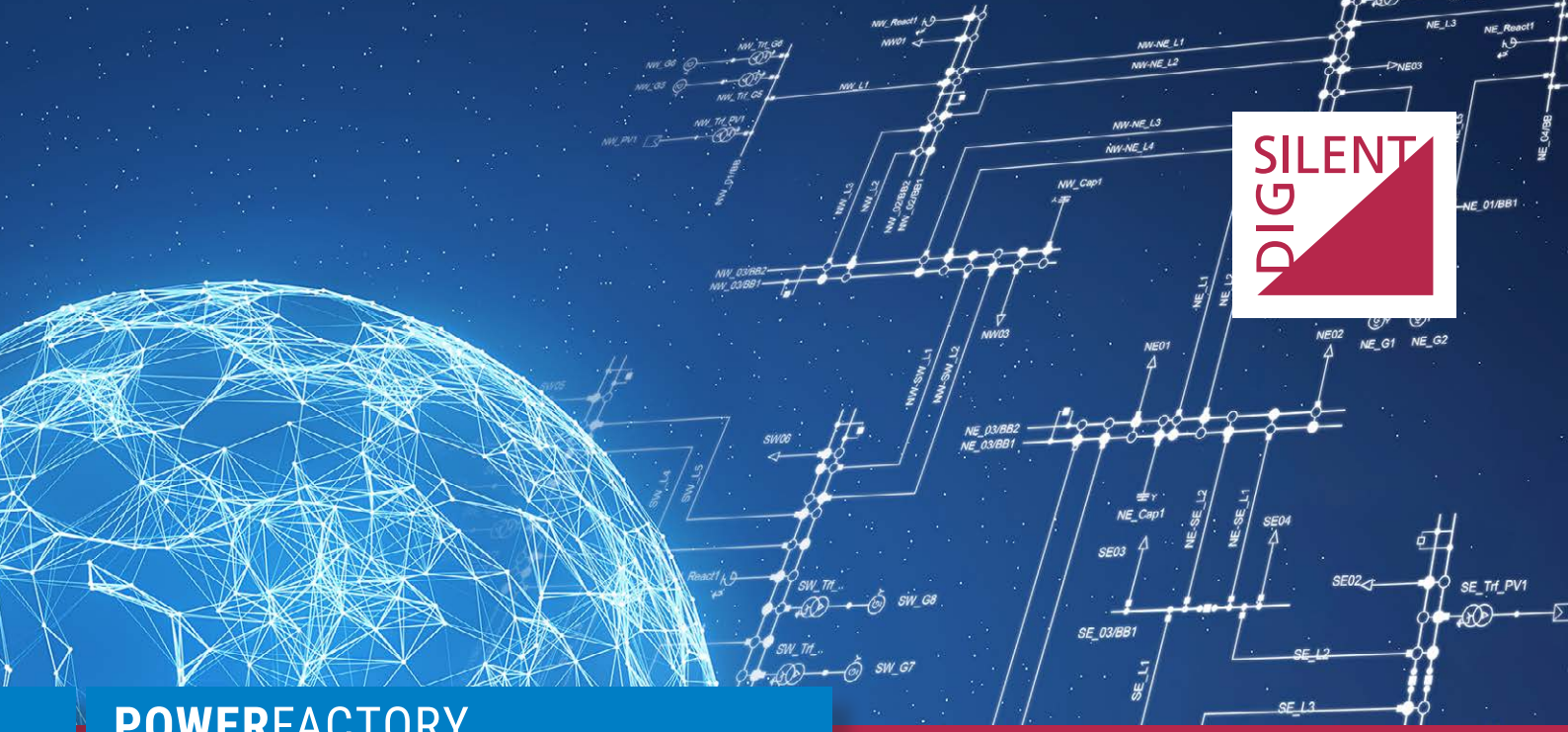

PowerFactory 2021

Technical Reference

DIgSILENT F87T Transformer differential Generic Rela

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POWER SYSTEM SOLUTIONS

MADE IN GERMANY

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Contents

1 F87T Transformer differential

1.1 Intent

To simulate the magnitude differential feature for transformer protection.

1.2 Functionality

The *F87T Transformer differential* generic relay model simulates a 3 phase (segregated phase) current magnitude differential element with 2^{nd}, 4^{th}, and 5^{th} harmonic restrain and differential threshold double bias restrain characteristic. An additional not restraint differential trip threshold is also available. The differential trip can be set with a configurable time delay.
The harmonic restrain can be disabled by the user with a check box in the differential element dialog; the restrain can be disabled if the current is greater than a given threshold. A *Phase Interlocking* logic can be enabled/disabled by the user and can be configured to be triggered by a single phase, by 2 out of 3 phases or by the phase average value.

1.3 Inputs

- Three 3 phase CTs (”Phase Ct 1”, ”Phase Ct 2” and ”Phase Ct 3” block, *StaCt* class).

The *iblock_1* relay input signals can be used to block the differential element trip.

1.4 Available Units

Measurement

- Three 3 phase measurement elements (”Measurement 1”, ”Measurement 2”, and ”Measurement 3” block, *RMS Calculation* enabled, *Filter* FFT [*RelMeasure* class]).
- Four 3 phase RMS measurement blocks ancillary to the differential elements (”Differential RMS”, ”Differential RMS 2nd harmonic”, ”Differential RMS 3rd harmonic”, and ”Differential RMS 4th harmonic” block, [*RelMeasure* class]).

Protective elements

- Three 3 phase CT adapters (”Adapter 1”, (”Adapter 2”, and ” Adapter 3” block, [emphRelCtadapt class).
- A differential element with *Type* set equal to *3ph* (”Differential” block, [*RelBiasidiff* class]).

Output logic

- One relay trip element (”Output logic” block, *RelLogdip* class).

1.5 Outputs

- *yout* associated by default to the differential element trip (any phase).
- *y_s* associated by default to the differential element trip (any phase). Its behavior is identical to the *yout* signal and has been added to guarantee compatibility with the *F79 Recloser* generic relay.
- *y_A* associated by default to the phase A differential element trip.
- *y_B* associated by default to the phase B differential element trip.
- *y_C* associated by default to the phase C differential element trip.

The output logic can be configured in the ”Logic” tab page of the ”Output Logic” block.