

What class do I need for the sensors linked to my measuring system?

To connect to high-powered grids or to circuits without having to rewire them, the measuring instruments are hooked up to current sensors, but their presence in the measurement loop influences the accuracy of the measurement.

To use a measuring product with sensors, the IEC61557-12 standards indicates the recommended CTs and the resulting accuracy class:

Performance class of the metering and power or energy monitoring device without external sensors	Class of the recommended associated sensor	Total overall uncertainty
0,2	0.2 or better	0.5 %
0,5	0.5 or better	1 %
1	1 or better	2 %

For example:

- With a Ulys TT meter (Class 1), we can choose a TCR (Classes 0.5 – 1 – 3 depending on the rated powers)
- Similarly, with an Enerium 100 power monitor in Class 0.5, the same TCR can be used if the rated power is limited to the nominal power corresponding to 0.5
- For an Enerium 300 power monitor in Class 0.2, it is advisable to use a Class 0.2S CT from the JVS range

This total uncertainty will concern data such as the energy, power and current.

For further details, as indicated in the standard:

*The association of a metering and power monitoring device with external current and/or voltage sensors constitutes a complete system. **The performance class of the system depends on the sensor class and the class of the metering and monitoring device.***

However, a system's performance class is only applicable if the sensor's intrinsic uncertainty is within the limits of its performance class. In addition, this performance class is not equivalent to the performance class of the metering and monitoring device alone.

Particular attention must be paid to the power and energy measurements, as sensor phase error is a highly sensitive factor in the event of measurements when the power factor is different from 1: a 20-minute phase error adds a 1 % error to the active power measurement when the power factor is 0.5.

For this reason, if a better performance class is required, you are strongly recommended to use sensors in Class 0.2S or Class 0.5S for power or energy measurements.

The sensors in Class "S" are sensors for which the class is defined over a much wider range (from 20% to 120% instead of 100% to 120% for the ordinary classes) and for which the minimum current is 1% of I_n .