

## 932 Series Multi-Geometry Handheld Retroreflectometer



The use of retroreflective materials has expanded beyond traffic signs and roadway markings. From safety apparel to athletic wear; from emergency vehicles to rail cars, improved visibility is a key to safety.

The 932 Series product is ideal in both field and laboratory applications. Featuring fully adjustable illumination and observation angles and a fully calibrated photopic-corrected sensor, measurements per ASTM, CIE, ANSI, BS, EN & DIN specifications are possible. On-board storage of up to 32,000 readings, Bluetooth connectivity and multi-channel GPS come as standard.

## Reliability in a Field-Proven Platform

### Safe Workers & Motorists

- Accurately measures visibility of sign sheeting, construction apparel, athletic wear or vehicle markings or essentially any other retroreflective material

### Simple Setup & Use

- With a press of a button, provides both retroreflectivity and color verification
- All-in-one attached adjustable angle apparatus eliminates need for additional components
- Operate with built-in color touch-screen, Bluetooth or USB computer interface

### Smart Optics and Analytics

- Integrated photometric filter for high-precision measurements
- Internal memory stores up to 32,000 readings
- Tri-stimulus sensor suitable for nighttime measurement parameters



# 932 Series Handheld Retroreflectometer



### Variable Angles

Fully adjustable entrance & observation angles



### Multi-Purpose

Accurately measure a multitude of reflective materials



### Intuitive Operation

Easy menu driven touch screen operation



### Lab or Field Functionality

Portable and fully self-contained

## Geometry

Entrance Angle:	-45° to +45° with electronic feedback
Observation Angle:	0.2° to 2.0° Continuously adjustable via stepper control
Light Source angular aperture	0.1°
Receiver angular aperture	0.1°
Field of Measurement	1 inch (25 mm) diameter spot - reduceable to 0.59 inch and 0.39 inch (15mm and 10mm) with supplied aperture reducers.

## General Specifications

Applicable Standards	Meets all requirements of ASTM E1709, ASTM E2450, EN12899-1. Performs testing in compliance with 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
Range (cd/lx/m <sup>2</sup> )	0-10,000
Color Measurement	Measures CIE 1931 x,y retroreflected night-time color coordinates per ASTM D4956, table 13
Data Memory	>32,000 measurements
Computer Interface	USB and Bluetooth
GPS	56-Channel WAAS Enabled for <2 meter position fix uncertainty
Power Supply	Removable 12 VDC, 3.3 Ah battery (DeWalt P/N DC9071)
Charger	100-240 VAC, 50/60 Hz (add -1 to model no.) 12 VDC cigarette lighter (add -2 to model no.)
Operating Temperature	0° to 50° C (32° to 122° F)
Operating Humidity	0 to 95% non-condensing
Dimensions	15-in (380 mm) L x 4.5-in (115 mm) W x 12.75-in (325mm) H including battery
Weight	Instrument: 4.40 lbs (2.20 kg) Battery Pack: 1.45 lbs (0.66 kg)

## Performance

- Accommodates 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 with 'Illuminant A' source
- Tri-stimulus corrected detector for nighttime retroreflected color measurement
- Requires only a single reference standard without correction factors
- Self-contained via a standardized commercial battery pack or operations from mains power
- Intuitive TFT-color touch screen display
- Built-in Bluetooth wireless capability
- USB computer interface
- Built-in averaging
- Internal storage of up to 32,000 measurements
- Includes carrying case, 2 battery packs, charger, calibration standard, 2 aperture port reducers, and calibration certificate

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