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|--|---|--|---|
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| | RMV-112D | RMV-122D | RMV-132D |
| Main functions: | Under- /overvoltage protection: <ul style="list-style-type: none"> • timer controlled tripping • adjustable hysteresis | Overvoltage protection (2 levels): <ul style="list-style-type: none"> • timer controlled tripping • adjustable hysteresis | Undervoltage protection (2 levels): <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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  RMC-111D | ANSI code 50, 51  RMC-121D | ANSI code 50, 51  RMC-122D |
| Main functions: | Short circuit relay: <ul style="list-style-type: none"> short circuit protection timer controlled tripping | Short circuit current relay: <ul style="list-style-type: none"> short circuit protection timer controlled tripping | Overcurrent and short circuit relay: <ul style="list-style-type: none"> 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  RMC-131D | ANSI code 50, 51  RMC-132D | ANSI code 50N, 51N  RMC-142D |
| Main functions: | Differential current relay: <ul style="list-style-type: none"> protection against short circuits and leakage current in the generator winding timer controlled tripping | Dual overcurrent relay: <ul style="list-style-type: none"> overcurrent protection timer controlled tripping | Stator earth fault relay: <ul style="list-style-type: none"> 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: | ✓ | ✓ | ✓ |

| | ANSI code 32  RMP-111D | ANSI code 32  RMP-112D | ANSI code 32  RMP-121D |
|--|--|---|---|
| Main functions: | Overload relay: <ul style="list-style-type: none"> • overload protection of generator and prime mover • real power relay • timer controlled tripping | Overload/reverse power relay: <ul style="list-style-type: none"> • combined overload and reverse power protection • protection against "motoring" • timer controlled tripping | Reverse power relay: <ul style="list-style-type: none"> • "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  RMQ-111D | ANSI code 32  RMQ-121D | |
| Main functions: | Loss of excitation relay: <ul style="list-style-type: none"> • protection of generators against loss of excitation • timer controlled tripping | Overexcitation relay: <ul style="list-style-type: none"> • 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: | ✓ | ✓ | |

| | ANSI code 81 | ANSI code 78 | ANSI code 78 |
|--|--|---|---|
| |  |  |  |
| | RMF-112D | LMR-111D | LMR-122D |
| Main functions: | Frequency relay: <ul style="list-style-type: none"> combined underfrequency/overfrequency protection timer controlled tripping | Loss of mains relay: <ul style="list-style-type: none"> detection of vector shift generator disconnection on mains failure | Loss of mains relay: <ul style="list-style-type: none"> 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: <ul style="list-style-type: none"> 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: | — | | |

| | ANSI code 25 | ANSI code 25 | |
|--|---|---|--|
| |  FAS-113DG |  FAS-115DG | |
| Main functions: | Synchroniser: <ul style="list-style-type: none"> • synchronisation of generator to busbar • circuit breaker time compensation | Synchroniser: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • synchronisation of generator to busbar • setting of phase angle • setting of maximum frequency and voltage difference | Electronic potentiometer: <ul style="list-style-type: none"> • 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: | ✓ | ✓ | |

| | ANSI code 90  LSU-112DG | ANSI code 90  LSU-113DG | ANSI code 90  LSU-114DG |
|--|---|--|---|
| Main functions: | Load sharing unit: <ul style="list-style-type: none"> • built-in power and freq. transducer • constant power or isochronous mode | Load sharing unit: <ul style="list-style-type: none"> • reverse power protection and low power detection • built-in power and freq. transducer • constant power or isochr. mode | Load sharing unit: <ul style="list-style-type: none"> • 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: <ul style="list-style-type: none"> • 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: | ✓ | | |