



## The RetroSign GRX retroreflectometer features

*The professional choice for measuring all types of retroreflective sheeting on road traffic signs, high visibility clothing, license plates and reflective tapes*

### The RetroSign instrument

RetroSign GRX is the most advanced retroreflectometer available on the market currently for measuring retroreflection of road traffic signs, high visibility clothing, license plates and reflective tapes. RetroSign GRX is built in accordance with existing standards to allow for retroreflection measurement of various colours and all type of retroreflective materials including fluorescence types. RetroSign GRX uses a LED light source and meets the sensor response as stated in ASTM E 1709 for combining the CIE eye response and CIE illuminant 'A'.

RetroSign GRX has a rugged design and is built for long-lasting field work even if it can also be used in the laboratory. The software is simple and intuitive and guides the user through the different steps of a measurement program. RetroSign GRX allows the user to create templates with almost unlimited measurement related information (pre-defined or specific entries) of series of measurements with the same basic data. An ID for the user can be entered.

### Standard compliance

RetroSign GRX complies with the following standards: EN 12899 (road traffic signs), EN 20471 (high visibility clothing), ASTM E 1709 & ASTM E 2540 (road traffic signs) and ASTM E 1809 (high visibility clothing).

### Technology

RetroSign GRX is based on point aperture geometry comparable to laboratory readings reflecting real-world driving conditions and allows detection of incorrect application of direction sensitive microprismatic sheeting.

RetroSign GRX uses advanced sensor technology to allow for measurement of up to seven observation angles in addition to automatic colour recognition. The angles available to the user are:

0.2°, 0.33°, 0.5°, 0.7°, 1.0°, 1.5° and 2.0°. A built-in digital camera makes it possible to take pictures of signs as well as scan barcodes and QR codes for asset management purpose.

The man-machine user interface is through a large 5" WVGA colour touch display clearly visible even in bright sunshine. The instrument automatically detects and compensates for ambient light present which could affect the measurement result.



The working range of the instrument is 0 – 2.000 cd x lx<sup>-1</sup> x m<sup>-2</sup>.

### Scalability

GRX scalability - also after purchase - is an extremely powerful feature. Users can upgrade their system in the field as their needs change. The GRX comes with all features but just those paid for are made available.

### Instrument types

RetroSign GRX is offered in three base models where the figure tells the number of observation angles offered

- **GRX-1** (1 entrance and 1 main observation angle)
- **GRX-3** (1 entrance and 3 observation angles)
- **GRX-7** (1 entrance and 7 observation angles)

The entrance angle is provided as a front adapter with one of the two standard angles of -4° (ASTM) or +5° (CEN) supplied with the instrument. Further entrance angles of +10°, +20°, +30°, +40° and +45° are offered for special measurement purposes. Using the

instrument on continents with different measurement geometries just requires an extra front adapter.

RetroSign GRX will be available as one model for both CEN and ASTM geometries. The geometry is being controlled by the front mounted entrance angle adapter. The instrument automatically reads which adapter has been attached and records this information.



### Standard Instrument features

RetroSign GRX offers a range of basic features:

- Measurement of 1, 3 or 7 observation angles
- Calibration reference with values as number or QR code for scanning
- Automatic colour recognition
- Colour contrast calculation (background and legend)
- Automatic pass/fail evaluation
- Memory of >2 mio measurements, >2,000 measurements with pictures
- Replaceable and rechargeable battery available from the market
- Data transfer to PC via USB memory stick
- Data presentation in generally available software like Excel and Google Earth

### Optional instrument features

RetroSign GRX offers a range of built-in features which add value to the performance of the instrument.

- GNSS for location identification and mapping
- Camera for taking photos of signs
- Camera for scanning of barcodes and QR codes for asset management
- Wireless communication
- Instrument rotation and tilt
- Sign facing direction
- US MUTCD Library for automatic pass/fail evaluation
- Wireless data transfer to tablet for data back-up, processing, presentation and asset management

For further information on GRX App & tablet option, see separate leaflet.

In addition to built-in features the following items are available:

- Wireless operated extension pole, 1.5 to 2.7 m / 4.9 to 8.9 feet.
- Entrance angle adapters of -4°, +5°, +10°, +20°, +30°, +40° and +45°

### Data presentation

Data can be transferred to a PC using a USB memory stick, or can be transferred to a tablet (iPad) via WiFi. From the tablet data can be sent instantly to the company back office if required. See the GRX App & tablet feature leaflet for further information on this option.

RetroSign GRX measurements transferred to a PC will be presented as a log file in Excel and displayed on Google Earth. If other output formats are required, DELTA will be able to assist in developing such solutions.



### Contact and further information

For further information about DELTA's RetroSign GRX, please contact: