



# 932 MULTI-GEOMETRY HAND-HELD RETROREFLECTIVITY ASSESSMENT SOLUTION

The use of retroreflective materials has expanded beyond that of traffic signs and lines. There are many uses, from safety vests to athletic wear and police cars to train cars. All have the single purpose of improving safety. The verification of the performance of retroreflective material is critical. The 932 is a handheld retroreflectometer designed for use in the field or in a laboratory or QA/QC environment.



## Safe Workers to Motorists

- Accurately measures visibility of sign sheeting, construction clothing, and athletic wear ensuring safety for all users



## Smart Optics to Build

- Continuously adjustable entrance and observation angles
- World-class photometric filter fit for extremely precise measurements of other colors using a single white reference standard
- Internal memory stores more than 32,000 measurements
- Tri-stimulus detector for night-time retroreflected color measurements



## Simple Setup to Reporting

- With a press of the button, provides both retroreflectivity and color verification
- All in one attached adjustable angle apparatus with no need for add-on components
- Operate with built-in color touch screen, Bluetooth or USB computer interface

### VARIABLE ANGLES

Continuously adjustable entrance and observation angles

### MULTI-PURPOSE

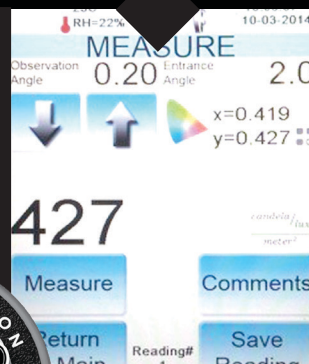
Accurately measure most any retroreflective material

### INTUITIVE OPERATION

Easy menu driven touch screen operation

### LAB/FIELD FUNCTIONALITY

Portable light-weight construction with durable protective carrying case



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# 932 Multi-Geometry Handheld Retroreflectometer Specifications



## Performance

- Measures all types of retroreflective materials with a single measurement
- Meets ASTM, CIE, ANSI, BS, EN & DIN specifications
- Continuously Variable observation angle from 0.2° to 2.0°
- Continuously Variable entrance angle from -45° to +45°
- World-class photopic-corrected detector and source "A"
- Tri-stimulus corrected detector for nighttime retroreflected color
- Requires only 1 reference standard without any correction factors
- Self-contained commercially available battery or mains power
- Graphical TFT-color touch-screen display
- Built-in Bluetooth Wireless Capability
- USB Computer Interface
- Built-in averaging
- Internal storage for more than 32,000 measurements
- Foam-lined carrying case

## Standard Accessories

- Foam-lined protective carrying case
- Calibration standard
- Calibration certificate
- Measurement area reducers
- Windows software with mapping
- Battery charger
- 2 12-volt batteries



US Patent 7,961,328

## Geometry

Entrance Angle	Continuously adjustable from -45° to +45° with Electronic Feedback
Observation Angle	Stepper controlled, continuously adjustable from 0.2° to 2.0°
Light Source angular aperture	0.1°
Receiver angular aperture	0.1°
Field of Measurement	1 in (25.4 mm) diameter spot

## Specifications (applies to all models)

Standards compliance	Meets all requirements of ASTM E1709, ASTM E2540, EN12899-1. Performs testing in with the following specifications: ASTM D4956, ISO 20471, ANSI/ISEA 107
Detector Responsivity	Photopic response in accordance with ASTM E1709 paragraph 6.4.2 and ASTM E2540 paragraph 6.4.2 Separate tri-stimulus detector for color measurements
Range (cd/lx/m2)	0-10,000
Data Memory	>32,000 measurements
Color Measurement	Determines CIE 1931 xy retroreflected night-time color coordinates in accordance with ASTM D4956, table 13
Power Supply	Removable 12 VDC, 3.3 Ah battery (DeWalt P/N DC9071 or equivalent)
Charger	100-240 VAC, 50/60 Hz (add -1 after model number) 12 VDC cigarette lighter (add -2 after model number)
Operating Temperature	0°C to 50°C (32°F to 122°F)
Operating Humidity	0 to 95% non-condensing
Length	Approx. 15 in (380 mm)
Width	Approx 4.5 in (115 mm)
Height	Approx 12.75 in (325 mm) with battery
Computer Interface	USB; Bluetooth
GPS	56-channel, 7-engine, WAAS-enabled for <2 meter position fix uncertainty