

■ Basic function setting modes

Setting item	LCD display	Settings	Initial value
Operation mode 		• Selects the operation mode (13 types) $\overbrace{F1 \quad F2 \quad F3 \quad F4 \quad F5 \quad F6 \quad F7 \quad F8 \quad F9 \quad F10 \quad F11 \quad F12 \quad F13}^{F1 \sim F13}$	F1
Input A sensor type 		• Selects the sensor type of input A • Consists of NPN-L, NPN-H, PNP-L, PNP-H (select and use NPN-L or PNP-L for contact input) $\overbrace{nPn-L \quad nPn-H \quad pNp-L \quad pNp-H}^{NPN-L \quad NPN-H \quad PNP-L \quad PNP-H}$	NPN-L
Input B sensor type 		• Selects the sensor type of input B - used only in F2, F5, F7, F8, F9, F10, F11, F12, F13 modes • Consists of NPN-L, NPN-H, PNP-L, PNP-H (select and use NPN-L or PNP-L for contact input) $\overbrace{nPn-L \quad nPn-H \quad pNp-L \quad pNp-H}^{NPN-L \quad NPN-H \quad PNP-L \quad PNP-H}$	NPN-L
Output mode 		• Output mode selection - used in all operation modes except F9 mode (only used in comparative output mode) • Consists of standard output mode (S), HIGH output mode (H), LOW output mode (L), ONE-SHOT output mode (F), deviation output mode (D) • F9 mode is fixed to HIGH output mode (H) $\overbrace{oL-S \quad oH \quad oL-L \quad oL-H \quad oL-T \quad oL-F \quad oL-D}^{OUT-S \quad OUT-L \quad OUT-L \quad OUT-B \quad OUT-F \quad OUT-D}$	OUT-S
Input A prescale mantissa 		• Sets input A prescale mantissa (AX) - used only in F1, F2, F4, F7, F8, F9, F10, F11, F12, F13 modes • Setting range: 0.0000 - 9.9999 $\overbrace{0.0000 \sim 9.9999}^{0.0000 \quad 0.9999}$	6.0000
Input A prescale index 		• Sets input A prescale index (AY) - used only in F1, F2, F4, F7, F8, F9, F10, F11, F12, F13 modes • Setting range: 10 ⁰ - 10 ⁹ $\overbrace{10^0 \sim 10^9}^{10^0 \quad 10^9}$	10 ¹
Input B prescale mantissa 		• Sets input B prescale mantissa (BX) - used only in F10, F11, F12, F13 modes • Setting range: 0.0000 - 9.9999 $\overbrace{0.0000 \sim 9.9999}^{0.0000 \quad 0.9999}$	6.0000
Input B prescale index 		• Sets input B prescale index (BY) - used only in F10, F11, F12, F13 modes • Setting range: 10 ⁰ - 10 ⁹ $\overbrace{10^0 \sim 10^9}^{10^0 \quad 10^9}$	10 ¹
Decimal point position 		• Selects decimal point position of display value - used only in F1, F2, F7, F8, F9, F10, F11, F12, F13 modes • Comparative value setting range differs according to the decimal point setting position $\overbrace{0.0000 \quad 0.0000 \quad 0.0000 \quad 0.0000 \quad 0.0000}^{0.0000 \quad 0.0000 \quad 0.0000 \quad 0.0000 \quad 0.0000}$	00000
Numeral system 		• Selects the numeral system of measured time - used only in F3, F4, F5, F6 modes • Consists of decimal and sexagesimal $\overbrace{10 \quad 60}^{10 \quad 60}$	10
Time range 		• Selects measured time range - used only in F3, F4, F5, F6 modes • Decimal time range: 0.01 (0-999.99S), 0.1 (0-9999.9S), MIN (0-99999m) • Sexagesimal time range: 0.01 (0-5m59.99S), 0.1 (0-59m59.99S), SEC (0-9h59m59S), MIN (0-9h59m59m) $\overbrace{0.01 \quad 0.1 \quad SEC \quad MIN}^{0.01 \quad 0.1 \quad SEC \quad MIN}$	0.01
Display cycle 		• Selects display cycle - only in F1, F10, F11, F12, F13 • Consists of 0.05, 0.5, 1, 2, 4, and 8 sec - The measured value is updated according to display cycle $\overbrace{0.05 \quad 0.5 \quad 1 \quad 2 \quad 4 \quad 8}^{0.05 \quad 0.5 \quad 1 \quad 2 \quad 4 \quad 8}$	0.05

■ RS485 signal output function setting mode (Displayed only for signal output models)

Setting item	LCD display	Settings	Initial value
Signal number 		• Select a signal number $\overbrace{00 \quad 1 \sim 127}^{00 \quad 1 \sim 127}$	001
Signal speed 		• Select a signal speed $\overbrace{38400 \quad 19200 \quad 9600 \quad 4800 \quad 2400 \quad 1200}^{38400 \quad 19200 \quad 9600 \quad 4800 \quad 2400 \quad 1200}$ bps	96
Parity bit 		• Select the signal parity bit $\overbrace{NONE \quad ODD \quad EVEN}^{NONE \quad ODD \quad EVEN}$	NONE
Response latency 		• Sets the signal response latency $\overbrace{05 \sim 99}^{05 \sim 99}$	20
Communication write prohibition 		• Select Communication write prohibition. • If Communication write prohibition is 'ON', settings cannot be changed by signal	ON

■ PV input/output function setting mode (Displayed only for input/output models)

Setting item	LCD display	Settings	Initial value
Transfer Output Upper limit 		• Set the upper limit for the transmission output of 20 mA. • The upper limit value should be set larger than the lower limit value. • The setting range of the upper limit value depends on the operation mode (see Comparison value setting range) • If the measured value is above the upper limit, 20mA is output. -99999 ~ +99999 -9999 ~ +9999	99999
Transfer Output Lower bound 		• Set the lower limit for the transmission output of 4 mA. • The lower limit value should be set less than the upper limit value. • The setting range of the lower limit value depends on the operation mode (see Comparison value setting range) • If the measured value is below the lower limit, 4mA is output. -99999 ~ +99999 -9999 ~ +9999	00000

■ Extended function setting modes

Setting item	LCD display	Settings	Initial value
Initial mode 		• Initializes all parameter set values • Consists of OFF and ON - when ON is selected, all parameter set values are initialized to the default set values $\overbrace{oFF \quad oN}^{oFF \quad oN}$	OFF
Hysteresis 		• Sets hysteresis value for output - only in F10, F11, F12, F13 (only used in comparative output mode) • Hysteresis range depends on decimal point setting position • Setting range: 0.000 (0-999.9), 0.0000 (0-999.9), 0.0000 (0.000-9.999) $\overbrace{0.000 \sim 9999}^{0.000 \quad 9999}$	0000
Input A AUTO-ZERO 		• Sets input A AUTO-ZERO time - used only in F1, F4, F10, F11, F12, F13 modes • Setting range: 0.0 - 9999.9 sec $\overbrace{0.0000 \sim 99999}^{0.0000 \quad 9999.9}$	9999.9
Input B AUTO-ZERO 		• Sets input B AUTO-ZERO time - used only in F10, F11, F12, F13 modes • Setting range: 0.0 - 9999.9 sec $\overbrace{0.0000 \sim 99999}^{0.0000 \quad 9999.9}$	9999.9
Output limit 		• Selects comparative output limit - used in all operation modes except F9 (only used in comparative output mode) • Consists of L, LL output limit and start compensation timer • When L-OUT is selected, L output and LL output are limited. When S-TIM is selected, the comparative output is limited by start compensation timer $\overbrace{oL \quad oL-L \quad oL-T}^{oL \quad oL-L \quad oL-T}$	L-OUT
Start compensation timer 		• Sets comparative output limit time of start compensation timer - You can set output limit function when S-TIM is set • Setting range: 0.0 - 99.9 sec $\overbrace{0.0 \sim 99.9}^{0.0 \quad 99.9}$	00.0
Power outage memory 		• Saves final count value when power is off - only in F9 • Consists of CLEAR and SAVE • When SAVE is selected, the final count value is saved $\overbrace{CLR \quad SAVE}^{CLR \quad SAVE}$	CLEAR
BANK switching 		• Selects the activation of BANK function • When the BANK function is activated, the comparative value, prescale, decimal point position, time range, display cycle are measured with the value set in BANK • OFF selection: deactivates BANK function • KEY selection: switches BANK number by (hold for at least 1 sec, ON state) • EX-IN selection: switches BANK number by external BANK input $\overbrace{oFF \quad KEY \quad EX-IN}^{oFF \quad KEY \quad EX-IN}$	OFF
Lock 		• Selects the activation of lock function • OFF selection: unlocks keys and parameters. • KEY selection: locks in operation mode (only comparative value checking is possible, not comparative value setting) • PAR selection: locks parameters (parameter change is not possible, comparative value setting is possible) • KP selection: sets key lock and parameter lock simultaneously (comparative value setting and parameter change are not possible). • BNK selection: locks BANK (BANK setting is not possible) $\overbrace{oFF \quad KEY \quad PAR \quad BNK}^{oFF \quad KEY \quad PAR \quad BNK}$	OFF

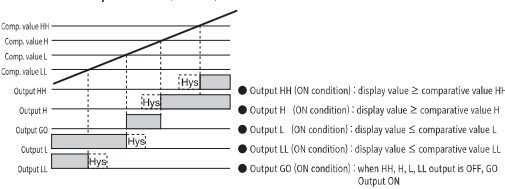
■ BANK function setting modes

Setting item	LCD display	Settings	Initial value
BANK number 		• Selects BANK number • Consists of BANK_1 and BANK_2 - individually sets comparative value, prescale, decimal point position, time range, display cycle for each BANK. $\overbrace{1 \quad 2}^{1 \quad 2}$	1
Input A prescale mantissa 		• Sets BANK_1,2 Input A prescale mantissa (AX) - used only in F1, F2, F4, F7, F8, F9, F10, F11, F12, F13 modes • Setting range: 0.0000 - 9.9999 $\overbrace{0.0000 \sim 9.9999}^{0.0000 \quad 0.9999}$	6.0000
Input A prescale index 		• Sets BANK_1,2 Input A prescale index (AY) - used only in F1, F2, F4, F7, F8, F9, F10, F11, F12, F13 modes • Setting range: 10 ⁰ - 10 ⁹ $\overbrace{10^0 \sim 10^9}^{10^0 \quad 10^9}$	10 ¹
Input B prescale mantissa 		• Sets BANK_1,2 Input B prescale mantissa (BX) - used only in F10, F11, F12, F13 modes • Setting range: 0.0000 - 9.9999 $\overbrace{0.0000 \sim 9.9999}^{0.0000 \quad 0.9999}$	6.0000
Input B prescale index 		• Sets BANK_1,2 Input B prescale index (BY) - used only in F10, F11, F12, F13 modes • Setting range: 10 ⁰ - 10 ⁹ $\overbrace{10^0 \sim 10^9}^{10^0 \quad 10^9}$	10 ¹
Decimal point position 		• Selects display value decimal point position of BANK_1,2 - used only in F1, F2, F7, F8, F9, F10, F11, F12, F13 modes • The comparative value setting range depends on the decimal point setting position $\overbrace{0.0000 \quad 0.0000 \quad 0.0000 \quad 0.0000 \quad 0.0000}^{0.0000 \quad 0.0000 \quad 0.0000 \quad 0.0000 \quad 0.0000}$	00000
Numeral system 		• Selects BANK_1,2 measured time numeral system - used only in F3, F4, F5, F6 modes • Consists of decimal and sexagesimal $\overbrace{10 \quad 60}^{10 \quad 60}$	10
Time range 		• Selects BANK_1,2 measured time range - used only in F3, F4, F5, F6 modes • Decimal time range: 0.01 (0-999.99S), 0.1 (0-9999.9S), SEC (0-99999S), MIN (0-99999m) • Sexagesimal time range: 0.01 (0-5m59.99S), 0.1 (0-59m59.99S), SEC (0-9h59m59S), MIN (0-9h59m59m) $\overbrace{0.01 \quad 0.1 \quad SEC \quad MIN}^{0.01 \quad 0.1 \quad SEC \quad MIN}$	0.01
Display cycle 		• Selects BANK_1,2 display cycle - used only in F1, F10, F11, F12, F13 modes • Consists of 0.05, 0.5, 1, 2, 4, and 8 sec. The measured value is updated according to display cycle $\overbrace{0.05 \quad 0.5 \quad 1 \quad 2 \quad 4 \quad 8}^{0.05 \quad 0.5 \quad 1 \quad 2 \quad 4 \quad 8}$	0.05

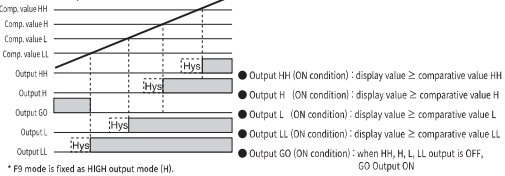
HI comparative value 		• Sets BANK_1,2 HI comparative value - not used in D output mode • HI comparative value setting range depends on decimal point setting position (refer to comparative value setting range) -99999 ~ +99999 -9999 ~ +9999	+99999
H comparative value 		• Sets BANK_1,2 H comparative value - used as H deviation value in D output mode. • H comparative value setting range depends on decimal point setting position (refer to comparative value setting range) -99999 ~ +99999 -9999 ~ +9999	+99999
L comparative value 		• Sets BANK_1,2 L comparative value - used as L deviation value in D output mode. • L comparative value setting range depends on decimal point setting position (refer to comparative value setting range) -99999 ~ +99999 -9999 ~ +9999	-99999
LL comparative value 		• Sets BANK_1,2 LL comparative value - not used in D output mode. • LL comparative value setting range depends on decimal point setting position (refer to comparative value setting range) -99999 ~ +99999 -9999 ~ +9999	-99999

■ Output modes

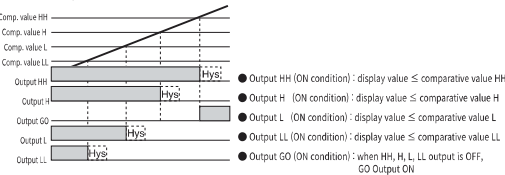
■ Standard output mode (OUT-S)



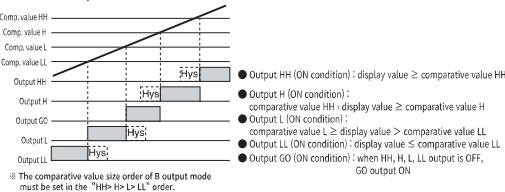
■ HIGH output mode (OUT-H)



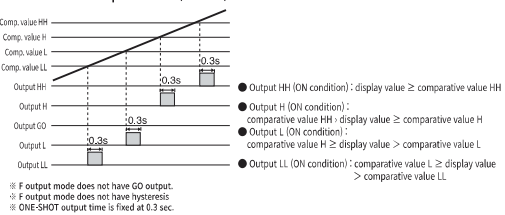
■ LOW output mode (OUT-L)



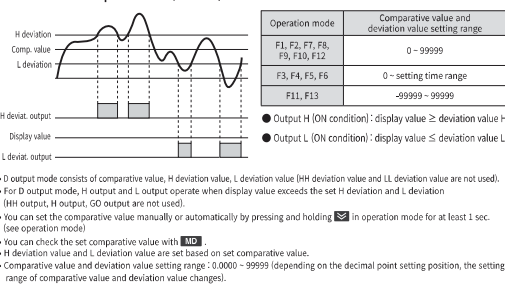
■ BLOCK output mode (OUT-B)



■ ONE-SHOT output mode (OUT-F)



■ Deviation output mode (OUT-D)



■ Function description

■ AUTO-ZERO function

- Function that forces display value to 0 when there is no input pulse during AUTO-ZERO setting time
- Please set the AUTO-ZERO setting time longer than the longest input pulse time.
- If the AUTO-ZERO setting time is too long, even without input pulse, the time to change the display value to "0" will be delayed, so please set the AUTO-ZERO time to match the input pulse.
- AUTO-ZERO setting time can be set individually for Input A and Input B.
- AUTO-ZERO time setting range: 0.0 - 9999.9S

■ Start compensation timer function

- Function to limit HH, H, L, LL, GO outputs during the set time until the measuring instrument stabilizes after power on
- Start compensation timer time setting range: 0.0 to 99.9S

■ Comparative output limit function

- Function that limits L output and LL output until H output and H output operates after power on.
- Used only in standard output mode, BLOCK output mode, and deviation output mode.

■ Hysteresis function

- If the measured value oscillates near the comparative value, the output will be unstable. Function that sets hysteresis value based on comparative value to prevent such output instability.
- The hysteresis value is applied when the measured value decreases from HH and H comparative values, and when the measured value increases from LL and L comparative values.

■ Display cycle function

- A function that measures the detector during the set time of the display cycle and displays the measured value by averaging it during the set time
- The display value is changed by the setting time of the display cycle.
- Display cycle consists of 0.05 s, 0.5 s, 1 s, 2 s, 4 s, 8 s.
- When measuring high-speed pulse, display value can be stabilized by adjusting display cycle.
- For output models, if the display cycle is long, the output operation may be delayed.

■ Time unit selection function

- Function that displays measured value in several time units.
- Time units can be expressed in decimal and sexagesimal notations.
- Time units are available only in F3, F4, F5, F6 modes.

■ Maximum and minimum value display function

- Function that selects and displays the max. measured value and min. measured value of input pulse
- When displaying the maximum value, the display shows "MAX".
- When displaying the minimum value, the display shows "MIN".
- To check max. measured value and min. measured value, if you press you can view them sequentially (see operation mode)
- In the maximum value display mode, if you press and hold for at least 1 second, the maximum value will be initialized to the current measured value (see operation mode)
- In the minimum value display mode, if you press and hold for at least 1 second, the minimum value will be initialized to the current measured value (see operation mode)

■ HOLD and RESET functions

- Function that makes the current display value to remain unchanged when the ON signal is input to the external HOLD terminal
- The display value is maintained only while the HOLD signal is ON.
- In F9 mode, the external HOLD terminal is used as RESET signal.
- When RESET signal is applied in F9 mode, count value is initialized to "0".

■ Power outage memory function

- Function that saves current count value when power is turned off
- Only used in F9 mode.
- If the parameter "bACK" is set to "SAVE", it saves the current count value when the power is turned off.
- It counts from the saved count value when power is re-applied.

■ Lock function

- Function that can set parameter, BANK, KEY operation lock

Lock setting	Descriptions
	Unlocks parameters and keys
	Locks . Cannot set comparative values, can change parameters
	Locks parameters. Can set comparative values, cannot change parameters
	Locks parameters and keys. Cannot set comparative values, cannot change parameters
	Locks BANK. Can set comparative values and change parameters. Can switch BANK 1, 2, cannot set BANK parameters

■ BANK function

- Function that enables the comparative value and the prescale value to be saved in advance in two BANKs, and to be easily switched and used on demand
- The BANK function is used when the prescale value needs to be changed, such as changing the transmission ratio.
- Consists of two banks, such as BANK_1 and BANK_2.
- You can set prescale, decimal point position, display refresh cycle, comparative value, etc. to the BANK.
- When the BANK function is activated, the display shows "BA" and BANK number.
- When the BANK function is activated, it uses and measures the comparative value and prescale value that are saved in the relevant BANK
- The BANK switching is performed by and external BANK terminal.
- If the BANK parameter "b-CHC" is set to "KEY", the BANK switching is performed by (the BANK is switched every time you press and hold for at least 1 second).
- If the BANK parameter "b-CHC" is set to "EX-IN", the BANK switching is performed by external BANK terminal input (BANK_1 is used when the BANK terminal is open, and BANK_2 is used when the BANK terminal is short).

※ For further information, please visit our homepage(www.hanyoungnux.com) and refer to the user's manual.