# RetroSign® Retroreflectometer

*On site quality control of retroreflective road signs and materials according to CEN, DIN and ASTM specifications*


***Other features:***

- Measures all types of retroreflective materials and colors directly without correction factors
- Control of safety clothing
- Stray light compensated
- Large dynamic range (0 – 2000 $cd \cdot lx^{-1} \cdot m^{-2}$)
- Portable self-contained construction (no separate battery pack)
- Low weight and ergonomic design
- Mains powered battery charger
- Allows the user to identify and store ~ 1000 measurements
- Road Sensor Control (RSC) program provides an easy interface to the RetroSign® instrument
- Data can be exported to a spreadsheet
- Independently traceable calibration standard
- Built-in average function

The RetroSign® Retroreflectometer is a handheld instrument for measurement of the retroreflection of retroreflective road signs and materials.

The RetroSign® measures the coefficient of retroreflection ($R_A$) according to international standards with direct read out in $cd \cdot lx^{-1} \cdot m^{-2}$.

RetroSign® uses DELTA's proprietary high tech filters, allowing measurement of any color or type of retroreflective sign sheeting or materials, with only one calibration unit and no need for correction factors. The calibration standard supplied with the RetroSign® are traceable to an accredited national standards laboratory.

Calibration to an independently traceable standard is your ensurance for reliable measurements.

The Road Sensor Control program, RSC, supplied with the instrument makes it easy to transfer the data to a file on a computer, and to display and read the stored measurements and print reports.

The optional GPS ensures complete documentation of the measurement program. The extension pole option makes it easy to measure "hard to reach" signs.

DELTA

# RetroSign® Retroreflectometer

*Type 4000, Type 4500 and Type 4471*

## Optical specifications Type 4000

| | |
|---|---|
| Geometry: | DIN 67520 5° / 0.33° |
| Entrance angle: | +5° |
| Observation angle: | 0.33° |
| Light source angular aperture: | 0.16° |
| Receiver angular aperture: | 0.16° |
| Field of measurement, Ø: | 30 mm / 1.2 inch |
| Spectral responsivity: | |
| Illuminant A and V(λ) efficiency according to ASTM E1709 para, 6.4.2. for selected filters. | |
| Range ($cd \cdot lx^{-1} \cdot m^{-2}$): | 0 – 2000 |

## Optical specifications Type 4500

| | |
|---|---|
| Geometry: | ASTM-E-1709: ÷ 4° / 0.2° |
| Entrance angle: | ÷ 4° |
| Observation angle: | 0.2° |
| Light source angular aperture: | 0.1° |
| Receiver angular aperture: | 0.1° |
| Field of measurement, Ø: | 30 mm / 1.2 inch |
| Spectral responsivity: | |
| Illuminant A and V(λ) efficiency according to ASTM E1709 para, 6.4.2. for selected filters. | |
| Range ($cd \cdot lx^{-1} \cdot m^{-2}$): | 0 – 2000 |

## Optical specifications Type 4471

*Special version for safety clothing*

| | |
|---|---|
| Geometry: | EN471 5° / 0.2° |
| Entrance angle: | 5° |
| Observation angle: | 0.2° |
| Light source angular aperture: | 0.16° |
| Receiver angular aperture: | 0.16° |
| Field of measurement, Ø: | 30 mm / 1.2 inch |
| Spectral responsivity: | |
| Illuminant A and V(λ) efficiency according to ASTM E1709 para, 6.4.2. for selected filters. | |
| Range ($cd \cdot lx^{-1} \cdot m^{-2}$): | 0 – 2000 |

## Instrument dimensions

| | |
|---|---|
| Length: | 295 mm / 11.6 inch |
| Width: | 83 mm / 3.3 inch |
| Height: | 324 mm / 12.8 inch |
| Weight: | 2.1 kg / 4.6 lbs |
| Gross weight, approx.: | 6.0 kg / 13.2 lbs |

## Electrical characteristics

| | |
|---|---|
| EMC: | EN50081-1/EN50082-1 |
| Power supply: | |
| replaceable NiCd battery 9.6 V, 1.2 Ah (Bosch part no. 2 607 335 012) | |
| External charger: | |
| mains | 230 V AC / 50 Hz |
| optional | 110 V / 60 Hz |
| charge time approx. 15 minutes | |
| Data memory: | ~ 1000 measurements |
| Data retention: | typ. 5 years |
| Interface: | RS232 |

## Environmental specification

| | |
|---|---|
| Temperature: | |
| operating | 0°C to + 45°C |
| | 32°F to 113°F |
| storage | ÷ 15°C to + 55°C |
| | 5°F to 131°F |
| Humidity: | non condensing |

## Standard delivery

- Carrying case
- Calibration standard
- RSC program
- Battery charger
- Ø15 aperture reducer
- Small supporting plate
- Lens cover
- Communication cable
- Quick guide
- User manual

## Options

- Extension Pole Kit
- GPS unit
- Fast 12 V powered battery charger
- Extra battery
- Ø10 aperture reducer
- Calibration certificate
- Calibration service

*The information contained in this document is subject to change without notice.*


To obtain more information please contact:

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