



2024 PRODUCT CATALOG

CONTROL AND SIGNALLING DEVICES



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ESP TECHNOLOGIES LIMITED

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01 COOLING FAN AND FAN FILTER





Description

NOVA Filter grill kit (NFG) is a solution for dissipation of heat inside the electrical cabinet and protect electronic components from overheating. The airchonnelling makes the cooling fan particularly quiet in operation and function filtered outside air into the cabinet, expelling the heated air through exhaust filters or roof exhaust units.

The Filter grill kit adopts ABS resin for shell to improve its resistance to flame and ultraviolet ray. In addition, it adopts nylon synthetic fibre for filter sheet to achieve high filtration efficiency.

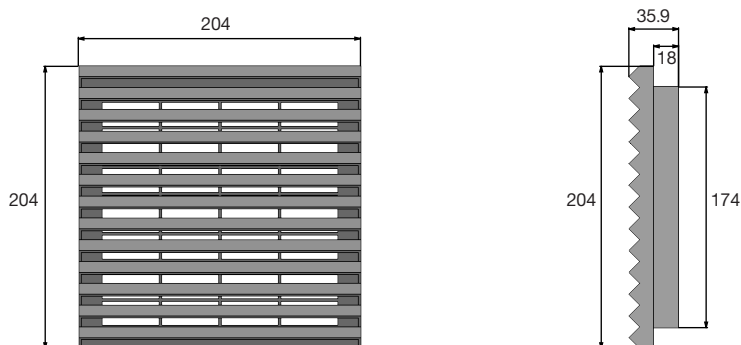
Features

- Suitable for the continuous working in the tough environment
- Suitable for ventilation in the control cabinet
- Ventilation inside the control cabinet
- Maintain the temperature inside the control cabinet
- Helps to cool down electronic devices
- Easy to install, compact size

Technical data

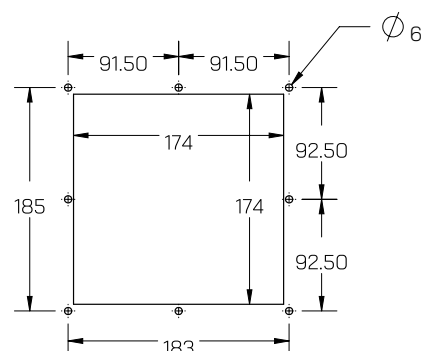
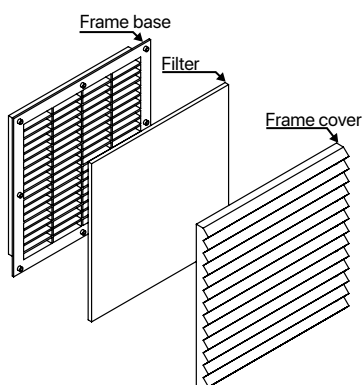
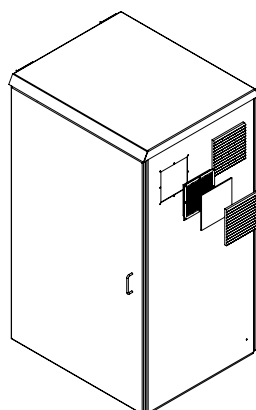
Description	Specification
Dust filter size(mm)	204x204
For fan size(mm)	45"(120x120), 6"(150x150)
Material	ABS resin
Material filter	Nylon fiber synthetic resin
Color	Cream color
Weight(g)	220

Dimension

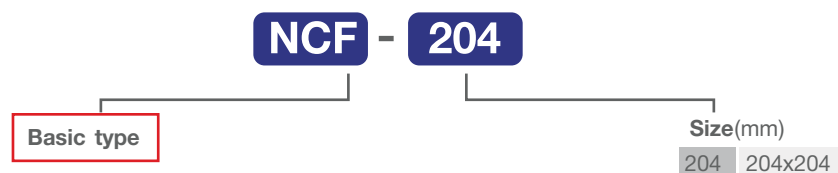


Dimension : Millimeter(mm)

Installation and Cut-out



Product Coding





COOLING FAN

Description

NOVA Panel cooling fan (NPF) is a solution for dissipation of heat inside the electrical cabinet and protect electronic components from overheating.

The Panel cooling fan frame made of aluminum to improve its resistance to flame and ultraviolet ray, Black color coated for installation in cabinet with filter grill kit.

Features

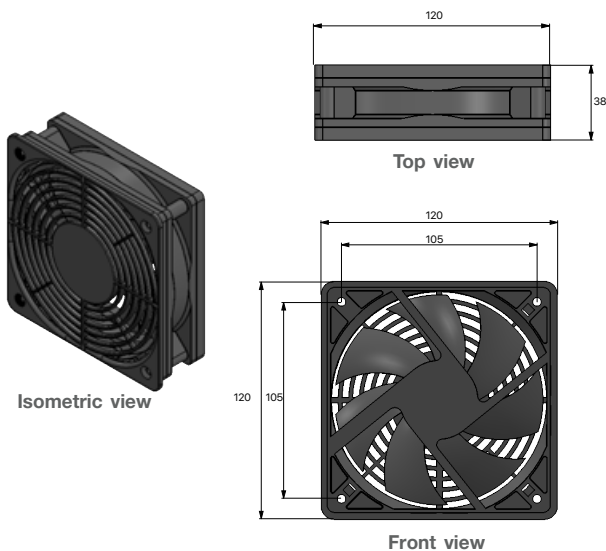
- Fan is heavy duty
- Suitable for continuous working in the tough environment
- Suitable for ventilation in the control cabinet
- Maintain the temperature inside the enclosure
- Cool down electronic devices
- Easy to install and compact size
- Box protective steel increase security with prevent the user from being harmed by the rotating force of the propeller

Technical data

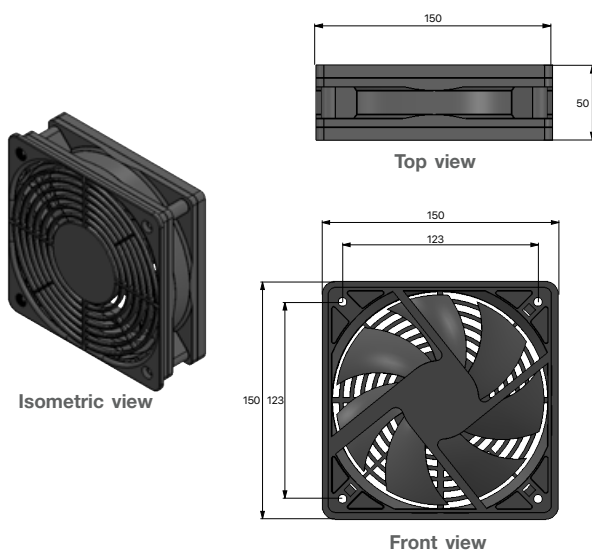
Description		Specification			
Fan size		4.5"		6"	
Rated voltage		110VAC	220VAC	110VAC	220VAC
Rated current		0.2A	0.12A	0.4A	0.2A
Rated power		18W	18W	38W	38W
Operating voltage		110-120VAC	220-240VAC	110-120VAC	220-240VAC
Frequency		50/60Hz		50/60Hz	
Air flow		138CFM±10%		210CFM±10%	
Rated speed		2650RPM±10%		2650RPM±10%	
Static pressure		7.2mmH ₂ O		12.5mmH ₂ O	
Noise level		42dB(A) (Max45)		50dB-A ±5% (Max55)	
Life expectancy		50000hrs at 40°C		50000hrs at 40°C	
Operating temperature		-20°C ~ 70°C		-20°C ~ 70°C	
Storage temperature		-30°C ~ 75°C		-30°C ~ 75°C	
Material	Frame	Die-cast aluminum alloy		Die-cast aluminum alloy	
	Impeller	PBT plastic		PBT plastic	
	Bobbin	PBT of UL94V-0 ROHS		PBT of UL94V-0 ROHS	
Bearing type		Double ball bearing		Double ball bearing	
Color		Black		Black	
Dimension(mm)		120x120x38		150x150x50	
Weight(g)		429		788	

Dimension

4.5" (120x120x38)

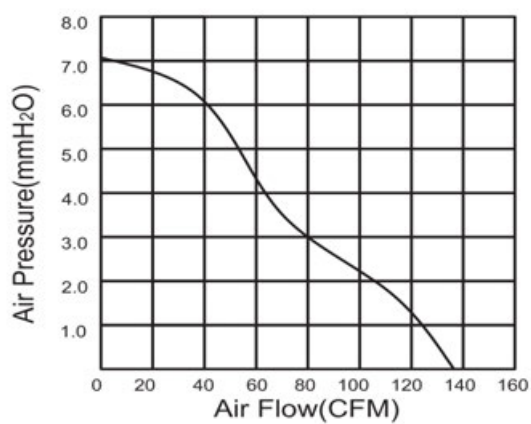


6" (150x150x50)

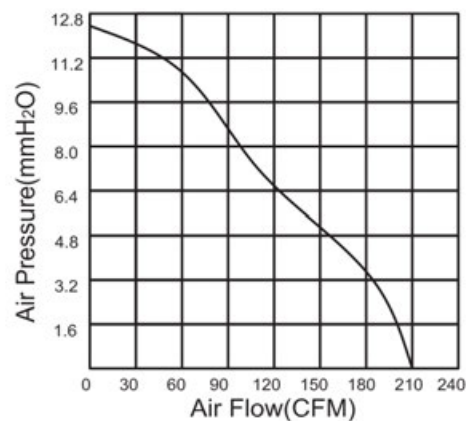


Air Volume

4.5" (120x120x38)



6" (150x150x50)



Product Coding

NPF - 04 - 220

Basic type

Size(mm)

04 4.5" (120x120x38)

06 6" (150x150x50)

Operating voltage

110 110-120VAC, 50/60Hz

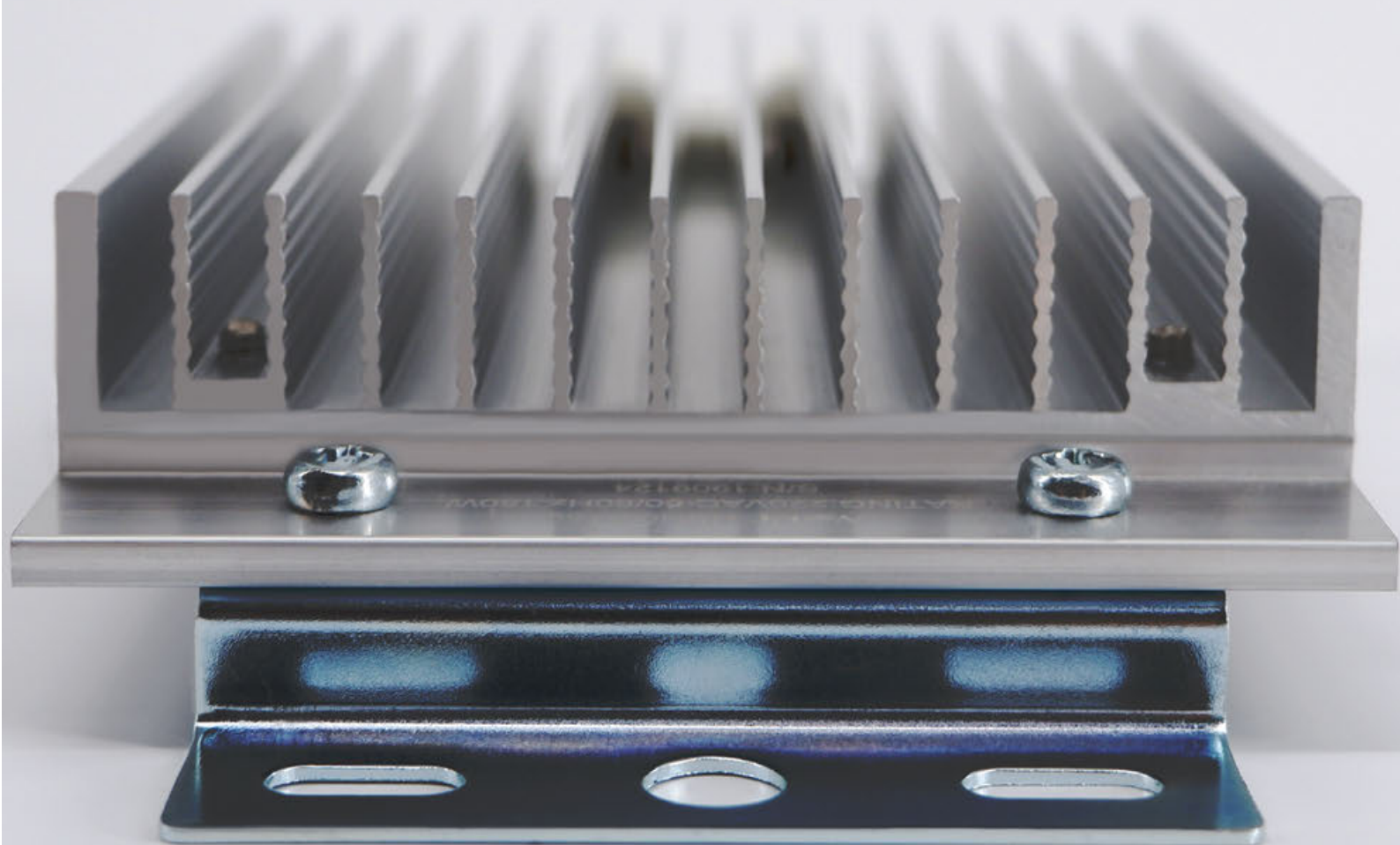
220 220-240VAC, 50/60Hz

02

HEATER

AND

HEATER CONTROLLER





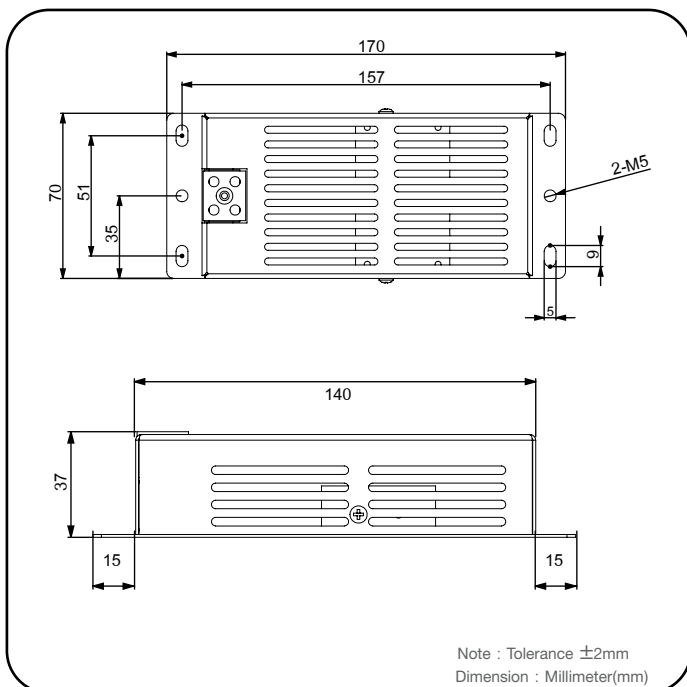
Description

Space heater is an economical and reliable source of heat, widely used in the control panel, switchgear cubicle, main distribution board, control boxes etc. When it is in use, normally it should be combined with other products such as electric fan, thermostat or hygrostat.

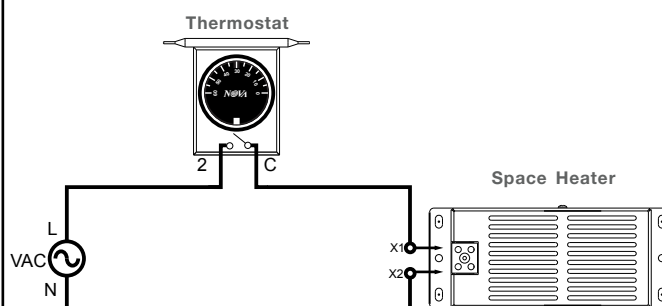
Heat element is a mica strip heater and the flat resistance ribbon generates heat over a broad area. Installation of the space heater should be at the bottom part of the cubicle or the lowest part of the control panel to get the best result of the heater.

The complete set of space heater is rugged and modern design to fulfill the function of heating. The body of the heater is made of zinc-coated steel and painted with epoxy black color.

Dimensions



Wiring Diagram



Product coding

NSH01 - 050

Basic type

Power consumption($\pm 10\%$)

050	50W/220VAC
100	100W/220VAC



NSH02

NSH02 With cover

Description

Space heater is used in enclosures where damage from condensation must be prevented, or where the temperature may not fall below a minimum value, widely used in the control panel, switchgear cubicle, main distribution board, control boxes. When it is in use, it should be combined with other products such as electric fan, thermostat or hygrostat, heat element is a mica strip heater and the flat resistance ribbon generates heat over a broad area. To get the best result of the heater, the space heater shall be install at the bottom side of the cubicle or the lowest part of the control panel.

The NSH02 series space heater is rugged and aluminum profile heater body design to fulfill the function of heating. The extruded aluminum profile has a chimney effect and distributes the heat evenly.

Features

- Lightweight heater enable wide range of application and contributes to size and weight saving
- Construction provides temperature capability between 100°C - 300°C
- Dynamic heating up, excellent heat radiation
- Corrosion resistance
- Wide supply voltage range 195VAC–245VAC
- Insulation resistance >500MΩ
- Resistance tolerance $\pm 10\%$
- Dielectric strength 2000VAC
- Lifespan >5000hrs
- Very low power consumption by a shorter heating time comparing to the same wattage of power
- Heat transfer area $\approx 810\text{Sq.cm}$ at 50W model
- Approvals : VDE, UL

Technical data

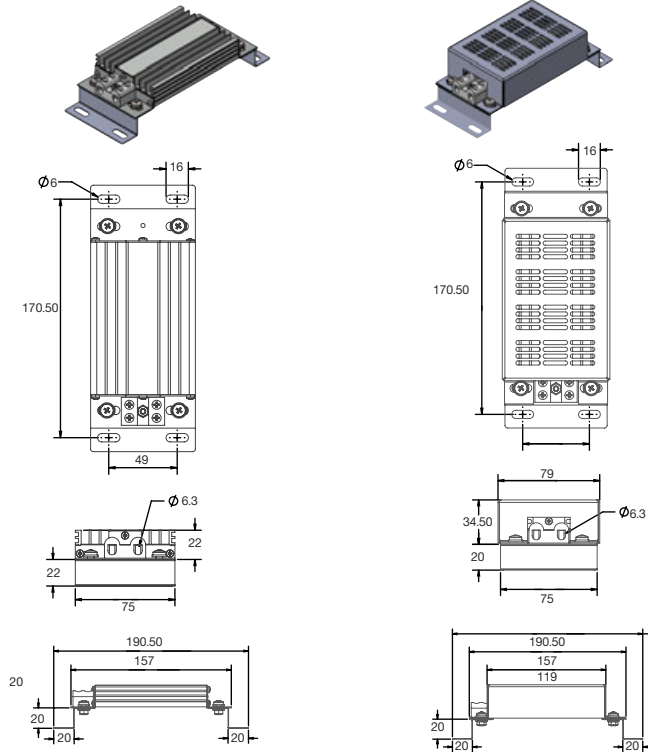
Description	NSH02-020	NSH02-050	NSH02-100	NSH02-150	NSH02-200	NSH02-350	NSH02-500
Power(W)	20	50	100	150	200	350	500
Inrush current(Max)	0.09A	0.23A	0.45A	0.68A	0.91A	1.52A	2.27A
Resistance(Ω)	2,420	968	484	322	242	145	97
Working temp.(Max 15min)	60°	90°	140°	180°	200°	260°	300°
Dimension(mm)	150x100x24	150x100x24	150x100x24	150x100x24	150x100x24	200x100x24	201x105x26
Weight(g)	336	361	381	381	381	410	448

Dimensions

Power 20W

Without cover

With cover

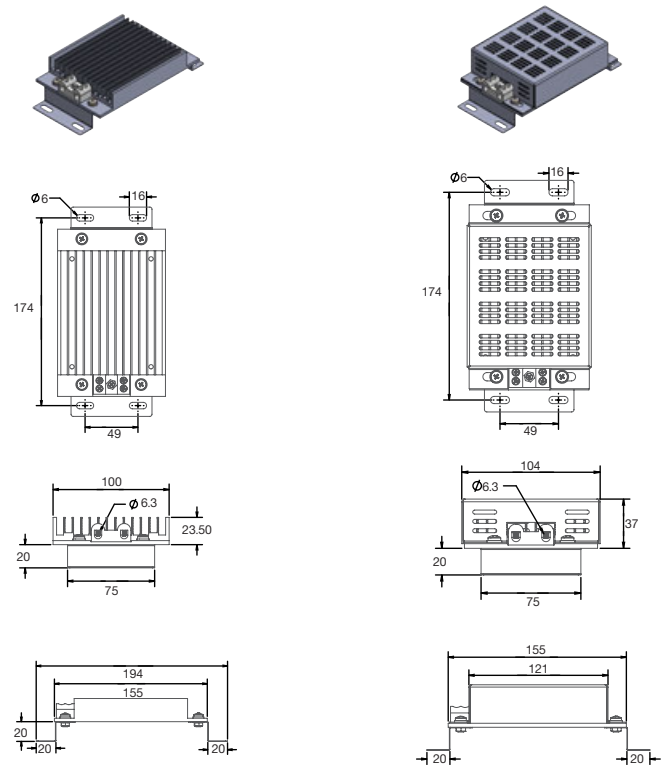


Dimension : Millimeter(mm)

Power 50W, 100W, 150W, 200W

Without cover

With cover

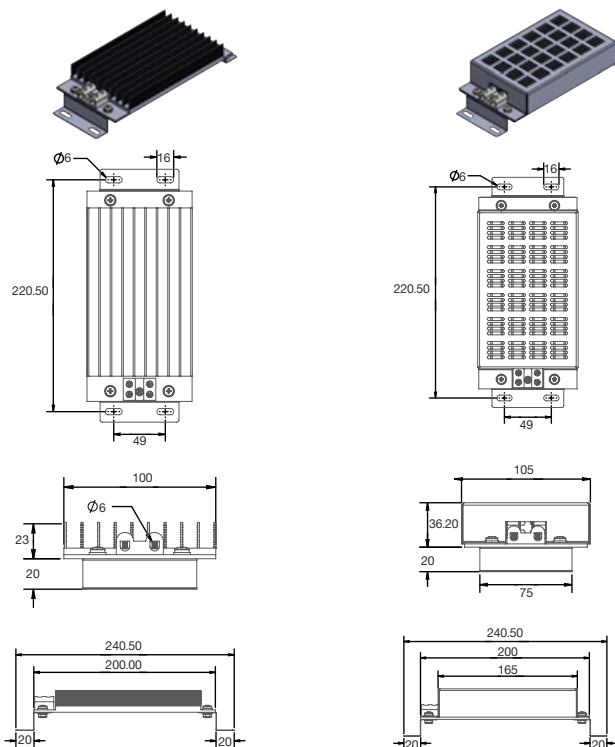


Dimension : Millimeter(mm)

Power 350W

Without cover

With cover

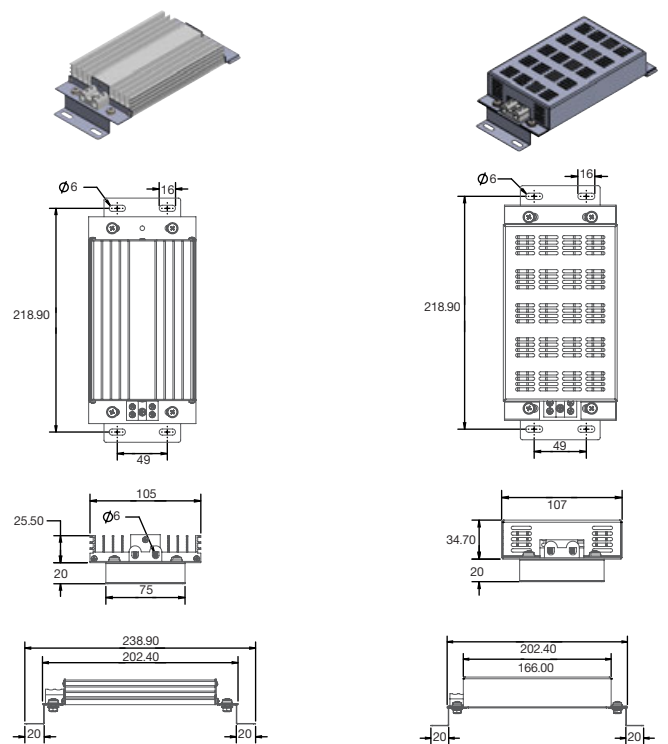


Dimension : Millimeter(mm)

Power 500W

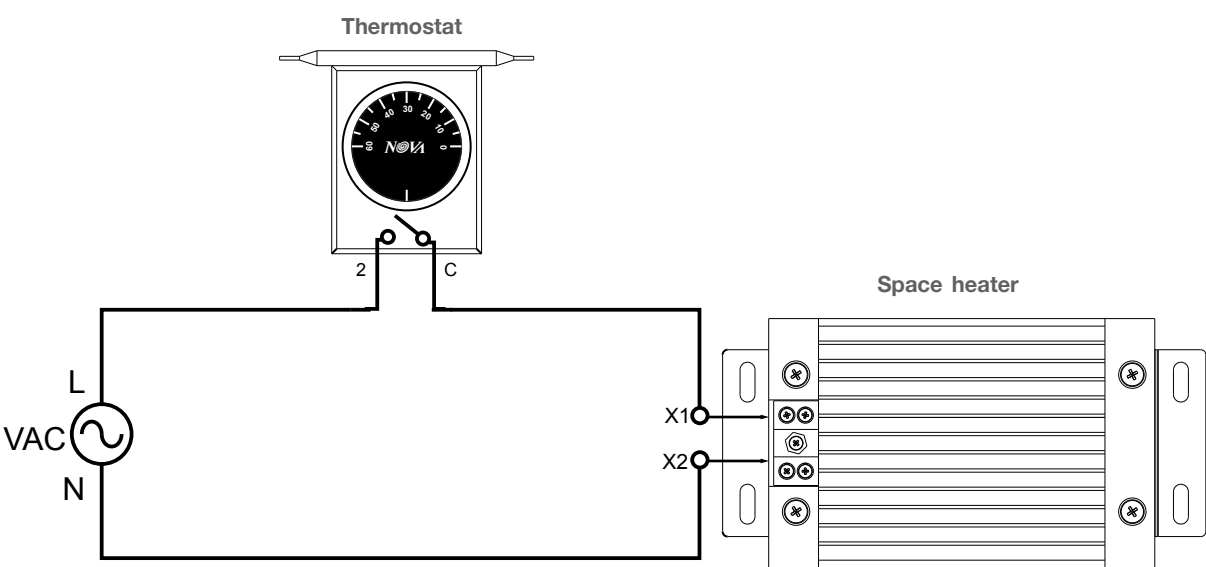
Without cover

With cover



Dimension : Millimeter(mm)

Wiring Diagram



Product coding

NSH02 - 050 C

Basic type

Power consumption(±10%)

020	20W/220VAC
050	50W/220VAC
100	100W/220VAC
150	150W/220VAC
200	200W/220VAC
350	350W/220VAC
500	500W/220VAC

Cover protection

C	With cover
N/A	No cover



Description

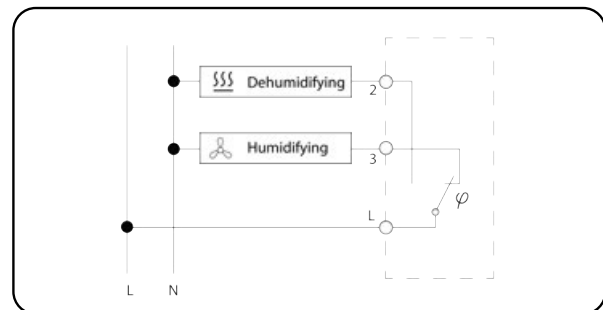
The electromechanical hygrostat NMH is designed to control the relative humidity inside enclosures and electrical cabinets. It can be used to switch on a heater or dehumidifier at the humidity setpoint or when the critical relative humidity of 65% is exceeded to increase the dew point within the cabinet. In this way condensation and corrosion is effectively prevented. This prevents damage and malfunction of electronic components and metal parts caused by condensation and corrosion.

Application is for cabinets of electrical distribution, control panel, switchgear and control gear, ticket and vending machine.

Features

- Adjustable relative humidity
- Setting in 5%RH intervals
- Can work in either NC (Humidifying) or NO mode (Dehumidifying)
- Change Over contact high switching capacity
- Easily accessible terminals
- Clip fixing for 35mm DIN rail
- Protection class IP20

Wiring diagram

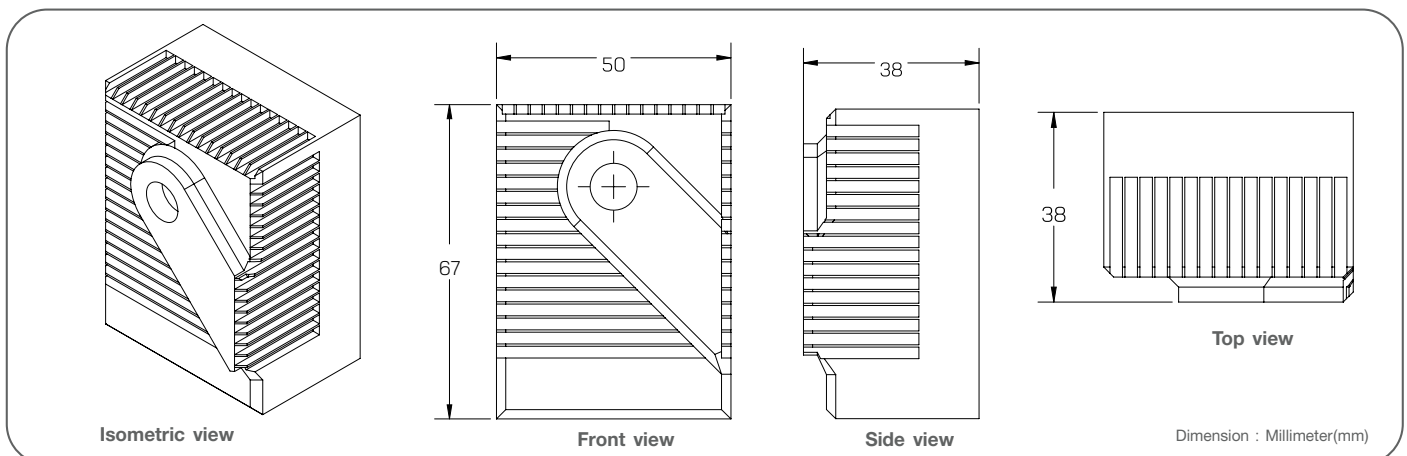


Technical data

Description	Specification
Setting range(%RH)	35% - 95%
Switching differential(%RH)	4%RH ($\pm 3\%$ tolerance)
Contact type	Change over contact
Contact resistance	$<10m\Omega$
Service life	100000cycles
Max. switching capacity	250VAC, 5A / DC 20W(24-75VDC)
Connection	3-pole terminal for 2.5mm ² Clamping torque 0.5Nm max : rigid wire 2.5mm ² Stranded wire (With wire end ferrule) 1.5mm ²

Description	Specification
Mounting	Clip for 35mm DIN rail, EN 50022
EMC	EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Casing	Plastic according to UL94 V-0, light grey
Dimension(mm)	67x50x38
Weight(g)	Approx 60
Operating temperature	0 to 60°C (+32 to 140°F)
Storage temperature	-20 to +80°C (-4 to +176°F)
Degree of protection	IP20

Dimensions







Description

Capillary thermostats are designed for accurate and reliable temperature control for domestic appliances and industrial equipments. Thermostat (NTH type) is an economic and reliable instrument, widely used in relay & control panel, switchgear cubicle, main distribution board, control boxes, laboratory instrument and others. When it is in use, usually it should be combined with other products such as an electric fan or space heater.

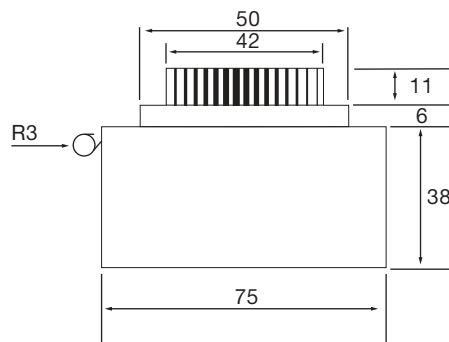
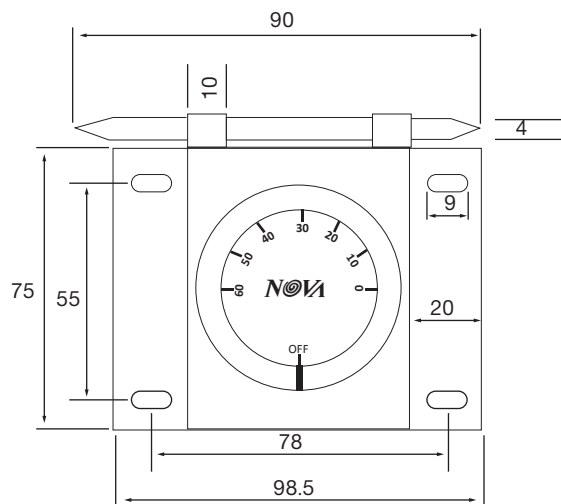
The assembly of the thermostats consisted by a capillary tube, sensing bulb and diaphragm (Phial) filled with liquid (Which sensitive to the ambient temperature) total length approx 1.5 metre and fixed in the polycarbonate housing and switch base. A black polycarbonate knob with white scale marking is provided to set the desired temperature. The complete set of thermostat (NTH type) is rugged and modern design. The box of the thermostat is made of zinc-coated steel, painted with epoxy resin black color.

This instrument keeps constant within the differential temperature. It is intended to use for preventing of moisture content which may be occurred in the switchboard or electrical cabinets, control panel, switchgear cubicle, small control boxes etc. The setting ranges are started from 0°C to 60°C (Error : +2 ~ 5°C) with one change over contact (Breaking capacity: 16A at 220VAC ±10%) for controlling or command purpose.

Technical data

Description	Specification	
Temperature range	0 - 60°C	
Differential temperature	2 - 7°C	
Contact resistance	50MΩ	
Dielectric strength	2000VAC/1min	
Insulation resistance	100MΩ	
Life cycle	100000cycles	
Max. switching capacity	16A/220VAC ±10%3A (24-125VDC), 380W	
Degree of protecection	IP40	
Contact type	S.P.D.T (Change over contact) 1CO 	S.P.S.T (Normally open contact) 1NO 

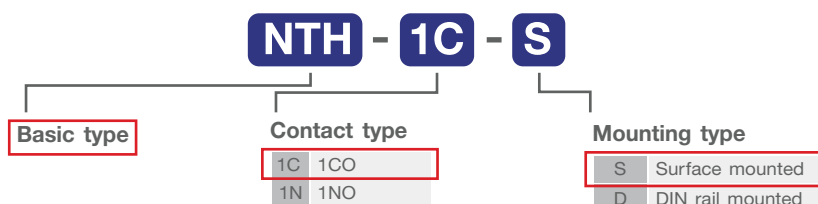
Dimensions



Dimension : Millimeter(mm)



Product coding



Description



Electronic thermostats are designed for accurate and reliable temperature control for domestic appliances and industrial equipments. Electronic thermostat (NTH02) is an economic and reliable instrument, widely used in relay & control panel, switchgear cubicle, main distribution board, control boxes, laboratory instruments and others. When it is in use, usually it should be combined with other products such as an electric fan or space heater.

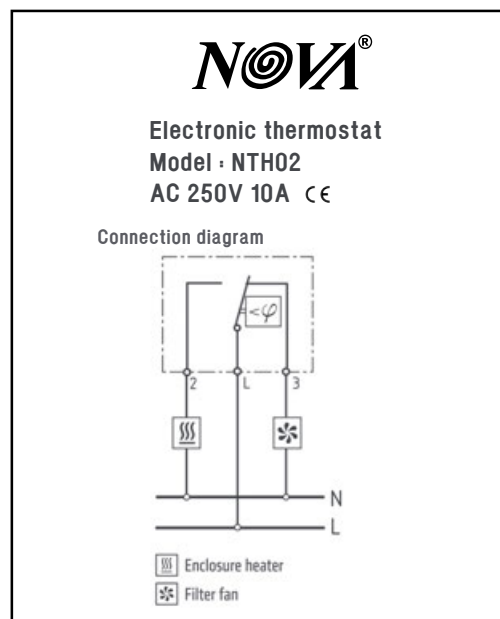
The complete set of electronic thermostat (NTH02) is rugged and modern design. The thermostat is made of polycarbonate housing with a black polycarbonate knob, also marking scale is provided to set the desired temperature.

This instrument keeps constant within the differential temperature. It is intended to use for preventing of moisture content which may be occurred in the switchboard, control panel, switchgear cubicle, small control boxes etc. The setting ranges are started from -20°C to 60°C (Error : $+2 \sim 5^{\circ}\text{C}$) with one change over contact (Breaking capacity : 10A at 250VAC) for controlling or command purpose.

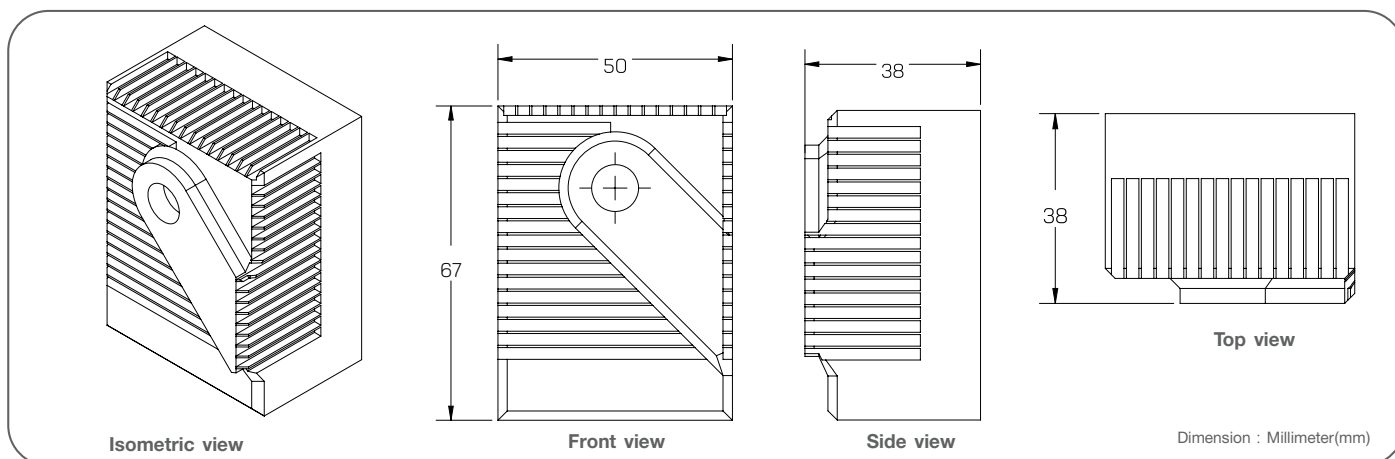
Technical data

Description	Specification
Temperature range adj.	-20 to $+60^{\circ}\text{C}$
Differential temperature	$2 \sim 5^{\circ}\text{C}$
Sensor type	Bimetal
Dielectric strength	2000VAC/1min
Insulation resistance	$10\text{m}\Omega$
Life cycle	100000cycles
Max switching capacity	10A/250VAC
Mounting	Clip for DIN rail 35mm, EN 50022
EMC	EN 55014-1-2, EN 61000-3-2, EN 61000-3-3
Casing	Plastic according to UL94 V-0, light grey
Degree of protection	IP20
Dimension(mm)	67x50x38
Weight(g)	60

Wiring diagram



Dimensions





03

INDICATOR



Description

The BA9S and E10 are standard socket of LED bulb, with diameter approx 9-10mm multi-chip and latest technology assures bright intensity, shock resistance and long life operation. Meanwhile E12 and E14 (Diameter 12mm and 14mm) could be done upon customer requested.

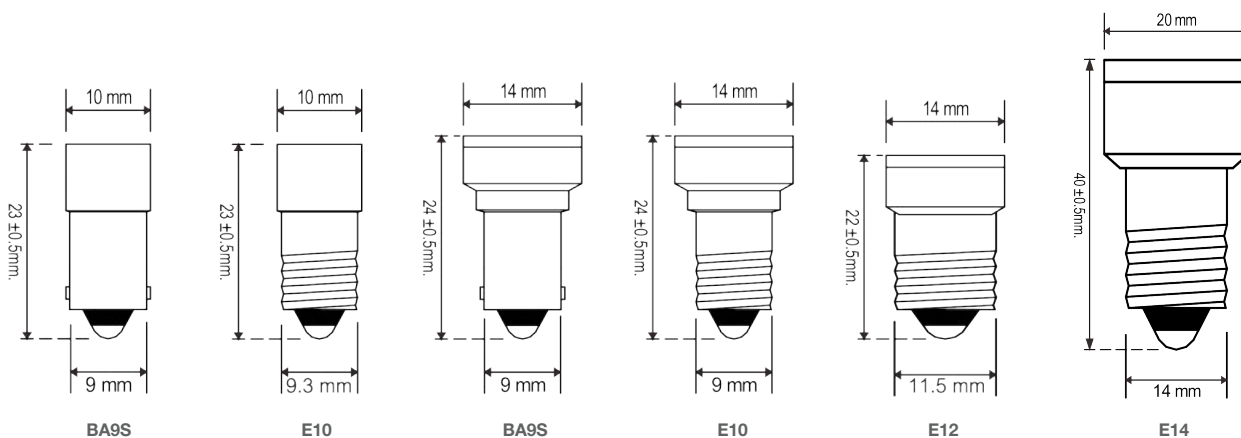
Features

- Low power consumption
- Lifetime : More than 30000hrs
- Ambient temperature : $-5^{\circ}\text{C} \sim +50^{\circ}\text{C}$
- Insulation : $100\text{M}\Omega$ at 500VDC
- Selectable input voltage
from AC/DC 24, 48, 70, 110, 125, 220, 230V
- Operating current less than 10mA

Technical data

Rated voltage	Description	White	Sky blue	Green	Yellow	Amber	Red
AC/DC-24V	Operating current(mA)	6.0	6.0	6.0	6.0	6.0	6.0
	Wave length(nm)	459	466	523	596	613	633
	Luminous intensity(mcd)	80	70	80	80	80	90
AC/DC-48V	Operating current(mA)	6.0	6.0	6.0	6.0	6.0	6.0
	Wave length(nm)	459	466	523	596	613	633
	Luminous intensity(mcd)	80	70	80	80	80	90
AC/DC-70V	Operating current(mA)	6.0	6.0	6.0	6.0	6.0	6.0
	Wave length(nm)	459	466	523	596	613	633
	Luminous intensity(mcd)	80	70	80	80	80	90
AC/DC-110V	Operating current(mA)	3.5	3.5	3.5	3.5	3.5	3.5
	Wave length(nm)	459	466	523	596	613	633
	Luminous intensity(mcd)	50	45	50	50	50	65
AC/DC-125V	Operating current(mA)	3.5	3.5	3.5	3.5	3.5	3.5
	Wave length(nm)	459	466	523	596	613	633
	Luminous intensity(mcd)	50	45	50	50	50	65
AC/DC-220V	Operating current(mA)	3.0	3.0	3.0	3.0	3.0	3.0
	Wave length(nm)	459	466	523	596	613	633
	Luminous intensity(mcd)	50	45	50	50	50	65
AC/DC-230V	Operating current(mA)	3.0	3.0	3.0	3.0	3.0	3.0
	Wave length(nm)	459	466	523	596	613	633
	Luminous intensity(mcd)	50	45	50	50	50	65

Dimensions



Dimension : Millimeter(mm)

Product coding

NLB - BA9S - R 13 - 10

Basic type

Socket type

BA9S	Bayonet base 9mm
E10	Screw-in base 9.3mm
E12	Screw-in base 11.5mm
E14	Screw-in base 13.5mm

Emitting colors

R	Red
G	Green
A	Amber
W	White
S	Sky blue
Y	Yellow

Input voltage(±10%)

24	AC/DC 24V
48	AC/DC 48V
70	AC/DC 70V
11	AC/DC 110V
13	AC/DC 125V
22	AC/DC 220V
23	AC/DC 230V

LED Diameter

10	10mm
14	14mm
20	20mm

*Other rating can be supplied upon request



Features

- This products are made by aluminum alloy
- Viewable in direct sunlight
- Visible from all directions
- Colored and clear lenses
- Integrated terminal cover is IP65
- Full voltage up to 480VAC 50/60Hz without bulky transformer
- Other voltage rating can be done upon request
- Unique lens & bulb uniform body assures bright intensity, shock resistance, and oil tight construction
- The use of an ultra-bright LED that is not susceptible to external scattered light ensures high visibility and provides for more accurate recognition

Ultra bright Outdoor used



LED lamp

Electric life 300,000 hrs.

Red(R) Amber(A) Yellow(Y) Green(G) Sky blue(S) White(W)



Voltage rating

220/230VAC/DC

125VAC/DC

110VAC/DC

70VAC/DC

48VAC/DC

24VAC/DC

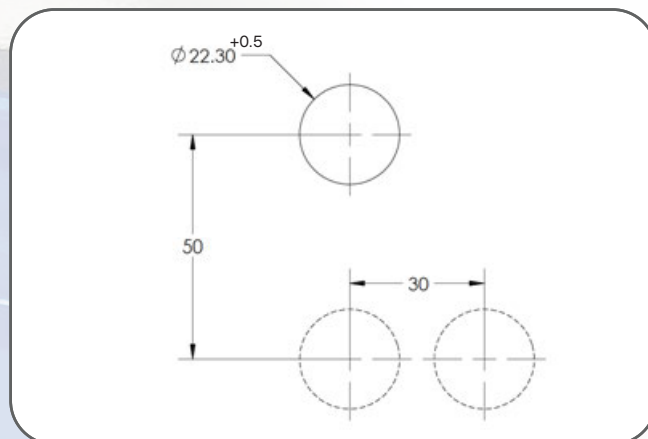
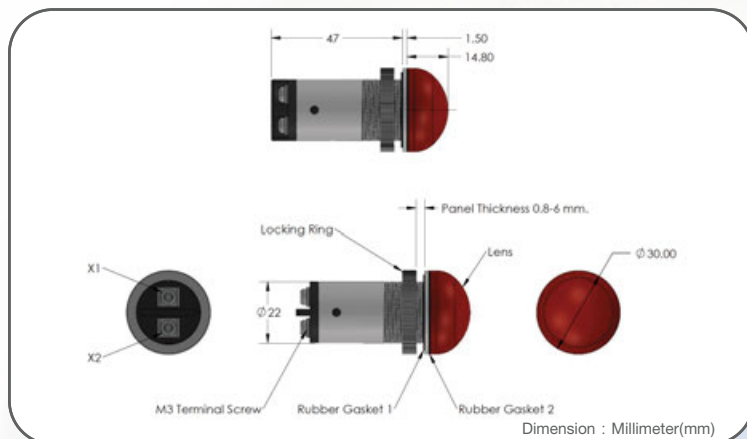
12VAC/DC



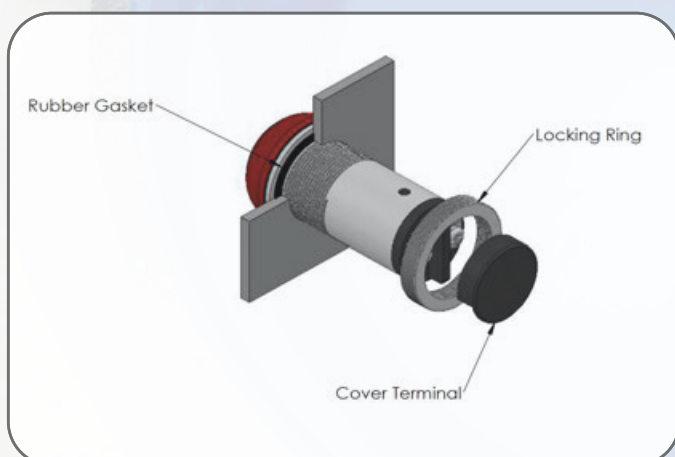
Technical data

Description	Specification
Rated voltage	AC/DC 12V, 24V, 48V, 70V, 110V, 125V, 220V, 230V
LED Illumination color	6 Colors : Red(R), Green(G), Yellow(Y), Amber(A), Sky Blue(S), White(W)
Power consumption	$P_{max} \leq 1W$
Electric life	Approx 300000Hrs
Ambient temp	$-60^{\circ}C \leq t_a \leq +55^{\circ}C$
Degree of protection	Panel front : IP65, Terminal : IP20
Cut-out(mm)	22.3
Terminal size(mm)	M3
Wire size(mm)	AWG 16(1.5) - AWG 14(2.5)
Weight(g)	40

Dimensions and panel cut-out

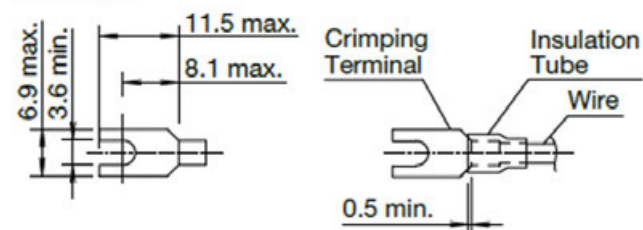


Installation



Panel mounting

Fork Crimp Terminal



Applicable terminal

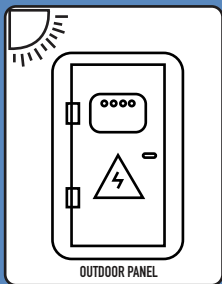
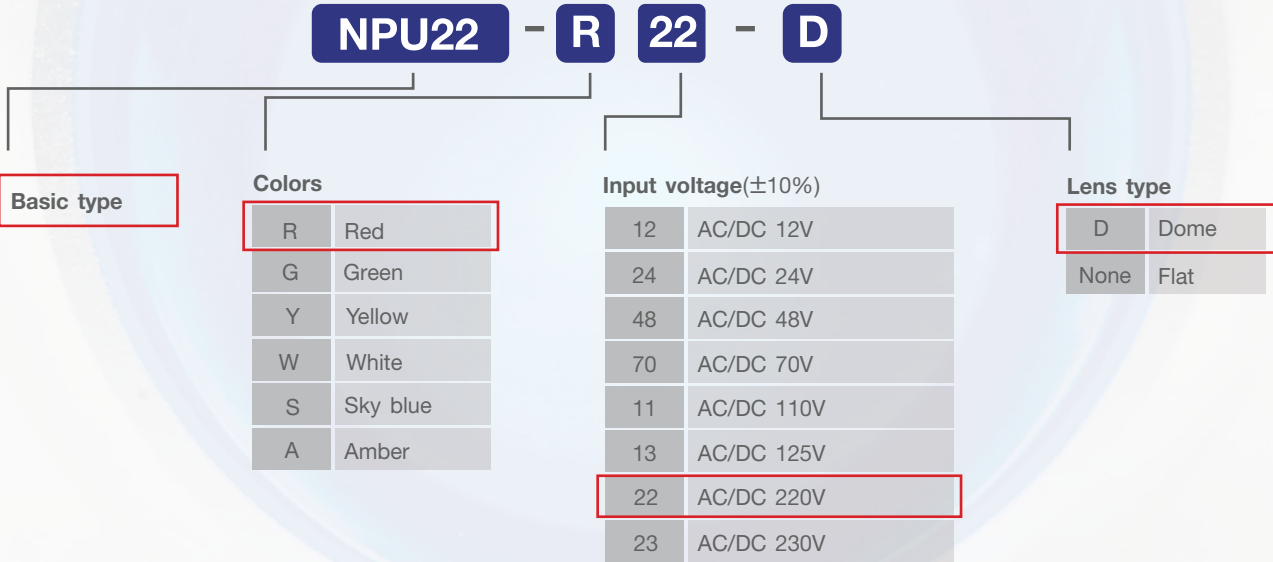
Safety instructions

- Turn off the power before installation, removal, wiring maintenance and inspection. Failure to turn off power may cause an electrical shock or fire hazard
- When wiring, use proper size wire (AWG16-AWG14) to meet voltage and current requirements
- Operating with loose terminal screws may cause overheating and fire

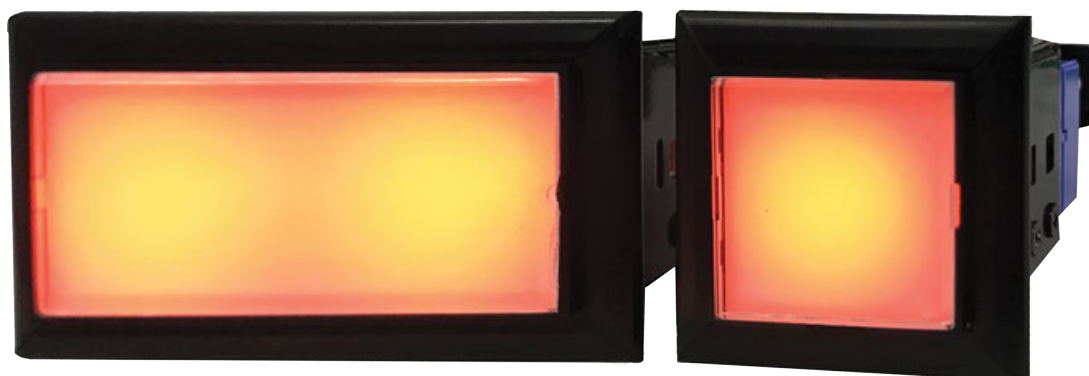
LED Output Level

LED Colors	Luminance(Lumen)	Color rendering index(CRI)	LUX(lx)
Red	169.85	0.72	4668.00
White	504.15	74.83	13857.00
Yellow	280.51	62.70	7756.00
Green	386.26	6.62	10617.00
Amber	240.50	16.59	6610.00
Sky blue	91.94	8.23	2527.00

Product coding



ULTRA BRIGHT



Description

NLL series line lamps or status lamps are panel mounted assemblies which are consisting of the indicator housing, an internal LED lamp, terminals (at the rear side), and lens. Applications include industrial control panels of all types, equipment indicating panels, status indicators and display lighting. The light source is from high brightness pure color LED.

Features

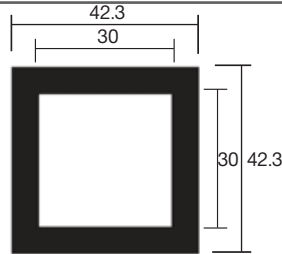
- Robust, compact and luxurious design
- Selectable lens shape either square (30x30) or rectangular shape (30x60)
- High brightness LED chip technology with built in current limiting resistor and zener diode
- Various choices of LED illuminating colors such as White, Red, Green, Yellow, Amber and Sky blue
- Various input voltages (Both AC & DC) for LED indicator

Technical data

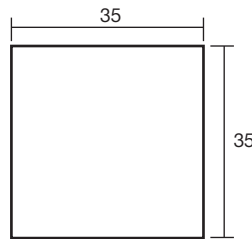
Model	NLL
Input voltage for LED lamp	AC/DC 230V, 220V, 125V, 110V, 48V, 24V
Allowable voltage fluctuation	±10%
AC rated frequency	50/60Hz
LED illuminating color	White, Red, Green, Yellow, Amber and Sky blue
LED base type	E10
LED power consumption	Below 20mA
Insulation resistance	>100 MΩ (DC 500 V. Meg)
Withstand voltage	2500VAC/1min
Ambient temperature	-5°C to +55°C
Relative humidity	45 – 85 %
Degree of protection	IP40 (Front panel)
Recommended wire size	1.0 – 2.5mm ²

Dimensions

Square lamp



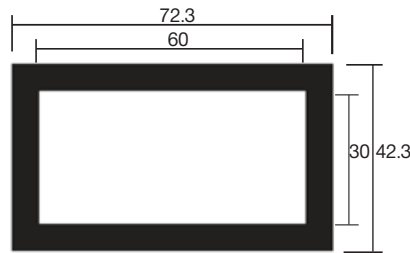
Square lamp
Frame : 42.3x42.3
Lens : 30x30



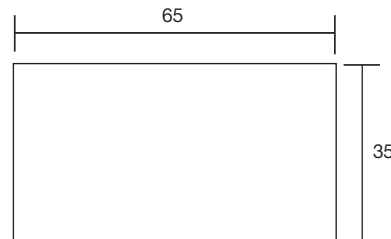
Panel cut-out
Cut-out square hole 35x35

Dimension : Millimeter(mm)

Rectangular lamp



Square lamp
Frame : 42.3x72.3
Lens : 30x60



Panel cut-out
Cut-out rectangular hole 35x65

Dimension : Millimeter(mm)

Product coding

NLL - 3 R - L 24

Basic type

Lens type(mm)

3	Square lamp (30x30)
6	Rectangular lamp (30x60)

Colors of LED lamp

W	White
R	Red
G	Green
Y	Yellow
A	Amber
S	Sky blue

LED lamp with E10 base type

Input voltage(±10%)

24	AC/DC 24V
48	AC/DC 48V
11	AC/DC 110V
13	AC/DC 125V
22	AC/DC 220V
23	AC/DC 230V

*Other rating can be supplied upon request



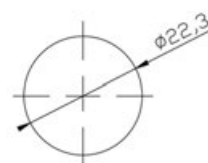
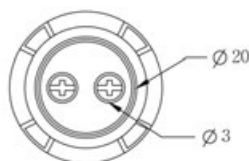
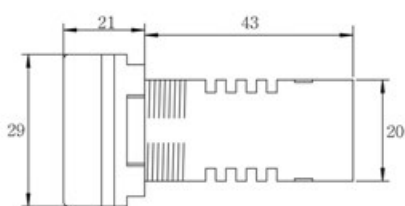
Description

The miniature buzzer is used for general purpose alarm and warning applications. Usually it is used in cubicle or control boxes for wide application such as power distribution boards, LV.switchgear, MV.switchgear, panel boards/ Switchboards as well as in controller box of production machine and so on.

Features

- Small size/light weight and 5cm depth in panel
- Diameter 22mm buzzer is intermittent sound and flashing lamp (C : Continuous sound & Display lamp)
- Sound volume is 80dB at 1ft
- Both AC and DC type can be supplied with wide range of voltage
- Ambient temperature -5°C to +55°C
- Degree of protection : IP20
- Weight 22g
- Low power consumption <3W
- Optional : Continuous sound & Display lamp

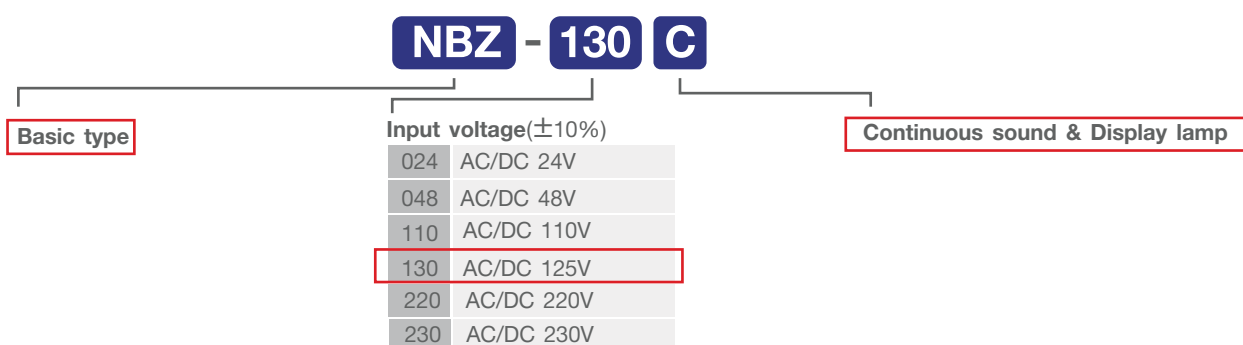
Dimensions



Cut-out

Dimension : Millimeter(mm)

Product coding





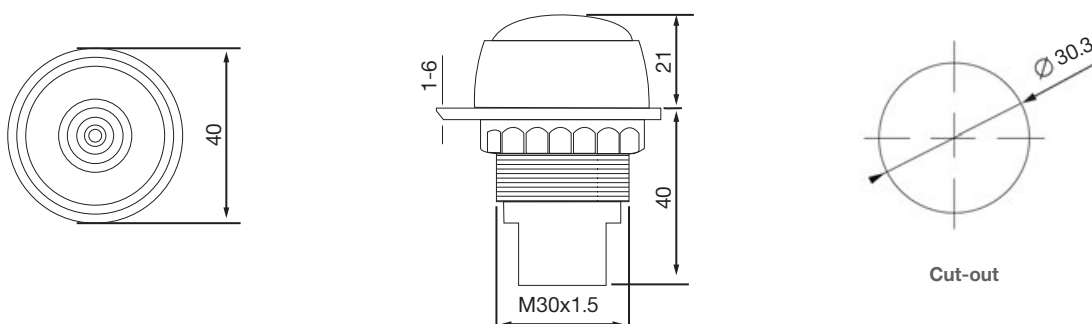
Features

- Standards IEC/EN 60947
- Transparent part is made by polycarbonate
- Ambient temperature -25°C to +70°C
- Degree of protection : IP40

Applications

- Hazardous areas : Zone 1 & 2 or Zone20, 21 22
- Explosive gas atmosphere : Class II A, II B, II C
- Flammable dust atmospheres
- Strong corrosive gas environment

Dimensions



Dimension : Millimeter(mm)

Product coding

NBZH - 130

Basic type

Input voltage

024	AC/DC 24V
048	AC/DC 48V
110	AC/DC 110V
130	AC/DC 125V
220	AC/DC 220V
230	AC/DC 230V

*Other rating can be supplied upon request

Removable LED (BA9S) type



Flat lens LED type
(NPL22-L)



Dome lens LED type
(NPL22-LD)

Fixed LED type



Flat lens LED type
(NPL16-F)



Square fix LED type
(NPL16S-F)



Rectangle fix LED type
(NPL16R-F)



Flat lens LED type
(NPL22-F)



Square fix LED type
(NPL22S-F)



Flat lens LED type
(NPL30-F)

Description

Pilot lights are panel mounted lamp assemblies consisting of the indicator housing, an internal LED lamp, terminal, and a lens. Applications include industrial control panels of all types, equipment indicator panels, status indicators and display lighting. The light source is high brightness pure color LED.

Features

- Unique lens & bulb uniform body assures bright intensity, shock resistance, and oil tight construction
- Full voltage up to 480VAC 50/60Hz without bulky transformer
- High brightness LED chip technology with built in current-limiting resistor and zener diode
- Other voltage rating can be done upon request

Technical data

Conform to standards IEC 60947-5 and IEC 60073 (Lamp colors)

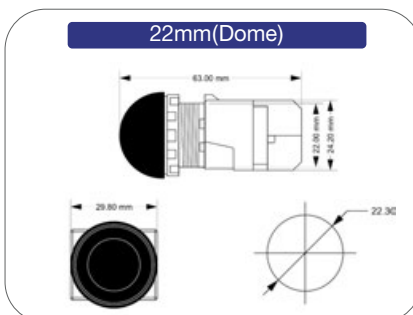
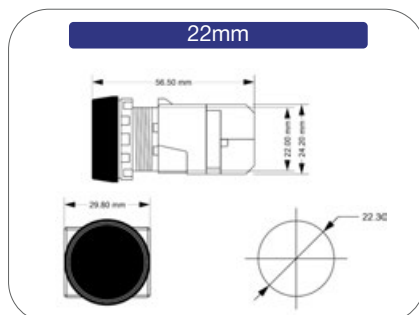
Description			Specification
Rate voltage of lamp ($\pm 10\%$)			380/400VAC, AC/DC 220V, 230V, 125V, 110V, 70V, 48V, 24V, 12V
Current			Less than 6mA
Insulation			100 M Ω at 500VDC
Ambient temperature			-5°C ~ +55°C
Storage temperature			-20°C ~ 70°C
Electrical lifetime			Above 30000hrs
Degree of protection			IP40
Cut-out (mm)	Removable LED (BA9S) type	Flat lens	22.3
		Dome lens	22.3
	fixed LED type	Flat lens	16.3
			22.3
			30.3

LED Output Level

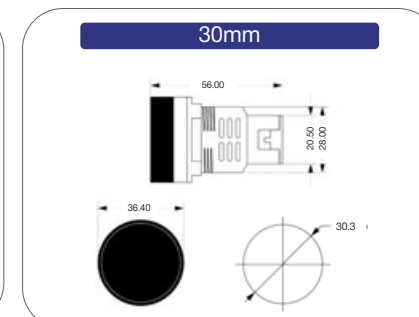
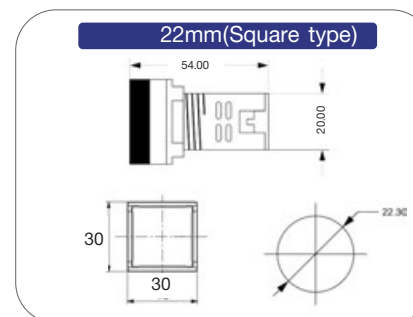
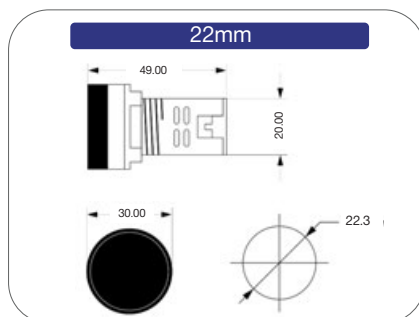
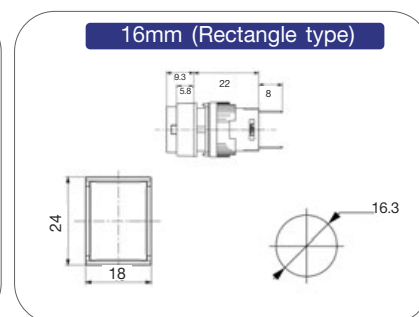
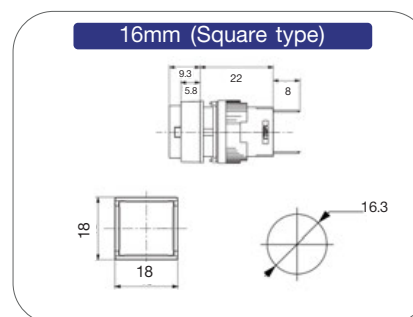
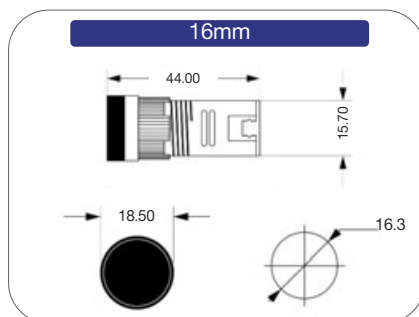
LED Colors	Luminance(Lumen)	Color rendering index(CRI)	LUX(lx)
Red	11.46	0.99	315.04
White	23.03	78.64	632.96
Yellow	10.03	15.17	275.57
Green	27.65	6.74	759.98
Amber	13.60	5.77	373.91
Sky blue	6.34	7.34	174.33

Dimensions

Removable LED (BA9S) type



Fixed LED type



Dimension : Millimeter(mm)

Product coding

NPL 22 - R13 - L D

Basic type

Cut-out(mm)

16	16.3 (Fix LED type)
16S*	16.3 (Square type)
16R*	16.3 (Rectangle type)
22	22.3
22S	22.3 (Square fix LED type)
30*	30.3 (Fix LED type)

*No amber

Colors

R	Red
G	Green
Y	Yellow
W	White
S	Sky blue
A	Amber

Rated voltage of lamp (±10%)

12	AC/DC 12V
24	AC/DC 24V
48	AC/DC 48V
70	AC/DC 70V
11	AC/DC 110V
13	AC/DC 125V
22	AC/DC 220V
23	AC/DC 230V
38**	AC 380V
40**	AC 400V

**For fix LED type only

Lens type

D*	Dome
None	Flat

*For removable LED type only

Bulb type

L*	LED(BA9S), Removable
F	Fix LED

*For NPL22(Cut-out 22.3mm) only



Applications

- Hazardous areas : zone 1 & 2 or zone 20, 21, 22
- Explosive gas atmosphere : Class II A, II B, II C
- Flammable dust atmospheres
- Strong corrosive gas environment

Features

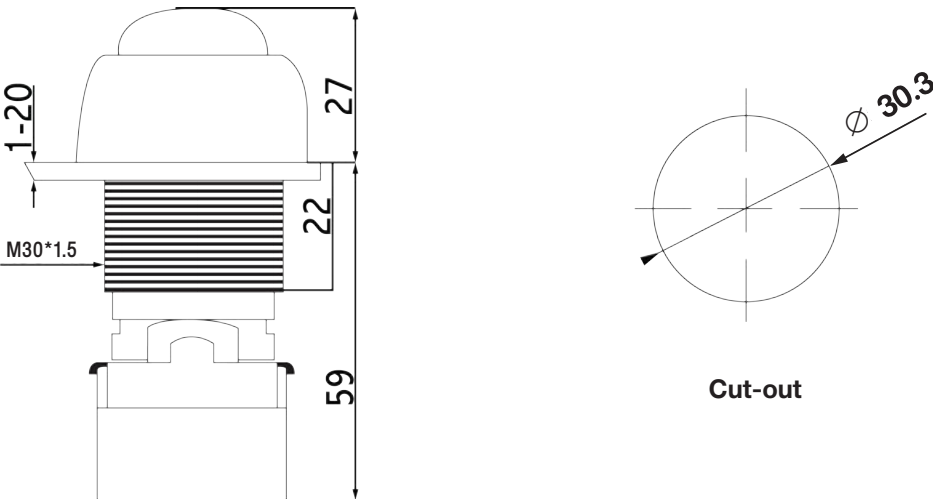
- This products are made by aluminum alloy
- The explosion-proof signal lamp should be used together with flame proof enclosure, cannot be used alone at explosive atmosphere

Technical data

Conform to standards : IEC 60073, IEC 60079, IEC 61241

Description	Specification
Rate voltage of lamp(±10%)	AC/DC 230V, 220V, 125V, 110V, 48V, 24V, 12V
Power consumption	$P_{max} \leq 1W$
Electric life	300000hrs
Ambient temperature	$-60^{\circ}C \leq T_a \leq +55^{\circ}C$
Ex mark	Ex de II C T6 DIP A21 TA, T6
Electrical lifetime	Above 30000hrs
Degree of protection	IP65
Cut-out(mm)	30.3

Dimensions



Dimension : Millimeter(mm)

Product coding

NPLH - R 13

Basic type

Colors

R	Red
G	Green
Y	Yellow
W	White
S	Sky blue
A	Amber

Input voltage of lamp(±10%)

12	AC/DC 12V
24	AC/DC 24V
48	AC/DC 48V
70	AC/DC 70V
11	AC/DC 110V
13	AC/DC 125V
22	AC/DC 220V
23	AC/DC 230V
38**	AC 380V
40**	AC 400V

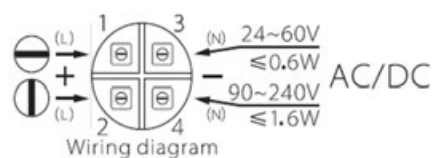
**For fix LED type only



Description

NOVA mechanical semaphore indicator is used for power plant and power conversion station etc, which is instrument of remote indication of switch or circuit breaker contact position. The position indicator is made up of circuit, resistance, coil and rotatable magnets steel.

Wiring diagram

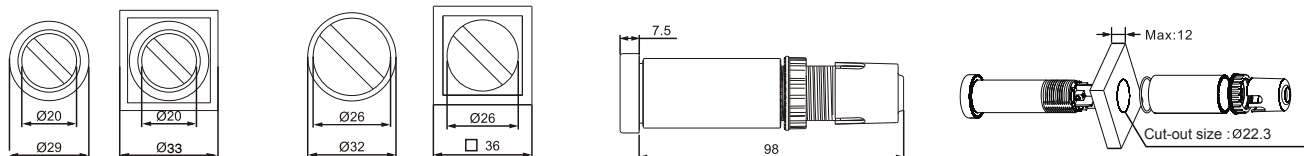


Technical data

Conform to standards IEC 60947-5

Description	Specification	
Operational voltage(Ue)	24~60V	90~240V
Insulation withstand voltage(Ui)	250V	
Electrical lifetime	Above 100000hrs	
Operating current	2~10mA	
Common connector(-,N)	3(N)	4(N)
Withstand voltage	2000VAC/1min	
Power consumptions	≤1.0VA	≤2.0VA
Working conditions temperature	-25°C ~ 55°C	
Working conditions humidity	5% ~ 95%RH, no condensation	
Storage temperature	-40°C ~ 70°C	
Storage humidity	5% ~ 95%RH, no condensation	
Degree of protection	IP52 panel part	
Cut-out(mm)	22.3	
Weight(g)	45	

Dimensions



NUM2933

NUM3236

Dimension : Millimeter(mm)

Product coding

NUM22 - 2933

Basic type

Dimension

2933	Round Ø29, The size with square frame Ø33
3236	Round Ø32, The size with square frame Ø36



NSI22



NSI22 U

Description

NOVA LED semaphore indicator is used as a state indicator of the circuit breaker, disconnector or earthing switch. The indicator is mounted on the panel with mounting hole diameter 22.3mm and operated by two color LED. The two colors are red and green, detail description is as below:

Model	Symbol	Connection		Equipment status	
		X0-X1	X0-X2		
Draw out		Red	Green	Service	Test
Grounding or earth		Red	Green	Close	Open
Operation		Red	Green	Close	Open

Technical data

Conform to standards IEC 60073 (Lamp colors) and IEC 60947-5

Description	NSI22	NSI22 U	
		24~60V	90~240V
Insulation withstand voltage	>1000MΩ at 500VDC/min, <5mA at1500VAC/min	>1000MΩ at 500VDC/min, <5mA at1500VAC/min	
Electrical lifetime	Above 50000hrs	Above 50000hrs	
Operating current	4-6mA	2-15mA	
Common connector(-,N)	XO	3(N)	4(N)
Power consumptions	0.12W(24VDC), 0.24W(48VDC), 0.55W(110VDC), 0.625W(125VDC), 1.10W(220VDC)	≤1.0VA	≤1.2VA
Ambient temperature	-5°C ~ +55°C	-25°C ~ +55°C	
Storage temperature	-20°C ~ 70°C	-40°C ~ 70°C	
Ambient humidity	45 ~ 85%	5% ~ 95%	
Degree of protection	IP40 (Front plate)	IP52 (Panel part)	
Cut-out(mm)	22.3	22.3	
Weight(g)	30	45	

Product coding

NSI22 B - E 13

Basic type

Surface color

W	White plate
B	Black plate
U	24-240V AC/DC

Working status

S	Operation status (Close or Open) of breaker or DS
E	Grounding or earth of breaker or DS
D	Draw out status of breaker or DS

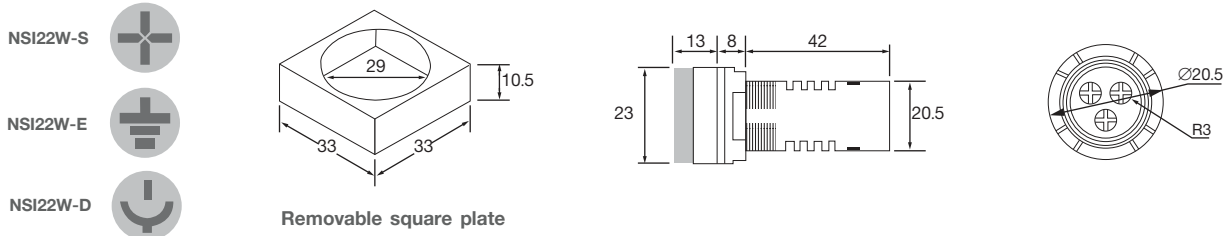
Input voltage (±10%)

24	AC/DC 24V
48	AC/DC 48V
11	AC/DC 110V
13	AC/DC 125V
22	AC/DC 220V
23	AC/DC 230V

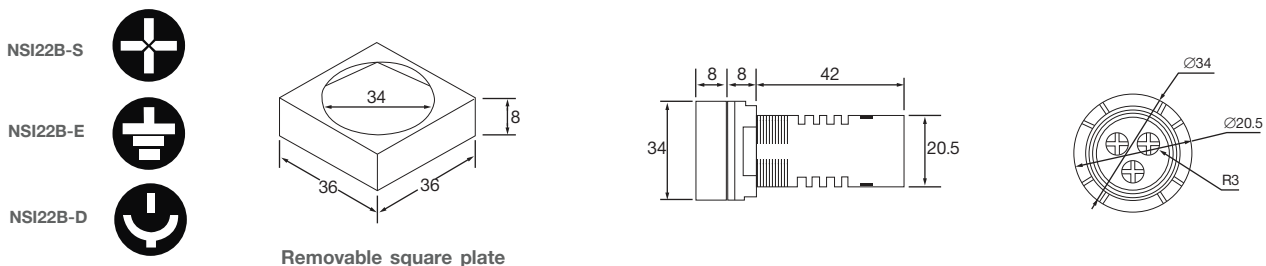
*Other rating can be supplied upon request

Dimensions

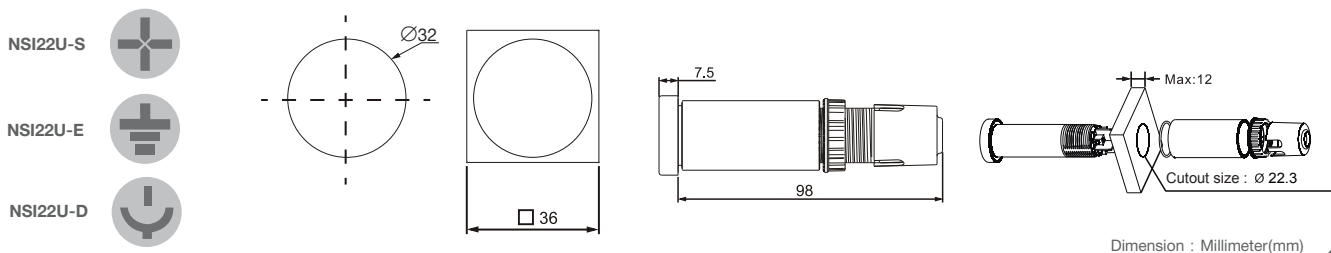
NSI22W (White plate)



NSI22B (Black plate)

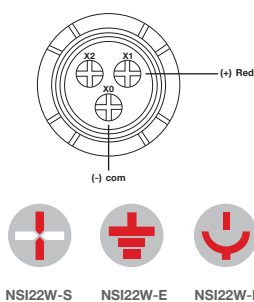


NSI22U (Universal)

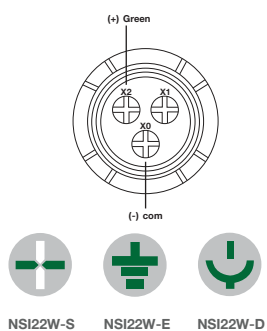


Wiring diagram

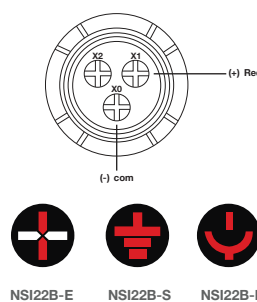
NSI22W (White plate)



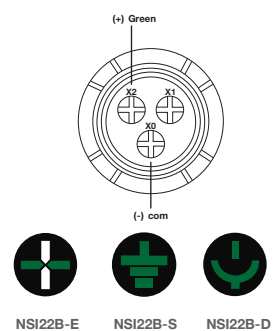
NSI22W (White plate)



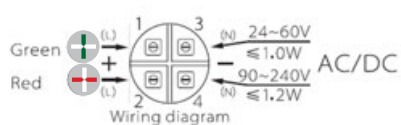
NSI22B (Black plate)



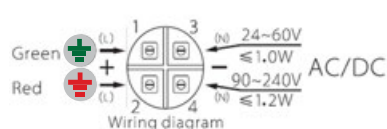
NSI22B (Black plate)



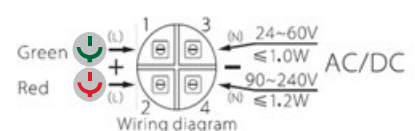
NSI22 U-S



NSI22 U-E



NSI22 U-D





04 LIGHTING LUMINAIRE



Description

The integrated tube T8 (NIT8 series) (Ultra-brightness LED) is use for lighting the control cubicle and all kinds of switchgear cubicles, long span of input supply voltage for both AC and DC supply. Resistant to high temperatures, high efficiency of power saving and environmental friendly. Suitable for ceiling, wall installation and general walkway

Features

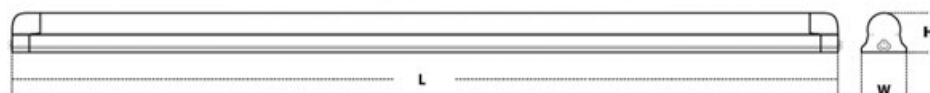
- LED chip epistar SMD2835
- High-bright luminous efficacy 80lm/watt
- Correlated color temperature 6500k (Day light)
- Color rendering >75RA
- Power factor >0.5
- Beam angle 125°
- Protection degree IP33
- No UV/IR and no mercury&lead
- Life span 25000hrs
- Supply voltage input 130 ~ 265VAC(50/60Hz) or 185 ~ 365VDC
- Replace compact fluorescent 9 ~ 36watt or incandescent 40 ~ 150watt
- Approvals : CE, RoHS

Technical data

Description	NIT8-30	NIT8-60
Voltage	130V ~ 265VAC(50/60Hz)	
Power	5watt	9watt
Luminous flux	400lm	720lm
Replacement	Compact fluorescent 9 ~ 36watt or incandescent 40 ~ 150watt	
Housing	Aluminum + PC	
Cover	Polycarbonate frosted	
Dimension(mm)	317x31x38	592x31x38
Weight(g)	66	107

Dimension

External



Internal



Dimension : Millimeter(mm)



Description

The LED service lamp (Ultra-brightness LED) is use for lighting the control cubicle and all kinds of switchgear cubicles. Long span of input supply voltage for both AC and DC supply. Resistant to high temperatures, high efficiency of power saving and environmental friendly. Suitable for ceiling and wall installation.

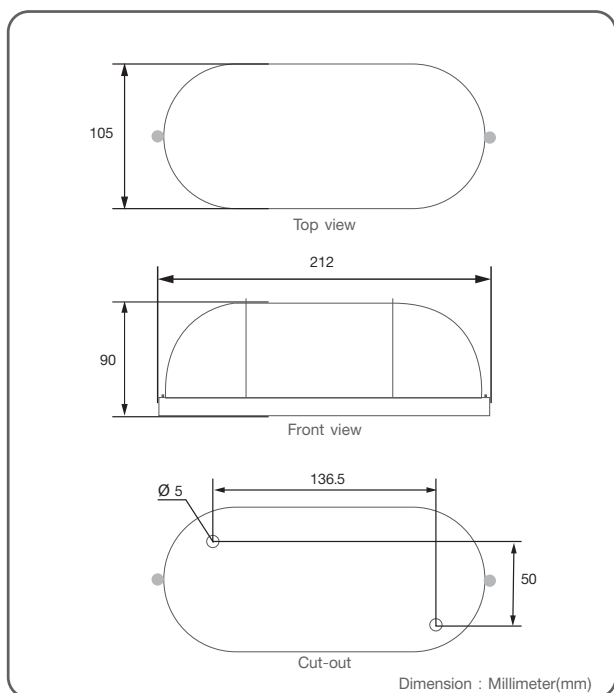
Features

- LED chip epistar SMD2835
- High-bright luminous efficacy 65lm/watt
- Correlated color temperature 6000k (Day light)
- Color rendering >75RA
- Power consumption 7watt, 11watt(CFL)
- Luminous flux : 450, 570lumen
- Power factor >0.5
- Beam angle 120°
- Protection degree IP65
- No UV/IR and no mercury & lead
- Life span 25000hrs
- Supply voltage input 85 ~ 265VAC(50/60Hz) or 120 ~ 365VDC

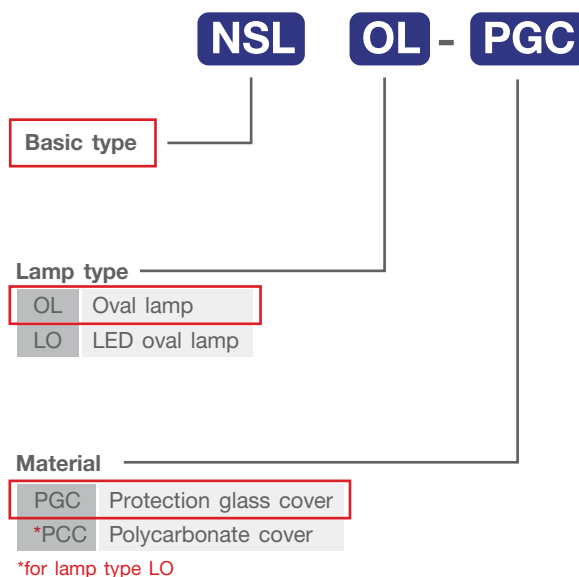
Technical data

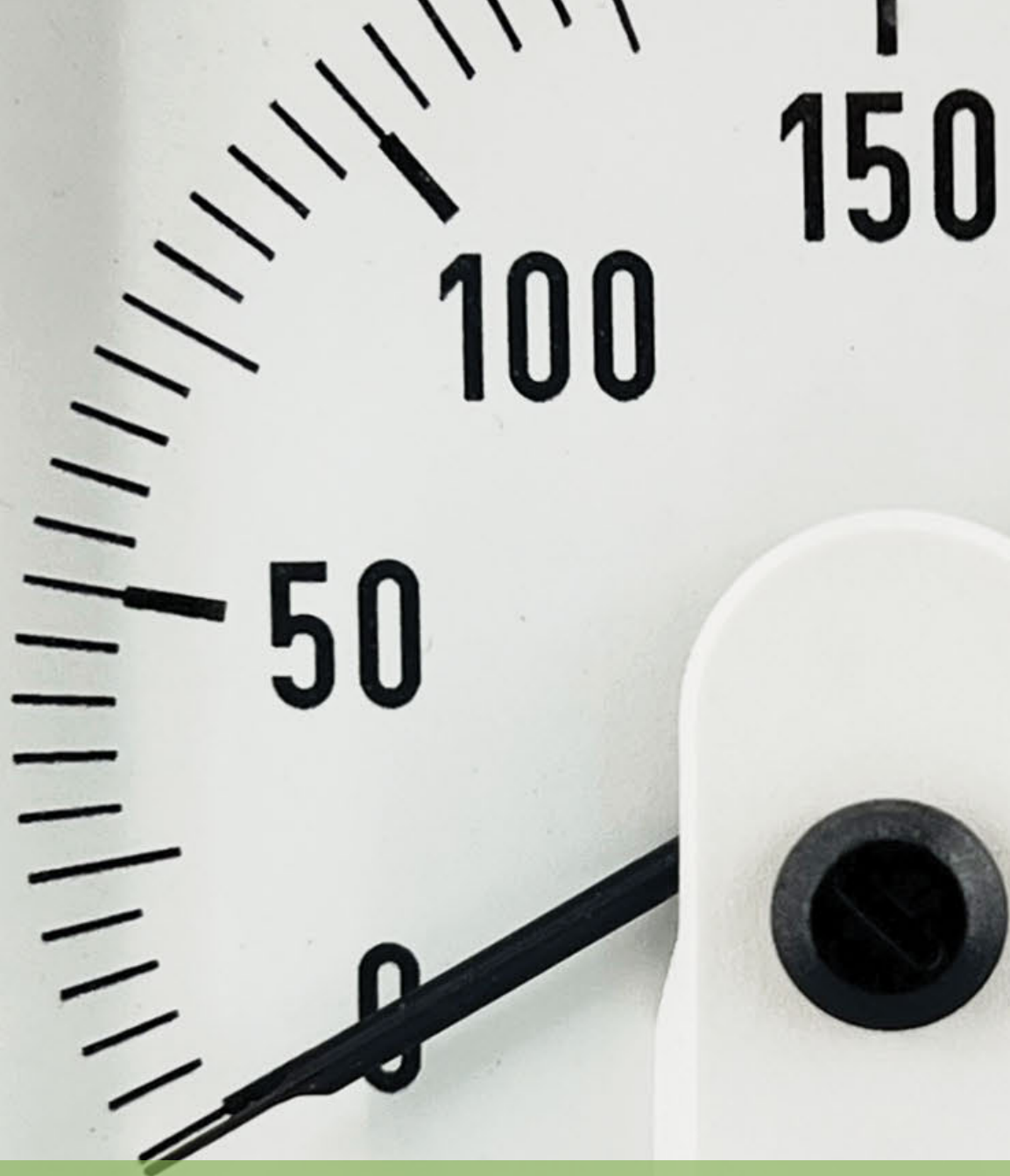
Description	Specification	
Voltage	85V ~ 265VAC(50/60Hz)	
Power	11watt(CFL)	7watt, E27(LED)
Luminous flux	570lm	450lm
Replacement	Compact fluorescent 10watt or incandescent 40watt	
Cover	Protection glass cover	
Dimension(mm)	212x105x90	
Weight(g)	510	

Dimension



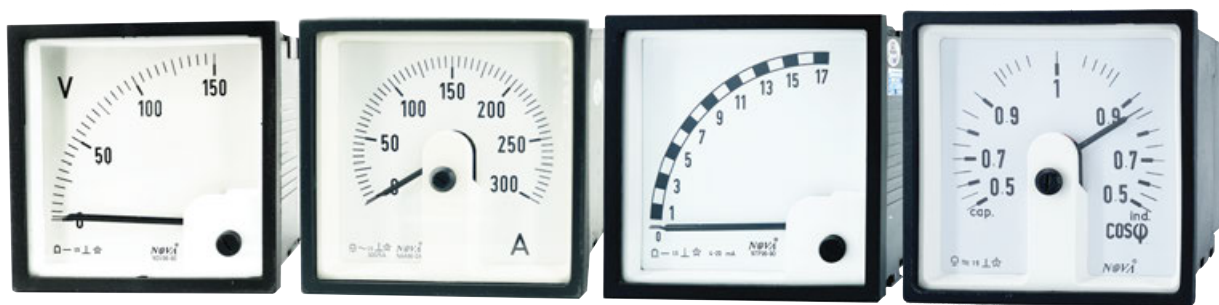
Product coding





05 METERING DEVICES

 \sim 1,5   2 **NOVA[®]**
300/5A NAA96-24



Description

Specifications are in accordance with UL94V-0 (Flame retardancy), DIN 43700 (Dimensions), DIN 43802 and DIN 43701 (Pointer and scale), VDE 410, IEC 51, UL 94 and EN 60051.

Accuracy	Most instruments are calibrated to a class index (CI) of 1.5 as standard although certain instruments can be calibrated to a CI of 1.0 on request. A CI of 1.5 signifies an error of up to $\pm 1.5\%$ of full scale
Magnetic field	All the devices keep their accuracy under the influence of an external magnetic field with a value $\geq 0.5\text{mT}$
Voltage influence	Maximum additional error is not more than $\pm 1.5\%$ indication for $\pm 1.5\%$ voltage variation
Frequency influence	For variations from nominal of $\pm 10\%$ the maximum addition error is $\pm 0.5\%$ of indication
Power factor influence	For variations between unity and 1.5 lag and lead at any power factor up to half scale, the maximum additional error is $\pm 0.5\%$ of full scale deflection. Between unity and zero p.f. lag or lead the maximum additional error is $\pm 1.0\%$ of full scale deflection
Temperature influence	Maximum additional error is $\pm 0.05\%$ per $^{\circ}\text{C}$
Operating temperature range	$-25^{\circ}\text{C} - +65^{\circ}\text{C}$ (Unless otherwise specified)
Relative humidity	Standard 90% RH for 4 days. The accuracy class is stable within an interval from 25 to 95% non-condensed relative humidity
Dielectric level	2kV (RMS) for one minute between movement and case and between terminals which are electrically isolated
Degree of protection	IP52(Case) in accordance with IEC 60529
Permanent overloads	Voltage circuit : 1.2Un Current circuit : 1.2In (1.5In for moving iron)
Short-time overloads	Voltage circuits : 2Un for 5s Current circuit : 5In for 30s, 10In for 5s
Insulation	Insulation reference voltage 0.6kV
Full scale deflection angle	Quadrant scale : 90° Long scale : 240° Synchroscope : 360°
Case material	96mm : Polycarbonate in black 144mm : Polycarbonate in black
Mounting position	Standard operating position is vertical (Unless otherwise specified)

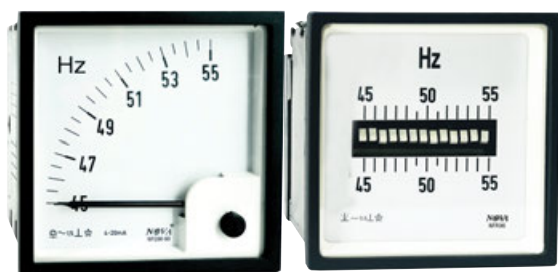
Symbols for marking instruments and accessories

Normal operating position of the panel meter is vertical. The position is marked on the scale and the meters are correspondingly calibrated.

Principal units and their main multiples	
kA	Kiloampere
A	Ampere
mA	Milliampere
μA	Microampere
kV	Kilovolt
V	Volt
mV	Millivolt
μV	Microvolt
MW	Megawatt
kW	Kilowatt
W	Watt
Mvar	Megavar
kvar	Kilovar
Var	Var
MHz	Megahertz
kHz	Kilohertz
Hz	Hertz
MΩ	Megaohm
kΩ	Kiloohm
Ω	Ohm
mΩ	Milliohm

Significance of symbols	
	Measuring system with a moving coil
	Measuring system with a moving coil and rectifier
	Measuring system with a moving iron
	Bimetal measuring system
	Electronic device in a measuring circuit
	Externally positioned electronic device
	Vibrating measuring system
	Warning : see application instructions
	DC
	AC
	DC and AC
	3 phase 3 wire system with balanced load
	3 phase 4 wire system with balanced load
	3 phase 3 wire system with unbalanced load
	3 phase 4 wire system with unbalanced load
1.5	Accuracy class 1.5
1.0	Accuracy class 1.0
Safety	
	Test voltage of 500V
	Test voltage above 500V (e.g. 2kV)
	Vertically

Frequency meters



Instruments for local indication are usually supplied as self-contained units in sizes 96mm and 144mm Each instrument incorporates a moving coil movement driven by an internally mounted static circuit.

For remote indication moving coil instruments can be supplied to operate with transducers (0.1mA or 4..20mAdc)

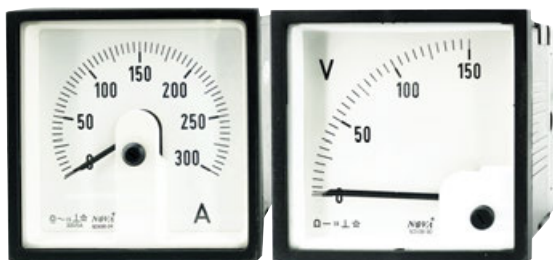
Model	Class	Full scale deflection angle	Dimension	Burden (VA)
NFR96	0.5	-	96x96	3VA(Max)
NFQ96-90	1.5	90°	96x96	2VA(Max)
NFQ96-24	1.5	240°	96x96	3VA(Max)

Standard ranges : 44..55Hz., 45..65Hz., 55..65Hz., 47..53Hz., 57..63Hz., 44..56Hz., 54..66Hz.

Information required with order : Type reference and model. Details of required scale and any optional features of required electrical rating

Example : Pointer, NFQ96-90 Scale 45..55Hz. Rating 110V, 115V, etc.

Moving coil DC ammeters and DC voltmeters



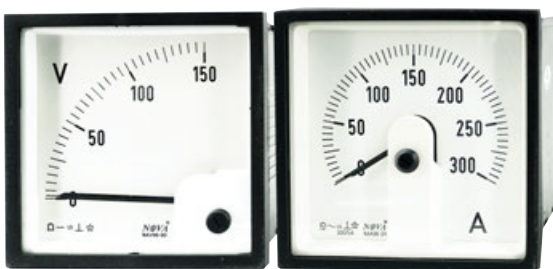
Moving coil instruments are suitable for a wide range of DC application, particularly for remote indication when use with a suitable transducer (0..1mA or 4..20mADC). Scales are linear and can be drawn to suit customer specification together with any chosen title.

Overload ratings	DC Ammeters : 1.2 x rated current continuously 10 x rated current for 5s DC Voltmeters : 1.2 x rated voltage continuously 2 x rated voltage for 5s			
Accuracy	DC Ammeters : Class index 1.5 (Class index 1.0available) DC Voltmeters : Class index 1.5 (Class index 1.0available)			
Model	Full scale deflection angle	Type reference	Dimension(mm)	Burden(VA)
NDA96-90	90°	DC ammeter	96x96	1.5
NDA96-24	240°			
NDV96-90	90°	DC voltmeter		2.0
NDV96-24	240°			

Information required with order : Type reference and model details of required scale and any optional features. Details of required electrical rating or input transformer ratio

Example : Moving coil, NDA96-24 Input 4..20mA, scale 0..200A

Moving coil AC ammeters and AC voltmeters



Moving coil instruments are suitable for a wide range of AC rectified instruments are available for AC applications and have a long burden. Scales are linear and can be drawn to suit customer specification together with any chosen title.

Frequency	AC rectifier instruments are calibrated on a sinusoidal wave form at 50Hz but are suitable for use without significant error on any frequency from 20Hz To 10kHz(2.5kHz when internal CT is used)			
Overload ratings	AC Ammeters : 1.2 x rated current continuously 10 x rated current for 5s AC Voltmeters : 1.2 x rated voltage continuously 2 x rated voltage for 5s			
Accuracy	AC Ammeters : Class index 1.5(Class index 1.0 available) AC Voltmeters : Class index 1.5(Class index 1.0 available)			

Model	Full scale deflection angle	Type reference	Dimension(mm)	Burden(VA)
NAA96-90	90°	AC ammeter	96x96	1.5
NAA96-24	240°			
NAV96-90	90°	AC voltmeter		2.0
NAV96-24	240°			

Information required with order : Type reference and model details of required scale and any optional features. Details of required electrical rating or input transformer ratio

Example : Moving coil, NAA96-24 Input 4..20mA, scale 0..200A

Power factor meters



A power factor indicator with quadrant and long scale is available in size 96mm. these instruments are designed for measuring power factor in three phase three wire network with balanced load or in single phase network.

The moving coil movement is driven by an internal transducer circuit. Scale are central at unity and are available up to ± 180 electrical degrees. For remote indication, moving coil instruments can be supplied to operate with transducer (0..1mA or 4..20mA dc). All instruments are 96x96mm

Input ranges	Voltage : 100V, 110V, 120V, 230V, 380V and 415V Current : 1A or 5Aac Frequency : 50/60Hz
Scales	0.5..1.0.5 cos ϕ , 0..1.0.cos ϕ , 0.7..1.0.3 cos ϕ , 0.3..1.0.7 cos ϕ
Overload ratings	Voltage : 1.2 x rated voltage continuously, 2 x rated voltage for 5s Current : 1.2 x rated current continuously, 10 x rated current for 5s
Accuracy	Class index 1.5 or 1.0 available on request

Model		Full scale deflection angle	Type reference	Burden(VA)
NPF96-90	NPF96-90B1	90°	Single phase	1.8 for 1A
	NPF96-90B3	90°	3 phase 3 wire balanced load	2.5 for 5A
NPF96-24	NPF96-24B1	240°	Single phase	3.3 for 1A
	NPF96-24B3	240°	3 phase 3 wire balanced load	4 for 5A

Information required with order : Type reference and model. Details of CT and VT transformer secondary inputs and frequency

Tap position meters



Position indicators can be used for many remote monitoring applications. For example, the position of transformer taps, mechanical values or sluice gates can be determined accurately.

Scale marking are kept to a minimum to present a clear pleasing appearance ensuring that the instruments can be read with ease from distance of several feet. An internally mounted static circuit ensure that normal supply variations do not affect the stated accuracy. For remote indication, these instruments can be supplied to operate with transducer (0..1mA or 4..20mA). Instruments are available in 96x96mm. and 144x144mm cases.

Voltage influence	A static circuit is included which ensures that the effect of $\pm 10\%$ supply voltage variation does not affect the stated accuracy of indication. When the sensing resistor is positioned in some distance away from the indicator, the line impedance can affect the accuracy of indication. For example, an impedance of 10 Ω per line causes an indication error not greater than 0.25% at 2.4k Ω sensing potentiometer.
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Model	Full scale deflection angle	Dimension(mm)	Burden(VA)
NTP96-90	90°	96x96	2VA(Max)
NTP96-24	240°	96x96	3VA(Max)
NTP144-90	90°	144x144	2VA(Max)

Information required with order : Type reference and model. Details of required electrical rating and number of taps and resistance per tap scale required

Moving coil wattmeters and varmeters



Instruments for local indication are usually supplied as self-contained units in sizes 96mm and 144mm. Each instrument incorporates a moving coil movement driven by an internally mounted static circuit.

For remote indication, moving coil instruments can be supplied to operate with transducers (0..1mA or 4..20mAdc).

Input ranges	Voltage : 63.5V, 100V, 110V, 120V, 230V, 380V and 440V Current : 1A or 5Aac Frequency : 50/60Hz
Overload ratings	Voltage : 1.2 x rated voltage continuously, 2 x rated voltage for 5s Current : 1.2 x rated current continuously, 10 x rated current for 5s
Accuracy	Class index 1.5 or 1.0 available on long scale instruments on request

Model		Type	Full scale deflection angle	Type reference	Burden(VA)
NMW96-90	NW96-90B1	Wattmeter	90°	Single phase	1.0
	NW96-90B3			3 phase 3 wire balanced load	
	NW96-90B4			3 phase 4 wire balanced load	
	NW96-90U3			3 phase 3 wire unbalanced load	
	NW96-90U4			3 phase 4 wire unbalanced load	
NMW96-24	NW96-24B1		240°	Single phase	
	NW96-24B3			3 phase 3 wire balanced load	
	NW96-24B4			3 phase 4 wire balanced load	
	NW96-24U3			3 phase 3 wire unbalanced load	
	NW96-24U4			3 phase 4 wire unbalanced load	
NMV96-90	NQ96-90B1	Varmeter	90°	Single phase	
	NQ96-90B3			3 phase 3 wire balanced load	
	NQ96-90B4			3 phase 4 wire balanced load	
	NQ96-90U3			3 phase 3 wire unbalanced load	
	NQ96-90U4			3 phase 4 wire unbalanced load	
NMV96-24	NQ96-24B1		240°	Single phase	
	NQ96-24B3			3 phase 3 wire balanced load	
	NQ96-24B4			3 phase 4 wire balanced load	
	NQ96-24U3			3 phase 3 wire unbalanced load	
	NQ96-24U4			3 phase 4 wire unbalanced load	

Information required with order : Type reference and model details of required scale and any optional features details of CT and VT transformer input

Example : 90° Wattmeter 3phase 3wire balanced load,

Model : NW96-90B3

Voltage : 11kV/110V, 50Hz

Scale : 0..4MW

Synchronizing Instruments

Synchroscope



Description		NSY96	NSY144
Dimension	mm	96x96	144x144
Housing cut-out	mm	92x92	138x138
Class		1.0	1.0
Internal consumption : (at 100 V, 50Hz)			
At main side	VA	4	4
At generator side	VA	0.7	0.7
Weight	kg	1.0	1.1
Rated voltage	V	100	100
	V	110	110
	V	230	230
	V	400	400
	V	440	440

Double voltmeter



Description		NAV144-II
Dimension	mm	144x144
Housing cut-out	mm	138x138
Scale length	mm	105
Class		1.5
Internal consumption at 100V	VA	2.5
Test voltage	V~	2000
Weight	kg	1.5
Rated voltage	V	2xX/100
	V	2xX/100
	V	2x230
	V	2x400
	V	2x440

Double frequency meter

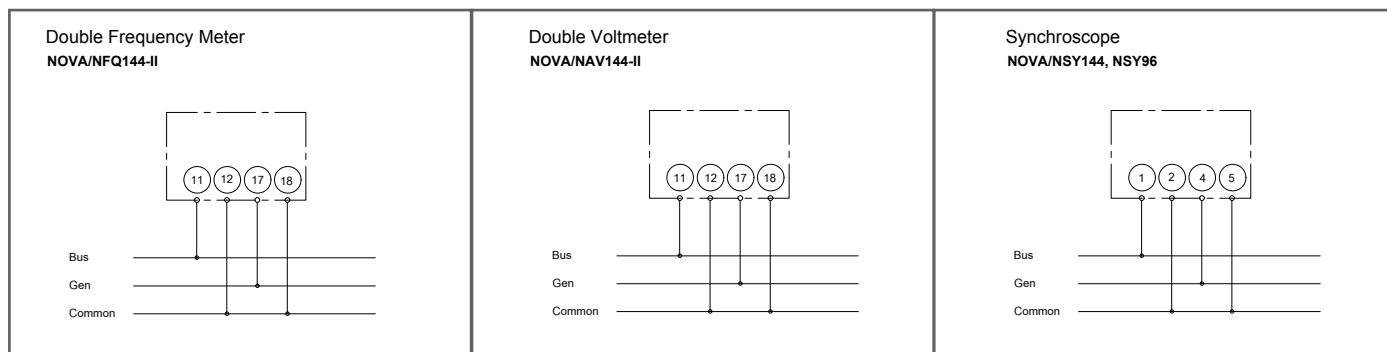


Description		NFQ144-II
Dimension	mm	144x144
Housing cut-out	mm	138x138
Class		1.0
Internal consumption at 100V	VA	1.1
Test voltage	V~	2000
Weight	kg	1.0
Rated voltage	V	2x100
	V	2x110
	V	2x230
	V	2x400
	V	2x440
Measuring range	Hz	45-50-55
	Hz	55-60-65

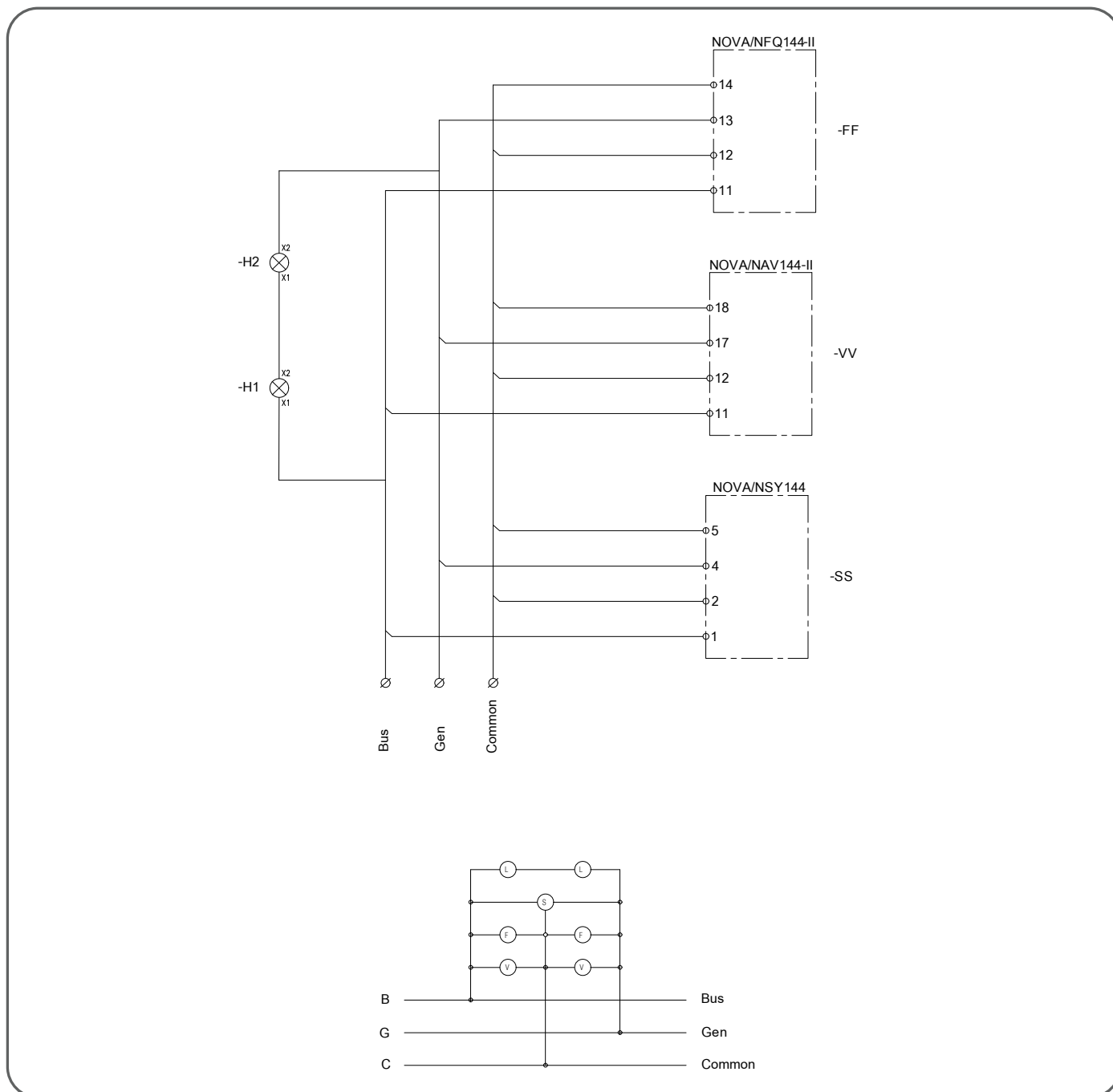
Connection diagram

<p>DC current direct connection</p>	<p>AC current transformer connection</p>	<p>AC voltage direct connection</p>	<p>AC voltage transformer connection</p>																				
<p>DC voltage</p>	<p>Active power single-phase AC network</p>	<p>Active power three-phase, three-wire network balanced load</p>	<p>Active power three-phase, three-wire network unbalanced load</p>																				
<p>Active power three-phase, four-wire network balanced load</p>	<p>Active power three-phase, four-wire network unbalanced load</p>	<p>Reactive power single-phase AC network</p>	<p>Reactive power three-phase, three-wire network balanced load</p>																				
<p>Reactive power three-phase, three-wire network unbalanced load</p>	<p>Reactive power three-phase, four-wire network balanced load</p>	<p>Reactive power three-phase, four-wire network unbalanced load</p>	<p>Power factor single-phase AC</p>																				
<p>Power factor three-phase AC</p>	<p>Frequency single-phase AC / three-phase AC</p>	<p>PANEL CUT-OUT</p> <table><thead><tr><th>Bezel</th><th colspan="2">(a) Panel cut-out</th><th>b (min)</th></tr></thead><tbody><tr><td>48 x 48</td><td>45^{+0.6} X</td><td>45^{+0.6}</td><td>3</td></tr><tr><td>72 x 72</td><td>68^{+0.7} X</td><td>68^{+0.7}</td><td>4</td></tr><tr><td>96 x 96</td><td>92^{+0.8} X</td><td>92^{+0.8}</td><td>4</td></tr><tr><td>144 x 144</td><td>138^{+1.0} X</td><td>138^{+1.0}</td><td>6</td></tr></tbody></table> <p>All dimensions in mm</p>		Bezel	(a) Panel cut-out		b (min)	48 x 48	45 ^{+0.6} X	45 ^{+0.6}	3	72 x 72	68 ^{+0.7} X	68 ^{+0.7}	4	96 x 96	92 ^{+0.8} X	92 ^{+0.8}	4	144 x 144	138 ^{+1.0} X	138 ^{+1.0}	6
Bezel	(a) Panel cut-out		b (min)																				
48 x 48	45 ^{+0.6} X	45 ^{+0.6}	3																				
72 x 72	68 ^{+0.7} X	68 ^{+0.7}	4																				
96 x 96	92 ^{+0.8} X	92 ^{+0.8}	4																				
144 x 144	138 ^{+1.0} X	138 ^{+1.0}	6																				

Synchronizing system connection diagram



Overall connection diagram





Description

This NCP series split type current transformer is specially designed in order to make the installation of electrical system and electric network transformation more convenient. It can be mounted under the circumstance of no need to disconnect the cable or busbar. It can save the mounting time and maintenance charge. The products complied with IEC 60044-1, GB 1208-2006, BS 7626

Features

- One button clamp-on design, safe, easy to install, portable
- Two built in fixing methods : base; busbar mounting
- Wide inner window, allowing clamping of big cables or bus-bars
- Wide range of sizes to accommodate all the existing installations
- Primary current from 100A - 6000A

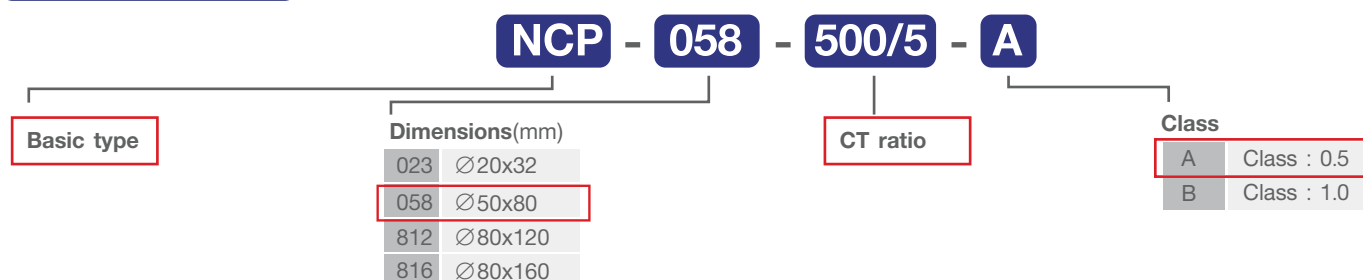
Applications

- Current measurement, monitoring and protection for electrical wiring and equipment
- Current and power measurement for electric motors, lighting, air compressor, heating and ventilation system, air-condition equipment and automation-control system
- Current, power and energy monitoring device
- Relay protection device


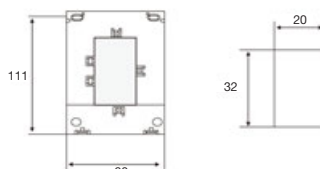

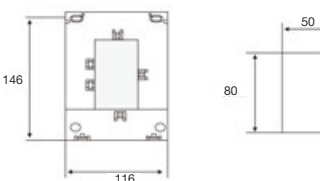

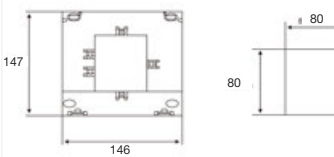

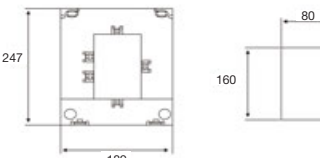
Technical data

Electrical parameter		Mechanical parameter	
Frequency	40-60Hz	Case	PC/UL 94-V0
Rated input current	100A-6000A	Safety factor	FS 5
Measuring range	10%In-120%In	Core	Silicon steel
Rated output current	5A, 1A	Internal structure	Epoxy
Accuracy class	0.5%, 1%	Operation temperature	-5°C ~ +55°C
Dielectric strength	2.5KV/1min	Operating humidity	≤95%
Insulation resistance	DC500V/100MΩ min		

Product coding



Model and dimension

Model		Ratio(A)	Burden(VA)		Dimension(mm)
			Class : 0.5	Class : 1.0	
	NCP-023	100/5	-	1.5	 Dimension : Millimeter(mm)
		150/5	-	1.5	
		200/5	-	1.5	
		250/5	-	1.5	
		300/5	1.5	2.5	
		400/5	2.5	3.75	
	NCP-058	250/5	-	1.5	 Dimension : Millimeter(mm)
		300/5	-	2.5	
		400/5	2.5	5	
		500/5	2.5	5	
		600/5	2.5	5	
		750/5	5	5	
		800/5	5	5	
		1000/5	5	10	
	NCP-812	500/5	-	2.5	 Dimension : Millimeter(mm)
		600/5	-	2.5	
		750/5	5	5	
		800/5	5	5	
		1000/5	5	7.5	
		1200/5	5	10	
		1250/5	5	10	
		1600/5	5	10	
	NCP-816	1000/5	5	10	 Dimension : Millimeter(mm)
		1500/5	7.5	10	
		2000/5	10	15	
		2500/5	15	20	
		3000/5	20	25	
		4000/5	20	25	
		5000/5	20	25	
		6000/5	20	25	



Description

Current transformers are special transformers for the proportional transformation of high currents into direct measurable values. Their construction and physical operating principle enable an electrolytic separation of the primary circuit from the measured circuit, thereby providing a safety mechanism when switching on the measuring appliance in the event of a fault.

Technical data

The products complied with VDE 0414, BS 7262 and IEC 185 standard.

Description	Specification
Primary current	30A-5000A
Secondary current	5A or 1A
Standard approval	VDE 0414, BS 7262, IEC 185
Maximum voltage	0.72kV
Frequency	50 - 60Hz
Rated load	5VA - 30VA
Dielectric strength	2kV(1min)
Class	0.5, 1.0
Short-time thermal current	50kA
Rated security coefficient	FS5
Ambient temperature	-5 ~ 55°C
Operating humidity	up to 95%

Measuring current transformer is an encapsulated type which intended to supply to indicative devices, integrated meter and similar apparatus.

They are characterized by their accuracy and for saturating at moderate over current. This effect protects the measuring instruments from possible over current.

Technical data

Type	CT ratio(A)	Rated burden(VA)		Bar Dimension(mm)	Weight(kg)
		Class : 0.5	Class : 1.5		
NCT-30	20/5	-	1.5(2T)	30x10	0.38
	30/5	-	1.5(2T)		
	50/5	-	2.5(2T)		
	60/5	-	2.5(2T)		
	80/5	-	2.5		
	100/5	-	2.5		
	150/5	5	10		
	200/5	5	10		
	250/5	5	10		

Type	CT ratio(A)	Rated burden(VA)		Bar Dimension(mm)	Weight(kg)
		Class : 0.5	Class : 1.0		
NCT-40	150/5	5	10	40x10	0.40
	200/5	10			
	250/5	10			
	300/5	10			
	400/5	10			
	500/5	10			
NCT-60	400/5	10	10	60x20	0.60
	500/5	10	10		
	600/5	10	10		
	750/5	15	15		
	800/5	15	15		
NCT-80	750/5	15	15	80x20	0.60
	800/5				
	1000/5				
	1200/5				
	1500/5				
NCT-100	1000/5	15	15	100x10 or 80x30	0.80
	1200/5				0.94
	1500/5				1.10
	1600/5				1.20
	2000/5				1.40
	2500/5				1.60
	3000/5				1.60
NCT-125	1500/5	15	30	130x12 or 125x57	1.00
	2000/5				1.15
	2500/5				1.45
	3000/5				1.60
	4000/5				1.90
	5000/5				2.20

Technical data

Burden is the impedance of the secondary circuit in ohms and power factor. For the measurement or protection relay operating via a current transformer, in order to operate them, the primary current has to induce the power required in the secondary current of the instrument or relay.

This induced power must be equal or higher than the losses in the power line + consumption of the measurement instrument or protection relays.

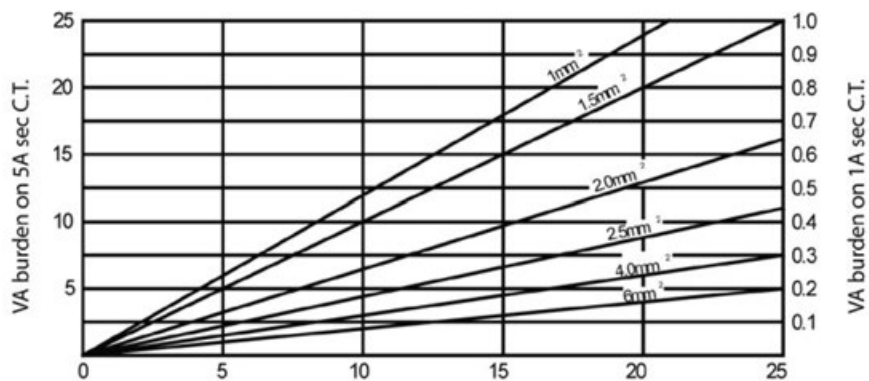
The burden imposed on a current transformer consist mainly of:

- The impedance of wiring cable between current transformer and instruments/relay
- The impedance of the instrument/relay
- The sum of the above constitute the external burden required

Table illustrating some typical instruments and its typical consumption

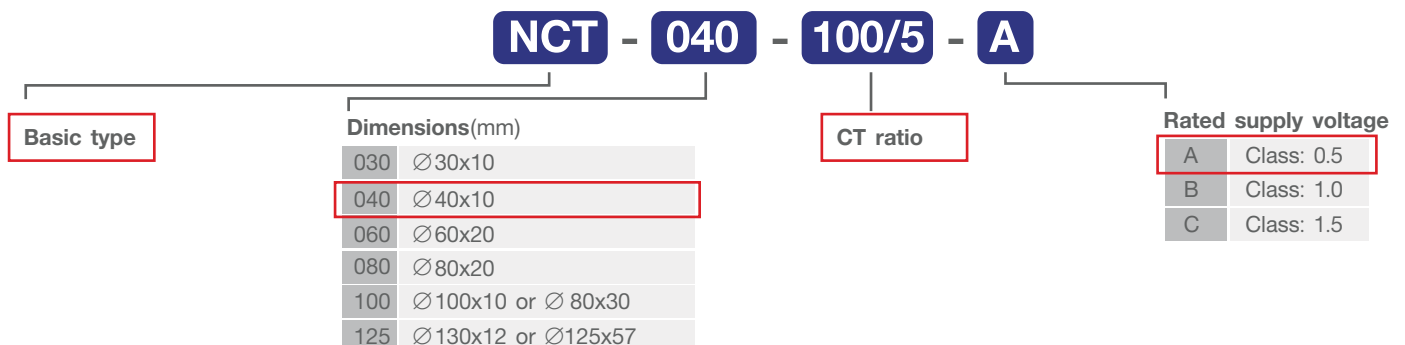
Instrument	Burden consumed
Moving iron instruments	0.3 - 15VA
Moving coil instruments	0.5VA
Analogue power meter	0.2 - 2.5VA
Maximum demand meter	2.5 - 5.0VA
Digital meter	0.5 - 1.0VA
Energy meter	1.0 - 1.5VA
Recording instruments	2.0 - 5.0VA

Table guide for wiring cable burden



Distance (Double wire run) in meters from C.T. to the instrument or relay

Product coding





Description

NCR series current transformer for protective relay can work under such condition when system current is much times than rated working current, or can work under exceeding measuring current transformer. When current transformer is used to power protective relay, it still keeps its electrical characteristics on many times of working current.

The product can be applied to protect the equipment against the damage, in the AC circuit with the rated voltage value below 720V and the frequency of 50-60Hz

Features

- Primary current 100A - 5000A
- Protection class 5P10, 5P20
- High accuracy protection level
- Safe, easy to install, portable
- Wide range of sizes
- Standard IEC 60044-1, IEC 61869-2, VDE 0414

Application

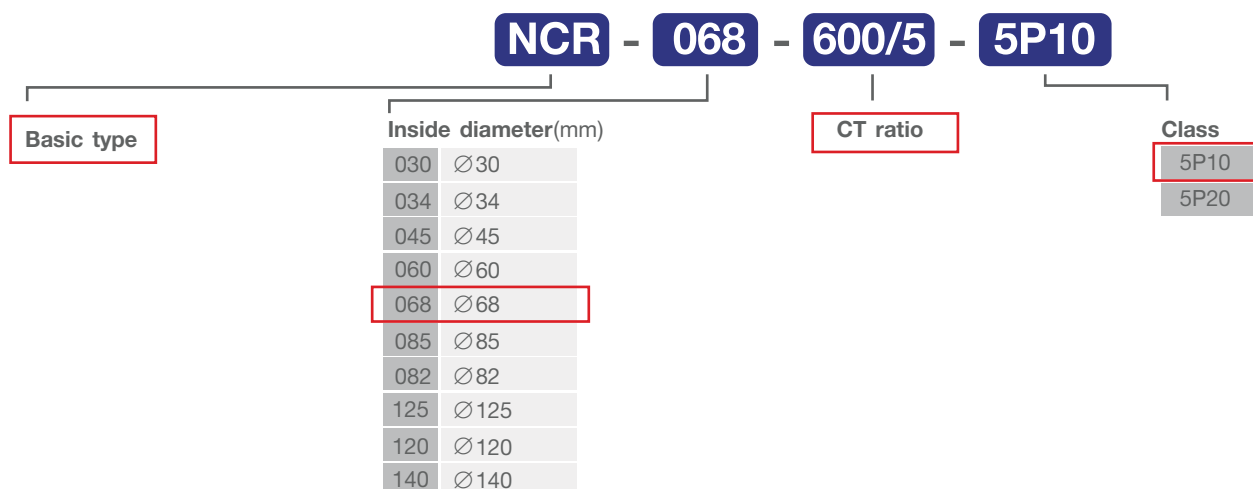
- Current measurement of monitoring device and relay protection device
- Current and power measurement for electric motors, lighting, air compressor, heating and ventilation system, air-condition equipment and automation-control system
- Current, power and energy monitoring device

Technical data

Frequency	50-60 Hz
Rated input current	100A - 6000A
Rated burden	7.5VA - 20VA
Secondary current	1A, 5A
Accuracy class	5P10 / 5P20
Rated insulation level	3kV r.m.s. 50Hz/1min
Rated dynamic current	2.5Ith
Rated voltage	0.72kV AC

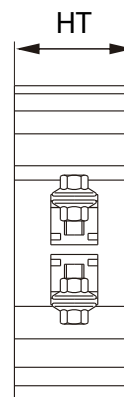
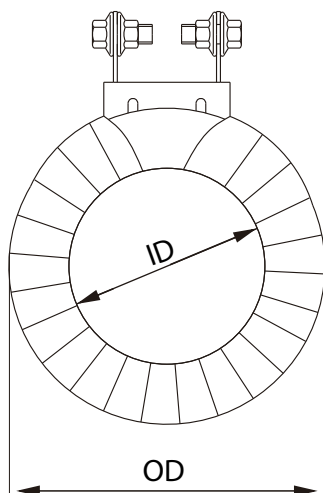
Coil structure	Toroidal
Insulation class	B (130°C max)
Storage temperature	-50°C ~ +80°C
Operation temperature	-10°C ~ +55°C
Operating humidity	<95% RH (Non condensing)
Continuous overload	1.2In
Safety factor	FS 5
Housing self-extinguishing class	VO

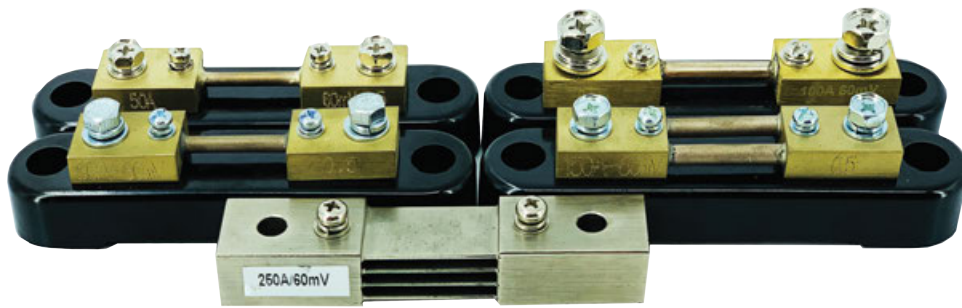
Product coding



Dimension

Model	Ratio(A)	Class	Burden(VA)	Dimension(mm)		
				ID	OD	HT
NCR-030	60/5	5P10 or 5P20	15	30	145	165
NCR-034	100/5			30	100	180
	150/5			34	100	130
	200/5			34	100	110
NCR-045	250/5			45	96	110
	300/5			45	96	110
NCR-060	400/5			45	96	98
	500/5			60	100	100
NCR-068	600/5			68	110	78
NCR-085	800/5			85	120	78
NCR-082	1000/5			82	123	70
	1200/5			82	123	70
	1600/5			82	123	60
NCR-125	2000/5			125	178	38
	2500/5			125	178	35
NCR-120	3000/5			120	178	35
NCR-140	3500/5			140	200	35
	4000/5			140	200	35
	5000/5			140	200	35





Description

Highly accurate manganin resistance dc shunts. When a current is passed through the shunt, a proportional millivolt output is produced. The current flowing through the shunts creates a voltage drop which can be measured with a measuring devices switched on in parallel. By switching on the shunts and the measuring devices in parallel, it is possible to use voltage measurement devices to measure the current or to gain an extension of the measuring facilities of the existing current measuring devices.

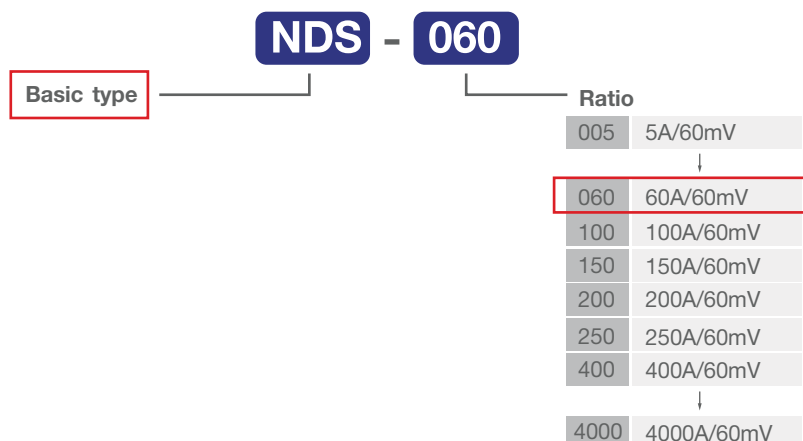
Applications

Shunts are used for the indirect monitoring of high electrical current. The series shunts accurately measure and convert high DC current into millivolt output. They are made from brass extrusions and high quality manganin resistance wire. The manganin resistance wire is noted for its excellent stability and extremely low temperature coefficient. Production of the shunts complied with the requirements of IEC 51/60051 part8 (1984) and DIN 43703 They are available for currents as high as 4000A and millivolt output as 60mV

Technical data

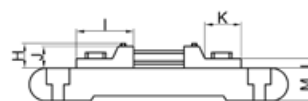
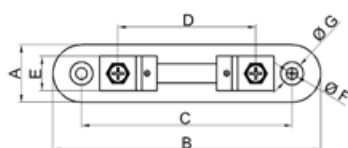
Description	Specification
Accuracy class	0.5
Output	60mV
Rated current	5-4000A
Dielectric strength	Continuous 1.2x rated current, 5seconds 5x rated current
Operating temperature	-20°C to +70°C
Temperature co-efficient	0.002% per°C between 25°C to 80°C

Product coding



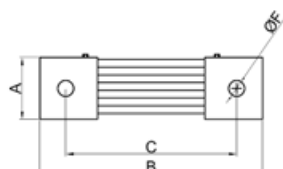
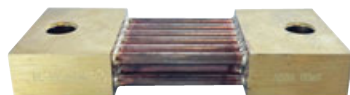
Dimension

60-200A



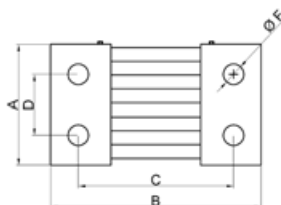
Dimension : Millimeter(mm)

250-600A



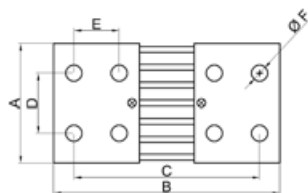
Dimension : Millimeter(mm)

800-1500A



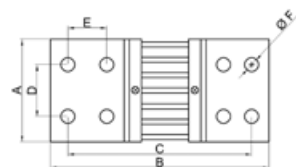
Dimension : Millimeter(mm)

2000A



Dimension : Millimeter(mm)

3000-5000A



Dimension : Millimeter(mm)

Model	A	B	C	D	E	F	G	H	I	J	K	L	M
NDS-060	30	135	110	72	20	6	12	17	31	13	20	5	17
NDS-100													
NDS-150													
NDS-200	32	136	110	67	25	15	12	17	30	15	-	-	17
NDS-250	41	132	105	-	-	8.5	10	-	-	-	-	-	-
NDS-300	34	132	105	-	-	10	12	-	-	-	-	-	-
NDS-400	45	132	105	-	-	12	20	-	-	-	-	-	-
NDS-500	55	132	105	-	-	12	20	-	-	-	-	-	-
NDS-600	55	133	105	-	-	12	20	-	-	-	-	-	-
NDS-800	70	132	105	35	-	12	20	-	-	-	-	-	-
NDS-1000	70	159	105	35	-	12	21	-	-	-	-	-	-
NDS-1500	100	159	105	49	-	12	21	-	-	-	-	-	-
NDS-2000	100	190	166	50	38	14	39	-	-	-	-	-	-
NDS-3000	103	273	232	55	45	14	28	64	90	-	-	-	-
NDS-4000	110	292	253	50	50	17	34	82	97	-	-	-	-



06

RELAY



Description

Industrial power relay of NP403 series enable the high switching capacity up to 40A, high contact force, minimum bouncing time, low power consumption with various choices of selectable coil voltage. Also their high degree of protection (IP50) ensures the reliable operation in tropical and/or salty ambient air condition.

These NP403 relays are an alternative choice which can be widely implemented to the power control circuit in industrial sector, electrical equipments, power stations, substations, railway and industrial plants etc.

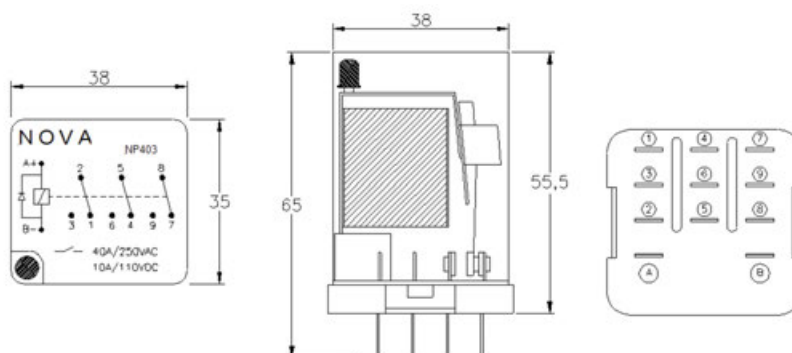
Features

- Compact size and light weight
- Plug-in relay module
- 3change-over contacts
- High contact load (40A at 250VAC or 10A at 110VDC)
- According to IEC 255, IEC 67-1, VDE 0435 part 201
- LED status indicator
- AC or DC coil
- DC type with back EMF diode protection
- Silver alloy contact material

Technical data

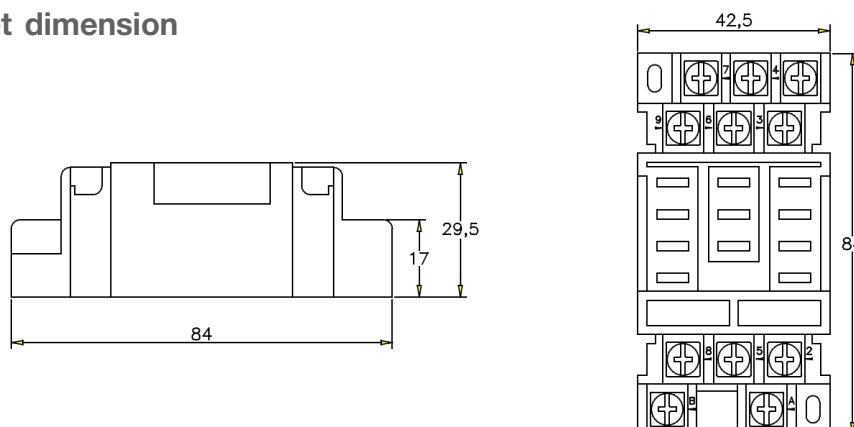
Description	Specification
Coil nominal voltage	AC/DC 12 - 230V
Coil nominal power	AC 4.0VA, DC 2.6W
Contact capacity	40A at 250VAC, 10A at 110VDC
Contact resistance	Max 50m Ω
Max. switching power	10000VA/1120W
Insulation resistance	>1000M Ω at 500VDC
Dielectric strength between open contacts	2000VAC/1min
Dielectric strength between coil & contacts	1500VAC/1min
Electrical service life	10 ⁵ Times
Mechanical service life	10 ⁷ Times
Pick-up time	20ms max for basic type, 9ms max for rapid type
Drop-out time	15ms max for basic type, 9ms max for rapid type
Operating temperature	-40 to +60°C
Ambient humidity	35 ~ 80%RH
Dimension(mm)	40x37x67
Weight(g)	125
Socket type	11pins
Mounting	DIN rial 35mm

Dimension



Dimension : Millimeter(mm)

Socket dimension



Dimension : Millimeter(mm)

Product coding

NP - 40 3 - D 110

NP Basic type
NPR Rapid type

Contact rating 40A

3 Output contact

Coil voltage type

D DC
A AC 50/60Hz

Rated voltage(±10%)

012	12V
024	24V
048	48V
110	110V
125	125V
220	220V
230	230V



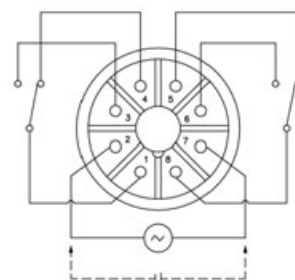
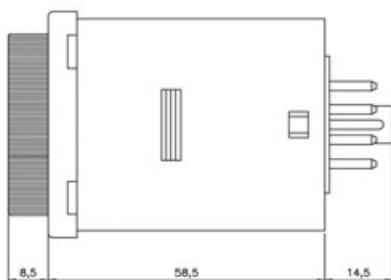
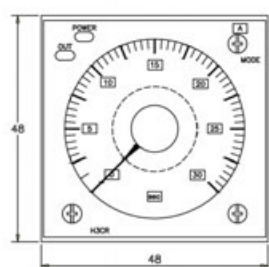
Features

- Field-selectable time ranges from 0.2second to 300hrs
- Use for delay timing, ON-delay and OFF-delay
- Wide input voltage ranges model from 24 - 240VAC/DC fit most applications and reduce spare part inventories
- Timing functions : Signal ON-delay(A), ON-OFF interval(B2), OFF-delay(E), Pulse Trigger(J)
- Timer LED indicators : Power ON(Green) flickers during operation OUT(Red) on when normally open contact is closed
- Short(80mm) panel mounting depth with socket allows for more space-efficient control panel design

Technical data

Description	Specification
Supply voltage(Un)	AC/DC 24~240V
Operating voltage	AC/DC 24 - 240V
Time setting range	0.2Sec - 300hrs
Control output	DPDT relay type
Contact rating	5A at 250VAC
Repeat accuracy	Max $\pm 0.5\%$
Dielectric strength	1500VAC/1min
Operating temperature	-25°C - +70°C
Degree of protection	IP40
Mounting	DIN rail 35mm

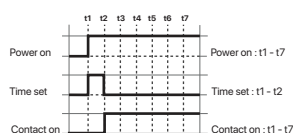
Dimension



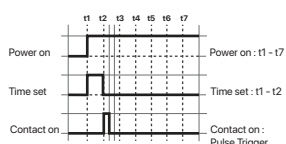
Dimension : Millimeter (mm)

Time - chart

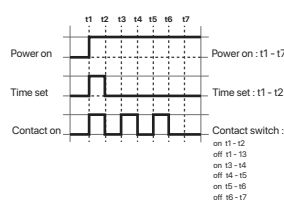
Mode Selector A : On Delay



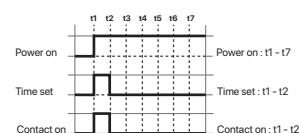
Mode Selector J : Pulse Trigger



Mode Selector B2 : On-Off Interval



Mode Selector E : Off Delay





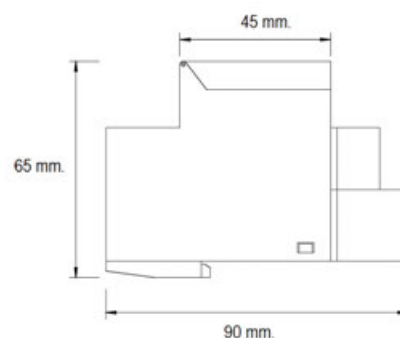
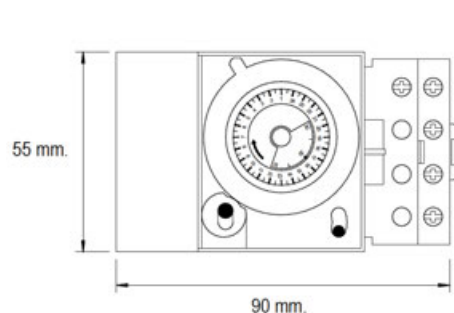
Features

- Time switch with power reserve
- Nominal rated voltage at 230V $\pm 10\%$
- 24hour dial with 30min segment
- Manual over ride ON/OFF switching
- Permanent ON/OFF switching
- Snap on fixing for DIN rail 35mm (EN 50022)

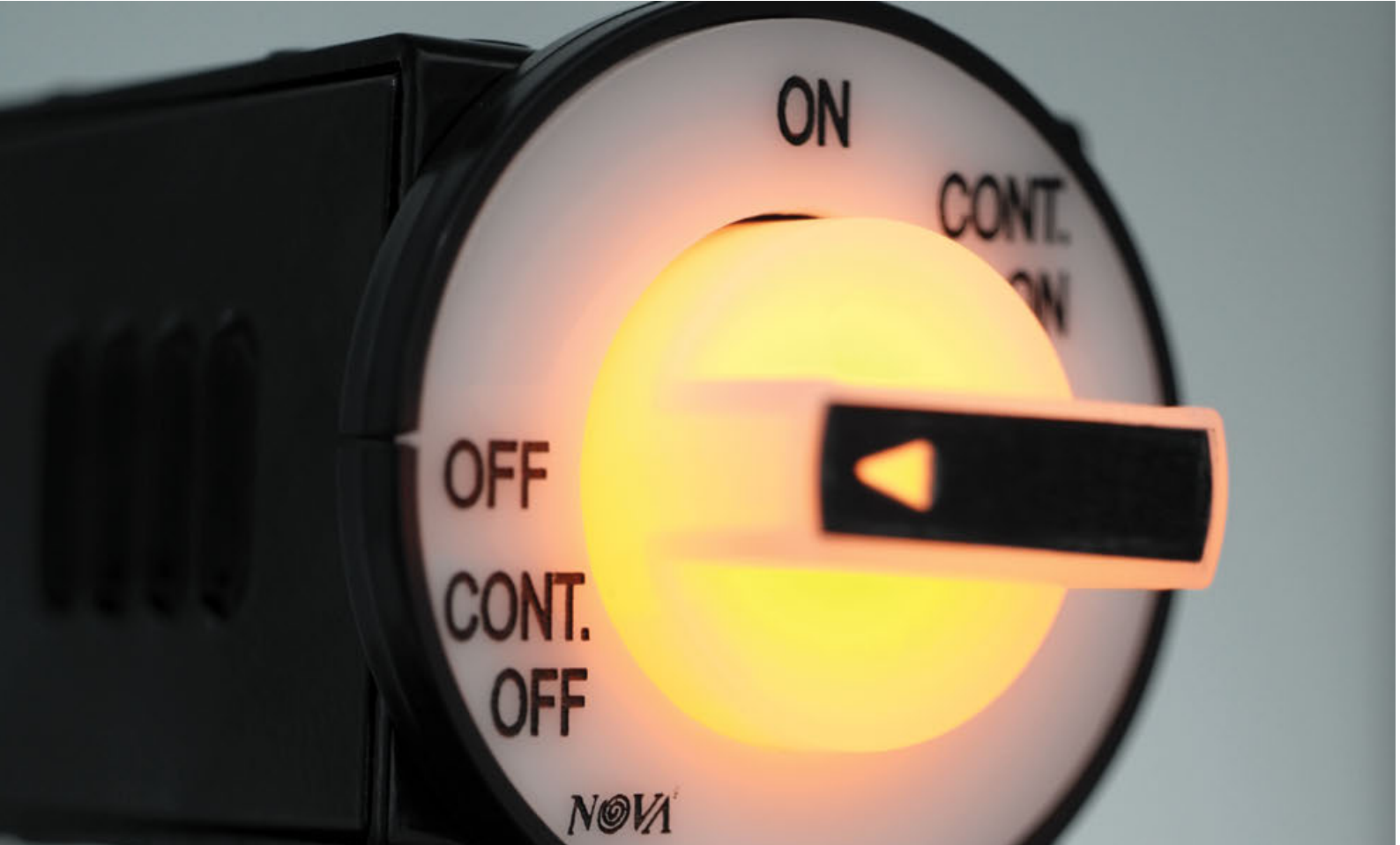
Technical data

Model	NTS-24HR
Program dial	24hrs
Program interval	30min
Set up time	48times
Supply failure reserve	150hrs
Operating voltage	220 ~ 250VAC (45 ~ 60Hz)
Contact capacity	16A/250VAC
Power consumption	1.5W
Output contact	1 changeover
Motor load($\cos\theta = 0.7$)	220V, 1500W
Electric-filament lamp load	12A
Contact resistance	$\leq 50m\Omega$
Insulation resistance	$\geq 100m\Omega$
Electric lifetime	10^7 times
Mechanical lifetime	10^5 times
Operating temperature	$-10 \sim +55^{\circ}\text{C}$
Dimension(mm)	110x66.5x52.5
Weight(g)	190
Mounting	DIN rail 35mm

Dimension



Dimension : Millimeter(mm)



07

SWITCHES





Description

Cam switches series NCS have been developed to the latest achievements in the field of switching devices through the application of high quality insulation material and contacts made from silver alloys. Their advantages are high making and breaking capacities, electrical and mechanical endurance and small dimensions. The rotary cam switches are intended for multiple switching operations in main circuit as well as in auxiliary circuits.

NCS series rotary cam switches have five current ratings : 20A, 25A, 32A, 40A and 63A. All ratings have the finger proof terminal (except for 40A and 63A) The series comply with IEC 60947-1, IEC 60947-3, IEC 60947-5-1

NCS series mainly applies to 600Vac and below voltage (240VAC/50Hz) as well as DC circuit. Typical applications are breaking and closing, change-over of circuit, selector switches (for example: Auto-Manual), control switch of switchgear/control gear and control switch of instruments.

Applications

The NCS series cam switches can be used for virtually all purposes which classified by utilization as the following :

- Motor switches - these switches are designed for direct-online starting and stopping of single phase and three phase motors, which also come out as star-delta switches, reversing switches, pole-change over motor switches.
- Selector switches and multi-step switches - e.g. Voltmeter selector switches, Ammeter selector switches and etc for transformers and welding apparatuses.
- Cut-Off switches or ON-OFF switches in auxiliary circuits - these switches are assembled in compliance with the switching programmer according to preference : switches for control, signaling and measuring circuits.
- Control switches with spring return - pull to operate and etc.

Cam switches can have up to 15 layers (30 contacts) in maximum In principle all sizes and designs of cam switches can be arranged with four different angles of rotation. Suitable to the application of stop mechanism with 90°, 60°, 45°, 30° at uniform distribution of a full circle, maximum 4, 6, 8 or 12 switch positions are possible.

The switches can be used at the ambient temperature from -5°C to +55°C and storage temperature from -20°C to +70°C

Technical data

Conforming to the standards IEC 60947-1, IEC 60947-3 and IEC 60947-5-1

Front protection class : IP40

Live part : IP20

Contact material : Ag Ni10 (90% silver + 10% Nickel)

Model			NCS-20	NCS-25	NCS-32	NCS-40	NCS-63
Rated insulation voltage U_i	V		690	690	690	690	690
Rated impulse withstand voltage U_{imp}	kV		6	6	6	6	6
Rated thermal current I_{th}	A		20	25	32	40	63
Rated operational current I_e							
AC-21A, AC-22A	(240/440V)	A	20/20	25/25	32/32	40/40	63/63
AC-23A	(240/440V)	A	15/15	22/22	30/30	32/32	57/57
AC-2	(240/440V)	A	15/15	22/22	30/30	32/32	57/57
AC-15	(240/440V)	A	5/4	8/5	14/6	14/6	28/12
Power rating							
AC-23A	(220V~240V)/(380V~440V)	kW	3.7/7.5	5.5/11	7.5/15	7.5/18.5	15/30
AC-2	(220V~240V)/(380V~440V)	kW	3.7/7.5	5.5/11	7.5/15	10/18.5	18.5/30
AC-3	(220V~240V)/(380V~440V)	kW	3/5.5	3.7/7.5	5.5/11	7.5/15	6/18.5
AC-4	(220V~240V)/(380V~440V)	kW	1.5/1.5	2.2/3	3/5.5	3.7/6	2.4/7.5
DC Switching capacity							
Resistive loads							
T = 1 ms		Voltage					
	24	A	20	25	32	40	63
	48	A	12	20	25	32	40
	60	A	4.5	7.5	8	10	16
	110	A	2	3	4	4.5	6
Inductive loads							
T = 50 ms		Voltage					
	24	A	16	20	25	32	40
	48	A	9.5	16	20	19.5	32
	60	A	3.5	6	6	8	13
	110	A	1.0	1.5	2	2.3	3

NOTE : The power under AC-23A, AC-2, AC-3, AC-4 are in three phase/three pole and the divider represents the power under single phase/two pole.

Mechanical life without load : 10×10^4 times, operation frequency is 120 times/h

Mechanical life with load : 3×10^4 times, operation frequency is 120 times/h

Ammeter selector switches



Model		NCS
Size(mm)	M1	48x48, 48x60(with rectangle plate)
	M2	64x64, 64x80(with rectangle plate)
Rated current	Standard	20A
	Special	25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2x0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal

Voltmeter selector switches



Model		NCS
Size(mm)	M1	48x48, 48x60(with rectangle plate)
	M2	64x64, 64x80(with rectangle plate)
Rated current	Standard	20A
	Special	25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2x0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal

Breaker control switches (Pull to lockout)



Model		NCS
Size(mm)	M2	64x64, 64x80(with rectangle plate)
Rated current	Standard	25A
	Special	20A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2x0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal

Circuit breaker control switch (Pull and turn / Push and turn)



Model		NCS
Size(mm)	M2	64x64, 64x80with rectangle plate)
Rated current		20A / 25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2x0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal

Open-close switch (Spring return/Limited movement)



Model		NCS
Size(mm)	M1	48x48, 48x60(With rectangle plate)
	M2	64x64, 64x80(With rectangle plate)
Rated current		20A / 25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2x0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal

Changeover switch (Limited movement)



Model		NCS
Size(mm)	M1	48x48, 48x60(With rectangle plate)
	M2	64x64, 64x80(With rectangle plate)
Rated current		20A / 25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2x0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal

Changeover switch M2 (Type (O) handle for M2 only)



Model		NCS
Size(mm)	M2	64x64, 64x80(With rectangle plate)
Rated current		20A / 25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2x0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal

Changeover switch M2 (Type (S) handle for M2 only)



Model		NCS
Size(mm)	M2	64x64, 64x80(With rectangle plate)
Rated current		20A / 25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2x0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal

Open-close switch (Push and spring return)



Model		NCS
Size(mm)		Ø22
Rated current		20A / 25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2x0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal

Padlock changeover switch (Push and turn / Push for padlock)



Model		NCS
Size(mm)	M1	48x48, 48x60(With rectangle plate)
Rated current		20A / 25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2x0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal

Padlock control switch



Model		NCS
Size(mm)	M1	64x80
Rated current		20A / 25A / 32A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2x0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal

Double layer (multi-contact) switch



Model		NCS
Size(mm)	M1	48x48, 48x60(With rectangle plate)
	M2	64x48, 64x60(With rectangle plate)
Rated current		20A / 25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2 x 0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal
Contacts		Maximum 60 contacts

Key changeover switch RK (Lock and removable)



Model		NCS
Size(mm)	M1 (RK)	48x85
	M2 (RK)	64x129
Rated current		20A / 25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2 x 0.5 - 2.5mm ² / 14AWG
Terminal Lug		Fork terminal

Key changeover switch M1, M2 (Lock and removable)



Model		NCS
Size(mm)	M2	64x64, 64x80(With rectangle plate)
Rated current		20A / 25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2 x 0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal

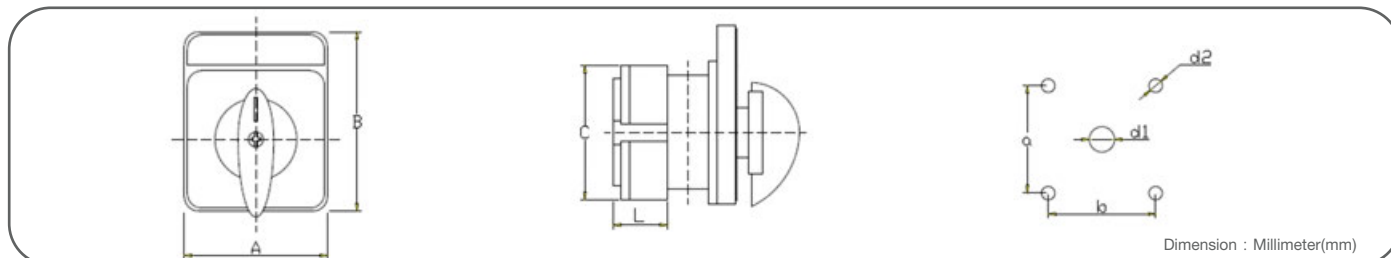
Key operate type (Lock and removable)



Model		NCS
Size(mm)	M1	48x48
	M2	64x64, 64x80(With rectangle plate)
Rated current		20A / 25A / 32A / 40A / 63A
Voltage	Rated impulse withstand voltage	6kV
	Rated insulation voltage	690VAC
Wire size		2 x 0.5 - 2.5mm ² / 14AWG
Terminal lug		Fork terminal
Colors		No.264 /No Color, No.65/Yellow, No.66/Red, No.67/Blue, No.68/Green, No.69/Purple, No.S01/Pink

Dimension

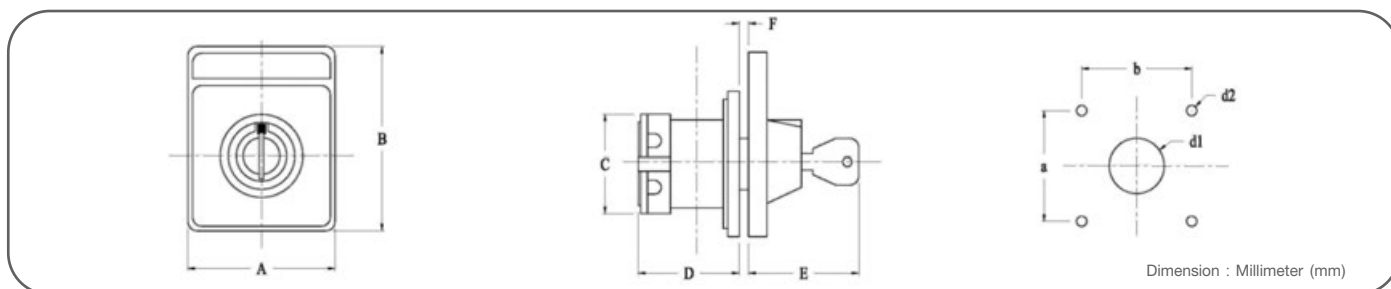
Cam switch (Normal type)



Dimension : Millimeter(mm)

Model	Escutcheon plate	Dimension(mm)				Installation(mm)						
		A	B	C	L	a	b	d1	d2			
NCS-20	M1	48	48	43	9.6n	36	36	Ø8.5	Ø4.5			
	M1(With rectangle plate)		60									
	M2	64	64			48	48	Ø9				
	M2(With rectangle plate)		80									
NCS-25	M1	48	48	45.2	12.8n	36	36	Ø8.5				
	M1(With rectangle plate)		60									
	M2	64	64			48	48	Ø19				
	M2(With rectangle plate)		80									
NCS-32	M2	64	64	58	14n					48	48	Ø19
	M2(With rectangle plate)		80									
NCS-40	M2		64			66	22n					
	M2(With rectangle plate)		80									
NCS-63	M2		64									
	M2(With rectangle plate)		80									

Cam switch (Key type)



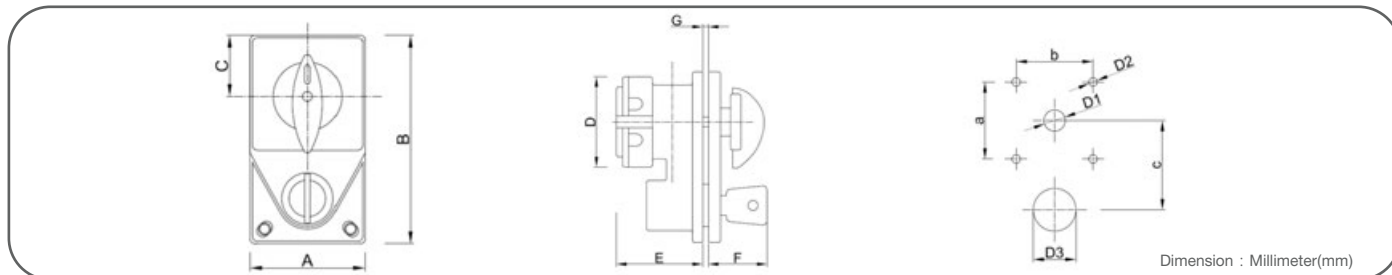
Dimension : Millimeter (mm)

Model	Escutcheon plate	Dimension(mm)						Installation(mm)			
		A	B	C	D	E	F	a	b	d1	d2
NCS-20	M1	48	48	43	40+9.6n	40	1-4	36	36	Ø24	Ø4.5
	M2	64	64		35+9.6n	48		48	48		
	M2(With rectangle plate)	64	80		35+9.6n	48		48	48		
NCS-20	M1	48	48	45.2	23+12.8n	40		36	36		
	M2	64	64		34.4+12.8n	48		48	48		
	M2(With rectangle plate)	64	80		34.4+12.8n	48		48	48		

NOTE : n for number of layers

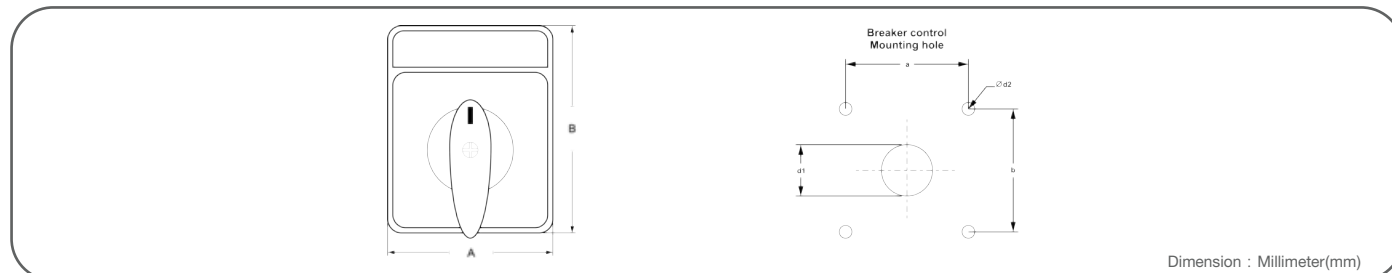
: Square escutcheon plate plus rectangle plate is added for M1 and M2, shall be used for Model NCS20 and NCS25. NCS32, NCS40 and NCS63 should be M2, and M3 only.

Cam switch (Key changeover switch RK)



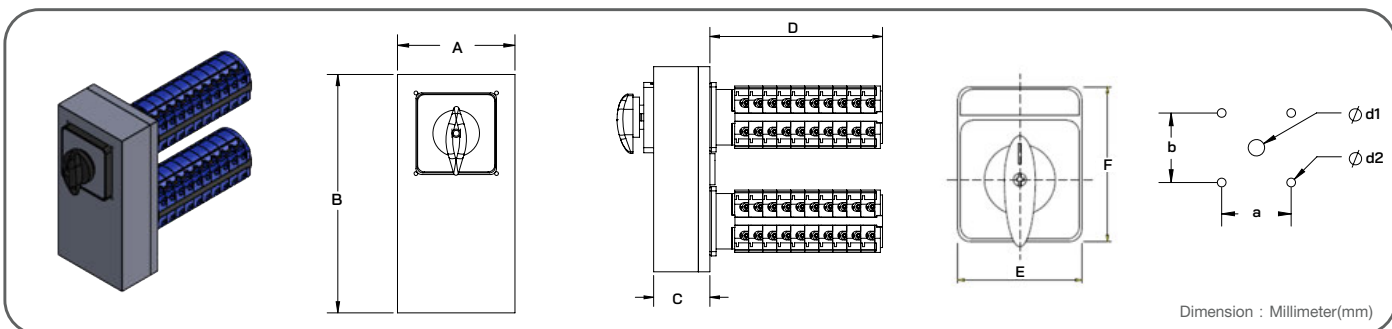
Model	Escutcheon plate	Dimension(mm)							Installation(mm)					
		A	B	C	D	E	F	G	a	b	c	D1	D2	D3
NCS-20	M1	48	85	25	45	34+9.6n	29	1-4	36	36	41.5	Ø8.5	Ø4	Ø20
	M2	64	129	32			35	1-4	48	48	50	Ø10	Ø4	Ø34
NCS-25	M1	48	85	25	47.2	34+12.8n	29	1-4	36	36	41.5	Ø8.5	Ø4	Ø20
	M2	64	129	32			35	1-4	48	48	50	Ø10	Ø4	Ø34

Breaker control switches (Pull to Lockout)



Model	Escutcheon plate	Dimension(mm)		Installation(mm)			
		A	B	a	b	d1	d2
NCS-25	M2	64	80	48	48	Ø19	Ø4.5
	M3	88	88	68	68	Ø13	Ø6

Double layer (multi-contact) switch



Model	Escutcheon plate	Dimension(mm)						Installation(mm)				
		A	B	C	D	E	F	a	b	d1	d2	
NCS-20	M1	70	142	39	22+9.6n	48	48	36	36	Ø8.5	Ø4.5	
	M1(With rectangle plate)						60					
	M2				25+9.6n		64	48	48	Ø9		
	M2(With rectangle plate)						80					
NCS-25	M1				23+9.6n	64	48	36	36	Ø8.5		
	M1(With rectangle plate)						60					
	M2						26.5+9.6n	64	48	48		Ø19
	M2(With rectangle plate)							80				

NOTE : n for number of layers

Product Coding

NCS - 20 M1 - 10 (X A I) -D (270 - 0 - 90) (K66)



Current rating

20	20A
25	25A
32	32A
40	40A
63	63A

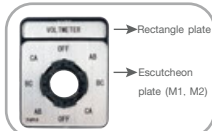
Ex.Step position and angle



Escutcheon plate size

M1	48x48mm
M2	64x64mm

Name plate



Number of contacts

02	2contacts, 1layer
04	4contacts, 2layers
06	6contacts, 3layers
08	8contacts, 4layers
10	10contacts, 5layers
30	30contacts, 15layers

Handle type

Handle type (M1)



Handle type (M2)



*Rectangle plate not available

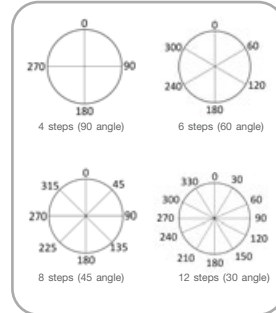
Additional rectangle plate

X	No
A	Add

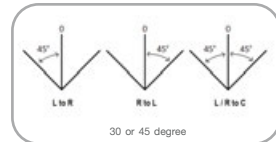
Operation

X	Normal
S	Spring return
P	Pull and turn
H	Push and turn

Step position and angle



Spring return



Key No. *

K264	No color
K65	Yellow
K66	Red
K67	Blue
K68	Green
K69	Purple
KS01	Pink

*for handle type Key

DIN rail mounted option

	No
-D	Add DIN rail



Description

NOVA Discrepancy switches (NDCS) are used to control & monitor the circuit breaker and disconnecting switches. Also display their circuit state in mimic panels and illuminated mimic diagrams.

When it lights up that means the position of the discrepancy switches does not match with the pre-assigned circuit breaker.

The luminous source is from high brightness LED lamp with yellow color.

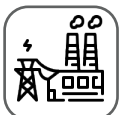
Features

- Robust, durable, compact and luxurious design
- Provide both round and square installation flanges
- 2points switching type
(by pushing and turning to right or left side)
High brightness LED chip technology with built in current limiting resistor and zener diode
- Various input voltages (both AC & DC) for LED indicator.
- Flashlight could be supplied as an option
- Finger proof terminal, screw type for contactor size 0.5-4mm²

Applications



Electrical utility substations



MV/LV energy distribution



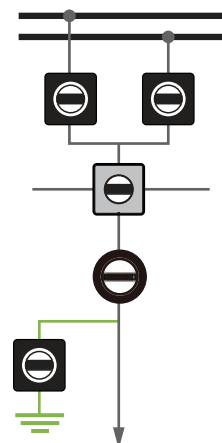
Railway transport industry

According to standards

- IEC 60947-1
- IEC 60947-3
- IEC 60947-5-1
- IEC 60529

Mimic diagram

The association between discrepancy switches and disconnecter/circuit breaker is directly identified on the mimic diagram by the front plate shape.



Control discrepancy switches mimic diagram

Technical data

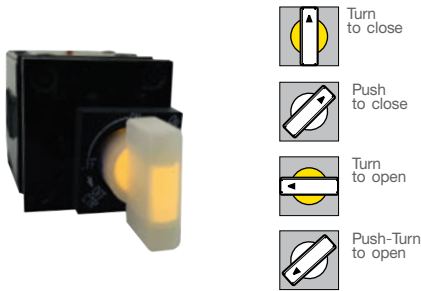
Description			NDCS-20	NDCS-25	NDCS-32
Rated insulation voltage U_i		V	690	690	690
Rated impulse withstand voltage U_{imp}		kV	6	6	6
Rated thermal current I_{th}		A	20	25	32
AC rated frequency			50/60Hz		
Input voltages for LED lamp			24, 48, 110, 125, 220 and 250V AC/DC ($\pm 10\%$)		
Rated short-time withstand current (I_{cw})	for AC-22A		1.3kA	2.5kA	5kA
	for DC-22A		9A	14A	18A
Rated short-circuit making capacity (I_{cm})	for AC-22A		2kA	3.5kA	7.5kA
	for DC-22A		9A	14A	18A
Rated operational current (I_e)					
AC-21A, AC-22A		A	20	25	32
AC-23A		A	15	22	30
AC-2		A	15	22	30
AC-3		A	11	15	22
AC-4		A	3.5	6.5	11
AC-15 (220V-240V)		A	5	8	14
Power rating	Three phase	Single phase			
AC-22A	380V-440V	220V-240V	7.5/3.7 kW	11/5.5 kW	15/7.5 kW
AC-2	380V-440V	220V-240V	7.5/3.7 kW	11/5.5 kW	15/7 kW
AC-3	380V-440V	220V-240V	5.5/3 kW	7.5/3.7 kW	11/5.5 kW
AC-4	380V-440V	220V-240V	1.5/1.5 kW	3/2.2 kW	5.5/3 kW
DC operational performance capability (DC-22A)					
Resistive and inductive loads					
T = 2 ms	24VDC	A	20	25	32
	48VDC	A	12	20	25
	60VDC	A	4.5	7.5	10
	110VDC	A	1.0	1.5	2.0
	125VDC	A	0.9	1.4	1.8
	220VDC (2Contacts in series)	A	1.0	1.5	2.0
	250VDC (2Contacts in series)	A	0.9	1.4	1.8
Mechanical durability			5x10 ⁵ operations up		
Electr ical durability			2x10 ⁵ operations up		
Ambient temperature			-5 ^o C to + 40 ^o C		
Storage temperature(not exceeding 24h)			-25 ^o C to + 70 ^o C		
Average maximum temperature			+45 ^o C		
Contact material			AgNi (90%Silver + 10%Nickel)		



Micro knob

Normal knob

Big knob



SM Square (Micro knob)
For Mosaic Tie (24x24mm)



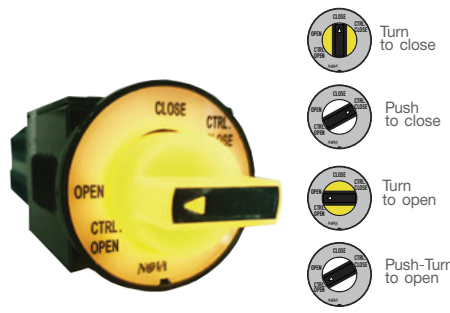
SN Square (Normal knob)
For Circuit breaker (48x48mm)



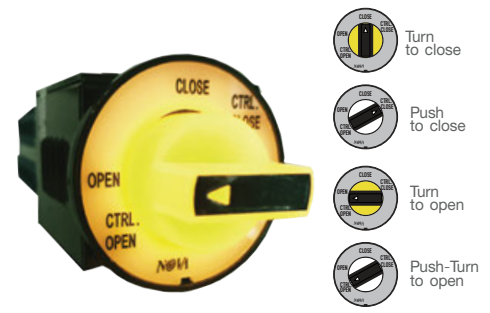
SB Square (Big knob)
For Circuit breaker (58x58mm)



LED lamp (NLB)
24, 48, 110, 125, 220 and 250V AC/DC



RN Round (Normal knob)
For Disconnector (Ø52mm)



RB Round (Big knob)
For Disconnector (Ø62mm)

Special diagrams

Control discrepancy switches are mainly used to control and signal discrepancies on circuit breakers and disconnectors switches.

Often it is also requested on applications where the switch will control auxiliary circuits giving signal to external relays, acoustic circuits.

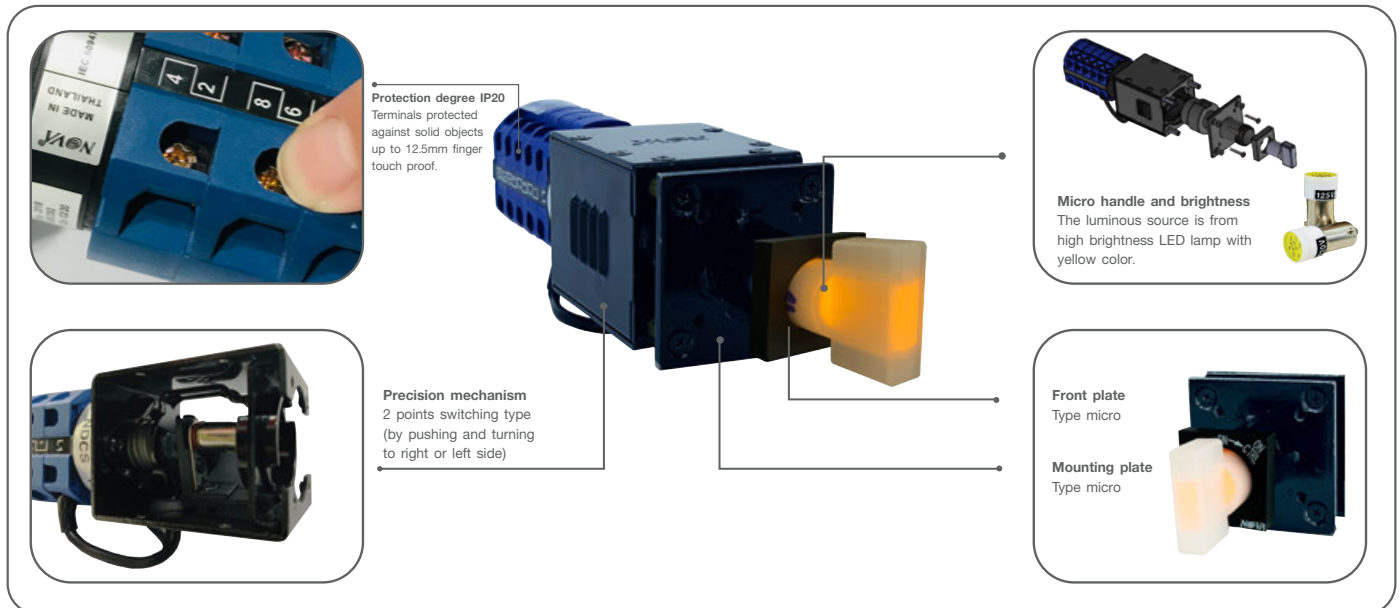
This product constructional flexibility offers optimal adaptation to specific needs of circuit breaker/disconnector circuits and other applications such as on load controller, contactor control.



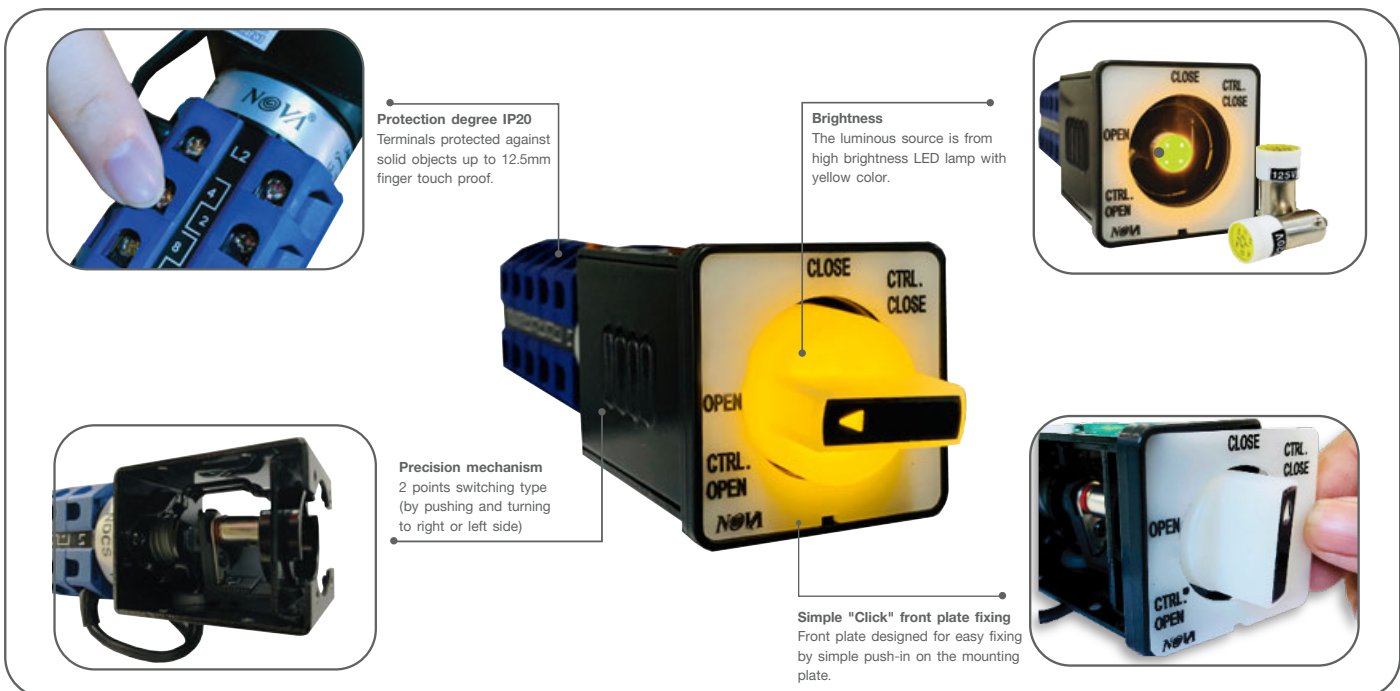
Combining electronics and electro mechanics technology on this product has achieved a solution that is distinguished by its well accomplished integration and simplicity on installation and operation.

- High brightness LED chip technology with built in current limiting resistor and zener diode.
- Encapsulated electronics, Maximum protection and safety.
- Simple mounting insert bolts on frontal breaking mechanism.
- Easy "push to turn" front plate mounting.

Mosaic type



General characteristics



Control panels retrofitting

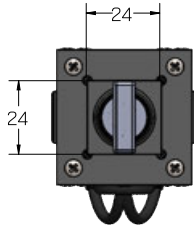
When maintaining and updating control panels we often face product supply problems to localize and purchase original goods that frequently are yet out of production manufacturing. In ESP Technologies Limited we can provide the product cross-reference that you need and benefit from an expert technical service manufacturing product countertypes from your original unit.



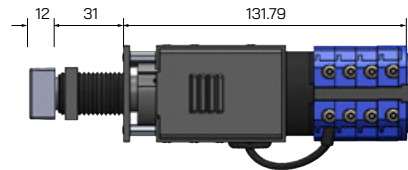
retrofit

Dimensions

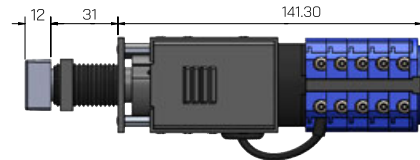
Micro knob



3 Layers

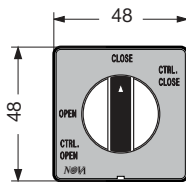


4 Layers

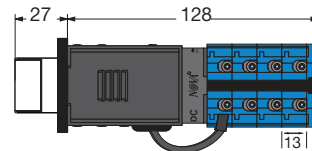


Normal knob

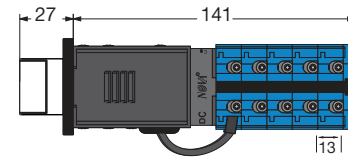
SN(Square normal knob)



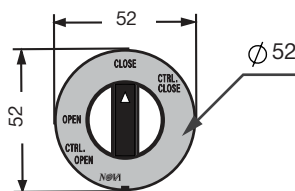
3 Layers



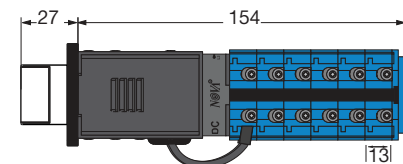
4 Layers



RN(Round normal knob)



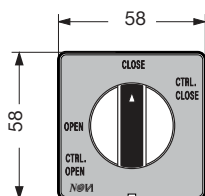
5 Layers



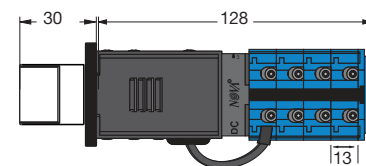
Dimension : Millimeter(mm)

Big knob

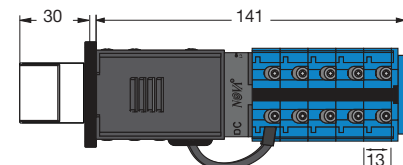
SB(Square big knob)



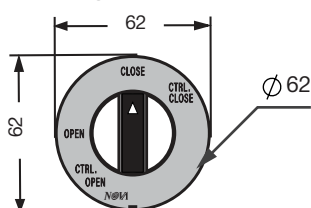
3 Layers



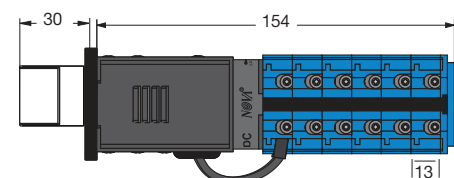
4 Layers



RB(Round big knob)



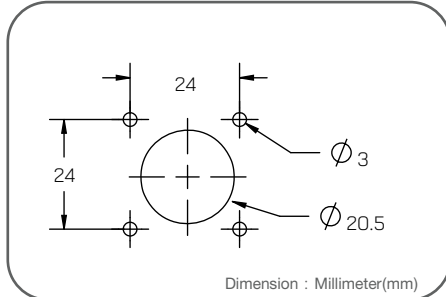
5 Layers



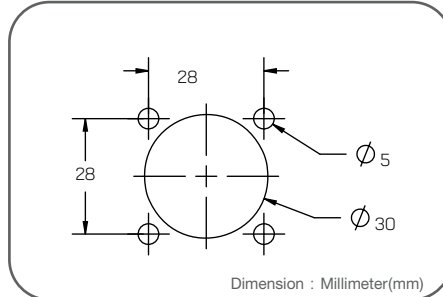
Dimension : Millimeter(mm)

Fixing Dimensions

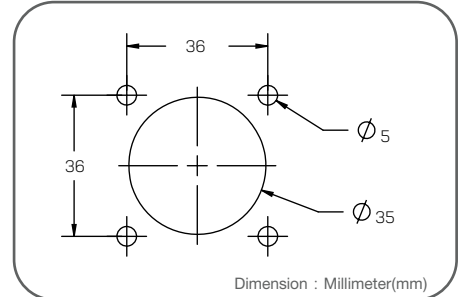
Micro knob mounting hole
Mosaic tie 24x24



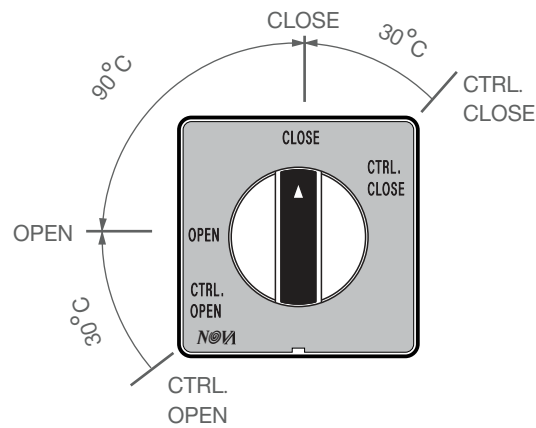
Normal knob mounting hole
flange code SN, RN



Big knob mounting hole
flange code SB, RB



Operation



Wiring diagram

3 Layers

CONTACT	POSITION			
	CTRL. OPEN	OPEN	CLOSE	CTRL. CLOSE
[L1-L2] [L1-L2]	L1			L2
1-2				X
3-4	X			
5-6				X
7-8	X			
9-10			X	X
11-12	X	X		

4 Layers

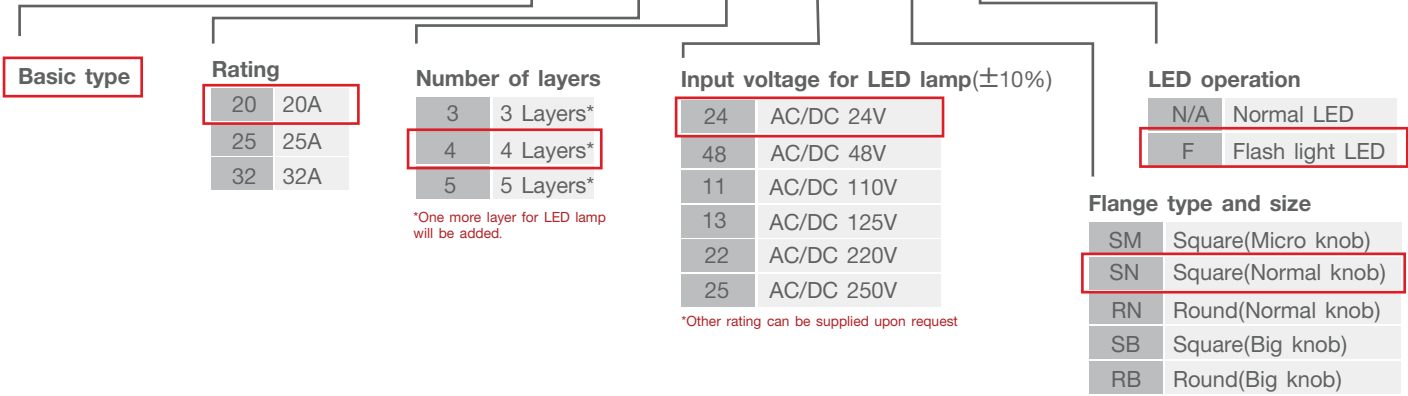
CONTACT	POSITION			
	CTRL. OPEN	OPEN	CLOSE	CTRL. CLOSE
[L1-L2] [L1-L2]	L1			L2
1-2	X	X		
3-4			X	
5-6				X
7-8				X
9-10				X
11-12	X			
13-14	X			
15-16	X			

5 Layers

CONTACT	POSITION			
	CTRL. OPEN	OPEN	CLOSE	CTRL. CLOSE
[L1-L2] [L1-L2]	L1			L2
1-2				X
3-4	X			
5-6				X
7-8	X			
9-10				X
11-12	X			
13-14			X	X
15-16	X	X		
17-18			X	X
19-20	X	X		

Product Coding

NDCS 20 - 4 - 24 - SN F





NLS-DS



NLZ-15GQ-B



NLZ-15GW-B



NLZ-15GW22-B



NLZ-15GW2-B


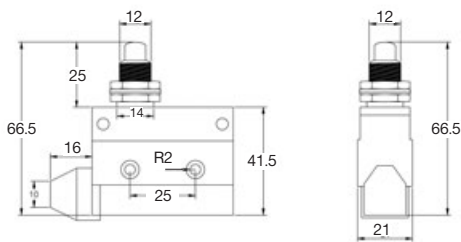

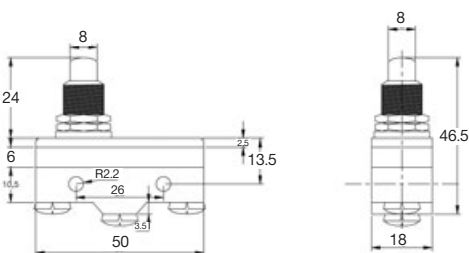

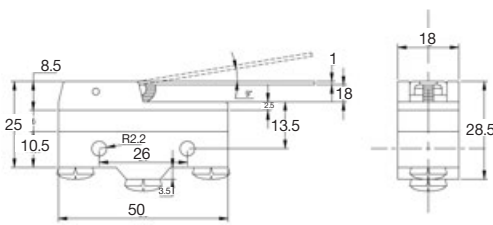

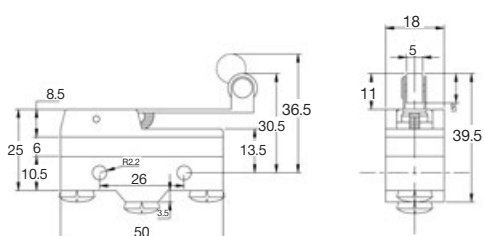

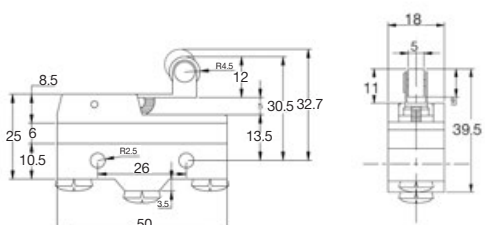
Features

- Enclosed switches with built-in basic switches for high repeatability and durability of 10million operations minimum
- High precision basic switch in a variety of styles
- Suitable for applications demanding higher mechanical strength, dustproof and drip-proof properties than those on basic switches

Technical data

Description		NLS-DS	NLZ-15GQ-B	NLZ-15GW-B	NLZ-15GW2-B	NLZ-15GW22-B
Operating force(Max)		600g	350g	100g	200g	130g
Releasing force(Min)		100g	114g	14g	42g	21g
Pre travel(Max)		2.0mm	0.4mm	10.0mm	2.7mm	7.1mm
Over travel(Min)		6.0mm	5.5mm	5.6mm	2.4mm	4.0mm
Movement differential(Max)		0.8mm	0.05mm	2.0mm	0.8mm	1.6mm
Free position(Max)		-	-	28.2mm	32.9mm	36.5mm
Operating position		21.8 ±1.2mm	19.0 ±0.8mm	19.0 ±0.8mm	30.2 ±0.4mm	30.2 ±0.8mm
Operating frequency	Mechanical	240ops/min				
	Electrical	20ops/min				
Service life	Mechanical	1 x 10 ⁶ (Operations)				
	Electrical	5 x 10 ⁶ (Operations)				
Rated current/Voltage		10A at 250VAC				
Rated insulation voltage		600VAC				
Operating temperature		-20° to +80°C (-4° to 176°F)				
Dielectric strength		1500VAC 50/60Hz (For 1min)				
Degree of protection		IP63				

Dimension

Product	Model	Dimension(mm)
	NLS-DS	 <p>Dimension : Millimeter(mm)</p>
	NLZ-15GQ-B	 <p>Dimension : Millimeter(mm)</p>
	NLZ-15GW-B	 <p>Dimension : Millimeter(mm)</p>
	NLZ-15GW2-B	 <p>Dimension : Millimeter(mm)</p>
	NLZ-15GW22-B	 <p>Dimension : Millimeter(mm)</p>

Features

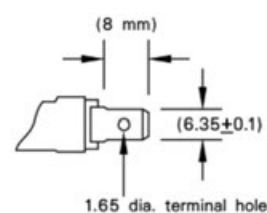
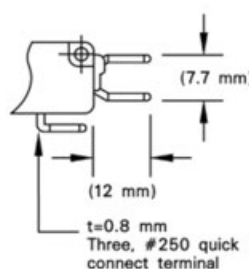
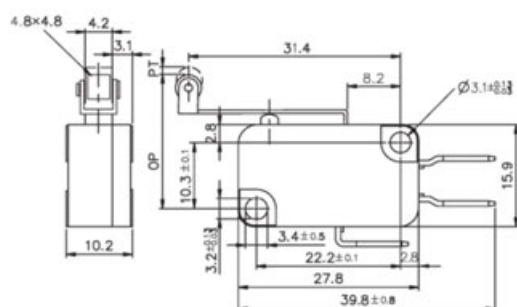
- High switch on and off capacity (16A)
- Economy model

Technical data



Description		Specification
Head and driving rod		Hinge roller lever
Rated current / Voltage		16A/250VAC
Contact type		SPDT 1NO 1NC
Terminal type		NEMA type #250, 6.3mm
Operation speed		0.1mm ~ 1m/s (Button type)
Insulation resistance		100M Ω above (at 500VDC)
Contact resistance		15m Ω max (Initial value) 1000VAC
Withstand voltage	Non-continuous terminals	50/60Hz for 1min
	Current-carrying and non-current carrying metal parts Between terminal and earthing	2000VAC, 50/60Hz for 1min
Vibration	Misoperation	10 - 55Hz, 1.5mm pairs swing
Shock	Durable	1000m/s ² (100G)
	Misoperation	300m/s ² (100G)
Service life	Mechanical	1x10 ⁷ min (Operations)
	Electrical	1x10 ⁵ min (Operations)
Operation frequency	Mechanical	240min (Operations)
	Electrical	20min (Operations)
Temperature		-10°C ~ +65°C
Humidity		85%RH (-5°C ~ +35°C)

Dimension



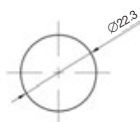
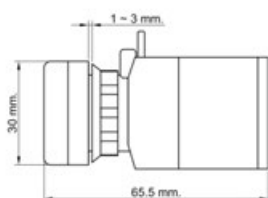
Dimension : Millimeter(mm)



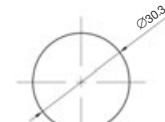
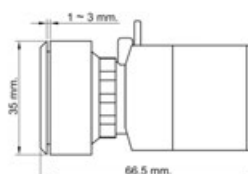
Technical data

Description	Specification
Insulation withstand voltage	10MΩ at 500VDC, 1500VAC/1min
Contact rating	10A at 250VAC, 5A at 125VDC
Rated voltage of lamp	AC/DC 24, 48, 70, 125, 220V
Mechanical lifetime	3 x 10 ⁶
Electrical lifetime	12 x 10 ⁵
Ambient temperature	-5°C ~ +55°C
Storage temperature	-20°C ~ 70°C
Ambient humidity	45 ~ 85%
Degree of protection	IP54
Cut-out(mm)	22.3/30.3

Cutout Dimension



Cut-out



Cut-out

Dimension : Millimeter(mm)

Product Coding

NPB 22 - R 13 - A 11

Basic type

Cut-out(mm)

22	22.3
30	30.3

Button colors

R	Red
B	Black
G	Green
Y	Yellow
W	White
S	Sky blue

Rated voltage (with lamp)(±10%)

FL	Without lamp (Flat)
EM	Emergency*
24	AC/DC 24V
48	AC/DC 48V
11	AC/DC 110V
13	AC/DC 125V
22	AC/DC 220V
23	AC/DC 230V

*Other rating can be supplied upon request

Number of contacts

11	1NO/1NC
20	2NO
02	2NC
22	2NO/2NC

Function operate

A	Alternate
M	Momentary
T	Turn to release

NOTE : Emergency push button has red color only. The emergency stop push button comply with IEC 60204, IEC 60947 and IEC 60073. They are designed with a positive mechanical movement sequence. The push button latches when pressed and is reset by turning it in a clockwise direction.



Features

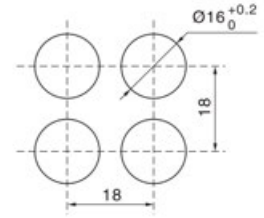
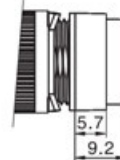
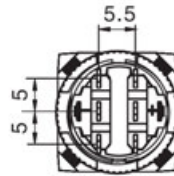
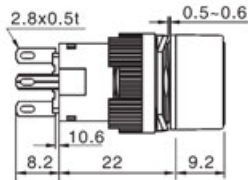
- Installation diameter : 16mm
- Degree of protection : IP65
- Silver plated of contact : 3μ
- Compact design saves space
- EN 60947-1, EN 60947-5-1
- Terminal Style : Solder/Quick connect
- Super bright LED cold light source lamp display

Technical data

Description	Specification
Degree of protection	IP65 Watertight/Oiltight
Maximum voltage	AC/DC 250V
Thermal current	5A
Contact configuration	Single pole, Double pole
Insulation resistance	100MΩ at 500VDC
Minimum applicable load	AC/DC 5V, 1mA
Operating temperature	-25°C ~ 55°C
Ambient humidity	45 ~ 85% RH
Cut-out(mm)	16
Weight(g)	>10
Electrical life	100,000 Operations minimum (at full rated load)
Mechanical life	Maintained : 1,000,000 Operations minimum Momentary : 1,000,000 Operations minimum Selector/Keylock : 250,000 Operations minimum
Dielectric strength	Switch Unit : 2000VAC/1min between live/dead part and terminals of different poles 1000VAC/1min between terminals of the same pole 1500VAC/1min between contact and lamp terminals Illumination unit : 2000VAC/1min between live Part/Ground
Soldering temperature	20W/5 seconds or 260°C/3 seconds

Dimension

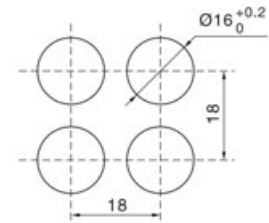
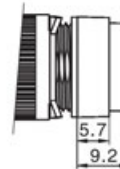
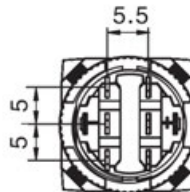
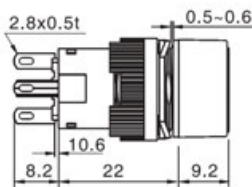
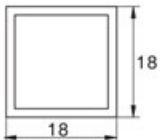
Round



Installation size

Dimension : Millimeter(mm)

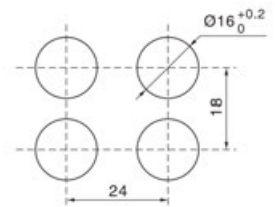
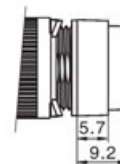
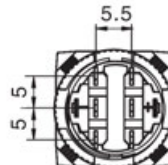
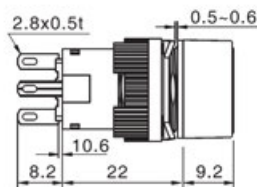
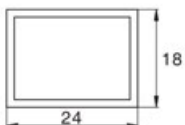
Square



Installation size

Dimension : Millimeter(mm)

Rectangle



Installation size

Dimension : Millimeter(mm)

Product Coding

NPB16 - T - R13 - M

Basic type

Flange type

R	Round
S	Square
T	Rectangle

Button colors

R	Red
G	Green
Y	Yellow
W	White
S	Sky blue

Rated voltage

24	AC/DC 24V
48	AC/DC 48V
11	AC/DC 110V
13	AC/DC 125V
22	AC/DC 220V
23	AC/DC 230V

*Other rating can be supplied upon request

Function operate

A	Alternate
M	Momentary



Applications

- Hazardous areas : Zone 1 & 2 or zone 20, 21, 22
Explosive gas atmosphere : class II A, II B, II C
or Flammable dust atmospheres

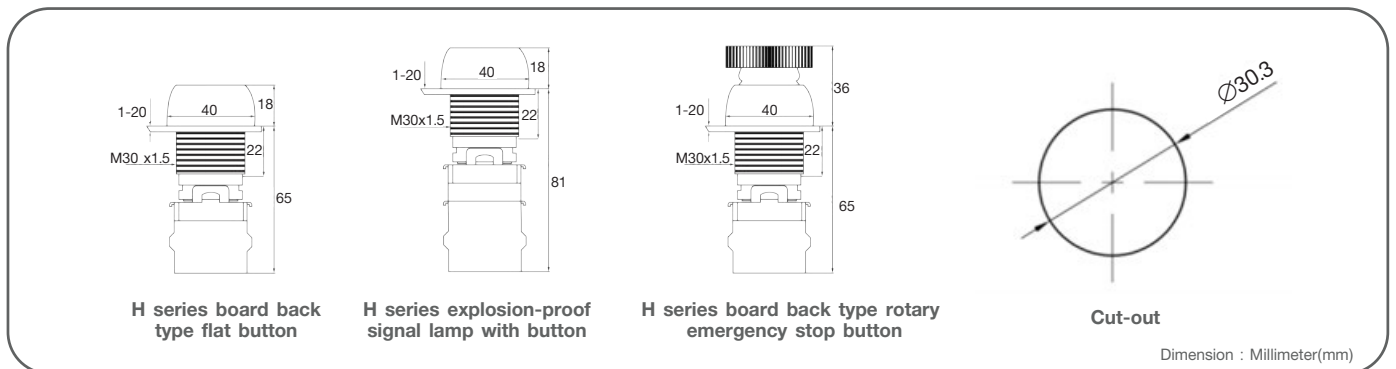
Features

- This products are made by aluminum alloy, stainless steel or medium carbon steel
- The explosion-proof signal lamp should be used together with flame proof enclosure, cannot be used alone at explosive atmosphere

Technical data

Description	Specification
Insulation withstand voltage	10MΩ at 500VDC, 1500VAC/1min
Contact rating	AC-15 : 200V/6A, 380V/4A, 600V/2A DC-13 : 24V/6A, 48V/3A, 110V/1A, 220V/0.5A
Mechanical lifetime	3 x 10 ⁶
Electrical lifetime	12 x 10 ⁵
Ambient temperature	-5°C ~ +55°C
Storage temperature	-20°C ~ 70°C
Ambient humidity	45 ~ 85%
Degree of protection	IP65
Cut-out(mm)	30.3

Dimension



Product Coding

NPBH - R13 - A11

Basic type

Button colors

R	Red
B	Black
G	Green
Y	Yellow
W	White
S	Sky blue
A	Amber

Rated voltage (with lamp)

FL	Without lamp (Flat)
EM	Emergency
24	AC/DC 24V
48	AC/DC 48V
11	AC/DC 110V
13	AC/DC 125V
22	AC/DC 220V
23	AC/DC 230V

*Other rating can be supplied upon request

Function operate

A	Alternate
M	Momentary
T	Turn to release

Number of contacts

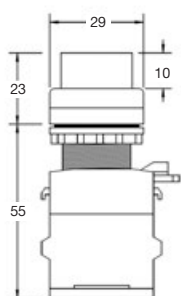
11	1NO/1NC
20	2NO
02	2NC
22	2NO/2NC



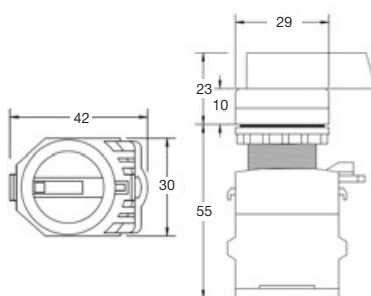
Technical data

Description	Specification
Insulation withstand voltage	10MΩ at 500VDC, 1500VAC/1min
Contact rating	10A at 250VAC, 5A at 125VDC
Mechanical lifetime	3 x 10 ⁶
Electrical lifetime	12 x 10 ⁵
Ambient temperature	-5°C ~ +55°C
Storage temperature	-20°C ~ 70°C
Ambient humidity	45 ~ 85%
Degree of protection	IP54
Cut-out(mm)	22.3

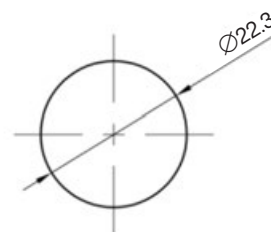
Dimension



Short handle



Long handle



Cut-out

Dimension : Millimeter(mm)

Product Coding

NSS22 - 2 L - 11 S

Basic type

Position

2	2 Steps
3	3 Steps

Handle type

L	Long
S	Short

Number of contacts

11	1NO/1NC
20	2NO
02	2NC
22	2NO/2NC

Operation state

S	Spring return
None	Limit movement



Applications

- Hazardous areas: Zone 1 & 2 or zone 20, 21, 22
- Explosive gas atmosphere : class II A, II B, II C or flammable dust atmospheres

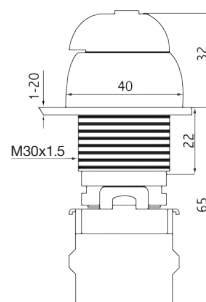
Features

- This products are made by aluminum alloy, stainless steel or medium carbon steel
- The explosion-proof signal lamp should be used together with flame proof enclosure, cannot be used alone at explosive atmosphere

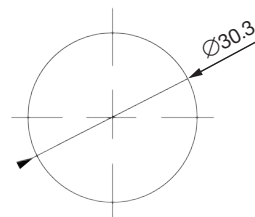
Technical data

Description	Specification
Insulation withstand voltage	10MΩ at 500VDC, 1500VAC/min
Contact rating	AC-15 : 200V/6A, 380V/4A, 600V/2A DC-13 : 24V/6A, 480V/3A, 110V/1A, 220V/0.5A
Mechanical lifetime	3 x 10 ⁶
Electrical lifetime	12 x 10 ⁵
Ambient temperature	-5°C ~ +55°C
Storage temperature	-20°C ~ 70°C
Ambient humidity	45 ~ 85%
Degree of protection	IP65
Cut-out(mm)	30.3

Dimension



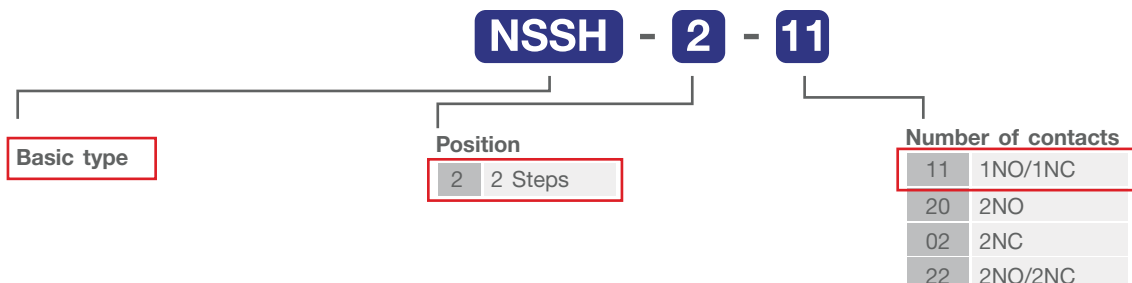
H series explosion-proof selector switch



Cut-out

Dimension : Millimeter(mm)

Product Coding

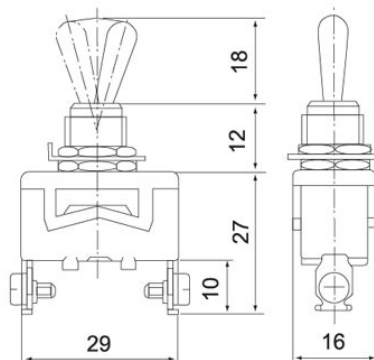




Technical data

Description		Specification
Rated current / Voltage		15A/250VAC
Function		OFF-ON
Terminal type		Screw type
Contact resistant		15m Ω max
Insulation resistance		100M Ω
Dielectric strength		2000VAC, 50/60Hz for 1min
Vibration		55Hz, 1.5mm double amplitude
Ambient temperature		10°C ~ +80°C
Humidity		85% RH max
Service life	Mechanical	5x10 ⁵ min (Operations)
	Electrical	1x10 ⁵ min (Operations)

Dimension



Dimension : Millimeter(mm)

08 OTHERS





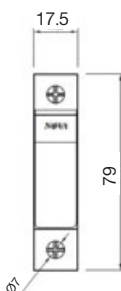
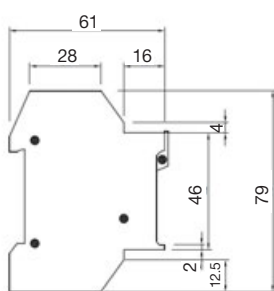
Features

- Compliance with IEC 947-1, IEC 947-3 and IEC 269
- Plastic parts are made of material resistant to high temperatures
- Mounting on standard DIN rail 35mm (EN 50022)
- It is simply possible to assemble multi pole with some connecting pins.

Technical data

Description	NFD10	NFD14
Number of poles	1P, 1P+N, 2P, 3P, 3P+N	
Type of current	AC	
Rated operational voltage(Ue)	500V	
Rated insulation voltage(Ui)	600V	
Rated frequency(Hz)	50	
Rated impulse withstand voltage(Uimp)	6kA	
Rated operational current(Ie)	32A	63A
Rated making capacity	75A	150A
Rated breaking capacity	75A	150A
Rated short time withstand current(Icw)	300A	600A
Rated conditional short circuit current	100kA	100kA
Connection	Max 25mm ²	Max 35mm ²

Dimension



Pole	Dimension width
1P	17.5
2P	35
3P	52.5

Dimension : Millimeter(mm)

Product Coding

NFD - 10 - 2P - 04

Basic type

Fuse link size(mm)

10	Ø10x38
14	Ø14x51

Number of poles

1P	One pole
1N	One pole + Neutral
2P	Two poles
3P	Three poles
3N	Three poles + Neutral

Fuse rating

02	2A
04	4A
06	6A
10	10A
↓	
63	63A



Resettable on Front side



Non-Resettable

Description

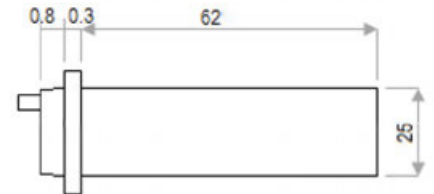
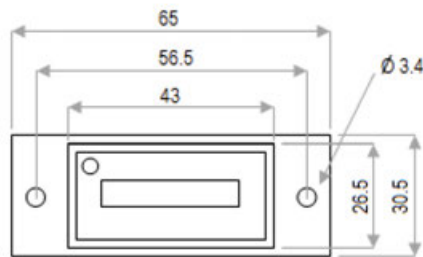
Electro-magnetic counter NEC series was designed to use as the accumulative recorder of the electrical pulse signal in the system. It can equip with the secondary instrument to form the digital display instrument, which is widely use for calculation in various industries such as the petroleum, chemical, textile, machinery, agriculture, food, printing and so on. After the electrical signal input to the counter, it will generate attractive power in the electromagnet, which will make the armature to drive the numerical gear to conduct decimal counting.

Technical data

Description		Specification
Rated supply voltage		AC 110, 220V, 50/60Hz
		DC 12, 24, 48V (Specify when order)
Operating voltage range		85% - 110% of rated supply voltage
Power consumption	AC	Approx 3VA
	DC	Approx 3.5W
Counter (Count range)		0 - 99999 for 5digits/0 - 999999 for 6digits
Counter (Input mode)		Increment
Display method		Thumbwheel(Half-digit drive system)
Digit		5/6digits(Model : NEC-5/NEC-6)
Character height		4mm(White)
Temperature	Operating	-10°C - 60°C
	Storage	-25°C- 70°C
Ambient humidity		Operating : 45% - 85%
Insulation resistance		100M-Ohm min(at 500VDC)
Dielectric withstand voltage		1500VAC 50/60 Hz for 1min
Mechanical life expectancy		2x10 ⁷ operations min
Weight(g)		Approx 105

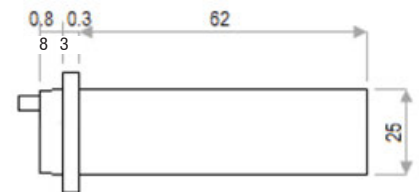
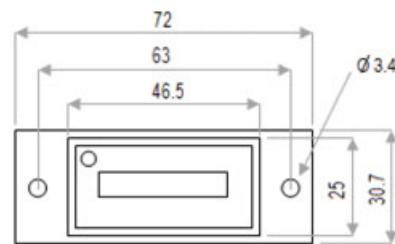
Dimension

5 Digits



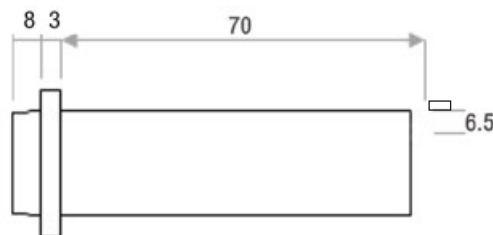
Dimension : Millimeter(mm)

6 Digits



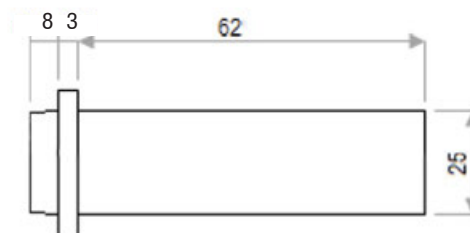
Dimension : Millimeter(mm)

Resettable on Rear side (Pull to Reset)



Dimension : Millimeter(mm)

Non-Resettable



Dimension : Millimeter(mm)

Product Coding

NEC - 5 - RR - 24

Basic type

Digits

5	5 Digits
6	6 Digits

Reset type

RF	Resettable on Front side
RR	Resettable on Rear side
NR	Non-Resettable

Rated supply voltage

12	12VDC
24	24VDC
48	48VDC
11	110VAC
22	220VAC



NUO-S



NUO-D



NUO-DS

Description

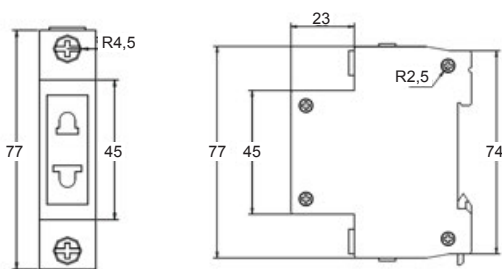
Universal outlet is made of a high impact-resistant thermoplastic face for single outlet and rugged design with metal for Universal outlet with and without on-off switch. Ideal for mounting in cabinets where AC power is required, such as laptop computers, test equipment, electrical tools, etc.

Features

- Current rating 16A, 250VAC
- One piece design, easy installation
- DIN rail 35mm EN 50022 & direct mountable
- Finger safe connections, allow for increased safety during maintenance
- NUO-D : Weight 301g, NUO-DS : Weight 314g

Dimension

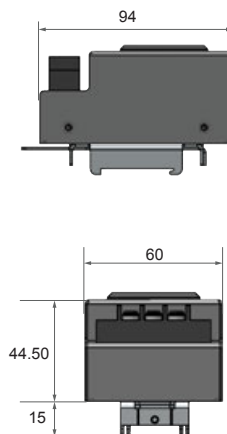
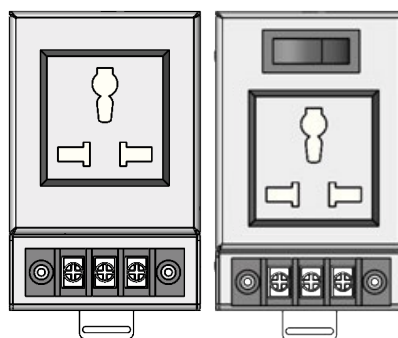
NUO-S



Dimension : Millimetre(mm)

NUO-D

NUO-DS



Dimension : Millimeter(mm)

Product Coding

NUO - D

Basic type

Type

- S Thermoplastic single outlet
- D Metal housing**
- DS Metal housing with switch

Product Catalog 2024

Contact



ESP TECHNOLOGIES LIMITED

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