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RetroSign GR3 Retroreflectometer

Triple geometry retroreflectometer with GPS and RFID reader for quality control and asset management of road signs and retroreflective materials with laboratory precision



The RetroSign GR3 retroreflectometer is a handheld instrument for measuring retroreflection of traffic signs. The RetroSign measures the coefficient of retroreflection, R_A , according to U.S. and European standards.

The unique triple geometry facilitates simultaneous measurements at various observation angles as proposed by ASTM. The RetroSign GR3 measures simultaneously at observation angles at 0.2 / 0.33, 0.5, and 1 degrees.

The point aperture geometry specified by ASTM ensures realistic and accurate readings replicating realistic driving conditions. Furthermore it enables the user to determine if a microprismatic sign sheeting material has been applied correctly.

Due to the DELTA proprietary gradient index ultra hard coating (UHC) technology the sensor response meets the ASTM 1709 requirements combining the CIE eye response and CIE illuminant "A".

The photometric filter in the RetroSign GR3 is the most precise, sensitive and durable filter in the world. In combination with the point aperture geometry this gives readings with laboratory precision for all colors and types of retroreflective sheeting.

The RetroSign GR3 has a built-in precision WAAS GPS and an attachable RFID reader. Due to its robustness RFID has become the optimum choice for field asset ID tagging and has proven itself superior to other technologies.

The RetroSign GR3 is designed to easily interface with current and future ID tagging and asset management systems.

The internal memory stores up to 250,000 readings, which essentially means that the instrument never runs out of memory. The Road Sensor Control program, RSC, supplied with the instrument in combinations with the USB interface makes it easy to download data and generate reports.

Other features

- Meets ASTM, CEN, and CIE specifications
- Measures all types of retroreflective materials and colors directly without correction factors
- The point aperture geometry ensures accurate readings replicating realistic driving conditions, and high correlation with laboratory readings. It also enables checking correct application of microprismatic sheeting material
- Simultaneous triple observation angle measurements
- Dual field aperture: 30 mm and 15 mm
- Unmatched precise, sensitive and durable optical spectral response
- All colors and types of sign sheeting materials are accurately measured, using only one traceable calibration standard
- Built-in precision WAAS GPS
- Attachable RFID tag reader
- Automatic stray light compensation
- Internal storage for 250.000 measurements
- Low weight and ergonomic design
- Road Sensor Control (RSC) program facilitates quick USB data transfer, processing, and report generation
- Calibration standard traceable to independent international master standard
- Optional extension pole with remote control

Optical specifications

Type ASTM	Geometry: ASTM-E-1709/WK9050: $\pm 4^\circ / 0.2^\circ, 0.5^\circ, 1.0^\circ$
	Entrance angle: $\pm 4^\circ$
	Observation angle: $0.2^\circ, 0.5^\circ, 1.0^\circ$
Type CEN	Geometry: EN 12899-1: $5^\circ / 0.33^\circ, 0.5^\circ, 1.0^\circ$
	Entrance angle: 5°
	Observation angle: $0.33^\circ, 0.5^\circ, 1.0^\circ$

Field of measurement, \emptyset : 30 mm / 1.2 in. and $\emptyset 15 / 0.6$ in.

Spectral responsivity:

Illuminant A and $V(\lambda)$ efficiency according to ASTM E1709 section 6.4.2. for selected filters.

Range ($\text{cd}\cdot\text{lx}^{-1}\cdot\text{m}^{-2}$): 0 – 2000

Instrument dimensions

Length:	295 mm / 11.6 inch
Width:	83 mm / 3.3 inch
Height:	324 mm / 12.8 inch
Weight:	2.0 kg / 4.6 lbs
Gross weight, approx.:	6.0 kg / 13.2 lbs

Electrical characteristics

EMC:	EN50081-1/EN50082-1
RFID tag reader:	HF (13.56 MHz; ISO 15693 and ISO 1443A/B)
GPS:	WAAS
Power supply:	Rechargeable and replaceable Nickel Metal Hydride 9.6 V, 2.4 Ah
External charger:	230 V AC / 50 Hz 110 V / 60 Hz Charge time approx. 15 minutes
Data memory:	250.000 measurements
Data retention:	typically 5 years
Interface:	USB

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

Environmental specifications

Temperature:	
operating	0°C to $+50^\circ\text{C}$ 32°F to 113°F
storage	$\pm 15^\circ\text{C}$ to $+55^\circ\text{C}$ 5°F to 131°F
Humidity:	non condensing

Standard delivery

Carrying case
Calibration standard
RSC program
Battery charger
$\emptyset 15$ aperture reducer
Small supporting plate
Lens cover
Communication cable
Quick guide
User manual

SignTag™ RFID disc

SignTag™ Diameter:	30 mm / 1.2 in.
Thickness:	3.2 mm / 0.13 in.
Diameter of hole:	5 mm / 0.2 in.



Options

Extension Pole Kit
Fast 12 V powered battery charger
Extra battery
$\emptyset 10$ aperture reducer
Calibration service