

D5Y/D5W Series

This model is upgraded from D4Y, D4W

■ Features

- Various input specification
: Static input, dynamic input, 4/5 bit serial input, 16/20/25 bit serial input method
- Decimal point, "-" symbol display type selection function
: Display type by serial input
Display type by external DP terminal and MINUS terminal
- Positive/Negative logic input selection function
- Display digit selection function
: 4digit (-9999 to 9999), 5digit (0 to 99999)
- Zero blank function selection function
- Selectable reversion function of latch signal



⚠ Please read "Caution for your safety" in operation manual before using.

■ Ordering information

D	5	W	-	M	X	
Digit		Size		Input	Power supply	
						Blank
						X
						M
						Y
						W
						5
						D

12-24VDC
 110/220VAC 50/60Hz (Option)
 Multi-input mode
 DIN W72×H36mm
 DIN W96×H48mm
 99999 (5 Digit)
 Display Unit

* AC Power of D5W model is optional.

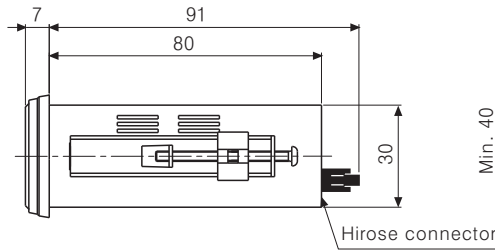
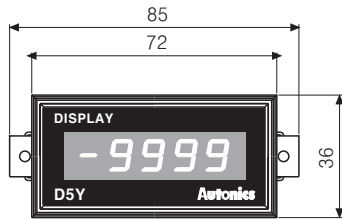
■ Specifications

Model	D5Y-M	D5W-M	D5W-MX
Power supply	12-24VDC	12-24VDC	110/220VAC 50/60Hz (Option)
Allowable voltage range	90 to 110% of rated voltage		
Current consumption	1.1W		2VA
Display method	7Segment LED display		
Display digit	4digit (or 4 1/2 digit include symbol bit), 5digit		
Max. response frequency	100Hz to 5kHz (Except for STATIC input type)		
Input logic	Selectable positive (PNP) or negative (NPN)		
Input	BCD code : Static, dynamic, serial (4/5/16/20/25 bit)		
Zero blanking function	ON ('0' No display), OFF ('0' Display)		
Input level	High : 5-24VDC, Low : 0-1.2VDC		
Insulation resistance	100MΩ (at 500VDC megger)		
Dielectric strength	2000VAC 50/60Hz for 1 minute		
Noise strength	±1kV the square wave noise (pulse width : 1μs) by the noise simulator		
Vibra- tion	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 1 hour	
	Malfunction	10.5mm amplitude at frequency of 10 to 55Hz in each of X, Y, Z directions for 10 minutes	
Shock	Mechanical	300m/s ² (Approx. 30G) in X, Y, Z directions for 3 times	
	Malfunction	100m/s ² (Approx. 10G) in X, Y, Z directions for 3 times	
Ambient temperature	-10 to 50°C (at non-freezing status)		
Storage temperature	-25 to 65°C (at non-freezing status)		
Ambient humidity	35 to 85%RH		
Unit weight	Approx. 75g	Approx. 165g	Approx. 267g

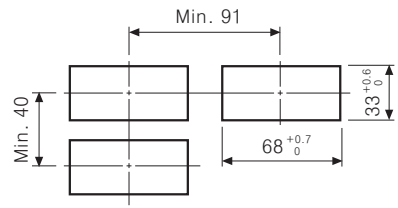
Display Unit Indication Type Only

Dimensions

●D5Y-M

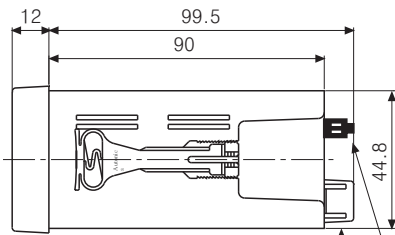
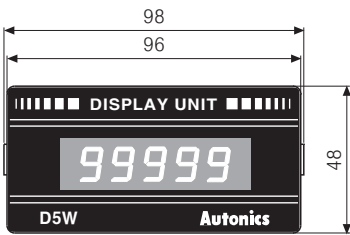


●Panel cut-out

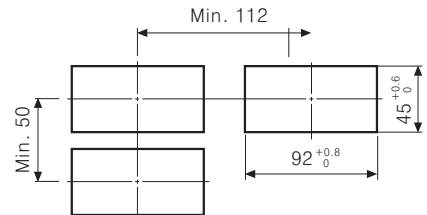


(Unit:mm)

●D5W-M



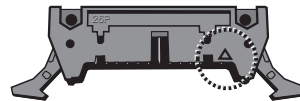
●Panel cut-out



(Unit:mm)

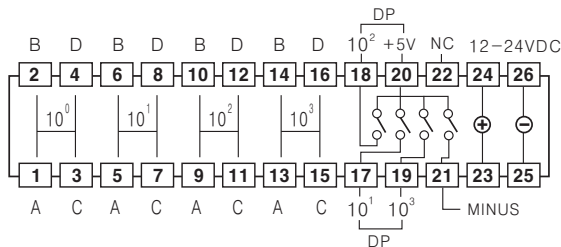
* When it is AC power option, there is terminal block on product.

- * Hirose connector pin header model : HIF3BA-26PA-2.54DS
- * Contact Hirose Electric to purchase socket and wires of Hirose connector [Socket : HIF3BA-20D-2.54R]
- * "△" mark indicates No.1 pin of hirose connector.

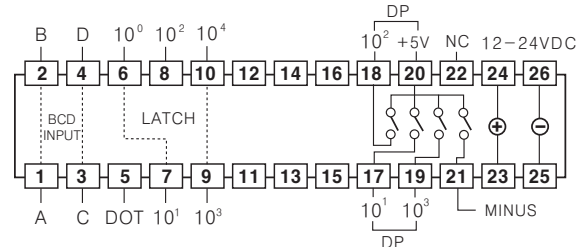


Connections

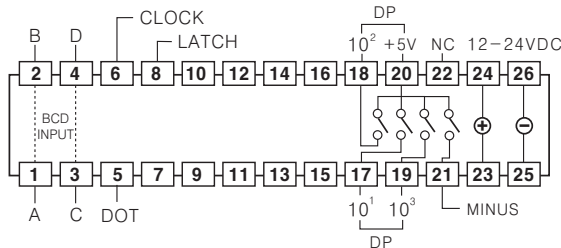
●Static input



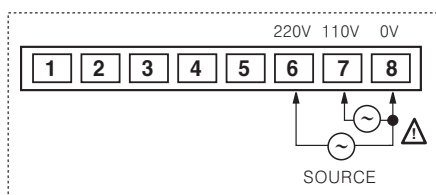
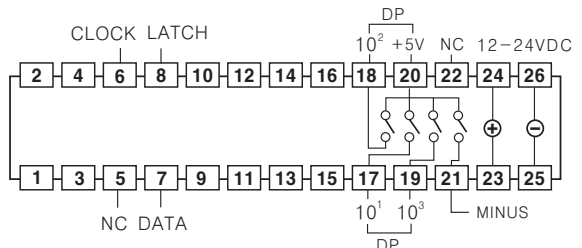
●Dynamic input



●4/5Bit serial input



●Serial input



* It is power terminal for AC power option of D5W type.

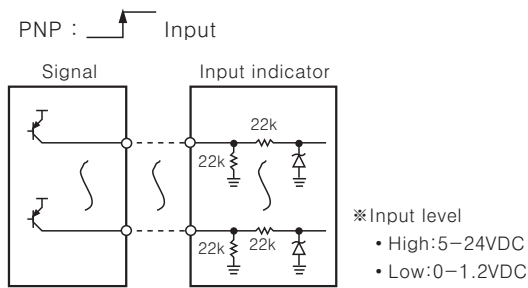
- * In case of static input, 5digits cannot be used because of external terminal
- * "-" signal cannot be indicated in 5digits type because the display range is from 0 to 99999. Therefore, the input signal of Pin 21 which is external minus unit input terminal is ignored.
- * The input of external DP (Pin No. 17, 18, 19) and minus signal terminal (Pin No. 20) regardless input logic.

(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
(D)	Proximity sensor
(E)	Pressure sensor
(F)	Rotary encoder
(G)	Connector/Socket
(H)	Temp. controller
(I)	SSR/Power controller
(J)	Counter
(K)	Timer
(L)	Panel meter
(M)	Tacho/Speed/Pulse meter
(N)	Display unit
(O)	Sensor controller
(P)	Switching power supply
(Q)	Stepping motor & Driver & Controller
(R)	Graphic/Logic panel
(S)	Field network device
(T)	Production stoppage models & replacement

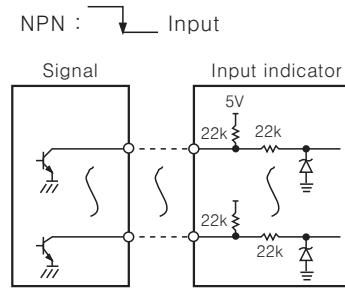
D5Y/D5W Series

Input circuit

Positive logic



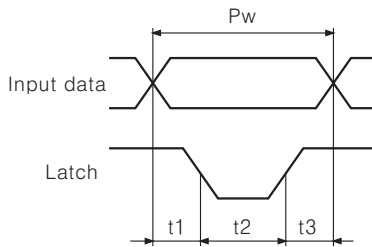
Negative logic



Input timing

Parallel input

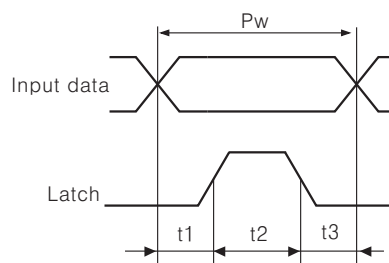
Positive logic (PNP)



$$Pw = t1 + t2 + t3$$

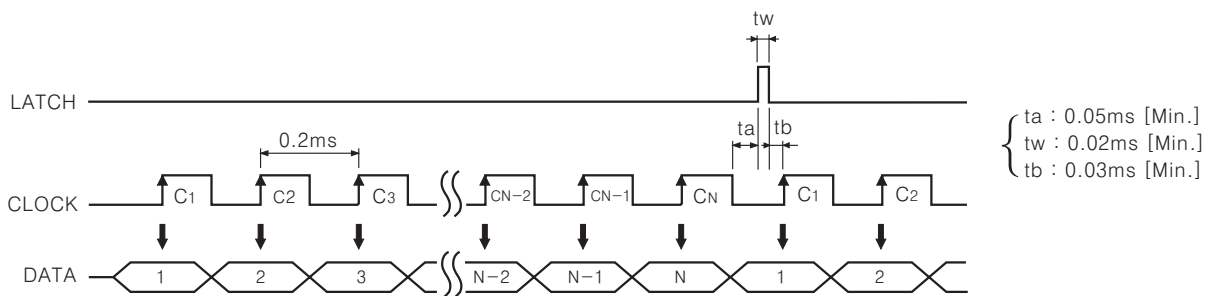
}	Pw : 0.2ms [Min.]
	t1 : 0.05ms [Min.] → Data latch
	t2 : 0.1ms [Min.] → Data shift
	t3 : 0.05ms [Min.] → Data latch

Negative logic (NPN)

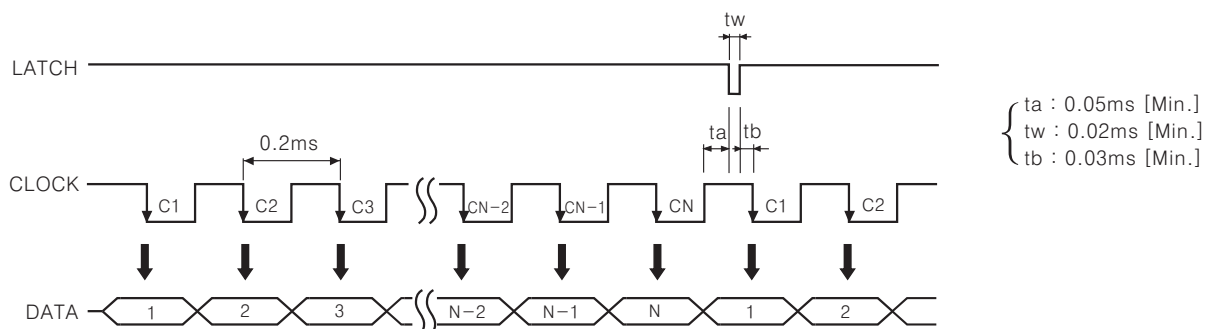


Serial input

Positive logic (PNP) : Clock max. 5kHz



Negative logic (NPN) : Clock max. 5kHz



Display Unit Indication Type Only

Input data chart

Display	Negative(NPN) input					Positive(PNP) input				
	A	B	C	D	LATCH	A	B	C	D	LATCH
0	H	H	H	H	L	L	L	L	L	H
1	L	H	H	H	L	H	L	L	L	H
2	H	L	H	H	L	L	H	L	L	H
3	L	L	H	H	L	H	H	L	L	H
4	H	H	L	H	L	L	L	H	L	H
5	L	H	L	H	L	H	L	H	L	H
6	H	L	L	H	L	L	H	H	L	H
7	L	L	L	H	L	H	H	H	L	H
8	H	H	H	L	L	L	L	L	H	H
9	L	H	H	L	L	H	L	L	H	H
HOLD	X	X	X	X	H	X	X	X	X	L

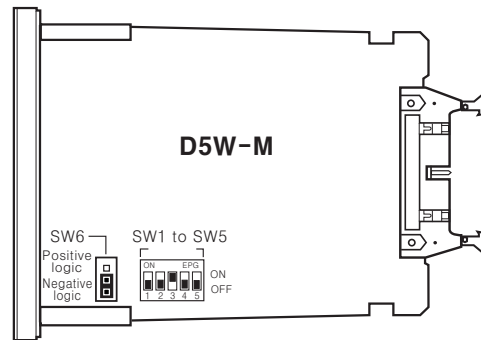
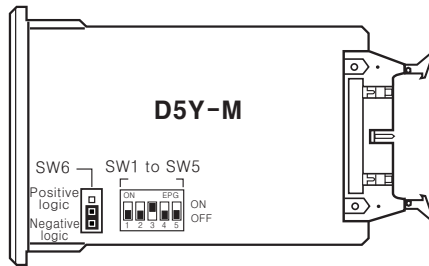
※Input level : High → 5–24VDC, Low → 0–1.2VDC

※"X" : Both high or low level can be input.

- (A) Photo electric sensor
- (B) Fiber optic sensor
- (C) Door/Area sensor
- (D) Proximity sensor
- (E) Pressure sensor
- (F) Rotary encoder
- (G) Connector/Socket
- (H) Temp. controller
- (I) SSR/Power controller
- (J) Counter
- (K) Timer
- (L) Panel meter
- (M) Tacho/Speed/Pulse meter
- (N) Display unit**
- (O) Sensor controller
- (P) Switching power supply
- (Q) Stepping motor & Driver & Controller
- (R) Graphic/Logic panel
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- (T) Production stoppage models & replacement

D5Y/D5W Series

Inner selection switch



*Factory specification : SW1→OFF, SW2→OFF, SW3→ON, SW4→OFF, SW5→OFF, SW6→Negative logic

Input mode

SW1	SW2	Static input
ON <input type="checkbox"/>	ON <input type="checkbox"/>	
OFF <input checked="" type="checkbox"/>	OFF <input checked="" type="checkbox"/>	
SW1	SW2	Dynamic input
ON <input checked="" type="checkbox"/>	ON <input type="checkbox"/>	
OFF <input type="checkbox"/>	OFF <input checked="" type="checkbox"/>	
SW1	SW2	4/5 Bit serial input
ON <input type="checkbox"/>	ON <input type="checkbox"/>	
OFF <input checked="" type="checkbox"/>	OFF <input checked="" type="checkbox"/>	
SW1	SW2	Serial input
ON <input type="checkbox"/>	ON <input type="checkbox"/>	
OFF <input checked="" type="checkbox"/>	OFF <input type="checkbox"/>	

Zero blank function

SW3	ON <input type="checkbox"/>	Using zero blank function
	OFF <input checked="" type="checkbox"/>	
SW3	ON <input type="checkbox"/>	Non-using zero blank function
	OFF <input checked="" type="checkbox"/>	

*Zero blank function

It is to remove "0" indication which is no meaning.

EX)When indication value is "10" in 4digit LED

- Zero blanking function is applied :
- Zero blanking function is not applied :

Minus signal/DOT(Decimal point) input terminal

SW4	ON <input type="checkbox"/>	Using DOT terminal(Pin No. 5)
	OFF <input checked="" type="checkbox"/>	
SW4	ON <input type="checkbox"/>	Using external DP(Pin No. 17, 18, 19, 20) terminal and minus(Pin No. 21) terminal
	OFF <input checked="" type="checkbox"/>	

Display digit

SW5	ON <input type="checkbox"/>	5digit (0 to 99999)
	OFF <input checked="" type="checkbox"/>	
SW5	ON <input type="checkbox"/>	4digit (-9999 to 9999)
	OFF <input checked="" type="checkbox"/>	

*In case of static input, 5digits cannot be used because of external terminal.

Input logic

SW6	Positive logic <input type="checkbox"/>	Negative logic <input checked="" type="checkbox"/>	Positive(PNP) input
	Positive logic <input checked="" type="checkbox"/>	Negative logic <input type="checkbox"/>	
SW6	Positive logic <input type="checkbox"/>	Negative logic <input checked="" type="checkbox"/>	Negative(NPN) input
	Positive logic <input checked="" type="checkbox"/>	Negative logic <input type="checkbox"/>	

*If changing inner selecting switch when power is ON, it does not operate as a changed mode.

If the mode is changed when power is ON, please turn OFF and then turn ON the power.

Latch

SW7	ON <input type="checkbox"/>	Reverse latch signal to set logic in SW6
	OFF <input checked="" type="checkbox"/>	
SW7	ON <input type="checkbox"/>	Correspond latch signal to set logic in SW6
	OFF <input checked="" type="checkbox"/>	

*BCD output and latch signal of low speed serial output, which are optional of pulse meter(MP5Y/W Series) and panel meter(MT4Y/W Series) is outputted to positive logic(NPN). If connecting D5Y/W, use it after setting SW6 to NPN and soldering(ON) the semi-contact(SW7) of inner PCB solder plate.

How to select decimal point

DOT and symbol input is not serial input [SW4 = OFF]

Terminal 17-20 :
 18-20 :
 19-20 :
 21-20 :
 Open :

DOT and symbol(-) input is serial input [SW4 = ON]

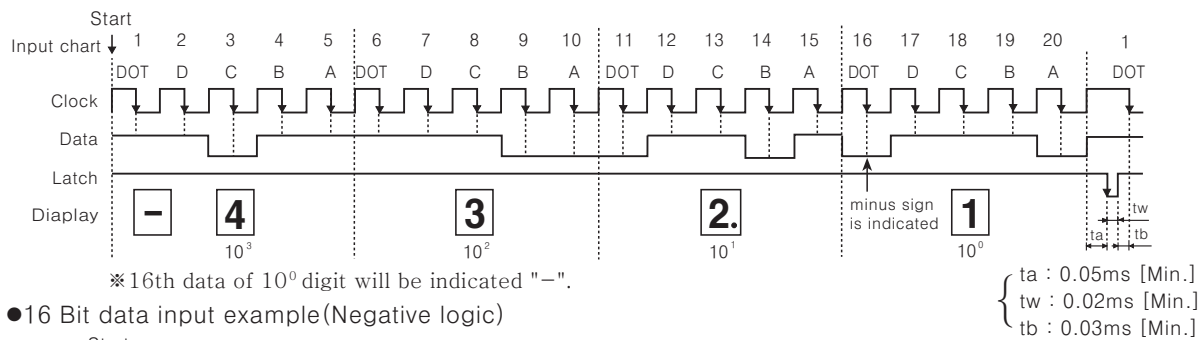
- ①When it is dynamic mode and 4/5 bit serial mode, 5 will be input. (Refer to time chart for 4digit)
- ②When it is serial input mode, 1 bit of serial data is used for DOT and symbol. (Refer to time chart for 4digit)

Display Unit Indication Type Only

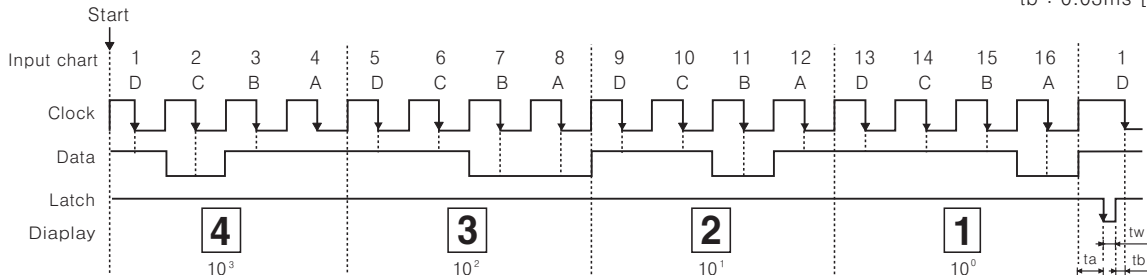
Time chart(4digit)

Serial input(Serial connection)

20 Bit data input example(Negative logic)



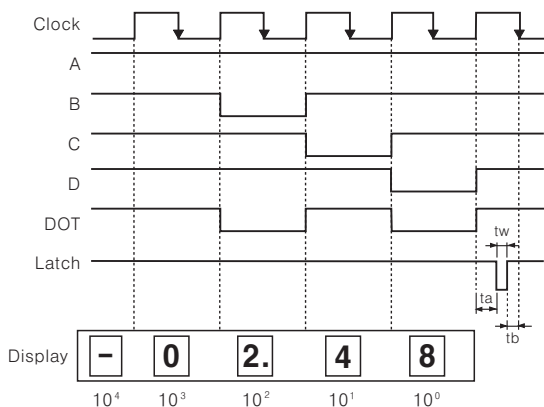
16 Bit data input example(Negative logic)



※Data will be fixed, when clock is changed from high to low, and latch pulse is changed from high to low.
 ※Hold time is the next latch pulse is changed from high to low.

4/5 Bit serial input(Serial connection)

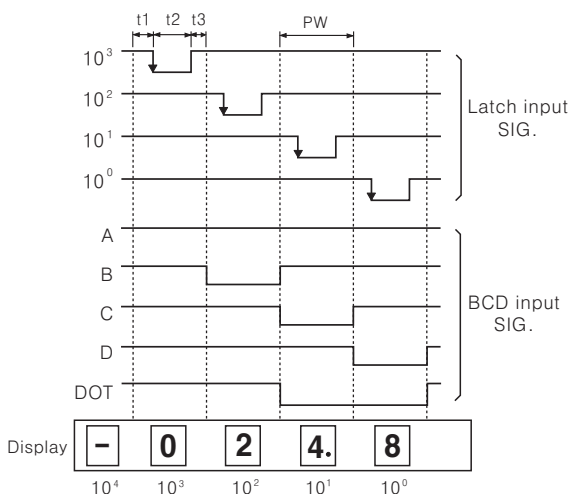
Inner selection switch SW1→ON, SW2→ON, SW3→OFF, SW4→ON, SW5→OFF



※Left figure shows the waveform of negative logic input. In case of positive logic, it will be reversed.
 ※If dot data is inputted on 10⁰ position, it displays "-" signal. (Inner selection switch SW4 → ON)
 ※Concerning decimal point and "-" signal, it can be displayed using outer DP and minus terminal not a serial input. (Inner selection switch SW4 → OFF)
 ※The left application of display indicates non-using zero blank function. If using zero blank function, the "0" on 10³ position is not displayed. (Inner selection switch SW3 → ON)

Dynamic input(Parallel connection)

Inner selection switch SW1 → ON, SW2 → OFF, SW3 → OFF, SW4 → ON, SW5 → OFF



※Left figure shows the waveform of negative logic input. In case of positive logic, it will be reversed.
 ※For 4 digit, external 10⁴ LATCH input terminal is not available.
 ※If dot data is inputted on 10⁰ position, it displays "-" signal. (Inner selection switch SW4 → ON)
 ※Concerning decimal point and "-" signal, it can be displayed using outer DP and minus terminal not a serial input. (Inner selection switch SW4 → OFF)
 ※Latch input should be later than BCD input, otherwise, it will display the previous data.
 ※The left application of display indicates non-using zero blank function. If using zero blank function, the "0" on 10³ position is not displayed. (Inner selection switch SW3 → ON)

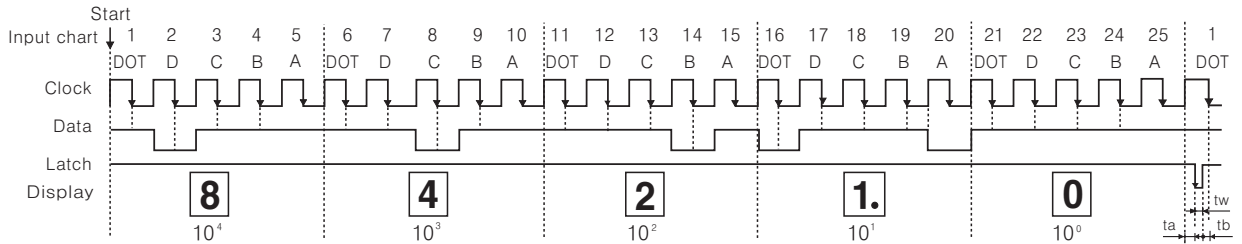
(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
(D)	Proximity sensor
(E)	Pressure sensor
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(G)	Connector/Socket
(H)	Temp. controller
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D5Y/D5W Series

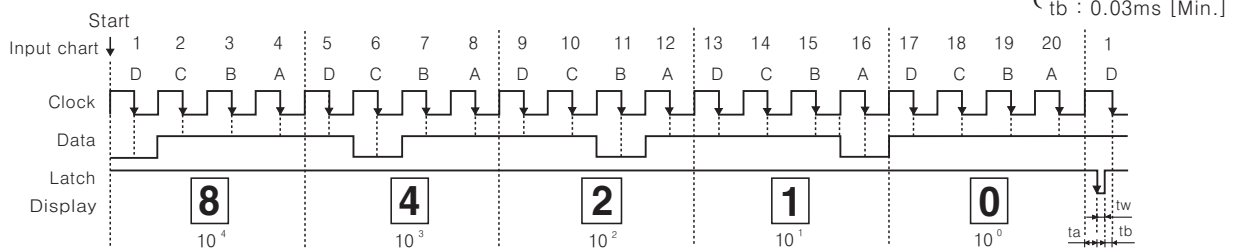
Time chart(4digit)

Serial input(Serial connection)

25 Bit data input example(Negative logic)



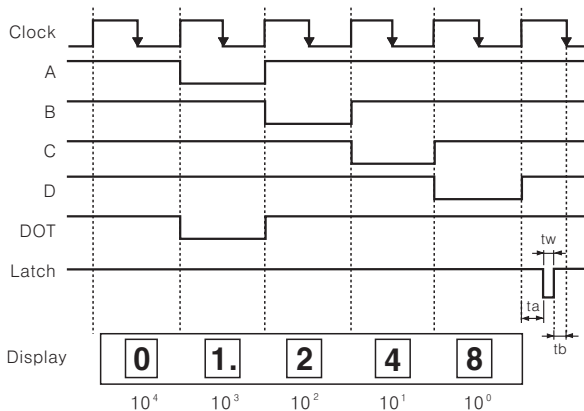
20 Bit data input example(Negative logic)



- * "-" signal cannot be indicated in 5digit type. [The input of DOT signal on 10^0 position and minus terminal(Pin No. 21) is ignored.]
- * Data will be fixed, when clock is changed from high to low, and latch will hold input data when latch pulse is changed from high to low.
- * Hold time is the next latch pulse is changed from high to low.

4/5 Bit serial input(Serial connection)

Inner selection switch SW1 → ON, SW2 → ON, SW3 → OFF, SW4 → ON, SW5 → ON.

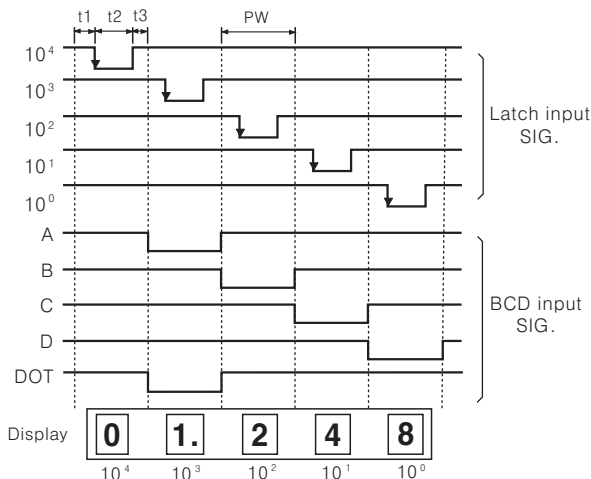


- * Left figure shows the waveform of negative logic input. In case of positive logic, it will be reversed.
- * It is impossible to display the "-" at 5digit line.
- * The left application of display indicates non-using zero blank function. If using zero blank function, the "0" on 10^4 position is not displayed. (Inner selection switch SW3 → ON)

$$\begin{cases} ta = 0.05ms \text{ [Min.]} \\ tw = 0.02ms \text{ [Min.]} \\ tb = 0.03ms \text{ [Min.]} \end{cases}$$

Dynamic input(Parallel connection)

Inner selection switch SW1 → ON, SW2 → OFF, SW3 → OFF, SW4 → ON, SW5 → ON.



$$\begin{cases} Pw = t1 + t2 + t3 \\ Pw = 0.2ms \text{ [Min.]} \\ t1 = 0.05ms \text{ [Min.]} \\ t2 = 0.10ms \text{ [Min.]} \\ t3 = 0.05ms \text{ [Min.]} \end{cases}$$

- * Left figure shows the waveform of negative logic input. In case of positive logic, it will be reversed.
- * It is impossible to display the "-" at 5digit line.
- * Latch input should be later than BCD input, otherwise, it will display the previous data.
- * The left application of display indicates non-using zero blank function. If using zero blank function, the "0" on 10^4 position is not displayed. (Inner selection switch SW3 → ON)

Display Unit Indication Type Only

■ Proper usage

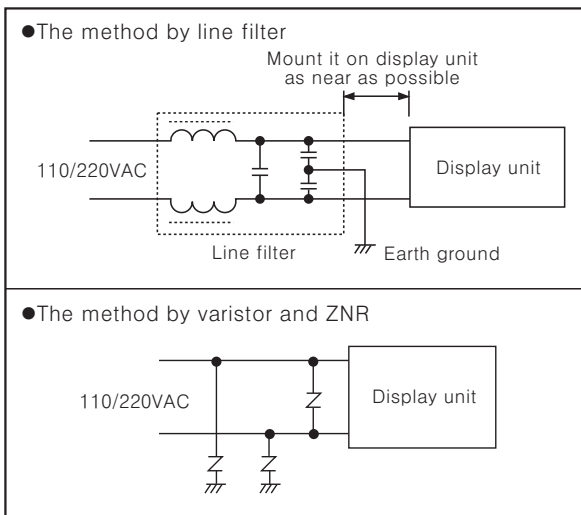
1. The way of custody

Avoid direct ray of light when keeping long time, and keep it under -25 to 65°C , 35 to 85%RH of relative humidity.

2. Noise

Concerning the product (D5W-MX type) using AC power, inflow of noise through a power line is a major circuit built-in small product.

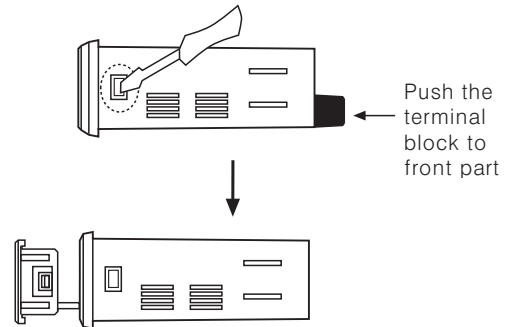
Therefore, use an absorbing circuit such as outer line filter and varistor when abnormal voltage is occurred in the same line by power relay, magnet S/W, using a high-frequency machin, high voltage of spark of lightning stroke.



3. Input signal line should be short as much as possible. If the line is too long, it will affect noise.
4. If the time of input signal is overlapped, it may occur faint light.
5. Oil, soot or dust must not be flown into the product.
6. A decimal point and "-" signal can be displayed with outer DP terminal and minus terminal when signal level is "High". (High level : 5V-24VDC)
7. Because Hirose connector has both power line (12-24VDC) and data signal line, please connect the lines after checking connection figure.

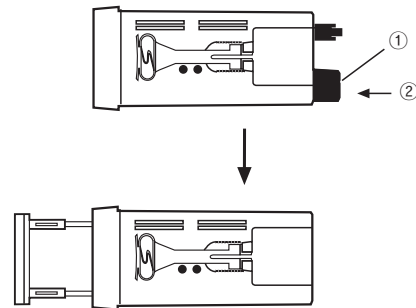
■ Case detachment

●D5Y-M



Widen the both inside of lock devices with a driver, and push the terminal block to the direction of front part.

●D5W-M / D5W-MX



Push the lock part on the side to the direction ①, and then push the terminal block to the direction ②.

※Be careful in order not to be wounded.

※Please turn off the power before detaching the case.

(A)	Photo electric sensor
(B)	Fiber optic sensor
(C)	Door/Area sensor
(D)	Proximity sensor
(E)	Pressure sensor
(F)	Rotary encoder
(G)	Connector/Socket
(H)	Temp. controller
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