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Protection functions	ANSI code	G40	G60	G62	G82	G87	G88
Phase overcurrent ⁽¹⁾	50/51	4	4	4	8	8	8
Earth fault / Sensitive earth fault ⁽¹⁾	50N/51N 50G/51G	4	4	4	8	8	8
Breaker failure	50BF	1	1	1	1	1	1
Negative sequence / unbalance	46	2	2	2	2	2	2
Thermal overload for machines ⁽¹⁾	49RMS	2	2	2	2	2	2
Restricted earth fault differential	64REF				2		2
Two-winding transformer differential	87T						1
Machine differential	87M					1	
Directional phase overcurrent ⁽¹⁾	67			2	2	2	2
Directional earth fault ⁽¹⁾	67N/67NC			2	2	2	2
Directional active overpower	32P	1	2	2	2	2	2
Directional reactive overpower	32Q/40	1	1	1	1	1	1
Directional active underpower	37P		2	2	2		
Field loss (underimpedance)	40		1	1	1	1	1
Loss of synchronization	78PS				1	1	1
Overspeed (2 set points) ⁽²⁾	12		□	□	□	□	□
Underspeed (2 set points) ⁽²⁾	14		□	□	□	□	□
Voltage-restrained phase overcurrent	50V/51V	1	1	1	2	2	2
Underimpedance	21B		1	1	1	1	1
Inadvertent energization	50/27				1	1	1
Third harmonic undervoltage / 100% stator earth fault	27TN/64G2 64G				2	2	2
Overfluxing (V / Hz)	24				2	2	2
Positive sequence undervoltage	27D		2	2	2	2	2
Remanent undervoltage	27R		2	2	2	2	2
Undervoltage (L-L or L-N)	27	2	2	2	4	4	4
Overvoltage (L-L or L-N)	59	2	2	2	4	4	4
Neutral voltage displacement	59N	2	2	2	2	2	2
Negative sequence overvoltage	47	1	2	2	2	2	2
Overfrequency	81H	2	2	2	2	2	2
Underfrequency	81L	4	4	4	4	4	4
Rate of change of frequency	81R		2	2			
Thermostat / Buchholz	26/63		□	□	□		□
Temperature monitoring (8/16 RTDs) ⁽³⁾	38/49T	□ 8/16 RTDs	□ 8/16 RTDs	□ 8/16 RTDs	□ 8/16 RTDs	□ 8/16 RTDs	□ 8/16 RTDs
Synchro-check ⁽⁴⁾	25		□	□	□	□	□

The figures indicate the number of units available for each protection function

■ standard, □ options.

(1) Protection functions with 2 groups of settings.

(2) According to parameter setting and optional input/output modules.

(3) With optional MET148-2 temperature input modules.

(4) With optional MCS025 synchro-check module.

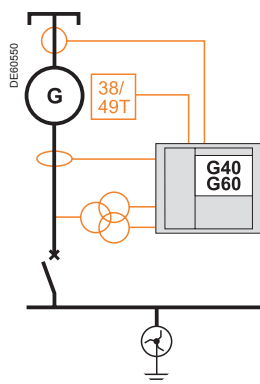
Generator protection

- internal generator fault protection
- network fault protection
- driving machine fault protection
- RTD temperature monitoring (ANSI 38/49T)
- voltage and frequency monitoring.

Protection of a separate generator: Sepam G40 or G60

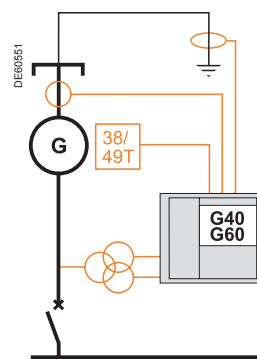
Earth fault protection:

- 50G/51G
- 59N.



Earth fault protection:

- 50G/51G.



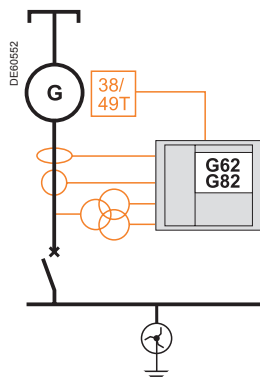
Protection of a generator coupled to other generators or to a network: Sepam G62 or G82

Short-circuit detection on generator side.

Control fault protection.

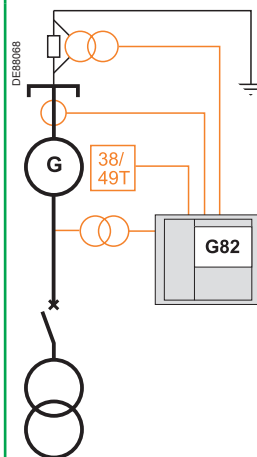
Earth fault protection:

- 50G/51G
- 59N.



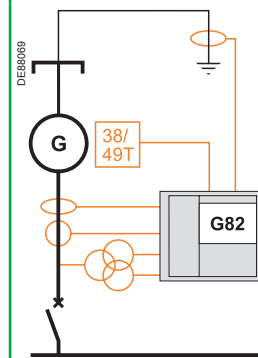
Earth fault protection:

- 100 % stator earth fault 64G.



Earth fault protection:

- 64REF and 50G/51G
- 50N/51N.

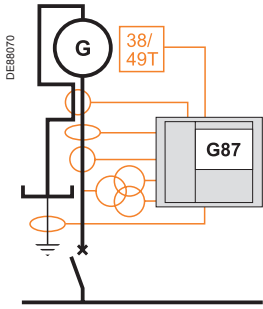


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Generator differential protection: Sepam G87

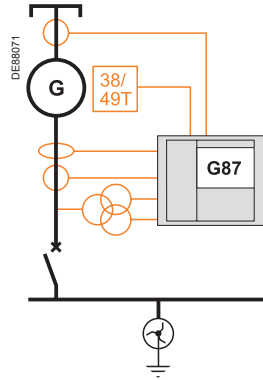
Phase protection by self-balancing differential scheme: 50/51.

Earth fault protection: 50G/51G.

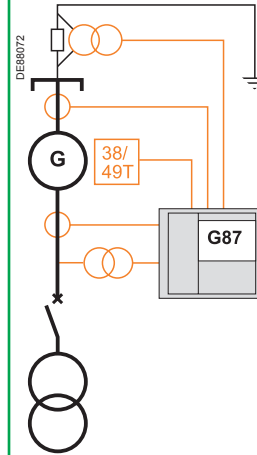


Generator differential protection: 87M.

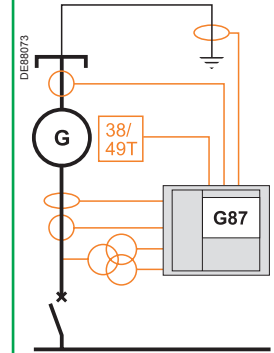
Earth fault protection:
 ■ 50G/51G
 ■ 59N.



Earth fault protection:
 ■ 100 % stator earth fault
 64G.



Earth fault protection:
 ■ 50N/51N.



Generator-transformer unit protection

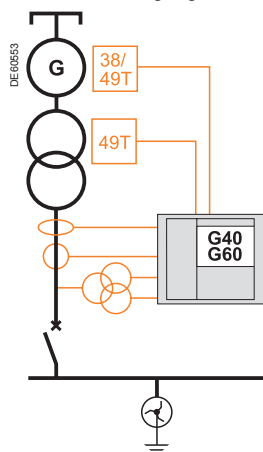
- generator and transformer protection against internal faults
- network fault protection
- driving machine fault protection
- RTD temperature monitoring (ANSI 38/49T)
- voltage and frequency monitoring.

Separate generator-transformer unit protection. Sepam G40 or G60

Earth fault protection:

- 50G/51G.

Note: monitoring of generator insulation must be ensured by another device.



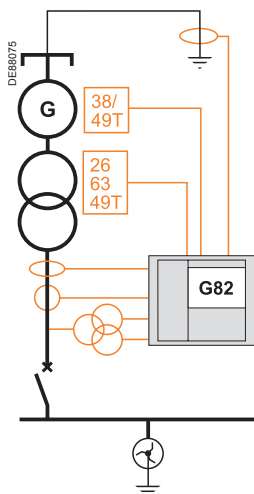
Protection of a generator-transformer unit coupled to other generators or to a network: Sepam G82

Short-circuit detection on generator side: 67.

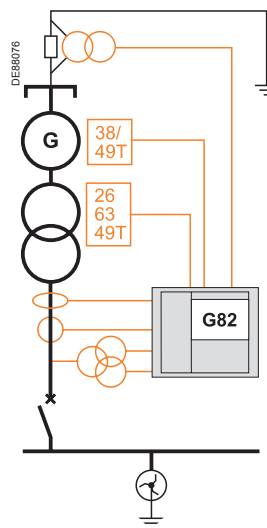
Control fault protection.

Internal transformer protection: Thermostat / Buchholz (ANSI 26/63).

- generator earth fault protection: 50G/51G
- transformer secondary earth fault protection:
 - 50G/51G
 - 59N.



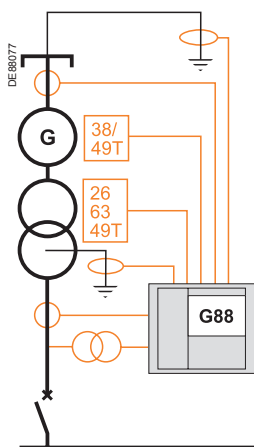
- generator earth fault protection: 100 % stator earth fault 64G
- transformer secondary earth fault protection:
 - 50G/51G
 - 59N.



Generator-transformer unit differential protection: Sepam G88

Generator-transformer unit differential protection: 87T.

- generator earth fault protection: 50G/51G
- transformer secondary earth fault protection:
 - 50G/51G.



- generator earth fault protection: 100% stator earth fault 64G
- transformer secondary earth fault protection:
 - 50G/51G
 - 64REF.

