D5Y/D5W SERIES

This model is upgraded from D5Y, D5W

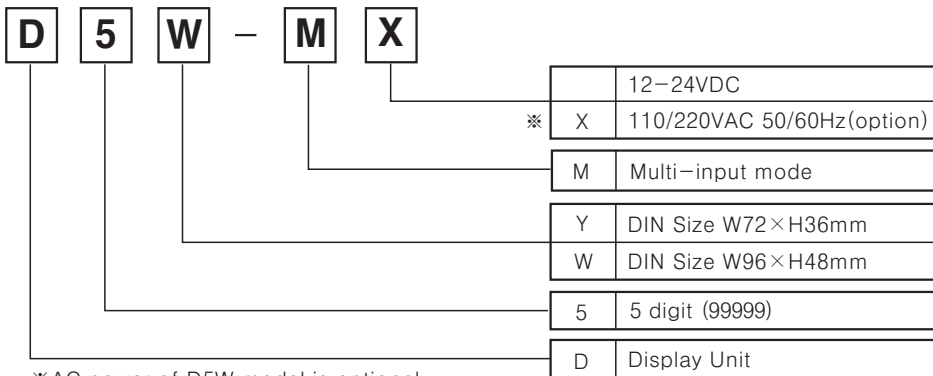### ▣Features

- ●Various input specification
  - : STATIC input, DYNAMIC input, 4/5 BIT SERIAL input, 16/20/25 BIT SERIAL Input type
- ●Decimal point, "−" symbol display type selection function
  - : Display type and external DP by SERIAL input
    Display type by terminal and Minus terminal
- ●Positive / Negative logic input selection function
- ●Display digit selection function
  - : 4Digit(−9999~9999), 5Digit(0~99999)
- ●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

		12−24VDC
※ X	110/220VAC 50/60Hz(option)
M	Multi−input mode
Y	DIN Size W72×H36mm
W	DIN Size W96×H48mm
5	5 digit (99999)
D	Display Unit

※AC power of D5W model is optional.

▣Specifications

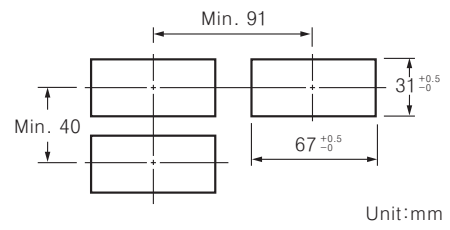| Model		D5Y-M	D5W-M	D5W-MX
Power supply		12−24VDC	12−24VDC	110/220VAC 50/60Hz(option)
Allowable operation voltage		90 ~ 110% of rating voltage		
Power consumption		1.1W		0.8VA
Display method		7Segment LED Display		
Display digit		4digit(or $4\frac{1}{2}$ digit include symbol bit), 5digit		
Max. clock speed		100Hz ~ 5kHz(Except STATIC input type)		
Input logic		Positive logic(PNP), Negative logic(NPN)		
Input mode		BCD Code : STATIC, DYNAMIC, SERIAL(4/5/16/20/25 BIT)방식		
Zero blanking function		ON('0' No display), OFF('0' display)		
Input level		High : 5V−24VDC, Low : 0−2VDC		
Insulation resistance		Min. 100MΩ(at 500VDC)		
Dielectric strength		2000VAC 50/60Hz for 1 minute		
Noise strength		The square wave noise(pulse width:1μs) by the noise simulator		
Vibration	Mechanical	0.75mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 1 hour		
	Malfunction	0.5mm amplitude at frequency of 10 ~ 55Hz in each of X, Y, Z directions for 10 minutes		
Shock	Mechanical	300m/s² (Approx. 30G) in X, Y, Z directions for 3 times		
	Malfunction	100m/s² (Approx. 10G) in X, Y, Z directions for 3 times		
Ambient temperature		−10 ~ 50℃(at non−freezing status)		
Storage temperature		−25 ~ 65℃(at non−freezing status)		
Ambient humidity		35~85%RH		
Weight		Approx. 75g	Approx. 165g	Approx. 267g

Display unit Indication type only

▣Dimensions

●D5Y-M

85
72

DYSPLAY **Autonics**
-9999
D5Y

36

98
7 | 80 | 11
30

Hirose
connector

●Panel cut-out

Min. 91
$31^{+0.5}_{-0}$
Min. 40
$67^{+0.5}_{-0}$

Unit:mm

●D5W-M

98
96

⫿⫿⫿⫿⫿ **DISPLAY UNIT** ⫿⫿⫿⫿⫿
99999
D5W **Autonics**

48

11.6
12 | 90 | 9.6
45
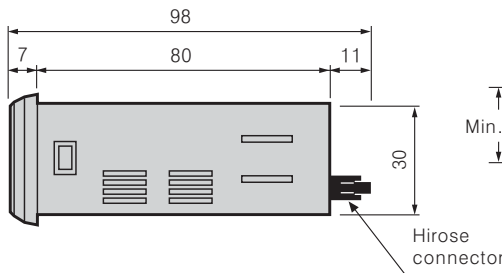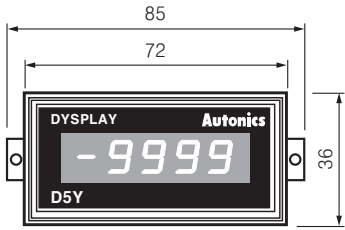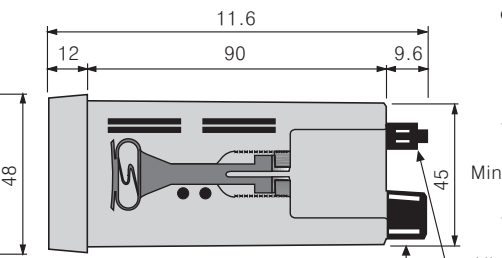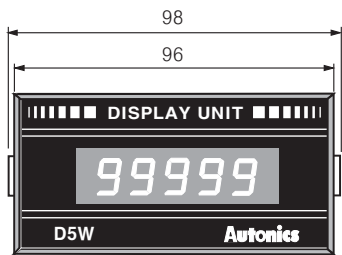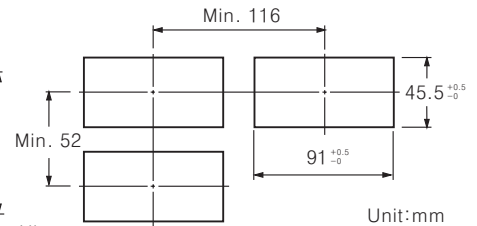
※When it is AC power option, there
is terminal block on product.

Hirose
connector

●Panel cut-out

Min. 116
$45.5^{+0.5}_{-0}$
Min. 52
$91^{+0.5}_{-0}$

Unit:mm
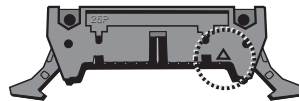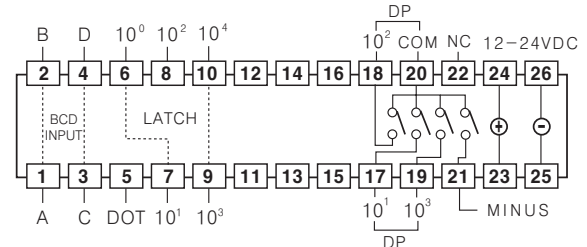
●Hirose Connector Model :
HIF3BA-26PA-2.54DS
●The position of triangular
signal indicates pin number1
in Hirose connector.

▣Connections

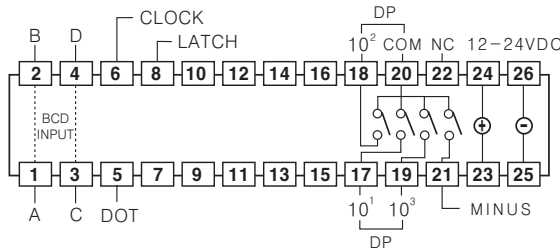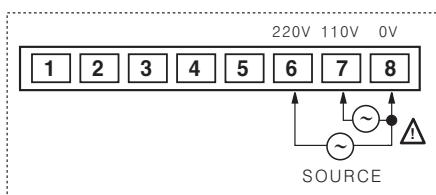### ●STATIC INPUT

B D B D B D B D DP 10^2 COM NC 12-24VDC
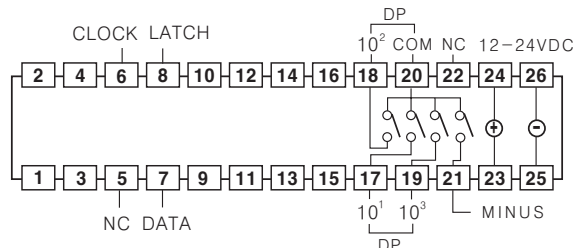2 4 6 8 10 12 14 16 18 20 22 24 26
10^0 10^1 10^2 10^3
⊕ ⊖
1 3 5 7 9 11 13 15 17 19 21 23 25
A C A C A C A C 10^1 10^3 MINUS
DP

●DYNAMIC INPUT

B D 10^0 10^2 10^4 DP 10^2 COM NC 12-24VDC
2 4 6 8 10 12 14 16 18 20 22 24 26
BCD INPUT LATCH
⊕ ⊖
1 3 5 7 9 11 13 15 17 19 21 23 25
A C DOT 10^1 10^3 10^1 10^3 MINUS
DP

●4/5BIT SERIAL INPUT

B D CLOCK LATCH DP 10^2 COM NC 12-24VDC
2 4 6 8 10 12 14 16 18 20 22 24 26
BCD INPUT
⊕ ⊖
1 3 5 7 9 11 13 15 17 19 21 23 25
A C DOT 10^1 10^3 MINUS
DP

●SERIAL INPUT

CLOCK LATCH DP 10^2 COM NC 12-24VDC
2 4 6 8 10 12 14 16 18 20 22 24 26
⊕ ⊖
1 3 5 7 9 11 13 15 17 19 21 23 25
NC DATA 10^1 10^3 MINUS
DP

220V 110V 0V
1 2 3 4 5 6 7 8
～ ～ ⚠
SOURCE

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

※In case of static input, 5digits cannot be used because of outer
terminal.
※"−" signal cannot be indicated in 5digits type because the display
range is from 0 ~ 99999. Therefore, the input of dot signal on 10°
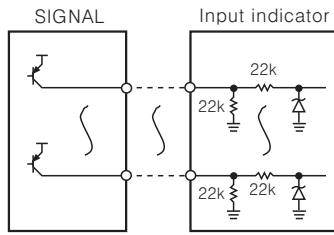position and Minus terminal (Pin No. 21) is ignored.
※The input of outer DP(Pin No. 17, 18, 19) and Minus signal terminal
(Pin No. 21) is displayed when connecting COM(Pin No. 20)
regardless input logic.
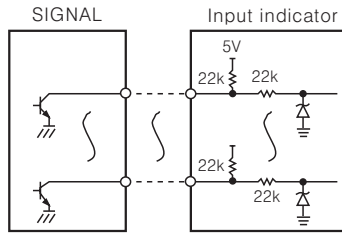
D5Y/D5W SERIES

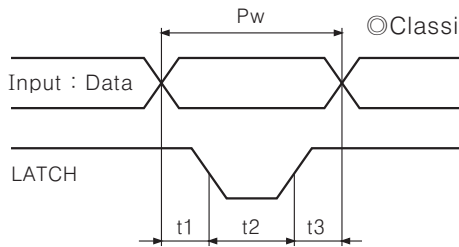## ▣ Input mode and function
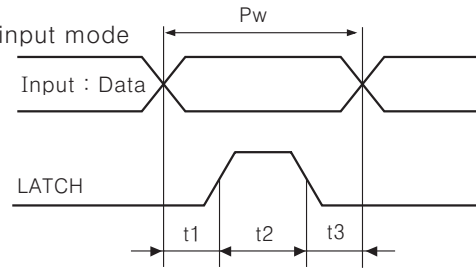
● Input signal

PNP : ⌐ Input

SIGNAL Input indicator

22k
22k
22k 22k

● Positive logic

PNP : ¬ Input

SIGNAL Input indicator

5V
22k 22k
22k
22k

▣ Input timing

◎ Parallel input

● Positive(PNP) logic

Pw

Input : Data

LATCH

t1 t2 t3

● Negative(NPN) logic

Pw

Input : Data

LATCH

t1 t2 t3

◎ Classification of input mode

$Pw = t1 + t2 + t3$

$\begin{cases} Pw : 0.2ms[Min.] \\ t1 : 0.05ms[Min.] \rightarrow Data\ latch(Latch) \\ t2 : 0.1ms[Min.] \rightarrow Data\ shift \\ t3 : 0.05ms[Min.] \rightarrow Data\ latch(Latch) \end{cases}$

◎ Serial input

● Positive(PNP) logic: Clock max. 5kHz

*ta *tb

LATCH

*tw

0.2ms

CLOCK C1 C2 C3   CN−2 CN−1 CN C1 C2

DATA 1 2 3   N−2 N−1 N 1 2
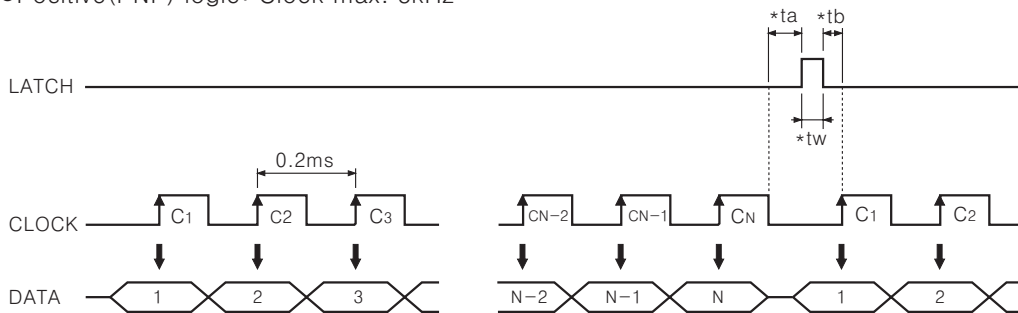
● Negative(NPN) input : Clock max. 5kHz
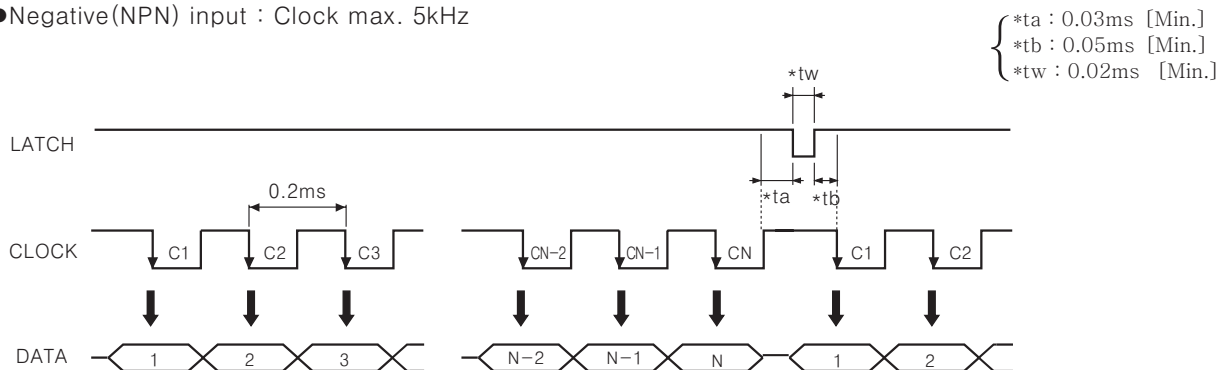
$\begin{cases} *ta : 0.03ms\ [Min.] \\ *tb : 0.05ms\ [Min.] \\ *tw : 0.02ms\ [Min.] \end{cases}$

*tw

LATCH

*ta *tb

0.2ms

CLOCK C1 C2 C3   CN−2 CN−1 CN C1 C2

DATA 1 2 3   N−2 N−1 N 1 2

▣ **Input data chart**

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

※ Input level : Hight → 5−24VDC, Low → 0−2VDC
※ "X" : Both Hight or Low level can be input.

D5Y/D5W SERIES

▣ Inner switch

D5Y-M

D5W-M

● Input mode

SW1 ON/OFF ■	SW2 ON/OFF ■	STATIC input
SW1 ON/OFF ■	SW2 ON/OFF ■	DYNAMIC input
SW1 ON/OFF ■	SW2 ON/OFF ■	4/5 BIT SERIAL input
SW1 ON/OFF ■	SW2 ON/OFF ■	SERIAL input

● Zero Blank function

SW3	ON ■ / OFF	Using Zero Blank function
	ON / OFF ■	Non-using function

※ Zero blanking method ?
 : It is to remove "0" indication, which has no meaning.
Ex1) When indication value is "10" in 4 digit LED
 • Zero blanking function is applied : ` 10`
 • Zero blanking function is not applied : `0010`

● Minus signal/DOT(Decimal point) input port

SW4	ON ■ / OFF	Using DOT terminal(Pin No. 5)
	ON / OFF ■	Using outter DP(Pin No. 17, 18, 19, 20) terminal and Minus(Pin No. 21) terminal

● Display digit

SW5	ON ■ / OFF	5digit (0~99999)
	ON / OFF ■	4digit (−9999~9999)

※ In case of static input, 5digits cannot be used because of outer terminal.

● Input logic

SW6	Positive logic / Negative logic	Positive input(PNP input)
	Positive logic / Negative logic	Negative input(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

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 output of Pulse meter(MP5Y/W series) and multimeter(MT4Y/W series) is outputted to a 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 :	8888.8
18−20 :	888.88
19−20 :	88.888
21−20 :	-8888
O P E N :	88888

● Dot and symbol(−) input is serial input [SW4=ON]

① When it is Dynamic mode and 4/5 Bit serial mode, 5 will be input.

② When it is serial input mode, 1 bit of serial data is used for Dot and symbol. (See Time chart)

Display unit Indication type only

■Time chart(4digit)

◎Serial input(Serial connection)

● 20 Bit data(Negative logic)
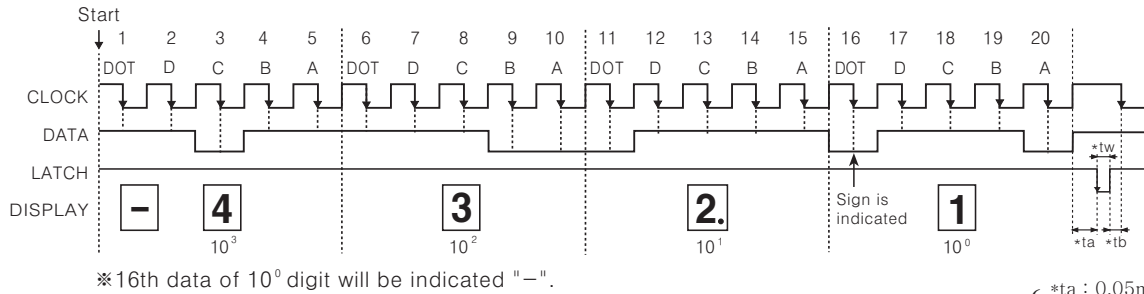
※16th data of 10^0 digit will be indicated "−".

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

● 16 Bit data(Negative logic)
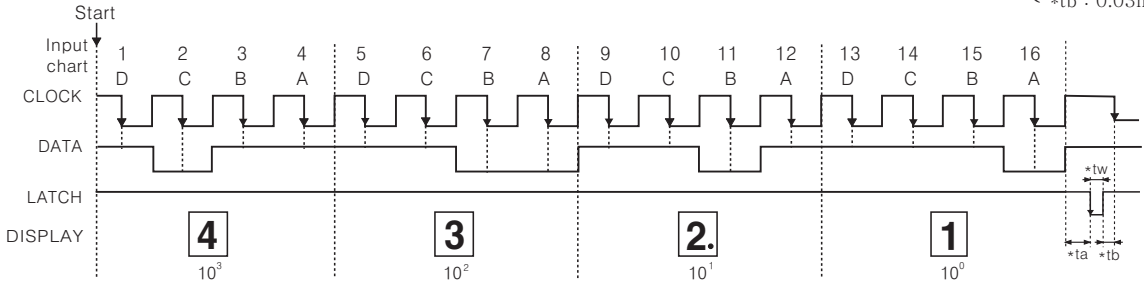
※Data will be fixed when clock is changed from high to low, and latch pulse is changed from high to low.
※Hold time is the next latch pulse is changed from high to low.

◎4/5 Bit Serial input

● 4Bit Serial input(Negtive logic)

※Concerning decimal point and "−" signal, it can be displayed using outer DP and Minus terminal.
※Above application shows that zero blank function is not used. If using zero blank function, "0" on 10^3 position will not be displayed.

● 5BIT Serial input(Negtive logic)
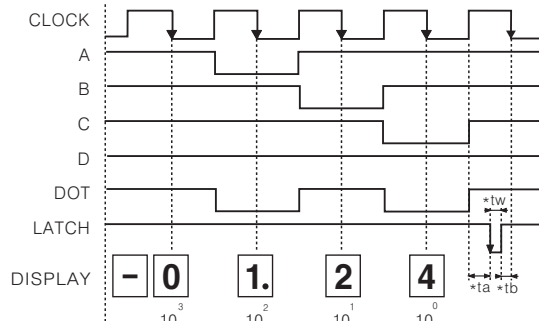
※When dot data is inputted on 10^0 position, it will display "−".
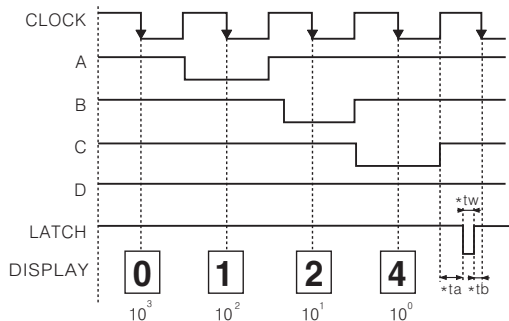
◎DYNAMIC input
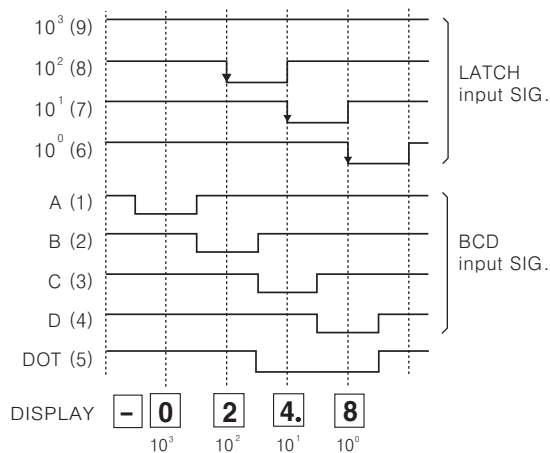
※Left figure shows the waveform of negative logic input. In case of positive logic, it will be reversed.
※If dot data is inputted on 10^0 position, it displays "−" signal.
※Concerning decimal point and "−" signal, it can be displayed using outer DP and Minus terminal not a serial input.
※Latch input 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 10^3 position is not displayed.
※The number in round brackets indicates connector pin number.

D5Y/D5W SERIES

▣ Time chart(4digit)

◎Serial input(Serial connection)

● 25 Bit data(Negative logic)

Start
Input chart

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| DOT | D | C | B | A | DOT | D | B | C | A | DOT | D | C | B | A | DOT | D | C | B | A | DOT | D | C | B | A |

CLOCK
DATA
LATCH
DISPLAY

8 10^4 4 10^3 2 10^2 $1.$ 10^1 0 10^0

*tw   *ta   *tb

● 20 Bit data(Negative logic)

● 16 Bit data(Negative logic)

$$\left\{ \begin{array}{l} *ta : 0.05ms \ [Min.] \\ *tw : 0.02ms \ [Min.] \\ *tb : 0.03ms \ [Min.] \end{array} \right.$$

Start
Input chart

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| D | C | B | A | D | C | B | A | D | C | B | A | D | C | B | A | D | C | B | A |

CLOCK
DATA
LATCH
DISPLAY

8 10^4 4 10^3 2 10^2 1 10^1 0 10^0

*tw   *ta   *tb

※ "−" 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

● 4Bit Serial input(Negative logic)

CLOCK
A
B
C
D
LATCH
DISPLAY

0 1 2 4 8 *tw *ta *tb

10^4 10^3 10^2 10^1 10^0

● 5BIT Serial input(Negative logic)

CLOCK
A
B
C
D
DOT
LATCH
DISPLAY

0 1 2 4 8 *tw *ta *tb

10^4 10^3 10^2 10^1 10^0

※ In case of 5digits, dot terminal(Pin No. 5) is used only for decimal point. (Minus signal cannot be used.)
※ Above application shows that zero blank function is not used. If using zero blank function, "0" on 10^4 position will not be displayed.

◎DYNAMIC input

10^4(10)
10^3 (9)
10^2 (8)
10^1 (7)
10^0 (6)

LATCH input SIG.

A (1)
B (2)
C (3)
D (4)
DOT (5)

BCD input SIG.

DISPLAY

0 $1.$ 2 4 8
10^4 10^3 10^2 10^1 10^0
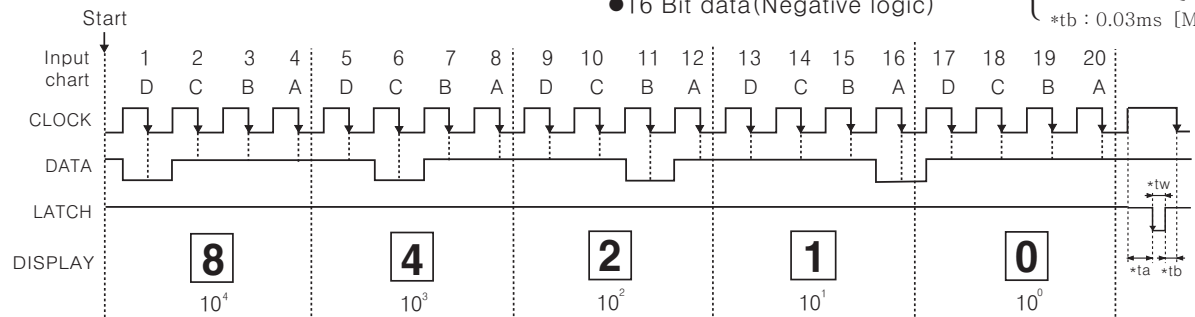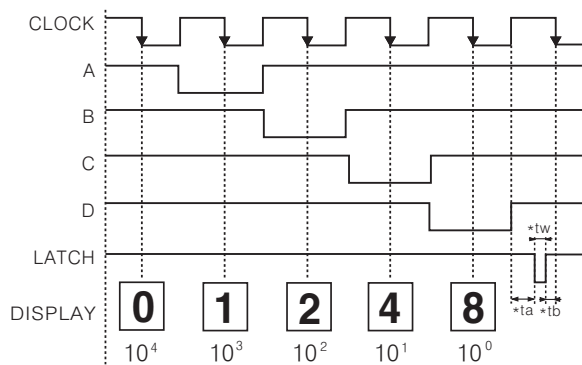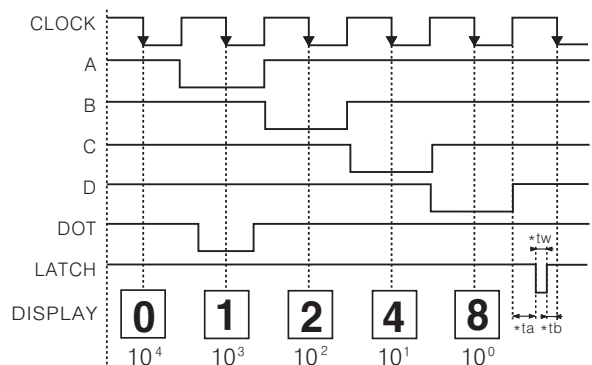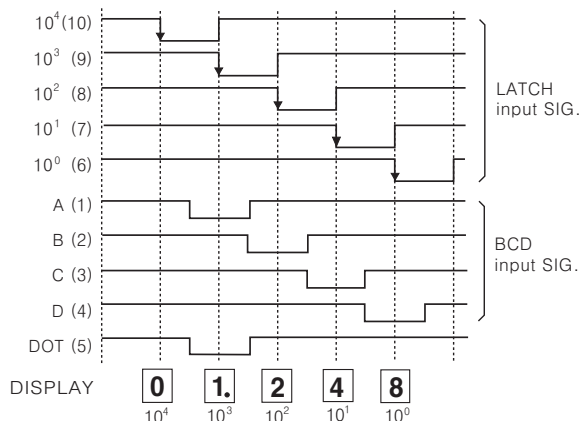
※ Left figure shows the waveform of negative logic input. In case of positive logic, it will be reversed.
※ In case of 5digits, dot terminal (Pin No. 5) is used only for decimal point. (Minus signal cannot be used.)
※ Latch input should be later than BCD input, otherwise, it will display the previous 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.
※ The number in round brackets indicates connector pin number.

Autonics

▣Proper usage

1. The way of custody
   Avoid direct ray of light when keeping long time, and keep it under −25~65℃, 35~85% of relative humidity.
2. Noise
   Concerning the product(D5W−MX type) using AC power, inflow of noise through a power line is a major problem. The 1st stage of power trans has a condenser preventing noise, but it is hard to make a perfect 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 machine, high voltage of spark or lightning stroke.
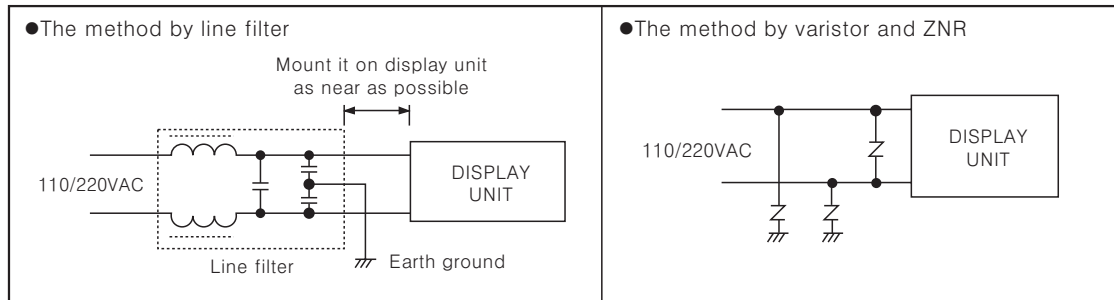
3. Input signal line should be short as much as possible.
   If the line is too long, it will affect noise.
4. If the time of input signal is overlapped, it may occur faint light.
5. Oil, soot or dust must not be flown into the product.
6. A decimal point and "−" signal can be displayed with outer DP terminal and Minus terminal when signal level is "High". (High level : 5V−24VDC)
7. Because hiroseconnector has both power line(12−24VDC) and DATA signal line, please connect the lines after checking connection figure.