	ANSI code 27, 59	ANSI code 59	ANSI code 27
			
	RMV-112D	**RMV-122D**	**RMV-132D**
Main functions:	**Under- /overvoltage protection:** • timer controlled tripping • adjustable hysteresis	**Overvoltage protection (2 levels):** • timer controlled tripping • adjustable hysteresis	**Undervoltage protection (2 levels):** • timer controlled tripping • adjustable hysteresis
Aux. voltage (U_n): 57.7…690V AC 24-48-110-220V DC	✓	✓	✓
Meas. voltage (U_n): 57.7…690V AC	✓	✓	✓
Meas. current (I_n): 0.4…5.0A	–	–	–
Frequency range: 40..45…65..70Hz	✓	✓	✓
Outputs:	1 minimum and 1 maximum relay output Settings: ±20% of U nom Delay: 0.5…10 s Hysteresis: 1…10% of U nom	2 maximum relay outputs Settings: 0…+20% of U nom Delay: 0.5…10 s Hysteresis: 1…10% of U nom	2 minimum relay outputs Settings: 0…-20% of U nom Delay: 0.5…10 s Hysteresis: 1…10% of U nom
Measuring system:	Δ, 3 phase 3 wire, Y, 3 phase 4 wire	Δ, 3 phase 3 wire, Y, 3 phase 4 wire	Δ, 3 phase 3 wire, Y, 3 phase 4 wire
Approved by classification societies:	✓	✓	✓

	ANSI code 27, 59		
			
	RMV-142D		
Main functions:	**Under- /overvoltage protection:** • timer controlled tripping • adjustable hysteresis		
Aux. voltage (U_n): 57.7…690V AC 24-48-110-220V DC	✓		
Meas. voltage (U_n): 57.7…690V AC	✓		
Meas. current (I_n): 0.4…5.0A	–		
Frequency range: 40..45…65..70Hz	✓		
Outputs:	1 minimum and 1 maximum relay output Settings: ±20% of U nom Delay: 0.5…10 s Hysteresis: 1…10% of U nom		
Measuring system:	2 phase, single phase		
Approved by classification societies:	✓		

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	ANSI code 50, 51	ANSI code 50, 51	ANSI code 50, 51
			
	RMC-111D	**RMC-121D**	**RMC-122D**
Main functions:	**Short circuit relay:** • short circuit protection • timer controlled tripping	**Short circuit current relay:** • short circuit protection • timer controlled tripping	**Overcurrent and short circuit relay:** • short circuit/overcurrent protection • timer controlled tripping
Aux. voltage (U_n): 57.7…690V AC 24-48-110-220V DC	✓	✓	✓
Meas. voltage (U_n): 57.7…690V AC	–	–	–
Meas. current (I_n): 0.4…5.0A	✓	✓	✓
Frequency range: 40..45…65..70Hz	✓	✓	✓
Outputs:	1 maximum relay output Setting: 100…400% of I nom Delay: 0.1…1/5/10 s	1 maximum relay output with 2 sets of contacts Setting: 100…400% of I nom Delay: 0.1…1/5/10 s	2 maximum relay outputs Settings: 50…150% of I nom, 100…400% of I nom Delay: 0.1…1/5/10 s, 0.5…20/60/120 s
Measuring system:	3 phase	3 phase	3 phase
Approved by classification societies:	✓	✓	✓

	ANSI code 87	ANSI code 50, 51	ANSI code 50N, 51N
			
	RMC-131D	**RMC-132D**	**RMC-142D**
Main functions:	**Differential current relay:** • protection against short circuits and leakage current in the generator winding • timer controlled tripping	**Dual overcurrent relay:** • overcurrent protection • timer controlled tripping	**Stator earth fault relay:** • earth fault protection at 2 level • built-in filter for 3rd harmonic • timer controlled tripping
Aux. voltage (U_n): 57.7…690V AC 24-48-110-220V DC	✓	✓	✓
Meas. voltage (U_n): 57.7…690V AC	–	–	–
Meas. current (I_n): 0.4…5.0A	✓	✓	✓
Frequency range: 40..45…65..70Hz	✓	✓	✓
Outputs:	1 maximum relay output with 2 sets of contacts Settings: 4…40% of I nom Delay: 0.1…1/5/10 s	2 maximum relay outputs Settings: 50…150% of I nom Delay: 0.5…20/60/120 s	2 maximum relay outputs Settings: 2…20%, 10…110% of I nom Delay: 0.5…20/60/120 s
Measuring system:	3 phase	3 phase	Single phase
Approved by classification societies:	✓	✓	✓

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	ANSI code 32	ANSI code 32	ANSI code 32
			
	RMP-111D	**RMP-112D**	**RMP-121D**
Main functions:	**Overload relay:** • overload protection of generator and prime mover • real power relay • timer controlled tripping	**Overload/reverse power relay:** • combined overload and reverse power protection • protection against "motoring" • timer controlled tripping	**Reverse power relay:** • "motoring" protection of generator and prime mover • timer controlled tripping
Aux. voltage (U_n): 57.7…690V AC 24-48-110-220V DC	✓	✓	✓
Meas. voltage (U_n): 57.7…690V AC	✓	✓	✓
Meas. current (I_n): 0.4…5.0A	✓	✓	✓
Frequency range: 40..45…65..70Hz	✓	✓	✓
Outputs:	1 maximum relay output Settings: 25…125% of P nom Delay: 0.4…20 s	1 max. + 1 min. relay output Settings: 25…125%,-0…-25% of P nom Delay: 0.4…20 s	1 minimum relay output Settings:-0…-25% of P nom Delay: 0.4…20 s
Measuring system:	2W3, 3 phase 3 wire unbal. load 3W3, 3 phase 3 wire unbal. load 3W4, 3 phase 4 wire unbal. load	2W3, 3 phase 3 wire unbal. load 3W3, 3 phase 3 wire unbal. load 3W4, 3 phase 4 wire unbal. load	1W, single phase 1W3, 3 phase 3 wire bal. load 1W4, 3 phase 4 wire bal. load
Approved by classification societies:	✓	✓	✓

	ANSI code 32	ANSI code 32	
			
	RMQ-111D	**RMQ-121D**	
Main functions:	**Loss of excitation relay:** • protection of generators against loss of excitation • timer controlled tripping	**Overexcitation relay:** • protection of generator against overexcitation (over var) • timer controlled tripping	
Aux. voltage (U_n): 57.7…690V AC 24-48-110-220V DC	✓	✓	
Meas. voltage (U_n): 57.7…690V AC	✓	✓	
Meas. current (I_n): 0.4…5.0A	✓	✓	
Frequency range: 40..45…65..70Hz	✓	✓	
Outputs:	1 maximum relay output Settings: -25…-25% of Q nom Delay: 0.4…20 s	1 maximum relay output Settings: 25…125% of Q nom Delay: 0.4…20 s	
Measuring system:	1var3, 3 phase 3 wire bal. load 1var4, 3 phase 4 wire bal. load	1var3, 3 phase 3 wire bal. load 1var4, 3 phase 4 wire bal. load	
Approved by classification societies:	✓	✓	

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	ANSI code 81	ANSI code 78	ANSI code 78
			
	RMF-112D	**LMR-111D**	**LMR-122D**
Main functions:	**Frequency relay:** • combined underfrequency/overfrequency protection • timer controlled tripping	**Loss of mains relay:** • detection of vector shift • generator disconnection on mains failure	**Loss of mains relay:** • detection of vector shift • detection of ROCOF (df/dt)
Aux. voltage (U_n): 57.7…690V AC 24-48-110-220V DC	✓	✓	✓
Meas. voltage (U_n): 57.7…690V AC	✓	✓	✓
Meas. current (I_n): 0.4…5.0A	–	–	–
Frequency range: 40..45…65..70Hz	✓	✓	✓
Outputs:	1 min. and 1 max. relay output Settings: ±10% of f nom, ±20% of f nom at f nom = 55Hz Delay: 0…10 s Nom. frequency: 50Hz, 55Hz, 60Hz	2 relay outputs Settings: 2…20 electr. deg. Delay: 0.5…5 s	2 relay outputs Settings: 2…20 electr. deg. / 0.3…5 Hz/s Delay: 0.5…5 s
Measuring system:	2 phase, single phase	2 phase, single phase	2 phase, single phase
Approved by classification societies:	✓	✓	✓

	ANSI code 27, 59, 78, 81	
		
	G59	
Main functions:	**Protection relay package:** • combined vector shift and ROCOF • protection of over-/underfrequency • 3 phase protection of over-/undervoltage	
Aux. voltage (U_n): 57.7…690V AC 24-48-110-220V DC	✓	
Meas. voltage (U_n): 57.7…690V AC	✓	
Meas. current (I_n): 0.4…5.0A	–	
Frequency range: 40..45…65..70Hz	✓	
Outputs:	4 relay outputs, setting of set point: 2…20 electr. deg. / 0.3…5 Hz/s / 90…100% of f_n / 100…110% of f_n / 80…100% of U_n / 100…120% of U_n Hysteresis: 1…10% of U_n	
Measuring system:	2 phase, single phase: Vector shift, ROCOF, frequency, 3 phase 3 wire, U, 3 phase 4 wire: Voltage	
Approved by classification societies:	–	

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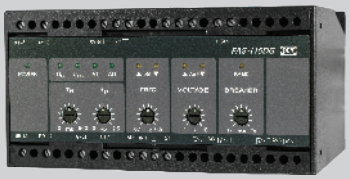
	ANSI code 25	ANSI code 25	
			
	FAS-113DG	**FAS-115DG**	
Main functions:	**Synchroniser:** • synchronisation of generator to busbar • circuit breaker time compensation	**Synchroniser:** • synchronisation of generator to busbar • voltage matching • circuit breaker time compensation	
Aux. voltage (U_n): 57.7…690V AC 24-48-110-220V DC	✓	✓	
Meas. voltage (U_n): 57.7…690V AC	✓	✓	
Meas. current (I_n): 0.4…5.0A	–	–	
Frequency range: 40..45…65..70Hz	✓	✓	
Outputs:	Synch. pulse output: 1 relay output Freq. control outputs: 2 relay outputs	Synch. pulse output: 1 relay output Freq. control outputs: 2 relay outputs Voltage control: 2 relay outputs	
Measuring system:	2 phase, single phase	2 phase, single phase	
Approved by classification societies:	✓	✓	

	ANSI code 25	ANSI code 18	
			
	HAS-111DG	**EPN-110DN**	
Main functions:	**Paralleling relay:** • synchronisation of generator to busbar • setting of phase angle • setting of maximum frequency and voltage difference	**Electronic potentiometer:** • control of electronic governor • setting of integrating time • adjustment of output signal	
Aux. voltage (U_n): 57.7…690V AC 24-48-110-220V DC	✓	✓	
Meas. voltage (U_n): 57.7…690V AC	✓	–	
Meas. current (I_n): 0.4…5.0A	–	–	
Frequency range: 40..45…65..70Hz	✓	–	
Outputs:	Synch. pulse output: 1 relay output	1 analogue output Settings: 0…±1V/0…±5V	
Measuring system:	2 phase, single phase	–	
Approved by classification societies:	✓	✓	

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	ANSI code 90  LSU-112DG	ANSI code 90  LSU-113DG	ANSI code 90  LSU-114DG
Main functions:	**Load sharing unit:** • built-in power and freq. transducer • constant power or isochronous mode	**Load sharing unit:** • reverse power protection and low power detection • built-in power and freq. transducer • constant power or isochr. mode	**Load sharing unit:** • automatic start/stop outputs • built-in power and freq. transducer • constant power or isochronous mode
Aux. voltage (U_n): 57.7…690V AC 24-48-110-220V DC	✓	✓	✓
Meas. voltage (U_n): 57.7…690V AC	✓	✓	✓
Meas. current (I_n): 0.4…5.0A	✓	✓	✓
Frequency range: 40..45…65..70Hz	✓	✓	✓
Outputs:	Speed control: 2 relay outputs	Speed control: 2 relay outputs Reverse power protection: 1 relay output, fixed settings: -P> 5% / 5 s, -P> 5% / 10 s, -P> 10% / 5 s or -P> 10% / 10 s Low power detect.: 1 relay output, fixed setting: P<5%	Speed control: 2 relay outputs Start/stop: 2 relay outputs, fixed settings: P>80%, P<20%
Measuring system:	1W3, 3 phase 3 wire bal. load Single phase	1W3, 3 phase 3 wire bal. load Single phase	1W3, 3 phase 3 wire bal. load Single phase
Approved by classification societies:	✓	✓	✓

	ANSI code 90  LSU-122DG		
Main functions:	**var load sharing unit:** • built-in reactive power transducer • control of AVR • input for external voltage transducer		
Aux. voltage (U_n): 57.7…690V AC 24-48-110-220V DC	✓		
Meas. voltage (U_n): 57.7…690V AC	✓		
Meas. current (I_n): 0.4…5.0A	✓		
Frequency range: 40..45…65..70Hz	✓		
Outputs:	Voltage control: 2 relay outputs		
Measuring system:	1var3, 3 phase 3 wire bal. load Single phase		
Approved by classification societies:	✓		

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