The world's first built-in crack scale

Fast and accurate digital processing for crack inspections.

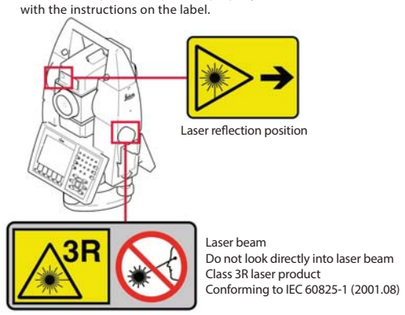
The KUMONOS is able to remotely measure the width, length, shape and positional coordinates of cracks and automatically plot out the data

Product Specification

Telescope	Magnification: ×42 Field of view: 2.5m at 100 meters away
Angle measurement accuracy	5"(0.1" indication)
Distance measurement accuracy (Non-prism)	2mm+2ppm
Laser output	Class 3R
Internal memory/Memory devices	1GB / SD card, USB stick
Size	203(W)×226(D)×325(H)mm
Weight	4.8kg
Geospatial Information Authority of Japan (GSI) certified	Class 2A

※ Other specifications conform to the specifications of Leica Total Stations.
The specifications and external appearance are subject to change for improvement without prior notice.

The following label is attached to the Total Station.
For safe use, operate the product properly in accordance with the instructions on the label.



Precautions for using laser product safely

The Total Station is a Class 3R laser product defined by IEC60825-1 - Safety of Laser Products. Please observe the following warning for safe use of the product.

WARNING

- For safety reasons, Class 3R laser products must be handled as a potentially dangerous product. Do not look directly into the laser beam or aim the laser beam at anyone.
- Not only direct laser beams but also reflections from prisms, windowpanes, mirrors, metal surfaces, or other reflective surfaces may be hazardous in some cases. Do not aim the laser beam at places with high reflectivity (such as a mirror) or places wherean adverse reflection may be caused. Do not look at the prism or reflective objects through the bead or from beside the bead while the laser beam switch (in the laser pointer mode or ranging mode) is turned on. The prism should only be aligned through the telescope.

[Developer]

Kansai Construction Survey Co., Ltd.

[Head Office] 2-1-15 Sembahigashi Minoh-shi Osaka 5620035 JAPAN
PHONE: +81 72-730-0009 FAX: +81 72-749-1818
[Tokyo Office] 1-2-26 Omorinaka Ota-ku Tokyo 1430014 JAPAN
PHONE: +81 03-5856-1219 FAX: +81 3-3764-1372
URL: http://kumonos.info MAIL: kumonos@kankou.co.jp

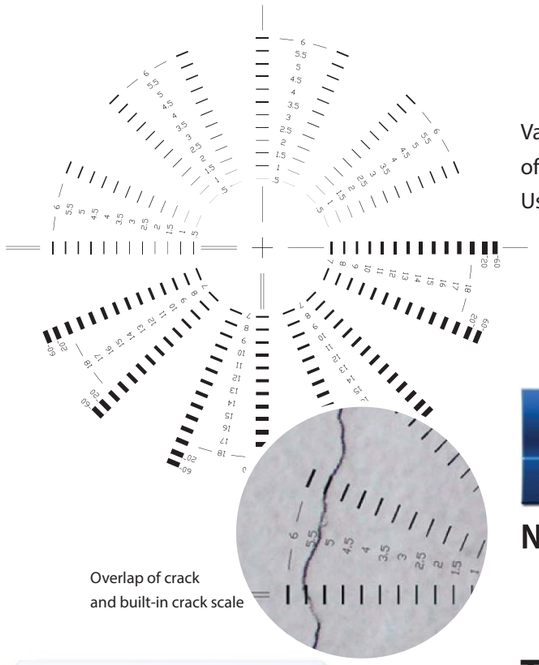
New Remote Concrete Crack Inspection System

KUMONOS

Safe, Efficient, Accurate, Economical Crack Inspection System

Kansai Construction Survey Co., Ltd.

Safe, Efficient, Accurate, Economical Crack Inspection System



Overlap of crack
and built-in crack scale

Valuable time and huge costs are required for crack inspections of hard-to-reach concrete structures.
Using the KUMONOS, cracks can be measured from a distance.

KUMONOS

New Remote Concrete Crack Inspection System

The world's first built-in crack scale

The KUMONOS is the world's first non-prism lightwave surveying instrument with a built-in concentric crack scale. Crack widths are calculated from the relation of the distance between the crack and the instrument, and the gauge number that is found by positioning the scale mark over the crack.

Improved measurement accuracy

The KUMONOS system can measure crack widths of 0.3mm, 0.2mm, and 0.1mm from the respective distances of 80 meters, 50 meters, and 25 meters. This increase in measurable range allows safe and secure crack inspection in places where scaffolds or boom lifts have been required, and crack inspection was difficult or impossible.

● Minimum measurable crack width by distance Measurement condition : Instrument faces wall surfaces straight on.

Minimum measurable crack width by distance

Distance from instrument (m)	1.5	5	10	15	20	25	30	35
Minimum measurable width (mm)	0.007	0.022	0.044	0.066	0.088	0.110	0.132	0.155
Distance from instrument (m)	40	45	50	60	70	80	90	100
Minimum measurable width (mm)	0.177	0.199	0.221	0.265	0.309	0.353	0.397	0.441

This table shows the minimum measurable crack width when the minimum gauge number 0.5 is read.
Measurement from oblique angle is also possible with the automatic angle compensation function, but minimum measurable crack width values differ from those in this table.

"KUMONOS"

Lens scale is a composite image in this photo.

Hand-drawn sketches and CAD tracing are no longer necessary. The KUMONOS achieves high-speed digital data processing from inspection to written report.

Safe

Remote inspection from the ground ensures the safety of the operator.

Efficient

The KUMONOS software automatically draws each crack as a CAD drawing.

Accurate

The lightwave surveying system in the KUMONOS records all target points as 3D coordinates and creates 3D CAD drawings.

Economical

The KUMONOS eliminates the need for expensive scaffolds or boom lifts.

Inspection Flow

Preparation → 1 Site inspection using the **KUMONOS** → 2 Automatic creation of CAD drawings using dedicated software → **Results**

Crack widths are measured one by one by aligning the crack scale with the point of the crack to measure the width.

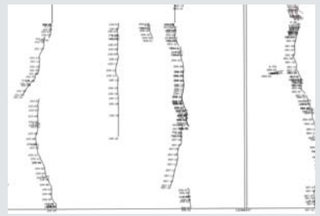
Advantages:
Remote safe measurement, no need to use scaffolds or boom lifts, automatic drawing, accurate data, and the ability to track the change in cracks over time with numerical values.

Application Uses • Out of reach places • Places where installing scaffolds or boom lifts is difficult.

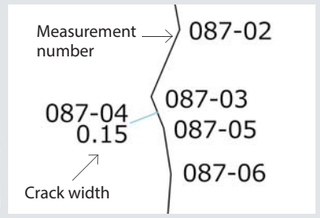
Buildings, high-rises, bridges, smoke stacks, cooling towers, retaining walls, dams, tunnels, concrete pavements and other concrete structures in hard to reach places.

Automatic creation of CAD drawings using dedicated software

The dedicated application software automatically converts acquired measurement data to CAD data and creates plotted drawings.



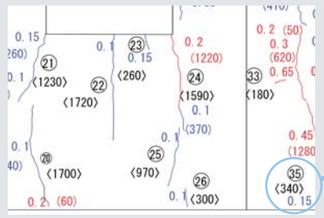
Plot plan automatically drawn



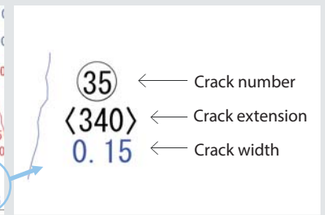
Displaying crack shape, crack width, and measurement number

Edit of CAD Drawings

It is possible to divide layers, as well as add crack numbers and crack extensions.



Edited plot plan



Enlarged view