Upgraded Display Unit from D4Y, D4W

▣ Features

- Various input specifications
  : Static Parallel input, Dynamic Parallel input, 4/5 bit serial input, 16/20/25 bit serial input method
- Decimal point, "–" minus sign display 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 blanking 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

Power supply	No-mark	12-24VDC
	X※1	110/220VAC 50/60Hz
Input	M	Multi-input mode
Size	Y	DIN W72×H36mm
	W	DIN W96×H48mm
Digit	5	99999(5digit)
Item	D	Display Unit

※1: AC Power is only for D5W and it is option.

▣ Specifications

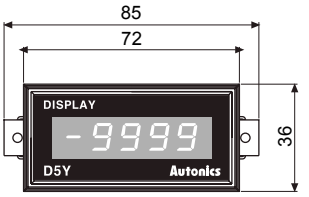
Model		D5Y-M	D5W-M	D5W-MX
Power supply		12-24VDC		110/220VAC 50/60Hz
Allowable voltage range		90 to 110% of rated voltage		
Current consumption		Max. 1.1W		Max. 2VA
Character size		W7×H14mm		
Display method		7Segment LED display (red)		
Display digit		Selectable 4digit(or 4 ½ digit including symbol bit), 5digit		
Max. CLOCK		100Hz to 5kHz		
Input logic		Selectable positive(PNP) or negative(NPN)		
Input method		Static parallel, Dynamic parallel, 4/5 Bit serial, Serial(16/20/25 Bit)		
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		
Vibration	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 1 hour		
	Malfunction	0.5mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 10 minutes		
Shock	Mechanical	300m/s² (approx. 30G) in each of X, Y, Z directions for 3 times		
	Malfunction	100m/s² (approx. 10G) in each of X, Y, Z directions for 3 times		
Environ -ment	Ambient temperature	-10 to 50℃, storage : -25 to 65℃		
	Ambient humidity	35 to 85%RH, storage : 35 to 85%RH		
Unit weight		Approx. 75g	Approx. 165g	Approx. 267g

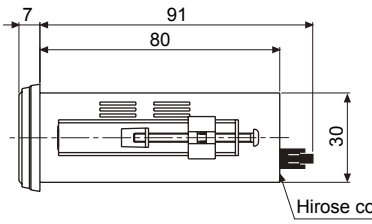
※The max. CLOCK is when the duty ratio is 1:1.
※Environment resistance is rated at no freezing or condensation.

▣ Dimensions

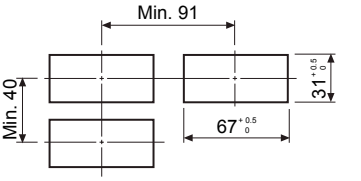
(unit: mm)

● D5Y-M

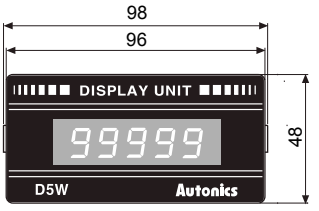


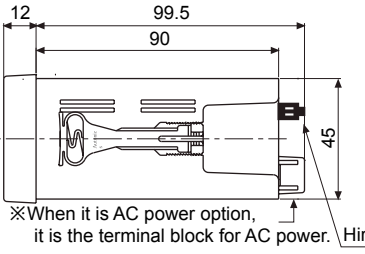


● Panel cut-out

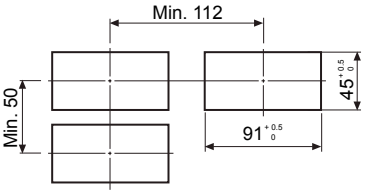


● D5W-M/D5W-MX





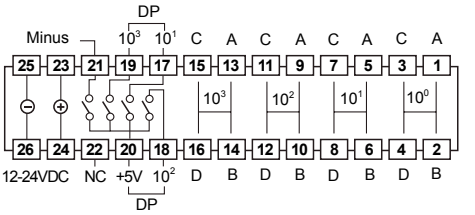
● Panel cut-out



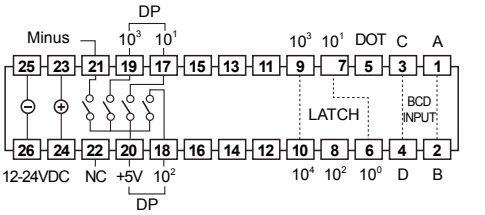
※Hirose connector pin header model : HIF3BA-26PA-2.54DS
※Hirose connector socket is not included with this unit.
Contact hirose connector vendors for socket and cable.
[Socket : HIF3BA-26D-2.54R]
※"△" mark indicates pin No.1 of hirose connector.

▣ Connections

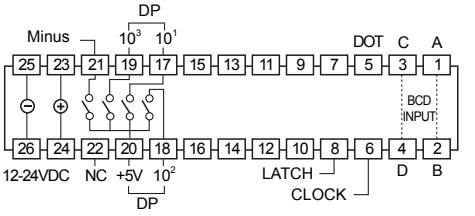
● Static parallel input



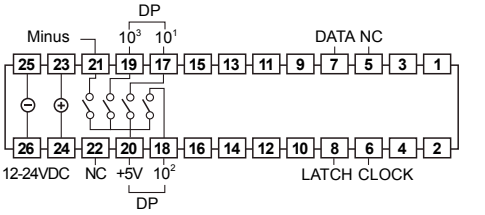
● Dynamic parallel input



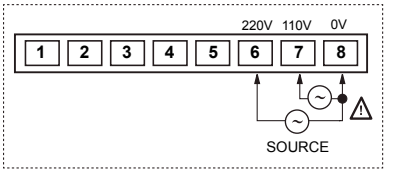
● 4/5Bit serial input



● Serial input



● Power terminal for AC power option of D5W series

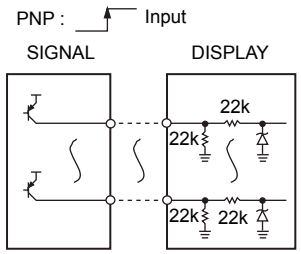


※Above terminal connection diagrams's number set by pin no.1 of hirose connector. Please note that "△" mark indicates pin no.1 of hirose connector.

※In case of Static parallel input, 5digit cannot be used because of external terminal
※To display 5 digit in Dynamic parallel, 4/5 bit serial, serial input, display range is 0 to 99999 and it cannot display minus sign. Therefore, the applied signal to the external minus sign input terminal(pin no.21) is ignored.
※Regardless of input logic, connect external DP terminal(pin no.17, 18, 19) or external minus sign input terminal(pin no.21) to +5V(pin no.20) and it displays decimal point and minus sign.

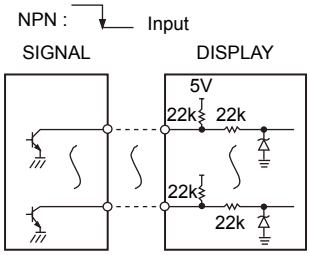
▣ Input circuit

● Positive logic(PNP) input



※Input level
- High: 5-24VDC
- Low: 0-1.2VDC

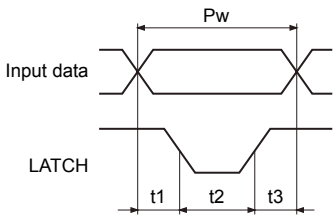
● Negative logic(NPN) input



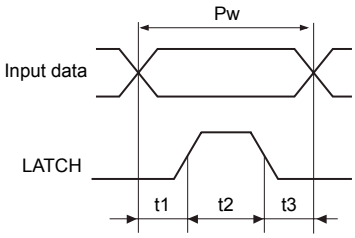
▣ Input timing

◎ Parallel input

● Positive logic(PNP) input



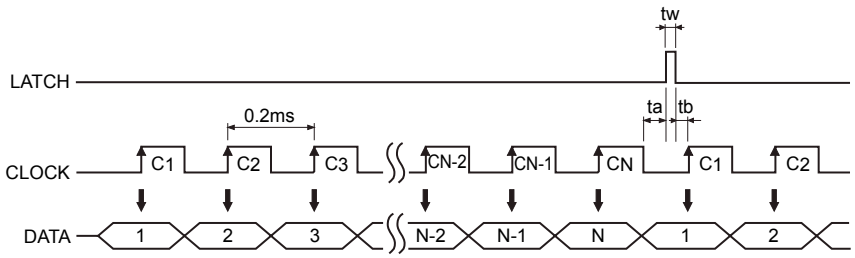
● Negative logic(NPN) input



Pw=t1+t2+t3
- Pw : Min. 0.2ms
- t1 : Min. 0.05ms → Data latch
- t2 : Min. 0.1ms → Data move
- t3 : Min. 0.05ms → Data latch

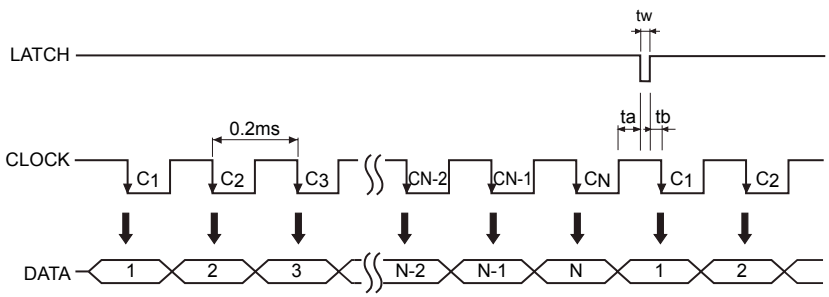
◎ Serial input

● Positive logic(PNP) input: CLOCK max. 5kHz



- ta: Min. 0.05ms
- tw: Min. 0.02ms
- tb: Min.0.03m

● Negative logic(NPN) input: CLOCK max. 5kHz



- ta: Min. 0.05ms
- tw: Min. 0.02ms
- tb: Min. 0.03ms

▣ 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": Either high or low level can be input.

▣ How to select decimal point

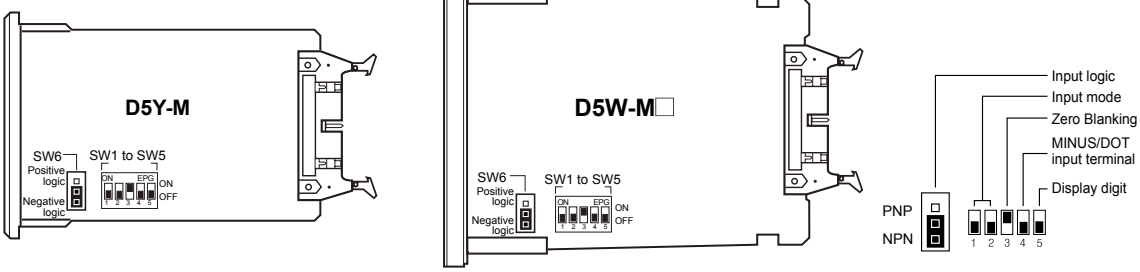
● DOT and minus sign input is not serial input [SW4 = OFF]

Terminal 17-20 : 8888.8
18-20 : 888.88
19-20 : 88.888
21-20 : -8888
OPEN : 88888

● DOT and minus sign input is serial input [SW4 = ON]

① When it is Dynamic parallel input and 4/5 bit input, it connects with no.5 pin. (Refer to time chart for 4digit)
② When it is serial input, 1 bit of serial data should have DOT and minus sign and the DATA is input. (Refer to time chart for 4digit)

▣ Inner selection switch



● Input mode

SW1 SW2 ON OFF ON OFF	Static parallel input
SW1 SW2 ON OFF ON OFF	Dynamic parallel input
SW1 SW2 ON OFF ON OFF	4/5 Bit serial input
SW1 SW2 ON OFF ON OFF	Serial input

● Zero blanking function

SW3	ON OFF	Using zero blanking function
	ON OFF	Non-using zero blanking function

※Zero blanking 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 : 10
- Zero blanking function is not applied : 0010

● Minus signal/DOT(Decimal point) input terminal

SW4	ON OFF	Using DOT terminal(pin no. 5)
	ON OFF	Using external DP(pin no. 17, 18, 19, 20) terminal and minus(pin no. 21) terminal

● Display digit

SW5	ON OFF	5digit (0 to 99999)
	ON OFF	4digit (-9999 to 9999)

※In case of Static parallel input, 5digit cannot be used because of external terminal.

● Input logic

SW6	PNP NPN	Positive(PNP) input
	PNP NPN	Negative(NPN) input

※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 input signal

SW7	ON	Reverse latch signal to set logic in SW6
	OFF	Correspond latch signal to set logic in SW6

※BCD output and latch signal of low speed serial output, which are optional of Autonics pulse meter (MP5Y/W Series) and panel meter (MT4Y/W Series) is output 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.

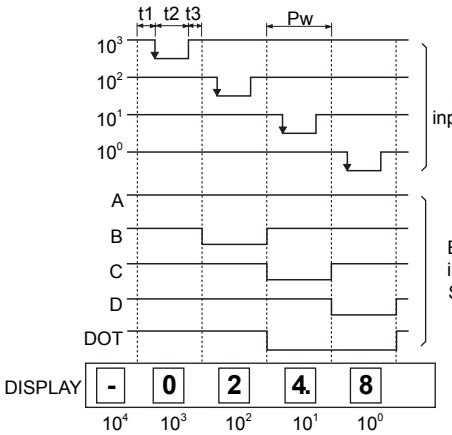
◎ Factory default

Selection switch	Factory default	Selection switch	Factory default
SW1	OFF	SW5	OFF
SW2	OFF	SW6	Negative logic
SW3	ON	SW7	OFF
SW4	OFF		

▣ Time chart(4digit)

◎ Dynamic parallel input

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

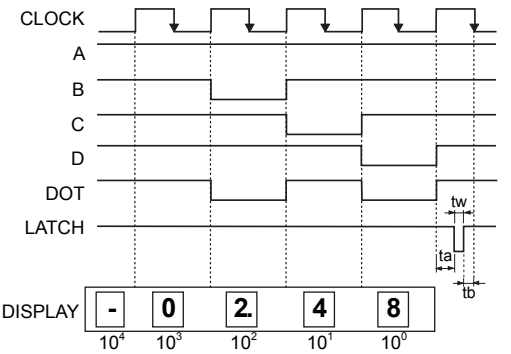


Pw = Min. 0.2ms
t1 = Min. 0.05ms
t2 = Min. 0.10ms
t3 = Min. 0.05ms

※The waveform is for negative logic input(NPN).
In case of positive logic(PNP), it will be reversed.
※For 4 digit, external 10^4 LATCH input terminal is not available.
※If DOT data is inputted on 10^0 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 black function. If using zero blank function, the "0" on 10^3 position is not displayed.
(Inner selection switch SW3 → ON)

◎ 4/5 Bit serial input

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

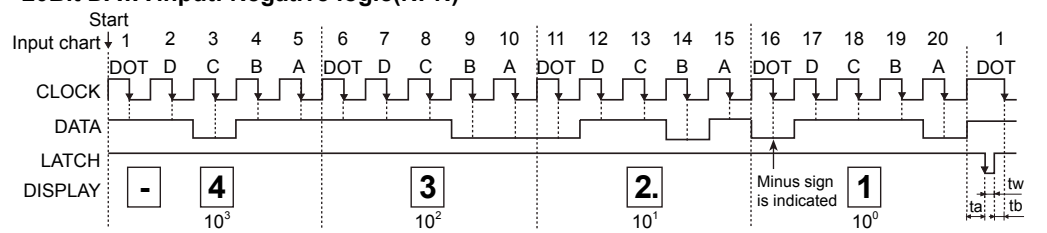


※The waveform is for negative logic input(NPN).
In case of positive logic(PNP), it will be reversed.
※If dot data is inputted on 10^0 position, it displayed "—" signal.
(Inner selection switch SW4 → ON)
※Concerning decimal point and "—" signal, it can be displayed using outer DP and minus terminal not 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 10^3 position is not displayed.(Inner selection switch SW3 → ON)

ta = Min. 0.05ms
tw = Min. 0.02ms
tb = Min. 0.03ms

◎ Serial input

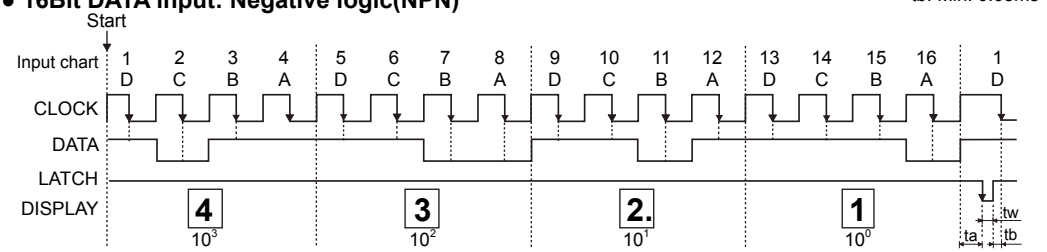
• 20Bit DATA input: Negative logic(NPN)



※The waveform is for negative logic input(NPN) . In case of positive logic(PNP), it will be reversed.
※When DOT signal data(16th) is input on 10^0 position, minus sign is indicated.

ta: Min. 0.05ms
tw: Min. 0.02ms
tb: Min. 0.03ms

• 16Bit DATA input: Negative logic(NPN)

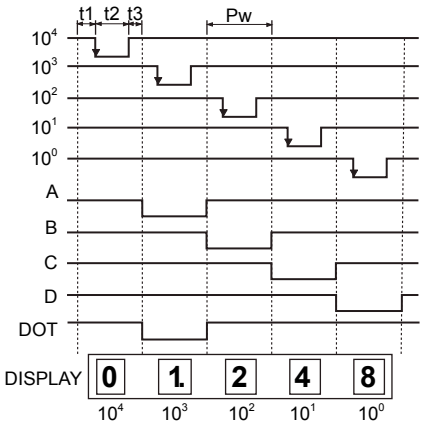


※The waveform is for negative logic input(NPN) . In case of positive logic(PNP), it will be reversed.
※DATA is fixed when CLOCK is changed from high to low and held when LATCH is changed from high to low.
※DATA hold term is before next LATCH is changed from high to low.

▣ Time chart(5digit)

◎ Dynamic parallel input

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

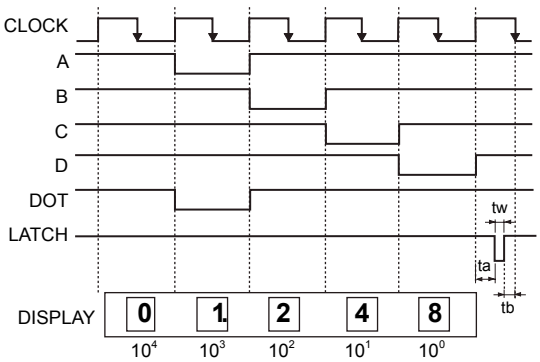


Pw = t1+t2+t3
- Pw = Min. 0.2ms
- t1 = Min. 0.05ms
- t2 = Min. 0.10ms
- t3 = Min. 0.05ms

※The waveform is for negative logic input(NPN) . In case of positive logic(PNP), 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)

◎ 4/5 Bit serial input

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

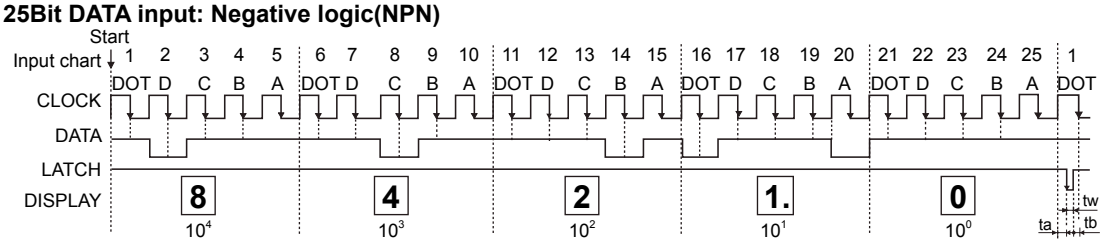


※The waveform is for negative logic input(NPN) . In case of positive logic(PNP), it will be reversed.
※It is impossible to display the "—" at 5digit line.
※The left application of display indicates non-using zero blank function, the "0" on 10^4 position is not displayed.
(Inner selection switch SW3 →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

- ta = Min. 0.05ms
- tw = Min. 0.02ms
- tb = Min. 0.03ms

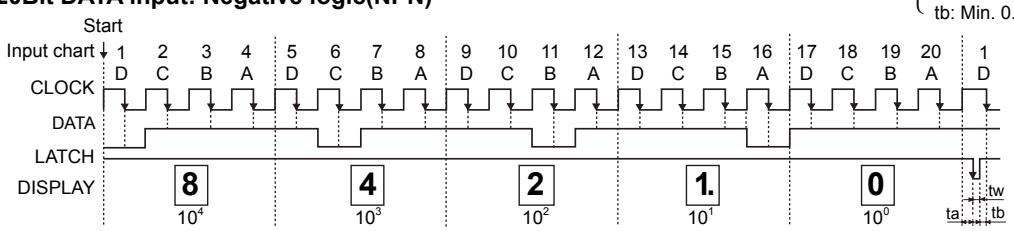
◎ Serial input

● 25Bit DATA input: Negative logic(NPN)



- ta: Min. 0.05ms
- tw: Min. 0.02ms
- tb: Min. 0.03ms

● 20Bit DATA input: Negative logic(NPN)



※The waveform is for negative logic input(NPN) . In case of positive logic(PNP), it will be reversed.
※Minus sign cannot be indicated in 5digit type. [The input of DOT signal on 100 position and MINUS terminal(Pin No. 21) is ignored.]
※DATA is fixed when CLOCK is changed from high to low and held when LATCH is changed from high to low.
※DATA hold term is before next LATCH is changed from high to low.

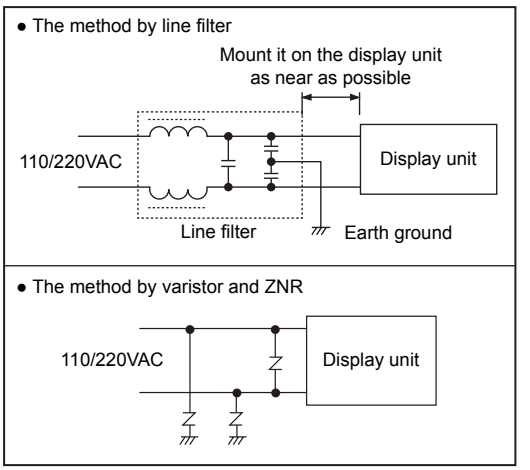
▣ Proper usage

- Storage

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

- Noise

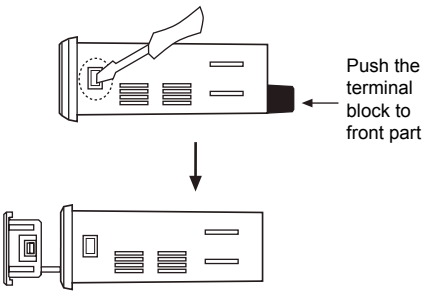
In case of the product(D5W-MX) using AC power, inflow of noise through a power line is a major circuit built-in small product. Therefore, use an absorbing circuit such as outer line filter and varistor when abnormal voltage occurs in the same line by power relay, magnet S/W, using a high-frequency machine, high voltage of spark of lightning stroke.



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

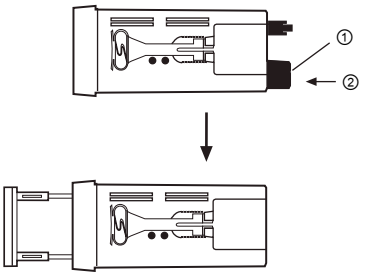
▣ Case detachment

● 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 to detach the case.

※Be careful in order not to be wounded.
※**Turn OFF the power** before detaching the case.