



How can I connect the Sepam 1000+ to an existing zero-sequence toroid?

"The ACE 990 interface can be used as an adaptor for measurements between an MV zero-sequence toroid with a ratio of $1/n$

($50 \leq n \leq 1500$) and the residual current input of the Sepam 1000+.

In order not to reduce the measuring accuracy, the MV toroid has to be able to deliver sufficient power. This value is given in the table below:

Use:

In order to wire the ACE 990 toroid adaptor correctly, you need to know the following information:

The ratio of the zero-sequence toroid ($1/n$)

The power of the toroid

The approximate rated current I_{no} (1)

The table above can be used to determine:

The possible options for connection to the primary of the ACE 990 adaptor

The possible options for connection to the residual current input of the Sepam 1000+

The setting value of the rated residual current I_{no}

The exact value of the rated current $I_{no}(1)$ to set is given by the following formula:

$I_{no} = k \times \text{number of toroid turns}$ - where k is the coefficient defined in the adjacent table.

Example:

The toroid used has a ratio of $1/400$ 2 VA

If the value of the monitored current is between 0.5 A and 60 A, then an approximate rated current I_{no} may be 5 A. This value allows accurate measurement from 0.5 A to 75 A.

Calculate the ratio:

approximate I_{no}

number of turns

Find the closest value of k in the table above

$5/400 = 0.0125$ ---> approximate value of $k = 0.01136$

This corresponds to toroids with a power greater than 0.1 VA.

The value of I_{no} to set is: $I_{no} = 0.01136 \times 400 = 4.5$ A.

This value of I_{no} allows a current of between 0.45 A and 67.5 A to be monitored.

The secondary of the MV toroid is wired to terminals E2 and E4 of the ACE 990.

Characteristics:

Accuracy: amplitude: $\pm 1\%$ and Maximum permissible current: 20 kA 1 s (at the primary of a non-saturating MV toroid of ratio $1/50$)

Operating temperature: -5°C to $+55^\circ\text{C}$.

Storage temperature: -25°C to $+70^\circ\text{C}$.

Wiring:

A single toroid can be connected to the ACE 990 adaptor.

The secondary of the MV toroid is connected to 2 of the 5 input terminals on the ACE 990 adaptor.

To ensure correct operation the direction of connection of the toroid to the adaptor must be observed, and in particular label S1 of the MV toroid must be connected to the terminal with the lowest index (Ex).

Cables to use:

Cable between the toroid and the ACE 990: length less than 50 m

Cable between the ACE 990 and the Sepam 1000+: sheathed and shielded, maximum length 2 m

Cable cross-section between 0.93 mm² (AWG 18) and 2.5 mm² (AWG 13)

Resistance per unit length less than 100 mOhm/m

Minimum dielectric strength: 100 V.

Connect the shielding of the ACE 990 connection cable in the shortest length possible (maximum 2 cm) to terminal 18 of connector A.

Fix the cable to the metal conductive parts of the cubicle. The shielding of the connection cable is earthed in the Sepam 1000+.

Do not provide any other earth for this cable."

