POWERFACTORY

PowerFactory 2021

Technical Reference

DIgSILENT F68 OOS/Power Swing Generic Relay

SILENT
DIg

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POWER SYSTEM SOLUTIONS
MADE IN GERMANY

Contents

1   F68 OOS/Power Swing

1.1   Intent

To simulate a set of generic shapes which define an *Out of step* and a *Power Swing* detection zone feature.

1.2   Functionality

The *F68 OOS/Power Swing* generic relay simulates a detection shape defined by two concentric zones. Each zone can be defined by a combination of the following shapes:

- A Mho shape.

- A Polygon shape.

- Two blinders.

Each zone can be defined by a subset of the available shapes. The shape trip signals are combined together by two logic blocks (one for each zone).
The relay measures the time the system impedance spends in the R-X diagram between the two zones. If the time is greater than a given relay parameter the *power swing* condition is declared and a relay output signal is set. This signal can be used to block the mho and polygonal trip distance zones of a distance relay.
Moreover the relay measures how may times the system impedance passes through both the internal and the external zones. If it happens more times than a given parameter the *out of step* condition is declared and the power breaker operated. The logic can be configured to trip when the external zone is left or when the internal zone is left.

It consists of the main relay and of the "Blocked relay" external device which is connected the *OOS Power Swing* generic relay by a relay slot.

1.3   Inputs

- One 3 phase CT ("Phase Ct" block, *StaCt* class).

- One 3 phase VT ("Phase Vt" block, *StaVt* class).

1.4   Available Units

Measurement

- One 3phase measurement element ("Measurement" block, *RMS Calculation* enabled, *Filter* disabled [RelMeasure class]).

Protective elements

- One polarizing element ("Polarizing" block, [*RelZpol* class]).

- Two mho distance elements ("Outer mho", and "Inner mho" block, [*RelDismho* class]).

- Two polygonal distance elements ("Outer polygonal", and "Inner polygonal" block, [*RelDispoly* class]).

- Four blinders distance elements ("Outer left blinder", "Outer right blinder", "Inner right blinder", and "Inner left blinder" block, [*RelDisbl* class]).

- Two logic blocks ("Outer trip logic", and "Inner trip logic" block, [*RelLogic* class]).

- One Out of step/power swing detector ("Out of step / Power swing " block, [*RelDispspoly* class]).

Output logic

- One relay trip element ("Output logic" block, [*RelLogdip* class]).

1.5   Outputs

- *yout* associated by default to the *out of step* element trip.

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