

Digital panelmeter

BS3

INSTRUCTION MANUAL

Thank you for purchasing HANYOUNG product.
Please check whether the product is the exactly same as you ordered.
Before using the product, please read this instruction manual carefully.
Please keep this manual where you can view at any time

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HANYOUNG NUX

Safety information

Before using the product, please read the safety information thoroughly and use it properly.
Alerts declared in the manual are classified to Danger, Warning and Caution by their criticality

	DANGER	DANGER indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury
	WARNING	WARNING indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
	CAUTION	CAUTION indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury

DANGER

Do not touch or contact the input/output terminals because it may cause electric shock.

WARNING

- If the user use the product with methods other than specified by the manufacturer, there may be bodily injuries or property damages.
- If there is a possibility of an accident caused by errors or malfunctions of this product, install external protection circuit to prevent the accident.
- Since this product does not have the power switch or a fuse, please install those separately on the outside. (Fuse rating : 250 V 0.5 A)
- To prevent electric shock or equipment failure, please do not turn on the power until completing wiring.
- Never disassemble, modify, or repair the product. There is a possibility of a malfunction, an electric shock, or a risk of fire.
- Please turn off the power when mounting/dismounting of the product. This is a cause of an electric shock, a malfunction, or failure.
- To prevent damage or failure of this product, please supply the rated power voltage.
- Since this is not explosion-proof structure, please do not use in a place where combustible or explosive gas is around.
- Since there is a possibility of an electric shock, please use the product as mounted on a panel while the power is being supplied.

CAUTION

- The contents of the instruction manual are subjective to change without prior notice.
- Please make sure that the specification is the same as what you have ordered.
- Please make sure that the product is not damaged during shipping.
- Please use this product in a place where corrosive gas (such as harmful gas, ammonia, etc.) and flammable gas do not occur.
- Please use this product in a place where there is no direct vibration and a large physical impact to the product.
- Please use this product in a place where there is no water, oil, chemicals, steam, dust, salt, iron or others (Contamination class 1 or 2).
- Please do not wipe this product with organic solvents such as alcohol, benzene and others. (Please use mild detergent)
- Please avoid places where excessive amounts of inductive interference and electrostatic and magnetic noise occur.
- Please avoid places where heat accumulation occurs due to direct sunlight or radiant heat.
- Please use this product in a place where the elevation is below 2,000 m.
- Please make sure to inspect the product if exposed to water since there is a possibility of an electric leakage or a risk of fire.
- If there is a lot of noise from the power line, installing an insulated transformer or a noise filter is recommended. The noise filter should be grounded on the panel and the lead wire between the output of the noise filter and the power terminal of the instrument should be as short as possible.
- It is effective against noise if making the power lines of the product the twisted pair wiring.
- Please do not connect anything to the unused terminals.
- Please connect wires properly after making sure the polarity of terminal.
- Please use a switch or breaker (IEC60947-1 or IEC60947-3 approved) when the product is mounted on a panel.
- Please install a switch or break near the operator to facilitate its operation.
- Write down on a label that the operation of circuit breaker or switch disconnects the power since the devise is installed.
- In order to use this product properly and safely, we recommend periodic maintenance.
- Some parts of this product have limited expected life span and aged deterioration.
- The warranty of this product (including accessories) is 1 year only when it is used for the purpose it was intended under normal condition.
- When the power is being supplied there should be a preparation time for the contact output. Please use a delay relay together when it is used as a signal on the outside of interlock circuit or others.

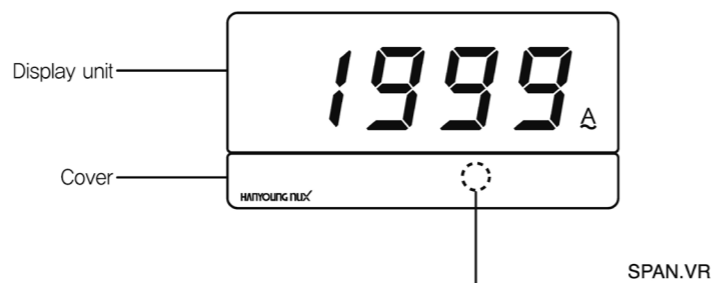
Suffix code

Model	Code	Description	
BS	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	Digital panelmeter	
Dimension	3	48(W) x 96(H) mm	
Output	N	Only for indication	
Input type	A	10	AC voltmeter (AC)
		20	AC ammeter (AC)
	D	10	DC voltmeter (DC)
		20	DC ammeter (DC)
		11	DC voltmeter
		21	DC ammeter
Measurement range	1	Refer to the measurement rang code	
Power supply voltage	-	110/220 V AC	
	D	24 V DC	

Specification

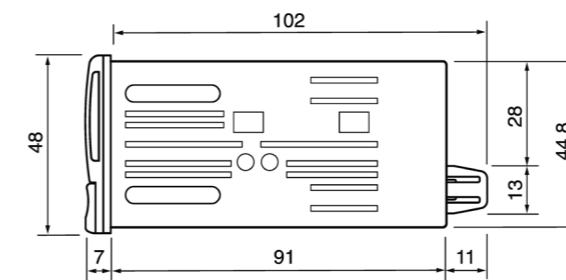
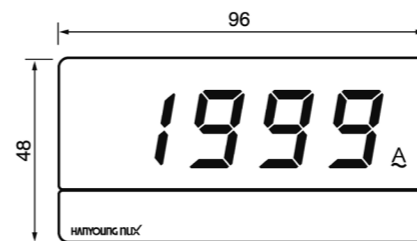
Input signal	Voltage, current and analog signal input (4-20 mA DC or 1-5 V DC)
A/D conversion type	Duplex integral method
Sampling time	300 ms
Reponse speed	Approx. 2 sec (max range)
External control	Hold function of the indicated value by the contact input
max displayable digit	±1999
Displaying part	7 segments LED
Measuring and indicating method	RMS indicating method by the electric wave rectification
Accuracy	AC : ±0.5 % of F.S ±1 digit
	DC : ±0.2 % of F.S ±1 digit
Insulation resistance	100 MΩ min (500 V DC)
Dielectric strenght	1500 V AC 1 min (power terminal - input terminal)
Power supply voltage	110 V / 220 V AC, 50/60 Hz (Dual usage)
	24 V DC 2.5 W
Voltage fluctuation	±10 % of the power supply voltage
Power consumption	2 VA max
Ambient temperature	0 ~ 50 °C
Ambient humidity	35 ~ 85 % RH
Storage temperature	-10 ~ 70 °C
Vibration resistance	10 - 55 Hz Peak amplitude for 2 hour each in X, Y and Z each direction
Shock resistance	300 %, 3 times each in X, Y and Z 6 direction
Weight	350

Parts name and function

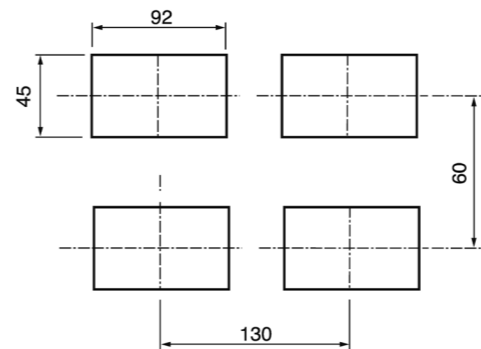


Appearance and pannel cutout

● Appearance

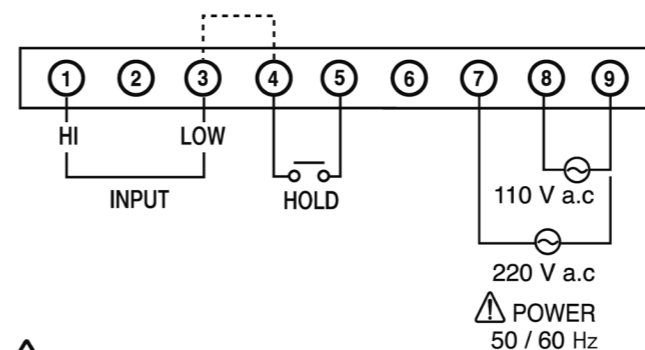


● Panel cutout



Connection diagram

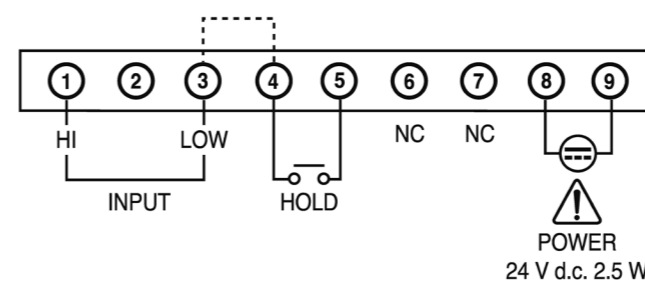
■ AC (110/220 V)



CAUTION

Please use a single contact when using hold function of AC voltage/current type. Terminal 2 and 3 are internally shorted so that it can be a cause of its malfunction when connecting them in parallel.

■ DC (24 V)



Measurement range

■ AC voltage measurement

Model	Measurement range	Resolving power	Input impedance	Allowable max input voltage
BS3-NA101	1.999 V	1 mV	100 kΩ	10 V
BS3-NA102	19.99 V	10 mV	1 MΩ	50 V
BS3-NA103	199.9 V	100 mV	10 MΩ	300 V
BS3-NA104	400 V	1 V	10 MΩ	500 V
BS6-NA105	400 V	1 V	10 MΩ	500 V

■ AC ammeter measurement

Model	Measurement range	Resolving power	Input impedance	Allowable max input voltage
BS3-NA201	19.99 mA	10 μA	10 Ω	50 mA
BS3-NA202	199.9 mA	100 μA	1 Ω	300 mA
BS3-NA203	1.999 A	1 mA	0.1Ω	3 A
BS3-NA204	5.00 A	10 mA	0.01Ω	5 A
BS3-NA205	19.99 A	10 mA	Use transformer (Secondary current 5 A)	
BS3-NA206	30.0 A	100 mA		
BS3-NA207	100.0 A	100 mA		
BS3-NA208	150.0 A	100 mA		
BS3-NA209	199.9 A	100 mA		
BS3-NA210	300 A	1 A		
BS3-NA211	1999 A	1 A		

■ DC voltage measurement

Model	Measurement range	Resolving power	Input impedance	Allowable max input voltage
BS3-ND101	199.9 mV	0.1 mV	10 kΩ	70 V
BS3-ND102	1.999 V	1 mV	100 kΩ	100 V
BS3-ND103	19.99 V	10 mV	1 MΩ	200 V
BS3-ND104	199.9 V	100 mV	10 MΩ	300 V
BS3-ND105	500 V	1 V	10 MΩ	600 V

■ DC ammeter measurement

Model	Measurement range	Resolving power	Input impedance	Allowable max input voltage
BS3-ND201	1.999 mA	1 μA	100 Ω	50 mA
BS3-ND202	19.99 mA	10 μA	10 Ω	150 mA
BS3-ND203	199.9 mA	100 μA	1Ω	300 mA
BS3-ND204	1.999 A	1 mA	0.1Ω	3 A
BS3-ND205	5.00 A	10 mA	0.01Ω	5 A
BS3-ND206	19.99 A	10 mA	Use shunt (Secondary voltage 50 mV)	
BS3-ND207	199.9 A	100 mA		
BS3-ND208	1999 A	1 A		

■ DC voltage

Model	Input range	Display range	Input impedance	Allowable max input voltage
BS3-ND111	1 - 5 V DC	50.0	500 kΩ	100 V
BS3-ND112		100.0	500 kΩ	100 V
BS3-ND113		199.9	500 kΩ	100 V

■ DC ammeter

Model	Input range	Display range	Input impedance	Allowable max input voltage
BS3-ND211	4 - 20 mA DC	50.0	25 Ω	150 mA
BS3-ND212		100.0	50 Ω	150 mA
BS3-ND213		199.9	100 Ω	150 mA

Measuring Method of AC

When measuring AC voltage and current, there are two methods which are measuring effective values method and measuring average values method. If the input is not followed a sine wave or is having lots of distorted waves then it is useful to measure effective value but measuring average values method is generally used for measuring. (For analog meter, most of them take measuring average values method.) The factory default of Hanyoung NUX's DPM is measuring average values method as standard feature.
DPM : Digital Panel Meter