



Tee-Off Transformer Configuration for the T60

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DESCRIPTION

The T60 allows two configuration approaches for a tee-off (i.e. transformer connected between two circuit breakers) arrangement:

1. Configure the transformer as two-winding and sum the current vectors to by configuring the relay (SRC setting).
2. Configure the transformer as three-winding, but with identical configuration settings for tee-off windings.

EXAMPLE

Consider a D/y30° transformer, with the delta connected to the tee-off.

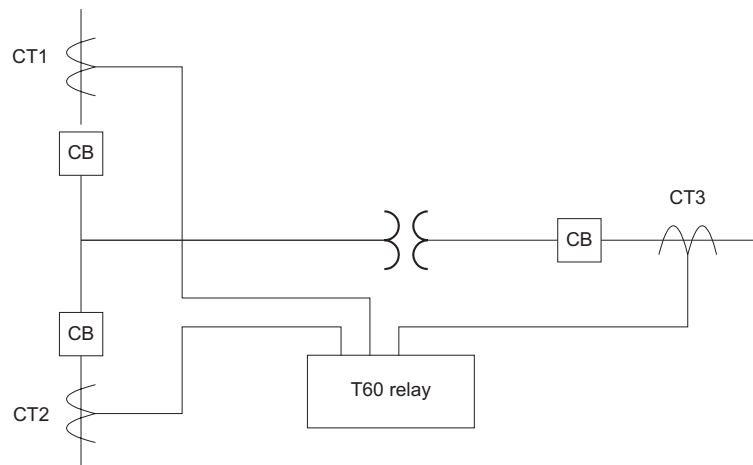


FIGURE 1. Tee-Off Transformer Connection

The first approach is to configure the T60 for two-winding transformer. The tee-off source is configured as a sum of the two sets of CTs associated with the two breakers. The other source is the input from the Wye side set of CTs.

The second approach configures three sources, each with its own set of CTs. The two windings representing the tee-off winding have the same information: MVA, kV, angle WRT, and grounding.

The second approach is preferred as it provides more restraint current and better sensitivity.



it is also possible to sum the currents externally (hard-wire). However, this is NOT recommended. External summation reduces the effective restraint current required for stability during external faults.

For our example (D/y30°, 100 MVA, 220 kV / 69 kV) the settings using the preferred (second) approach are shown below (as URPC screen captures):

Signal Sources // New Site 1: T60 Lubo: Settings: System Setup

PARAMETER	SOURCE 1	SOURCE 2	SOURCE 3	SOURCE 4
Name	SRC 1	SRC 2	SRC 3	SRC 4
Phase CT	F1	U1	U5	None
Ground CT	None	None	None	None
Phase VT	None	None	None	None
Aux VT	None	None	None	None

General // New Site 1: T60 Lubo: Settings: System Setup: Transformer

SETTING	PARAMETER
Transformer Number Of Windings	3
Transformer Phase Compensation	Internal (software)
Transformer Load Loss At Rated Load	100 kW
Transformer Rated Winding Temperature Rise	65°C (oil)
Transformer No Load Loss	10 kW
Transformer Type Of Cooling	OA
Transformer Top-oil Rise Over Ambient	35 °C
Transformer Thermal Capacity	100.00 kWh/°C
Transformer Winding Thermal Time Constant	2.00 min

Windings // New Site 1: T60 Lubo: Settings: System Setup: Transformer

PARAMETER	WINDING 1	WINDING 2	WINDING 3
Source	SRC x (SRC 1)	SRC x (SRC 2)	SRC x (SRC 3)
Rated MVA	100.000 MVA	100.000 MVA	100.000 MVA
Nominal Phs-phs Voltage	220.000 kV	220.000 kV	69.000 kV
Connection	Delta	Delta	Wye
Grounding	Not within zone	Not within zone	Within zone
Angle Wrt Winding 1	0.0 °	0.0 °	-30.0 °
Resistance	10.0000 ohms	10.0000 ohms	10.0000 ohms

T60 Lubo Settings: System Setup: Transformer

If opting for the first approach, then the currents from the CT sets (CT1 and CT2 above) should be summed in the source configuration representing the Delta winding.



GE VERNOVA

GE Vernova

650 Markland Street

Markham, Ontario

Canada L6C 0M1

Worldwide telephone: +1 905 927 7070

Europe/Middle East/Africa telephone: +34 94 485 88 54

North America toll-free: 1 800 547 8629

Fax: +1 905 927 5098

Worldwide e-mail: GA.support@gevernova.com

Website: <https://www.gevernova.com/grid-solutions/multilin/>