

Network monitoring using signal transformer

Background

Cable networks such as lightning conductors on buildings or earthing networks in industrial production facilities are subject to various changes over their service life which reduce their ability to function. Wear and tear, ageing and renovations can result in these circuits no longer being able to fulfil their protective function. These changes often go unnoticed. Their impact can be serious, for example if a lightning strike is no longer conducted via the intended protection circuit but via the systems that require protection. The result will be damage to plants and systems or faults which lead to sensitive production losses.



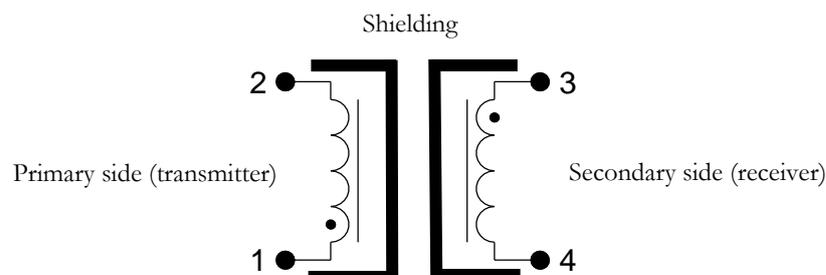
Picture 1: Connection in a lightning conductor network



Picture 2: Earthing point in an industrial plant

Signal transformer by NEOSID

NEOSID has developed a special signal transformer for these applications which feeds an electromagnetic pulse into a cable network via a primary winding.



Picture 3: Circuit diagram of signal transformer

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This network of cabling can, for example, be a network of various sections of a lightning conductor for a building, but could also represent an earthing network e.g. for an industrial manufacturing cell. The arrangement and type of the network requiring monitoring is user-defined. The insertion point of the transformer into the network is also user-defined. The signal is fed and transmitted by a first coil to the cable network. The second coil receives the signal transmitted via the cable network and transfers a measurement value to the evaluation unit. The evaluation unit compares the incoming and outgoing signal and saves a measurement result or displays it so that it can be noted down. If, for example, the transfer resistance at the contact points of the mains network changes over the course of time and in operations, this results in a change to the electrical values and the measurement result deviates from the original value. When a set tolerance is exceeded, the system reports a fault or sets off an alarm. Suitable evaluation circuits are developed by our customers using our signal transformer. Monitoring systems are either fitted to the network for a system check or remain permanently installed in the network for the purposes of ongoing controls. By including the evaluation device in a fieldbus network or a mobile data network it enables remote warning concepts to be implemented, making seamless monitoring possible without the need for on-site manning by service personnel.

The advantages of our solution

The special feature of the new signal transformer is the fixed positioning of transmitting and receiving coils to one another as a compact, electronic component. This ensures that the reciprocal influence of the directly coupled coils is constant, simplifying the evaluation and processing of the desired signal. In addition, the use of sophisticated shielding of the coils against one another using specially moulded, soft magnetic ferrite elements significantly reduces the parasitic influences. This is particularly important if the measurement devices as described above are possibly only installed for a system check and perhaps once a year at that. The fixed arrangement then helps to keep the sources of faults in the measurement system to a minimum.

The goal

The goal is to detect changes to the cable network and therefore a decreasing ability to protect the object against electrical shock (lightning protection on buildings) or transition resistances in an earthing network (earthing protection in production facilities) and carrying out repairs in terms of predictive maintenance before damage occurs.

Advantages of NEOSID signal transformers:

- Compact design as a single coherent unit consisting of signal transmitter and receiver
- High decoupling of sending coil to receiving coil
- THT or SMD version
- Customer-specific design on request

Tell us your requirements – we will develop the fitting solution for you!

Have we aroused your interest? Then get in touch with us about the latest generation of signal transformers.

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