a solid data basis can play an increasingly important role in helping them make the right decisions.


# AIR QUALITY INDEX

| AQI | CATEGORY | NO2 CONCENTRATION (ppb) | O3 CONCENTRATION (ppb) |
|---|---|---|---|
| 0 to 50 | good | 0 to 53 | 0 to 62 |
| 51 to 100 | acceptable | 54 to 100 | 63 to 124 |
| 101 to 150 | harmful for sensitive groups | 101 to 360 | 125 to 164 |
| 151 to 200 | harmful | 361 to 649 | 165 to 204 |
| 201 bis 300 | very harmful | 650 to 1249 | 205 to 404 |
| 301 bis 500 | dangerous | 1250 to 2050 | 405 to 604 |

# EXCEPTIONAL

## WHAT MAKES TOPO EXCEPTIONAL?

- TOPO is the only system that performs axle detection along with length and speed measurement. It measures the vehicle length, counts the number of axes, and determines their spacing, for exceptional detection accuracy according to 8+2 classes.
- TOPO systems are equipped with a microphone to pinpoint the position of the motor block and ensure a distinction of truck, truck with trailer, semitrailer, or bus is made. The microphone records the sound pressure level measured in decibels (dB (A)) emitted by the vehicles. This is the maximum level that can be recorded when a vehicle in the closest lane passes by.
- TOPO systems classify the vehicle at the exact moment the vehicle passes the detector.
- TOPO is the only detector system certified by the Federal Highway Research Institute (BASt) and thus also the only system approved for automatic traffic payments.
- TOPO provides real-time data that can be immediately processed by the traffic computer to enable precise and effective responses.

# REAL-TIME

FAST AND RELIABLE - IN REAL TIME!

Increased traffic on the roads frequently disrupts traffic flows. There is a requirement for contemporary, forward-thinking solutions that enable traffic flows to be closely managed. The new generation of TOPO systems have the fast 4G/LTE standard that enables data to be accessed in real time. Live data from the streets can be fed straight into the traffic computer to help control the traffic. For example, where the TOPO systems are used as count points, it may be important to know what the current traffic volume is.

This lends itself to improved traffic flow control, particularly on roads that are used as detours when there are jams on the freeway. But TOPO devices with a 4G module can also be deployed ahead of traffic lights to improve the traffic situation, for example by extending the green phase. The first handful of projects have been already implemented.

# TOPO.app

All the latest generation TOPO devices can be configured with the TOPO.app. It is of course available for both iOS and Android operating systems. The current DD.web 4.0 platform is to be upgraded, so that individuals can use it for all app management.

# CURRENT PROJECTS

"SCHLOSSKREUZUNG" PROJECT IN PADERBORN

Intelligent traffic light control makes it possible to prevent traffic congestion, stop and go traffic, and unnecessary waiting periods by collecting real-time data.

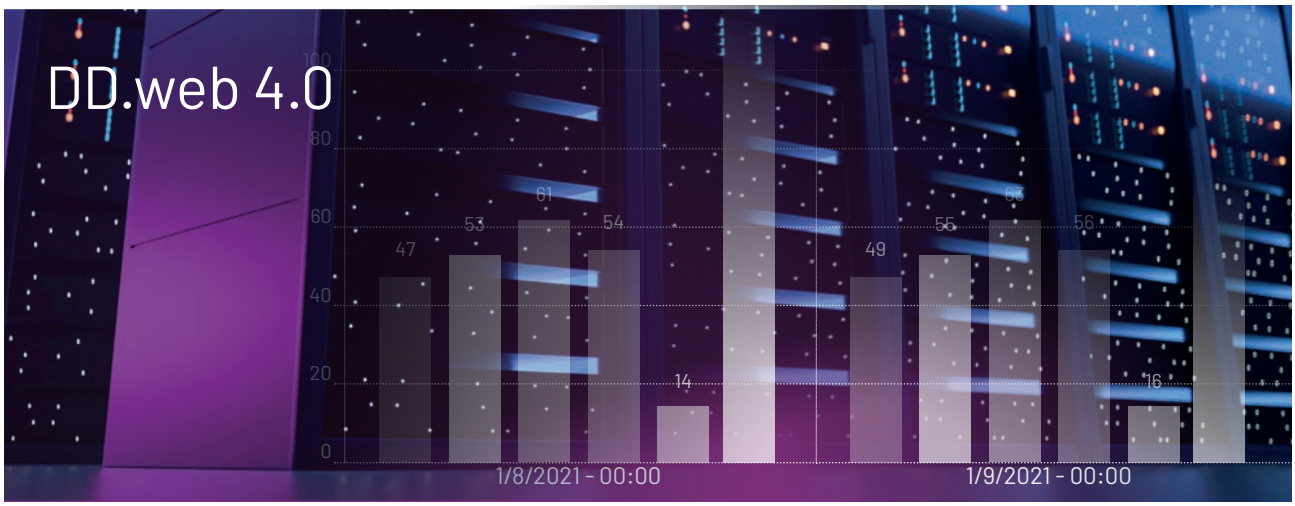

PROJECT rosshaf in Paderborn (**Ro**bust **S**ensors and **S**ystems for **H**ighly **A**utomated **D**riving ("Fahren"))

The goal of the rosshaf project is to increase the robustness of sensors and sensor systems to withstand environmental conditions and thus to also ensure the safe use of automated driving functions under adverse environmental influences.

Our TOPO systems with environmental sensors used stationary sensor technology to provide the vehicle with the data it needs.

# ACCURATE ANALYSIS

DD.web 4.0 is an Internet platform our customers can use to access a range of services and analytics.




- High security standards through encrypted https connection
- Customer controls access rights: the administrator manages user rights
- Group message communication
- DD.web 4.0 hotline
- Language selection
- Comprehensive analytics (speed, traffic volume, classification results)
- Configurable dynamic speed and time intervals for analytics models
- Access to vehicle data points (raw data)
- Location and order management
- Operational control of the device
- Map display to manage locations
- PDF document creation
- Export functions

Feel free to contact us for your free trial access.


# NOISE REDUCTION

Noise is unhealthy. This is verified by numerous scientific studies. In adults, it mainly affects the cardiovascular system, and in children, the brain's performance. Noise far below a sound pressure level of 85 decibels can make people sick—even if it is not perceived as annoying. It is estimated that around 4,000 heart attacks a year in Germany alone are caused by road traffic noise.

But RTB has a solution: TOPO systems with the dialog display offer help. This combination of devices has already been tried and tested, especially when used to combat motorcycle noise:

- Device combination of dialog display (SLOW/QUIET/THANK YOU) and upstream TOPO vehicle detection system that records the type of vehicle noise emission
- Mitigation of motorcycle hotspots, especially on weekends
- Targeted protection of residents through immediate, emotional appeal to road users and the impact of social control by others
- Proven use on highly frequented routes proves effective, sustainable effect

More information can be found in our motorcycle noise brochure.

**AUTHENTIC PEOPLE. RELIABLE PRODUCTS.**

That is the premise on which we operate. We aim to impress you with innovative power, excellent quality, and outstanding service. User-friendliness of our products and customer orientation are most important for us. We put our heart and soul into reliable, collaborative partnerships.

As an internationally company, RTB develops, produces, and distributes solutions in the traffic lights, detection and parking sectors. We have repeatedly set new standards for the industry with our bold ideas. We combine a constant willingness to innovate and dogged persistence with a natural straightforward approach. We see customers, suppliers and employees as equals, engaging in intensive dialog with them, which perhaps explains our long-term success.

RTB

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