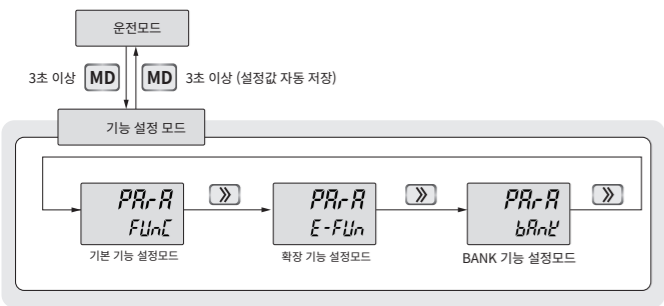


기능설정모드

LCD 표시	영칭	설정내용
<i>PRR-R</i> <i>FUnC</i>	기본 기능	• 동작모드, 센서타입, 출력모드, 프리스케일, 소수점위치, 시간레인지, 표시주기 등의 펠스미터 동작에 필요한 기본적인 항목들을 설정하는 파라미터로 구성
<i>PRR-R</i> <i>E-FUn</i>	확장 기능	• 파라미터 초기화, 출력 히스테리시스, AUTO-ZERO, 출력제한, 기동보상타이머, 정전기역, BANK 전환, 잠금 등 펠스미터의 부가적인 항목들을 설정하는 파라미터로 구성
<i>PRR-R</i> <i>bAnL</i>	BANK 기능	• 동작모드, 센서타입, 출력모드, 프리스케일, 소수점위치, 시간레인지, 표시주기, HH 비교값, H 비교값, L 비교값, LL 비교값 등 BANK 기능 사용에 필요한 항목들을 설정하는 파라미터로 구성 (Bank 기능 사용시) • 2개의 BANK 로 구성되어 있으며, BANK 번호 별로 필요한 항목들을 개별적으로 설정 • BANK 기능 설정은 확장기능의 BANK 전환을 'KEY' 또는 'EX-IN' 으로 설정해야 활성화 합니다. • BANK 전환은 KEY 또는 외부입력으로 전환 가능합니다.



* 기능설정모드에서는 계속을 중지합니다.



■ 기본기능 설정모드

설정항목	LCD표시	설정내용	초기값
<i>F-nd</i> <i>F1</i>	동작모드	● 동작모드 선택. (13가지로 구성) <i>F 1 ↔ F 2 ↔ F 3 ↔ F 4 ↔ F 5 ↔ F 6 ↔ F 7</i> <i>↔ F 8 ↔ F 9 ↔ F 10 ↔ F 11 ↔ F 12 ↔ F 13</i>	F1
<i>In-R</i> <i>nPn-L</i>	입력 A 센서타입	● 입력 A 의 센서타입 선택. ● NPN-L, NPN-H, PNP-L, PNP-H 로 구성. (점정입력은 NPN-L 또는 PNP-L 로 선택하여 사용하십시오) <i>nPn-L ↔ nPn-H ↔ PnP-L ↔ PnP-H</i>	NPN-L
<i>In-b</i> <i>nPn-L</i>	입력 B 센서타입	● 입력 B 의 센서타입 선택 - F2, F5, F7, F8, F9, F10, F11, F12, F13 모드에서만 사용됩니다. ● NPN-L, NPN-H, PNP-L, PNP-H 로 구성. (점정입력은 NPN-L 또는 PNP-L 로 선택하여 사용하십시오) <i>nPn-L ↔ nPn-H ↔ PnP-L ↔ PnP-H</i>	NPN-L
<i>o-nd</i> <i>oUt-S</i>	출력모드	● 출력모드 선택 - F9 모드를 제외한 전체동작모드에서 사용. (비교출력모달에서만 사용) ● 표준출력모드 (S), HIGH 출력모드 (H), LOW 출력모드 (L), ONE-SHOT 출력모드 (F), 편차출력모드 (D) 로 구성 ● F9 모드는 HIGH 출력모드 (H) 로 고정되어 있습니다. <i>oUt-S ↔ oUt-H ↔ oUt-L ↔ oUt-b</i> <i>oUt-F ↔ oUt-d</i>	OUT-S
<i>P-RU</i> <i>10000</i>	입력 A 프리스케일 가수	● 입력 A 의 프리스케일 가수 설정 (AX) - F1, F2, F4, F7, F8, F9, F10, F11, F12, F13 모드에서만 사용됩니다. ● 설정범위 : 0.0000 - 9.9999. <i>00000 ~ 99999</i>	6.0000
<i>P-RY</i> <i>10 0</i>	입력 A 프리스케일 지수	● 입력 A 의 프리스케일 지수 설정 (AY) - F1, F2, F4, F7, F8, F9, F10, F11, F12, F13 모드에서만 사용됩니다. ● 설정범위 : 10 ⁻⁹ ~ 10 ⁹ . <i>10-9 ~ 10 9</i>	10 ¹
<i>P-bU</i> <i>10000</i>	입력 B 프리스케일 가수	● 입력 B 의 프리스케일 가수 설정 (BX) - F10, F11, F12, F13 모드에서만 사용됩니다. ● 설정범위 : 0.0000 - 9.9999. <i>00000 ~ 99999</i>	1.0000
<i>P-by</i> <i>10 0</i>	입력 B 프리스케일 지수	● 입력 B 의 프리스케일 지수 설정 (BY) - F10, F11, F12, F13 모드에서만 사용됩니다. ● 설정범위 : 10 ⁻⁹ ~ 10 ⁹ . <i>10-9 ~ 10 9</i>	10 ⁰
<i>dot</i> <i>000000</i>	소수점 위치	● 표시값의 소수점 위치 선택 - F1, F2, F7, F8, F9, F10, F11, F12, F13 모드에서만 사용됩니다. ● 소수점 설정 위치에 따라 비교값 설정범위가 다릅니다. <i>000000 ↔ 00000 ↔ 0000 ↔ 000000 ↔ 000000</i>	00000
<i>SCRL</i> <i>10</i>	시간전번	● 계속시간의 표시전번 선택 - F3, F4, F5, F6 모드에서만 사용됩니다. ● 10진수 및 60진수로 구성. <i>10 ↔ 60</i>	10
<i>rAnG</i> <i>00 1</i>	시간범위	● 계속시간의 시간범위 선택 - F3, F4, F5, F6 모드에서만 사용됩니다. ● 10진수 시간범위 : 0.01 (0-999.99S), 0.1 (0-9999.9S), SEC (0-999999S), MIN (0-999999M). ● 60진수 시간범위 : 0.01 (0-9M59.99S), 0.1 (0-59M59.9S), SEC (0-9H59M59S), MIN (0-99H59.9M). <i>00 1 ↔ 0 1 ↔ SEC ↔ n In</i>	0.01
<i>d-rEF</i> <i>005</i>	표시주기	● 표시주기 선택 - F1, F10, F11, F12, F13 모드에서만 사용됩니다. ● 0.05초, 0.5초, 1초, 2초, 4초, 8초 로 구성 - 표시주기에 따라 계속값이 갱신됩니다. <i>005 ↔ 05 ↔ 1 ↔ 2 ↔ 4 ↔ 8</i>	0.05
<i>b1-HH</i> <i>199999</i>	HH 비교값	● BANK_1,2 의 HH 비교값 설정 - D 출력모드에서는 사용하지 않습니다. ● HH 비교값 설정범위는 소수점 설정 위치에 따라 다릅니다. (비교값 설정범위 참조) <i>99999 ~ 1,99999</i>	+99999
<i>b1-H</i> <i>199999</i>	H 비교값	● BANK_1,2 의 H 비교값 설정 - D 출력모드에서는 H 편차값으로 사용됩니다. ● HH 비교값 설정범위는 소수점 설정 위치에 따라 다릅니다. (비교값 설정범위 참조) <i>99999 ~ 1,99999</i>	+99999
<i>b1-L</i> <i>-99999</i>	L 비교값	● BANK_1,2 의 L 비교값 설정 - D 출력모드에서는 L 편차값으로 사용됩니다. ● L 비교값 설정범위는 소수점 설정 위치에 따라 다릅니다. (비교값 설정범위 참조) <i>99999 ~ 1,99999</i>	-99999
<i>b1-LL</i> <i>-99999</i>	LL 비교값	● BANK_1,2 의 LL 비교값 설정 - D 출력모드에서는 사용하지 않습니다. ● LL 비교값 설정범위는 소수점 설정 위치에 따라 다릅니다. (비교값 설정범위 참조) <i>99999 ~ 1,99999</i>	-99999

■ 확장기능 설정모드

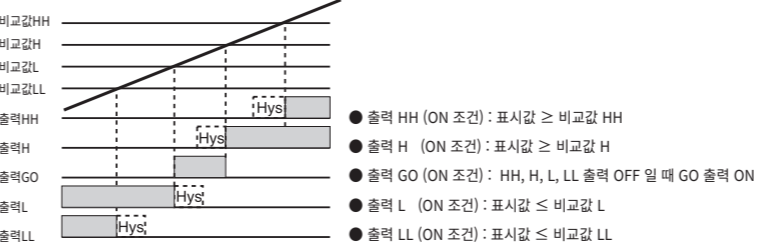
설정항목	LCD표시	설정내용	초기값
<i>F-in1</i> <i>oFF</i>	초기모드	● 파라미터 전체 설정값 초기화. ● OFF 및 ON 으로 구성 - ON 으로 선택 시 파라미터 전체 설정 값은 출하설정값으로 초기화 됩니다. <i>oFF ↔ on</i>	OFF
<i>HYS</i> <i>1234</i>	히스테리시스	● 출력에 대한 히스테리시 값 설정 - F1, F10, F11, F12, F13 모드 에서만 사용됩니다. (비교출력모달에서만 사용) ● 소수점 설정 위치에 따라 히스테리시스 범위가 다릅니다. ● 설정범위 : 00000 (0-9999), 0000.0 (0.0-999.9), 000.00 (0.00-99.99), 00.000 (0.000-9.999), 0.0000 (0.0000-0.9999) <i>0000 ~ 99999</i>	0000
<i>RZ-R</i> <i>99999</i>	입력 A AUTO-ZERO	● 입력 A 의 AUTO-ZERO 시간 설정 - F1, F4, F10, F11, F12, F13 모드에서만 사용됩니다. ● 설정범위 : 0.0 - 9999.9 초 <i>00000 ~ 99999</i>	9999.9
<i>RZ-b</i> <i>99999</i>	입력 B AUTO-ZERO	● 입력 B 의 AUTO-ZERO 시간 설정 - F10, F11, F12, F13 모드에서만 사용됩니다. ● 설정범위 : 0.0 - 9999.9 초. <i>00000 ~ 99999</i>	9999.9
<i>o-L in</i> <i>L-oUt</i>	출력제한	● 비교출력제한 선택 - F9 모드를 제외한 전체동작모드에서 사용. (비교출력모달에서만 사용) ● L, LL 출력제한 및 기동보상타이머로 구성. ● L-OUT 선택 시 L 출력 및 LL 출력이 제한되며, S-TIM 선택 시 기동보상타이머에 의해 비교출력이 제한됩니다. <i>L-oUt ↔ S-t in</i>	L-OUT
<i>S-tnr</i> <i>123</i>	기동보상 타이머	● 기동보상타이머의 비교출력제한 시간 설정 - 출력제한기능을 S-TIM 으로 설정 시 설정 가능합니다. ● 설정범위 : 0.0 - 99.9 초. <i>000 ~ 999</i>	00.0
<i>bRUE</i> <i>CLER</i>	정전기역	● 전원 차단 시 최종계수값 저장 - F9 모드에서만 사용. ● CLEAR 및 SAVE 로 구성. ● SAVE 선택 시 최종계수값이 저장됩니다. <i>CLER ↔ SRUE</i>	CLEAR
<i>b-CHG</i> <i>oFF</i>	BANK 전환	● BANK 기능 활성화 선택. ● BANK 기능이 활성화 되면 비교값, 프리스케일, 소수점위치, 시간범위, 표시주기는 BANK 에 설정된 값으로 계속됩니다. ● OFF 선택 : BANK 기능 비활성화. ● KEY 선택 : BANK 전환은  KEY 에 의해 BANK 번호 전환. (1초 이상 ON 상태 유지) ● EX-IN 선택 : 외부 BANK 입력에 의해 BANK 번호 전환. <i>oFF ↔ KEY ↔ EU- In</i>	OFF
<i>LoLU</i> <i>oFF</i>	잠금	● 잠금기능 활성화 선택. ● OFF 선택 : KEY 잠금 및 파라미터 잠금 해제. ● KEY 선택 : 운전모드에서  KEY 잠금. (비교값 설정은 불가능하며 비교값 확인만 가능) ● PAR 선택 : 파라미터 잠금. (파라미터 변경 불가, 비교값 설정은 가능) ● K-P 선택 : KEY 잠금 및 파라미터 잠금 동시 설정. (비교값 설정 및 파라미터 변경 불가) ● BNK 선택 : BANK 잠금. (BANK 설정 불가) <i>oFF ↔ KEY ↔ PRR ↔ P-P ↔ bnL</i>	OFF

■ BANK 기능 설정모드

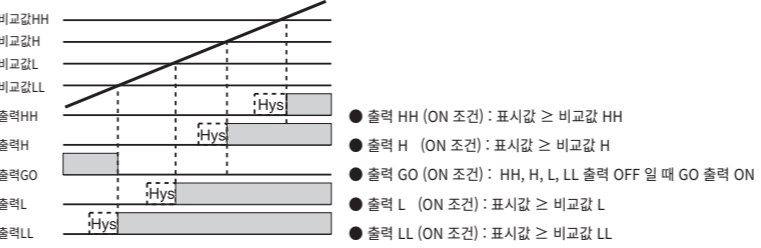
설정항목	LCD표시	설정내용	초기값
<i>bAnL</i> <i>1</i>	BANK 번호	● BANK 번호 선택. ● BANK_1 및 BANK_2 로 구성 - BANK 별로 비교값, 프리스케일, 소수점위치, 시간범위, 표시주기를 개별설정. <i>1 ↔ 2</i>	1
<i>P-RU</i> <i>10000</i>	입력 A 프리스케일 가수	● BANK_1,2 의 입력 A 프리스케일 가수 설정 (AX) - F1, F2, F4, F7, F8, F9, F10, F11, F12, F13 모드에서만 사용됩니다. ● 설정범위 : 0.0000 - 9.9999. <i>00000 ~ 99999</i>	6.0000
<i>P-RY</i> <i>10 0</i>	입력 A 프리스케일 지수	● BANK_1,2 의 입력 A 프리스케일 지수 설정 (AY) - F1, F2, F4, F7, F8, F9, F10, F11, F12, F13 모드에서만 사용됩니다. ● 설정범위 : 10 ⁻⁹ ~ 10 ⁹ . <i>10-9 ~ 10 9</i>	10 ¹
<i>P-bU</i> <i>10000</i>	입력 B 프리스케일 가수	● BANK_1,2 의 입력 B 프리스케일 가수 설정 (BX) - F10, F11, F12, F13 모드에서만 사용됩니다. ● 설정범위 : 0.0000 - 9.9999. <i>00000 ~ 99999</i>	1.0000
<i>P-by</i> <i>10 0</i>	입력 B 프리스케일 지수	● BANK_1,2 의 입력 B 프리스케일 지수 설정 (BY) - F10, F11, F12, F13 모드에서만 사용됩니다. ● 설정범위 : 10 ⁻⁹ ~ 10 ⁹ . <i>10-9 ~ 10 9</i>	10 ⁰
<i>dot</i> <i>000000</i>	소수점 위치	● BANK_1,2 의 표시값 소수점 위치 선택 - F1, F2, F7, F8, F9, F10, F11, F12, F13 모드에서만 사용됩니다. ● 소수점 설정 위치에 따라 비교값 설정범위가 다릅니다. <i>000000 ↔ 00000 ↔ 00000 ↔ 000000 ↔ 000000</i>	00000
<i>SCRL</i> <i>10</i>	시간전번	● BANK_1,2 의 계속시간 표시전번 선택 - F3, F4, F5, F6 모드에서만 사용됩니다. ● 10진수 및 60진수로 구성. <i>10 ↔ 60</i>	10
<i>rAnG</i> <i>00 1</i>	시간범위	● BANK_1,2 의 계속시간 시간범위 선택 - F3, F4, F5, F6 모드에서만 사용됩니다. ● 10진수 시간범위 : 0.01 (0-999.99S), 0.1 (0-9999.9S), SEC (0-999999S), MIN (0-999999M). ● 60진수 시간범위 : 0.01 (0-9M59.99S), 0.1 (0-59M59.9S), SEC (0-9H59M59S), MIN (0-99H59.9M). <i>00 1 ↔ 0 1 ↔ SEC ↔ n In</i>	0.01
<i>d-rEF</i> <i>005</i>	표시주기	● BANK_1,2 의 표시주기 선택 - F1, F10, F11, F12, F13 모드에서만 사용됩니다. ● 0.05초, 0.5초, 1초, 2초, 4초, 8초 로 구성 - 표시주기에 따라 계속값이 갱신됩니다. <i>005 ↔ 05 ↔ 1 ↔ 2 ↔ 4 ↔ 8</i>	0.05
<i>b1-HH</i> <i>199999</i>	HH 비교값	● BANK_1,2 의 HH 비교값 설정 - D 출력모드에서는 사용하지 않습니다. ● HH 비교값 설정범위는 소수점 설정 위치에 따라 다릅니다. (비교값 설정범위 참조) <i>99999 ~ 1,99999</i>	+99999
<i>b1-H</i> <i>199999</i>	H 비교값	● BANK_1,2 의 H 비교값 설정 - D 출력모드에서는 H 편차값으로 사용됩니다. ● HH 비교값 설정범위는 소수점 설정 위치에 따라 다릅니다. (비교값 설정범위 참조) <i>99999 ~ 1,99999</i>	+99999
<i>b1-L</i> <i>-99999</i>	L 비교값	● BANK_1,2 의 L 비교값 설정 - D 출력모드에서는 L 편차값으로 사용됩니다. ● L 비교값 설정범위는 소수점 설정 위치에 따라 다릅니다. (비교값 설정범위 참조) <i>99999 ~ 1,99999</i>	-99999
<i>b1-LL</i> <i>-99999</i>	LL 비교값	● BANK_1,2 의 LL 비교값 설정 - D 출력모드에서는 사용하지 않습니다. ● LL 비교값 설정범위는 소수점 설정 위치에 따라 다릅니다. (비교값 설정범위 참조) <i>99999 ~ 1,99999</i>	-99999

■ 출력모드

■ 표준출력 모드 (OUT-S)

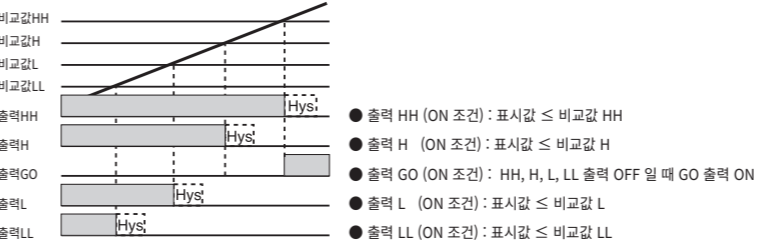


■ HIGH 출력 모드 (OUT-H)

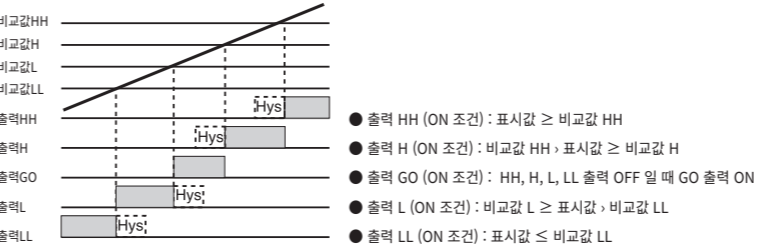


* F9 모드는 HIGH 출력모드 (H) 로 고정되어 있습니다.

■ LOW 출력 모드 (OUT-L)

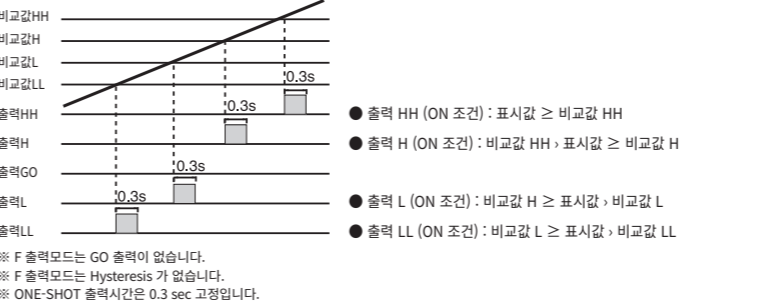


■ BLOCK 출력 모드 (OUT-B)

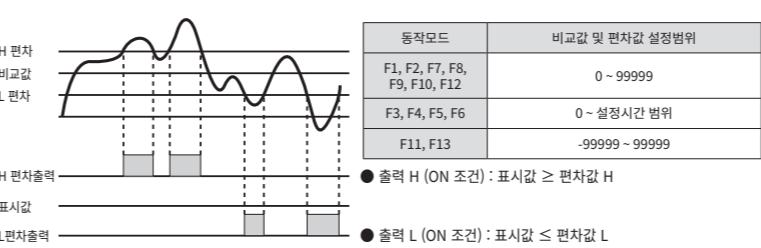



※ B 출력모드의 비교값 크기 순서는 "HH > H > L > LL" 순서로 설정되어야 합니다.

■ ONE-SHOT 출력 모드 (OUT-F)



■ 편차출력 모드 (OUT-D)



• D 출력모드는 비교값 및 H 편차값, L 편차값으로 구성됩니다. (HH 편차값 및 LL 편차값은 사용하지 않습니다.)
• D 출력모드는 표시값이 설정된 비교값에서 H 편차 및 L 편차를 초과할 때 H 출력 및 L 출력이 동작됩니다. (HH 출력, H 출력, GO 출력은 사용되지 않습니다.)
• 비교값은 직접 설정하거나, 운전모드에서  KEY 를 1초 이상 누르면 자동으로 설정됩니다. (운전모드 참조)
• 설정된 비교값은 **MD** KEY 로 확인할 수 있습니다.
• 설정된 비교값을 기준으로 H 편차값 및 L 편차값을 설정합니다.
• 비교값 및 편차값 설정범위 : 0.0000 ~ 99999 (소수점 설정 위치에 따라 비교값 및 편차값의 설정범위는 변경됩니다.)

기 능

■ AUTO-ZERO 기능

• AUTO-ZERO 설정시간 동안 입력펄스가 없으면 표시값을 강제로 0 으로 만드는 기능
• AUTO-ZERO 설정시간은 가장 긴 입력펄스시간보다 긴 시간을 설정하십시오.
• AUTO-ZERO 설정시간이 너무 길면 입력펄스가 없어도, 표시값이 “0” 으로 변경되는 시간이 늦어지게 되므로 입력펄스에 적합하도록 AUTO-ZERO 시간을 설정 하십시오.
• AUTO-ZERO 설정시간은 입력 A 및 입력 B 에 대해 개별 설정할 수 있습니다.
• AUTO-ZERO 시간 설정범위 : 0.0 ~ 9999.9s

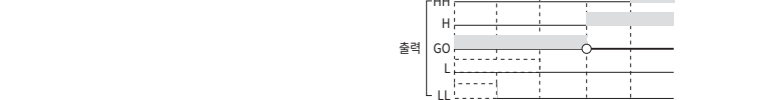
■ 기동보상타이머 기능

• 전원인가 후 측정기기가 안정화 될 때까지 설정시간 동안 HH, H, L, LL, GO 출력을 제한하는 기능
• 기동보상타이머 시간 설정범위 : 0.0 ~ 99.9s



■ 비교출력제한 기능

• 전원인가 후 H 출력 및 HH 출력이 동작하기 전 까지는 L 출력 및 LL 출력을 제한하는 기능
• 표준출력모드, BLOCK 출력모드, 편차출력모드에서만 사용됩니다.



■ 히스테리시스 기능

• 계속값이 비교값 부근에서 흔들리는 경우, 출력이 불안정하게 동작하게 됩니다. 이러한 출력 불안정을 방지하기 위하여 비교값을 기준으로 히스테리시스 값을 설정하는 기능.
• 히스테리시스 값은 HH 및 H 비교값에서는 계속값이 감소될 때 적용되며, LL 및 L 비교값에서는 계속값이 증가될 때 적용됩니다.

소수점 위치	히스테리시스 값 설정범위
00000	0 ~ 9999
0000.0	0.0 ~ 999.9
000.00	0.00 ~ 99.99
00.000	0.000 ~ 9.999
0.0000	0.0000 ~ 0.9999



■ 표시주기 기능

• 표시주기의 설정시간 동안 검출체를 계속하여 설정시간 동안의 계속값을 평균화하여 표시해 주는 기능
• 표시값은 표시주기의 설정시간에 의해 변경됩니다.
• 표시주기는 0.05s, 0.5s, 1s, 2s, 4s, 8s 로 구성
• 고출력스 계속 시, 표시주기를 조절하여 표시값을 안정화 할 수 있습니다.
• 출력 모델의 경우, 표시주기가 길면 출력동작이 늦어질 수 있습니다.

■ 시간단위선택 기능

• 계속값을 다양한 시간단위로 표시해 주는 기능
• 시간단위는 10진법 및 60진법으로 표시할 수 있습니다.
• 시간단위는 F3, F4, F5, F6 모드에서만 사용 가능합니다.

■ 최대값 및 최소값 표시 기능

• 입력된 펄스의 최대계속값 및 최소계속값을 선택하여 표시해 주는 기능
• 최대값을 표시하는 경우, 표시창에 "MAX" 문자가 표시됩니다.
• 최소값을 표시하는 경우, 표시창에 "MIN" 문자가 표시됩니다.
• 최대값 및 최소값 확인은 **MD** KEY 를 누르면 순차적으로 확인할 수 있습니다. (운전모드 참조)
• 최대값 표시모드에서  KEY 를 1초 이상 누르면 최대값은 현재계속값으로 초기화됩니다. (운전모드 참조)
• 최소값 표시모드에서  KEY 를 1초 이상 누르면 최소값은 현재계속값으로 초기화됩니다. (운전모드 참조)

■ HOLD 및 RESET 기능




• 외부 HOLD 단자에 ON 신호가 입력되면 현재 표시값이 변경없이 유지되는 기능
• 표시값은 HOLD 신호가 ON 동안에만 유지됩니다.
• F9 모드에서는 외부 HOLD 단자는 RESET 신호로 사용됩니다.
• F9 모드에서 RESET 신호가 인가되면 계수값은 “0” 으로 초기화 됩니다.

■ 정전기역 기능




• 전원 차단 시, 현재 계수값을 저장하는 기능
• F9 모드에서만 사용됩니다.
• 파라미터 "BACK" 이 "SAVE" 로 설정되어 있으면 전원 차단 시 현재 계수값을 저장합니다.
• 전원 재인가 시, 저장된 계수값부터 계수됩니다.

■ 잠금 기능

● 파라미터, BANK, KEY 동작을 잠금 설정할 수 있는 기능

잠금설정	설 명
<i>oFF</i>	파라미터 및 KEY 잠금 해제
<i>KEY</i>	   KEY 잠금. 비교값 설정 불가, 파라미터 변경 가능
<i>PRr</i>	파라미터 잠금. 비교값 설정 가능, 파라미터 변경 불가
<i>P-P</i>	파라미터 및 KEY 잠금. 비교값 설정 불가, 파라미터 변경 불가
<i>bnL</i>	BANK 잠금. 비교값 설정 및 파라미터 변경 가능. BANK_1, 2 전환 가능, BANK 파라미터 설정 불가

■ BANK 기능

• 비교값 및 프리스케일 값을 2개의 BANK 에 미리 저장하여 필요 시 쉽게 전환하여 사용하도록 하는 기능
• BANK 기능은 변속기의 변속비 변경과 같이 프리스케일 값의 변경이 필요한 경우에 사용됩니다.
• BANK_1 및 BANK_2 와 같이 2개의 BANK 로 구성
• BANK 에는 프리스케일, 소수점위치, 표시경신주기, 비교값 등을 설정할 수 있습니다.
• BANK 기능이 활성화 되면, 표시창에 “ BA ” 문자 및 BANK 번호가 표시됩니다.
• BANK 기능이 활성화 되면, 해당 BANK 에 저장되어 있는 비교값 및 프리스케일 값을 사용하여 계속합니다.
• BANK 전환은  KEY 및 외부 BANK 단자에 의해 전환됩니다.
• BANK 파라미터 "b-CHG" 가 "KEY" 로 설정되어 있으면, BANK 전환은  KEY 에 의해 전환됩니다. ( KEY 를 1초 이상 누르면 마다 BANK 가 전환됩니다.)
• BANK 파라미터 "b-CHG" 가 "EX-IN" 설정되어 있으면, BANK 전환은 외부 BANK 단자 입력에 의해 전환됩니다. (BANK 단자 개방 시 BANK_1 이 사용되며, BANK 단자 단락 시 BANK_2 가 사용됩니다.)

※상세한 설명은 당사 홈페이지(www.hynux.com) 자료실에 있는 사용설명서를 참고하여 주시기 바랍니다.

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.

HANYOUNG NUX CO., LTD
28, Gilpa-ro 71beon-gil,
Michuhol-gu, Incheon, Korea
TEL : +82-32-876-4697
http://www.hynux.com

MA0202KE180920

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
	CAUTION Indicates a potentially hazardous situation which, if not avoided, may result in minor injury or properties damage

DANGER

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

- Any use of the product other than those specified by the manufacturer may result in personal injury or property damage.
- If there is a possibility that a malfunction or abnormality of this product may lead to a serious accident to the system, install an appropriate protection circuit on the outside.
- Since this product is not equipped with a power switch and fuse, install them separately on the outside (fuse rating: 250 V a.c. 0.5 A).
- Please supply the rated power voltage, in order to prevent product breakdowns or malfunctions.
- To prevent electric shocks and malfunctions, do not supply the power until the wiring is completed.
- The product does not have an explosion-proof structure, so avoid using it in places with flammable or explosive gases.
- Never disassemble, modify, process, improve or repair this product, as it may cause abnormal operations, electric shocks or fires.
- Please disassemble the product after turning OFF the power. Failure to do so may result in electric shocks, product abnormal operations or malfunctions.
- Please use this product after installing it to a panel, because there is a risk of electric shock.

CAUTION

- The contents of this manual may be changed without prior notification.
- Please make sure that the product specifications are the same as you ordered.
- Please make sure that there are no damages or product abnormalities occurred during shipment.
- Please use the product in places where corrosive gases (especially harmful gases, ammonia, etc.) and flammable gases are not generated.
- Use the product in places where vibrations and impacts are not applied directly to product body.
- Please use the product in places without liquids, oils, chemicals, steam, dust, salt, iron, etc.
- Please do not wipe the product with organic solvents such as alcohol, benzene, etc. (use neutral detergents).
- Please avoid places where large inductive interference, static electricity, magnetic noise are generated.
- Please avoid places with heat accumulation caused by direct sunlight, radiations, etc.
- Please use the product in places with elevation below 2000 m.
- When water enters, short circuit or fire may occur, so please inspect the product carefully.
- When there is a lot of noise from the power, we recommend to use insulation transformer and noise filter. Please install the noise filter to a grounded panel or structure etc. and make the wiring of noise filter output and product power supply terminal as short as possible.
- Tightly twisting the power cables is effective against noise.
- Do not wire anything to unused terminals.
- Please wire correctly, after checking the polarity of the terminals.
- When you install this product to a panel, please use switches or circuit breakers compliant with IEC60947-1 or IEC60947-3.
- Please install switches or circuit breakers at close distance for user convenience.
- We recommend regular maintenance for the continuous safe use of this product.
- Some components of this product may have a lifespan or deteriorate over time.
- The warranty period of this product, is 1 year, including its accessories, under normal conditions of use.
- Please use the product in places with elevation below 2000 m.
- If used as a signal to external interlock circuit, etc. please use a delay relay together.

Suffix code

Model	Code	Content
LP	□ □ □ □	LCD Multi Pulse Meter
Dimensions	3	96(W) × 48(H) mm
Display digits	5	5 digits
Power voltage	A	100 - 240 V a.c. 50/60Hz
Setting stages	N	Display only
	3	3-stage setting (H/GO/L)
	5	5-stage setting (HH/H/GO/L/L)

Specifications

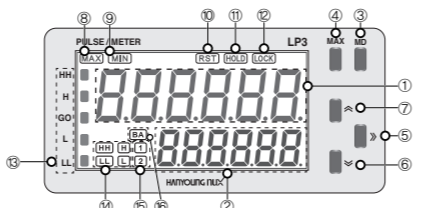
Model	LP3-5A5	LP3-5A3	LP3-5AN
Power voltage	100 - 240 V a.c. 50/60 Hz		
Power consumption	Max. 8 VA	Max. 8 VA	Max. 6 VA
Display	Negative LCD display		
Character height	Counting unit (14.5 mm), Setting unit (10 mm)		
Input frequency	Non-contact (Max. 50 KHz, ON/OFF pulse width Min. 10 us), Contact (Max. 30 Hz ON/OFF pulse width Min. 16.6 ms)		
Input	Voltage	[H] level (4.5 - 24 V d.c.), [L] level (0 - 1 V d.c.), Input impedance (4.5 kΩ)	
	Non-voltage	Residual voltage (Max. 1 V), Impedance during short-circuit (Max. 300 Ω), Impedance during open (Min. 100 kΩ)	
Measurement range	F1, F2, F10, F11, F12, F13 : 0.0005 ~ 50 KHz / F3, F4, F5, F6 : 0.001 s ~ 3200 s / F7, F8, F9 : 0 ~ 4x10 ⁹		
Measurement accuracy	F1, F4, F10, F11, F12, F13 : F3 ± 0.05 % rdg ± 1 digit / F2, F3, F5, F6 : F5 ± 0.01 % rdg ± 1 digit		
External power supply	12 V d.c. ± 10 % 100 mA		
Display cycle	0.05 sec / 0.5 sec / 1 sec / 2 sec / 4 sec / 8 sec		
Display range	-99999 ~ 99999		
Power outage compensation	Approx. 10 years (non-volatile EEPROM only)		
Control output	HH (SPST), H (SPST), GO (SPST), L (SPST), LL (SPST) * HH/H output COM common, * LL/L output COM common	H (SPDT), GO (SPST), L (SPDT)	-
	NO contact (250 V a.c. 5 A resistive load), NC contact (250 V a.c. 2 A resistive load)		
Relay life cycle	Electrical	Min. 100,000 times	
	Mechanical	Min. 10,000,000 times (250 V a.c. 2A)	
Front panel	IP66 (product front)		
Vibration durability	10 ~ 55Hz double amplitude 0.75 mm X, Y, Z each direction, 2 hr		
Insulation resistance	Min. 100 MΩ (500 V d.c.), conductive part terminal - Non-conductive metal		
Dielectric strength	2,000 V a.c. 60 Hz for 1 minute (between each conductive terminal)		
Noise immunity	± 2000 V (pulse width 1 μs, square-wave noise by noise simulator is applied among the power terminals)		
Ambient temperature	-10 ~ 50 °C (without condensation)		
Storage temperature	-20 ~ 60 °C (without condensation)		
Ambient humidity	35 ~ 85 % RH		

Input specifications and connection

Input specifications

- Non-contact input
 - Input frequency : Max. 50 KHz
 - Input duty ratio : 50 % (1:1)
 - Input ON/OFF pulse width : each Min. 10 us
 - Input voltage level : HIGH (4.5 - 24 V d.c.), LOW (0 - 1 V d.c.)
- Contact input
 - Input frequency : Max. 30 Hz
 - Input duty ratio : 50 % (1:1)
 - Input ON/OFF pulse width : Min. 16.7 ms each
 - Contact specifications : approx. 12 V d.c. 2 mA load current open / close contact

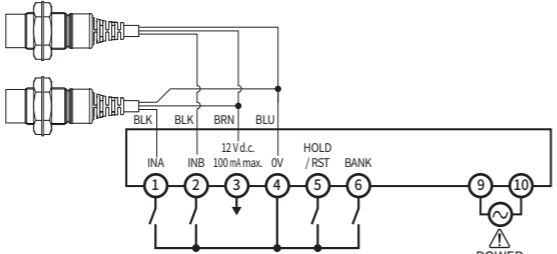
Part names and functions



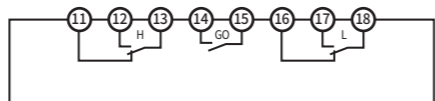
NO	NAME	Descriptions
①	PV display	Displays measured value, maximum value, minimum value, parameter setting item
②	SV display	Displays HH/H/L/L comparative value
③	MODE KEY	• Enters and exits function setting mode (hold ON state for more than 3 seconds) • Auto save function set value during termination • Used to switch the SV display in operation mode (HH comparative value / H comparative value / L comparative value / LL comparative value) • Used to switch the SV display in D output mode (comparative value / H deviation value / L deviation value)
④	MAX KEY	Used to switch the PV display in operation mode (measured value / max. measured value / min. measured value)
⑤	Shift KEY	• Enters comparative value setting mode and shifts the comparative value digits in operation mode deviation value digits in D output mode • Reduces comparative value in function setting mode and comparative value setting mode • Initializes maximum values as current display value when the maximum value is displayed in operation mode, if you press and hold it for at least 1 second • Initializes minimum value as current display value when the minimum value is displayed in operation mode, if you press and hold it for at least 1 second • Saves current display value as comparative value if you press and hold it for at least 1 second in D output mode
⑥	DOWN KEY	• Enters comparative value setting mode and shifts the comparative value digits in operation mode deviation value digits in D output mode • Reduces comparative value in function setting mode and comparative value setting mode • Initializes maximum values as current display value when the maximum value is displayed in operation mode, if you press and hold it for at least 1 second • Initializes minimum value as current display value when the minimum value is displayed in operation mode, if you press and hold it for at least 1 second • Saves current display value as comparative value if you press and hold it for at least 1 second in D output mode
⑦	UP KEY	• Increases comparative value in function setting mode and comparative value setting mode • Used to switch BANK number in operation mode (hold ON state for at least 1 second). when if BANK switch is set to 'KEY' in function setting mode
⑧	Max. indicator	Illuminates when max. measured value is displayed to PV display in operation mode
⑨	MIN indicator	Illuminates when min. measured value is displayed to PV display in operation mode
⑩	RESET input indicator	Illuminates when external RESET signal is applied (illuminates only in F9)
⑪	HOLD input indicator	Illuminates when external HOLD signal is applied
⑫	LOCK setting indicator	Illuminates when LOCK enables in function setting mode
⑬	Timer setting indicator	Illuminates when TIM/TTIM/BT/M operation modes enables, flashes set time activates
⑭	SV display status indicator	HH/H/L/L indicator illuminates when SV display(②) switched to the each value in operation mode
⑮	BANK number indicator	The selected BANK number illuminates
⑯	BANK indicator	Indicator illuminates when BANK function enables

Connection diagrams

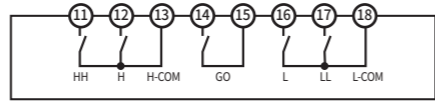
LP3-5A



LP3-5A3 output

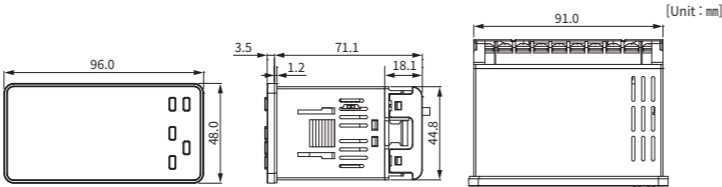


LP3-5A5 output

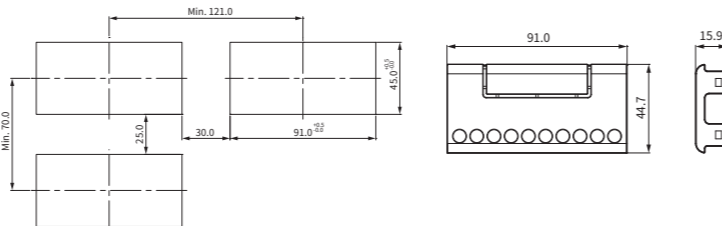


Dimensions and panel cutout

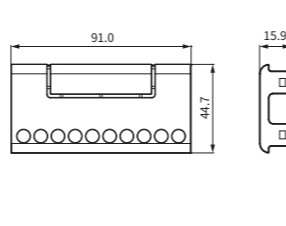
Dimensions



Panel cutout



Protective cover dimensions



Initial values of parameters (SV)

Setting item	Initial value	Setting item	Initial value
Operation mode	F1	Start compensation timer	000
Input A sensor type	nPn-L	Power outage memory	CLEAR
Input B sensor type	nPn-L	BANK switching	oFF
Output mode	oUt-5	Lock	oFF
Input A prescale mantissa	60000	BANK number	1
Input A prescale index	10 1	Input A prescale mantissa	60000
Input B prescale mantissa	10000	Input A prescale index	10 1
Input B prescale index	10 0	Input B prescale mantissa	10000
Decimal point position	00000	Input B prescale index	10 0
Numeral system	10	Decimal point position	00000
Time range	00 1	Numeral system	10
Display cycle	005	Time range	00 1
Parameter initialization	oFF	Display cycle	005
Hysteresis	0000	HH comparative value	199999
Input A AUTO-ZERO	99999	H comparative value	199999
Input B AUTO-ZERO	99999	L comparative value	-99999
Output limit	L-oUt	LL comparative value	-99999

Output limit function table for each output mode

Out. limit	OUT-S	OUT-H	OUT-L	OUT-B	OUT-F	OUT-D
Comparative output limit	0	X	X	0	X	0
Start compensation timer	0	0	0	0	0	0

Parameter table for each product

* Supportive parameter table for each model Some parameters are not available for a certain product. Please refer to the below table. (O: used, X: not used)

parameter	operation mode	LP3-5AN	LP3-5A3	LP3-5A5
Basic functions (FUNC)	F-MD	0	0	0
	IN-A	0	0	0
	IN-B	0	0	0
	O-MD	X	0	0
	P-AX	0	0	0
	P-AY	0	0	0
	P-BX	0	0	0
	P-BY	0	0	0
	SCAL RANG	0	0	0
	D-REF	0	0	0
BANK functions	DOT	0	0	0
	D-REF	0	0	0
	Bx-HH	X	X	0
	Bx-H	X	0	0
	Bx-L	X	0	0
	Bx-LL	X	X	0
	HH	X	X	0
	H	X	0	0
	L	X	0	0
	LL	X	X	0
Comparative values	F-INI	0	0	0
	HYS	X	0	0
	AZ-A	0	0	0
	AZ-B	0	0	0
	O-LIM	X	0	0
	S-TMR	X	0	0
	BACK	0	0	0
	B-CHG	0	0	0
	LOCK	0	0	0

Parameter table for each operation mode

parameter	operation mode	F1	F2	F3	F4	F5	F6	F7	F8	F9	F10	F11	F12	F13	
Basic functions (FUNC)	F-MD	0	0	0	0	0	0	0	0	0	0	0	0	0	
	IN-A	0	0	0	0	0	0	0	0	0	0	0	0	0	
	IN-B	X	0	X	X	0	X	0	0	0	0	0	0	0	
	O-MD	0	0	0	0	0	0	0	0	X	0	0	0	0	
	P-AX	0	0	X	0	X	X	0	0	0	0	0	0	0	
	P-AY	0	0	X	0	X	X	0	0	0	0	0	0	0	
	P-BX	X	X	X	X	X	X	X	X	X	X	0	0	0	0
	P-BY	X	X	X	X	X	X	X	X	X	X	0	0	0	0
	SCAL RANG	0	X	X	X	X	X	0	X	X	X	0	X	0	X
	D-REF	0	X	X	X	X	X	X	X	X	X	0	0	0	0
Extended functions (E-FUN)	F-INI	0	0	0	0	0	0	0	0	0	0	0	0	0	
	HYS	0	X	X	X	X	X	X	X	X	0	0	0	0	
	AZ-A	0	X	X	0	X	X	X	X	X	0	0	0	0	
	AZ-B	X	X	X	X	X	X	X	X	X	0	0	0	0	
	O-LIM	0	0	0	0	0	0	0	0	0	X	0	0	0	
	S-TMR	0	0	0	0	0	0	0	0	X	0	0	0	0	
	BACK	X	X	X	X	X	X	X	X	X	X	X	X	X	
	B-CHG	0	0	0	0	0	0	0	0	0	0	0	0	0	
	LOCK	0	0	0	0	0	0	0	0	0	0	0	0	0	
	BANK	0	0	0	0	0	0	0	0	0	0	0	0	0	
BANK functions	P-AX	0	0	X	0	X	X	0	0	0	0	0	0	0	
	P-AY	0	0	X	0	X	X	0	0	0	0	0	0	0	
	P-BX	X	X	X	X	X	X	X	X	X	0	0	0	0	
	P-BY	X	X	X	X	X	X	X	X	X	0	0	0	0	
	DOT	0	X	X	0	X	0	X	0	X	0	X	0	X	
	D-REF	0	X	X	X	X	X	X	X	X	0	0	0	0	
	Bx-HH	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Bx-H	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Bx-L	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Bx-LL	0	0	0	0	0	0	0	0	0	0	0	0	0	
Comparative values	HH	0	0	0	0	0	0	0	0	0	0	0	0	0	
	H	0	0	0	0	0	0	0	0	0	0	0	0	0	
	L	0	0	0	0	0	0	0	0	0	0	0	0	0	
	LL	0	0	0	0	0	0	0	0	0	0	0	0	0	

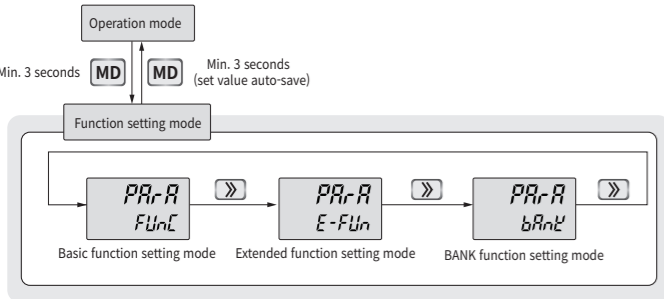
Parameter configuration

- To enter function mode from operation mode, press and hold **MD** more than 3 seconds on ON state.
- To exit and return to operation function, press and hold **MD** for more than 3 seconds on ON state. (changed parameter set value auto-save).
- The parameters contained in the rectangles with bold borders are only displayed on the comparative output modes.
- Some parameters are not displayed depending on the models and operation mode.(see chart)

Function setting modes

LCD display	Name	Settings
\overline{PRR} \overline{FUn}	Basic functions	● Configuration by parameter that sets basic items required for the pulse meter operations, such as operation mode, sensor type, output mode, prescale, decimal point position, time range, display cycle, etc.
\overline{PRR} $\overline{E-FUn}$	Extended functions	● Configuration by parameter that sets additional pulse meter items, such as parameter initialization, output hysteresis, AUTO-ZERO, output limit, start compensation timer, power outage memory, BANK switching, lock, etc.
\overline{PRR} \overline{bAn}	BANK function	● Configuration by parameter that sets items required for the BANK function use, such as operation mode, sensor type, output mode, prescale, decimal point position, time range, display cycle, HH comparative value, H comparative value, L comparative value, LL comparative value, etc. (Using BANK function) ● It consists of 2 BANKs, and individually sets required items for each BANK number ● The BANK function setting is activated only when BANK switching of extended functions is set to 'KEY' or 'EX-IN'. ● BANK switching can be switched by KEY or external input.

* The measurement stops in function setting mode.



Basic function setting modes

Setting item	LCD display	Settings	Initial value
\overline{Fnd} $\overline{F1}$	Operation mode	● Selects operation mode (13 types). $\overline{F1} \leftrightarrow \overline{F2} \leftrightarrow \overline{F3} \leftrightarrow \overline{F4} \leftrightarrow \overline{F5} \leftrightarrow \overline{F6} \leftrightarrow \overline{F7}$ $\overline{F8} \leftrightarrow \overline{F9} \leftrightarrow \overline{F10} \leftrightarrow \overline{F11} \leftrightarrow \overline{F12} \leftrightarrow \overline{F13}$	F1
\overline{InA} $\overline{nPn-L}$	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). $\overline{nPn-L} \leftrightarrow \overline{nPn-H} \leftrightarrow \overline{pPn-L} \leftrightarrow \overline{pPn-H}$	NPN-L
\overline{InB} $\overline{nPn-L}$	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). $\overline{nPn-L} \leftrightarrow \overline{nPn-H} \leftrightarrow \overline{pPn-L} \leftrightarrow \overline{pPn-H}$	NPN-L
\overline{oNd} $\overline{oUt-S}$	Output mode	● Output mode selection - used in all operation modes except F9 mode (only used in comparative output modes). ● 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). $\overline{oUt-S} \leftrightarrow \overline{oUt-H} \leftrightarrow \overline{oUt-L} \leftrightarrow \overline{oUt-b}$ $\overline{oUt-F} \leftrightarrow \overline{oUt-d}$	OUT-S
$\overline{P-R}$ $\overline{10000}$	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. $\overline{00000} \sim \overline{99999}$	6.0000
$\overline{P-RY}$ $\overline{10^0}$	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^{-9} - 10^9 . $\overline{10^{-9}} \sim \overline{10^9}$	10^1
$\overline{P-b}$ $\overline{10000}$	Input B prescale mantissa	● Sets input B prescale mantissa (BX) - used only in F10, F11, F12, F13 modes. ● Setting range: 0.0000 - 9.9999. $\overline{00000} \sim \overline{99999}$	1.0000
$\overline{P-bY}$ $\overline{10^0}$	Input B prescale index	● Sets input B prescale index (BY) - used only in F10, F11, F12, F13 modes. ● Setting range: 10^{-9} - 10^9 . $\overline{10^{-9}} \sim \overline{10^9}$	10^0
\overline{dot} $\overline{000000}$	Decimal point position	● Sets 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. $\overline{000000} \leftrightarrow \overline{00000} \leftrightarrow \overline{00000} \leftrightarrow \overline{00000} \leftrightarrow \overline{00000}$	00000
\overline{SEAL} $\overline{10}$	Numeral system	● Selects the numeral system of measured time - used only in F3, F4, F5, F6 modes. ● Consists of decimal and sexagesimal. $\overline{10} \leftrightarrow \overline{60}$	10
\overline{rAn} $\overline{001}$	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), SEC (0-99999S), MIN (0-999999M) ● Sexagesimal time range: 0.01 (0-9M59.99S), 0.1 (0-59M59.99S), SEC (0-9H59M59S), MIN (0-99H59.9M). $\overline{001} \leftrightarrow \overline{01} \leftrightarrow \overline{SEC} \leftrightarrow \overline{min}$	0.01
$\overline{d-rEF}$ $\overline{005}$	Display cycle	● Selects BANK_1,2 display cycle - used only in F1, F10, F11, F12, F13 modes. ● Consists of 0.05 sec., 0.5 sec., 1 sec., 2 sec., 4 sec., 8 sec. The measured value is updated according to display cycle. $\overline{005} \leftrightarrow \overline{05} \leftrightarrow \overline{1} \leftrightarrow \overline{2} \leftrightarrow \overline{4} \leftrightarrow \overline{8}$	0.05
$\overline{b1-HH}$ $\overline{199999}$	HH comparative value	● Sets BANK_1,2 HH comparative value - not used in D output mode. ● HH comparative value setting range depends on decimal point setting position (refer to comparative value setting range). $\overline{-99999} \sim \overline{199999}$	+99999
$\overline{b1-H}$ $\overline{199999}$	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). $\overline{-99999} \sim \overline{199999}$	+99999
$\overline{b1-L}$ $\overline{-99999}$	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). $\overline{-99999} \sim \overline{199999}$	-99999
$\overline{d-rEF}$ $\overline{005}$	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. $\overline{005} \leftrightarrow \overline{05} \leftrightarrow \overline{1} \leftrightarrow \overline{2} \leftrightarrow \overline{4} \leftrightarrow \overline{8}$	0.05

Extended function setting modes

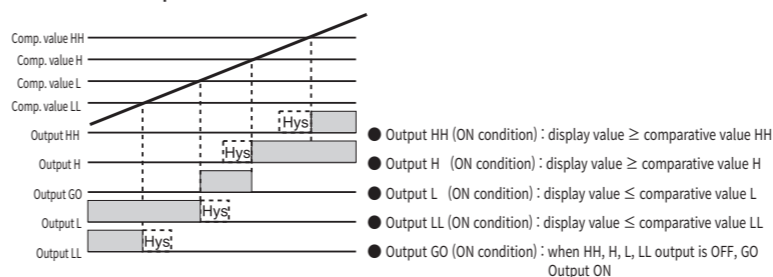
Setting item	LCD display	Settings	Initial value
$\overline{F-in}$ \overline{oFF}	Initial mode	● Initializes all parameter set values. ● Consists of OFF and ON - when ON is selected, all parameter set values are initialized to the default set values. $\overline{oFF} \leftrightarrow \overline{oN}$	OFF
\overline{HYS} $\overline{1234}$	Hysteresis	● Sets hysteresis value for output - only in F1, F10, F11, F12, F13 (only used with comparative output modes). ● Hysteresis range depends on decimal point setting position. ● Setting range: 0.0000 (0-9999), 0.000.0 (0.0-999.9), 0.00.0 (0.00-99.99), 0.0000 (0.0000-9.999), 0.0000 (0.0000-9.9999). $\overline{0000} \sim \overline{9999}$	0000
$\overline{R-Z-R}$ $\overline{99999}$	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. $\overline{00000} \sim \overline{99999}$	9999.9
$\overline{R-Z-b}$ $\overline{99999}$	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. $\overline{00000} \sim \overline{99999}$	9999.9
$\overline{o-L in}$ $\overline{L-oUt}$	Output limit	● Selects comparative output limit - used in all operation modes except F9 (only used in comparative output modes). ● 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. $\overline{L-oUt} \leftrightarrow \overline{S-t in}$	L-OUT
$\overline{S-t in}$ $\overline{123}$	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. $\overline{000} \sim \overline{999}$	00.0
\overline{bREL} \overline{CLEr}	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. $\overline{CLEr} \leftrightarrow \overline{SAvE}$	CLEAR
$\overline{b-CHG}$ \overline{oFF}	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: locks \overline{KEY} 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). ● K-P 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). $\overline{oFF} \leftrightarrow \overline{KEY} \leftrightarrow \overline{PRr} \leftrightarrow \overline{L-P} \leftrightarrow \overline{bNt}$	OFF
$\overline{L-oCk}$ \overline{oFF}	Lock	● Selects the activation of lock function. ● OFF selection: unlocks keys and parameters. ● KEY selection: locks \overline{KEY} 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). ● K-P 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). $\overline{oFF} \leftrightarrow \overline{KEY} \leftrightarrow \overline{PRr} \leftrightarrow \overline{L-P} \leftrightarrow \overline{bNt}$	OFF

BANK function setting modes

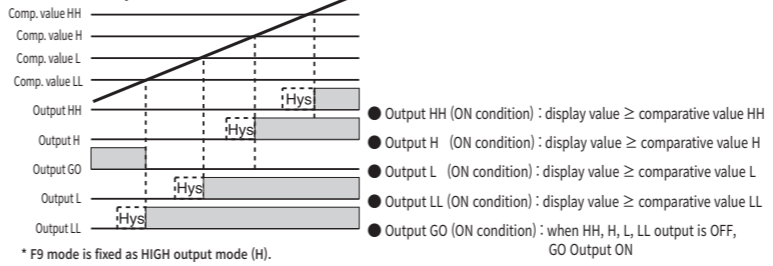
Setting item	LCD display	Settings	Initial value
\overline{bAn} $\overline{1}$	BANK number	● Selects BANK number. ● Consists of BANK_1 and BANK_2 - individually sets comparative value, prescale, decimal point position, time range, display cycle for each BANK. $\overline{1} \leftrightarrow \overline{2}$	1
$\overline{P-R}$ $\overline{10000}$	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. $\overline{00000} \sim \overline{99999}$	6.0000
$\overline{P-RY}$ $\overline{10^0}$	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^{-9} - 10^9 . $\overline{10^{-9}} \sim \overline{10^9}$	10^1
$\overline{P-b}$ $\overline{10000}$	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. $\overline{00000} \sim \overline{99999}$	1.0000
$\overline{P-bY}$ $\overline{10^0}$	Input B prescale index	● Sets BANK_1,2 input B prescale index (BY) - used only in F10, F11, F12, F13 modes. ● Setting range: 10^{-9} - 10^9 . $\overline{10^{-9}} \sim \overline{10^9}$	10^0
\overline{dot} $\overline{000000}$	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. $\overline{000000} \leftrightarrow \overline{00000} \leftrightarrow \overline{00000} \leftrightarrow \overline{00000} \leftrightarrow \overline{00000}$	000000
\overline{SEAL} $\overline{10}$	Numeral system	● Selects BANK_1,2 measured time numeral system - used only in F3, F4, F5, F6 modes. ● Consists of decimal and sexagesimal. $\overline{10} \leftrightarrow \overline{60}$	10
\overline{rAn} $\overline{001}$	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 (0-999999M) ● Sexagesimal time range: 0.01 (0-9M59.99S), 0.1 (0-59M59.99S), SEC (0-9H59M59S), MIN (0-99H59.9M). $\overline{001} \leftrightarrow \overline{01} \leftrightarrow \overline{SEC} \leftrightarrow \overline{min}$	0.01
$\overline{d-rEF}$ $\overline{005}$	Display cycle	● Selects BANK_1,2 display cycle - used only in F1, F10, F11, F12, F13 modes. ● Consists of 0.05 sec., 0.5 sec., 1 sec., 2 sec., 4 sec., 8 sec. The measured value is updated according to display cycle. $\overline{005} \leftrightarrow \overline{05} \leftrightarrow \overline{1} \leftrightarrow \overline{2} \leftrightarrow \overline{4} \leftrightarrow \overline{8}$	0.05
$\overline{b1-HH}$ $\overline{199999}$	HH comparative value	● Sets BANK_1,2 HH comparative value - not used in D output mode. ● HH comparative value setting range depends on decimal point setting position (refer to comparative value setting range). $\overline{-99999} \sim \overline{199999}$	+99999
$\overline{b1-H}$ $\overline{199999}$	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). $\overline{-99999} \sim \overline{199999}$	+99999
$\overline{b1-L}$ $\overline{-99999}$	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). $\overline{-99999} \sim \overline{199999}$	-99999
$\overline{b1-LL}$ $\overline{-99999}$	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). $\overline{-99999} \sim \overline{199999}$	-99999

Output modes

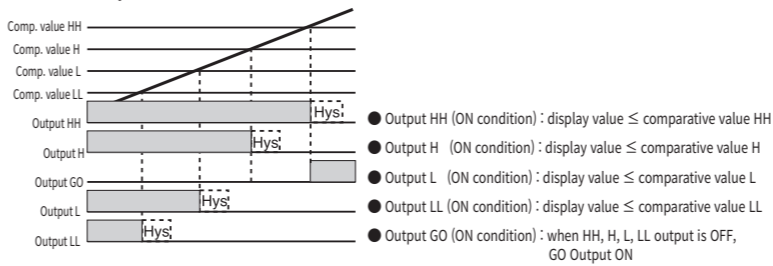
Standard output mode (OUT-S)



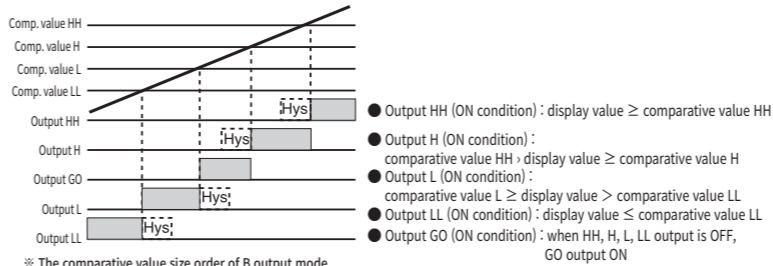
HIGH output mode (OUT-H)



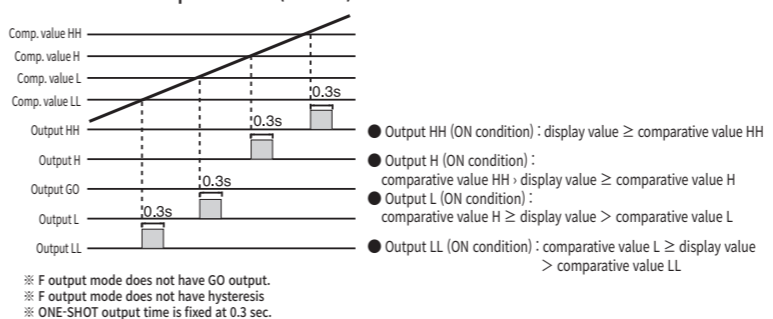
LOW output mode (OUT-L)



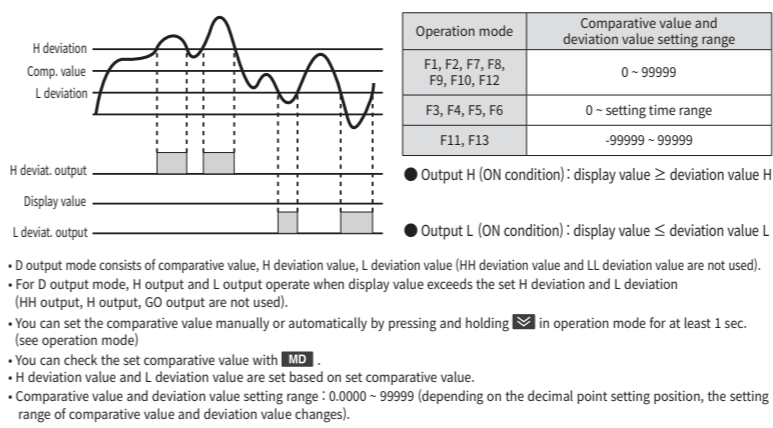
BLOCK output mode (OUT-B)



ONE-SHOT output mode (OUT-F)



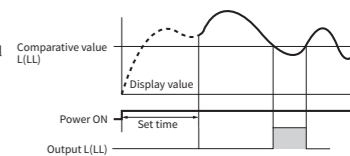
Deviation output mode (OUT-D)



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

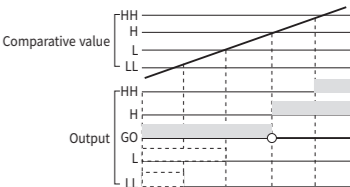


Start compensation timer function

- 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

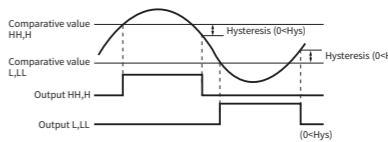
Comparative output limit function

- Function that limits L output and LL output until H output and HH output operate 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.



Decimal point position	Hysteresis value setting range
00000	0 - 9999
0000.0	0.0 - 999.9
000.00	0.00 - 99.99
00.000	0.000 - 9.999
0.0000	0.0000 - 0.999

Display cycle function

- Function that measures the detector during the set time of the display cycle, averages measured values during the set time and displays.
- 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 \overline{MD} you can view them sequentially (see operation mode)
- In the maximum value display mode, if you press and hold \overline{KEY} 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 \overline{KEY} 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

Lock setting	Descriptions
\overline{oFF}	Unlocks parameters and keys
\overline{KEY}	Locks \overline{KEY} , \overline{MD} , \overline{KEY} . Cannot set comparative values, can change parameters
\overline{PRr}	Locks parameters. Can set comparative values, cannot change parameters
$\overline{L-P}$	Locks parameters and keys. Cannot set comparative values, cannot change parameters
\overline{bNt}	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 \overline{KEY} and external BANK terminal.
- If the BANK parameter "b-CHG" is set to "KEY", the BANK switching is performed by \overline{KEY} (the BANK is switched every time you press and hold \overline{KEY} for at least 1 second).
- If the BANK parameter "b-CHG" is set to "EX-IN", the BANK switching is performed by external BANK terminal input (BANK_1 is used when the BANK terminal is opened, and BANK_2 is used when the BANK terminal is short.)

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