

# Zehntner Retro Reflectometer



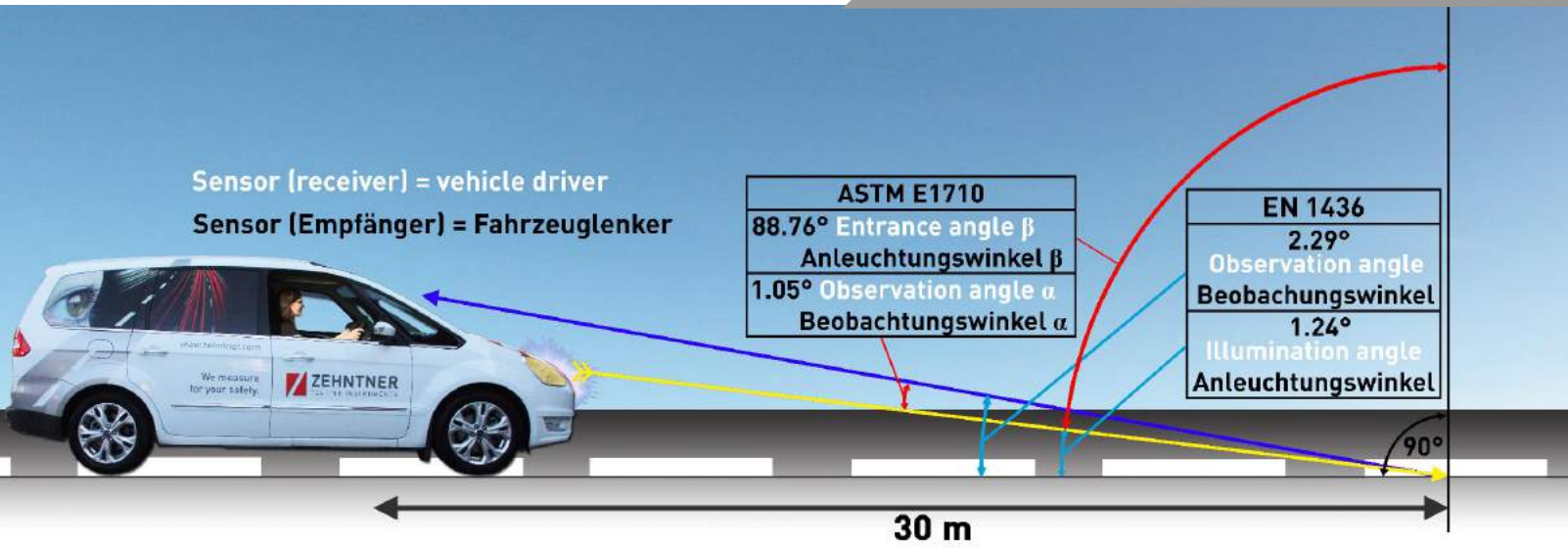
**Road Marking Retroreflectometer**  
**Road Sign Retroreflectometer**

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Zehntner testing Instruments, A Proceq SA company, are manufactured in Switzerland & approved by the accredited association StrAus-Zert, Germany. Each instrument is supplied with a calibration certificate traceable to the Swiss Institute of Metrology (METAS) & approved by StrAus-Zert, Zehntner instruments set the standard for road marking measurement.





Proceq Zehntner Retroreflectometers are high performance retroreflectometer widely used to monitor the performance of road markings and traffic signs. Road marking is very essential for road safety; Especially at night and during wet & rainy condition, when visibility is reduced road markings and signs provide important guidance for drivers to stay safely on the road avoiding accidents.

## What is Retroreflection?

Road Marking ensure road safety by directing & guiding drivers on the road . Road markings can be based on as example thermoplastic paints, water or solvent borne road marking paints, which have a life depending on a variety of factors. The same are embedded with an optimal level of glass beads for ensuring retroreflection from the vehicles headlights . The reflectance from the road markings degrade over time. The ability of a driver to view the markings , while driving at speed, from a distance, whether in day or night , dry or wet, can ensure avoidance of accidents.

A retroreflectometer is used to measure the retroreflection performance of the surface.

Visibility in day light of the road paint is referred to as "Qd" i.e luminance coefficient under diffused illumination

Night time visibility is referred to as " $R_L$ " i.e Retro reflection.

The Road Marking performance evaluation requires use of a Retro Reflectometer with average value to be measured over a sample size at a specific location.

Retroreflectometers work in accordance with EN 1436 , ASTM E 1710 ( $R_L$ ) ,ASTM E 2302 (Qd) and ASTM E 2177 ( $R_L$  wet) .

Zehntner Switzerland, part of the Proceq SA group, worlds premier manufacturer of non destructive testing equipment & instrumentation, offers an array of retroreflectometers which allow monitoring the road markings for all types of road surfaces (dry or wet) at day & night visibility. asian contec ltd is the authorised partner to Proceq for India.

With integrated mapping and data analysis software, the Professional retroreflectometers provide measurements with precise geolocation and high-res images & allow report generation at ease.

# Road Marking Retro Reflectometer Selection Guide

Model	ZRM 6006 R <sub>L</sub> -Qd	ZRM 6013+ R <sub>L</sub> -Qd	ZRM 6014 R <sub>L</sub> -Qd
Display	Transflective luminous LCD display with LED backlight	Touchscreen 5.7" color TFT (LCD), LED backlight, VGA resolution	
Technology Options	-	GPS, internal printer	High-resolution Camera Optional compass and level-meter GPS, internal printer
Memory	None	1 GB internal flash memory	
Measurement Modes	R <sub>L</sub> dry (night visibility) R <sub>L</sub> wet (night visibility) Qd (day visibility) °C/°F (ambient temperature) rH % (relative humidity)		
Measuring Area (WxL)	52mm x 218mm (2.05" x 8.6")	52mm x 218mm (2.05" x 8.58")	52 mm x 218 mm (2.05" x 8.58")
Measuring Range	R <sub>L</sub> : 0 - 4'000 mcd•m <sup>-2</sup> •lx <sup>-1</sup> Qd: 0 - 400 mcd•m <sup>-2</sup> •lx <sup>-1</sup>		
Measuring Accuracy	Repeatability±2%		
Observation Angle	EN 1436 & ASTM E2302: 2.29° ASTM E1710: 1.05°		
Illumination Angle	RL: EN 1436: 1.24° RL: ASTM E1710: 88.76° Qd: diffuse		
Weight	6.4kg (14.1lbs)	6.8kg (14.99 lbs)	7.6 kg (16.76 lbs )
Operating Temperature	-10°C to +50°C		
Reporting Software	-	Includes mapping and data analysis software MappingTools	
Versatility	Day & night visibility measurement, at day or night, on any road surface	Day & night visibility measurement under any weather condition; dry or wet	Day & night visibility measurement, anytime and on any road surface dry or wet



# Zehntner ZRM 6006 R<sub>L</sub>-Qd

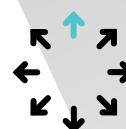
## Road Marking Retroreflectometer

An entry-level and easy to use retro reflectometer



### Efficiency

Use in dry or wet condition, day or night on the road or in the laboratory



### Versatility

Ultrafast retroreflection measurement (R<sub>L</sub> and Qd) in about 2 seconds for all types of road markings



### Ease of use

The entry-level device, ideal for measuring night visibility (R<sub>L</sub>) and day visibility (Qd) of road markings and ambient temperature with a touch of a button

### Features :

- **Budget priced** user-friendly **entry level retroreflectometer** with **one button operation** for measuring **night visibility (R<sub>L</sub>)** and **day visibility (Qd)** of **road markings** as well as ambient temperature (°C/°F) and relative humidity (rH %)
- Focussed on the core functions to keep the reflectometer simple and inexpensive
- Ultrafast retroreflection measurement (R<sub>L</sub> and Qd) in about 2 seconds
- For all types of road markings
- The ZRM 6006 Retroreflectometer is **in accordance** with **EN 1436 (R<sub>L</sub>/Qd)**, **ASTM E1710 (R<sub>L</sub>)**, **ASTM E2302 (Qd)**, **ASTM E2177 (R<sub>L</sub> wet)**
- The retroreflectometer factory calibration is traceable to the independent Swiss Federal Institute of Metrology METAS
- The retro-reflectometer is approved by the accredited association StrAus-Zert, Germany (test No. 0913-2011-03)

### Application Areas :

- For road authorities, manufacturers of road marking materials, contractors and consultants.
- For Determination of R<sub>L</sub> and Qd of all types of road marking paints, marking tapes, thermoplastic and cold plastic materials - whether smooth, textured, profiled, coloured, with or without aggregates / reflective beads



# Zehntner ZRM 6006 R<sub>L</sub>-Qd

## Road Marking Retroreflectometer

### Specifications :

Equivalent Observation Distance	30m
Measurement Modes	R <sub>L</sub> dry (night visibility) R <sub>L</sub> wet (night visibility) Qd (day visibility) °C/°F (ambient temperature) rH% (relative humidity)
Measuring Sensor Adaption	V(λ)
Measuring Area	52 mm x 218 mm (2.05" x 8.58")
Measuring Range Profiled Markings	up to 12 mm (0.5")
Measuring Range	R <sub>L</sub> : 0-4'000 mcd•m <sup>-2</sup> •lx <sup>-1</sup> Qd: 0-400 mcd•m <sup>-2</sup> •lx <sup>-1</sup>
Measuring Accuracy	Repeatability±2%
Measuring Time RL/Qd Without Pictures	≈2 s
Observation Angle	EN1436 & ASTM E2302 :2.29°, ASTM E1710:1.05°
Illumination Angle	R <sub>L</sub> :ASTM E1710: 88.76° EN 1436: 1.24° Qd: diffuse
Display	Transflective luminous LCD display with LED backlight
Battery	Li-Ion 14.4 V / 6.5 Ah
Material Housing	Anodised aluminium / Aluminium eloxiert
Dimensions (LxWxH)	560 mm x 190 mm x 280 mm
Weight	6.4kg
Operating Temperature	-10°C to +50°C, non condensing
Standards	EN 1436 (R <sub>L</sub> /Qd), ASTM E1710 (R <sub>L</sub> ), ASTM E2302 (Qd), ASTM E2177 (R <sub>L</sub> wet / nass)
Supply Includes	Retroreflectometer, calibration standard, battery & battery charger, calibration certificate, carrying case with wheels
Warranty	2 years



# Zehntner ZRM 6013+ $R_L$ -Qd

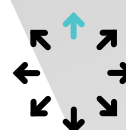
## Road Marking Retroreflectometer

Advanced road marking retroreflectometer for day and night visibility



### Efficiency

Ultrafast retroreflectometer measurement ( $R_L$  and Qd) in about 2 seconds for all types of road markings



### Versatility

Use in dry or wet conditions at any time of day or night on the road or in the laboratory



### User Experience

5.7" high resolution colour touchscreen with excellent visibility under all light conditions

## Features :

- **Portable handheld retroreflectometer** with memory for **determination of night visibility ( $R_L$ ) and day visibility (Qd) of road markings** as well as ambient temperature ( $^{\circ}\text{C}/^{\circ}\text{F}$ ) and relative humidity (rH %)
- **5.7"** high resolution **colour touchscreen** with excellent visibility under all light conditions
- **Ultrafast** retroreflection measurement ( $R_L$  and Qd) in about 2 seconds
- For all types of road markings
- The ZRM 6013+ Retroreflectometer is in accordance with EN 1436 ( $R_L$ /Qd), ASTM E1710 ( $R_L$ ), ASTM E2302 (Qd) and ASTM E2177 ( $R_L$  wet)
- Factory calibration traceable to the independent Swiss Federal Institute of Metrology METAS
- Approved by the accredited association StrAus- Zert, Germany (test No. 0913-2014-01)

## Application Areas :

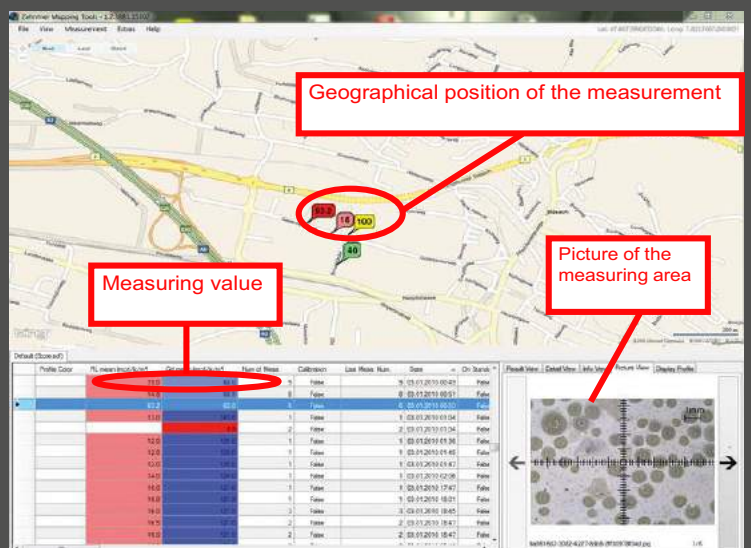
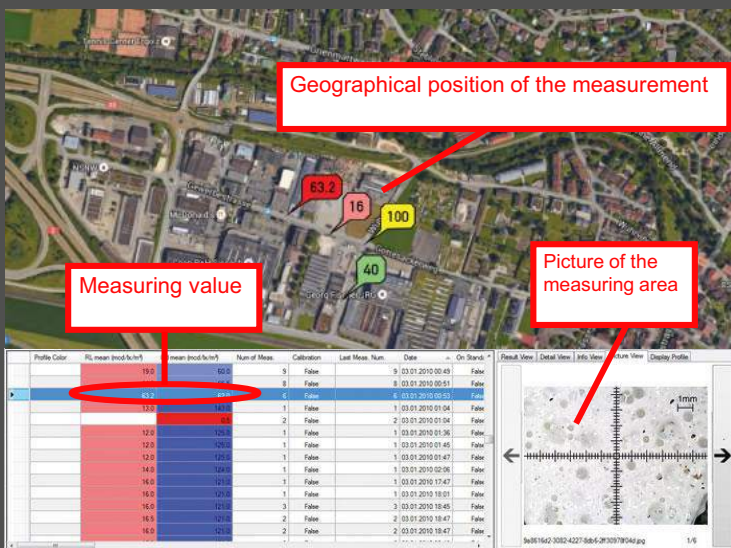
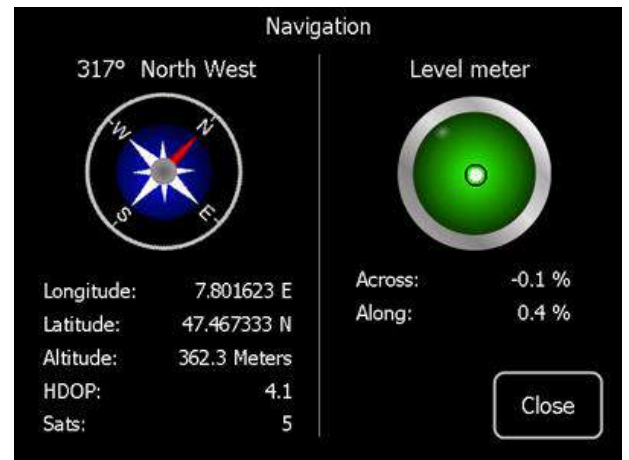
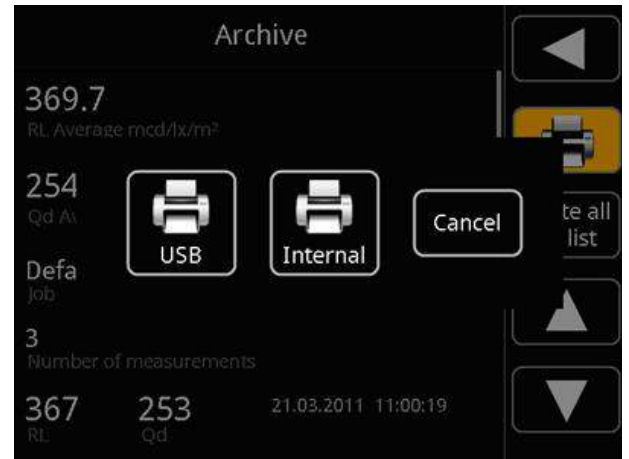
- For road authorities, manufacturers of road marking materials, contractors and consultants.
- For Determination  $R_L$  and Qd of all types of road marking paints, marking tapes, thermoplastic and cold plastic materials - whether smooth, textured, profiled, coloured, with or without aggregates / reflective beads

# Zehntner ZRM 6013+ R<sub>L</sub>-Qd

## Road Marking Retroreflectometer



5.7" color touch-screen with easy to use guided menu with excellent visibility under all lighting conditions



Clever "MappingTools" software for easy data display and analysis included as part of package



# Zehntner ZRM 6013+ R<sub>L</sub>-Qd

## Road Marking Retroreflectometer

### Specifications :

Equivalent Observation Distance	30m
Measurement Modes	R <sub>L</sub> dry (night visibility) R <sub>L</sub> wet (night visibility) Qd (day visibility) °C/°F (ambient temperature) rH % (relative humidity)
Measuring Sensor Adaption	V(λ)
Measuring Area	(WxL): 52mm x 218mm (2.05" x 8.58")
Measuring Range Profiled Markings	up to 12 mm (0.5")
Measuring Range	R <sub>L</sub> : 0 - 4'000 mcd•m <sup>-2</sup> •lx <sup>-1</sup> Qd: 0 - 400 mcd•m <sup>-2</sup> •lx <sup>-1</sup>
Measuring Accuracy	Repeatability±2%
Measuring Time RL/Qd Without Pictures	≈2 s
Measuring Time Single Without Picture	≈1 s
Observation Angle	EN 1436 & ASTM E2302: 2.29° , ASTM E1710: 1.05°
Illumination Angle	R <sub>L</sub> : EN 1436: 1.24° R <sub>L</sub> : ASTM E1710: 88.76° Qd: diffuse
Display	Touchscreen 5.7" color TFT (LCD), LED backlight, VGA resolution
Memory	1 GB internal flash memory
Interface	Host USB (type A / Typ A), Client Mini USB (type B / Typ B)
Battery	Li-Ion-Mn 14.4 V / 6.5 Ah
Material Housing	anodised aluminium / Aluminium eloxiert
Dimensions (LxWxH)	560 mm x 190 mm x 280 mm (22.05" x 7.48" x 11.02")
Weight	6.8kg
Operating Temperature	-10°C to +50°C (14°F to 122°F), non condensing
Standards	EN 1436 (RL/Qd), ASTM E1710 (R <sub>L</sub> ), ASTM E2302 (Qd), ASTM E2177 (R <sub>L</sub> wet / nass)
Reporting Software	Includes mapping and data analysis software MappingTools
Supply Includes	Retroreflectometer, mapping & data analysis software, calibration standard, battery & battery charges, calibration certificate, carrying case with wheels
Technology Options	Optional High-resolution Camera Optional compass and level-meter GPS, internal printers
Warranty	2 years



# Zehntner ZRM 6014 R<sub>L</sub>-Qd

## Road Marking Retroreflectometer

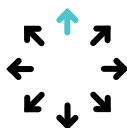
The Most Advanced road marking retroreflectometer

Day and night visibility measurement of road markings with retroreflectometry



### Accuracy

Intelligent electronics paired with Swiss Made optics deliver a new benchmark of measurement, accuracy, and ultrafast retroreflection measurement (R<sub>L</sub> and Qd) in about 2 seconds



### Versatility

Fold-away telescopic handle and wheels standard allowing for superior portability. Gather data for night and day visibility effectively, anytime and on any road surface.



### Productivity

Refine your measurements with precise geolocation and high-res images. The user-friendly software makes comprehensive reports quickly and with ease.

## Features :

- Portable **handheld top class retroreflectometer** for determination of **night visibility (R<sub>L</sub>) and/or day visibility (Qd) for all types of road markings** as well as ambient temperature (°C/°F) and relative humidity (rH %) combined in one compact instrument
- 5.7" high resolution colour touchscreen with excellent visibility under all light conditions
- **Fold-away telescopic handle and wheels** for the first time included in the standard delivery of a retroreflectometer for easy field and laboratory operation
- **Ultrafast** retroreflection measurement (R<sub>L</sub> and Qd) in about 2 seconds
- Innovative **options to customize** the reflectometer to personal requirements such as **integrated 5-megapixel camera**, WAAS **GPS-unit**, **compass** and **level-meter** as well as **integrated printer** option.
- Easy to use menu navigation
- The ZRM 6014 Retroreflectometer is in accordance with EN 1436 (for R<sub>L</sub> and Qd), ASTM E1710 (for R<sub>L</sub>), ASTM E2302 (for Qd) ASTM E2177 (for R<sub>L</sub> wet)
- Factory calibration traceable to the independent Swiss Federal Institute of Metrology METAS
- Approved by the accredited association StrAus- Zert, Germany (test No. 0913-2010-06)

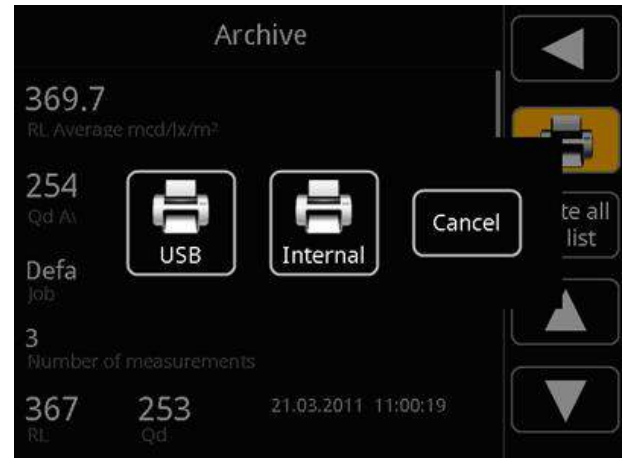
# Zehntner ZRM 6014 R<sub>t</sub>-Qd

## Road Marking Retroreflectometer

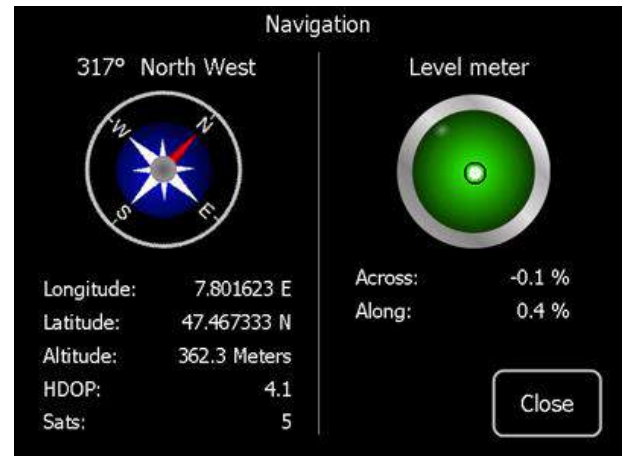


Position shifting

Height shifting



Optional: Built-in printer\*



Optional: Compass and level-meter\*



5.7" colourtouch-screen with easy to use guided menu with excellent visibility under all lighting conditions



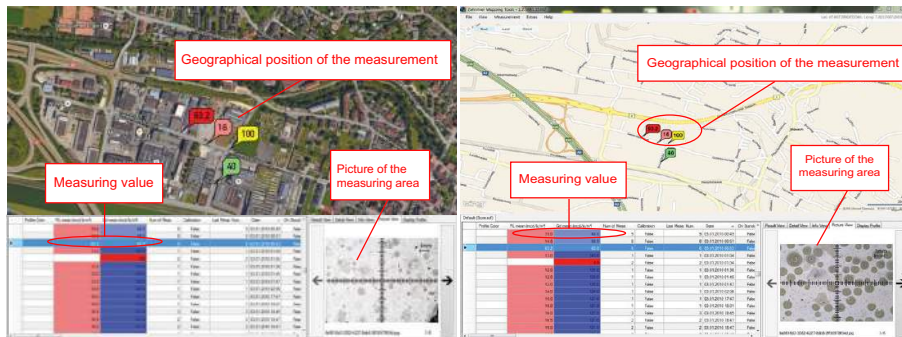
Optional: Camera – pictures with or without zoom\*

\* Items shown as optional, if required, should be specified at time of RFQ & ordering

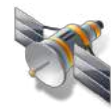


# Zehntner ZRM 6014 R<sub>L</sub>-Qd

## Road Marking Retroreflectometer



Clever "MappingTools" software for easy data display and analysis



GPS unit



Compass and level-meter



Built-in or portable printer



Camera in measuring position

## Specifications :

Equivalent Observation Distance	30m
Measurement Modes	R <sub>L</sub> dry (night visibility) R <sub>L</sub> wet (night visibility) Qd (day visibility) °C/°F (ambient temperature) rH % (relative humidity)
Measuring Sensor Adaption	V(λ)
Measuring Area	(WxL): 52 mm x 218 mm (2.05" x 8.58")
Measuring Range Profiled Markings	up to 12 mm (0.5") / bis 12 mm
Measuring Range	R <sub>L</sub> : 0 - 4'000 mcd•m <sup>-2</sup> •lx <sup>-1</sup> Qd: 0 - 400 mcd•m <sup>-2</sup> •lx <sup>-1</sup>
Measuring Accuracy	Repeatability±2%
Measuring Time RL/Qd Without Pictures	≈2 s
Measuring Time Single Without Picture	≈1 s
Observation Angle	EN 1436 & ASTM E2302: 2.29° , ASTM E1710: 1.05°
Illumination Angle	R <sub>L</sub> : EN 1436: 1.24° R <sub>L</sub> : ASTM E1710: 88.76° Qd: diffuse
Display	Touchscreen 5.7" colour TFT (LCD), LED backlight, VGA resolution
Memory	1 GB internal flash memory
Interface	Host USB (type A / Typ A), Client Mini USB (type B / Typ B)
Battery	Li-Ion-Mn 14.4 V / 6.5 Ah
Material Housing	anodised aluminium / Aluminium eloxiert
Dimensions (LxWxH)	658.5mm x190mm x 408.5mm
Weight	7.6 kg (16.76 lbs )
Operating Temperature	-10°C to +50°C (14°F to 122°F)
Standards	EN 1436 (RL/Qd), ASTM E1710 (RL), ASTM E2302 (Qd), ASTM E2177 (RL wet / nass)
Reporting Software	Includes mapping and data analysis software MappingTools
Supply Includes	Retroreflectometer, mapping & data analysis software, calibration standard, battery & battery charges, calibration certificate, carrying case with wheels
Technology Options	Optional High-resolution Camera Optional compass and level-meter
Warranty	2 years

# Zehntner ZRS 6060

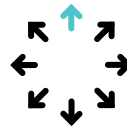
## Road Sign Retroreflectometer

Visibility measurement of Traffic and Road signs and Reflective materials



### Accuracy

Intelligent electronics work together with Swiss Made optics to monitor the environment and adjust to stray light. The result is a new benchmark of accuracy and robustness under any conditions in the field.



### Versatility

Superior ergonomics and screen readability, thanks to the adjustable display. Quality-assure the night visibility of traffic signs, safety garments, conspicuity tapes, and other reflective materials.



### Productivity

Enrich your measurements with precise geolocation and high-resolution images. The user-friendly and intuitive analysis software makes comprehensive reports possible quickly and with ease

### Features :

- New generation of ergonomic **retroreflectometer** for determination of **night visibility** (coefficient of retroreflection  $R_A$  and  $R'$ ) of **traffic signs**, safety garments and other reflective materials with measurement of three different observation angles at the same time
- The very first retroreflectometer with LED illumination system and with a **3.5" high resolution colour touchscreen** with adjustable display inclination for excellent visibility under all light conditions also in bright sunlight
- Innovative options to customize the reflectometer to personal requirements: integrated 5-megapixel camera, WAAS GPS-unit, holster and handles and many more
- For all kinds of retroreflective materials and colours with automatic colour indication
- **Continuously updated average value**; each single measurement is stored additionally
- Measurements can be evaluated with the mapping and data analysis software „MappingTools“ included.
- Easy to operate with polyglot menu navigation



# Zehntner ZRS 6060

## Road Sign Retroreflectometer

### Specifications :

Measuring Sensor Adaption	V(λ)
Measuring Area	Ø 25 mm (0.98")
Measuring Range	0 - 2'000 cd•lx <sup>-1</sup> •m <sup>-2</sup>
Measuring Time	≈ 3 s
Display	3.5" colour TFT (LCD), LED backlight, HVGA resolution
Memory	Internal flash memory of 1 GB ≈ 1'000'000 measurements without pictures
Interface	Host USB (type A / Typ A), Client Mini USB (type B / Typ B)
Battery	Li-Ion 14.4 V / 6.5 Ah
Material Housing	anodised aluminium / Aluminium, eloxiert
Dimensions (LxWxH)	220 mm x 85 mm x 290 mm
Weight	1.9 kg (4.19 lbs) net without options
Operating Temperature	-10 to +50°C , non condensing
Reporting Software	Includes mapping and data analysis software MappingTools
Supply Includes	Retroreflectometer, calibration standard / front plate , battery charger, mapping and data analysis software
Technology Options	LED illumination system 3.5" colour touchscreen with adjustable display inclination for excellent visibility under all light conditions Measurement of three different observation angles at the same time
Warranty	2 years

Versions	Illumination angle b / Anleuchtungswinkel b	Observation angle a / Beobachtungswinkel a	Application / Anwendung
6060.ASTM	-4°	0.2°, 0.5°, 1°	

\* Other options available includes 6060 (Illumination 5° Observation angle 0.2°, 0.33°, 2°) CD CEN & DE





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2021-22

## Digital Concrete Test Hammers

Advanced Non Destructive Testing Schmidt  
Concrete Test Hammers for Measuring  
Compressive Strength of Concrete & Rock

**Quality in Concrete. Delivered.**

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**PUNDIT® PL-200**  
ULTRASONIC PULSE VELOCITY

**PUNDIT® PL-200PE**  
ULTRASONIC PULSE ECHO

54 kHz 10:25

Gain  
20x  
Voltage  
100V

$\Delta 22.8 \mu s$   
 $\Delta 2976 \text{ m/s}$

proceq

60 Years of Innovation

Made in Switzerland

**PORTABLE SKID RESISTANCE TESTER**  
For Determining Friction of Asphalt

**STANLAY™**

The **Stanley Portable Skid Resistance Tester** is a direct reading instrument that provides the measure of the friction between a skidding tyre and wet road surface. The instrument facilitates a road or runway engineer, based on numerical scientific results, information on whether a measure needs to be taken to reduce skidding.

The instrument can also be used for testing on tiles, surfaces especially relevant to areas with high thoroughfare/human traffic.

Conforms to: EN 1436, EN 13036-4, ZTV M 02

**Working Principle:**

The Portable Skid Resistance Tester (PSRT) is based on the Izod principle. In operation, a pendulum of a known mass rotates about a vertical spindle. The head of the pendulum is fitted with a Rubber Slider, which has a specific hardness and resilience. When released from a horizontal position, the pendulum head strikes the sample surface with a constant velocity. The distance travelled by the pendulum after striking the sample, is determined by the friction resistance of the sample surface. The skid resistance values which approximately correspond to the coefficient of friction times 100 are read directly from the clearly engraved scale.

Leather Handle  
Knob for Fine Tuning of Height Adjusting  
Aluminium Design  
Reading Pointer  
Pendulum Arm  
High Precision Levelling Bubble  
Rubber Slider Provided in 55HRC & 96HRC

Height Adjustment Knobs  
Chrome Fitting  
Catch Lock Mechanism  
Levelling Knobs

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**PROCEQ GPR LIVE - CONCRETE SCANNING GPR** **2017-18**

**Proceq GPR Live**  
The GPR for everyone

**PERFORM STRUCTURAL IMAGING  
LOCATE REBAR IN CONCRETE**

- Upto 0.7m Depth of Investigation
- Stepped Frequency Continuous Wave GPR



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**Catalogue Version : ST/ZRM/2022-23**



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