ODEN configurations for high current and/or high compliance voltage

Depending on the ODEN configuration, different max current/voltages output levels are possible.
In total there are 46 ODEN combinations.
This application note focuses on two different application examples of an ODEN setup.
Test of Current Transformers and Low Voltage Breakers.

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ODEN configuration for a current transformer test

When ODEN is used to test a current transformer, it means ODEN shall apply a primary current. The load is moderate and distance to test object can be several meters. The current required can be around 5kA.

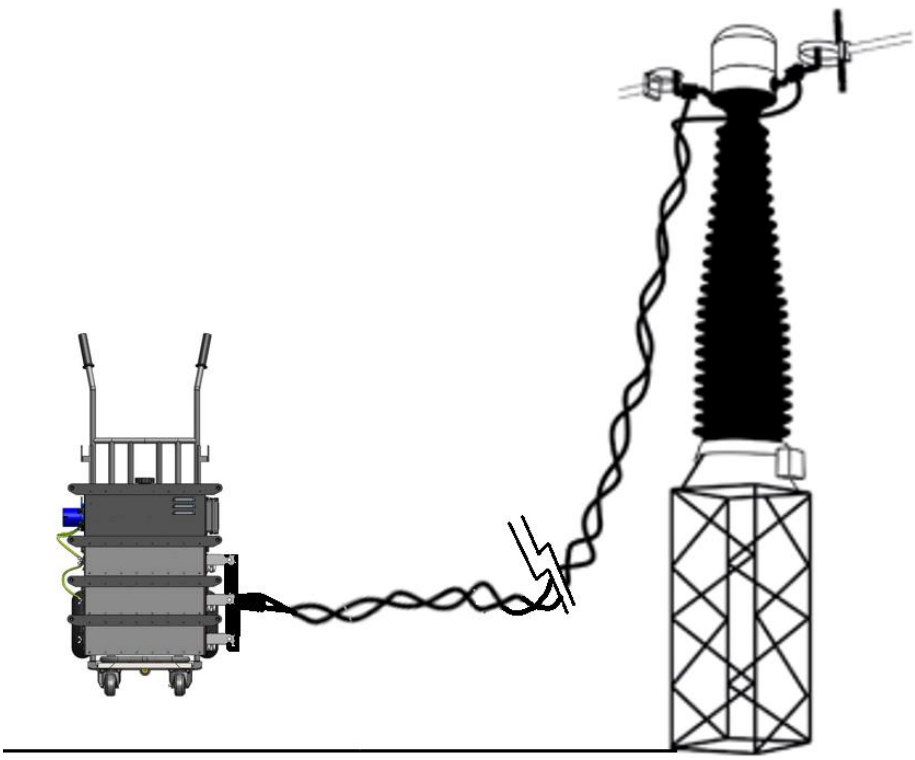
The below example pictures an ODEN AT/3S 400V(in serial mode).

The CT impedance is **0.5mΩ**.
The cable selected is a 10m 720mm² (6 x 120mm²).
Estimated impedance for the twisted cables is **1mΩ**.
Test current selected is **4kA**.
ODEN setup in serial mode. At 4kA, ODEN can give out 9.4V(compliance voltage)

The theoretical possible load ODEN can handle will be 2.35mΩ (9.4V/4kA = **2.35mΩ**)

For this example, ODEN AT/3S is well suited as the load(impedance) of the CT is 0.5mΩ and the cable impedance is 1mΩ. Total load(impedance): 1mΩ + 0.5mΩ = **1.5mΩ**

As ODEN can handle up to **2.35mΩ load**. The **1.5mΩ** load shall not be a problem.
In this case it's an "impedance room" of **0.85mΩ** (2.35mΩ - 1.5mΩ).



ODEN configuration for a breaker test

Another test scenario for ODEN is to test low voltage breakers(MCCB). Measuring trip times for different current levels injected to a breaker.
The ODEN configuration selected in this example: ODEN AT/3H 400V(in parallel mode).
Output current selected 17kA. That gives 2.4V(from ODEN spec.) in compliance voltage from ODEN.
The total load ODEN can handle will be 2.4V/17kA = **0.14mΩ**

Test object placed as close as possible to ODEN. In this example 0.25m.

With a cupper bar of 800mm² area with cupper bars close to each other, the impedance of the cupper bars will be **0,11mΩ.** It means that the max resistance of the test object will be 0.14mΩ-0.11mΩ = **0.03mΩ**. This value can be treated as a “normal” resistance for a breaker.