



Pavement and Traffic Safety Detection Equipment



ZHUOZHOU TIANPENG INSTRUMENT MANUFACTURING CO., LTD.

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Product Outline

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a UHYf]Ug'Gi ddcfHYX'fYhfcfYZYVWjY'a UHYf]Ug'j]bWl XY.'dUj Ya Ybh'a Uf_YfgZ'fYZYVWjY'Z'a gZ dfchX]b['g]bgZ
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\\kUmUbX'k UHYf]fUbgdcfU]cb'Hygh]b['j]bghh h]cbgZ ei U]m]bgdYVWjY'cb'j]bghh h]cbg'UbX'a YUgi fYa Ybh]bghh h]cbg'

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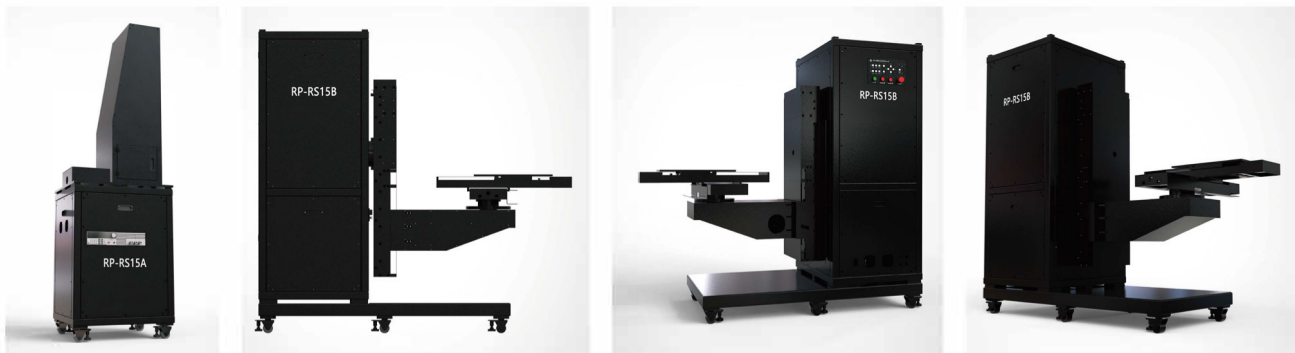
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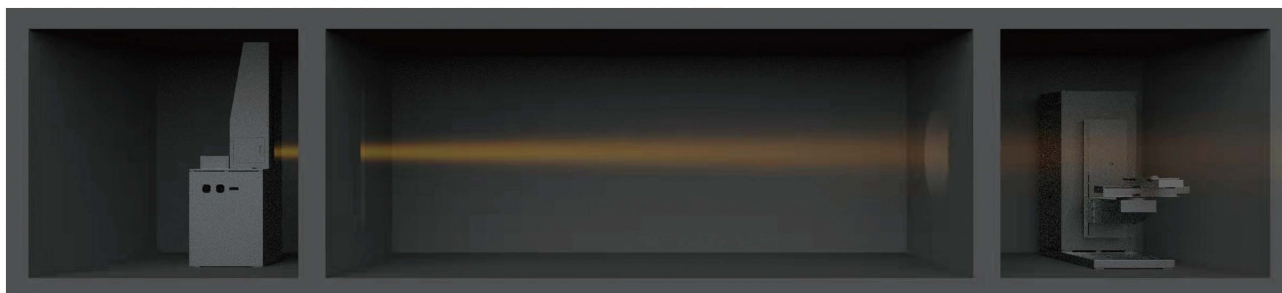
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Main Features

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- ❖ With metrology-level measurement accuracy.
- ❖ Designed for photometric and chromatic properties testing of retroreflective materials in the transportation industry, meeting all retroreflective material testing needs.
- ❖ The life of the light source is more than 500 hours.
- ❖ High-illumination projection light source ensures stable measurement at low retroreflection values.
- ❖ Independent software system, which can be installed on any computer, and can remotely control the software system.
- ❖ The positioning accuracy of the observation angle is $\pm 0.002^\circ$, which meets the requirements of various standards.
- ❖ The measuring distance is adjustable from 15m to 30m, and the multi-point support turntable has higher stability.



Luminosity Parameters

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Measuring distance	15m / 30m
Light source	Projection type standard A light source, correlated color temperature 2856K ± 50K
Illumination range	1 - 20 lx adjustable
Spot size	φ100 - φ600mm continuously adjustable
Light diameter of light source	φ<50mm
Spot illumination inhomogeneity	<2%
Measuring range	Retroreflection brightness coefficient: not less than 0.1 ~ 4x10 ³ mcd/ (m ² · lx)
	Retroreflection coefficient: not less than 0.1 ~ 4 x 10 ³ mcd/ (m ² · lx)
	Luminous intensity coefficient: not less than 0.1 - 4x10 ³ mcd/lx
Observation angle	0.2° - 2° continuously adjustable
Observation angle accuracy	± 0.002°
Incidence angle	- 180° ~ 180° continuously adjustable
Incidence angle accuracy	± 0.01°

Chromaticity Parameters

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Detectors	TDI line array CCD
	TEC constant temperature control, cooling temperature: 0°C, stability: 005°C
Integration time	9.7ms ~ 120s
Grating	Anti-second-order diffraction coated BB grating
Slit width	100um
CCD pixel	2048X64
Wavelength range	380-780nm, wavelength resolution: ±0.2nm
Spectral resolution	2.5nm
Chromaticity coordinates	Chromaticity Coordinate Accuracy: ± 0.0003
	Chromaticity Coordinate Repeatability: ±0.0002x, ±0.0002y

RP- MR11 Vehicle-mounted line marking retroreflection measuring system

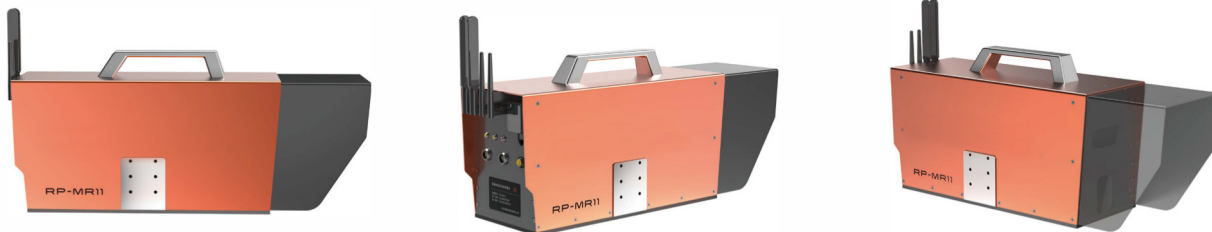
Product Outline



The RP-MR11 vehicle-mounted line marking retroreflection measuring system can detect the photometric properties of all road markings under the condition of no road closure and normal driving speed. It has the advantages of high detection efficiency, complete detection sample coverage, and safe detection environment. The measured value can be equivalent to that of the portable marking retroreflection measuring instrument, and can provide panoramic images of road markings. The detection data can be used to draw a marking maintenance map, a marking asset management map, etc., which solves the problems of traditional marking retroreflection testers occupying manpower, low efficiency, insufficient coverage of sampling testing samples, and unsafe testing environment. It is an ideal equipment for marking construction, inspection, maintenance and control of marking quality.

Standard:

JJF 1809-2020
GB/T 26377-2010
GB/T 16311
JJG 059-2004
JT/T 690
ASTM E2177RL
ASTM E1710
EN 1436



Main Features



- ❖ Automatic recognition of line marking width.
- ❖ High-precision Beidou positioning, real-time map data update.
- ❖ Provide panoramic images of road marking conditions, and the detection data can be used to draw marking maintenance maps and marking asset management maps.
- ❖ It can work uninterrupted all day long (except for bad weather such as ice, snow and standing water).
- ❖ Portable notebook computers were used for data collection.
- ❖ The large-capacity battery can work continuously for more than 10 hours, and can also be connected to the car power system.
- ❖ It can be measured without road closure at normal vehicle speed.

Main Parameters

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Detection channel	Single channel / dual channel (can be customized)
Analog detection distance	30m
Distance of object to be measured	6m
Horizontal measurement width	1200mm
Longitudinal measurement size	500mm
Light source	Infrared laser
Measuring speed	260 frames/s
Measurement interval	<100mm
Incidence angle	88.76° ±0.01° (ASTM E1710)
	1.24° ±0.01° (EN 1436)
Observation angle	1.05° ±0.01° (ASTM E1710)
	2.29° ±0.01° (EN 1436)
RL measurement range	0-2000mcd/ (m ² · lx)
Data repeatability	<5%
Error of indication	<10%
Light source life	> 10000 hours
Operating system	Win10

Product Demonstration

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RP- R18 Line Marking Retroreflectometer (Rain/Night Version)

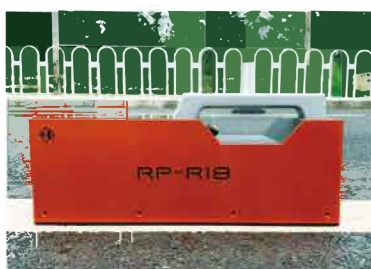
Product Outline

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RP-R18 line marking retroreflectometer is a portable field measuring instrument with an open optical path, which is used to measure the retroreflection brightness coefficient of line markings. Unit: mcd / (m² · lx). The main characteristics of its research are: simulating the motor vehicle driving on the road at night, the headlights illuminated on the road (made of retroreflective material), the luminance observed by the driver in the cab after its reflection. The parameter measured is the luminance coefficient of night retroreflection, the RL value. This instrument can measure the retroreflection luminance coefficient of the marking line under three conditions: dry RL, wet RLwet and continuous rainfall RLrain.

Standard:

GB/T26377-2010; GB/T16311-2009; JJ G 059-2004; JTG F50/1-2017; 8B36/T 978-2017; 8B51/T 2429-2017



Advantages

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- ❖ Open optical path, no external light interference during measurement.
- ❖ Fast measurement (measurement of retroreflection luminance coefficient value within 1.5 seconds).
- ❖ Support to store more than 100,000 test data.
- ❖ Real-time voice broadcast of measurement data, and on-site printing of test data.
- ❖ Supports measurements under dry, wet and continuous rainfall conditions.
- ❖ Support shock marking test.
- ❖ USB data interface, the test report is exported to the computer in the form of a database.

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Parameters	
Measurement item	Retroreflection Luminance Coefficient
Measurement range	0-4000mcd/ (m ² · lx)
Observation angle	1.05°
Incidence angle	88.76°, the complementary angle is 1.24°
Light source color temperature	2856±50K open optical path
Repeatability error	≤2%
Dry mode	√
Wet mode	√
Continuous rainfall mode	√

RP- R12 Line Marking Retroreflectometer (Voice/Print Version)

Product Outline

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RP-R12 line marking retroreflectometer is used to measure the retroreflection brightness coefficient of line markings. Unit: mcd / (m² · lx). The main characteristics of its research are: simulating the motor vehicle driving on the road at night, the headlights illuminated on the road (made of retroreflective material), the luminance observed by the driver in the cab after its reflection. The parameter measured is the luminance coefficient of night retroreflection, the RL value. The instrument is easy to operate and reliable in measurement. It is suitable for both laboratory and field measurements.

Standard:

GB/T 26377-2010

GB/T 16311-2009

JJG 059-2004



Main Features

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- ❖ Calibrate white to measure other color line markings;
- ❖ Real-time voice broadcast of measurement data;
- ❖ 5-inch high-brightness touch screen, test data can be seen clearly under strong light;
- ❖ One-key measurement, no need to calibrate repeatedly on the same day;
- ❖ Support Bluetooth printing.
- ❖ USB data port, the test report is exported to the computer in the form of a database;

Main Parameters

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Parameters	
Measurement item	Retroreflection Luminance Coefficient
RL measurement range	0-4000mcd/ (m ² · lx)
QD measurement range(optional)	0-400mcd/ (m ² · lx)
Observation angle	1.05°
Incidence angle	88.76°, the complementary angle is 1.24°
Light source color temperature	2856±50K
Repeatability error	≤2%
Battery continuous working time	>30h
Data storage	More than 100,000 test data
Dimensions	700mm x 140mm x 140mm
Net weight	6kg
Package	Premium Instrument Case

RP- R11 Line Marking Retroreflectometer (Digital version)

Product Outline

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RP-R12 line marking retroreflectometer is used to measure the retroreflection brightness coefficient of line markings. Unit: mcd / (m² · lx). The main characteristics of its research are: simulating the motor vehicle driving on the road at night, the headlights illuminated on the road (made of retroreflective material), the luminance observed by the driver in the cab after its reflection. The parameter measured is the luminance coefficient of night retroreflection, the RL value. The instrument is easy to operate and reliable in measurement. It is suitable for both laboratory and field measurements.

Standard:

GB/T26377-2010

GB/T16311-2009

JJG 059-2004

JJF 1809-2020



Main Features

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- ❖ Calibrate white and yellow at the same time;
- ❖ 5-inch high-brightness screen, test data can be seen clearly under strong light;
- ❖ Display temperature and humidity in real time;
- ❖ One-key measurement, no need to calibrate repeatedly on the same day;
- ❖ Long standby time, and supports fast charging.

Main Parameters

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Parameters	
Measurement item	Retroreflection Luminance Coefficient
Measurement range	0-4000mcd/ (m ² · lx)
Observation angle	1.05°
Incidence angle	88.76°, the complementary angle is 1.24°
Light source color temperature	2856±50K
Repeatability error	≤2%
Battery continuous working time	>30h
Data storage	Can store 30 sets of data at a time, automatically overwrite

RP-R21 Protruding signs retroreflectometer

Product Outline

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RP-R21 Protruding signs retroreflectometer is used to measure the main performance index of protruding signs - luminous intensity coefficient. It is suitable for photometry laboratories, testing centers and pavement construction sites, etc. It is also suitable for product quality inspection by protruding sign manufacturers.

Standard:

GB/T 24725-2009

GB/T 26377-2010

GB/T 26377-2010

JJG 059-2004

JJG 059-2004

GB/T 24725-2009



Main Features

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- ❖ 5-inch touch operation panel, bilingual in Chinese and English, large LCD color screen, simultaneous display of temperature and humidity.
- ❖ Data storage: store 500 sets of test data at a time.
- ❖ With parameter verification, automatic zeroing, data storage, export, delete, query and other functions.
- ❖ Hollow-out angle auxiliary board can accurately locate the incident angle without manual adjustment of the incident angle and observation angle.
- ❖ The observation angle automatically matches the incident angle.
- ❖ All angles are calibrated in one go.

Main Parameters

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Measurement item	Luminous intensity coefficient
Measurement range	0-2000mcd · lx ⁻¹
Light source color temperature	2856±50K
Repeatability error	5%
Battery continuous working time	>30h
Data storage	Can store 50 sets of data at a time
Battery capacity	12V/5.2Ah
Charger	DC15V
Working ambient temperature	-15 °C - 60 °C
Working ambient humidity	<98% no condensation
Dimensions	330mm x 220mm x 100mm

RP-R01 Multi-Angle Sign Retroreflectometer

Product Outline

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RP-R01 Multi-Angle Sign Retroreflectometer is an instrument for measuring the photometric properties (retroreflection coefficient) of retroreflective materials, unit: $\text{cd} \cdot \text{lx}^{-1} \cdot \text{m}^{-2}$. It can be used for traffic safety management and road, railway, aviation and other relevant departments to conduct on-site measurement of retroreflective signs, etc., and can also be used to measure the reflective performance of reflective signs on the body of trucks. It is also used to monitor the reflective quality of retroreflective materials produced to ensure that retroreflective sign materials meet the requirements of relevant standards.

Standard: GB/T18833-2012; GB/T26377-2010; JJG 059-2004; JJF1809-2020



Main Features

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- ❖ Automatically determine whether the test data is qualified or not.
- ❖ Three sets of data are detected at the same time, increasing the test efficiency by 3 times.
- ❖ Data storage: can store 50,000 sets of test data. Support indoor and outdoor use at the same time.
- ❖ 5-inch touch control panel, bilingual in Chinese and English.
- ❖ The magnetic suction calibration method can fix the position of the standard block more accurately.
- ❖ With parameter verification, automatic zeroing, data storage, export, delete, query and other functions.

Main Parameters

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Parameters	
Angle	Incident angle: -40° , 15° , 30° (any other angle can be customized)
	Observation angle: 0.2° , 0.5° , 1° ($0.2^\circ \sim 2^\circ$ can be customized)
Measurement area	$\phi 25\text{mm}$
Light source correlated color temperature	$2856 \pm 50\text{K}$ (Standard A light source)
Measurement range	$0-4000 \text{ cd} \cdot \text{lx}^{-1} \cdot \text{m}^{-2}$
Measuring time	$\approx 2\text{s}$
Error of indication	$< 2\%$

RP-R03 Sign Retroreflectometer

Product Outline

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RP-R03 Sign Retroreflectometer is an instrument for measuring the photometric properties (retroreflection coefficient) of retroreflective materials, unit: $\text{cd} \cdot \text{lx}^{-1} \cdot \text{m}^{-2}$. It can be used for traffic safety management and road, railway, aviation and other relevant departments to conduct on-site measurement of retroreflective signs, etc., and can also be used to measure the reflective performance of reflective signs on the body of trucks. It is also used to monitor the reflective quality of retroreflective materials produced to ensure that retroreflective sign materials meet the requirements of relevant standards.

Standard:

GB/T 18833-2012

GB/T 26377-2010

JJG 059-2004



Main Features

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- ❖ Touch screen operation
- ❖ Small and lightweight
- ❖ Optional Bluetooth printer
- ❖ One-key calibration
- ❖ Optional extension rod
- ❖ Magnetic calibration block for more accurate positioning

Main Parameters

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Parameters	
Angle	Incident angle: -4°
	Observation angle: 0.2°
Measurement area	$\phi 25\text{mm}$
Light source correlated color temperature	$2856 \pm 50\text{K}$ (Standard A light source)
Measurement range	$0-4000 \text{ cd} \cdot \text{lx}^{-1} \cdot \text{m}^{-2}$
Measuring time	$\approx 2\text{s}$

RP-T01 Handheld Marking Thickness Gauge

Product Outline



RP-T01 Handheld Marking Thickness Gauge is small and light, with OLED screen, can be used for road marking thickness measurement in laboratory and field. It is suitable for road maintenance departments, road marking paint manufacturers, construction and quality supervision departments, etc. to control and inspect the thickness of the marking coating.

Standard:

GB/T 16311-2009



Main Features



- ❖ Small and lightweight
- ❖ Can be operated with one hand
- ❖ OLED display
- ❖ High precision: 0.02mm error
- ❖ Grade 00 Marble Calibration Block
- ❖ Chargeable

Main Parameters



Measurement range	±13mm
Resolution	0.01mm
Accuracy	0.02mm
Calibration block accuracy	Grade 00
Screen	OLED
Battery continuous working time	>30h
Battery capacity	3.7V/4.4Ah

RP-808E Colorimeter

Product outline



The RP-808E colorimeter is a small and lightweight portable colorimeter with 45/0 optical structure. The 45/0 geometric optical structure is most consistent with the visually perceived color value and can completely exclude specular light from textured surfaces. It is suitable for measuring the luminance factor and chromaticity coordinates of traffic road signs, marking lines and reflective films.

Standard:

CIE No.15

GB 2893-2008

GB/T 3 978-2008

GB/T 1883 3-2012



Main Features



- ❖ Innovative ring illumination system can eliminate directional dependence.
- ❖ Changing the sample position, tilting the sample or rotating the instrument can achieve high accuracy and repeatability, minimizing the effects of texture.
- ❖ Measurements on matte, textured and structured material surfaces bring great advantages.
- ❖ It is specially used for the measurement of brightness factor and chromaticity coordinates of traffic road signs, markings and reflective films. It contains the standards of "GB 2893 " and "GB/T 18833", and the polygon and rectangle tolerance can be customized manually.

Main Parameters



Colorimetric Optical Structure	45/0 (45° ring illumination, 0° viewing angle)
Caliber	11mm
Wavelength	400-700nm
Interval	10nm
Sensor	High Sensitivity Silicon Photodiodes
Lighting	OLED
Repeatability	Spectral reflectance: standard deviation within 0.08% ΔE^*ab 0.03 (after correction, the standard deviation of the white board was measured 30 times with an interval of 5s), the maximum value is 0.05
Difference between colorimeters	0.2 ΔE^* (average measured on 12 BCRAI boards)
Observer Angle	2°; 10°
Observation light source	A,C,D50, D55, D65, D75