





## Parameter Setting

- Some parameters are activated / deactivated depending on the model or setting of other parameters. Refer to the description of each parameter.
- If any key is not entered for 60 sec in each parameter, it returns to RUN mode.
- After returning to RUN mode, press the [MODE] key within 2 sec, it returns to previous parameter.
- [MODE] key: Saves current setting value and moves to the next parameter.
- [◀] key: Checks fixed value / Changes setting digits.
- [▲], [▼] key: Changes setting values.

### Parameter 1 group

Parameter	Mark	Defaults	Setting range	Display condition
1-1 Input range	<i>I n - r</i>	5000	[DC voltage model], [AC voltage model] • Refer to Input Range and Display Range	-
1-2 Display method	<i>d I S P</i>	5 t n d	STND: standard, SCAL: scale, FREQ: frequency <sup>01)</sup>	-
1-3	<i>I n - t</i>	t. r n 5	[AC voltage model], [AC current model] T.RMS: True RMS, A.RMS: Average RMS, AVG • True RMS = $\sqrt{\frac{A_1^2 + A_2^2 + \dots + A_n^2}{n}}$ • Average RMS = $\frac{A_1 + A_2 + \dots + A_n}{n}$ × Waveform rate (n = number of display values per cycle, A = display value)	1-2 Display method: STND, SCAL
1-4 High-limit display value gradient correction	<i>I n b H</i>	1000	0.100 to 5.000 %	1-2 Display method: STND
1-5 Low-limit display value deviation correction	<i>I n b L</i>	00	-99 to 99	
1-6 Decimal point position	<i>d o t</i>	00	[DC voltage model], [AC voltage model] 0, 0.0, 0.00, 0.000	1-2 Display method: STND
1-7 High-limit scale	<i>H - S C</i>	-	Display value against max. measurement input*	
1-8 Low-limit scale	<i>L - S C</i>	-	Display value against min. measurement input*	
1-9 High-limit display value gradient correction	<i>I n b H</i>	1000	0.100 to 5.000 %	1-2 Display method: STND & * 1-6 Decimal point position: 0.0, 0.00, 0.000
1-10 Low-limit display value deviation correction <sup>02)</sup>	<i>I n b L</i>	00	-99 to 99	
1-11 Decimal point position <sup>03)</sup>	<i>d o t</i>	00	[AC voltage model] 0, 0.0, 0.00, 0.000	1-2 Display method: FREQ
1-12 High-limit display value gradient correction	<i>I n b H</i>	1000	0.100 to 9.999	
1-13 Exponent of INB	<i>I n b E</i>	10 - 0	10-0: 10 <sup>0</sup> , 10-1: 10 <sup>-1</sup> , 10-2: 10 <sup>-2</sup> , 10 1: 10 <sup>1</sup>	

01) Displays at AC voltage or AC current model only.

02) Low-limit display value deviation correction range is within -99 to 99 for D<sup>0</sup>, D<sup>1</sup> digit regardless of decimal point position.

03) Display range is variable according to decimal point position.

Dot	Display range	Frequency measurement range
0	-1999 to 9999	1 to 9999 Hz
00	-199.9 to 999.9	0.1 to 999.9 Hz
000	-19.99 to 99.99	0.10 to 99.99 Hz
0000	-1.999 to 9.999	0.100 to 9.999 Hz

### Parameter 2 group

Parameter	Mark	Defaults	Setting range	Display condition
2-1 Output operation mode	<i>o U t t</i>	<i>o F F</i>	[Except indicator model] OFF, L.ST, H.ST, LH.ST, HH.ST, LL.ST, LD.ST • Refer to Output Operation Mode	-
2-2 Hysteresis	<i>H Y S</i>	00 1	[Except indicator model] Within 10 % of max. display range, digit	2-1 Output operation mode: except OFF
2-3 Startup compensation time	<i>S t R t</i>	0000	[Except indicator model] 0.0 to 99.9 sec	
2-4 Peak monitoring delay time	<i>P E P t</i>	00 5	00 to 30 sec	-
2-5 Display cycle	<i>d I S t</i>	02 5	0.1 to 5.0 sec	-
2-6 Keys for zero adjustment	<i>Z E r o</i>	<i>n o</i>	NO, YES • YES: Press the [◀] + [▲] keys for 3 sec to adjust zero.	-
2-7 External input terminal	<i>E u L n</i>	<i>H o l d</i>	[Except indicator model] HOLD, ZERO • If the external input terminal is short-circuited for 50 ms or more, it operates with the set function.	-
2-8 High-limit value of transmission output	<i>F S - H</i>	5000	[DC voltage & Transmission (DC 4 - 20 mA) output model], [AC voltage & Transmission (DC 4 - 20 mA) output model] Max. value of display range	-
2-9 Low-limit value of transmission output	<i>F S - L</i>	0000	[DC current & Transmission (DC 4 - 20 mA) output model], [AC current & Transmission (DC 4 - 20 mA) output model] Min. value of display range	-
2-10 Comm. Address	<i>R d r S</i>	0 1	[RS485 Comm. output model] 01 to 99	-
2-11 Comm. speed	<i>b P S</i>	9600	[RS485 Comm. output model] 38.4k, 19.2k, 9600, 4800, 2400, 1200 bps	-
2-12 Parity bit	<i>P r t Y</i>	<i>n o n E</i>	[RS485 Comm. output model] NONE, EVEN, ODD	-
2-13 Stop bit	<i>S t P</i>	2	[RS485 Comm. output model] 2, 1 bit	-
2-14 Response waiting time	<i>r S w t</i>	5	[RS485 Comm. output model] 5 to 99 sec	-
2-15 Lock	<i>L o C</i>	<i>o F F</i>	OFF: unlock, LOC1: lock parameter 1, LOC2: lock parameter 1, 2, LOC3: lock parameter 0, 1 and 2	-

### Parameter 0 group

Parameter	Mark	Defaults	Setting range	Display condition
0-1 Output high-limit output setting value	<i>H S E t</i>	5000	[DC voltage & Preset setting model] -5 to 110 % of display range [AC voltage & Preset setting model] 0 to 110 % of display range	2-1 Output operation mode: except OFF
0-2 Output low-limit output setting value	<i>L S E t</i>	0000	[DC current & Preset setting model] -5 to 110 % of display range [AC current & Preset setting model] 0 to 110 % of display range	2-1 Output operation mode: except OFF
0-3 Display max. peak value <sup>01)</sup>	<i>H P E t</i>	00	[DC voltage], [AC voltage] Max. peak value in run mode	2-1 Output operation mode: except OFF & 2-4 Peak monitoring delay time: except 00
0-4 Display min. peak value <sup>01)</sup>	<i>L P E t</i>	00	[DC voltage], [AC voltage] Min. peak value in run mode	
		0000	[DC current], [AC current] Min. peak value in run mode	

01) Reset: Press any one of [◀], [▼], [▲] keys.

## Input Range and Display Range

When the max. input value is over the 100 %, it may result in input terminal damage.

### DC voltage model

Input range	Display range		Input impedance
	Diaplay method: STND (fixed)	Diaplay method: SCAL <sup>01)</sup>	
0 - 500 VDC=	0.0 to 500.0	5 0 0 u	4.33348 MΩ
0 - 100 VDC=	0.0 to 100.0	1 0 0 u	4.33348 MΩ
0 - 50 VDC=	0.00 to 50.00	5 0 u	433.48 kΩ
0 - 10 VDC=	0.00 to 10.00	1 0 u	433.48 kΩ
0 - 5 VDC=	0.000 to 5.000	5 u	43.48 kΩ
0 - 1 VDC=	0.000 to 1.000	1 u	43.48 kΩ
0 - 250 mVDC=	0.0 to 250.0	02 5 u	2.28 kΩ
0 - 50 mVDC=	0.00 to 50.00	5 0 n u	2.28 kΩ

01) Connect to the input terminals whose 30 % to 100 % of the input range includes the max. value of the input range to measure.

When the max. input value is under the 30 % of the input terminal range, display accuracy is degraded.

### DC current model

Input range	Display range		Input impedance
	Diaplay method: STND (fixed)	Diaplay method: SCAL <sup>01)</sup>	
0 - 5 A	0.000 to 5.000	5 A	0.022 Ω
0 - 2 A	0.000 to 2.000	2 A	0.022 Ω
0 - 500 mA	0.0 to 500.0	05 A	0.222 Ω
0 - 200 mA	0.0 to 200.0	02 A	0.222 Ω
0 - 50 mA	0.00 to 50.00	5 0 n A	2.222 Ω
4 - 20 mA	4.00 to 20.00	4 - 2 0	2.222 Ω
0 - 5 mA	0.000 to 5.000	5 n A	22.222 Ω
0 - 2 mA	0.000 to 2.000	2 n A	22.222 Ω

01) Connect to the input terminals whose 30 % to 100 % of the input range includes the max. value of the input range to measure.

When the max. input value is under the 30 % of the input terminal range, display accuracy is degraded.

### AC voltage model

Input range	Display range		Input impedance
	Diaplay method: STND (fixed)	Diaplay method: SCAL <sup>01)</sup>	
0 - 500 VAC~	0.0 to 500.0	5 0 0 u	5.01092 MΩ
0 - 250 VAC~	0.0 to 250.0	2 5 0 u	5.01092 MΩ
0 - 110 VAC~ <sup>02)</sup>	0.0 to 440.0	1 1 0 P	1.11092 MΩ
0 - 50 VAC~	0.00 to 50.00	5 0 u	1.11092 MΩ
0 - 20 VAC~	0.00 to 20.00	2 0 u	200.92 kΩ
0 - 10 VAC~	0.00 to 10.00	1 0 u	200.92 kΩ
0 - 2 VAC~	0.000 to 2.000	2 u	20.92 kΩ
0 - 1 VAC~	0.000 to 1.000	1 u	20.92 kΩ

01) Connect to the input terminals whose 30 % to 100 % of the input range includes the max. value of the input range to measure.

When the max. input value is under the 30 % of the input terminal range, display accuracy is degraded.

02) In case of 0 to 110 VAC~ of AC voltage range and using P.T (potential transformer) for 440 VAC~ / 110 VAC~, if 110 VAC~ is input, and the unit displays 440 VAC~ automatically by preset scale value for P.T user's convenient.

### AC current model

Input range	Display range		Input impedance
	Diaplay method: STND (fixed)	Diaplay method: SCAL <sup>01)</sup>	
0 - 5 A	0.000 to 5.000	5 A	0.02 Ω
0 - 2.5 A	0.000 to 2.500	2.5 A	0.02 Ω
0 - 1 A	0.000 to 1.000	1 A	0.102 Ω
0 - 500 mA	0.0 to 500.0	05 A	0.202 Ω
0 - 250 mA	0.0 to 250.0	025 A	0.202 Ω
0 - 100 mA	0.0 to 100.0	0 1 A	1.022 Ω
0 - 50 mA	0.00 to 50.00	5 0 n A	1.022 Ω

01) Connect to the input terminals whose 30 % to 100 % of the input range includes the max. value of the input range to measure.

When the max. input value is under the 30 % of the input terminal range, display accuracy is degraded.

## Output Operation Mode

- H.SET or L.SET is displayed according to the output operation mode setting. In case of output operation mode as OFF, H.SET and L.SET are not displayed.
- When changing output operation mode, high-limit / low-limit output setting value, hysteresis are reset.

MODE	Output operation	Preset output		
		LO ON	HI ON	GO ON
	H.SET L.SET	ON OFF		
<i>o F F</i>		No output		
<i>L S t</i>		L.SET ≥ Display value	-	L.SET < Display value
<i>H S t</i>		-	H.SET ≤ Display value	H.SET > Display value
<i>L H S t</i>		L.SET ≥ Display value	H.SET ≤ Display value	L.SET < Display value < H.SET
<i>H H S t</i>		L.SET ≤ Display value	H.SET ≤ Display value	L.SET > Display value
<i>L L S t</i>		L.SET ≥ Display value	H.SET ≥ Display value	H.SET < Display value
<i>L d S t</i>		Second L.SET ≥ Display value	-	L.SET < Display value

## Reset

- Press the [◀] + [▲] + [▼] keys for over 5 sec. in run mode, INIT flashes for 0.5 sec.
- Press the direction keys to flash NO for 0.5 sec in turn.
- Change the setting value as YES by pressing the direction keys.
- Press the [MODE] key to reset all parameter values as default and to return to run mode.

## Error

Error display is released automatically when it is in the measured and display range.

Display	Description	Troubleshooting
<i>H H H H</i>	Flashes when measurement input is exceeded the max. allowable input (110 %)	Disconnect power supply and check the cables.
<i>L L L L</i> <sup>01)</sup>	Flashes when measurement input is exceeded the min. allowable input (-10 %)	
<i>d - H H</i>	Turns ON when display input is exceeded high-limit scale setting value or max. display range (9999)	Reset within the display range.
<i>d - L L</i>	Turns ON when display input is exceeded low-limit scale setting value or min. display range (-1999)	
<i>F - H H</i>	Turns ON when input frequency is exceeded the max. display value of measured range	-
<i>o u E r</i>	Flashes twice when it exceeds zero range (±99) and returns to run mode	Reset within the zero range.

01) Displays at DC input model only.