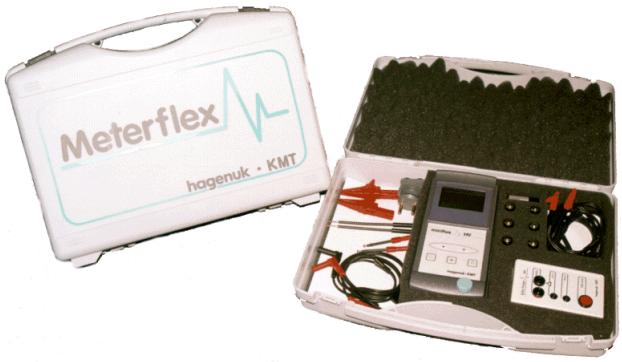
Cable Length Measurement

METERFLEX

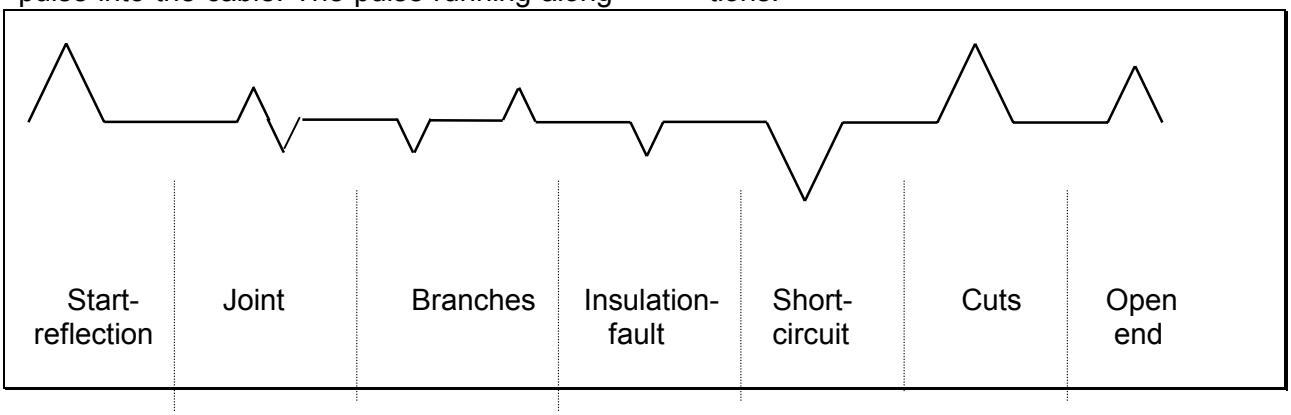
consisting of Miniflex Plus and
Echo Pulser *(patent pending)*



The Meterflex allows the measurement of cable lengths in completely installed low voltage networks. It is even possible to measure live cables.

Working principle

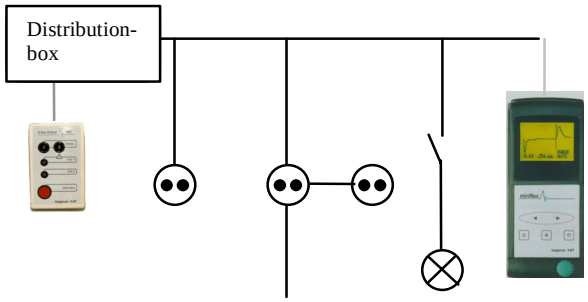
Length measurement is based on the pulse echo principle. The pulses velocity v/2 of the connected cable is set on the Meterflex Plus. The Meterflex then transmits a very narrow pulse into the cable. The pulse running along the cable is reflected on irregularities in the cable impedance such as joints, branches, insulation faults, short circuits, cuts or open ends. Picture 1 shows some typical reflections.



The cursor of the Miniflex HV is positioned manually to the foot point of the reflection. The distance from the beginning of the cable to the cursor is shown on the display as a numeric value in meter or feet. In very branched networks the large number of reflections can almost cover the reflection from the cable end. Here the Echo Pulser helps to make the end visible.

Conventional lengths meters usually measure distances only to the first reflection - in branched networks they therefore often show the wrong distance to the end. The Meterflex allows to distinguish between the reflections before the end and the real end reflection.

The length measurement is simple and reliable. The Echo Pulser is connected to the distribution box and the Miniflex Plus to the end of the cable (or vice versa). The Echo Pulser switches periodically an electric load into the line. The measurement shows the cable length between the Echo Pulser and the Miniflex Plus.



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The network shown in pict. 2 delivers a reflectogram according to picture 3: The display shows a positive / negative alternating reflection from the place where the Echo Pulser is connected. All other reflections remain unchanged.

The pulse velocity v/2

The pulse echo measurement bases on time measurement (time domain reflectometer, TDR).
For measurement of the exact distance the exact pulse velocity must be known as exact as possible. For the pulse velocity the term v/2 became common. Experienced technicians know the v/2 of their cables. For the most common low voltage cables a list of the pulse velocity is available with the Meterflex. The back of this table gives a short operation guide.

Measurement on live cables

Preferably one measures on dead cables. If it is not possible to cut the voltage off, the measurement on live cables is possible as well. The Echo Pulser is voltage proof up to 400 V and can be connected to the live cable via safety leads. The Miniflex can be connected to the live cable via a mains blocker that is available optionally.

More functions

Length measurement is only one application of the Meterflex. One can also prelocate cable faults, joints and branches.

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