Technical information

DATA ACQUISITION MODULE

Connecting Summation Current Transformers to a Data Acquisition Module

Area of Application

The Data Acquisition Module measures the electric power in an AC grid. To measure the total power, one Data Acquisition Module measures the power on a central cable in a central distribution board. The total current flows through the central cable.

If there is no central cable, each individual cable must be measured separately. The total power is the aggregate of the individual measurements. There are two ways of carrying out the individual measurements.

- Install an individual Data Acquisition Module for each measuring point.

  The SMA Fuel Save Controller will calculate the total power from the sum of all measured values.

- Install a summation current transformer.

  The summation current transformer will calculate the sum of all measured values. Connect the summation current transformer to one Data Acquisition Module. As a result, this Data Acquisition Module will be able to capture the total current. The total power is derived from the values of the summation current measurement and the voltage measurement performed by the Data Acquisition Module.

Requirements for the Use of Summation Current Transformers

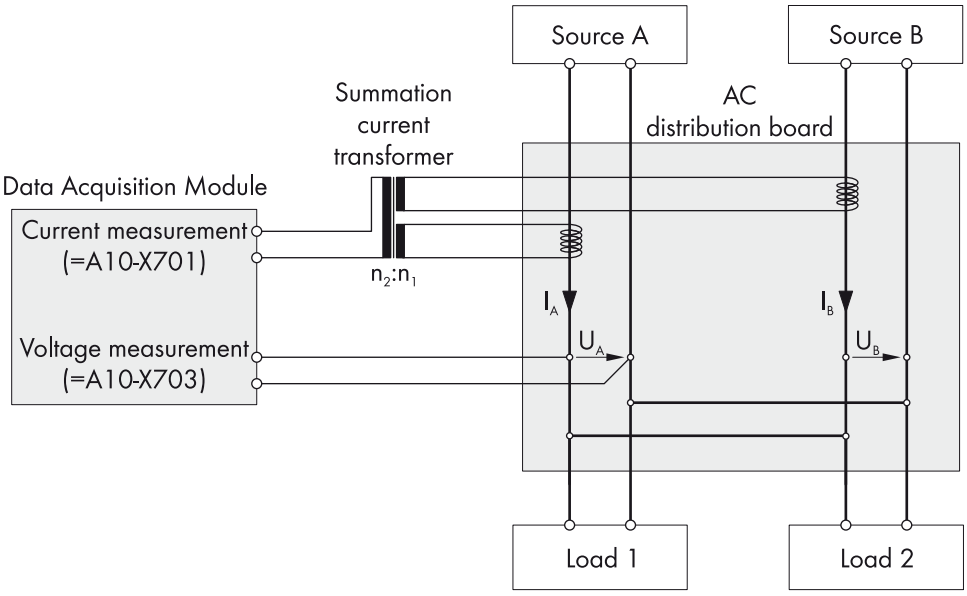

Figure 1: Measurement of the total power used by the loads (single-phase example)

To ensure that the power measurement is sufficiently precise, the following requirements must be fulfilled:

- The phase shift of the voltages V_A and V_B must be identical.
- In operation, the amplitudes of the voltages V_A and V_B must not deviate from each other by more than 1%.
- The current transformers used for measurement of the individual currents I_A and I_B must be of the same construction type and have the same transformation ratio.

Minimum Electrical Requirements for Summation Current Transformers

Measurement range on the secondary side	0 A to 5 A
Accuracy class of the aggregate measurement	1
Accuracy class of each individual measurement	0.5
Overall maximum cable length	30 m
Shielding when used in an industrial environment according to EN 61000-6-4	Required
Conductor cross-section	1.5 mm^2 to 2.5 mm^2