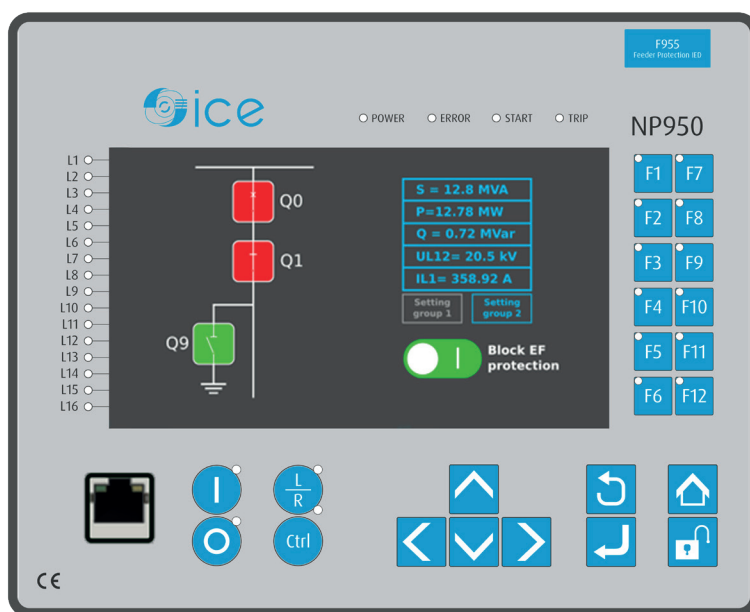# NP950 Series

Protection, control, measuring and monitoring IEDs

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

The NP950 Series devices offer a modular protection and control solution for applications requiring a large I/O capacity. Up to 11 optional I/O or communication cards are available for extensive monitoring and control applications.

The NP950 Series communicates using various protocols including the IEC 61850 substation standard.

- 3.2 kHz sampling rate
- Fully modular design
- IEC 61850 2nd Edition
- Large colourful configurable display

- Up to 11 additional module cards (depending on products)
- Arc flash compatible
- IEC 60255, RoHS and REACH compliance

Protection & Control

ice

Our energy at your service

NP950

POWER   ERROR   START   TRIP

F955
Feeder Protection IED

IL1:4890.0A
IL2:4892.0A
IL3:4891.0A

UL12:21.45kV

S:80.3MVA
P:72.3MW
Q:11.0MVar

L1 L2 L3 L4 L5 L6 L7 L8 L9 L10 L11 L12 L13 L14 L15 L16

Q0 Q1 Q9

F1 F7 F2 F8 F3 F9 F4 F10 F5 F11 F6 F12

NPF955
Feeder Protection IED

A large I/O capacity.

Double busbar control.

Optional automatic/manual voltage regulation and/or parallel voltage regulation (AVR).

Optional transformer module protections.

5-shot scheme-controlled auto-recloser.

The NPF955 feeder protection device offers a modular feeder protection and control solution for applications that require a large I/O capacity.

You can add up to total 11 optional modules (I/O and other type of modules) into the device for extensive monitoring and control applications. The NPF955 feeder protection device communicates using various protocols, including the IEC 61850 substation standard.

NPF955 Feeder Protection IED

PROTECTION

- Non-directional overcurrent (I>; 50/51)
- Non-directional earth fault (I0>; 50N/51N)
- Single-pole non-directional overcurrent (IPW>; 50/51)
- Directional overcurrent (Idir>; 67)
- Directional earth fault (I0dir>; 67N/32N)
- Intermittent earth fault (I0int>; 67NT)
- Negative sequence overcurrent / Phase current reversal / Current unbalance (I2>; 46/46R/46L)
- Harmonic overcurrent (Ih>; 50H/51H/68H)
- Circuit breaker failure protection (CBFP; 50BF/52BF)
- High- and low-impedance restricted earth fault / Cable-end differential (I0d>; 87N)
- Voltage-restrained overcurrent (Iv>; 51V)
- Overvoltage (U>; 59)
- Undervoltage (U<; 27)
- Neutral overvoltage (U0>; 59N)
- Sequence voltage (U1/U2>/<; 47/27P/59PN)
- Over- and underfrequency (f>/<; 81O/81U)
- Rate-of-change of frequency (df/dt>/<; 81R)
- Power protection (P,Q,S>/<; 32)
- Overpower (P>; 32O)
- Underpower (P<; 32U)
- Reverse power (Pr; 32R)
- Line thermal overload (TF>; 49F)
- Resistance temperature detectors (RTD)
- Transformer status monitoring (TST)
- Transformer thermal overload (TT>; 49T)
- Underimpedance (Z<; 21U)
- Underreactance (X<; 21/40)
- Volts-per-hertz overexcitation (V/Hz>; 24)
- Programmable stage (PG>/<; 99)
- Voltage memory
- Arc protection (IArc>/I0Arc>; 50Arc/50Narc) (optional)

CONTROL

- Objects to control and monitor (OBJ): 10
- Single-pole object control and monitoring (OBJS)
- Indicator objects to monitor (IND): 10
- Setting groups (SGS): 8
- Cold load pick-up (CLPU)
- Switch-on-to-fault (SOTF)
- Automatic voltage regulator (AVR; 90)
- Auto-recloser (0 → 1; 79)
- Zero sequence recloser (U0> RECL; 79N)
- Vector jump (Δφ; 78)

MONITORING

- Current transformer supervision (CTS)
- Voltage transformer supervision (VTS; 60)
- Circuit breaker wear monitoring (CBW)
- Current total harmonic distortion (THD)
- Voltage total harmonic distortion (THD)
- Fault locator (21FL)
- Disturbance records: 100 (á 5 s 3.2 kHz sampling)
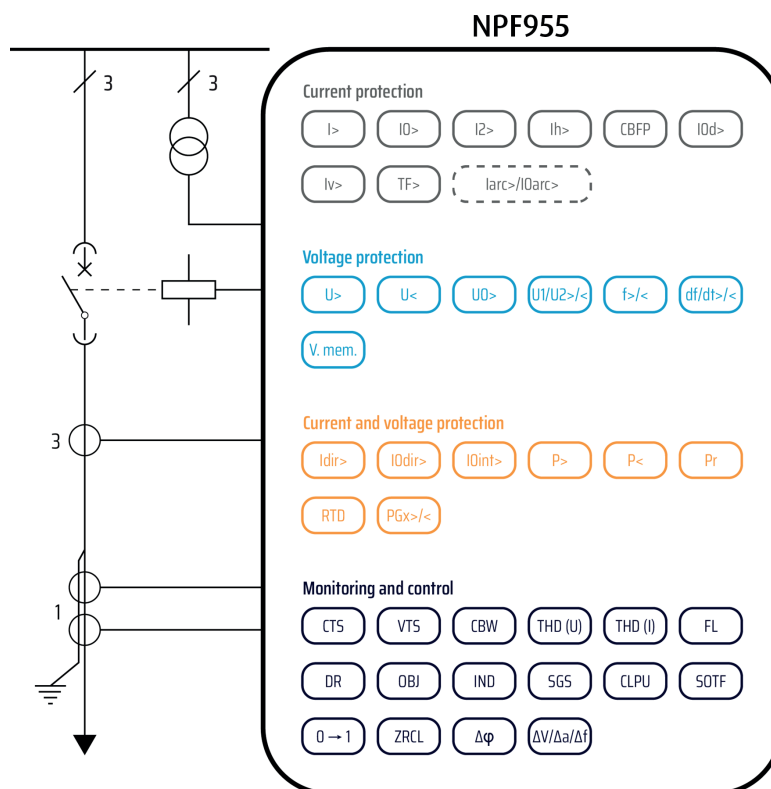- Non-volatile event records: 15,000

HARDWARE

Standard features:
- Digital inputs: 3
- Digital outputs: 5
- Current inputs: 5
- Voltage inputs: 4
- Empty module slots: 11

Optional hardware modules:
- Digital input module: 8 inputs
- Digital output module: 5 outputs
- Milliampere I/O module: 4 outputs + 1 input
- Arc protection module: 4 sensors + 2 HSO + 1 BI
- External I/O modules

NPF955

NPM955
Motor Protection IED

Powerful motor management with a large I/0 capacity.

5 thermal models (time constant accurate).

Soft start protection begins at 6 Hz.

Star-delta started motor supervision.

Two-speed motor protection.

Asynchronous and synchronous motors.

The NPM955 motor protection device offers a modular protection and control solution for larger and more important motors that require a large I/O capacity.

You can add up to total 11 optional modules (I/0 and other type of modules) into the device for extensive monitoring and control applications.

You can also connect up to 16 RTD signals for thermal alarms and trips. The NPM955 communicates using various protocols, including the IEC 61850 substation standard.

NPM955 Motor Protection IED

PROTECTION

- Non-directional overcurrent (I>; 50/51)
- Non-directional earth fault (I0>; 50N/51N)
- Directional overcurrent (Idir>; 67)
- Directional earth fault (I0dir>; 67N/32N)
- Negative sequence overcurrent / Phase current reversal / Current unbalance (I2>; 46/46R/46L)
- Harmonic overcurrent (Ih>; 50H/51H/68H)
- Circuit breaker failure protection (CBFP; 50BF/52BF)
- High- and low-impedance restricted earth fault / Cable-end differential (I0d>; 87N)
- Overvoltage (U>; 59)
- Undervoltage (U<; 27)
- Neutral overvoltage (U0>; 59N)
- Sequence voltage (U1/U2>/<; 47/27P/59PN)
- Over- and underfrequency (f>/<; 81O/81U)
- Rate-of-change of frequency (df/dt>/<; 81R)
- Power protection (P,Q,S>/<; 32)
- Resistance temperature detectors (RTD)
- Motor status monitoring (MST)
- Machine thermal overload (TM>; 49M)
- Motor start / Locked rotor monitoring (Ist>; 48/14)
- Number of starts protection (N>; 66)
- Non-directional undercurrent (I<; 37)
- Locked rotor (Im>; 51M)
- Power factor protection (PF<; 55)
- Programmable stage (PG>/<; 99)
- Arc protection (IArc>/I0Arc>; 50Arc/50Narc) (optional)
- Voltage memory

CONTROL

- Objects to control and monitor (OBJ): 10
- Indicator objects to monitor (IND): 10
- Setting groups (SGS): 8

MONITORING

- Current transformer supervision (CTS)
- Voltage transformer supervision (VTS; 60)
- Circuit breaker wear monitoring (CBW)
- Current total harmonic distortion (THD)
- Voltage total harmonic distortion (THD)
- Disturbance records: 100 (á 5 s 3.2 kHz sampling)
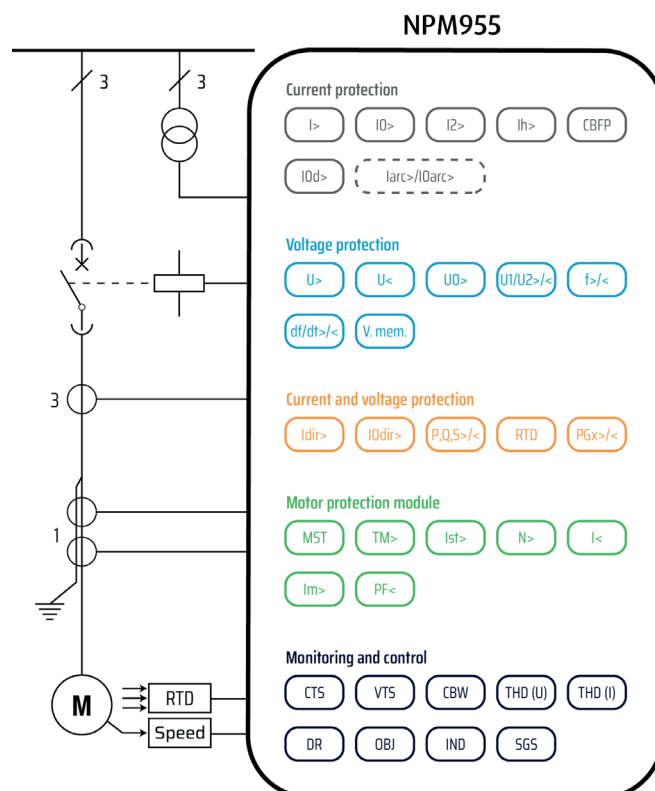- Non-volatile event records: 15,000

HARDWARE
Standard features:
- Digital inputs: 3
- Output relays: 5
- Current inputs: 5
- Voltage inputs: 4
- Empty module slots: 11

Optional hardware modules:
- Digital input module: 8 inputs
- Digital output module: 5 outputs
- Milliampere I/O module: 4 outputs + 1 input
- Arc protection module: 4 sensors + 2 HSO + 1 BI
- External I/O modules

NPM955

NPG957
Generator Protection IED

Complete synchronous machine protection.

Integrated differential protection.

The NPG957 generator protection device is well-suited for large machines that require complete generator protection and differential protection.

The device has an integrated automatic voltage regulator function. You can add up to total 9 optional modules (I/0 and other type of modules) into the device for extensive monitoring and control applications.

You can also connect up to 16 RTD signals for thermal alarms and trips. The NPG957 communicates using various protocols, including the IEC 61850 substation standard.

NPG957 Generator Protection IED

PROTECTION

- Non-directional overcurrent (I>; 50/51)
- Non-directional earth fault (I0>; 50N/51N)
- Directional overcurrent (Idir>; 67)
- Directional earth fault (I0dir>; 67N/32N)
- Negative sequence overcurrent / Phase current reversal / Current unbalance (I2>; 46/46R/46L)
- Harmonic overcurrent (Ih>; 50H/51H/68H)
- Circuit breaker failure protection (CBFP; 50BF/52BF)
- High- and low-impedance restricted earth fault / Cable-end differential (I0d>; 87N)
- Voltage-restrained overcurrent (Iv>; 51V)
- Overvoltage (U>; 59)
- Undervoltage (U<; 27)
- Neutral overvoltage (U0>; 59N)
- Sequence voltage (U1/U2>/<; 47/27P/59PN)
- Over- and underfrequency (f>/<; 81O/81U)
- Rate-of-change of frequency (df/dt>/<; 81R)
- Power protection (P,Q,S>/<; 32)
- Volts-per-hertz overexcitation (V/Hz>; 24)
- Underexcitation (Q<; 40)
- Underimpedance (Z<; 21U)
- Underreactance (X<; 21/40)
- Resistance temperature detectors (RTD)
- Machine thermal overload (TM>; 49M)
- Transformer/motor/generator differential (Idx>; 87T/87M/87G)
- Power factor protection (PF<; 55)
- 100 % stator earth fault (U03rd>; 64S)
- Programmable stage (PG>/<; 99)
- Arc protection (IArc>/I0Arc>; 50Arc/50Narc) (optional)
- Voltage memory

CONTROL

- Objects to control and monitor (OBJ): 10
- Indicator objects to monitor (IND): 10
- Setting groups (SGS): 8
- Vector jump ($\Delta\varphi$; 78)

MONITORING

- Current transformer supervision (CTS) (2 instances)
- Voltage transformer supervision (VTS; 60)
- Circuit breaker wear monitoring (CBW)
- Current total harmonic distortion (THD)
- Voltage total harmonic distortion (THD)
- Disturbance records: 100 (á 5 s 3.2 kHz sampling)
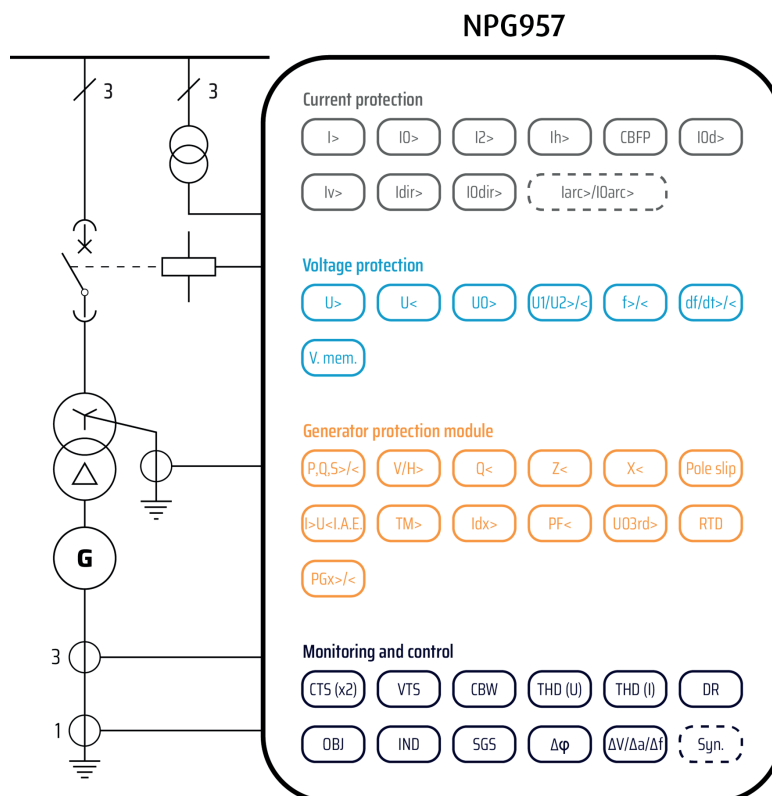- Non-volatile event records: 15,000

HARDWARE

Standard features:

- Digital inputs: 3
- Output relays: 5
- Current inputs: 10
- Voltage inputs: 4
- Empty module slots: 9

Optional hardware modules:

- Digital input module: 8 inputs
- Digital output module: 5 outputs
- Milliampere I/O module: 4 outputs + 1 input
- Arc protection module: 4 sensors + 2 HSO + 1 BI
- External I/O modules

NPG957

NPT957
Transformer Protection IED

A large I/O capacity.

Automatic/manual voltage regulation and/or parallel voltage regulation (AVR).

Complete transformer protection functionality.
2nd and 5th harmonic blocking.

Automatic verification of connection group and nominal value settings.

Overloading and through fault statistics for preventive maintenance.

The NPT957 is a transformer protection device with a differential protection function and an integrated automatic voltage regulator function.

The relay also provides complete current-based and voltage-based protection functions as well as full measurements.

You can add up to total 9 optional modules (I/O and other type of modules) into the device for extensive monitoring and control applications. The NPT957 communicates using various protocols, including the IEC 61850 substation standard.

NPT957 Transformer Protection IED

PROTECTION

- Non-directional overcurrent (I>; 50/51)
- Non-directional earth fault (I0>; 50N/51N)
- Directional overcurrent (Idir>; 67)
- Directional earth fault (I0dir>; 67N/32N)
- Negative sequence overcurrent/Phase current reversal/Current unbalance (I2>; 46/46R/46L)
- Harmonic overcurrent (Ih>; 50H/51H/68H)
- Circuit breaker failure protection (CBFP; 50BF/52BF)
- Overvoltage (U>; 59)
- Undervoltage (U<; 27)
- Neutral overvoltage (U0>; 59N)
- Sequence voltage (U1/U2>/<; 47/27P/59PN)
- Over- and underfrequency (f>/<; 81O/81U)
- Rate-of-change of frequency (df/dt>/<; 81R)
- Power protection (P,Q,S>/<; 32)
- Volts-per-hertz overexcitation (V/Hz>; 24)
- Resistance temperature detectors (RTD)
- Transformer status monitoring (TRF)
- Transformer thermal overload (TT>; 49T)
- Transformer/motor/generator differential (Idx>; 87T/87M/87G)
- Programmable stage (PG>/<; 99)
- Arc protection (IArc>/I0Arc>; 50Arc/50Narc) (optional)
- Voltage memory

CONTROL

- Objects to control and monitor (OBJ): 10
- Indicator objects to monitor (IND): 10
- Setting groups (SGS): 8
- Switch-on-to-fault (SOTF)
- Vector jump (Δφ; 78)
- Automatic voltage regulator (AVR; 90)

MONITORING

- Current transformer supervision (CTS) (2 instances)
- Voltage transformer supervision (VTS; 60)
- Circuit breaker wear monitoring (CBW)
- Current total harmonic distortion (THD)
- Voltage total harmonic distortion (THD)
- Fault locator (21FL)
- Disturbance records: 100 (á 5 s 3.2 kHz sampling)
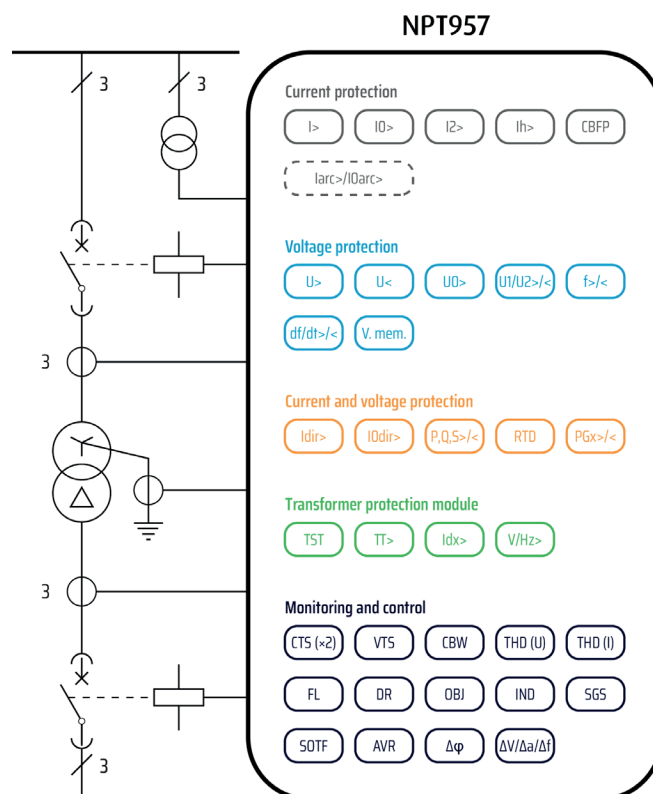- Non-volatile event records: 15,000

HARDWARE

Standard features:

- Digital inputs: 3
- Output relays: 5
- Current inputs: 10
- Voltage inputs: 4
- Empty module slots: 9

Optional hardware modules:

- Digital input module: 8 inputs
- Digital output module: 5 outputs
- Milliampere I/O module: 4 outputs + 1 input
- Arc protection module: 4 sensors + 2 HSO + 1 BI
- External I/O modules

CHARACTERISTICS

MEASUREMENTS
- Phase, sequence and residual currents (IL1, IL2, IL3, I01, I02)
- Phase, sequence and residual voltages (UL1, UL2, UL3, UL12, UL23, UL31, U0)
- Frequency (f)
- Power (P, Q, S, cos φ) and energy (E+, E-, Eq+, Eq-)
- Power and energy measurement accuracy 0.5

COMMUNICATION
Standard inputs:
- 1 port with RJ-45 Ethernet 100 MB (front)
- 1 port with RJ-45 Ethernet 100 MB (rear, COM A)
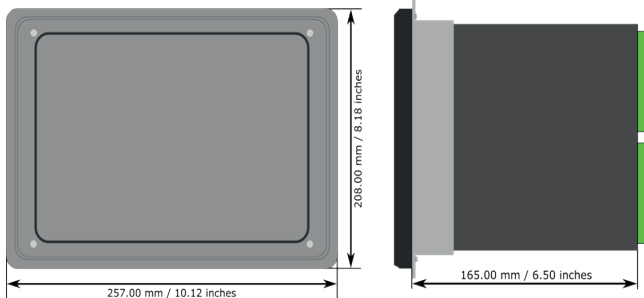- 1 port with RS-485 (rear, COM B)

Optional communication modules:
- 2 × RJ-45 Ethernet (100 MB/s) + IRIG-B input
- 2 × ST Ethernet (100 MB/s) + IRIG-B input
- 2 × LC Ethernet (100 MB/s, PRP/HSR)
- RS-232 serial fibre (PP/PG/GP/PP)

Protocols:
- IEC 61850 (1st and 2nd Edition)
- IEC 60870-5-101/103/104
- Modbus/RTU and Modbus/TCP
- DNP3
- SPA

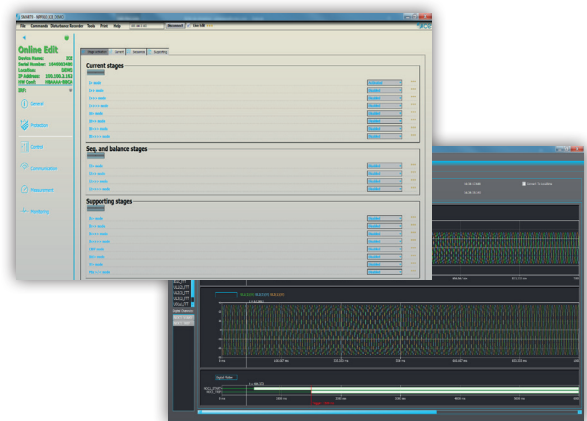### DIMENSIONS
- H, W, D without terminal 208 x 257 x 165 mm

208.00 mm / 8.18 inches
257.00 mm / 10.12 inches
165.00 mm / 6.50 inches

SERVICES

ADVICE · DIAGNOSIS · PRE-STUDIES · FOLLOW-UP · AFTER-SALES SERVICE · ON-SITE INTERVENTIONS · INSTALLATIONS · STUDIES · ENGINEERING · TRAINING

- Studies
- Systems architecture
- FAT, SAT
- Training
- Technical support
- Maintenance

SMART9

SMART9 - Integrated software
Our user friendly SMART9 (Setting, Measurement, Analysis, Recording, Time-saving) configuration software helps you to get the best from NP950 Series relays (connection from RJ45 Ethernet 100Mb front and rear port).

QUALITY SYSTEM

BRONZE 2023 ecovadis Sustainability Rating

QUALIANOR Certification ISO 9001 QUALITY

QUALIANOR Certification ISO 14 001 ENVIRONMENT

QUALIANOR Certification ISO 19443 NUCLEAR SAFETY

GENERATION · TRANSMISSION · DISTRIBUTION · RAILWAY · INDUSTRY