

Skydd vid paralleldrift Kategori 3, reservkraftanläggning - distributionsnät

Information:

Reservkraftanläggningar för paralleldrift enligt kategori 3 ska ha skydd dels för distributionsnätet och dels för kundanläggningen.

Styrpanelen är programmerad för Kategori 3, vilket medger en blinkfri nätåtergång, kortvarig (≤ 1 sekund) paralleldrift med distributionsnätet.

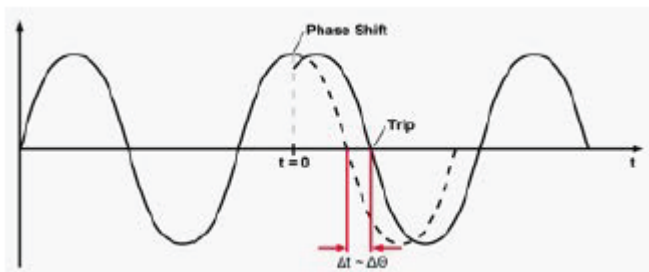
Styrpanel av typ Woodward easYgen 3000, är utrustad med nödvändiga skydd avseende fränkoppling av distributionsnät/annan strömkälla i händelse av spänningsbortfall eller om spänningen/frekvensen avviker från de värden som gäller vid normal matning.

Förutom automatisk fasningsutrustning finns följande skydd:

- Över- och underfrekvensskydd
- Trefasigt över- och underspänningsskydd
- Effektriktrelä (backeffektskydd)
- Osymmetriskydd
- Överströmsskydd

Nedan redovisas utdrag ur konfigurationen gällande skydd vid paralleldrift för ovan styrutrustning.

ID	Parameter	CL	Setting range [Default]	Description
3058	Change of frequency	2	[Phase shift]	Phase shift monitoring is carried out according to the parameters described in ☞ 'Phase shift' on page 139 .
			df/dt	df/dt monitoring is carried out according to the parameters described in ☞ 'df/dt (ROCOF)' on page 140 .
			Off	Monitoring is disabled.
3053	Phase shift: Monitoring	2	[1- and 3 phase]	<p>During single-phase voltage phase/vector shift monitoring, tripping occurs if the phase/vector shift exceeds the configured threshold value (parameter 3054 ☞ p. 141) in at least one of the three phases.</p> <p>If a phase/vector shift occurs in one or two phases, the single-phase threshold value (parameter 3054 ☞ p. 141) is taken into consideration; if a phase/vector shift occurs in all three phases, the three-phase threshold value (parameter 3055 ☞ p. 141) is taken into consideration. Single phase monitoring is very sensitive and may lead to nuisance tripping if the selected phase angle settings are too small.</p> <p>3 phase mains phase shift monitoring is only enabled if Mains voltage measuring (parameter 1853 ☞ p. 87) is configured to "3Ph 4W" or "3Ph 3W".</p>
3054	Phase shift: Limit 1 phase	2	3 to 30° [20°]	<p>If the electrical angle of the mains voltage shifts more than this configured value in any single phase, an alarm with the class configured in parameter 3051 ☞ p. 141 is initiated.</p> <p>Depending on the configured mains decoupling procedure (parameter 3110 ☞ p. 126), the GCB, MCB, or an external CB will be opened.</p>
3055	Phase shift: Limit 3 phase	2	3 to 30° [8°]	<p>If the electrical angle of the mains voltage shifts more than this configured value in all three phases, an alarm with the class configured in parameter 3051 ☞ p. 141 is initiated.</p> <p>Depending on the configured mains decoupling procedure (parameter 3110 ☞ p. 126), the GCB, MCB, or an external CB will be opened.</p>




Inställningar nätavkänning:

Config_Monitoring	Mains	Mains phase rotation	3970 Monitoring	On
Config_Monitoring	Mains	Mains phase rotation	3971 Alarm class	Class B
Config_Monitoring	Mains	Mains phase rotation	3972 Self acknowledge	No
Config_Monitoring	Mains	Mains phase rotation	3973 Delayed by engine speed	No
Config_Monitoring	Mains	Mains phase rotation	3974 Mains phase rotation	CW
Config_Monitoring	Mains	Operating voltage / frequency	5810 Upper voltage limit	110 %
Config_Monitoring	Mains	Operating voltage / frequency	5811 Lower voltage limit	90 %
Config_Monitoring	Mains	Operating voltage / frequency	5812 Upper frequency limit	110 %
Config_Monitoring	Mains	Operating voltage / frequency	5813 Lower frequency limit	90 %
Config_Monitoring	Mains	Operating voltage / frequency	5814 Hysteresis upper voltage limit	2 %
Config_Monitoring	Mains	Operating voltage / frequency	5815 Hysteresis lower voltage limit	2 %
Config_Monitoring	Mains	Operating voltage / frequency	5816 Hyst. upper frequency limit	0,5 %
Config_Monitoring	Mains	Operating voltage / frequency	5817 Hyst. lower frequency limit	0,5 %

Specifikation styrtrustning easYgen 3000

FEATURES OVERVIEW

	Model Package	easYgen-3000 Series			
		3100		3200	
		P1	P2	P1	P2
Measuring					
Generator voltage (3-phase/4-wire)		✓	✓	✓	✓
Generator current (3x true r.m.s.)		✓	✓	✓	✓
Mains voltage (3-phase/4-wire)		✓	✓	✓	✓
Mains or ground current (1x true r.m.s.) #1		✓	✓	✓	✓
Busbar voltage (1-phase/2-wire)		✓	✓	✓	✓
Control					
Breaker control logic (open and closed transition)	<i>FlexApp™</i>	2	2	2	2
Automatic, Manual, Stop, and test operating modes		✓	✓	✓	✓
Single and multiple-unit operation		✓	✓	✓	✓
Mains parallel multiple-unit operation (up to 32 units)		✓	✓ #2	✓	✓ #2
AMF (auto mains failure) and stand-by operation		✓	✓	✓	✓
Critical mode operation		✓	✓	✓	✓
GCB and MCB synchronization (slipping / phase matching)		✓	✓	✓	✓
Interchange (import / export control)		✓	✓	✓	✓
Load-dependent start/stop		✓	✓	✓	✓
n/f, V, P, Q, and PF remote control via analog input or interface		✓	✓	✓	✓
Load/var sharing for up to 32 gensets		✓	✓	✓	✓
Freely configurable PID controllers		-	3	-	3
HMI					
Color Display with Softkey operation	<i>DynamicsLCD™</i>	-	-	✓	✓
Start/stop logic for diesel / gas engines		✓	✓	✓	✓
Counters for operating hours / starts / maintenance / active/reactive energy		✓	✓	✓	✓
Configuration via PC #3		✓	✓	✓	✓
Event recorder entries with real time clock (battery backup)		300	300	300	300
Protection					
	ANSI#				
Generator: voltage / frequency	59 / 27 / 81O / 81U	✓	✓	✓	✓
Generator: overload, reverse/reduced power	32 / 32R / 32F	✓	✓	✓	✓
Generator: unbalanced load	46	✓	✓	✓	✓
Generator: instantaneous overcurrent	50	✓	✓	✓	✓
Generator: time-overcurrent (IEC 255 compliant)	51	✓	✓	✓	✓
Generator: ground fault #4	50G	✓	✓	✓	✓
Generator: power factor	55	✓	✓	✓	✓
Generator: rotation field		✓	✓	✓	✓
Engine: overspeed / underspeed	12 / 14	✓	✓	✓	✓
Engine: speed / frequency mismatch		✓	✓	✓	✓
Engine: D+ auxiliary excitation failure		✓	✓	✓	✓
Mains: voltage / frequency	59 / 27 / 81O / 81U	✓	✓	✓	✓
Mains: phase shift / rotation field / ROCOF (df/dt)	78 /	✓	✓	✓	✓
I/Os					
Speed input (magnetic / switching; Pickup)		✓	✓	✓	✓
Discrete alarm inputs (configurable)		10	10	10	10
Discrete outputs (configurable)	<i>LogicsManager™</i>	max. 12	max. 12	max. 12	max. 12
External discrete inputs / outputs via CANopen (maximum)		16 / 16	32 / 32	16 / 16	32 / 32
Analog inputs #5 (configurable)	<i>FlexIn™</i>	3	3	3	3
Analog outputs (+/- 10V, +/- 20mA, PWM; configurable)		2	2	2	2
External analog inputs / outputs via CANopen (maximum)		-	16 / 4	-	16 / 4
Display and evaluation of J1939 analog values (supported SPNs)		100	100	100	100
CAN bus communication interfaces #5	<i>FlexCAN™</i>	2	2	2	2
RS-232/485 Modbus RTU Slave interface(s)		1 / 1	1 / 1	1 / 1	1 / 1