

MEDIUM VOLTAGE PRODUCT

KEVCY xx Rx1 Indoor Combined Sensors

Instructions for installation, use and
maintenance



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Instructions for installation, use and maintenance for the KEVCY xx Rx1 combined sensors

These instructions for installation, use and maintenance are valid for KEVCY xx Rx1 type voltage electronic transformers (sensors) operating in indoor conditions. The voltage sensors type KEVCY xx Rx1 are intended for use in voltage measurement in gas insulated medium voltage switchgear. The voltage sensors are designed as alternative of originally used insulating bushing . The housing of sensors is made from epoxy resin; the internal parts are shielded and earthed.

01 Example of Amplitude (aU) and Phase error (pU) correction factors setting for voltage sensor into REF615

1. Operating conditions

The sensors should be mounted in dry, indoor conditions without excess ingress of dust and corrosive gases. The sensors shall be protected against unusually heavy deposits of dust or similar pollution, as well as against direct sunshine. The sensors are designed for standard ambient temperature between -5°C and +40°C (storage and transportation temperature between -40°C and +80°C). The altitude for mounting should be lower than 1000 m above sea level.

The sensors may also be used at higher altitudes when agreed upon with the manufacturer.

2. Technical details

For sensor dimensions see dimension drawings at the end of these instructions. Interfaces of other sensors KEVCY xx Rx1 is given by manufacturer, please refer to the sensor drawings below. When installing sensors and setting protection, it is necessary to enter correction factors according to the enclosed routine test protocol, see picture 01.



REF615 - Parameter Setting					
Group / Parameter Name	IED Value	PC Value	Unit	Min	Max
Voltage (R/UT)					
Primary voltage		22,000	kV	0,100	440,000
Secondary voltage		100	V	60	210
VT connection		Wye			
Amplitude Corr A		0,9984		0,9000	1,1000
Amplitude Corr B		0,9984		0,9000	1,1000
Amplitude Corr C		0,9984		0,9000	1,1000
Division ratio		10000		1000	20000
Voltage input type		CVD sensor			
Angle Corr A		-0,0400	deg	-20,0000	20,0000
Angle Corr B		-0,0400	deg	-20,0000	20,0000
Angle Corr C		-0,0400	deg	-20,0000	20,0000

01

- 02 Sensor mounting system
- 03 O-ring
- 04 RJ45 connector

3. Instructions for installation

Safety instruction

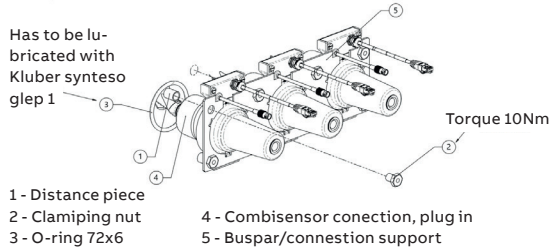
Always ground the sensor grounding terminal.

Installation conditions

The sensor should be installed in dry, indoor conditions. The temperature during the assembly must be between 0°C and +40°C. The sensor cable should not be moved or bent if the temperature is below 0°C.

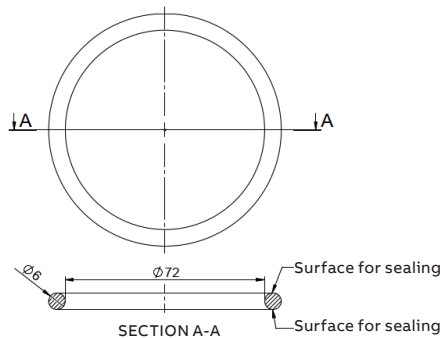
Mechanical installation

The sensors shall be mounted into the proper bushing installation place at the gas compartment. Sensor mounting position is shown at Fig. 4. The sensor is placed into the protrusion in the gas compartment wall. Lubricated O-ring between the mounting wall and sensor body is essential for the correct sealing functionality. Wall surface and also groove on the sensor body shall be clean and without scratches to prevent gas leakage. Proper mounting is ensured by the distance piece (spacer tube) and busbar/connection support fixed by clamping nuts (recommended 10 Nm shall be used). In order to achieve the correct applied torque ensure that there is no lubricant on the threaded parts. General rules and procedures for the insulative bushing installations shall be followed.



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Before mounting of sensor remove dust from the surface of sensor using a paper towel and lubricate O-Ring with “kluber synteco glep 1”.



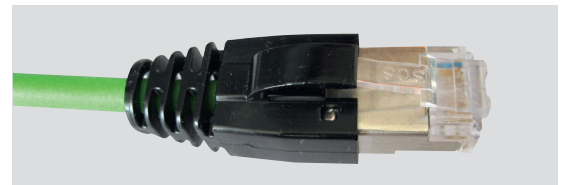
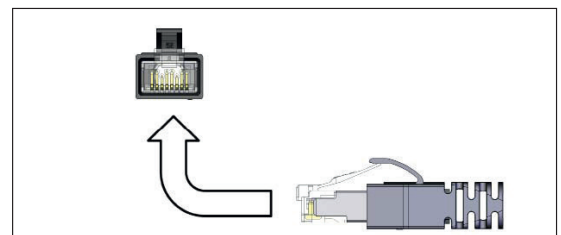
— 03

Secondary connections

The secondary cable is a special shielded cable designed to give maximum EMI shielding. The secondary cable is inseparable part of each sensor and cannot be additionally extended, shortened, branched, modified, withdrawn or changed due to the guarantee of accuracy and performance of the sensor.

The cable shall be connected directly (or via a connector adapter if needed - for more information about connector adapters and coupling adapter refer to Doc. No. 1VLC000710 - Sensor Accessories.) to Intelligent Electronic Device (e.g. protection relay). The electrical shielding of cable is connected to connector shielding and shall be earthed on IED side. The cable shall be fixed close to metal wall or inserted inside of metal cable tray far from power cables! The minimal bending radius for the secondary cable is 35 mm. The cable cannot to be moved if the temperature is below 0 °C. If cable, connector or connector grommet is damaged please contact the manufacturer for instructions.

The used RJ45-type connectors are screened and designed to guarantee low resistance shielding; they are particularly adapted to applications where electromagnetic compatibility (EMC) is important. The connectors are robust but it is necessary to be careful during their assembly – do not use force!



— 04

Note: It is recommended to use a cable tie to fasten long sensor cables approximately 10 cm from the RJ45 socket.

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05 KEVCY xx Rx1
sensors plug connector
pin's assignment.

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06 Sensor applica-
tion in gas insulated
switchgear with proper
grounding.

A cable not connected to the relay can be left open or short-circuited without any harm for the sensor. Even during a primary short-circuit the voltage in the secondary circuit of the current sensor will be below 100 V. Nevertheless it is a good safety practice to earth cables not connected to the relay.

RJ45 plug connector has 8 contacts and locking latch coupling. The sensor connector plug must be inserted properly with the relay matting receptacle before completing the coupling with the bayonet lock. Take care and do not use excessive force to plug-in and plug-out these connectors.



Sensor wires connected acc.
following assignment:

PIN4 – S1
PIN5 – S2

PIN7 – a
PIN8 – n

Others pins remain unused.

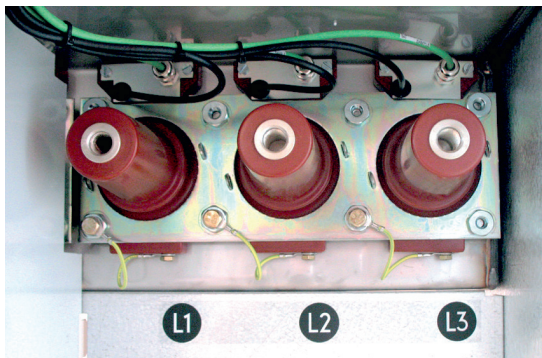
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05

Connection to the Voltage Detection Systems (VDS)

Only LR or LRM VDS systems are supported. Cable for coupling electrode with BNC connector.

Grounding terminal

The sensor's grounding terminal is located on the sensor's body and must be connected to the ground during the sensor operation use screw 6x10 mm for proper installation. Recommended tightening torque for sensor grounding mounting is 2-3 Nm.



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06

The used RJ-45-type connectors (EIA/TIA 568A Standard) are screened and designed to guarantee low resistance shielding; they are particularly adapted to applications where electromagnetic compatibility (EMC) is important. The connectors are robust but it is necessary to be careful during their assembly – do not use force!

4. Instructions for use

The combined sensors are used:

- To convert large currents and voltages in the primary circuit of the network to the appropriate signal for the secondary equipment (e.g. IEDs)
- To insulate primary and secondary circuits from each other
- To protect secondary equipment from harmful effects or large currents during abnormal situations in the network

The use of a sensor for other purposes than those described above is forbidden.

Routine test report

The routine test report includes following tests:

- Verification of terminal marking
- Power-frequency withstand test on secondary terminals / Power-frequency voltage withstand test for low-voltage components
- Test for accuracy

Note: No power-frequency withstand test on secondary terminals (connector) of the voltage sensor is allowed.

Correction factors are measured separately for each sensor during routine testing and are marked on routine test report. The use of correction factors is required condition in order to achieve the declared accuracy class.

5. Instructions for maintenance

Excessive dust or other kinds of pollution must be brushed off the sensor. Polluted sensors can be cleaned with spirit, petrol or toluene. Otherwise, during normal use the sensors do not need any additional maintenance.

6. Transport and storage

The permissible transport and storage temperature for sensors is from -40 to +80°C. During transport and storage the sensors must be protected against direct sunshine. The sensors are delivered packed into wooden boxes or transport pallets. The conical surface must be protected against damage.

7. Recommended procedure for disposal of the sensor

The sensor does not contain environmentally hazardous materials. For disposal of the product after it has been taken out of use, local regulations, if there are any, should be followed.

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