

**Voltage sensor**

**KEVI 24 A1**

**Installation and  
service instructions**

**34 KEVI 1 E1 B**



**ABB**

## 1. GENERAL DESCRIPTION

Voltage sensor type KEVI 24 A1 is intended for measuring voltage in SF<sub>6</sub>-insulated medium voltage switchgear. The busbar voltage to be measured is connected using flexible conductor to the primary terminal of the voltage sensor. The voltage is measured between phase and earth. The secondary output signal is taken from the secondary cable which is readily connected and delivered with the sensor. The sensor is partly installed in the switchgear, all primary voltage connections are made in the gas compartment and the secondary output is located outside of the gas compartment.

## 2. SERVICE CONDITIONS

SF<sub>6</sub>-insulation gas, gas pressure  $\geq 1$  bar (abs), ambient temperature must be between -40...+70 °C. No aggressive gases e.g. SF<sub>4</sub> are allowed in gas.

## 3. INSTALLATION CONDITIONS, TRANSPORT AND STORAGE

The sensor should be installed in dry, indoor conditions. The temperature must be between 0 and +50 °C. It is not allowed to move or bend the cable in temperatures below 0 °C.

The sensor has a small hole to allow the gas to enter inside when filling the switchgear. The small piece of tape must be removed after mechanical installation.

The sensor may contain a small amount (max. 0,35 dm<sup>3</sup>) of SF<sub>6</sub>-gas. This gas is left inside the sensor during gas tightness test and power frequency withstand test.

Transport and storage in dry conditions. Temperature between 0 and +50 °C.

#### 4. TECHNICAL DETAILS, RATING PLATE

For sensor dimensions see separate dimension drawing 135 KEVI 1.'

Technical details for each individual voltage sensor is mentioned on the rating plate fastened to the sensor. Values mentioned on the rating plate must not be exceeded.

##### Example rating plate:

Type: KEVI 24 A1	nr 1234KK567/89	
U: 24/50/125 kV	1,9 /8 h	f: 50 Hz
20000: $\sqrt{3}$ / 2: $\sqrt{3}$	class 1/3P	1995

where:

Type	voltage sensor type code
nr	voltage sensor identification code where 1234KK567 is the manufacturing number code and /89 is the sensor number
U	rated insulation voltage in kV 24 highest voltage for equipment 50 power frequency withstand test 1 min 125 rated lightning-impulse withstand voltage (peak)
1,9 / 8 h	rated voltage factor and permissible duration
f	rated frequency in Hz
20000: $\sqrt{3}$ / 2: $\sqrt{3}$	rated transformation ratio
class	rated accuracy class (measuring/protection)
1995	manufacturing year

#### 5. INSTALLATION INSTRUCTIONS

##### Mechanical installation

The mounting position for voltage sensor can be freely chosen. The sensor is to be fixed using using M10 screws. Extra care must be taken to make a good electrical contact between the copper fixing's of sensor and the earthed housing of the switchgear. The primary voltage to be measured is to be connected to the primary terminal using a flexible wire to avoid all forces and vibrations affecting the sensor.

To achieve a good gas tight sealing the switchgear surface must be very even and clean. The sensor has a small hole to allow the SF<sub>6</sub>-gas to fill the sensor when the switchgear is filled. The small piece of tape must be taken off after installation before the system is filled with gas and taken into use. Care must be taken to avoid anything getting inside the sensor during installation.

Figure 1. gives more information about O-ring gasket, tightening torque and installation procedure.

### **Secondary cable, secondary connections**

The secondary cable is a special shielded cable designed to give maximum EMI shielding. The cable is installed fixed to each sensor and it can not be changed or withdrawn. The cable must be connected directly to electronic measurement equipment (e.g. protective relay). The inner electrical shielding in cable must be earthed and the outer shielding must be installed so that direct distance to connections and earthed parts is at least 3 mm.

The minimum bending distance for the cable is 15 x cable diameter. Do not move the cable when the temperature is below 0 °C.

## **6. INSTRUCTIONS FOR USE**

The voltage sensors are used:

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

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

Routine test report includes accuracy class measurement. Measured values can be supplied if requested with the order.

**Note : No power frequency test on secondary terminals is allowed.**

## **7. INSTRUCTIONS FOR MAINTENANCE**

During normal use voltage sensors do not need maintenance. When required the sensor can be cleaned with spirit, petrol or toluen. When being cleaned, the small hole must be covered to avoid anything getting inside the sensor.

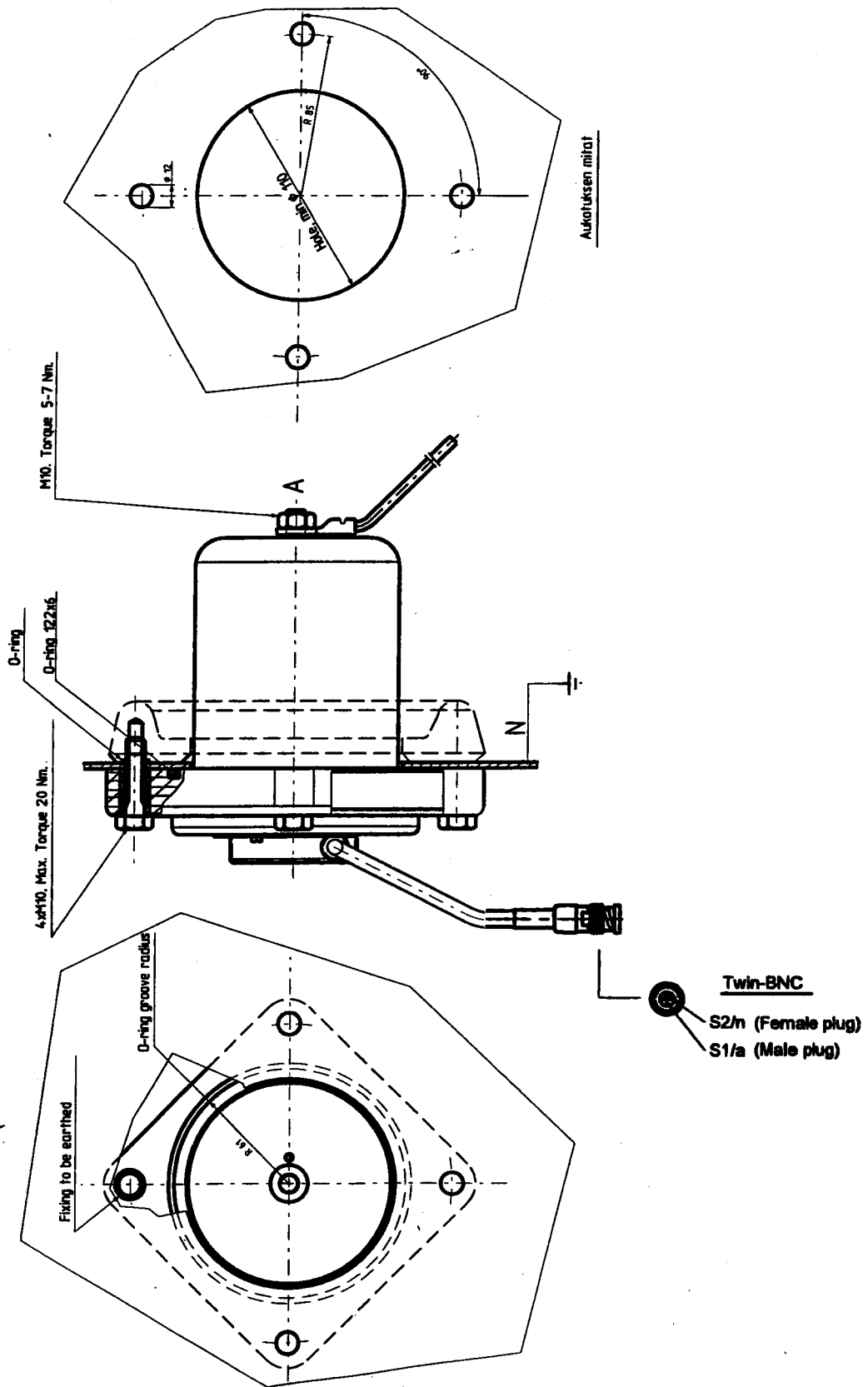


Figure. 1. Installation of KEVI 24 A1 voltage sensor.