## **NP900 Series**

Protection, control, measurement and monitoring IEDs

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

As a significant improvement over its NP800 series of relays, ICE has introduced the NP900 series. This new range includes many advanced features such as IEC 61850 communication protocol as standard, a large graphical display, wider measurement ranges and fully customisable logic functions.

Our user friendly configuration software SMARTline (Setting, Measurement, Analysis, Recording, Timesaving) comprises SMART9 configurator for the NP900s as well as SMARTsoft for NP800s, Railway and Regulation.

This range is designed for the protection of all types of Generation, Industrial, Railway and Distribution networks.



- Comprehensive protection IEDs for feeders, transformers, generators, motors and busbars
  Bay control, alarm, measurement and
- IEC 61850 protocol (PRP,HSR)
- Customisable HMI (measurement, display, control, MIMIC)
- PLC (programmable logic functions)



OUR TRADEMARKS

monitoring IEDs

## NP900 Series



#### **FUNCTIONS**

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Fach locator21FLXX	Phase and residual currents (IL1, IL2, IL3, I01, I02)		Х	Х	Х	Х		Х	Х
Current Trib and harmonics (up to 31at)KKKKKKKKValtage harmonics (up to 31at)IIKK <td></td> <td></td> <td></td> <td></td> <td></td> <td>Х</td> <td>Х</td> <td></td> <td></td>						Х	Х		
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Frequency (f)         X         <			Χ		×				
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Creat breaker wearNNN </td <td>Power (P, Q, S, pf)</td> <td></td> <td></td> <td>Х</td> <td></td> <td>Х</td> <td>Х</td> <td></td> <td>Х</td>	Power (P, Q, S, pf)			Х		Х	Х		Х
Disturbance recorder (3.2 kHz)XXXXXXXXXXCurrent transformer supervision60XX									
Current transformer supervisionMXX									
Fuse failure         60         X         <									
Trip circuit supervision74TCXXXXXXXXControlControllable objets5555555Synchrocheck25XXXXXXXAuto-reckoge79XXX11XXZero sequence recloser79NXXX11XXSwitch not fault logic79XXX11XXXCold-load pick-up block68XXX1XXXXXSetting groups68XX<		60	~		^			~	
Controllable objects         5         5         5         5         5         5         5         5           Synchrocheck         25         X         X         X         X         X         X           Auto-recises         79         X         X         X         X         X         X           Zero sequence reciser         79N         X			Х		Х			х	
Synchrocheck         25         X         X         X         X         X         X           Auto-reclose         79         X <td>Control</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Control								
Auto-reclose         79         X         X         X         Image: Constraint of ault logic           Zero sequence recloser         79N         X         X         Image: Constraint of ault logic         Image: Constraintof ault logic         Image: Constrais logic			5		5	5		5	
Zero sequence recloser         Y         K							X		Х
Switch onto fault logic         X			X						
Cold-load pick-up block         668         X         X         V         V         X         X           Setting groups         8		751	х						
Automatic voltage regulator         90         N         N         N         N         X	-	68						х	х
Lock out relay         86         X			8	8	8	8	8	8	
Hardware       Current inputs       5       5       5       5       5       10       5         Voltage inputs       4       4       4       4       4       4         Digital inputs       3									
Current inputs         5         5         5         5         5         10         5           Voltage inputs         4         5		86	Х	X	Х	X	Х	Х	X
Voltage inputs         4         4         4         4         4           Digital inputs         3<			5	5	5	5	5	10	5
Digital inputs         3			5		,			10	
Output relays         Output relays         S+1         S+1 <td></td> <td></td> <td>3</td> <td></td> <td>3</td> <td></td> <td></td> <td>3</td> <td></td>			3		3			3	
RJ 45 Ethernet 100Mb (front)       X <th< td=""><td></td><td></td><td></td><td></td><td></td><td>5+1</td><td></td><td></td><td></td></th<>						5+1			
RJ 45 Ethernet 100Mb and RS 485 (rear)         X									
Nb of slots for <b>Option</b> hardware         4         3         4         3         3         2         3           8 Digital inputs board         0 to 4         0 to 3         0 to 2         0 to 3         0 to 3         0 to 2         0 to 2         0 to 3         0 to 2         0 to 1         0 or									
8 Digital inputs board         0 to 4         0 to 3         0 to 3         0 to 3         0 to 2         0 to 2         0 to 3           5 Digital outputs board         0 to 2         0 to 1         0 o									
5 Digital outputs board         0 to 2         0 to 1         0 or 1         0 or 1	· · · · · · · · · · · · · · · · · · ·			1		-			
Arc protection (4 sensor channels + 2 DO + 1 DI)         50Arc/50NArc         0 or 1         0 or 1<									
Double LC fiber Ethernet 100Mb HSR/PRP (rear)         O or 1		50Arc/50NArc							
Double Ethernet RJ45 - 100Mb HSR/PRP (rear)         O or 1		49RTD							
mA analog measures (1 input + 4 outputs)         Oto 2         O to 1         O to 1         O to 1 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<>									
Double ST fiber Ethernet 100Mb (rear)         O or 1									
Double RJ45 Ethernet 100Mb (rear)         O or 1         O or									

NP900 Series

#### **FUNCTIONS**

		JRING	G & MEASU	ROL, MONITORIN	CONT	ROTECTION
		ENERGY	POWER	BAY CONTROL	SIGNAL	BUSBAR
Protection function	ANSI	E915	P915	BC915	S914	V911
Three phase overcurrent protection	50/51	Indication				
(Sensitive) Earth-fault protection	50N/51N	Indication				
Harmonic overcurrent protection / inrush blockir	50H/51H/68H					
Current unbalance / broken conductor protection	46/46R/46L					
Cable thermal overload protection	49F					
Restricted earth fault protection (low-imp) / Cable-end differential protection	87N					
Directional three-phase overcurrent protection	67	Indication				
Directional (sensitive) residual overcurrent protection	67N	Indication				
Intermittent earth fault protectio	67NT					
Overvoltage protectio	59	1.12.14				X
Undervoltage protectio	27	Indication				X
Positive sequence under/overvoltage protection	47/27P/59NP	In diseasing				X
Residual voltage protectio	59N	Indication				X
Frequency protectic Rate of change of frequenc	810/81U 81R					X X
Vector Jump / surg	78					x
Reverse/under/over power protectic	32/37/32R					^
Differential protection (2-winding transformer, generator, moto	87T/87M/87G					
Transformer thermal overload protection	49T					
Machine thermal overload protection	49M					
Motor start-up supervision element/locked rotor supervisio	48/14					
Restart inhibit / frequent start	66					
Undercurrent monite	37					
Load jam monite	51M/51LR					
Power facto	55					
Under impedance protection	21					
Voltage controlled/dependent overcurrent protection	51V					
Loss of fie	40					
Overexcitation protectic	24					
100% stator earth-fault protection	64S					
Breaker failure protectio	50BF/52BF			Х		Х
Programmable function	99			Х		Х
Measuring and monitorir						
Phase and residual currents (IL1, IL2, IL3, I01, I0		Х	Х	Х		
Voltage measurements (UL1-UL3, U12-U31, U0, S		х	Х	Х		Х
Fault locate	21FL	Х		Х		
Current THD and harmonics (up to 31s		Х	Х	Х		
Voltage harmonics (up to 31s		Х	Х	Х		х
Frequency (		Х	Х	Х		
Power (P, Q, S, p		Х	Х	Х		
Energy (E+, E-, Eq+, Eq		Х	Х	Х		
Circuit breaker we				Х		
Disturbance recorder (3.2 kH		Х	Х	Х		Х
Current transformer supervisio		Х		Х		
Fuse failu	60	Х		Х		х
Trip circuit supervisio	74TC			Х		х
Contr						
Controllable objec		10		10	10	5
Synchroched	25			X		х
Auto-reclos	79			X		
Zero sequence reclos	79N					
Switch onto fault log						Х
Cold-load pick-up blog	68			-		-
Setting group			8	8		8
Automatic voltage regulate	90	,				X
Lock out rela	86	Х	Х	Х	Х	Х
Hardwai				-		
Current inpu		5	5	5		
Voltage inpu	<b>└───</b> ↓	4	4	4		4
Digital inpu	↓↓	3	3	3	3	3
Output relay		5+1	5+1	5+1	5+1	5+1
Communication med						
RJ 45 Ethernet 100Mb (front		Х	X	X	X	X
RJ 45 Ethernet 100Mb and RS 485 (real		Х	Х	Х	Х	Х
Nb of slots for <b>Option</b> hardwa		3	3	3	6	5
8 Digital inputs boar		0 to 3	0 to 3	0 to 3	0 to 6	0 to 5
5 Digital outputs boar		0 to 2	0 to 2	0 to 2	0 to 2	0 to 2
Arc protection (4 sensor channels + 2 DO + 1 D	50Arc/50NArc					
8 x RTD inpl	49RTD	0 to 2	0 to 2	0 to 2	0 to 2	0 to 2
	1 [	0 or 1	0 or 1	0 or 1	0 or 1	0 or 1
Double LC fiber Ethernet 100Mb HSR/PRP (rea		0 or 1	0 or 1	0 or 1	0 or 1	0 or 1
		0011	0011	0011	0011	0011
Double LC fiber Ethernet 100Mb HSR/PRP (rea		0 to 2	0 to 2	0 to 2	0 to 2	0 to 2
Double LC fiber Ethernet 100Mb HSR/PRP (rea Double Ethernet RJ45 - 100Mb HSR/PRP (rea			0 to 2 0 or 1			
Double LC fiber Ethernet 100Mb HSR/PRP (rea Double Ethernet RJ45 - 100Mb HSR/PRP (rea mA analog measures (1 input + 4 output		0 to 2	0 to 2	0 to 2	0 to 2	0 to 2

### **NP900 Series**

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#### CHARACTERISTICS & BENEFITS

#### Integrated protection and control IEDs

Full range:

- Feeder, machine, transformer and voltage protection IEDs
- Bay control, alarm annunciation and indication IEDs
- Power or Energy monitoring IEDs
- Powerful PLC programming included allowing extensive customisation

#### Measurement range and accuracy

- Energy and power measurement accuracy : better than Class 0.5
- Large range measurement
- Configurable rated current: 0.2 to 10A
- Configurable rated voltage: 0.2 to 400V
- Wide operating frequency band: 6 to 75Hz (tracking mode)

#### Fast performance

- Sub-cycle instantaneous trip time
- Fast integrated arc protection (Option)

#### Integrated logical schemes

• User programmable functions

#### Intuitive HMI

- Large and customisable HMI
- Configurable MIMIC display
- 16 freely configurable LEDs with user text

#### Case (dimensions without protection gasket)

- H, W, D without terminal 177x127x174 mm
- H, W, D with terminal 177x127x189 mm (casing height 4U, width 1/4 rack, depth 210 mm)
- H, W of front plate 177x127 mm
- H, W of cut out 160x106 mm
- Removable protection gasket width 3mm

#### Non-volatile memory

- High recording capacity available:
  - Up to 100 disturbance records
  - Up to 10,000 events

#### Communication

- IEC 61850 with GOOSE and support of
  - Rapid Spanning Tree Protocol (RSTP)
  - Parallel Redundancy Protocol (PRP)
- High-availability Seamless Redundancy (HSR)
- IEC 870-101/103/104, Modbus, DNP 3.0
- Proprietary protocol SPA

#### Time synchronisation

SNTP (Simple Network Time Protocol) and NTP (Network Time Protocol) support

#### Software

- · User friendly SMART9 with instant download of all IED settings
- Extensive event log and diagnostics information



RAILWAY

#### **SMART9**

SMART9, integrated software for the Industry, Railway and Transmission ranges, helps the user get the best from NP900 series relays.

- **S**etting adjustment of all parameters, with 1 or 8 tables according to product, can be prepared on or off-line (configuration files can be saved, backed-up and edited on the user's PC and can be assigned unique identifying names for each relay in a connected system).
- **M**aintenance follow-up of installations is made easy by access to the operation counters, cut square amps, overload number.
- measurement functions reflect the installation state in real time and allow **A**nalysis its follow-up without penalising protection functions. According to the model, specific screens represent the electric quantities in the appropriate diagram (PQ, UI, ZO...).
- events and disturbance recordings will help understanding the faults Recording suffered by the installation. Recordings are stored on the user's PC in COMTRADE format and can be used to simulate a fault using a test set.

commissioning functions offer an immediate and exhaustive overview of Time saving the network characteristics as well as diagnosis tools such as installation wiring checks.







GENERATION

TRANSMISSION

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the specifications and drawings given are subject to change and are not binding unless confirmed by our specialists.