

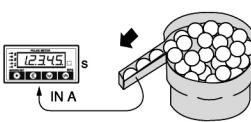
■ Mode F3 : Cycle (s)

It is a mode for measuring cycle(time T) of sensor input A (IN A).
Cycle shows the time from just before input to current input.

- Cycle(s) = T
- $T = 1/f$
- ※ Prescale is not available in this mode.

※ f = Frequency
※ T = Time

● Example of practical application

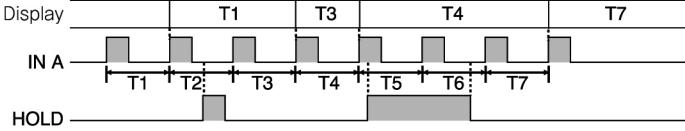


Display value	Decimal system	Sexagesimal system	
<u>S</u> ddd	9.9999 s	<u>5</u> 5ddd	59.999 s
55ddd	99.999 s	<u>5</u> 555d	59 m 59.9 s
555dd	999.99 s	<u>5</u> 5555	999 m 59 s
5555d	9999.9 s	<u>H</u> 5555	9 h 59 m 59 s
55555	99999 s	HHH555	999 h 59 m

※ Underlined figures are not shown on RP1(4 digits) model.

※ Default setting : 9.9999 s

※ It is possible to set output unit in the **ti nE** of PS Group(**P5GrP**)

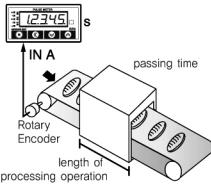


■ Mode F4 : Passing Time(s)

It is a mode for measuring passing time of processing operation.

- Passing Time(s) = $T \times \alpha$
- $T = 1/f$
- $\alpha = l / L$
- $L = \frac{\pi D}{N}$ (circumference of the roller)
N(pulse per 1 revolution of the encoder)
- D : diameter of roller
- $\pi = 3.141592$
- L : moving distance per 1 pulse
- l : length of processing operation
- f : Frequency
- T : Time

● Example of practical application

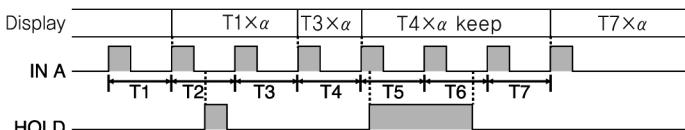


Display value	Decimal system	Sexagesimal system	
<u>S</u> ddd	9.9999 s	<u>5</u> 5ddd	59.999 s
55ddd	99.999 s	<u>5</u> 555d	59 m 59.9 s
555dd	999.99 s	<u>5</u> 5555	999 m 59 s
5555d	9999.9 s	<u>H</u> 5555	9 h 59 m 59 s
55555	99999 s	HHH555	999 h 59 m

※ Underlined figures are not shown on RP1(4 digits) model.

※ Default setting : 9.9999 s

※ It is possible to set output unit in the **ti nE** of PS Group(**P5GrP**)

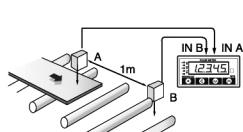


■ Mode F5 : Time Lag(s)

It is a mode for measuring time from sensor input A(IN A) ON 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
- T : measured time from sensor A to sensor B
- ※ Prescale is not available in this mode

● Example of practical application

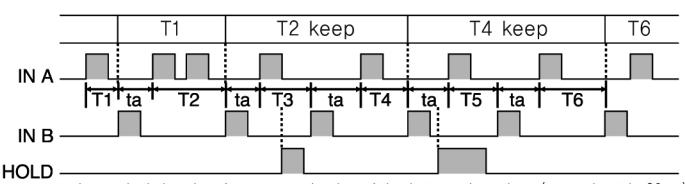


Display value	Decimal system	Sexagesimal system	
<u>S</u> ddd	9.9999 s	<u>5</u> 5ddd	59.999 s
55ddd	99.999 s	<u>5</u> 555d	59 m 59.9 s
555dd	999.99 s	<u>5</u> 5555	999 m 59 s
5555d	9999.9 s	<u>H</u> 5555	9 h 59 m 59 s
55555	99999 s	HHH555	999 h 59 m

※ Underlined figures are not shown on RP1(4 digits) model.

※ Default setting : 9.9999 s

※ It is possible to set output unit in the **ti nE** of PS Group(**P5GrP**)



ta is a calculating time for measured value of the just previous time. (approximately 20 ms)

■ Mode F6 : Time Width(s)

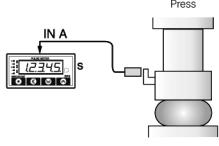
It is a mode for displaying after measuring time of sensor input A(IN A) ON.

- Time Width(s) = T

※ Prescale is not available in this mode.

※ T : sensor A ON time

● Example of practical application

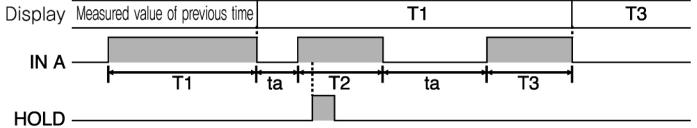


Display value	Decimal system	Sexagesimal system	
<u>S</u> ddd	9.9999 s	<u>5</u> 5ddd	59.999 s
55ddd	99.999 s	<u>5</u> 555d	59 m 59.9 s
555dd	999.99 s	<u>5</u> 5555	999 m 59 s
5555d	9999.9 s	<u>H</u> 5555	9 h 59 m 59 s
55555	99999 s	HHH555	999 h 59 m

※ Underlined figures are not shown on RP1(4 digits) model.

※ Default setting : 9.9999 s

※ It is possible to set output unit in the **ti nE** of PS Group(**P5GrP**)



ta is a calculating time for measured value of the just previous time. (approximately 20 ms)

■ Mode F7 : 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) = $P \times \alpha$

$$\bullet \text{Pulse width(m)} = P \times l$$

$$\cdot L = \pi \times D$$

$$\cdot D : \text{Diameter of roller}$$

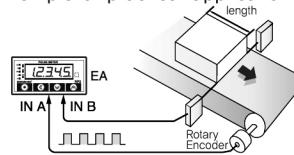
$$\cdot L : \text{Circumference of the roller}$$

$$\cdot \ell : \text{Moved distance per 1 pulse input}$$

$$\cdot N : \text{Number of pulse generation from the encoder when roller rotates 1 revolution}$$

$$\cdot P : \text{Number of Pulse inputted to IN A when sensor input B (IN B) is being ON}$$

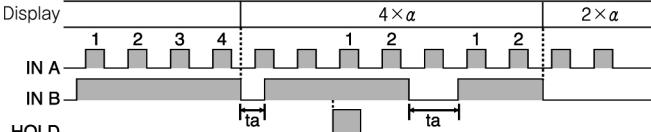
● Example of practical application



• Prescale example

Display value	Unit	Prescale value(a)
Pulse width	mm	1000 ℓ
	cm	100 ℓ
	m	1ℓ
EA	EA	1 (default value)

• Default setting : EA



ta is a calculating time for measured value of the just previous time. (approximately 20 ms)

■ 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 one again, it will display the calculated value that has been calculated until now.

- Pulse gap count(EA) = $P \times \alpha$

$$\bullet \text{Pulse gap(m)} = P \times l$$

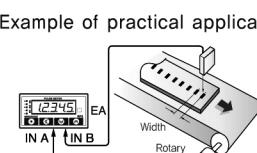
$$\cdot L = \pi \times D$$

$$\cdot P : \text{Number of Pulse inputted to IN A when sensor input B (IN B) is being ON}$$

$$\cdot N : \text{Number of pulse generation from the encoder when roller rotates 1 revolution}$$

$$\cdot \ell : \text{length of processing operation}$$

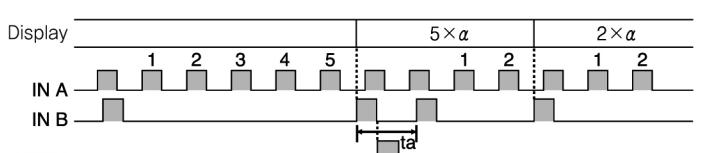
● Example of practical application



• Prescale example

Display value	Unit	Prescale value(a)
pulse gap	mm	1000 ℓ
	cm	100 ℓ
	m	1ℓ
EA	EA	1 (default value)

• Default setting : EA



ta is a calculating time for measured value of the just previous time. (approximately 20 ms)

■ Mode F9 : accumulation counter (EA)

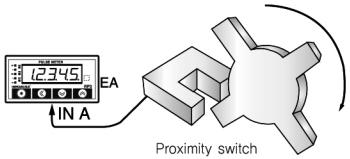
Mode that totals and displays pulse counts entered to sensor input A (IN A) But counting is suspended when sensor input B (IN B) turns ON. The displayed value is reset to zero when a reset signal is entered.

$$\cdot \text{Counter(EA)} = P \times \alpha$$

* P : Pulse counts of sensor input A (IN A)
* α : prescale value

● Example of practical application

- Input 0.1 to the IN A pre-scale and apply DOT Position with **99999**, then display will increase by 1 as the value increases by 10.



Display	1	2	3	4	5	6	7	0	1	2	3
IN A	1	2	3	4	5	6	7	0	1	2	3
IN B					1						
Reset						1					

Parameter Table for each operation mode

symbol description : ○ (Yes), ×(NO)

4 Row symbol	5 Row symbol	F1	F2	F3	F4	F5	F6	F7	F8	F9	RP1,RP4 Parameter
SPGP	SPGrP										SP Group (Comparative value Setting Group)
-	SP_HH	○	○	○	○	○	○	○	○	○	×
SP_H	SP_H	○	○	○	○	○	○	○	○	○	
-	SPSET	○	○	○	○	○	○	○	○	○	×
-	SP_L	○	○	○	○	○	○	○	○	○	×
-	SP_LL	○	○	○	○	○	○	○	○	○	×
PSGP	PSGrP										PS Group (Prescale or Time Option Setting Group)
PSRū	PS_Rū	○	○	×	○	×	×	○	○	○	
PSRY	PS_RY	○	○	×	○	×	×	○	○	○	
dSdE	dSdot	○	○	×	×	×	×	○	○	○	
dSSP	dSSRP	○	○	○	○	○	○	○	○	○	
HYS	HYS	○	○	○	○	○	○	○	○	○	
EI_nE	EI_nE	×	×	○	○	○	○	×	×	○	
SELGP	SEtGP										Setup Group 3 (IN/OUT Setting Group)
FUnC	FUnCn	○	○	○	○	○	○	○	○	○	
I_n-R	I_n-R	○	○	○	○	○	○	○	○	○	
I_n-b	I_n-b	×	○	×	×	○	×	○	○	○	
-	aUt-n	○	○	○	○	○	○	○	○	○	×
RtER	RtER	○	○	○	○	○	○	○	○	○	
RtEb	RtEb	×	○	×	×	○	×	○	○	○	
RtEr	RtEr	○	○	○	○	○	○	×	×	○	
oPtGP	oPtGP										Option Group 4 (Option Setting Group)
-	Pu-H	○	○	○	○	○	○	○	○	○	×
-	Pu-L	○	○	○	○	○	○	○	○	○	×
nEño	nEñor	×	×	×	×	×	×	×	○	○	
PrLr	PrLr	○	○	○	○	○	○	○	○	○	
PtEGP	PEtGP										Peak Display Group 5 (Peak Value Save Group)
HPE1	HPE1	○	○	○	○	○	○	○	×	○	
HPE2	HPE2	○	○	○	○	○	○	○	×	○	
HPE3	HPE3	○	○	○	○	○	○	○	×	○	
HPE4	HPE4	○	○	○	○	○	○	○	×	○	
HPEA	HPEA	○	○	○	○	○	○	○	×	○	
LPE1	LPE1	○	○	○	○	○	○	○	×	○	
LPE2	LPE2	○	○	○	○	○	○	○	×	○	
LPE3	LPE3	○	○	○	○	○	○	○	×	○	
LPE4	LPE4	○	○	○	○	○	○	○	×	○	
LPEA	LPEA	○	○	○	○	○	○	○	×	○	

■ Default Parameter set value (5 rows)

SP Group	default value
SP_HH	00000
SP_H	00000
SPSET	00000
SP_L	00000
SP_LL	00000

PS Group	default value
PS_Rū	60000
PS_RY	10 1
dSdE	99999
dSSRP	005
HYS	0000
EI_nE	EEnRn Sddd

SETUP Group	default value
FUnCn	F 1
I_n-R	nPnno
I_n-b	nPnno
aUt-n	aUt-S
RtER	000
RtEb	000
RtEr	00000

Option Group	default value
Pu-H	99999
Pu-L	00000
nEñor	on
PrLr	OFF

■ Default Parameter set value (4 rows)

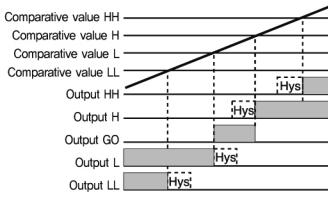
SP Group	default value
SP_H	0000

PS Group	default value
PSRū	6000
PSRY	10 1
dSdE	9999
dSSP	005
HYS	EI_nE
EI_nE	EEnRn Sddd

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

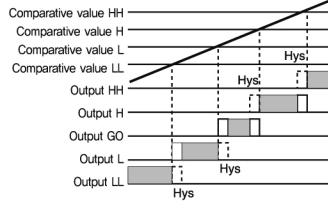
Output Mode **aUt-S**

■ Standard **aUt-S** mode



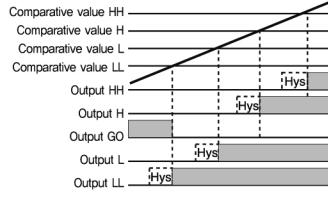
Output HH(ON) : Comparative value HH ≤ Display value
Output H(ON) : Comparative value H ≤ Display value < Comparative value HH
Output GO(ON) : HH, H, L, LL Output OFF → ON
Output L(ON) : Comparative value L ≥ Display value
Output LL(ON) : Comparative value LL ≥ Display value

■ Zone output **aUt-J** mode

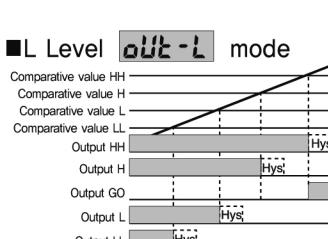


Output HH(ON) : Comparative value HH ≤ Display value
Output H(ON) : Comparative value H ≤ Display value < Comparative value HH
Output GO(ON) : HH, H Output OFF → ON
Output L(ON) : Comparative value L ≤ Display value
Output LL(ON) : Comparative value LL ≥ Display value

■ H Level **aUt-H** mode



Output HH(ON) : Comparative value HH ≤ Display value
Output H(ON) : Comparative value H ≤ Display value < Comparative value HH
Output GO(ON) : HH, H Output OFF → ON
Output L(ON) : Comparative value L ≤ Display value
Output LL(ON) : Comparative value LL ≤ Display value



Output HH(OFF) : Comparative value HH ≤ Display value
Output H(OFF) : Comparative value H ≤ Display value < Comparative value HH
Output GO(OFF) : HH, H Output OFF → ON
Output L(OFF) : Comparative value L ≤ Display value
Output LL(OFF) : Comparative value LL ≤ Display value