

Optimizing your choice of a current transformer

The data for each CT in the catalogue are provided in a table.

The table contains one line per proposed primary rated current.

The rated power is stated for the valid accuracy classes.

The IEC61869-2 standard stipulates that the accuracy class is valid between 100 and 120% of the rated current provided that the real power is between 25 and 100% of the rated power.

TCR 31 Primaire	Puissance (VA) en classe		
	0,5	1	3
100 A	-	1	1,5
125 A	-	1	2
150 A	1	2	2,5
200 A	2,5	3	3,5
250 A	3,5	3,75	5
300 A	3,5	3,75	5
400 A	3,5	5	7,5
500 A	5	7,5	10
600 A	5	7,5	10

Consider the previous example:

160A breaker, 150mm² cable (d = 21mm)
removable cable or bar

Which led us to the **TCR 31 125/5A**

1. There is no rated power for the 0.5 class
2. If we want to operate in class 1, its rated power is 1VA

The real power is made up of:

The power dissipated by the Joule effect in the connecting cables between the secondary of the CT and the current input of the meter.
The power dissipated in the input circuit of the meter.

Neglecting the power dissipated in the input circuit of the meter.

The real power is:

$$P = RI^2 \quad \text{where } R = \text{Resistivity of the wire} \times L/S$$

For the 0.75mm² copper wire, R = 1.2VA per metre of distance (half of the forward/return wiring length)

The standard states that with 1VA, wiring with 0.75mm², we must not exceed a distance of 1/1.2 metre, and at least one quarter, or 0.2m, to remain in class 1

To remain in the class at twice the distance, we can wire with twice the cross section, or 1.5mm², or choose a more powerful CT, because if the rated power for the class is exceeded, the next higher class must be used!