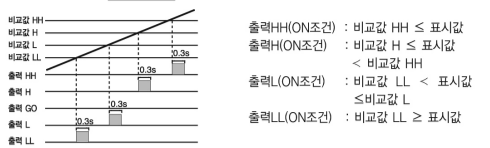


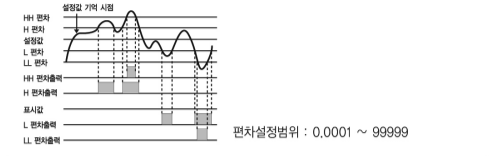


■ ONE short **oUt-F** 모드



■ 2중편차 **oUt-d** 모드

설정값을 기억시키고, 설정값에서 H(반파, L(반파, L(반파, L(반파)를 초과할 경우 출력이 되는 경우  
 • 설정값 자동설정 : 현재 표시되고 있는 표시값을 전선 ( ) Key를 눌러 설정값을 기억시킵니다.  
 • 설정값 표시 : 기억된 설정값은 ( ) Key를 한번 누르면 설정값 표시, 한번 더 누르면 현재값이 표시됩니다.



Hys는 히스테리시스 기능을 참조하여 주십시오.  
 \* 비교값은 LL(LL>HH) 크기로 설정되어야 이상적으로 동작합니다.  
 \* RP3, RP6, RP7 모델에서만 적용 됩니다. 단, 표시전용 모델에서는 적용되지 않습니다.

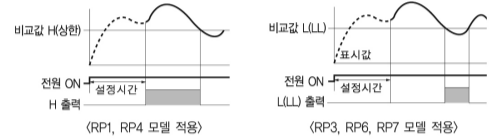
기능설명

■ Auto Zero 기능

입력 펄스 간격을 알고 있을 경우, 입력 펄스 시간 폭보다 긴 시간을 Auto Zero값으로 설정하여 설정된 시간 안에 입력이 없으면 표시값을 강제로 "00000"으로 표시하는 기능입니다. 특히 일정시간 펄스 입력이 없는 경우나, 회전체의 정지 되었음을 예측 설정해야 할 경우 그 시간을 Auto Zero 시간설정으로 임의 설정 할 수 있습니다.

■ 기동 보상 타이머 기능

전원 투입 후 일정시간 계속을 무효화 시켜 체터링 및 기동 전류 등의 불규칙적으로 입력되는 값에 의한 잘못된 출력을 없애기 위한 기능입니다. 특히, 회전체의 기동시 저속회전 동작에 의한 상한 비고 (H), 하한 비고(LL)편정을 시키지 않을 경우 유용합니다. (설정시간 : 0.1 ~ 99.9초)



■ 시간단위 선택 기능

계측값을 다양한 시간 단위로 선택 표시할 수 있어 효율적입니다.  
 • 시간단위 기능은 10진법 펄스와 60진법 펄스를 선택할 수 있습니다.  
 • 적용모드 : F3, F4, F5, F6

■ 표시 주기 설정 기능

측정값의 표시주기에 대한 주기를 변경할 수 있는 기능으로 설정된 주기의 시간 단위로 표시합니다.  
 설정 표시 주기 = 0.05 / 0.5 / 1 / 2 / 4 / 8초

■ 피크 홀드 표시 및 RESET 기능

표시값 중 max 값과 min 값을 선택 표시하는 기능으로 원터치 버튼에 의해 기능을 선택할 수 있습니다.



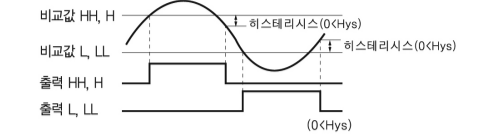
● 피크홀드 설정 (표시값) max 값 99999, min 값 99999

● 피크홀드 저장 및 확인 최대값(max) : HPEL1~HPEL4, HPELR 에 저장  
 최저값(min) : LPEL1~LPEL4, LPELR 에 저장

\* 각 값 최대(max), 최저(min)값은 4단계로 메모리에 저장되고 4개 값을 평균한 값은 max, min 평균값 메모리에 저장되어 별도 확인 가능하며 측정 모드 변경시 자동으로 지워집니다.  
 \* 현재 max / min 값을 표시하고 있으면 맨 우측 Dot가 켜져 있습니다.

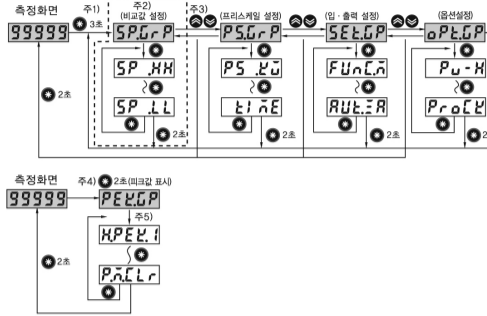
■ 히스테리시스 (Hysteresis) 기능

계측값이 비교값의 부근에서 흔들리는 경우에 출력속이 불안정하게 동작하는 것을 방지하기 위해 설정값 중심에 히스테리시스를 설정합니다.  
 히스테리시스 값은 비교값 HH, H에 대해서는 감소될 때 적용되고, 비교값 LL, L에 대해서는 증가 될 때 적용됩니다.  
 \* RP1, RP4 모델에서는 비교값 H(상한값), 출력 H만 적용 됩니다.  
 \* 히스테리시스는 표시전용 모델에서는 적용되지 않습니다.



파라미터 설명

\* 아래 파라미터 표시문자는 5행기준으로 표시 되어 있습니다.



- \* 주1) ( ) 키를 3초간 누르면 메뉴선택으로 진입합니다.
- \* 주2) 표시전용 제품은 SP Group이 나타나지 않습니다.
- \* 주3) 각 Group 표시에서 ( ) 키를 누르면 Group간 진입이 가능하고, ( ) 키를 1초간 누르면 측정화면으로 진입합니다.
- \* 주4) ( ) 키를 2초간 누르고 있으면 Peak Group (PELGRP)으로 진입합니다.
- \* 주5) PELGRP에서 HPEL1으로 진입할 경우에는 키를 떼거나 누르고 있으면 진입할 수 있습니다.

■ 파라미터 그룹 흐름도

1. SP Group [ SPGRP ]

설정 메뉴	설정 항목	설정 내용	초기값
SP.HH	비교값 설정 그룹	측정값이 소수점 이하로 설정될 경우 아래 설정값도 소수점 이하로 설정할 수 있도록 변환됩니다.	
SP.HH	비교값 HH값을 설정합니다	F1, F2, F7, F8, F9 : ~99999	00000
SP.H	비교값 H값을 설정합니다	F3, F4, F5, F6 : 0 ~ 설정된 시간범위	00000
SP.LL	비교값 LL값을 설정합니다		00000
SP.L	비교값 L값을 설정합니다		00000

- \* ① : RP1, RP4 모델에서는 비교값 H(상한값) 설정만 표시 됩니다.
- \* ② : 출력 out-d 모드에서만 사용되고 나머지 출력 모드에서는 표시 되지 않습니다.
- \* ③ : RP3, RP7 모델에서만 사용되고 있습니다.
- \* 비교값 설정그룹은 각 출력조건(H, H, GO, L, LL)을 설정하는 Group으로 각각의 파라미터를 설정하고 히스테리시스 값을 입력하면 원하는 출력속을 안정적으로 얻을 수 있습니다. 단, 표시전용 제품은 위 파라미터 설정 그룹을 사용하지 않습니다.
- \* 설정값 변경시 ( ) : 행이동, ( ) : 설정값 변경

2. PS Group [ PSGRP ]

설정 메뉴	설정 항목	설정 내용	초기값
PSGRP	프리스케일 설정그룹	비교값의 프리스케일값을 설정하는 그룹	
PS.RX	IN A의 프리스케일 가수(X) 설정	00000-99999	60000
PS.RY	IN A의 프리스케일 지수(Y) 설정	10-9-10 9	10 1
d5dot	표시값의 소수점위치를 설정함	소수점을 설정 할수 있습니다 99999-99999-99999-99999-99999	99999.
d5SRP	표시주기 설정	디스플레이 샘플링주기를 설정을 할수 있습니다 005-05-1-2-4-8	005
HYS	히스테리시스 설정	출력값의 히스테리시스 값을 설정을 할수 있습니다 0000-9999	0000
ELAE	ELAE 입력시간 단위설정 (동작모드 F3,F4,F5,F6)	시간설정 값을 설정을 할수 있습니다 10-5ddd-55ddd-555dd-5555d-55555 60-55ddd-555dd-5555d-55555-55555-55555-55555-55555	5ddd

\* 설정값 변경시 ( ) : 행이동, ( ) : 설정값 변경  
 \* 히스테리시스는 표시 전용 모델에서는 적용되지 않습니다.

3. Setup Group [ SELGRP ]

설정 메뉴	설정 항목	설정 내용	초기값
SELGRP	입출력 설정그룹	입출력 제어 설정 그룹으로 입출력에 대한 설정을 한다	
FUnA	IN A의 센서 타입 설정	F1-F9	F1
IN-A	IN A의 센서 타입 설정	nPno : NPN Normal Open nPnc : NPN Normal Close pNo : PNP Normal Open pNc : PNP Normal Close Conk : 점접 Normal Open nPno-nPnc-pNo-pNc-Conk	nPno
IN-B	IN B의 센서 타입 설정	nPno : NPN Normal Open nPnc : NPN Normal Close pNo : PNP Normal Open pNc : PNP Normal Close Conk : 점접 Normal Open nPno-nPnc-pNo-pNc-Conk	nPno
oUt-n	oUt-n 출력 모드 설정 ①	oUt-5-oUt-3-oUt-H-oUt-L-oUt-F-oUt-d	oUt-5
RULtA	IN A의 기동 보상 타이머 설정	00 1-999	000
RULtB	IN B의 기동 보상 타이머 설정	00 1-999	000
RULtF	IN A의 Auto Zero 타이머 설정	0000 1-99999	00000

\* ① : RP3, RP6, RP7 모델에서만 표시 됩니다. 단, 표시전용 모델에서는 표시 되지 않습니다.  
 \* 설정값 변경시 ( ) : 행이동, ( ) : 설정값 변경

4. Option Group [ PELGRP ]

설정 메뉴	의 미	설정 내용	초기값
PELGRP	옵션 설정그룹	음선 설정 그룹으로 입출력 설정항목의 음선을 설정 합니다	
Pu-H	PV 전출 출력의 상한값 설정	F1, F2, F7, F8, F9 : 0 ~ 99999	99999
Pu-L	PV 전출 출력의 하한값 설정	F3, F4, F5, F6 : 0 ~ 설정된 시간 범위	00000

설정 메뉴	설정 항목	설정 내용	초기값
Pu-H	정전보상 (Backup)-전원 ON/OFF시 전계측값을 기억함	on	on
Pu-L	정전도 사용되지 않음	off	off
PLoLk	파라미터 잠금 설정	off: 전도 해제 LoLk1: P1 ~ P3 Lock LoLk2: P3 ~ P4 Lock RL: P1 ~ P4 Lock LoLk2: P2 ~ P4 Lock LoLk4: P4만 Lock off-LoLk1-LoLk2-LoLk3-LoLk4-RL	off

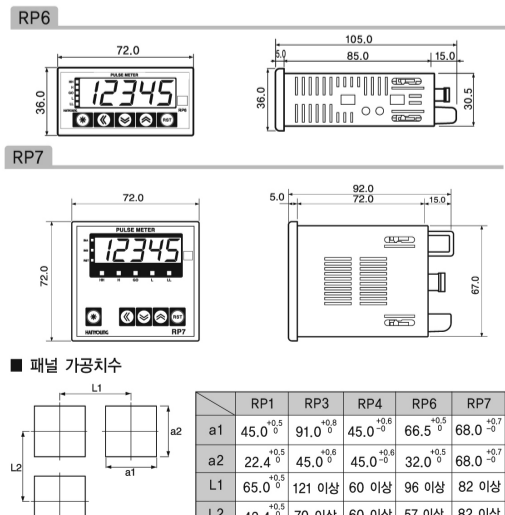
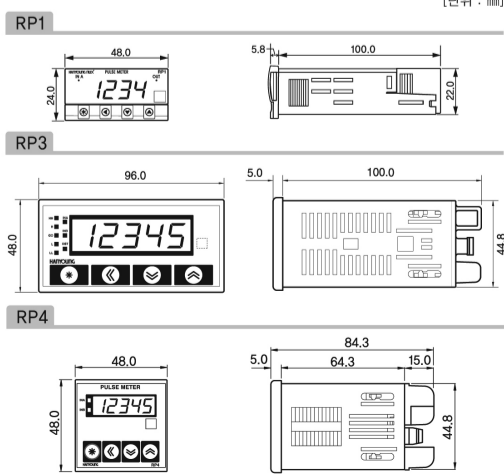
- ① : 4 ~ 20 mA 출력 모드에서만 표시 됩니다.
- ② : P1(SP Group), P2(PS Group), P3(Setup Group), P4(Option Group)
- \* 설정값 변경시 ( ) : 행이동, ( ) : 설정값 변경

5. Peak Display Group [ PELGRP ]

설정 메뉴	설정 항목	설정 내용	초기값
PELGRP	피크값 저장그룹	max, min 값의 피크 값을 10단계로 개별 저장	
HPEL1	HIGH 피크 값 중 최대값	HIGH 피크 값 중 가장 큰 값을 저장	00000
HPEL2	HIGH 피크 값 중 두번째 값	HIGH 피크 값 중 두번째로 큰 값을 저장	00000
HPEL3	HIGH 피크 값 중 세번째 값	HIGH 피크 값 중 세번째로 큰 값을 저장	00000
HPEL4	HIGH 피크 값 중 네번째 값	HIGH 피크 값 중 네번째로 큰 값을 저장	00000
HPELR	HIGH 피크 평균 값	저장된4개의 HIGH 피크 값들의 평균을 구해서 저장	00000
LPEL1	LOW 피크 값 중 최소값	LOW 피크 값 중 가장 작은 값을 저장	00000
LPEL2	LOW 피크 값 중 두번째 값	LOW 피크 값 중 두번째로 작은 값을 저장	00000
LPEL3	LOW 피크 값 중 세번째 값	LOW 피크 값 중 세번째로 작은 값을 저장	00000
LPEL4	LOW 피크 값 중 네번째 값	LOW 피크 값 중 네번째로 작은 값을 저장	00000
LPELR	LOW 피크 평균 값	저장된4개의 LOW 피크 값 들의 평균을 구해서 저장	00000
PnLr	피크 값 메모리를 지움	현재 저장되어 있는 값들을 모두 지움	

\* Peak Display Group에 저장된 값들은 개별적으로 수정은 안되며, 일괄적으로 모두 지울 수 있습니다.  
 \* 저장된 피크값들은 모드 변경시 또는 전원 ON/OFF 시 자동으로 지워집니다.  
 \* 설정값 변경시 ( ) : 행이동, ( ) : 설정값 변경

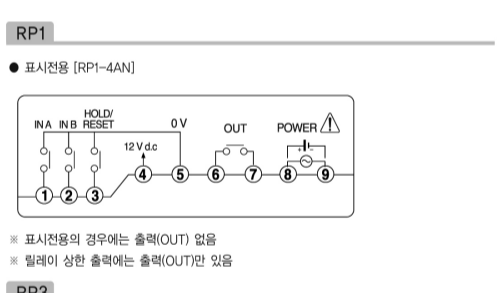
외형 및 패널가공치수



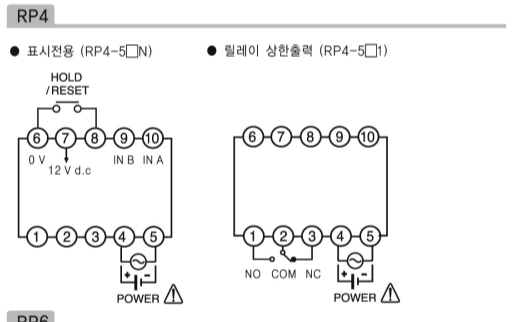
■ 패널 가공치수

	RP1	RP3	RP4	RP6	RP7
a1	45.0 <sup>+0.5</sup>	91.0 <sup>+0.8</sup>	45.0 <sup>+0.6</sup>	66.5 <sup>+0.5</sup>	68.0 <sup>+0.7</sup>
a2	22.4 <sup>+0.5</sup>	45.0 <sup>+0.8</sup>	45.0 <sup>+0.6</sup>	32.0 <sup>+0.5</sup>	68.0 <sup>+0.7</sup>
L1	65.0 <sup>+0.3</sup>	121 이상	60 이상	96 이상	82 이상
L2	42.4 <sup>+0.3</sup>	70 이상	60 이상	57 이상	82 이상

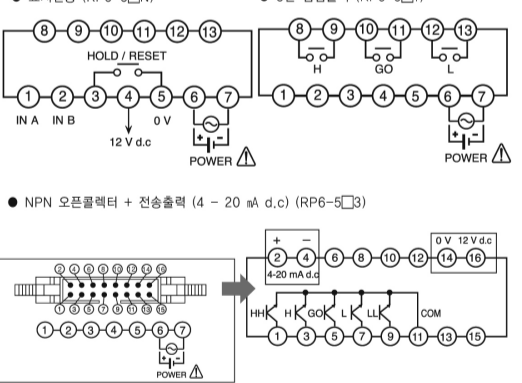
접속도



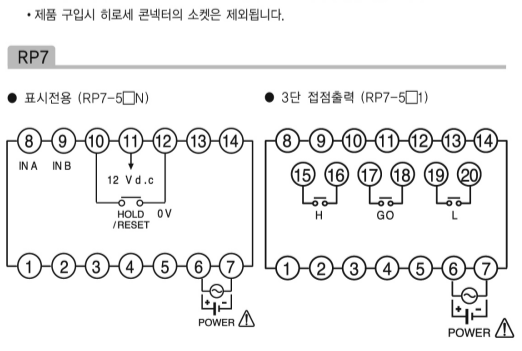
\* 표시전용의 경우에는 출력(OUT) 없음  
 \* 릴레이 상한 출력에는 출력(OUT)만 있음



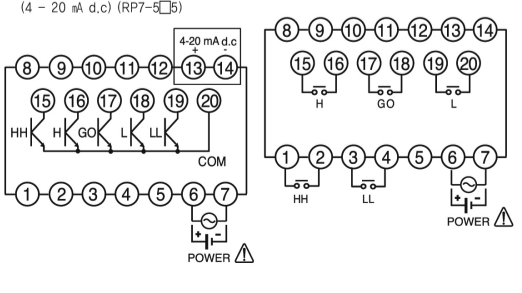
\* 표시전용 (RP3-5□N) \* 릴레이 상한출력 (RP4-5□I)  
 \* 표시전용 (RP6-5□N) \* 3단 점접출력 (RP6-5□I)



\* 3단 점접출력 (RP3-5□I)  
 \* NPN 오픈콜렉터 + 전출출력 (4 ~ 20 mA d.c.) (RP6-5□3)



\* 5단 점접출력 (RP3-5□2)  
 \* NPN 오픈콜렉터 + 전출출력 (4 ~ 20 mA d.c.) (RP3-5□4)



\* 히로세 콘넥터 HIF3BA-26PA-2.54DS이며 보조 콘넥터에 공통 사용됩니다.  
 \* 제품 구입시 히로세 콘넥터의 소켓은 제외됩니다.

# Multi Pulsemeter RP series

## INSTRUCTION MANUAL

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



**HANYOUNG NUX CO., LTD**  
28, Gilpa-ro 1beon-gil, Michuho-gu, Incheon, Korea  
TEL: (82-32)876-4697 FAX: (82-32)876-4696  
http://www.hynux.com

### Safety Information

Alerts declared in the manual are classified to Danger, Warning and Caution by their criticality

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

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

**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 detection or malfunction of this product, supply proper power voltage in accordance with the rating.  
To prevent electric shock or device malfunction of this product, do not supply the power until the wiring is completed.  
Do not decompose, modify, revise or repair this product. This may cause malfunction, electric shock or fire.  
Reassemble this product while the power is off. Otherwise, it may cause 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.

**Caution**  
The contents of this manual may be changed without prior notification.  
Before using the product you have purchased, check to make sure that it is exactly what you ordered.

- If you use the product with methods other than specified by the manufacturer, there may be bodily injuries or property damages.
- Check to 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. (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 excessive induction trouble, 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 2,000 m in altitude.
- When the product gets wet, the inspection is essential because there is danger of an electric leakage or fire.
- If there is excessive noise from the power supply, using insulating transformer and noise filter is recommended.
- The noise filter must be attached to a panel grounded, and the wire between the filter output side and power supply terminal must be as short as possible.
- If gauge cables are twisted closely, the effect on noise may occur.
- Do not connect anything to the unused terminals.
- After checking 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 IEC847-1 or IEC947-3.
- Install the circuit breaker or switch at near place for convenient use.
- 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.

### Specifications

Model	RP1	RP3	RP4	RP6	RP7
Power supply a.c.	100 ~ 240 V a.c. 50 ~ 60 Hz				
voltage d.c.	24 ~ 60 V d.c. / a.c.				
Voltage fluctuation	±10% of Power supply voltage				
Power consumption a.c.	10 VA	9.5 VA	12 VA	12 VA	9.5 VA
Power consumption (Approximately) d.c.	-	5 W	6 W	5 W	5 W
Voltage for sensor	12 V d.c. ±10% 120 mA Max.				
Measurement accuracy	• Mode F1, F2, F3, F4, F5 : ± 0.02 % rdg ± 1 dig • Mode F6 : ± 0.1 % rdg ± 1 digit				
Measurement range	• Mode F1 : 0.0003 ~ 10 KHz • Mode F2 : 0.003 ~ 1000 Hz • Mode F3, F4, F5, F6 : 0.001 s ~ 3,200 s • Mode F7, F8, F9 : 0 ~ 4 × 10 <sup>9</sup> Count				
Input signal	Non Contact Input : 10 KHz Max. (ON voltage : 4.5 V ~ 24 V, OFF voltage : 0 ~ 1.0 V) Contact Input : 30 Hz Max. (12 V d.c. Able to switch the current of 2 mA sufficiently)				
Displayable digits max	4 digits 1 stage (0~9999)		5 digits 1 stage (0~99999)		
Display method	7 Segment				
Font	Width	6.3	8.3	4.6	7.6
size (mm)	Length	10	14	8	13.8
Display cycle	0.05, 0.5, 1, 2, 4, 8 sec				
Operation mode	F1: Revolution/Frequency/Velocity, F2: Moving velocity, F3: Cycle F4: Passing time, F5: Time lag, F6: Time width, F7: Pulse width, F8: Pulse interval, F9: Addition counter				
Prescale	0.001 × 10 <sup>3</sup> ~ 9.999 × 10 <sup>3</sup>		0.0001 × 10 <sup>3</sup> ~ 9.9999 × 10 <sup>3</sup>		

Model	RP1	RP3	RP4	RP6	RP7
Other functions	• Auto Zero Time setting function • Time Unit Selection function • Parameter Lock function • Electricity Failure Compensation function (Applicable only to F9) • Start Compensation Timer function • Display cycle setting function • 10 steps memory for max. min. Peak function (max : 4 steps memory, average value memory, min : 4 steps memory, average value memory) • Comparative Output function (HH, H, GO, L, LL) : RP1, RP4, RP6 exception • Current Output Range Selection function (Applicable only to current output type) : RP1, RP4 exception • Relay high limit output(H) • Relay output (H, H, GO, L, LL) : RP1, RP4, RP6 exception • Transistor output (NPN open collector output : comparative alarm output) : RP1, RP4 exception • PV retransmission output (4 ~ 20 mA d.c.) : RP1, RP4 exception • Relay output (H, GO, L) : RP1, RP4 exception				
Insulation Resistance	More than 10 MΩ (at 500 V d.c.) - Between electrically chargeable part and non-electrically chargeable part				
Dielectric Strength	2000V a.c. 60 Hz for 1 minute (Between AC power terminal and case, between AC terminal and measurement input terminal)				
Noise Resistance	Square-shaped wave noise by noise simulator (Pulse width 1 μs ±2000 V)				
Vibration Durability	10 ~ 55 Hz double amplitude width 0.75 mm X · Y · Z each direction for 2 hours				
Resistance/Malfunction	10 ~ 55 Hz double amplitude width 0.5 mm X · Y · Z each direction for 10 minutes				
Shock Durability	300 % (30 G) X · Y · Z each direction 3 times				
Resistance/Malfunction	100 % (10 G) X · Y · Z each direction 3 times				
Operating ambient temperature	-10 ~ 50 °C (Without condensation)				
Storage temperature	-20 ~ 60 °C (Without condensation)				
Operating ambient humidity	35 ~ 85 % R.H.				
Weight(Approximately)	115 g	230 g	115 g	160 g	225 g

### Suffix Code

Model Name	Suffix Code	Description	
RP	□ □ □ □	Multi Pulse Meter	
Size	1	(W)48 × (H)24	
	3	(W)96 × (H)48	
	4	(W)48 × (H)48	
	6	(W)72 × (H)36	
	7	(W)72 × (H)72	
	Displayable Digits	4	4 digits 1 stage (0 ~ 9999) * applicable to RP1
	5	5 digits 1 stage (0 ~ 99999)	
Power Supply	A	100 ~ 240 V a.c. 50 ~ 60 Hz	
	D	24 ~ 60 V d.c. / a.c. * Exception : RP1	
Output Specification	RP1	N	Display Only
		1	Relay 1 stage output (H : High limit output)
	RP3	N	Display Only
		1	Relay 3 stages output (H, GO, L)
	RP4	N	Display Only
		1	Relay 1 stage output (H : High limit output)
	RP6	N	Display Only
		1	Relay 3 stages output (H, GO, L)
	RP7	N	Display Only
		1	Relay 3 stages output (H, GO, L)
	5	2	Relay 5 stages output (HH, H, GO, L, LL)
		5	NPN Open Collector 5 stages output, 4-20 mA d.c.(Retransmission output)

### Input Specification

**Input Specification**  
If the half-period of input frequency is more than 50μs pulse, it can be detected steadily.

### Input Type Selection (Selection of Input Sensor)

- **NPNO** : NPN Normal Open
- **NPNOC** : NPN Normal Close
- **PNPO** : PNP Normal Open
- **PNPNC** : PNP Normal Close

### Contact Input Normal Open



### Cautions when setting sensor

- Measured value is not available when sensor is not selected correctly.
- So please check the sensor type before connecting sensor.
- Example of sensor type selection
- NPNO** - Normally open, when closed due to the operation -> (NPN N.O)
- NPNOC** - Normally close, when opened due to the operation -> (NPN N.C)

### Output Specification

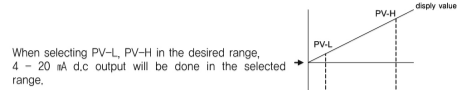
- Contact Output**
- Contact Capacity : 5 A 250 V a.c., 5 A 30 V d.c.
- Electrical life - Open & Close under 250 V a.c. 3 A/100 d.c. 3 A/100 thousand times
- Open & Close under 250 V a.c. 5 A/30 V d.c. 5 A/50 thousand times
- Speed of open and close : based on 20 times per minute.
- Mechanical life : 20 million times

### Non Contact Output

- Rated load power consumption : 500 mW
- Output type : NPN Open Collector
- Load voltage : 12 ~ 24 V d.c.

### PV Retransmission Output(4 ~ 20 mA d.c)

- Use : Transmit measured value to external equipment
- Function : Measured value which is measured within the selected range out of High output(PV-H) and Low output(PV-L) will be transformed to 4 ~ 20 mA d.c. and it will be transmitted to external equipment.
- Setting range of High and Low output
- High setting range (PV-H) : From minimum to maximum value within measuring range.
- Low setting range (PV-L) : From maximum to minimum value within measuring range.
- (Notice : PV-H must be bigger than PV-L at least 1)
- Load resistance : 600 Ω max
- Resolution : 10,000

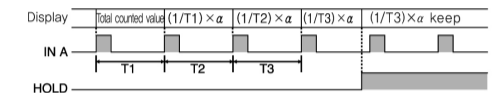
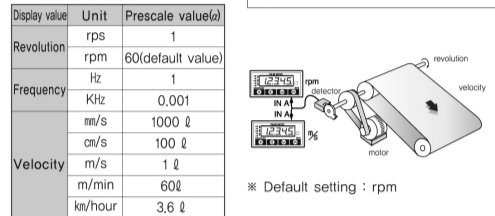


Resolution from PV-L to PV-H is set to 10,000. The setting value (The difference PV-H and PV-L) is smaller than resolution, error ratio will be going down.

### Operation Mode

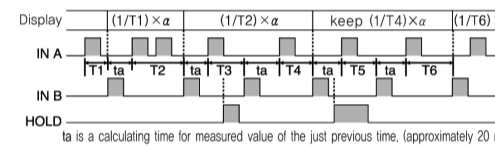
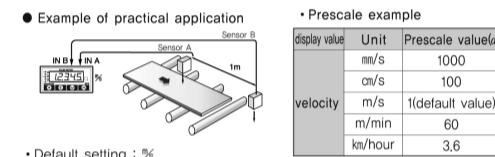
#### Mode F1 : Revolution(rpm) / Frequency(Hz) / Velocity (m/s)

- Revolution (rpm) = f × α (α = 60, default value)
- Frequency(Hz) = f × α (α = 1, setting value)
- Velocity(m/s) = f × α (α = 1 × L)
- L = π × D
- f = 1 / T
- Example of practical application
- Prescale example



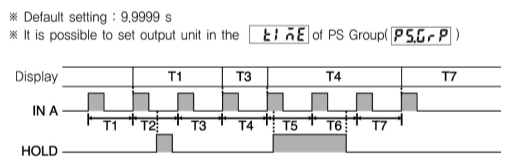
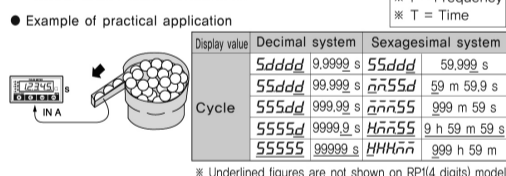
#### Mode F2 : Moving velocity(%)

- It is a mode for measuring moving velocity. Sensor must be connected on Input A and B because it is a mode for measuring velocity from sensor input A to B.
- velocity(%) = f × α (α = L)
- f = 1 / T
- Example of practical application
- Prescale example



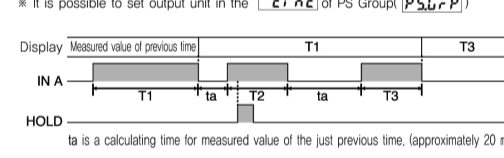
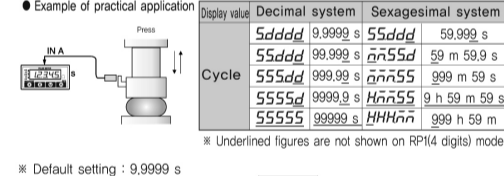
### Mode F3 : Cycle (s)

- It is a mode for measuring cycletime (T) of sensor input A (IN A).
- Cycle shows the time just before input to current input.
- Cycle(s) = T
- Prescale is not available in this mode.
- Example of practical application



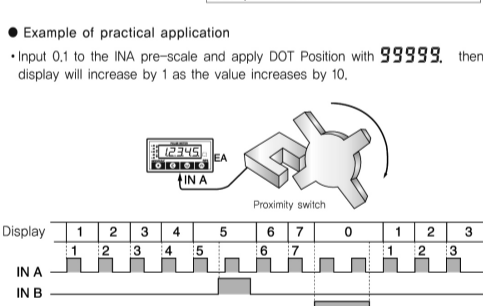
### Mode F5 : Time Width(s)

- It is a mode for displaying after measuring time of sensor input A (IN A) ON.
- Time Width(s) = T
- Prescale is not available in this mode.
- Example of practical application



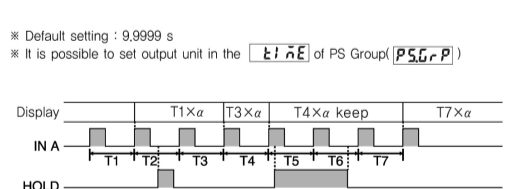
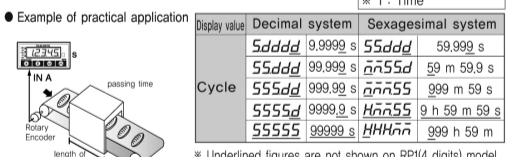
### Mode F9 : accumulation counter (EA)

- Mode that totals and displays pulse counts entered to sensor input A (IN A) But counting is suspended when sensor input B (IN B) turns ON. The displayed value is reset to zero when a reset signal is entered.
- Counter(EA) = P × α
- Example of practical application



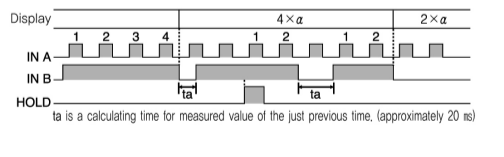
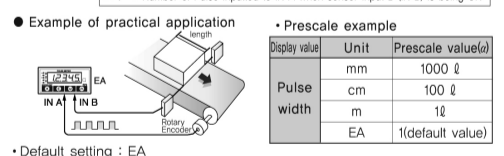
### Mode F4 : Passing Time(s)

- It is a mode for measuring passing time of processing operation.
- Passing Time(s) = T × α
- T = 1 / f
- α = L / L
- L = π × D (circumference of the roller)
- f = 1 / T
- Example of practical application



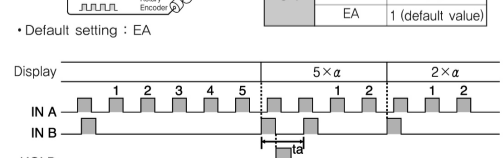
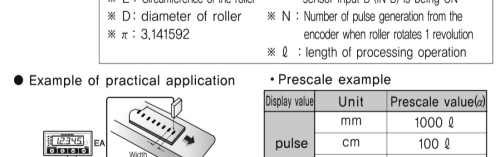
### Mode F6 : pulse width (m)

- During the sensor input B (IN B) is being ON, it counts the pulse number of input A (IN A) and when input B becomes OFF, it displays the counted value.
- Pulse count(EA) = P × α
- Pulse width(m) = P × L
- L = π × D
- α = 3,141592
- D : Diameter of the roller
- α : Prescale value
- L : Circumference of the roller
- N : Number of pulse generation from the encoder when roller rotates 1 revolution
- P : Number of Pulse inputted to IN A when sensor input B (IN B) is being ON
- Example of practical application
- Prescale example



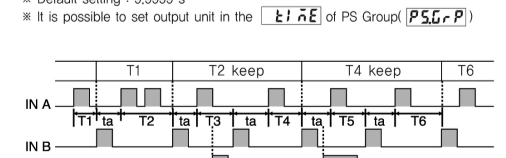
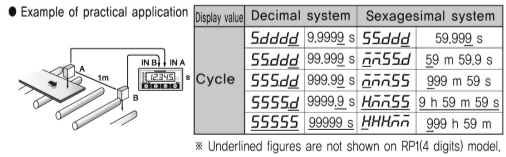
### Mode F8 : pulse gap counting (EA)

- Calculate the pulse number of input A (IN A) at the point where the sensor input B (IN B) becomes ON and if the input B (IN B) becomes ON again, it will display the calculated value that has been calculated until now.
- Pulse gap count(EA) = P × α
- Pulse gap(m) = P × L
- L = π × D
- α : prescale value
- L : Circumference of the roller
- D : diameter of roller
- N : Number of pulse generation from the encoder when roller rotates 1 revolution
- π : 3,141592
- α : length of processing operation
- Example of practical application
- Prescale example



### Mode F5 : Time Lag(s)

- It is a mode for measuring time from sensor input A (IN A) to sensor input B (IN B) ON.
- Sensor must be connected on Input A and B because it is a mode for measuring time lag from sensor input A to B.
- Time lag(s) = T
- Prescale is not available in this mode
- Example of practical application



### Default Parameter set value (5 rows)

SP Group	default value	PS Group	default value
SP HH	00000	PS R0	60000
SP H	00000	PS R4	10 I
SPSE	00000	dSdEt	99999
SP L	00000	dSSP	005
SP LL	00000	HYS	0000

SETUP Group	default value	Option Group	default value
FUnC	F I	Pu-H	99999
I n-R	nPno	Pu-L	00000
I n-b	nPno	nEor	on
oUt -n	oUt -5	PrLc	oFF
RuEt-R	000		
RuEt-b	000		
RuEt-R	000000		

### Default Parameter set value (4 rows)

SP Group	default value	Option Group	default value
SP H	0000	PrLc	oFF

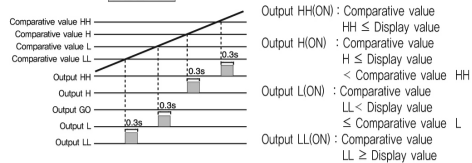
SETUP Group	default value	PS Group	default value
FUnC	F I	PSR0	6000
I n-R	nPno	PSR4	10 I
I n-b	nPno	dSdEt	9999
RuEt-R	000	dSSP	005
RuEt-b	0000	HYS	Et nE
RuEt-R	00000	Et nE	Et nRn Sddd

\*Setting might not be displayed depend on operation mode and output specification.

### Output Mode oUt -n

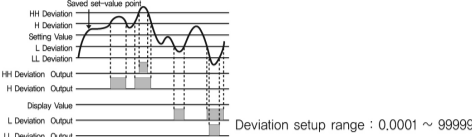
- Standard oUt -5 mode**
- Comparative value HH : Comparative value HH ≤ Display value
- Output H(ON) : Comparative value H ≤ Display value
- Output GO(ON) : Comparative value H ≤ Display value
- Comparative value LL : HH, H, L, LL Output OFF → ON
- Output LI(ON) : Comparative value L ≥ Display value
- Output L(ON) : Comparative value LL ≥ Display value
- Zone output oUt -7 mode**
- Output H(ON) : Comparative value HH ≤ Display value
- Output H(ON) : Comparative value HH ≤ Display value
- Output LI(ON) : Comparative value L ≤ Display value
- Output GO(ON) : HH, H, L, LL Output OFF → ON
- Output L(ON) : Comparative value L ≤ Display value
- Output L(ON) : Comparative value LL ≥ Display value
- H Level oUt -H mode**
- Comparative value HH : Comparative value HH ≤ Display value
- Output H(ON) : Comparative value HH ≤ Display value
- Output LI(ON) : Comparative value L ≤ Display value
- Output GO(ON) : HH, H, L, LL Output OFF → ON
- Output L(ON) : Comparative value L ≤ Display value
- Output L(ON) : Comparative value LL ≤ Display value
- L Level oUt -L mode**
- Comparative value HH : Comparative value HH ≤ Display value
- Output H(OFF) : Comparative value HH ≤ Display value
- Output H(OFF) : Comparative value H ≤ Display value
- Output LI(ON) : HH, H, L, LL Output OFF → ON
- Output L(OFF) : Comparative value L ≤ Display value
- Output L(OFF) : Comparative value LL ≤ Display value

■ ONE short **OUT-F** mode



■ Double variation **OUT-d** mode

It makes the set value to be saved and within the set values, it yields the output when the value exceeds the HH deviation, H deviation, L deviation and LL deviation.  
 • Set value auto-setting: Let currently displayed value to be saved by pressing **+** + **+**  
 • Set value display: Pressing the **+** key once will display the saved set value and pressing it one more time will display the current value.



※ Please refer to the Hysteresis function for Hys  
 ※ Comparative value should be set as following order in order to get proper operation LL,LL(HH)(H)  
 ※ Applied only with the models RP3, RP6 and RP7. But it is not applied with the model for indicating only.

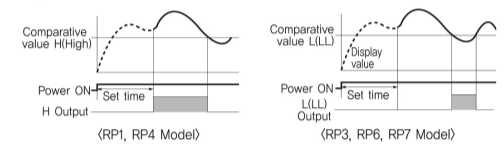
Function Description

■ Auto Zero Function

If you know input pulse width, set more longer time than input pulse time width as Auto Zero value. If there is no input within setting time, displayed value will be "00000" by compulsion. Especially in case there is no pulse input within a specific period of time or when revolving object is expected to be stopped, you can set the time as Auto Zero time setting.

■ Starting Compensation Timer Function

After turning the power ON, it invalidates the measurement in a specific period of time. This function removes faulty outputs caused by irregularly input values such as chattering and starting current. When starting revolving object, it is especially valid in case it does not make High Comparative(H), Low Comparative(LL) judgment by means of low speed revolution. (Setting time : 0.1 sec ~ 99.9 sec)



■ Time Unit Selection Function

It is efficient that measurement value could be selected and displayed with various time units.

- Available time units : Decimal system and Sexagesimal system.
- Available mode : F3, F4, F5, F6

■ Display Cycle Setting Function

Display cycle for measured value could be selected as follows.  
 Available settings of display cycle = 0.05 / 0.5 / 1 / 2 / 4 / 8 sec

■ Peak Hold and Reset Function

This function displays Max value and Min value among displayed values. It is possible to select it by one-touch button.



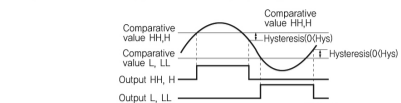
● Peak Hold Storage and Confirmation

Peak Value max. : Saved in **HPEL1** ~ **HPEL4** **HPELR**  
 Peak Value min. : Saved in **LPEL1** ~ **LPEL4** **LPELR**

※ Each value, Max value, Min value, Peak value is stored on memory in four steps. The average value for 4 values is stored on the memory of Max, Min average value. It could be verified and cleared automatically when changing measurement mode.  
 ※ When Max / Min value is displayed now, the very right side Dot is ON.

■ Hysteresis Function

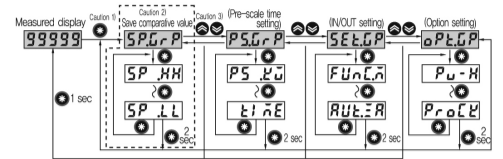
In case measured value becomes unstable near comparative value, set hysteresis value based on set value in order to prevent unstable output operation. For comparative value HH,H, the decreased value is applied as hysteresis value. For comparative value LL,L, increased value is applied as the hysteresis value.  
 ※ Comparative H(High value), Output H are only applicable to RP1, RP4.  
 ※ Hysteresis is not applicable to 'Display Only' model.



Parameter Description

※ Below parameter display signals are shown based on 5 digits. Regarding RP1 model(4 digits), please refer to page 6.

■ Menu Setting Flow Chart



※ Note 1) Press **+** key for 3 seconds to enter menu mode  
 ※ Note 2) SP Group is not shown on 'Display Only' model.

※ Note 3) In each Group, you can move to other Groups by press **←** or **→** key. Pressing **+** key for 1 minute leads to enter into measured screen.

※ Note 4) Pressing **+** key for 2 seconds leads to enter into **PEELP**  
 ※ Note 5) In case of entering into **HPEL1** out of **PEELP** please take hand off the key or press the key.

■ Parameter Group Flow Chart

1. SP Group [SPGRP]

Set menu	Setting	Setting information	Initial value
SPGRP	Select the comparative value setting group	In case of setting a measured value under a decimal point, below set values could be converted to be set under decimal point.	
SPHH	Set the comparative value HH	① F1, F2, F7, F8, F9 : ~ 99999	00000
SPH	Set the comparative value H	② : 0 ~ Set time range	00000
SPLL	Set the comparative value L		00000
SPLL	Set the comparative value LL		00000

※ ① : Comparative value H(High value) setting could be shown on RP1, RP4 model.  
 ※ ② : It is used in Output out-d only, it is not displayed on other output modes.  
 ※ ③ : RP3, RP7 Only applicable with the model RP7 and RP3.  
 ※ SP Group(Comparative Setting Group) is to set each output condition(HH,H,GO,LL,LL). Stable output is available by setting each parameter and inputting Hysteresis value. But, 'Display Only' model does not use the above parameter setting group.  
 ※ When changing setting value : (←): change of digit, (→): change of set value

2. PS Group [PSGRP]

Set menu	Setting	Setting information	Initial value
PSGRP	Select the pre-scale setting group	Group that sets the pre-scale value of comparative value	
PSA	Set the Pre-scale (X) of IN A	00000-99999	60000
PSB	Set the Pre-scale (Y) of IN A	10-9-10 9	10 1
PSA	Set the Pre-scale (X) of IN A	00000-99999	
PSB	Set the Pre-scale (Y) of IN A	10-9-10 9	
d5da	Set position of decimal point of the display value	It is possible to set the decimal point as you want. 99999-99999-99999-99999-99999	99999
d5srp	Set the displaying cycle	It is possible to set the display sampling cycle as you want. 005-05-1-2-4-8	005
HYS	Set the hysteresis of output value	It is possible to set the Hysteresis value as you want. 0000-9999	0000
ETn	Set the input time unit (Operation ode F3,F4,F5,F6)	It is possible to set the time setting value as you want. 10-5ddd-55ddd-555dd-5555d-55555 60-55ddd-555dd-5555d-55555-55555	5ddd

※ when changing the set value (←): shift the row, (→): change the set value  
 ※ Hysteresis is not displayed from N type(Display only).

3. Setup Group [SEELP]

Set menu	Setting	Setting information	Initial value
SEELP	Select the input/output control setting group	This is input/output control setting group that sets according to the input and output	
FUN	Set the input operation mode	F1 ~ F9	F1
IN-A	Set the IN A sensor type	nPnno : NPN Normal Open PnPno : PNP Normal Open Conctk : Contact Normal Open nPnnl : NPN Normal Close PnPnl : PNP Normal Close	nPnno
IN-B	Set the IN B sensor type	nPnno : NPN Normal Open PnPno : PNP Normal Open Conctk : Contact Normal Open nPnnl : NPN Normal Close PnPnl : PNP Normal Close Conctk : 점접 Normal Open	nPnno
OUT-n	Set the output mode	out-5-out-3-out-H-out-L-out-F-out-d	out-5
RULtA	Set the IN A Starting compensation timer	001-999	000
RULtB	Set the IN B Starting compensation timer	001-999	000
RULtZ	Set the IN A Auto Zero timer	0000-99999	00000

※ ① : Displayed only with the models RP3, RP6 and RP7. But it is not displayed with the model for indication only.  
 ※ When changing the set value (←): shift the row, (→): change the set value

4. Option Group [PEELP]

Set menu	Setting	Setting information	Initial value
PEELP	Select the option setting group	This is option setting group that sets the option of input/output setting parameter	
Pv-H	Set the High value of PV transfer output	F1, F2, F7, F8, F9 : 0 ~ 99999	99999
Pv-L	Set the Low value of PV transfer output	F3, F4, F5, F6 : 0 ~ Set time range	00000

Pv-H	00000-99999	Power failure backup setting	on : Power failure compensation(Backup) - Memorizing the previously measured value in case of off : Not use power failure compensation(Backup) on-off	on
Pv-L	00000-99999	Parameter lock setting	off: Cancel all modes LoLk1: P1 ~ P3 Lock LoLk2: P3 ~ P4 Lock LoLk3: P1 ~ P4 Lock LoLk4: P2 ~ P4 Lock LoLk5: P4 Lock off-LoLk1-LoLk2-LoLk3-LoLk4-RL	off

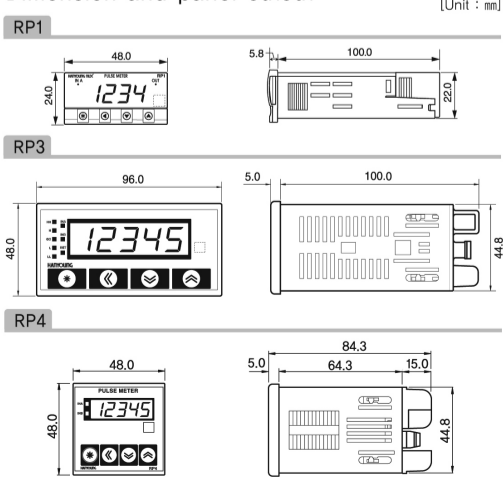
① : It could be displayed on the 4 - 20 mA output models.  
 ② : P1(SP Group), P2(PS Group), P3(Setup Group), P4(Option Group)  
 ※ When changing setting value : (←): shift the row, (→): change of set value

5. Peak Display Group [PEELP]

Set menu	Meaning	Setting information	Initial value
PEELP	Peak value saving group	Save the max and min of peak values divided into 10 stages individually	
HPEL1	Max value	Save the highest value among the HIGH peak values	00000
HPEL2	2nd highest values among the HIGH peak values	Save the 2nd highest value among the HIGH peak values	00000
HPEL3	3rd highest values among the HIGH peak values	Save the 3rd highest value among the HIGH peak values	00000
HPEL4	4th highest values among the HIGH peak values	Save the 4th highest value among the HIGH peak values	00000
HPELR	Average value	Calculate the average values of 4 saved HIGH peak values and save it	00000
LPEL1	Min value	Save the lowest value among the LOW peak values	00000
LPEL2	2nd lowest values among the LOW peak values	Save the 2nd lowest value among the LOW peak values	00000
LPEL3	3rd lowest values among the LOW peak values	Save the 3rd lowest value among the LOW peak values	00000
LPEL4	4th lowest values among the LOW peak values	Save the 4th lowest value among the LOW peak values	00000
LPELR	Average value	Calculate the average values of 4 saved LOW peak values and save it	00000
PnLr	Delete the peak value memory	Delete all of currently saved values	

※ The values saved in the Peak Display Value are not possible to be corrected respectively. In this case, it needs to erase all values collectively.  
 ※ Saved peak values will be erased automatically in case of changing mode or power ON/OFF.  
 ※ When changing setting value : (←): shift the row, (→): change of set value

Dimension and panel cutout



RP6

RP7

■ Panel cutout

	RP1	RP3	RP4	RP6	RP7
a1	45.0 <sup>+0.5</sup>	91.0 <sup>+0.5</sup>	45.0 <sup>+0.5</sup>	66.5 <sup>+0.5</sup>	68.0 <sup>+0.7</sup>
a2	22.4 <sup>+0.5</sup>	45.0 <sup>+0.5</sup>	45.0 <sup>+0.5</sup>	32.0 <sup>+0.5</sup>	68.0 <sup>+0.7</sup>
L1	65.0 <sup>+0.5</sup>	more than 121	more than 60	more than 96	more than 82
L2	42.4 <sup>+0.5</sup>	more than 70	more than 80	more than 57	more than 82

WIRING DIAGRAM

