

Services of the Calibration and Testing Division

The Calibration and Testing Division of METAS carries out tests, verifications, calibrations, type tests and conformity assessments of traffic measuring instruments using a wide variety of techniques. This includes all essential techniques and modern technologies for both speed measuring instruments and traffic monitoring instruments, such as:

- Radar antenna (Doppler principle, CW and FMCW)
- Laser pistol (LIDAR principle)
- Laser scanner (LIDAR principle)
- Section control
- Image-based speed measuring systems
- Light barriers
- Speed measuring systems based on induction loops or piezoelectric sensors
- Tracking tachographs
- High-performance GNSS-based measuring instruments (GPS, Glonass, Galileo)
- Red light monitoring
- Automatic number plate recognition (ANPR)
- Flashlight measurements
- Rev counter (optical/mechanical)

Global network

The development of measuring systems for new technologies and of measuring stations for the realistic simulation of road traffic in the lab is the trademark of the Calibration and Testing Division of METAS. It is correspondingly well known and recognised all over the world for its expertise, the quality and reliability of its measurements, and the extensive experience of the members of its team.

Legal principles

Measuring instruments for determining speed in road traffic must comply with legal requirements. The following are decisive:

- Metrology Act (SR 941.20)
- Measuring Instruments Ordinance (SR 941.210)
- Speed Measurement Equipment Ordinance (SR 941.261)
- Instructions on Speed Measuring Instruments (W261.6)
- Ordinance of the Federal Roads Office on the Road Traffic Control Ordinance (VSKV-ASTRA, SR 741.013.1)
- Instructions on Police Speed Checks and Red Light Monitoring in Road Traffic (W480)

METAS: the Swiss Federal Institute of Metrology

The Swiss Federal Institute of Metrology (METAS) is the national Institute of Metrology in Switzerland. It is at the forefront of measurement accuracy in Switzerland. With its activities in research and development and its services, it creates the conditions to ensure that it is possible to carry out measurements in Switzerland with the accuracy required for the interests of business, the research sector, administrative bodies and society. METAS realises the standards and reference values of Switzerland, ensures their international recognition and passes them on with the required accuracy.

METAS supervises the commissioning, use and control of measuring instruments in trade, transport, public safety, health and environmental protection. It ensures that the measurements necessary for the protection and safety of man and the environment can be carried out correctly and in compliance with regulations.

METAS follows scientific and technical developments in order to keep up to date. It conducts research and development to improve measuring systems and measuring services. This also applies to the measuring systems and services for traffic measurement technology.



Sector Verifications and Tests

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Traffic metrology



METAS – your partner for reliable measurements in traffic

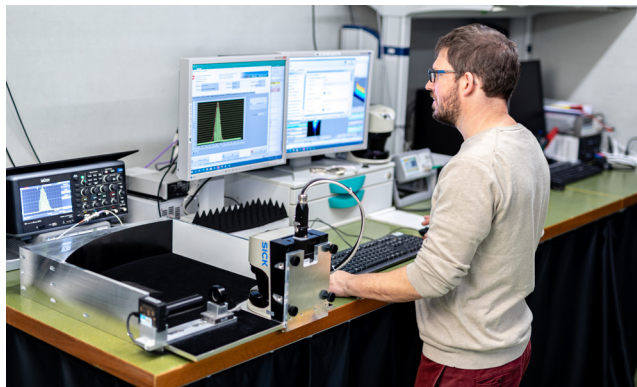
Type tests, approvals, conformity assessments

The Calibration and Testing Division of METAS ensures that the measuring instruments used in official traffic controls in Switzerland work accurately and reliably. It also constantly checks new measuring instruments and measuring procedures. Its lab has a specialised, technologically highly developed infrastructure. In order to fulfil its mission, it is continuously developing test procedures for new measurement technologies.



One of the main tasks of the division is to carry out **type tests for speed measuring instruments and for red light monitoring systems**. Where applicable, these type tests are conducted in accordance with the relevant recommendations of the International Organisation of Legal Metrology (OIML-R 91). International guidelines are often lacking for measuring instruments with new measuring procedures. In such cases, test methods must be developed to ensure that the essential requirements for such measuring instruments are met.

A type test forms the basis of an **approval** under Swiss law. In many countries, METAS tests are recognised as the basis for national approvals.



Verifications

Before an approved measuring instrument can be used for monitoring traffic, it must undergo an **initial verification**. This ensures that each individual measuring instrument works correctly from the outset. In order to guarantee measurement stability over the entire service life, METAS carries out **recalibrations** at regular intervals.

Other activities

The division performs special tests for manufacturers of traffic measuring instruments with new measuring procedures. For example, it can comprehensively test **GPS-supported measuring procedures** with simulations in the lab.

Judicial authorities often request **expert opinions** on speeding or red light violations. To this end, specialists from the division reconstruct the situation using the available raw data, photographs or video recordings.

METAS experts participate in interdepartmental working groups in the **preparation of legal bases** and support the competent authorities in technical matters.

Synthetic traffic in the lab

The Calibration and Testing Division has reference measuring systems for testing speed measuring instruments used on a motorway. Measurements in real road traffic are elaborate, expensive and dangerous. Furthermore, high speed and acceleration values, which must also be taken into account in test procedures for speed measuring instruments, are not available at all in everyday traffic.

In order to be able to test measuring instruments for road traffic in the lab as realistically as possible, the division has developed complex simulation systems that enable **realistic simulation of traffic in the lab**. With the help of these measuring systems developed in-house, measuring instruments for traffic monitoring can be checked and validated in the lab.

In these simulations, the entire speed range and the vehicle category can be freely selected. Synthetic traffic also makes it possible to study instrument behaviour during speed changes and in complex traffic constellations. Furthermore, it has the advantage that different devices or device types can be tested under repeatable, identical conditions.

