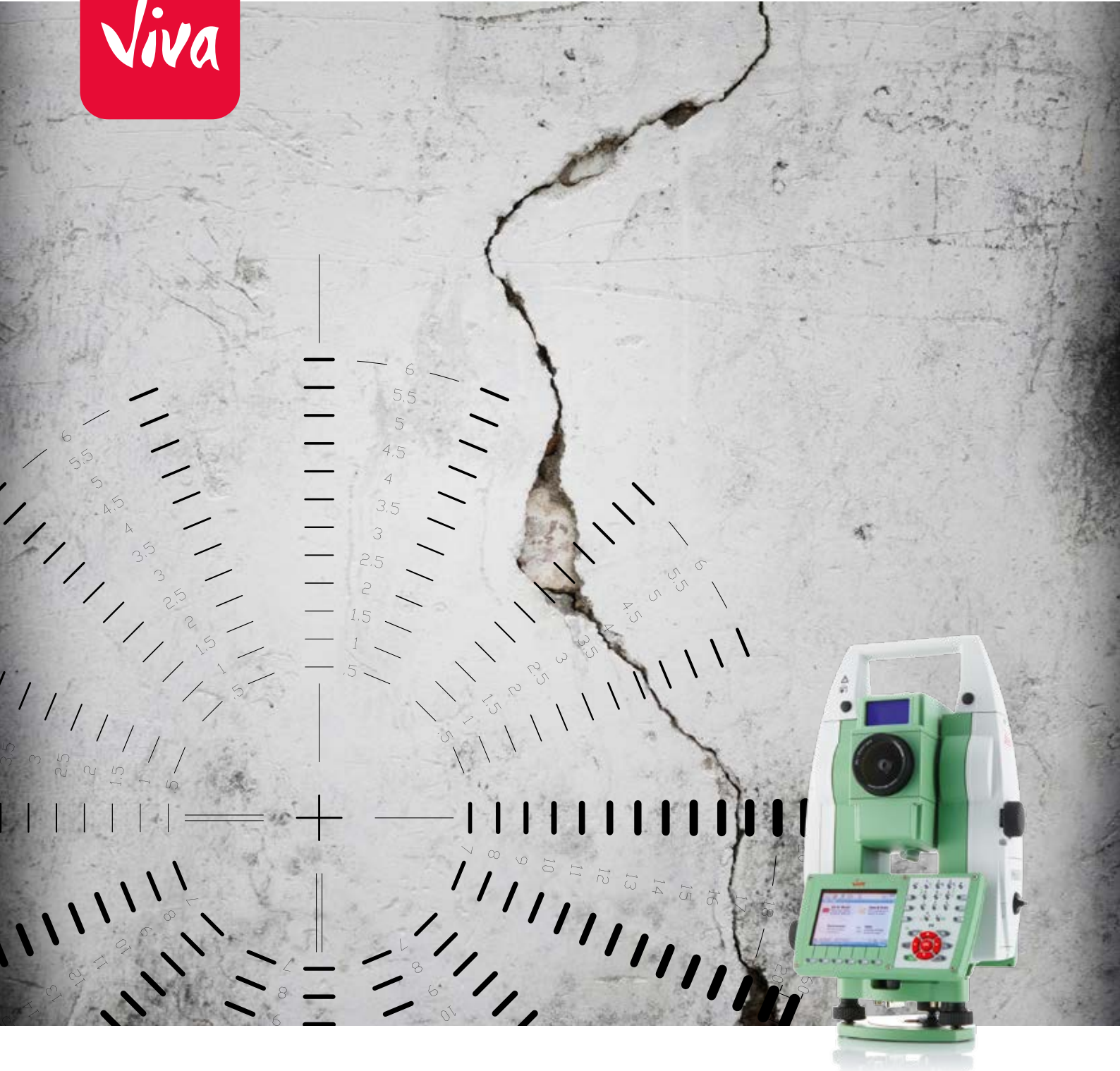


Leica Viva TS11/TS15 KUMONOS

The remote concrete crack measurement system



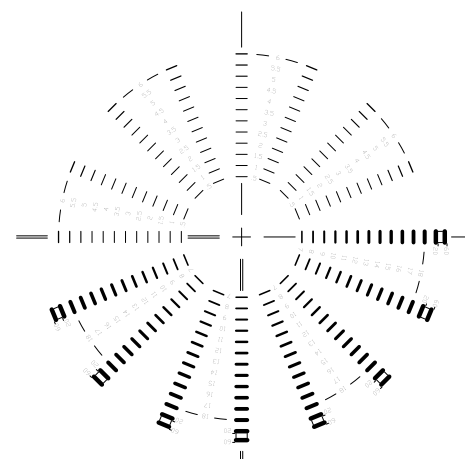
Leica Viva TS11 & TS15 KUMONOS

The remote concrete crack measurement system

Are you still using scaffolds for concrete crack inspections? Valuable time and huge costs are required for crack inspections of hard-to-reach concrete structures. In a strategic partnership, Leica Geosystems and Kansai Construction Survey Company bring together expertise in measurement and crack monitoring technology. Using the KUMONOS system, cracks can be measured from a distance without the need of expensive scaffolding or elevated work platforms.

The world's first built-in crack scale

KUMONOS is the world's first solution using Leica Viva TS11 & TS15 with a built-in concentric crack scale reticle. 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 scaffolding or a elevated work platform used to be required.

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	0.10	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. Oblique measurement is also possible with the automatic angle compensation function, but minimum measurable crack width values differ from those in this table.

Applications



Bridges



Buildings



Dams



Cooling Towers

Fast and accurate digital processing for crack inspections

■ Safe

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

■ Accurate

Leica Viva TS11 & TS15 KUMONOS records all target points with the accurate and reliable PinPoint EDM and quadruple axis compensation.

■ Efficient

The KUMONOS office software automatically draws each crack in a CAD drawing.

■ Economical

KUMONOS eliminates the need for expensive scaffolding or elevated work platforms.

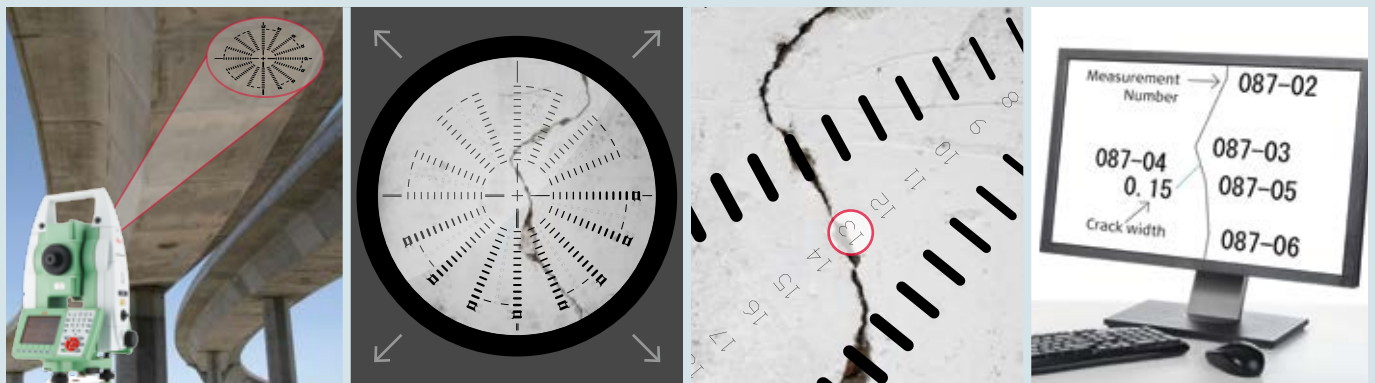
Inspection flow

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



KUMONOS

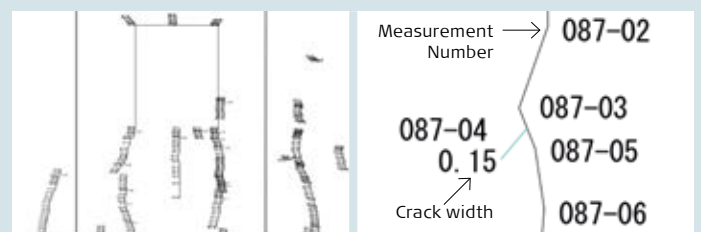
Kansai Construction Survey Co., Ltd.



1. Aim to the crack and measure a distance (reflectorless).
2. Crack widths are measured one by one by aligning the crack scale with the point of the crack to measure the width.
3. Enter number determined with the crack scale into onboard software - true thickness will be calculated and stored with the collected 3D coordinates of the crack.
4. Export data from instrument to KUMONOS office software.

Automatic creation of CAD drawings using dedicated software

The KUMONOS office software automatically converts acquired measurement data to CAD data and creates plotted drawings.

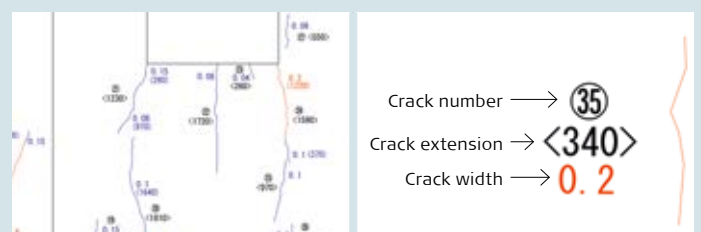


Automatically drawn CAD file

Displaying crack shape, crack width and measurement numbers

Editing of CAD drawings

It is possible to create layers, as well as add crack numbers and crack extensions to the CAD drawing.



Edited CAD file

Enlarged view of CAD file

Whether you want to stake-out an object on a construction site or you need accurate measurements of a tunnel or a bridge; whether you want to determine the area of a parcel of land or need the position of a power pole or to capture objects for as-built maps – you need reliable and precise data.

Leica Viva combines a wide range of innovative products designed to meet the daily challenges for all positioning tasks. The simple yet powerful and versatile Leica Viva hardware and software innovations are redefining state-of-the-art technology to deliver maximum performance and productivity. Leica Viva gives you the inspiration to make your ambitious visions come true.

When it has to be right.



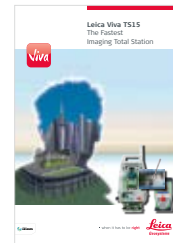
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Viva TS11
 Brochure



SmartWorx Viva
 Brochure

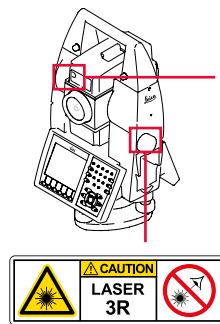


Viva TS15
 Brochure



1WK6W3KRHL
 3KRH
 (PDLOLIRVUHRUVRUFHFRP
 HEVUHRUVRUFHFRP

The following label is attached to the TS11 & TS15. For safe use, operate the product properly in accordance with the instructions on the label.



Laser reflection position

Laser beam
 Do not look directly into laser beam
 Class 3R laser product
 Conforming to IEC 60825-1 (2001.08)