—

# SAFER ROADS AND LESS NOISE POLLUTION

## Digital technology for optimal speed enforcement

ES 8.0: the complete system for efficient speed monitoring

## KISTLER

measure. analyze. innovate.

# Editorial

It is a proven fact that speed monitoring of traffic on roads helps to increase safety and reduce noise pollution. To achieve their goals, public authorities rely on advanced solutions as their main tool to ensure that measurements and other procedures are performed efficiently. This is why the complete system with the 8.0 single-side sensor presented in this brochure was designed with the focus on several key benefits: flexible application possibilities, simple and reliable operation, and a comprehensive software package for data utilization and management. The Kistler Group's speed monitoring know-how is closely linked to the eso name. Since 1977, world-leading speed measurement solutions based on optical sensors and multiple light barriers have been developed at our Tettnang facility near Lake Constance. Many years of experience in speed monitoring, a wide range of components, systems and services, and a strong network of partners: thanks to these advantages, customers benefit from a variable complete solution from one single source – tried-and-tested measurement technology from Kistler to enhance traffic safety.

# Contents

Efficient speed measurement in every scenario – with the 8.0 single-side sensor by Kistler

# Well equipped for every operational scenario

**Mobile and stationary speed monitoring are effective ways to improve traffic safety. Traffic measurement technology from Kistler is the key to performing the required measurements flexibly and efficiently, with comfortable evaluation and management thanks to comprehensive software solutions.**

Excessive speed has always been – and still is – one of the major causes of road traffic accidents, and it also causes noise pollution and contamination of the environment. Kistler collaborates with public authorities and other users to keep on developing its traffic measurement technology. The result: a flexible measurement solution that is as simple as possible to use.

**Variable operating modes**
Thanks to this solution, one and the same measuring instrument can be used for both mobile and stationary measurements. The equipment is easy to transport, so locations can be changed on a regular basis – for example, users can choose different measuring points within one municipal area. On request, the entire measurement solution – including a personal workstation for the operator – can also be installed directly in a vehicle.



Watch this video to learn how to set up the measurement solution, and see how quickly it will generate results that you can actually use.

**Efficient traffic monitoring with Kistler**
- Monitoring in both directions of travel with just one measuring instrument
- Cable-free operation thanks to encrypted WLAN
- Two calibrated wireless cameras can be operated
- Simultaneous front and rear flash photographs of motorcyclists provide conclusive legal evidence
- No traffic flow required for setup
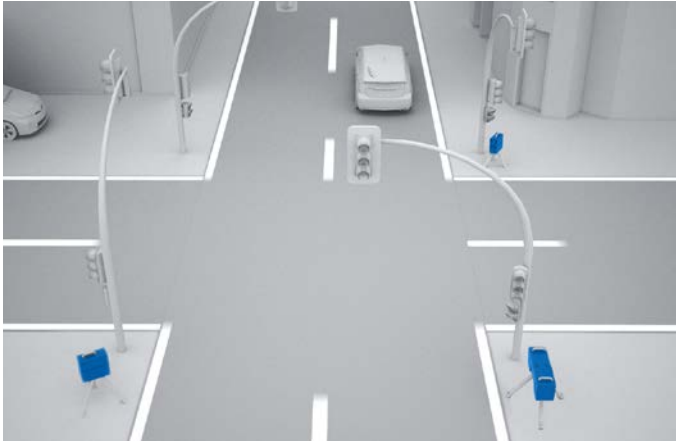- Sections with bends and multi-lane roads can also be monitored

Mobile monitoring in urban traffic
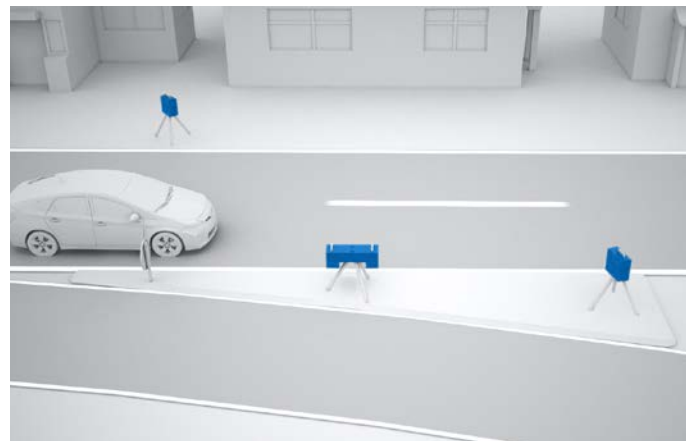

Monitoring in both directions of travel


Motorcyclists are recorded reliably – even on bends


Flash photography on multi-lane roads


Can be operated anywhere – even in narrow residential streets


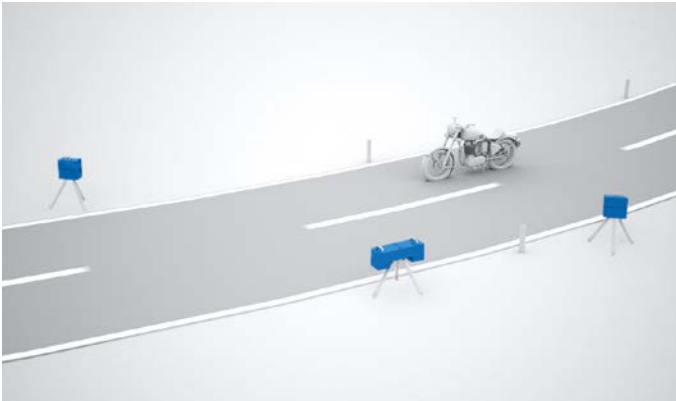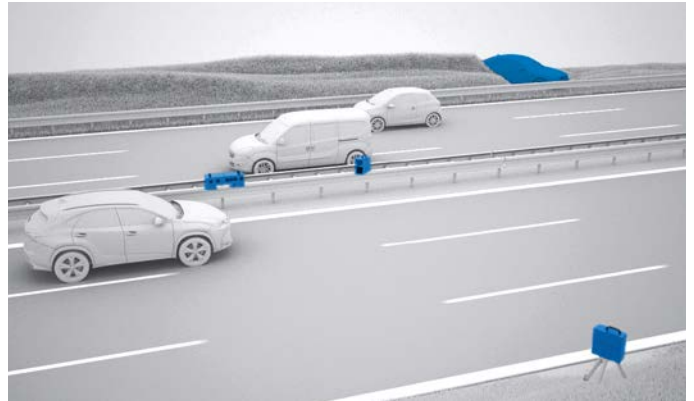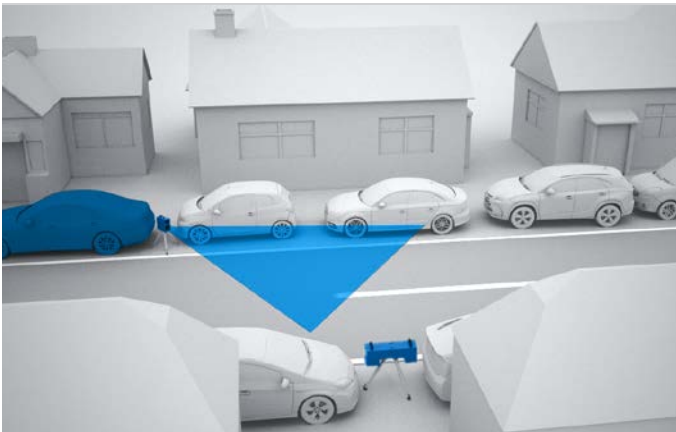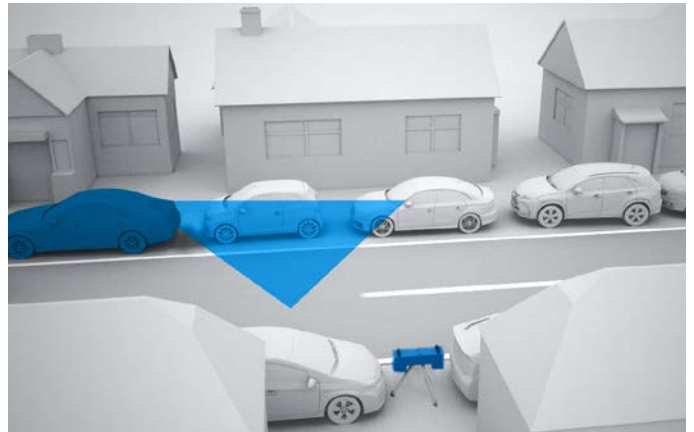Photography from inside the vehicle

The modular measurement solution from Kistler consists of the single-side sensor and up to two separate camera units. With this configuration, speeds can be recorded precisely – irrespective of vehicle class, number of lanes or operating scenarios. By day or night, on motorways or in cities, on bends or in heavy traffic: thanks to precise, near-real-time measurements, nothing escapes this system!

Cutting-edge camera technology and adjustable flash illumination ensure that drivers and numberplates are identified reliably in both directions of travel. Intuitive operating software is installed on the notebook with touchscreen that comes with the solution – so users benefit from step-by-step guidance through the setup procedure, and all the important information is available at a glance.

**Guaranteed data security**
While measurements are in progress, the sensor unit, notebook and photography equipment communicate via WLAN in a secured network. This guarantees very high data security.

**Features and benefits**
- Rechargeable battery runtime of up to eight hours
- Intuitive menu guidance via touchscreen supports users as they operate the system
- Extensive range of accessories for individual measurement operations
- Products are continuously developed to meet customers' wishes

# Flexible and efficient measurement and evaluation

**The all-in-one modular system that can be expanded as required: the speed measuring system based on the 8.0 single-side sensor by Kistler is designed for easy, safe and reliable operation: it meets the requirements of professional users and ensures compliance with legal requirements.**

The basic version of the complete solution consists of the mobile ES 8.0 measuring instrument, up to two cameras and two different flash units: these components can be linked together via the WLAN router (included in the solution) to create a measurement system that is comfortable to control from a laptop. After the measurements have been captured, the data is transferred to the evaluation computer on a USB stick.

Tripods of various sizes are available for mobile operation; cameras and flash units can be installed above one another or next to one another, according to choice.

| ES 8.0 sensor unit | |
|---|---|
| | The cable-free mobile ES 8.0 single-side sensor is the centerpiece of the complete solution. It allows near-real-time speed measurements in virtually every conceivable scenario, at speeds from 10 to 250 km/h. The unit can be operated for up to eight hours with a rechargeable battery. |

| FE8.0 camera unit | |
|---|---|
| | The basic equipment includes up to two digital FE8.0 wireless cameras. Features of these CMOS cameras include resolution of 12.58 megapixels, a broadband function specially designed for motorway use, and many other adjustments and settings. As an option, a telephoto lens can also be fitted for long-distance use. |

| WLAN router with case for easy transport | |
|---|---|
| | All the components such as the cameras, sensor and operating laptop are securely connected together via WLAN. The WLAN router is transported in a rugged weatherproof case, and is powered by a rechargeable battery weighing only 2 kg. |

| BE 2.0 flash unit | |
|---|---|
| | The BE2.0 flash unit is highly suitable for use in built-up areas and at measuring points where space is limited. The flash can be comfortably controlled and aligned from the vehicle. The BE2.0 can also be operated from the vehicle in combination with a camera. |

| BE 1.3 flash unit (optional) | |
|---|---|
| | The optional BE1.3 flash unit is particularly suitable for use outside of built-up areas or to illuminate multi-lane roads such as motorways and expressways. Users can choose whether to trigger the flash via a cable or a wireless module, synchronously with the camera. |

| Mobile operating computer | |
|---|---|
| | The scope of delivery includes a notebook equipped with a touchscreen, connected via WLAN with all the components of the measuring system. The pre-installed software guides users through the setup procedure for the measuring site. All measurement data is then continuously visualized and saved. |
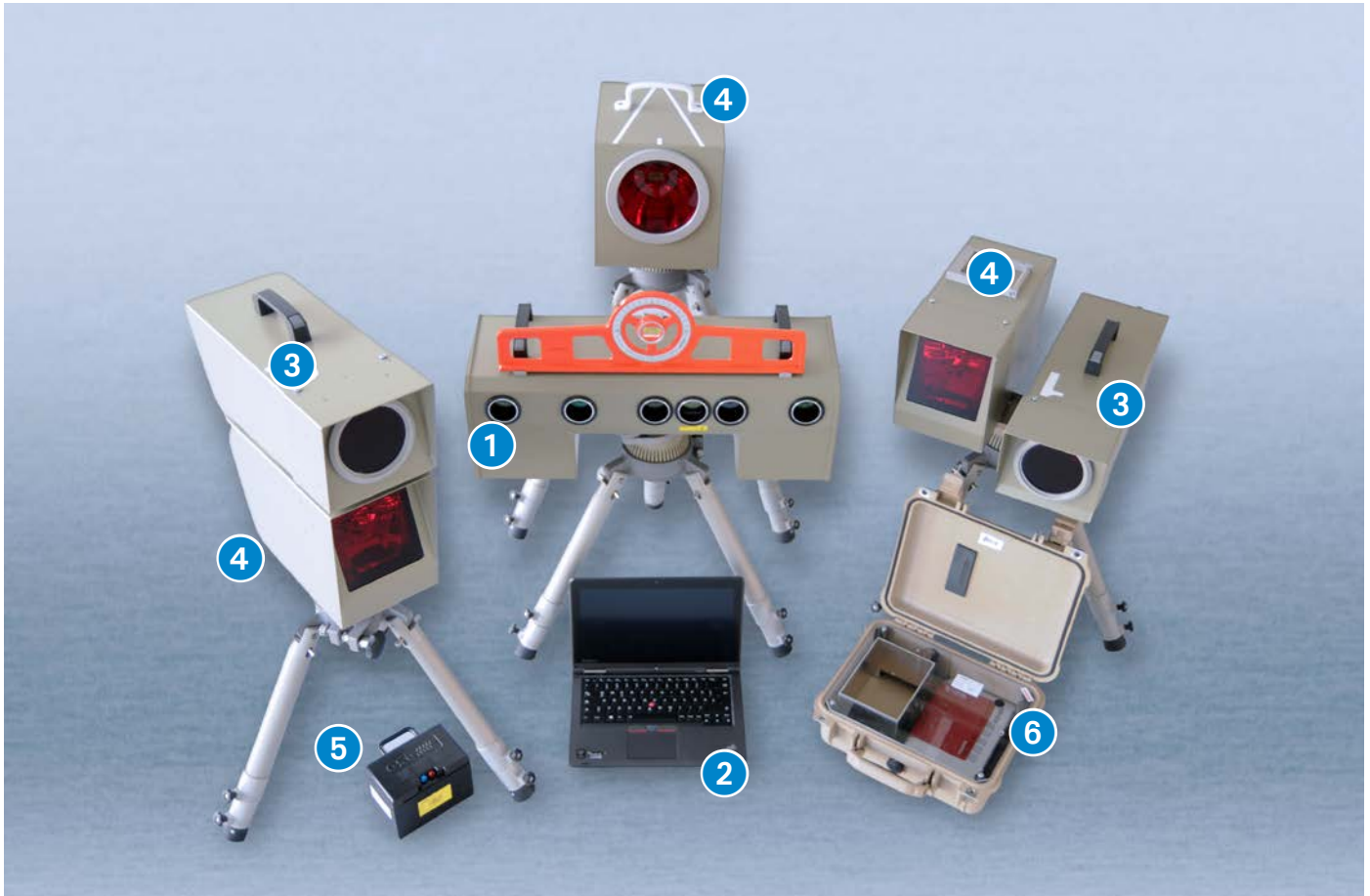
**The basic equipment includes these components:**

1. ES 8.0 sensor unit
2. Notebook with operating software
3. FE 8.0 camera unit (can be extended to two cameras)
4. BE 2.0 and BE 1.3 flash units
5. 12V lithium or lead storage battery
6. WLAN router in weatherproof case

# Practical information

**Which points require special attention when measuring?**
Optimal use of the system in compliance with the applicable legal requirements involves many different aspects, so users acquire this knowledge at special training courses offered by Kistler or the responsible authorities.

**How is the measurement equipment transported?**
All the required components can be transported in specially designed cases that fit into standard commercial vehicles. Alternatively, the system can be installed in protective housings for stationary measurements, or permanently built into vehicles.

**How is data stored?**
One or two photographs are stored in a dataset on the hard disk of the operating computer. They can then be conveniently transferred to the USB stick in the vehicle.

**How are photographs taken?**
The sensor unit triggers photographs wirelessly at a predefined position. If two cameras are operated, multiple lanes and both directions of travel can be covered, and front as well as rear photographs are possible.

**Comfortable operator workstation**

**Auxiliary heating**

**Measurements up to 60 m away from the sensor**
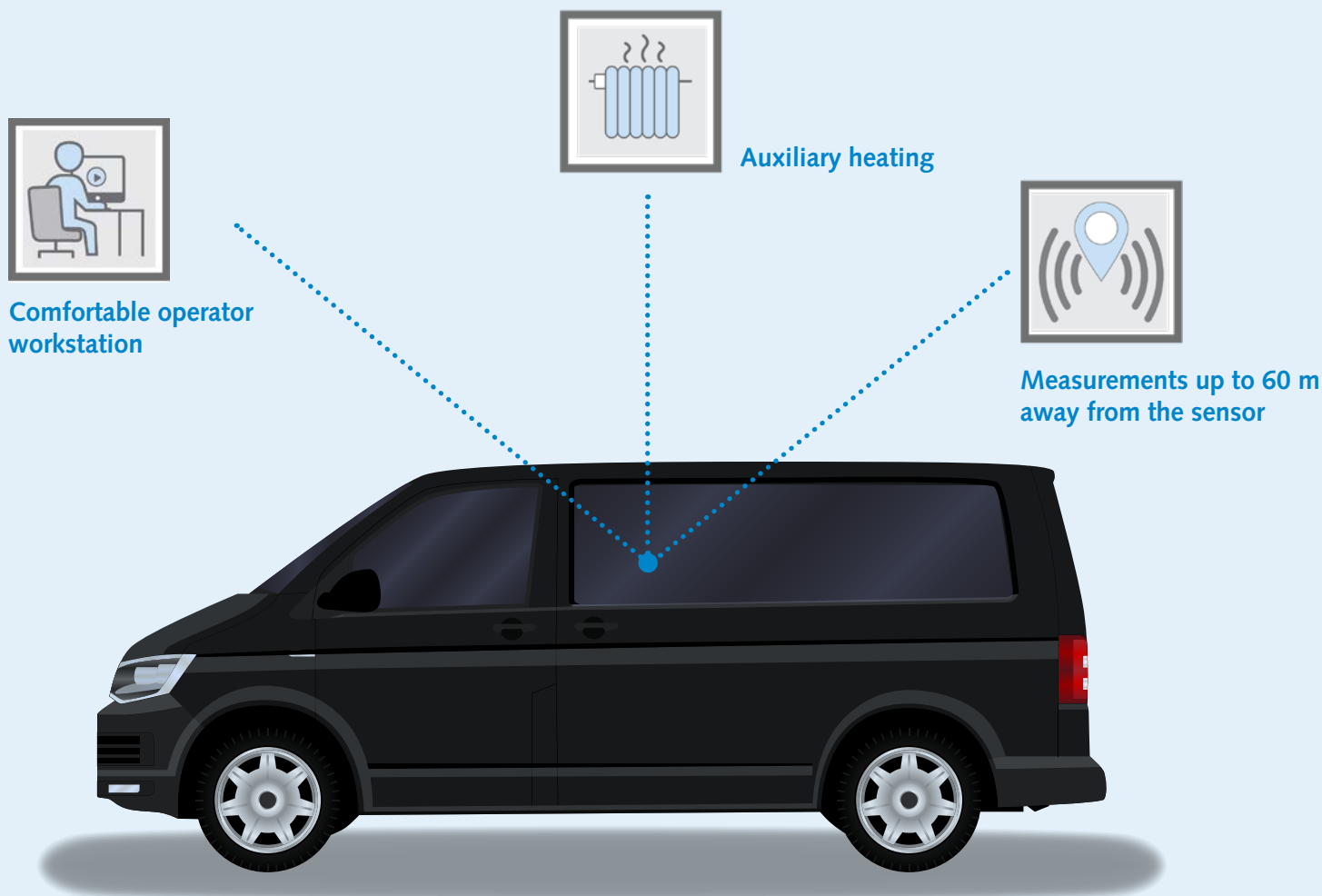
# Customized in-vehicle installation as an option

**Various versions are available for direct in-vehicle installation: rear box, integrated measuring station and "office on wheels". Direct photography from the vehicle is also offered as an option.**

The rear box can be installed without any major modifications to the vehicle (no drilled holes, etc.) – so it can also be used in leased vehicles, for example. If the system is installed in small vans such as the VW Caddy, individual features such as a table or shelving can be built in. If more space is available, a comfortable workstation ("office on wheels") can be set up with furniture, auxiliary heating and a battery for additional consumers.

**Variable, TÜV-certified installation options**
Generally speaking, installations are possible in almost all common vehicle types in the station wagon class. There are no additional requirements for the patrol vehicle – such as a costly clear-glass rear windscreen, which can be difficult to obtain. So that measurements can be performed comfortably in all weather conditions, however, we recommend that the vehicle is equipped with auxiliary heating as standard.

All installation work is carried out professionally by experienced service technicians and is then TÜV-certified.

# In-vehicle installation examples



**1** Rear box: the convenient transportation option



**2** All the components are within easy reach



**3** Removing the measuring instrument is easy and comfortable



**4** Additional storage compartments and lighting



**5** Flexible slide for taking photographs from the vehicle



**6** Comfortable workstation with seating

# Flexible transport options

**All the components of the complete system fit into hardshell cases. The cases are easily transported in a vehicle, and they can also be moved around on their roller wheels. The recommended solution: in-vehicle transportation of the measuring system in the rear box with its integrated workstation.**

For fast transport from A to B, the single-side sensor, camera and flash units can be packed together into two cases. Both the WLAN router and the operating computer with the data transfer unit are accommodated in their own robust containers.

**Easy to transport in standard commercial vehicles**
This means that all the measurement equipment can be transported in any standard vehicle in the station wagon category, with no additional effort or expense; optional accessories such as tripods, extra batteries and other components can also be accommodated in the two transport cases.

As a further option, Kistler can install a special transport box and – on request – can set up a workstation including an additional power supply for a laptop or cooling box, for example. The camera systems can also be installed and operated directly in the vehicle.

# Stationary operation

**The complete system including the 8.0 single-side sensor by Kistler is ideal for mobile operation – and it can also be fitted into protective housings for use at fixed locations. This opens up more applications: operation at accident black spots, for example, or monitoring in sensitive traffic zones near kindergartens and schools.**

The universal speed measurement solution from Kistler can also be used for stationary monitoring. In this mode, both the ES 8.0 measuring instrument and the camera and flash units are accommodated in special protective housings that blend inconspicuously into the surroundings. Flexible modules allow fast changes between different measuring sites.

**Operate multiple measuring sites with one system**
In just a few easy maneuvers, the basic mobile system can be integrated into the housing – but it doesn't have to stay there permanently. This makes it easy to switch between mobile and stationary mode, or between multiple stationary systems – on different days of the week, for example. Another possibility is to operate a fixed-location system at weekends and on public holidays only – entirely without officers, 24 hours a day – while the system is used in mobile mode on working days.

**Your benefits**
- Monitoring of sensitive traffic zones
- One system for all operating modes
- Special protective housings to match the system
- Flexible switchover between mobile and stationary mode, or between multiple systems
- Two different time ranges can be set (e.g. 50 km/h by day and 30 km/h at night)



Watch this video to learn how stationary operation works, and see how the housings blend inconspicuously into the surroundings.

# Mobile, stationary, alternating, or from inside the vehicle

**This measurement solution for official speed monitoring is designed so that it can be used in many different ways.**

It can be operated in flexible mobile mode or as a stationary system – and it is also easy to switch between the two operating modes. What's more, the solution with all its components can be installed inside a vehicle, including an individually designed workstation for the operator.

**Extremely flexible in every scenario**
The ES 8.0 single-side sensor from Kistler was designed for unrestricted mobile operation, irrespective of location, time, road and weather conditions. This gives the sensor some decisive advantages: it can measure on bends, near construction sites, inside and outside of built-up areas, on motorways and in traffic-calming zones (speeds as low as 10 km/h can be measured).

# Switching from ES8.0 mobile to ES8.0 stationary



1 Drive up to the stationary measuring point

2 Open the protective housing

3 Use the mobile equipment in stationary mode

For stationary operation, both the sensor and the camera and flash units are each accommodated in special housings – visually attractive, but inconspicuous. If required, they can very easily be taken out of the housings again and placed in the transport cases: for example, this would allow both stationary and mobile measurements on different days of the week.



④ Conversion is fast and easy

⑤ Changing the measuring equipment is quick

⑥ Flash photography from the stationary housing

# Switching from ES8.0 stationary to ES8.0 mobile

# Data evaluation and more with esoDigitales3

**The esoDigitales3-Studio software solution is a modular platform that gives users a wide choice of options for managing and selectively evaluating their measurement data. Applications go far beyond speed measurements: red light violations are also covered, for instance.**

The esoDigitales3 measurement data management software makes it much simpler and easier to evaluate traffic offenses – and it provides conclusive legal evidence. The effort and cost involved in the process are greatly reduced – less time is needed, and staff workloads are reduced. esoDigitales3-Studio enables evaluation of all measurement systems and measuring instruments for speeding and red light violations approved by the National Metrology Institute of Germany (PTB).

esoDigitales3-Studio is a complete package comprising four different modules:
• Coordinator
• Viewer
• Reader
• Checkpoint

The modules come with an Assistant that supports users as they go through each processing step. Nothing is left to chance, and optimal downstream processing of all valid case data is ensured.

> **Benefits of esoDigitales3-Studio: an overview**
> • Complete software designed to be user-friendly and efficient
> • An Assistant guides users through all the tasks waiting to be performed
> • Modular structure comprising three components: Viewer, Reader and Coordinator
> • Comprehensive search, analysis and reporting functions
> • PDF export to responsible authorities and courts
> • Flexible coordination and control of measuring instruments, measurement stations and staff

MAP OVERVIEW
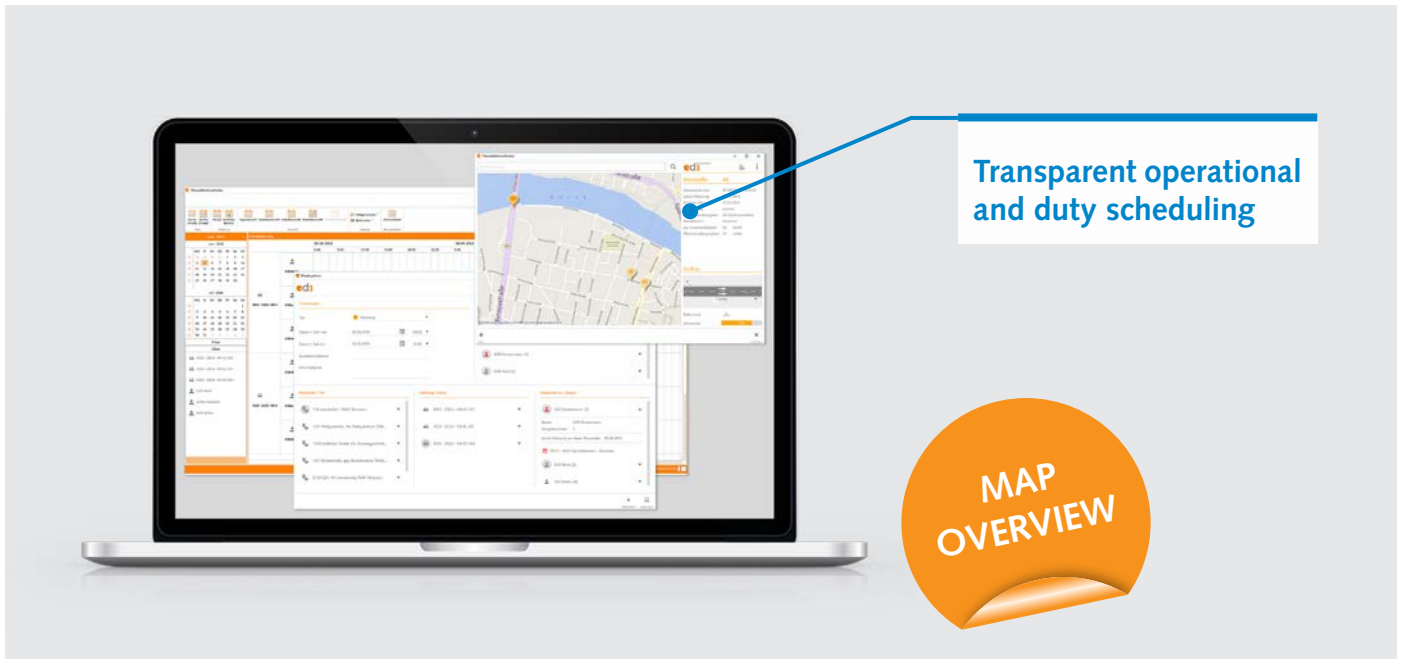
# esoDigitales3-Coordinator

**Thanks to its special selection screen for operational and duty scheduling, esoDigitales3-Coordinator allows users to input the availability of measurement sites, measuring instruments, vehicles and staff directly into their planning: the key to optimal use of all resources.**

Practical experience shows that operators do not always have a clear overview of operational and duty scheduling. Coordinating all the resources often involves major effort, or requires the use of various aids. Resource conflicts are often detected too late – only after operation has actually begun, for example. It frequently happens that measurement sites subject to a time schedule are not noticed ahead of time, so they are not started up.

With esoDigitales3-Coordinator, inefficiencies such as these are a thing of the past: users can input measurement sites directly into their planning via the measuring schedule; measurement protocols can be generated selectively to prepare for a measurement, so completed measurements can be assigned directly later on.

A map-based overview allows visualization of critical or overdue measurement sites. All the information for the displayed operating location is available at a glance. The direct link to planning ensures access to all the relevant information about the measurement sites at any time.

**Benefits of the esoDigitales3-Coordinator: an overview**
- Transparent operational and duty scheduling
- Availability of measurement sites, measuring instruments, vehicles and personnel as direct components of planning
- Map-based overview of all measuring sites, including visualization of critical or overdue operating locations
- Protocols for planned measurements.
- All information about a measurement site at a glance (setup, sketches and much more).



# esoDigitales3-Reader

Module for three additional licenses to view and export case data, e.g. as PDF or original file, to authorities, assessors or courts. Comprehensive search and statistics functions make it easier to locate and compare cases.

**Digital real-time speed measurement data**
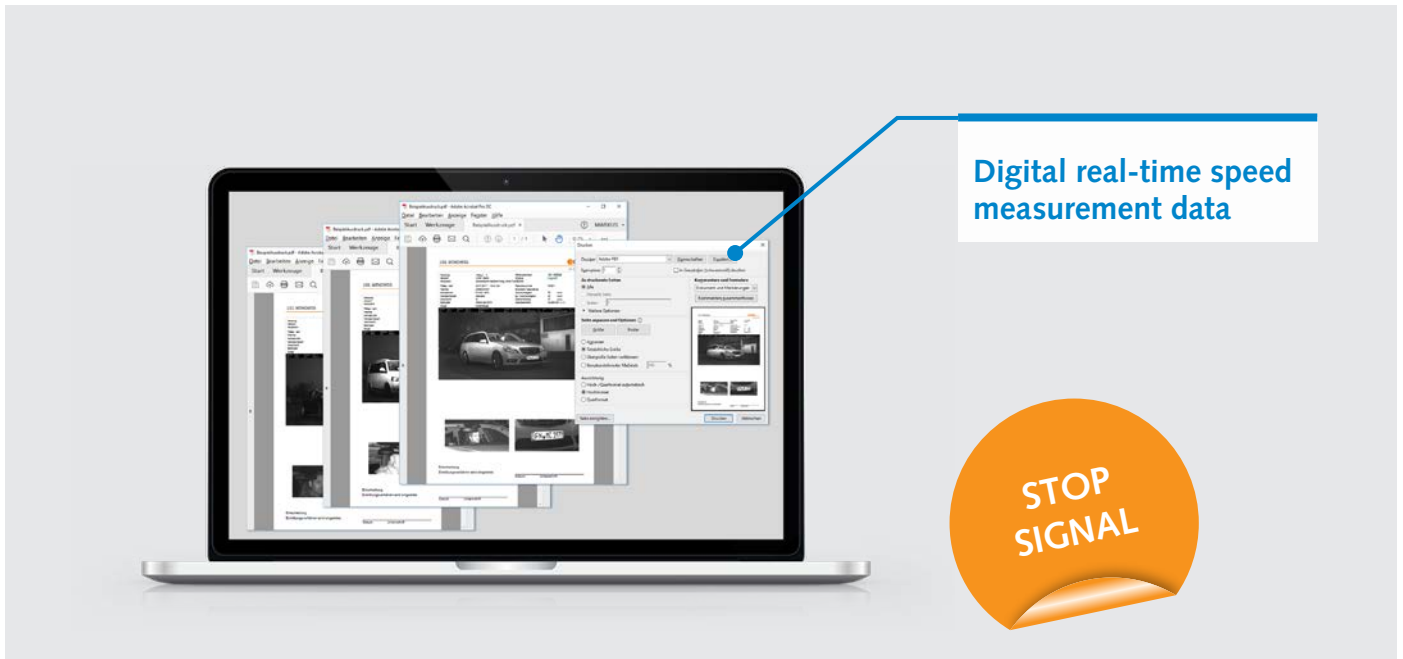
STOP SIGNAL

# esoDigitales3-CheckPoint

**The esoDigitales3-Checkpoint module is the ideal addition to the complete measurement system – for efficient handing of vehicles halted at the checkpoint by a stop signal. The in-vehicle operating computer transfers the necessary measurement data to other devices, so the data is readily available for interviews with road users.**

The esoDigitales3-Checkpoint add-on module is used to transmit digital case data in real time – from the operating computer for the measuring system to remote mobile devices (known as satellites). This means that officers have direct access to evidence at the checkpoint – so the checking procedure is simplified and offenders show more acceptance of the procedure (e.g. in case of language barriers).

**Additional offenses at a glance**
Personal data can be recorded or the image can be printed, depending on customers' preferences. As well as speed limit

violations, diverted road users are confronted directly with optional additional offenses such as noncompliance with seat belt or mobile phone regulations. esoDigitales3-Checkpoint is easy to operate because it is integrated into the complete ES8.0 solution. Users only require minimum training. Exploit the advantages of the digital stop signal!

**Benefits of esoDigitales3-Checkpoint: an overview**
- Digital real-time speed measurement data is available for a stop signal
- Evidence can be viewed on the spot, to improve acceptance when talking with offenders
- Personal data is simple to enter
- Targeted approach to special cases such as driving bans or special road users



# esoDigitales3-Viewer

This module checks the authenticity and integrity of the case file with the help of the digital signature; following a successful check, it displays the measurement data and photographic documentation.

# Accessories and add-on components

| Rechargeable batteries | |
|---|---|
| | Compact 12V lithium or lead rechargeable batteries provide the mobile power supply for the sensor as well as the camera and flash units. They are fitted with handles and they can quickly be charged up in the charging station included in the system. |

| LE5.0 charging station | |
|---|---|
| | The new LE 5.0 charging station features an even more compact design, with three charging bays for lead and lithium batteries. Charging, which is fully automatic, takes about four hours; multiple charging units can easily be positioned above one another. |

| Adjustment aid | |
|---|---|
| | This adjustment aid uses a laser pointer to aim the sensor head accurately at the headlights of passing vehicles in twilight and darkness. |

| Water level | |
|---|---|
| | This high-precision water level with a contact surface of approximately 0.5 m is used to set up the ES8.0 single-side sensor at measuring sites with an incline. The scope of delivery includes a practical wooden case for storage. |

| Tripods | |
|---|---|
| | The leveling tripods used to set up the sensor, cameras and flash units are available in two sizes and are lockable at any height. The selected device can easily be plugged on top of the tripod. Tripods are corrosion-resistant and non-reflective. |

| Square filter | |
|---|---|
| | The square filter for the BE 1.3 flash unit is screwed onto the external thread of the flash unit so that downstream traffic is much less aware when the flash is triggered. Reflection of the red filter disk by solar radiation is also prevented. |

| Plug-on unit for flash lamps | |
|---|---|
| | This retrofit kit for the BE 1.3 flash unit is equipped with a quartz glass double-filament flash lamp. Compared to the plug-in set installed as standard, this significantly reduces energy consumption and prolongs service life. |

# Comprehensive range of services

**We offer services for ES 8.0 to make our universal solution even more user-friendly and versatile. Check out all our services at a glance here – from maintenance to warranty extensions. We will also be glad to advise you by telephone or via email.**

**Maintenance agreements**

By opting for regular annual maintenance, you can plan your schedules more reliably – and you will avoid unnecessary downtime due to faults. We will check that your equipment is functioning properly, locate any leakages and ensure that the system operates reliably. Maintenance of your system is usually completed within one working day.

## Leasing and rental

All the items in the ES 8.0 delivery scope, as well as the patrol vehicle, are also available for leasing (rent-to-buy) and rental through a sales company in the Kistler Group. We'll be glad to quote for your individual requirements!

## Repairs and maintenance

In the unusual case of a defect, we ensure that your system is repaired promptly. Repairs and maintenance are usually completed in one day after a date has been agreed: you bring the equipment in on the previous day, and you can collect it again two days later.

## Training

Our trainers are experts with practical experience who will present the theoretical basis along with plenty of useful tips and tricks as they guide you through practical exercises. For newly delivered systems, training courses are held at the Tettnang site near Lake Constance. We also offer a comprehensive range of training courses.

## Warranty extensions

Get additional protection for your ES 8.0 speed measurement system by extending the manufacturer's warranty to a maximum period of two years. Ask us to quote for this, or let us offer you individual advice – we're looking forward to your inquiry!

**Novi**

**Headquarters, Winterthur**

**Sindelfingen**

**Shanghai**

**Yokohama**

● Sales Center
▲ Tech Center
■ Production Center

# At our customers' service across the globe

Thanks to Kistler's global sales and service network, we are always close to our customers. Some 2,050 employees at more than 60 locations are dedicated to the development of new measurement solutions, and they offer customized on-site support for individual applications.

**Would you like to learn
more about our applications?
Explore now:**

**www.kistler.com/applications**

**Kistler Group**
Eulachstrasse 22
8408 Winterthur
Switzerland
Tel. +41 52 224 11 11

Kistler Group products are protected by various intellectual
property rights. For more details, visit **www.kistler.com**
The Kistler Group includes Kistler Holding AG and all its subsid-
iaries in Europe, Asia, the Americas and Australia.

Find your local contact at
**www.kistler.com**

**KISTLER**
measure. analyze. innovate.