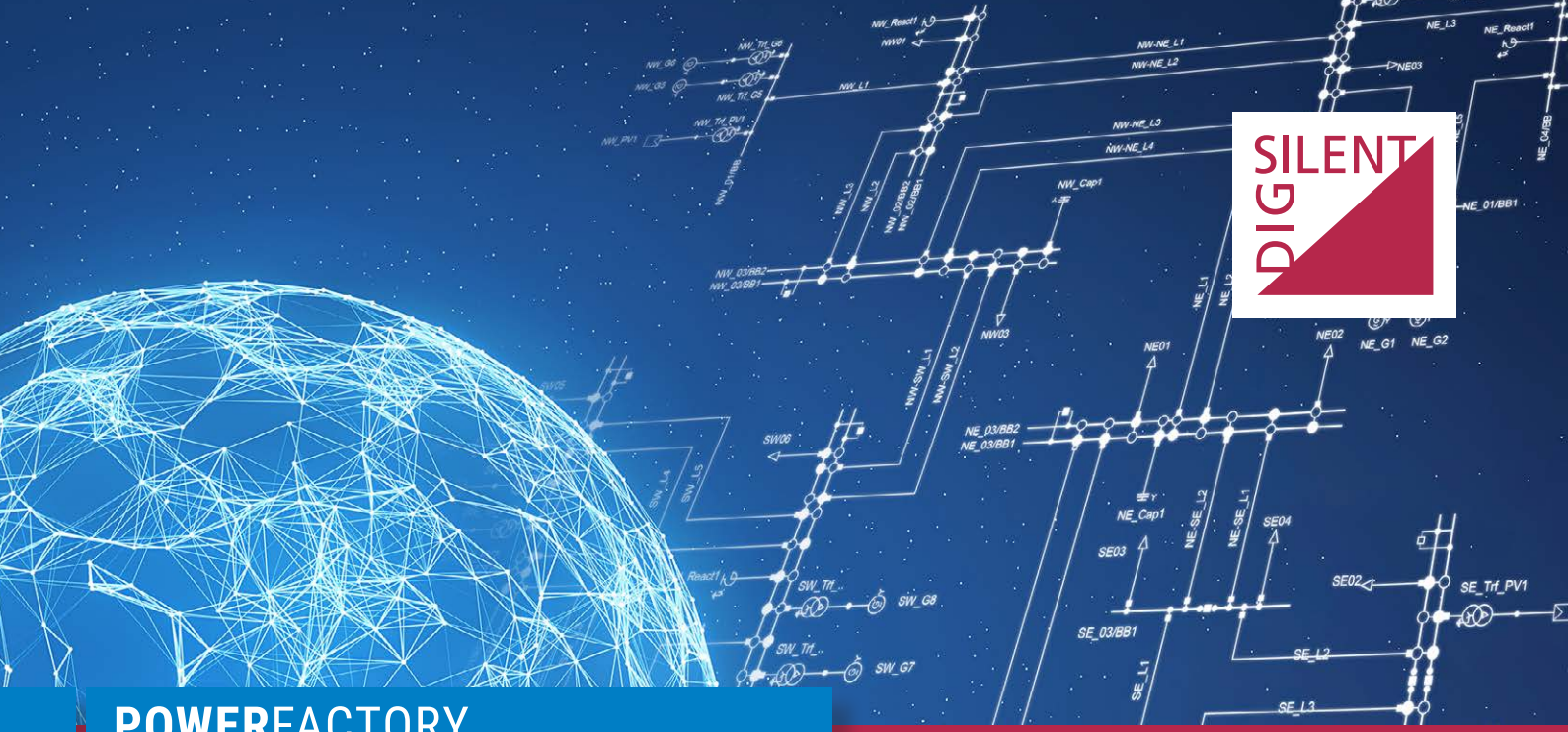

POWERFACTORY

PowerFactory 2021

Technical Reference

Eaton Series G

PF2021

POWER SYSTEM SOLUTIONS

MADE IN GERMANY

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Contents

Disclaimer

DIgSILENT protection device models are developed using publicly accessible information, such as user manuals, and are not validated or tested by the respective manufacturers.

1 Model information

Manufacturer Eaton

Model Series G

Variants The Eaton Series G series contains the electronic trip unit *"Digitrip RMS 310+"* available for circuit breakers *"Series G"* frames *"JG"*, *"LG"*, *"NG"* and *"RG"* based on the information given in [5], [1], [2], [3] and [4]. Each combination of model and available sensor rating is a dedicated type.

2 General description

The electronic trip unit is modelled as LSIG which corresponds to *"Digitrip RMS 310+"*. The units are modelled as 3-pole without neutral. The earth fault input is calculated from the phase currents.

Current transformer

The *"CT"* slot holds the assigned ideal 3-phase current transformers which has to be modelled with a ratio of 1/1.

Measurement unit

The *"Measurement"* slot processes the transformer inputs and holds the rated current value of the circuit breaker. The zero-sequence current is determined from the phase values.

Trip logic

The *"Trip Logic"* generates the tripping signal.

3 Electronic trip unit

The electronic trip unit *"Digitrip RMS 310+"* consists of three phase current stages and one zero-sequence current stage. The underlying phase current stage blocks the overlying phase

current stage if started, e.g. if the short-time stage is started, the long-time stage is blocked.

Address	Relay Setting	Model Unit	Model Parameter	Note
	Long delay setting	Long delay	Pickup Current	setting in amperes
	Long delay time	Long delay	Time Setting	for max clearing time
	Short delay pickup	Short delay	Pickup Current	see 1)
	Short delay time I2t	Short delay	Time Setting	see 2)
	Short delay time FLAT	Short delay	Time Setting	see 2)
	Instantaneous pickup	Instantaneous	Pickup Current	see 1)
	Operating time	Instantaneous	Time Setting	see 3)
	Ground fault pickup	Ground fault	Pickup Current	see 4)
	Ground fault delay time	Ground fault	Time Setting	see 2)

Notes:

1) – Maximum pick-up setting Ii is modelled in instantaneous unit. The following settings apply:
   - JG-Frame: 14 x In
   - LG-Frame: 28 x In (for In = 250 A) and 12 x In (for In > 250 A)
   - NG-Frame: 18 x In
   - RG-Frame: 17500 A

2) – I2t short delay set to 67 ms at 6 x Ir
   – Time setting *"Inst"* for FLAT response is equal to 0.05 s (max clearing time)
   – Delay settings have to be set individually. Example switch setting *"M"*: set short delay time to 0.12 s and ground delay time to 0.05 s

3) – Ideal DT curve with tripping time range from 0.01 to 0.05 s

4) – Pick-up setting range for:
   - JG-, LG-, NG-Frames in per unit based on In
   - RG-Frame in amperes

4 Variants

Type	Sensor rating	Trip unit
JG-Frame	50; 100; 160; 250 A	Electronic
LG-Frame	250; 400; 600; 630 A	Electronic
NG-Frame	800; 1200 A	Electronic
RG-Frame	1600; 2000; 2500 A	Electronic

5 References

[1] Eaton Corporation, 1111 Superior Avenue, Clevelan, OH 44114, UNITED STATES. *Series G JG-Frame 310+ circuit breaker time current curves*. TC01204008E.

[2] Eaton Corporation, 1000 Eaton Boulevard, Cleveland, OH 44122, UNITED STATES. *Series G LG-Frame time trip curves*. TD012019EN.

[3] Eaton Corporation, 1000 Eaton Boulevard, Cleveland, OH 44122, UNITED STATES. *Series G NG/ND-Frames time current curves*. TD012029EN.

[4] Eaton Corporation, 1000 Eaton Boulevard, Cleveland, OH 44122, UNITED STATES. *Series G RG-Frame time current curves*. TD012030EN.

[5] Eaton Electric Limited, Reddings Lane, Birmingham B11 3EZ, UNITED KINGDOM. *Molded Case Circuit Breakers - Volume 4 - Circuit Protection*. CA08100005E.