

# NPG915

## Generator protection IED



The optimal management of electrical power systems is based in particular on the reliability, availability and communication skills of protection, measurement and automation devices.

The NPG915 generator protection IED is well suited for machines requiring complete generator protections. It can be combined with NPT916 to protect larger machines requiring differential protection and greater protection redundancy.

The NPG915 communicates using various protocols including IEC 61850 substation communication standard.



• Cost efficient synchronous machine protection

### ANSI CODES

50/51	50N /51N	50H/51H /68H	46/46R /46L	67	67N	59	27	59N	47/27P /59NP	81O/81U	81R
40	55	51V	64S	32/37 /32R	49M	21	24	78	50BF /52BF	99	
60	74TC	25	86								

OUR TRADEMARKS



## CHARACTERISTICS

### Protection functions

- Three-phase overcurrent, 4 stages INST, DT or IDMT [50/51]
- Earth-fault (sensitive), 4 stages INST, DT or IDMT [50N/51N]
- Harmonic overcurrent / inrush blocking, 4 stages INST, DT or IDMT [50H/51H/68H]
- Current unbalance/broken conductor, 4 stages INST, DT or IDMT [46/46R/46L]
- Directional overcurrent, 4 stages INST, DT or IDMT [67]
- Directional (sensitive) earth-fault, 4 stages INST, DT or IDMT [67N]
- Overvoltage, 4 stages INST, DT or IDMT [59]
- Undervoltage, 4 stages INST, DT or IDMT [27]
- Zero sequence overvoltage, 4 stages INST, DT or IDMT [59N]
- Positive sequence under/overvoltage, negative sequence overvoltage, 4 stages INST, DT or IDMT [47/27P/59P]
- Over/under frequency, 4 stages INST or DT [810/81U]
- Rate of change of frequency, 4 stages INST or DT or IDMT [81R]
- Loss of field [40]
- Power factor [55]
- Voltage restrained overcurrent [51V]
- Field ground / 100% stator earth-fault [64S]
- Over/Under/Reverse power [32/37/32R]
- Generator thermal overload [49M]
- Under impedance [21]
- Overexcitation protection [24]
- Vector jump [78]
- Breaker failure protection [50BF/52BF]
- Programmable functions [99]
- Arc protection (option) [50Arc/50NArc]

### Measuring and monitoring

- Phase and residual currents (IL1, IL2, IL3, I01, I02)
- Voltage measurements (UL1-UL3, U12-U31, U0, SS)
- Current and voltage harmonics (up to 31st)
- Current THD
- Frequency (f)
- Power (P, Q, S, pf)
- Energy (E+, E-, Eq+, Eq-)
- Circuit breaker wear (CBW)
- Disturbance recorder: from 400 Hz to 3.2 kHz (8 to 64 samples per cycle)
- Current transformer supervision (CTS)
- Fuse failure (VTS)
- Trip circuit supervision [74TC]

### Control

- Controllable objects: 5
- Synchrocheck [25]
- Lock out relay [86]
- 8 setting groups

### Hardware

- Current inputs: 5
- Voltage inputs: 4
- Digital inputs: 2 or 3 (standard)
- Output relays: 5+1 (standard)

### Options (3 slots)

- Digital inputs optional: +8 per card
- Digital outputs optional: +5 per card (2 cards max.)
- Arc protection (12 sensors +2xHSO +BI)
- RTD inputs: +8 per card
- mA analog measures (1 input + 4 outputs)
- Communication medias (specified below)

### Event recording

- Non-volatile disturbance records: 100
- Non-volatile event records: 10,000

### Communication medias

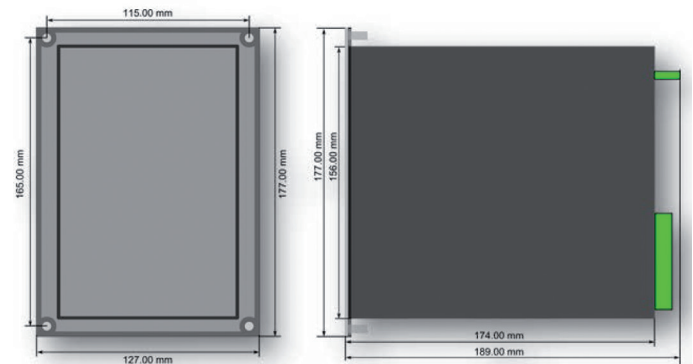
- R45 Ethernet 100Mb (rear port) + RS485
- Double LC fibre Ethernet 100Mb HSR/PRP (rear port)
- Double Ethernet RJ45 – 100Mb HSR/PRP (rear port)
- RS232 + serial fibre PP/PG/GP/GG (option)
- Double RJ45 Ethernet 100Mb (rear port)
- Double ST fibre Ethernet 100Mb (rear port)

### Communication protocols standard

- IEC 61850 (including HSR & PRP)
- IEC 60870-5-103/101/104
- Modbus RTU, Modbus TCP/IP
- DNP 3.0, DNP 3.0 over TCP/IP
- SPA

### Case (dimensions without protection gasket)

- H, W, D without terminal 177x127x174 mm
- H, W, D with terminal 177x127x189 mm (casing height 4U, width ¼ rack, depth 210 mm)
- H, W of front plate 177x127 mm
- H, W of cut out 160x106 mm
- Removable protection gasket width 3 mm



### SMART9 - integrated software

Our user friendly SMART9 (Setting, Measurement, Analysis, Recording, Time-saving) configuration software helps the user get the best from NP900 series relays (connection from RJ45 Ethernet 100Mb front and rear port).

