Measuring three phase current with two current transformers

This application note applies to Vamp 40, Vamp 50, Vamp 200 and Vamp 300 series

In networks isolated from earth or networks earthed with high impedance, it is possible to use current transformers (CT) in only two of the three phases and still have a complete measurement of all the three phase currents. However, especially if the load currents are small, the phase current measurements will be incorrect during an earth fault. Using a normal set of three CTs this problem is eliminated.

A VAMP relay with three phase current inputs should be wired to the two CTs according the figure 1. This figure is based on the following equation:

$$\bar{I}_{L1} + \bar{I}_{L2} + \bar{I}_{L3} = 0$$

Solving the I_{L2} gives

$$\bar{I}_{L2} = -(\bar{I}_{L1} + \bar{I}_{L3})$$

This is implemented in the figure 1.

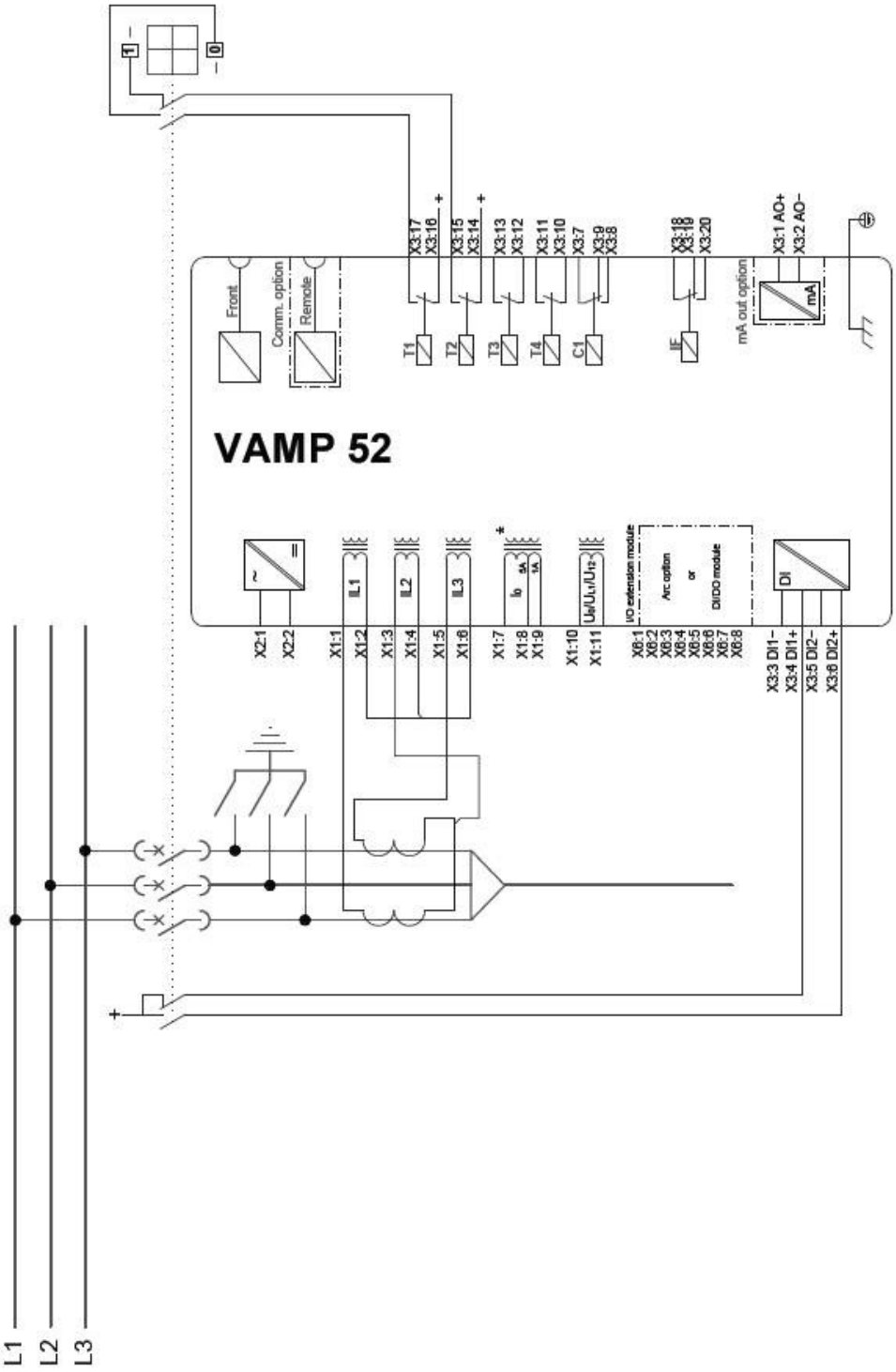

Figure 1. Example of VAMP 52 connection diagram

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