

**Service**

INKA 251 instruments do not require any maintenance within their operation. For reliable operation you only have to comply with the operating conditions specified and prevent mechanical damage to the instrument.

In case of the product's breakdown, you have to return it to the supplier at their address.

supplier: manufacturer: KMB systems, s.r.o.  
 559 Dr. M. Horákové  
 460 06, Liberec 7  
 Czech Republic  
 website: [www.kmb.cz](http://www.kmb.cz)

The product must be packed properly to prevent damage in transit. Description of the problem or its symptoms must be sent along with the product. If warranty repair is claimed, the warranty certificate must be sent in too. If repair beyond warranty is required, a written order must be included.

**Warranty Certificate**

Warranty period of 24 months from the date of purchase, maximum 30 months from the date of dispatch from manufacturer's warehouse however, is provided for the instrument. Problems in the warranty period, provably because of faulty workmanship, design or inconvenient material, will be repaired free of charge by the manufacturer or an authorized servicing organization.

The warranty ceases even within the warranty period if the user makes unauthorized modifications or changes to the instrument, connects it to out-of-range quantities, if the instrument got damaged in out-of-specs falls or by improper handling or if it has been operated in contradiction with the technical specifications presented.

type of product: **INKA – 251**..... serial number .....

date of dispatch: ..... final quality inspection: .....

manufacturer's seal:

date of purchase: ..... supplier's seal:

# INKA 251

## Contactless Indicator of Ground Connection on High Voltage Lines



## Application

The instrument has been designed for quick identification point of ground connection in overhead high voltage line system. The localization principle is functional at choke-compensated overhead lines (interjacent cable sections are acceptable) with tree structure only (it cannot be used at grid-structured networks). The measurement is made with no interruption of the network's operation and from the ground, completely without a contact.

## Description

The instruments indicate the magnetic field 5th harmonic level in two planes perpendicular to each other : horizontal and vertical. Under normal conditions (no ground connection), this level low and it corresponds to the current's harmonic distortion in a network. On ground connection, the current 5th harmonic component is created, which closes through the spurious capacitance line-ground and through the spot of the ground connection. The 5th harmonic level is significantly increased and its layout along the lines depends on network structure and ground connection placement.

The instrument features three scales :

- Scale 1 (upper) indicates horizontal component instantaneous value of the field produced by current through the power line.
- Scale 2 (lower) shows vertical component instantaneous (perpendicular to conductor) value of the field.

The above mentioned scales are made up of green LEDs with their extreme positions, stops, using red LEDs.

- Scale 3 indicates input amplifiers' gain setting. The gain can be turned up or down using the "+" and "-" buttons, respectively. Pressing one of these buttons starts the instrument's operation.

The instrument draws power from two alkaline AA-type 1.5V batteries. Low battery level is indicated by two flashing yellow LEDs at the ends of the gain scale.

## Operation

1. Position the instrument the shortest distance under the power line and its face vertically and perpendicular against overhead line. Measurement should be taken in the middle of the power line, that is under the middle wire.
2. Push the "+" or "-" button to switch locator on. Use the "+" and "-" to adjust sensitivity in order the greater of signals reaches approximately up to 3/4 of the full scale (green shows normal working condition, red shows limitation position).
3. If horizontal component is greater than vertical component, there is ground connection at this branch and go on in direction opposite to supplying transformation station (there is horizontal component smaller than vertical component and both signals are weaker at the branches without ground connection).
4. In the point of ground connection, the electromagnetic field inhomogeneity increases. The level in vertical direction is significantly increased there. Past the connection location, the level in the horizontal direction is lower than before the location.
5. Push + and - simultaneously or 5 min without action to switch locator off.

## Technical specifications

<b>line measured</b>	number of conductors	3
	voltage	6 to 100 kV
	current	any
	nominal frequency	50 Hz or 60 Hz
	network type	compensated with choke
<b>indication</b>	3 x LED scale	
<b>operation</b>	2 x pushbutton	
<b>power supply</b>	2 x battery / accumulator cells Ø 14,5 x 50,5 mm	AA - type (= LR6 ) alkaline NiCd, NiMH, alkaline 2 x 1,2 to 1,5 V
<b>voltage</b>		
<b>service time</b>	battery ( Duracell MN1500 ) accumulator ( 2100 mAh )	300 to 500 hours 100 to 200 hours
<b>protection class</b>	IP 40	
<b>dimensions ( h x w x d )</b>	instrument	110 x 70 x 28 mm
	case	130 x 85 x 60 mm
<b>Mass</b>	Instrument	120 g
	instrument with battery and case	220 g
<b>temperature</b>	operating	-25° to +70° C
	storage	-40° to +85° C
<b>relative humidity</b>	5 to 100 %, non-condensing	

