



POWERFACTORY

PowerFactory 2021

Technical Reference

DigSILENT F50N_F51N Neutral overcurrent Generic R

PF2021

POWER SYSTEM SOLUTIONS
MADE IN GERMANY

Publisher:

DlgSILENT GmbH
Heinrich-Hertz-Straße 9
72810 Gomaringen / Germany
Tel.: +49 (0) 7072-9168-0
Fax: +49 (0) 7072-9168-88
info@digsilent.de

Please visit our homepage at:
<https://www.digsilent.de>

Copyright © 2021 DlgSILENT GmbH

All rights reserved. No part of this
publication may be reproduced or
distributed in any form without written
permission of DlgSILENT GmbH.

November 15, 2019
PowerFactory 2021
Revision 924

Contents

1	F50N_F51N Neutral overcurrent	1
1.1	Intent	1
1.2	Functionality	1
1.3	Inputs	2
1.4	Available Units	2
1.5	Outputs	2

1 F50N_F51N Neutral overcurrent

1.1 Intent

To simulate a simple set of inverse/definite time neutral/ground overcurrent elements.

1.2 Functionality

The *F50N/51N neutral/ground overcurrent* relay model simulates one neutral/ground inverse time (F51N) and two neutral/ground definite time overcurrent elements (F50N).

The following inverse time trip and reset characteristics can be used in the ground inverse time (F51N) element:

Trip characteristic	Reset characteristic
IEC Class A (Standard Inverse)	IEC Class A(Standard Inverse) reset
IEC Class B (Very Inverse)	IEC Class B(Very Inverse)reset
IEC Class C (Extremely Inverse)	IEC Class C(Extremely Inverse)reset
IEC Long Time Inverse	IEC Long Time Inverse reset
IEC Short Time Inverse	IEC Short Time Inverse reset
IEEE Moderately Inverse	IEEE Moderately Inverse reset
IEEE Inverse	IEEE Inverse reset
IEEE Very Inverse	IEEE Very Inverse reset
IEEE Extremely Inverse	IEEE Extremely Inverse reset
IEEE Short Time Inverse	IEEE Short Time Inverse reset
RD (Logarithmic) inverse	
RI inverse	
I ² t	I ² t reset
IAC Extremely Inverse	
IAC Inverse	
IAC Short Inverse	
IAC Very Inverse	
CO2 Short time inverse	
CO8 Long time inverse	

The reset characteristic can be enable or disabled by the user. The reset time delay can be set with a separated relay model parameter.

Each characteristic can be set with an user configurable minimum and a maximum trip time.

Three relay input signals can be used to block the protective elements. Each protective element can be set to ignore the blocking input or to ignore the blocking input after that a user's definable time has expired after the element trip ("Blocking" tab page).

The output logic can be customized in the relay output logic block. Three relay input signals can be used to block the protective elements.

1.3 Inputs

- One 3 phase/single phase CT ("Ct" block, *StaCt* class).
- Three blocking signals (*iblock_1* blocking the "Ig>" element, *iblock_2* blocking the "Ig>>" element, and *iblock_3* blocking the "Ig>>>" element).
- Two directional signals (*fwd,rev*).

1.4 Available Units

Measurement

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

Protective elements

- One inverse/definite time neutral/ground overcurrent element ("Ig>" block, [*RelToc* class]).
- Two definite time neutral/ground overcurrent elements ("Ig>>" and "Ig>>>" block [*Relloc* class]).

Output logic

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

1.5 Outputs

- *yout* associated by default to any protective element trip.
- *y_s* associated by default to any protective element start.
- *toc_start* associate to the inverse time ground element start signal.
- *ioc_start* associate to a definite time ground element start signal.

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