

# FEATURES COMPARISONS

## Ground-Fault Protection Relays

| FEATURE                       | SE-601 | EL731 | EL3100 | PGR-3200 | T3200 | SE-502 | SE-703<br>SE-704 | SE-701 | T2800 | SE-105<br>SE-107 | SE-134C<br>SE-135 | SE-145 | SE-325 | SE-330<br>SE-330HV<br>SE-330AU |
|-------------------------------|--------|-------|--------|----------|-------|--------|------------------|--------|-------|------------------|-------------------|--------|--------|--------------------------------|
| Detects GF via voltage        |        |       | ✓      | ✓        |       | ✓      |                  |        |       | ✓                | ✓                 | ✓      | ✓      | ✓                              |
| Detects GF via current        | ✓      | ✓     |        |          |       |        | ✓                |        | ✓     | ✓                | ✓                 | ✓      | ✓      | ✓                              |
| Detects DC GF                 | ✓      | ✓     |        |          |       |        |                  |        |       |                  |                   |        |        |                                |
| Adjustable GF pickup          | ✓      | ✓     |        |          |       |        | ✓                |        | ✓     | ✓                | ✓                 | ✓      | ✓      | ✓                              |
| Adjustable time delay         | ✓      | ✓     |        |          | ✓     |        | ✓                |        | ✓     | ✓                | ✓                 | ✓      | ✓      | ✓                              |
| Remote reset                  | ✓      | ✓     |        | ✓        |       | ✓      | ✓                |        | ✓     | ✓                | ✓                 | ✓      | ✓      | ✓                              |
| Analog output                 | ✓      | ✓     |        | ✓        |       | ✓      | ✓                |        |       |                  |                   |        |        | ✓                              |
| Fail-safe option              | ✓      | ✓     |        |          |       | ✓      | ✓                |        |       | ✓                | ✓                 | ✓      | ✓      | ✓                              |
| Harmonic filtering            |        | ✓     |        | ✓        |       |        | ✓                |        |       | ✓                | ✓                 | ✓      | ✓      | ✓                              |
| CT-Loop monitoring            |        | ✓     |        |          |       |        | ✓                |        |       |                  | ✓                 | ✓      |        |                                |
| Insulation monitoring         |        |       |        | ✓        | ✓     | ✓      |                  |        |       |                  |                   |        |        |                                |
| Ground-check monitoring       |        |       |        |          |       |        |                  |        | ✓     | ✓                | ✓                 |        |        |                                |
| Grounding-resistor monitoring |        |       |        |          |       |        |                  |        |       |                  |                   | ✓      | ✓      |                                |
| PTC/RTD overtemperature       |        | ✓     |        |          |       |        |                  |        |       |                  |                   |        |        |                                |
| Communications                |        | ✓     |        |          |       |        |                  |        |       |                  |                   |        |        | ✓                              |
| Conformal coating             | ‡      | ✓     | ✓      | ‡        | ✓     | ‡      | ‡                |        | ✓     | ✓                | ✓                 | ✓      | ✓      | ✓                              |

## Arc-Flash Relays

| FEATURE                           | D0100 | PGR-8800 |
|-----------------------------------|-------|----------|
| Current detection                 |       | ✓        |
| Point sensors                     | ✓     | ✓        |
| Fiber optic sensors               |       | ✓        |
| Cable monitoring on sensor inputs |       | ✓        |
| USB                               |       | ✓        |
| DC supply                         | ✓     | ✓        |
| AC supply                         |       | ✓        |
| Data logging                      |       | ✓        |

## Motor & Feeder Protection Relays

| FEATURE (IEEE #)               | PGR-6100 | PGR-6130 | PGR-6150 | M/PU-32 | M/PS | PGR-6800 | FPU-32 | FPS |
|--------------------------------|----------|----------|----------|---------|------|----------|--------|-----|
| Ground fault (50G/N, 51G/N)    | ✓        |          | ✓        | ✓       | ✓    |          | ✓      | ✓   |
| Overload (49, 51)              |          | ✓        | ✓        | ✓       | ✓    | ✓        | ✓      | ✓   |
| Unbalance (current) (46)       |          | ✓        | ✓        | ✓       | ✓    | ✓        | ✓      | ✓   |
| Phase loss (current) (46)      |          | ✓        | ✓        | ✓       | ✓    | ✓        | ✓      | ✓   |
| Phase reverse (current) (46)   |          | ✓        | ✓        | ✓       | ✓    | ✓        | ✓      | ✓   |
| PTC overtemperature (49)       |          | ✓        | ✓        | ✓       | ✓    |          | ✓      |     |
| Undercurrent (37)              |          |          | ✓        | ✓       | ✓    | ✓        |        |     |
| Jam                            |          |          | ✓        | ✓       | ✓    |          |        |     |
| Overcurrent (50, 51)           |          |          | ✓        | ✓       | ✓    |          | ✓      | ✓   |
| Failure to accelerate          |          |          | ✓        | ✓       | ✓    |          |        |     |
| RTD temperature (38, 49)       |          |          |          | ✓       | ✓    |          | ✓      | ✓   |
| Starts per hour (66)           |          |          |          | ✓       | ✓    |          |        |     |
| Differential (87)              |          |          |          | ✓       | ✓    |          |        |     |
| Reduced overcurrent setting    |          |          |          | ✓       | ✓    |          |        |     |
| Phase loss (voltage) (47)      |          |          |          | ✓       | ✓    |          |        | ✓   |
| Phase reverse (voltage) (47)   |          |          |          | ✓       | ✓    |          |        | ✓   |
| Unbalance (voltage) (47)       |          |          |          | ✓       | ✓    |          |        | ✓   |
| Overvoltage (59)               |          |          |          | ✓       | ✓    |          | ✓      | ✓   |
| Undervoltage (27)              |          |          |          | ✓       | ✓    |          | ✓      | ✓   |
| Power factor (55)              |          |          |          | ✓       | ✓    |          |        | ✓   |
| Overfrequency (81)             |          |          |          | ✓       | ✓    |          |        | ✓   |
| Underfrequency (81)            |          |          |          | ✓       | ✓    |          |        | ✓   |
| Starter control                |          |          |          | ✓       | ✓    |          |        |     |
| Breaker control                |          |          |          | ✓       | ✓    |          |        | ✓   |
| Underspeed (14)                |          |          |          | ✓       | ✓    |          |        |     |
| Integrated CTs                 |          | ✓        | ✓        |         |      | ✓        |        |     |
| Off-line insulation monitoring | ✓        |          |          |         |      |          |        |     |
| Metering and data logging      |          | ✓        | ✓        | ✓       | ✓    |          | ✓      | ✓   |
| Communications                 |          |          | ✓        | ✓       | ✓    |          | ✓      | ✓   |
| Conformal coating              | ‡        |          |          | ✓       | ✓    |          | ✓      | ✓   |
| 10-year warranty               |          |          |          | ✓       | ✓    |          | ✓      | ✓   |

## Alarm Monitors

| FEATURE                                 | M1000 | M2000 | M4200 | M4500 | M4600 | M4700  | M4780  |
|---|-------|-------|-------|-------|-------|--------|--------|
| Alarm panel                             | ✓     | ✓     | ✓     |       |       |        |        |
| Indicator panel                         | ✓     | ✓     | ✓     | ✓     | ✓     | ✓      | ✓      |
| No. of inputs                           | 10    | 24    | 8     | 6     | 8     | 20     | 20     |
| Digital input                           | ✓     | ✓*    | ✓     | ✓     | ✓     | ✓      | ✓      |
| No. of open collector outputs           | 10    | 14    | 4     |       |       |        |        |
| Common alarm output†                    | 1oc   | 1oc   | 2dryc |       |       | 1dryc† | 1dryc† |
| Siren output                            | 1dryc | 1oc   | 1dryc |       |       | 1dryc† | 1dryc† |
| LCD display                             |       | ✓     |       |       |       |        |        |
| Configure from PC                       | ✓     | ✓     | ✓     |       |       |        |        |
| Configure from DIP switches/jumper      | ✓     |       | ✓     |       |       | ✓      | ✓      |
| Configure from front panel              |       | ✓     |       |       |       |        |        |
| MODBUS-RTU (RS485)                      | ✓     | ✓     |       |       |       |        |        |
| LED dimming                             | ✓     | ✓     | ✓     |       |       |        |        |
| LED synchronizing                       | ✓     |       | ✓     |       |       |        |        |
| Panel linking                           | ✓     |       |       |       |       |        |        |
| Remote reset                            | ✓     | ✓     | ✓     |       |       |        |        |
| Sensor monitoring                       | ✓     | ✓     | ✓     |       |       |        |        |
| Insulation monitoring of supply voltage | ✓     |       | ✓     |       |       |        |        |
| Monitoring of supply voltage            | ✓     |       | ✓     |       |       |        |        |

\*Both analog and digital input.  
1oc=open collector; dryc=dry contact  
†Optional

NOTE:  
Tables are for reference only and include standard and optional configurations.  
Please see the respective catalog page for exact product specifications.  
IEEE Device Numbers are shown in parenthesis after the applicable features.

# FEATURES COMPARISONS

## Generator Protection & Single-Function Relays

| FEATURE (IEEE #)                | PGR-4300 | G2000 | G3000 | G3300 | T2000 | T2100 | T2200 | T2300 | T2400 | T2500 | T2700 | T2900 | T3000 | T3100 | T3300 |
|---------------------------------|----------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Overload                        |          |       |       |       |       |       |       |       |       |       | ✓     |       |       |       |       |
| Overcurrent                     |          |       |       |       |       |       | ✓     |       | ✓     | ✓     |       |       |       |       |       |
| Undercurrent (37)               |          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Short circuit                   |          |       |       |       |       |       |       | ✓     |       | ✓     |       |       |       |       |       |
| Reverse power (32)              |          | ✓     |       |       | ✓     |       |       |       |       |       |       |       |       |       |       |
| Overfrequency (81)              |          |       | ✓     |       |       |       |       |       |       |       |       |       |       | ✓     |       |
| Underfrequency (81)             |          |       | ✓     |       |       |       |       |       |       |       |       |       |       | ✓     |       |
| Overvoltage (59)                |          |       |       | ✓     |       |       |       |       |       |       |       |       |       | ✓     | ✓     |
| Undervoltage (27)               |          |       |       | ✓     |       |       |       |       |       |       |       |       |       | ✓     | ✓     |
| Excitation loss (40)            |          |       |       |       |       | ✓     |       |       |       |       |       |       |       |       |       |
| Earth fault                     |          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Differential current relay (87) |          |       |       |       |       |       |       |       |       |       |       | ✓     |       |       |       |
| Insulation monitoring relay     |          |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| Single phase measurement        |          | ✓     | ✓     |       | ✓     | ✓     |       |       |       |       | ✓     |       | ✓     | ✓     |       |
| 3-phase measurement             |          |       |       | ✓     |       |       | ✓     | ✓     | ✓     | ✓     |       | ✓     |       |       | ✓     |
| Conformal coating               |          |       |       |       |       | ✓     | ✓     | ✓     | ✓     | ✓     | ✓     | ✓     | ✓     | ✓     | ✓     |

## Engine Controls

| FEATURE (IEEE #)                              | M2000 | M2500 | M2600 |
|---|-------|-------|-------|
| Start/stop                                    | ✓     | ✓     |       |
| Digital sensor inputs                         | ✓     | ✓     | ✓     |
| Analog sensor inputs                          |       | ✓     |       |
| Cable monitoring on fuel/stop solenoid output |       | ✓     | ✓     |
| Graphical display                             |       | ✓     |       |
| CAN J1939                                     |       | ✓     |       |
| USB   |       | ✓     |       |
| SD card slot                                  |       | ✓     |       |
| Pick-up input                                 | ✓     | ✓     | ✓     |

## Generator Controls

| FEATURE (IEEE #)                        | T2600 | T4500 | T4800 | T4900 | T5000 | E7800 | T7900 | M8100 | T8400 | C6200 | S6000 | S6100 | S6610 |
|---|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 3 phase true RMS measurement            | ✓     | ✓     | ✓     | ✓     | ✓     |       |       | ✓     |       | ✓     | ✓     | ✓     |       |
| Overcurrent                             |       |       |       |       |       |       |       |       |       | ✓     | ✓     |       |       |
| Short circuit                           |       |       |       |       |       |       |       |       |       | ✓     | ✓     |       |       |
| Overload                                |       |       |       |       |       |       |       |       |       | ✓     | ✓     |       |       |
| Reverse power (32)                      |       |       |       | ✓     |       |       |       |       |       | ✓     | ✓     |       |       |
| Excitation loss (40)                    |       |       |       |       |       |       |       |       |       | ✓     | ✓     |       |       |
| Overfrequency (81)                      |       |       |       |       |       |       |       |       |       | ✓     | ✓     | ✓     |       |
| Underfrequency (81)                     |       |       |       |       |       |       |       |       |       | ✓     | ✓     | ✓     |       |
| Overvoltage (59)                        |       |       |       |       |       |       |       |       |       | ✓     | ✓     | ✓     |       |
| Undervoltage (27)                       |       |       |       |       |       |       |       |       |       | ✓     | ✓     | ✓     |       |
| ROCOF (81)                              |       |       |       |       |       |       |       |       |       | ✓     | ✓     |       |       |
| Vector shift                            |       |       |       |       |       |       |       |       |       | ✓     |       |       |       |
| Preferential load trip                  |       |       |       |       |       |       |       |       |       | ✓     | ✓     |       |       |
| Synchronizing (25)                      |       | ✓     |       |       |       |       |       |       |       | ✓     |       | ✓     |       |
| Check synchronizer (25)                 |       |       |       |       | ✓     |       |       | ✓     |       | ✓     |       | ✓     |       |
| Active load sharing [kW]                |       |       | ✓     |       |       |       |       |       |       | ✓     |       | ✓     |       |
| Reactive load sharing [kVAR]            |       |       |       | ✓     |       |       |       |       |       | ✓     |       | ✓     |       |
| Power factor regulation                 |       |       |       | ✓     |       |       |       |       |       | ✓     |       | ✓     |       |
| Dead bus monitoring/black out limiter   |       |       |       |       |       |       |       | ✓     |       | ✓     |       | ✓     |       |
| Load depending start/stop (PM)          | ✓     |       |       |       |       |       |       |       |       | ✓     |       |       | ✓     |
| Large consumer control (PM)             |       |       |       |       |       |       |       |       |       | ✓     |       |       | ✓     |
| Dynamic grid-parallel operation control |       |       |       |       |       |       |       |       |       | ✓     |       | ✓     |       |
| MODBUS RTU (RS485 interface)            |       |       |       |       |       |       |       |       |       | ✓     | ✓     | ✓     | ✓     |
| Motorized potentiometer                 |       |       |       |       |       | ✓     |       |       |       |       |       |       |       |
| Electronic potentiometer                |       |       |       |       |       |       | ✓     |       |       |       |       |       |       |
| Dead bus closure                        |       |       |       |       |       |       |       |       | ✓     |       |       |       |       |

## Engine Diagnostics

| FEATURES                           | BASIC E5000 & E5100 | ADVANCED E5000, E5100 & E5200 | PROFESSIONAL E5000, E5100, E5200 & 5300 |
|------------------------------------|---------------------|-------------------------------|---|
| USB                                | ✓                   | ✓                             | ✓                                       |
| Color LCD                          | ✓                   | ✓                             | ✓                                       |
| PC software included               | ✓                   | ✓                             | ✓                                       |
| Upgradable                         | ✓                   | ✓                             | ✓                                       |
| Temperature compensation           | ✓                   | ✓                             | ✓                                       |
| Calibration-check integration      | ✓                   | ✓                             | ✓                                       |
| Connecting sensor ports            | 1                   | 2                             | 5                                       |
| Pressure graph                     | ✓                   | ✓                             | ✓                                       |
| MIP mode                           |                     | *                             | ✓                                       |
| Misfire analysis                   |                     | ✓                             | ✓                                       |
| p <sup>max</sup>                   |                     | ✓                             | ✓                                       |
| p/time                             | ✓                   | ✓                             | ✓                                       |
| p <sup>max</sup> bar graph         |                     | ✓                             | ✓                                       |
| p/alpha                            |                     | *                             | ✓                                       |
| dp/alpha                           |                     | *                             | ✓                                       |
| p/V                                |                     | *                             | ✓                                       |
| Pressure sensor                    | ✓                   | ✓                             | ✓                                       |
| Crank-angle sensor                 |                     |                               | ✓                                       |
| Maximum engines (memory)           | 5                   | 10                            | 20                                      |
| Maximum cylinders/engine (memory)  | 20                  | 20                            | 20                                      |
| Maximum number of strokes (memory) | 30                  | 30                            | 30                                      |

NOTE: These tables are for reference only and include standard and optional configurations.

\*Possible with a crank angle sensor E5300.