

# CHORD-2

## Digital versine measuring device

CHORD-2 measuring device enables the determination of the curve radius of one of the rails of the railway. The versine is measured by spot measurement in the middle of the string formed with a 2-meter base, with a resolution of 0.01 mm. The distance passed is measured by a rotary encoder with a resolution of 1 mm. The device operates with one Li-ion battery.

The measuring device consists of a measuring beam which provides the measuring base and a measuring frame which presses the measuring beam to the rail to be measured. The measuring device is isolated between the two rails. Both the guiding rollers providing the base on the measuring beam and the roller measuring the versine touch the rail 14 mm below the level of the rail crown. The measuring device enables the measuring of the inner and also the outer rail in the track, from both directions. Thus the device is suitable for measuring the curve from the concave and convex sides, as well. The device can be used for the measuring of rails with a minimum curve radius of 15 metres.



Figure 1.: The CHORD-2 device in track

Measuring of the versine is possible when the measuring device is stationary and anywhere depending on the road. With measurements carried out at equal distances e.g. measuring per base or per half a chord length (every 1 meter) the data required for the calculation with the embracing chords can be measured. The measuring program enables the measuring with embracing chords.

### The measuring process:

Assemble the measuring device and put it in the track. The device consists of three main parts, these are the measuring beam, the measuring frame and the push rod which is equipped with a press button. Push the device till the start of the curve radius to be measured and switch it on.



Figure 2.: The measuring device in disassembled state

When turning on the device a QR-code appears on the screen of the device. By reading this with a device capable of WI-FI connection, we can connect to a local network created by the measuring device where the measurement parameters can be filled in. After the filling in save the form and the parameters get written into the device. The phone or tablet can be put away,



Figure 3.: The appearing QR-code

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it will be needed next time when measuring a new curve. After this put the wheel with the rotary encoder into measuring state. By pressing the press button on the push rod the measuring begins and a 0 mm sign appears. After pressing again, the first measurement takes place. The measured result and the calculated momentary curve radius value will flash up for a few seconds.

Chord-2

Főoldal
Letöltés
Törlés

Konfiguráció

**Mérést végző neve:**

**Helység:**

**Helyszín:**

**Kezdő szelvény:**  +

**Vágányszám:**

**Vágány:**

**Sínszál:**

**Mérési irány:**

**Sínszál helyzet:**

Mentés

When the results are displayed the device can already be moved to the next measurement point. When the results disappear, the rotary encoder is zeroed again thus easing the reading of the localization per metre. At the pressing of the button, the measurements can be stored again for the desired sections or measurements can be made several times in one cross section. After completing the required number of measurements, the measurement section can be closed by pressing the button on the push rod for 5 seconds. At this time the device gets into sleep mode until we press the button again before a new measurement. Then the QR-code appears again and new measurement section can be started.



Figure 5.: The steps of the measurement on the screen

Figure 4.: The parameters which can be filled in

## Technical specifications

Measuring range	From a 15-metre curve radius to a straight line
Margin of error of versine measurement	± 0,05 mm
Track gauge	1415-1495 mm
Operating air temperature	-20 ... +50 °C
Battery of measuring device	18650 Li-Ion cell
Operating time of measuring device	8 hours
Water and dust protection	IP65
Transport dimensions: measuring beam in box	27 x 30 x 220 cm
measuring frame in sack	27 x 30 x 120 cm
Size in measuring state	70 x 100 x 170 cm
Shipping weight: measuring beam in box	20 kg
measuring frame in sack	7 kg
Weight in measuring state	16 kg

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