



Siemens 7SD52 PowerFactory Relay model description



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Published by
DgSILENT GmbH, Germany

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doc.TechRef, Build 513 12 Januar 2021

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1 Model general description

The following functionalities are modelled:

Main relay:

- ◆ Differential feature with 2nd harmonic restraint and minimum current release feature ("Differential" and "I> Release Diff" block). An additional unrestraint differential threshold is also available ("differential" block, "Unrestrained differential threshold" setting")

Distance/Overcurrent/Voltage sub relay:

- ◆ Starting feature ("Starting" block with "Overcurrent", "Underimpedance U/I", "Impedance Z", "Underimpedance U/I/phi" starting)
- ◆ Polarization feature ("Polarizing Z1" and "Polarizing Z1b-Z2-Z5" block)
- ◆ Directional characteristic ("Dir-Z" block)
- ◆ Load Area feature ("Load Area" block, please remember to disable manually such block when the active starting mode is not impedance as described at pag #83 of the "C53000-G1176-C156-5" manual)
- ◆ 5 Polygonal Trip zones ("Z1", "Z2", "Z3", "Z4", "Z5" block) with single phase trip.
- ◆ 1 Polygonal Extension zone ("Z1b" block) with single phase trip.
- ◆ 5 mho trip zones ("Z1Mho", "Z2Mho", "Z3Mho", "Z4Mho", "Z5Mho" block)
- ◆ 1 Impedance circle extension zone ("Z1bMho" block)
- ◆ 13 Timers ("ZT1", "ZT2", "ZT3", "ZT4", "ZT5" and "ZT1b" block for the polygonal zones, "ZT1c", "ZT2c", "ZT3c", "ZT4c", "ZT5c" and "ZT1bc" block for the impedance circle zones, "T7" for starting backup trip)
- ◆ Reclosing feature ("Reclosing" block)
- ◆ 1 3- Phase overcurrent element with inverse characteristic ("Ip>" block)
- ◆ 2 3-Phase overcurrent elements with time defined characteristic ("Iph>>", "Iph>>>" block)
- ◆ 1 Thermal image protective function ("Thr. Overload" block)
- ◆ 2 Earth fault overcurrent elements with time defined characteristic ("IO>" and "IO>>" block)
- ◆ Earth fault protection for high resistance earth faults with directional feature ("High resistance IE>" block)
- ◆ Fuse failure feature (controlling the overcurrent elements)

- ◆ 10 Overvoltage trip elements: 2 phase-phase elements ("Uphph>", "Uphph>>" block), 2 phase-ground elements("Uphe>", "Uphe>>" block), 2 positive sequence elements("U1>", "U1>>" block), 2 negative sequence elements ("U2>", "U2>>" block), , 2 zero sequence elements ("U0>", "U0>>" block)
- ◆ 6 Undervoltage trip elements: 2 phase-phase elements ("Uphph<", "Uphph<<" block), 2 phase-ground elements("Uphe<", "Uphe<<" block), 2 positive sequence elements("U1<", "U1<<" block)
- ◆ 4 over/underfrequency elements ("f1", "f2", "f3", "f4" block)
- ◆ Power swing detection
- ◆ PUTT logic

Different versions of the Siemens 7SD52 relay model are available for the 1A and the 5A input rated current relay.

2 Relay not supported features

The following features are not supported:

- Synchronism and voltage check
- Circuit breaker failure protection
- Teleprotection schemes for distance protection except PUTT

The model implementation has been based on the information available in the "C53000-G1176-C169-3" for V 4.60 and higher versions ("7SD5xx_Manual_A3_V044100_en.pdf" file) document.