

## HANYOUNG NUX LM3DV LCD Multi Panelmeter Instruction Manual

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LM series **INSTRUCTION MANUAL** 

Thank you for purchasing Hanyoung Nux products. Please read the instruction manual carefully before using this product, and use the product correctly. Also, please keep this instruction manual where you can view it any time.

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#### Safety information

Please read the safety information carefully before the use, and use the product correctly.

The alerts declared in the manual are classified into Danger, Warning and Caution according to their importance

DANGER	Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury
WARNING	Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury
<b>A</b> CAUTION	Indicates a potentially hazardous situation which, if not avoided, may result in minor injury or properties damage



• The input/output terminals are subject to electric shock risk. Never let the input/ output terminals come in contact with your body or conductive substances.

## **WARNING**

- This product does not contain an electric switch or fuse, so the user needs to install a separate electric switch or fuse externally.(Fuse rating: 250 V 0.5 A)
- To prevent defection or malfunction of this product, supply proper power voltage in accordance with the rating.
- To prevent electric shock or malfunction of product, do not supply the power until the wiring is completed.
- Since this product is not designed with explosion-protective structure, do not use it any place with flammable or explosive gas.
- Do not decompose, modify, revise or repair this product. This may be a cause of malfunction, electric shock or fire.
- Reassemble this product while the power is OFF. Otherwise, it may be a cause of malfunction or electric shock
- If you use the product with methods other than specified by the manufacturer, there may be bodily injuries or property damages.
- Due to the danger of electric shock, use this product installed onto a panel while an electric current is applied.

# A CAUTION

- The contents of this manual may be changed without prior notification.
- Before using the product you purchased, make sure that it is exactly what you ordered.
- Make sure that there is no damage or abnormality of the product during delivery.
- Do not use this product at any place with corrosive(especially noxious gas or ammonia) or flammable gas.
- Do not use this product at any place with direct vibration or impact.
- Do not use this product at any place with liquid, oil, medical substances, dust, salt or iron contents. (Use at Pollution level 1 or 2)
- Do not polish this product with substances such as alcohol or benzene.
- Do not use this product at any place with a large inductive difficulty or occurring static electricity or magnetic noise.
- Do not use this product at any place with possible thermal accumulation due to direct sunlight or heat radiation.
- Install this product at place under 2,000m in altitude.

- When the product gets wet, the inspection is essential because there is a danger of electric leakage or fire.
- If there is excessive noise from the power supply, using insulating transformer or noise filter is recommended.

  The noise filter must be attached to a panel which is already connected to a ground and the wire between the filter output and power supply terminal must be as short as possible.
- If puttig power cables closely together then It is effective against noise.
- · Do not connect anything to the unused terminals.
- After checking the polarity of terminal, connect wires at the correct position.
- When this product is connected to a panel, use a circuit breaker or switch approved with IEC947 1 or IEC947
   3.
- Install the circuit breaker or switch at near place for convenient use.
- Write down on a label that if the circuit breaker or switch is operating then the power will be disconnected since the circuit breaker or switch is installed.
- For the continuous and safe use of this product, the periodical maintenance is recommended.
- Some parts of this product have limited life span, and others are changed by their usage.
- The warranty period for this product including parts is one year if this product is properly used.

#### **Suffix Code**

Model	Code						Description		
LM Model							LCD Multi Panelmeter		
	3						96(W) X 48(H) mm		
Appearance	6						72(W) X 36(H) mm		
Displayable Digit		4					4 Digit indication		
			DV				voltage		
Input Specificatio	'n		DA				DC current		
input Specificatio	11		AV				AC voltage		
			AA				AC current		
				N			Indicator only		
				R			1-stage contact output *LM6 only (For LM6-RC/RT, 1-stage contact L output fixed.)		
Output specificat	ions			3R			3 stage contact output		
				3N			3 stage NPN open collector output		
				3P			3 stage PNP open collector output		
				ı	_		No option output		
Optional output C					С		RS 485 output (MODBUS RTU)		
Т					Т		Transmission output (4 20 mA)		
Power supply vol	tage				·	Α	100 − 240 V ∼ 50/60 Hz		

## **Specifications**

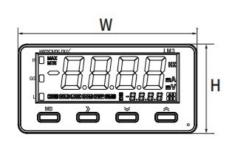
Model	LM3/6-DV	I LM3/6-DA	I LM3/6-AV	I LM3/6-AA
Size	•LM3 : 96(W) X 48(F •LM6 : 72(W) X 36(F	, , ,		
Power	100 – 240 V ~ 50/60	) Hz		

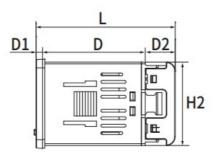
Power Consumption	•LM3-N: 6 VA or le ss •LM3-3NC/3PC: 9 VA or less •LM6-3/0P: 5 VA o r less	•LM3-3R/3RC: 10 VA or less •LM3-3NT/3PT: 10 VA or less •LM6-RC 6 VA or I ess	•LM3-3RT: 11 VA or less •LM6-N: 5 VA or le ss •LM6-3R: 7 VA or l ess	•LM6-RT: 7 VA or le ss				
Input signal	DC voltage	DC current	AC voltage / freque	AC current / frequen				
Input range	500V / 100V 50 V / 10 V 5V / 1V 200 mV / 50 mV	5A / 2A 500 mA / 200 mA 50 mA / 4 – 20 mA 5 mA / 2 mA	500V / 250V 110 V I 50 V 20V / 10V 2 V I 1 V	5A / 2A 500 mA / 200 mA 50 mA / 20 mA				
AC measurement metho	AVG / RMS selective	e measurement						
Input sampling cycle	50 ms	50 ms						
Input sampling method	OVER sampling me	OVER sampling method using continuous approximation A / D converter						
Maximum allowable inpu	F.S. of each input range 110 %							
Frequency measurement range	0.2 – 9999 Hz (Frequency measurement range depends on the decimal point positio n)							
Display	•Negative-LCD • 4 d	•Negative-LCD • 4 digit 2 rows • PV (White) • SV (Green)						
Character size	•LM3: 17.6 X 10.6 m	•LM3: 17.6 X 10.6 mm •LM6 : 7.0 X 11.5 mm						
Maximum display	- 9999 ~ 9999							
Display degree	•[ 23 °C $\pm$ 5 °C ] – F.S. $\pm$ 0.1 % rdg $\pm$ 2 di git   •[ 23 °C $\pm$ 5 °C, 5 A ] – F.S. $\pm$ 0.3 % rdg $\pm$ 3 digit   •[ 23 °C $\pm$ 5 °C, 5 C, 5 A ] – F.S. $\pm$ 0.3 % rdg $\pm$ 2 digit   •[ 23 °C $\pm$ 5 °C, frequency ] – F.S. $\pm$ 0.1% dg $\pm$ 2 digit   •[ 50 °C $$ 10 °C ] – F.S. $\pm$ 0.5 % rdg $\pm$ 3 digit   3 digit							
Control output	•Contact output : 3 stage, SPST (la), 250 V ~ 5 A •Solid state output: 3-stage, NPN or PNP open collector, 12 – 24 V = = = 50mA or les s							
Relay life time	•Electrical (about 100,000 times, 250 VA/ 5 A) • Mechanical (about 5 million times)							
Optional output	•Transmission outpu	•Transmission output (4-20 mA) • RS-485 output						
External input	ess		ge input • Short circuit se when open: 100 k.0	impedance: 300 0 or I or more				

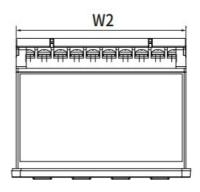
Communication	Communication protocol : Modbus-RTU • Communication method : RS-485 (2-wire half duplex)     •Communication speed : 2400 / 4800 / 9600 / 19200 / 38400 bps
Insulation Resistance	100 MO or more (500 V Mega standard, between conductive terminal and case)
Withstand voltage	2000 V ~ 60 Hz 1 minute (between conductive terminal and case)
Noise	± 2 kV(Between operation power terminals, Pulse width =1 us, Square wave noise b y noise simulator)
Vibration resistance	10 – 55 Hz, Single amplitude 0.5 mm, 3-axis angular, 2 hours
Approval	CE C TUS
Protection structure	•IP66 (front) • Terminal block protection cover applied
Ambient temperature an d humidity	– 10 – 50 °C, 35 ∼ 85 % RH
Storage temperature	– 20 ~ 65 °C

#### **Dimension & Panel cutout**

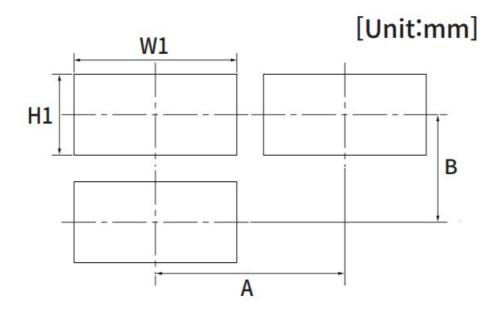
• Dimension





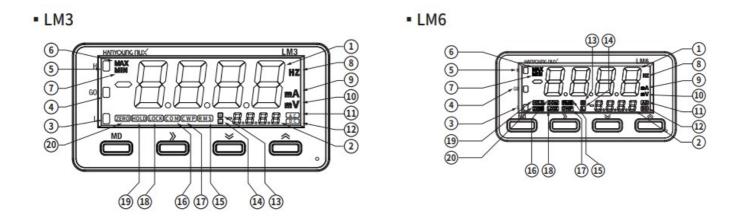


• Panel cutout



Classifica tion	Product dimensions (Protective cover)							Panel cutout				
Туре	W	Н	D	D1	D2	L	W2	H2	W1	H1	Α	В
LM3	96.0	48.0	55	3.5	16.1	74.6	91.0	44.8	91.5	45.5	121.5	70.1
LM6	72.0	36.0	68	3.5	16.1	87.6	66.0	30.5	66.5	32.0	96.5	57.0

#### Part names and functions

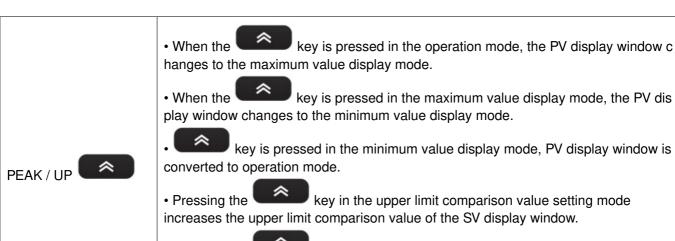


NO		Function
1	PV Display	Operation mode: Measured value / maximum value / minimum value Display Function mode: Parameter display
2	SV Display	Operation mode: Set in function mode Input range display Function mode: Parameter setting value display Setting mode: Upper / lower limit comparison value display (Only for output mo del)
3	LOW output lamp	Lights up when the lower limit output is operating
4	GO output lamp	Lights up during GO output operation
5	HIGH output lam	Lights up during high limit output operation
6	MAX lamp	Lights up when the PV display is in the maximum value display mode
7	MIN lamp	Lights up when the PV display is in the minimum value display mode
8	HZ lamp	Lights up when the PV display is in the frequency measurement mode (Display ed on AV / AA models only)
9	A / mA lamp	Lights up when PV display is in current measurement mode
10	V / mV lamp	Lights up when PV display is in voltage measurement mode
11	AC lamp	Lights up when the model is AV / AA model
12	DC lamp	Lights up when the model model is DV / DA model
13	H lamp	Lights up when SV display is in the upper limit comparison value display mode
14	L lamp	Lights up when SV display is in the lower limit comparison value display mode
15	RMS lamp	Lights up in RMS measurement mode (AV / AA models only)
16	COM lamp	Lights up when model model is communication model
17	CWP lamp	Lights up when communication write prohibition is set
18	LOCK lamp	Lights up when locked
19	HOLD lamp	Lights up when external HOLD signal is applied
20	ZERO lamp	Lights up when external ZERO signal is applied

## Front-key functions and names

Name	Function

	• In operation mode, press key for more than 3 seconds to enter function mode
	• In operation mode, when SV display window is in input range display mode,
	press key, <b>H</b> lamp is turned on and the SV display window is converted to the upper limit comparison value.
	In operation mode, when SV display window is in upper limit comparison value display.
MODE MD	MD
WODE	ay mode, press key, <b>L</b> lamp lights up and the SV display window is convert
	<ul><li>ed to the lower limit comparison value.</li><li>In operation mode, when SV display window is in lower limit comparison value displ</li></ul>
	MD
	ay mode, press key, <b>L</b> lamp goes out and the SV display window is convert
	ed to the input range value set in the parameter.  • If the model is not an output model or O MD is OFF, the SV display window is fixed
	with the input range value set in the parameter.
	• In the operation mode, when the SV display window is in the upper limit comparison
	value display mode, press the key to enter the upper limit comparison valu
	e setting mode.
	• In operation mode, when SV display window is in the lower limit comparison value d
	isplay mode, press the key to enter the lower limit comparison value settin
	g mode.
SHIFT >>	Pressing the key in the upper limit comparison value setting mode moves
	the digit of the upper limit comparison value.
	Pressing the
	the digit of the lower limit comparison value.
	• The setting range of the upper limit comparison value and lower limit comparison va
	lue depends on the decimal point position set in the parameter. can be set as '9.999 ~ 9.999 / 99.99 ~ 999.9 ~ 999.9 ~ 99999"
	9.5557 55.55 * 55.557 555.5 * 5555 * 5555 * 5555
	Pressing the key in the upper limit comparison value setting mode
	decreases the upper limit comparison value in the SV display window.
	Procesing the State of the leavest limit companies a value cotting mode decree
	• Pressing the key in the lower limit comparison value setting mode decrea ses the lower limit comparison value in the SV display window.
ZERO / DOWN	
	• In operation mode, key is pressed for more than 1 second, the current m easured value is forcibly corrected and stored automatically in the parameter ZERO.
*	However, when parameter K ZO is selected as 'ON')
	Draceing the State in the maximum value display made reacts the maximum
	• Pressing the key in the maximum value display mode resets the maximu m and minimum values.
	Pressing the key in the minimum value display mode resets the maximu m and minimum values.
	III and minimum values.

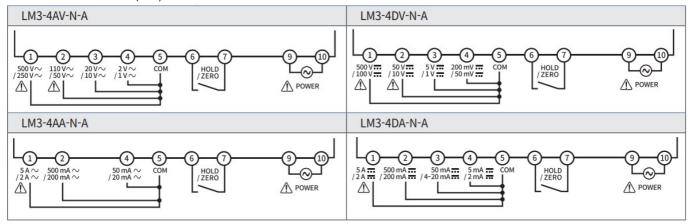


- Pressing the key in the lower limit comparison value setting mode increas es the lower limit comparison value of the SV display window.
- If parameter D.TMR is '0', there is no display conversion between PV display windo w's maximum value display mode and minimum value display mode

#### **Connection diagram**

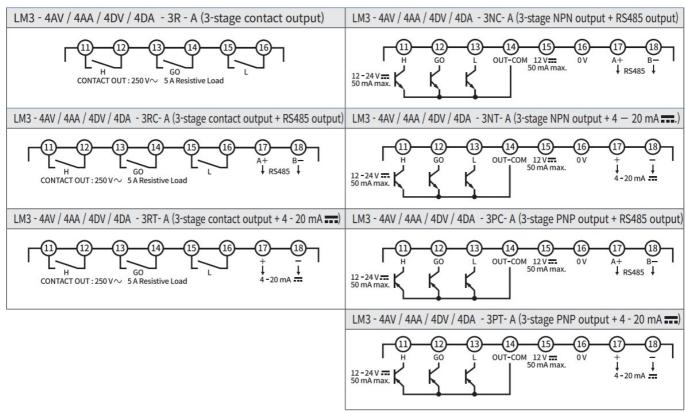
#### LM3 connection diagram

 ○ : Alternating Current (AC) = = : Direct Current (DC)



#### LM3 option output connection diagram

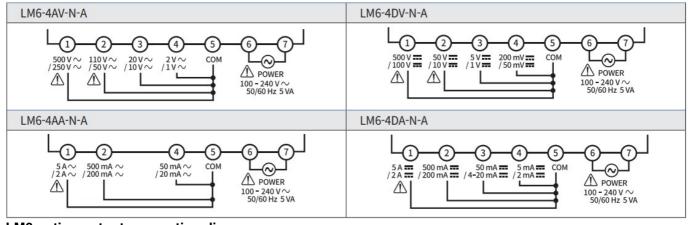
\* There is no output option for indicator only.



#### LM6 connection diagram

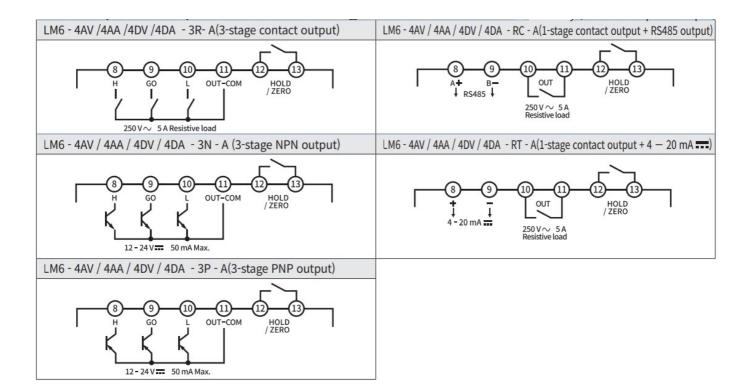
○ : Alternating Current (AC)

=== : Direct Current (DC)



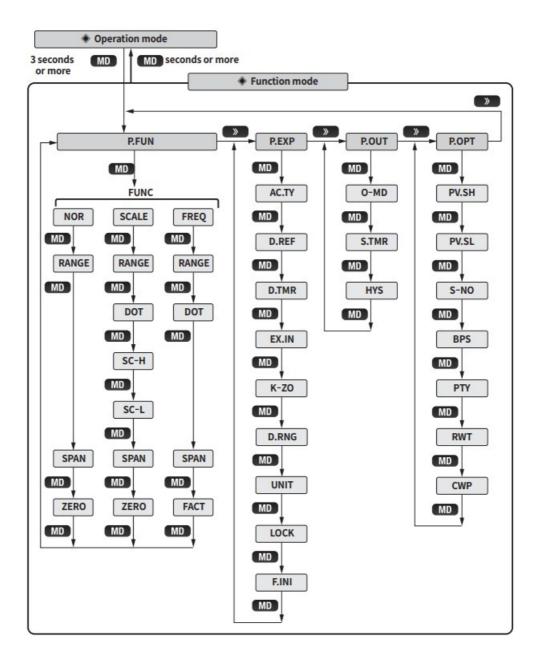
#### LM6 option output connection diagram

\* Non only (Indication option output)



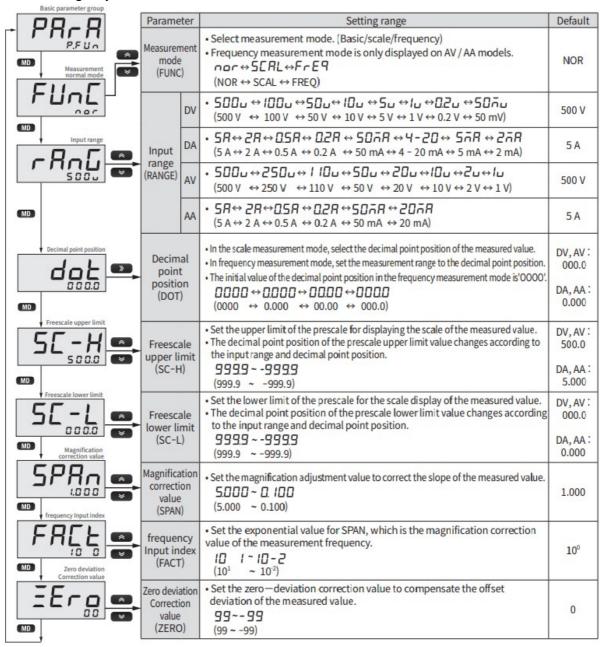
#### **Function mode**

#### **Function Mode Configuration**



- The function mode consists of 4 parameter groups: P.FUN / P.EXP / P.OUT / P.OPT.
- P.FUN is a group of general function setting parameters.
- P.EXP is an extended function setting parameter group.
- P.OUT is a group of output function setting parameters related to the output model.
- P.OPT is a group of optional function setting parameters related to transmission output and communication output models.
- Press the key for more than 3 seconds in the operation mode to enter the function mode.
- In function mode, if key is pressed for more than 3 seconds, all parameter values are saved and operation mode is restored.
- FREQ is displayed only on AC models (when FREQ is selected, AC.TY / EX.IN / K ZO is not displayed)
- AC.TY displayed on AC models only (AVG / RMS selected)
- P.OUT is displayed only on the output model (if O MD is OFF, S.TMR / HYS is not displayed)
- P.OPT is displayed only in transmission output and communication output models
- PV.SH/PV.SL is displayed only in transmission output model
- S NO / BPS / PTY / RWT / CWP are displayed only in communication output model

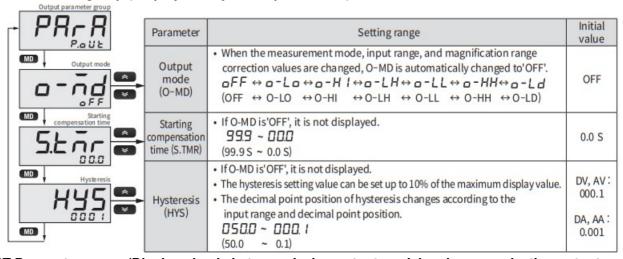
#### **P.FUN Parameter group**



P.EXP Parameter group

Extend parameter group	Parameter	Setting range	Default
MD Measurement method	Measurement method (AC.TY)	Select the AC input measurement method.  AVG (Average value measurement), RMS (Effective value measurement)  Displayed on AV/AA models only.  Not displayed when frequency measurement mode is selected.)  Ru□ ↔ r□5  (AVG ↔ RMS)	AVG
Display cycle	Display cycle (D.REF)	• Select the display period where the measured value is displayed.  5 ↔ Z ↔ I ↔ D.5 ↔ D.Z ↔ D. I  (5 S ↔ 2 S ↔ 1 S ↔ 0.5 S ↔ 0.2 S ↔ 0.1 S)	0.2 S
MD Max/Minimum value detection Delay time	Max/ Minimum value detection Delay time (D.TMR)	<ul> <li>Set the detection delay time for the maximum and minimum values of the measured value.</li> <li>If the detection delay time is '0 S', the maximum and minimum values in the operation mode are Is not displayed.</li> <li>39 ~ 00</li> <li>(99 S ~ 0 S)</li> </ul>	0 \$
External input select	External input Select (EX.IN)	<ul> <li>When HOLD is selected, the external HOLD input terminal operates with the display value HOLD function.</li> <li>When ZERO is selected, the external ZERO input terminal operates with the zero adjustment function.</li> <li>It is not displayed when frequency measurement mode isselected on AV / AA models.</li> <li>HoLd ← Ero</li> <li>(HOLD ← ZERO)</li> </ul>	HOLD
Key-Zeroadjustment	Key—Zero adjustment (K-ZO)	<ul> <li>• When "ON" is selected for the key—zero adjustment, the waskey operates with the zero—adjustment function.</li> <li>• It is not displayed when frequency measurement mode is elected on AV / AA models.</li> <li>□ □ □ □ □ F F (ON ↔ OFF)</li> </ul>	OFF
MD PANGE display selection	RANGE display selection (D.RNG)	•When D.RNG is set to 'OFF', the RANGE display is not displayed.  □□↔□FF  (ON ↔ OFF)	ON
MD UNIT display selection  Lock selection	UNIT display selection (UNIT)	<ul> <li>It is used when changing the display unit to a user-selected display unit and displaying it.</li> <li>When UNIT is set to 'ON', the unit is displayed in the range selected in the input range.</li> <li>□□ ↔ □ F F ↔ □ ↔ □□ ↔ □ ↔ □ → □□ ↔ □ ↔ □ → □□ ↔ □ → □□ ↔ □ → □□ ↔ □ → □□ ↔ □ → □□ ↔ □ → □□ →</li></ul>	ON
LOCK S	Lock selection (LOCK)	*Select Front Panel Key Lock and Parameter Lock.  □ FF ↔ Ł'E Y ↔ PAr ↔ Ł' - P ↔ □ L'L ↔ □ P'L  (OFF ↔ KEY ↔ PAR ↔ K-P ↔ OUT ↔ OPT)	OFF
Reset	Reset (F.INI)	•When F.INI is selected as 'ON', all parameters are reset to the factory defaults.  □□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□□	OFF

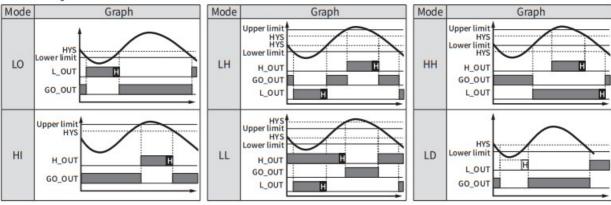
#### P.OUT Parameter group (Displayed only on output models)



P.OPT Parameter group (Displayed only in transmission output model and communication output model.)

Option parameter group	Parameter	Setting range	Initial value
P.o P E  Transmission output upper limit  S D D.D	Transmission output upper limit (PV.SH)	<ul> <li>Set the upper limit to which the transmission output 20 mA is output. (※ Displayed only in the transmission output model.)</li> <li>The upper limit of the transmission output scale should be set larger than the lower limit.</li> <li>The decimal point position of the upper limit of the transmission output scale changes according to the input range and the decimal point position.</li> <li>99.9 ~ -999.8)</li> </ul>	DV, AV : 500.0 DA, AA : 5.000
Transmission out put lower limit	Transmission output lower limit (PV.SL)	<ul> <li>Set the lower limit to which the transmission output 4 mA is output.         (** Displayed only in transmission output model.)</li> <li>The lower limit of the transmission output scale should be set lower than the upper limit.</li> <li>The decimal point position of the lower limit of the transmission output scale changes according to the input range and the decimal point position.</li> <li>\$33.8 ~ -33.9</li> <li>(999.8 ~ -999.9)</li> </ul>	DV, AV : 000.0 DA, AA : 0.000
Communication station number	Communication station number (S—NO)	Set communication station number.  (** Displayed only in communication output model.)  **DD I ~ IZT  (001 ~ 127)	001
Baud Rate	Baud Rate (BPS)	• Select communication speed. (※ Displayed only in communication output model.)  384 ↔ 192 ↔ 95 ↔ 48 ↔ 24 (38400 ↔ 19200 ↔ 9600 ↔ 4800 ↔ 2400 bps)	9600
Parity bit	Parity bit (PTY)	• Select communication parity bit.  (※ Displayed only in communication output model.)  ¬¬¬E ↔ ¬¬¬¬d ↔ E¬¬E¬¬  (NONE ↔ ODD ↔ EVEN)	NONE
Response waiting time	Response waiting time (RWT)	Set the waiting time for communication response.  (* Displayed only in communication output model.)  5 ~ 99  (5 ms ~ 99 ms)	20ms
Communication writing prohibited	Communication writing prohibited (CWP)	Select write communication prohibited.  (※ Displayed only in communication output model.)  If the communication write protection is 'ON', the setting value cannot be changed by communication.  □□ ↔ □FF  (ON ↔ OFF)	ON

### **Output mode**



\*For detailed explanation, please visit our website (<a href="www.hanyoungnux.com">www.hanyoungnux.com</a>)
Please refer to the communication and user manual in the archive.

# HANYOUNG NUX

#### **Documents / Resources**



<u>HANYOUNG NUX LM3DV LCD Multi Panelmeter</u> [pdf] Instruction Manual LM3DV, LM3DA, LM3AV, LM3AA, LM6DV, LM6DA, LM6AV, LM6AA, LM3DV LCD Multi Panelmeter, LCD Multi Panelmeter, Multi Panelmeter, Panelmeter

#### References

• User Manual

Manuals+, Privacy Policy