

Panel Mount 5-digit Display Unit



D5Y / D5W Series PRODUCT MANUAL

For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

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, external DP terminal and Minus terminal
- Positive/Negative logic input selection function
- Display digit selection function
 - 4-digit (-9999 to 9999), 5-digit (0 to 99999)
- Zero blanking function selection function
- Selectable reversion function of latch signal

Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

⚠ Warning Failure to follow instructions may result in serious injury or death.

- 01. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**
Failure to follow this instruction may result in personal injury, economic loss or fire.
- 02. Do not use or store the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.**
Failure to follow this instruction may result in explosion or fire.
- 03. Install on a device panel to use.**
Failure to follow this instruction may result in fire.
- 04. Do not connect, repair, or inspect the unit while connected to a power source.**
Failure to follow this instruction may result in fire.
- 05. Check 'Unit Descriptions' before wiring.**
Failure to follow this instruction may result in fire.
- 06. Do not disassemble or modify the unit.**
Failure to follow this instruction may result in fire.

⚠ Caution Failure to follow instructions may result in injury or product damage.

- 01. When connecting the power input of D5W-MX, use AWG 24 (0.20 mm²) to AWG 15 (1.65 mm²) cable or over and tighten the terminal screw with a tightening torque of 0.98 to 1.18 N m.**
Failure to follow this instruction may result in fire or malfunction due to contact failure.
- 01. Use the unit within the rated specifications.**
Failure to follow this instruction may result in fire or product damage.
- 02. Use a dry cloth to clean the unit, and do not use water or organic solvent.**
Failure to follow this instruction may result in fire.
- 03. Keep the product away from metal chip, dust, and wire residue which flow into the unit.**
Failure to follow this instruction may result in fire or product damage.

Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- 12 - 24 VDC== model power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
- Keep away from high voltage lines or power lines to prevent inductive noise. In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.
Do not use near the equipment which generates strong magnetic force or high frequency noise.
- This unit may be used in the following environments.
 - Indoors (in the environment condition rated in 'Specifications')
 - Altitude max. 2,000 m
 - Pollution degree 2
 - Installation category II

Ordering Information

This is only for reference, the actual product does not support all combinations.
For selecting the specified model, follow the Autonics website.

D **1** **2** - **3** **4**

① Display digits

5: 5-digit

② Size

Y: DIN W 72 × H 36 mm

W: DIN W 96 × H 48 mm

③ Input method

M: Multi

④ Power supply

No mark: 12 - 24 VDC

X: 110 / 220 VAC 50 / 60 Hz (W size)

Product Components

- Product × 1
- Insturction manual × 1
- Bracket (for D5Y) × 2

Specifications

Model	D5Y-M	D5W-M	D5W-MX
Power supply	12 - 24 VDC≡		110 / 220 VAC～ 50 / 60 Hz
Permissible voltage range	90 to 110 % of rated voltage		
Current consumption	1.1 W		2 VA
Size (W×H)	DIN 72 × 36 mm	DIN 96 × 48 mm	
Display method	7-segment LED Display		
Display digit / display range	4-digit / -9999 to 9999 5-digit ⁽⁰¹⁾ / 0 to 99999		
Max. Clock ⁽⁰²⁾	100 Hz to 5 kHz		
Input level	High: 5 - 24 VDC≡, Low: 0 - 1.2 VDC≡		
Input logic	Positive logic (PNP), negative logic (NPN)		
Input method	Static, Dynamic, 4 / 5-bit serial, Serial (16 / 20 / 25-bit)		
Insulation resistance	100 MΩ (500 VDC≡ megger)		
Dielectric strength	Between the charging part and the case: 2,000 VAC～ 50 / 60 Hz for 1 min		
Noise immunity	±1 kV the square wave noise (pulse width: 1 μs) by the noise simulator		
Vibration	0.75 mm double amplitude at frequency of 10 to 55 Hz in each of X, Y, Z directions for 1 hour		
Vibration (malfunction)	0.5 mm double amplitude at frequency of 10 to 55 Hz in each of X, Y, Z directions for 10 min		
Shock	300 m / s ² (≈ 30 G) in X, Y, Z directions for 3 times		
Shock (malfunction)	100 m / s ² (≈ 10 G) in X, Y, Z directions for 3 times		
Ambient temperature	-10 to 50 °C, storage: -25 to 65 °C (no freezing or condensation)		
Ambient humidity	35 to 85 %RH, storage: 35 to 85 %RH (no freezing or condensation)		
Certification	ERC		
Weight	≈ 75 g	≈ 165 g	≈ 267 g

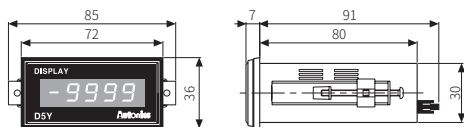
(01) Except for Static input method

(02) Max. Clock is for 50 : 50 (%) of duty ratio (ON, OFF ratio).

Dimensions

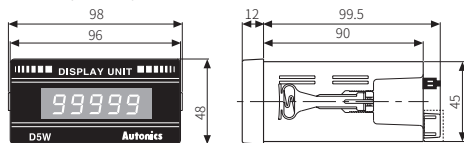
- Unit: mm, For the detailed drawings, follow the Autonics website.

■ D5Y

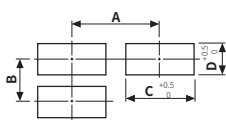


■ D5W

- Only for AC power model.



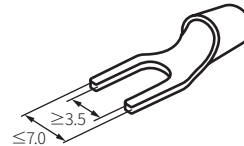
■ Panel cut-out



Model	A	B	C	D
D5Y	≥ 91	≥ 40	67	31
D5W	≥ 112	≥ 50	67	45.5

Cautions for Wiring

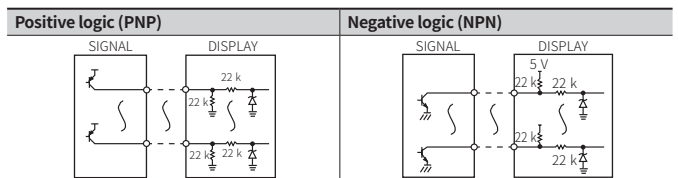
- Unit: mm, Use the shape below for the terminal.



- Contact the manufacturers for socket and cable.

Model		Manufacturer
Hirose connector	HIF3BA-26PA-2.54DS	Hirose Electric
Applied connector socket	HIF3BA-26D-2.54R	

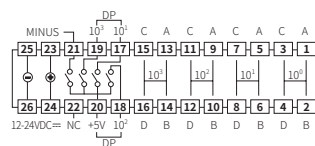
Input Circuit



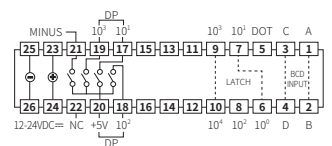
Connections

- The terminal number is based on the pin no. 1. "△" mark indicates pin no.1 of Hirose connector. Be sure to check it and use.
- The power terminal varies depending on the power supply model.

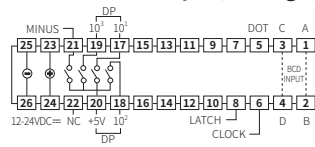
■ Static input (4-digit)



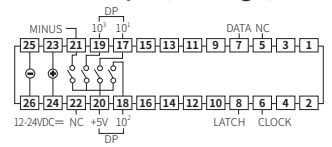
■ Dynamic input (4 / 5-digit)



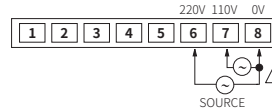
■ 4 / 5-bit serial input (4 / 5-digit)



■ Serial input (4 / 5-digit)



■ [AC power model] Power terminal



Cautions for Input

■ Serial input

- 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.
- The 5-digit cannot display the MINUS sign. The applied signal to the MINUS sign input terminal (pin no. 21) is ignored.

■ Parallel input

- LATCH input should be later than BCD input, otherwise, it will display the previous data.
- For 4-digit, the external 10⁴ LATCH input terminal is not available.
- The 5-digit cannot display the MINUS sign. The applied signal to the MINUS sign input terminal (pin no. 21) is ignored.

Input Data Chart

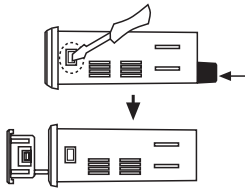
- Based on the negative logic (NPN).
- X: Either high or low level can be input.

Display	A	B	C	D	LATCH
0	H	H	H	H	L
1	L	H	H	H	L
2	H	L	H	H	L
3	L	L	H	H	L
4	H	H	L	H	L
5	L	H	L	H	L
6	H	L	L	H	L
7	L	L	L	H	L
8	H	H	H	L	L
9	L	H	H	L	L
Hold	X	X	X	X	X

Case Detachment

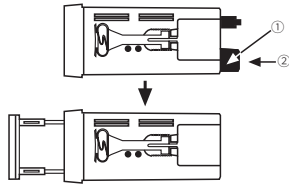
- Be sure to turn off all power of the product before detaching the case.
- Be careful in order not to be wounded when using the tools.

■ D5Y



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

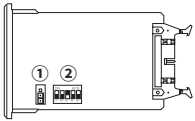
■ D5W



Press the both lock part toward the inside (direction ①), and push the terminal block to the direction of the front part (direction ②).

Internal Selection Switch

- If changing internal selection switch when power is ON, it does not operate as a changed mode. Be sure to turn OFF the power to change the mode. If the mode is changed when power is ON, turn OFF and then turn ON the power.



① Input logic selection switch (P1)

Positive logic		Positive logic (PNP) input
Negative logic		Negative logic (NPN) input

- Uncover the case to use the internal selection switch. See 'Case Detachment'.

01) When connecting Autronics panel meter MP5 Series, MT4 Series, the auxiliary output, BCD output or latch signal of low speed serial output, output as positive logic (PNP). Set SW6 of D5Y/W to NPN and soldering (ON) on the internal PCB solder plate before using it.

	ON	Input the reverse LATCH signal to set logic in P1.
	OFF	Input the same LATCH signal to set logic in P1.

② Function set switches

No.	Setting value (OFF ON)				Function	Default
	Static	Dynamic	4 / 5-bit serial	Serial		
SW1	OFF	ON	ON	OFF	Input mode	Static input (SW1 / 2: OFF)
SW2	OFF	OFF	ON	ON		
	Not used	Use				
SW3	OFF	ON			Zero Blanking	Use (ON)
	No. 5	No. 17 to 21				
SW4	OFF	ON			Use external terminal ; set decimal point	DOT (OFF)
	4-digit	5-digit ⁰¹⁾				
SW5	OFF	ON			Select display digit	4-digit (OFF)

01) Except for Static input.

Decimal Point Setting

■ DOT (SW4 = OFF)

- The inputs of DOT and MINUS sign are not Serial input.
- The decimal point varies depending on external connection terminal.

Connection	Display
Terminal 17-20	8888.8 10 ¹
Terminal 18-20	8888.8 10 ²
Terminal 19-20	8888.8 10 ³
Terminal 21-20	-8888
OPEN	8888.8

■ DP & MINUS (SW4 = ON)

- The inputs of DOT and MINUS sign are applying to 10⁰ position in Serial.
- Dynamic, 4 / 5-bit serial input: input terminal no. 5
- Serial input: 1 bit inputs DATA including DOT or MINUS sign.

Zero Blanking

- This function removes '0' that is no meaning when displaying the data.
- Set SW3 as ON.

■ Using Zero Blanking

- Display e.g.: 10

10 ¹	10 ²	10 ³	10 ⁴
		1	0

■ Not using Zero Blanking

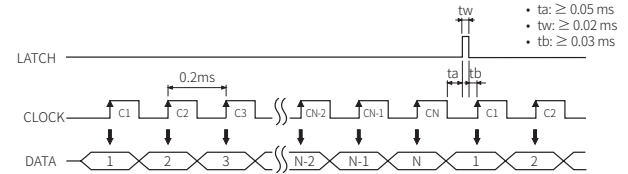
- Display e.g.: 10

10 ¹	10 ²	10 ³	10 ⁴
0	0	1	0

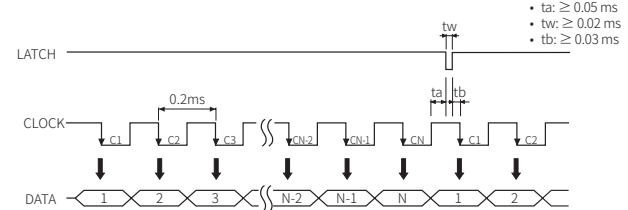
Input Timing Chart

■ Serial input

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

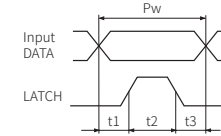


- Negative logic (NPN) input: CLOCK max. 5 kHz

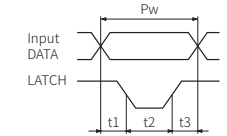


■ Parallel input

- Positive logic (PNP) input



- Negative logic (NPN) input



- Pw = t1 + t2 + t3
- Pw: ≥ 0.2 ms
- t1: ≥ 0.05 ms → DATA LATCH
- t2: ≥ 0.1 ms → DATA Shift
- t3: ≥ 0.05 ms → DATA LATCH

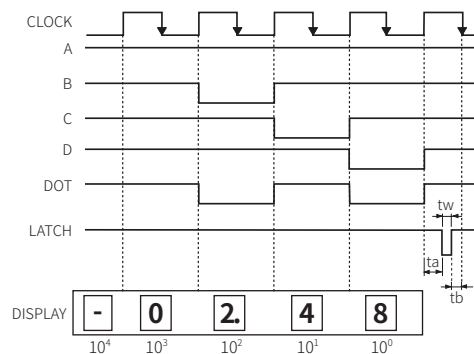
[Serial Input Model] 4-digit Data Input Method

- ta: ≥ 0.05 ms / tw: ≥ 0.02 ms / tb: ≥ 0.03 ms
- These are examples for negative logic (NPN).

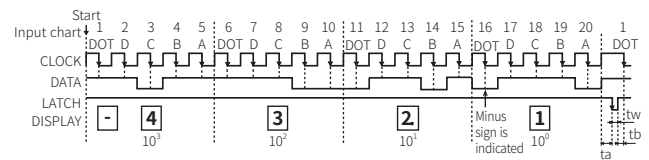
■ 4 / 5-bit Serial input

- Function set switches

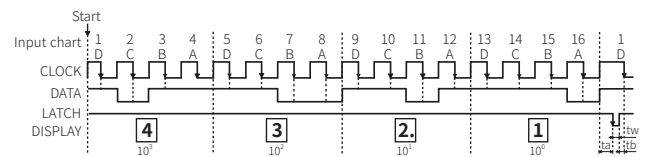
SW1	SW2	SW3	SW4	SW5
ON	ON	OFF	ON	OFF



■ 20-bit Serial input



■ 16-bit Serial input



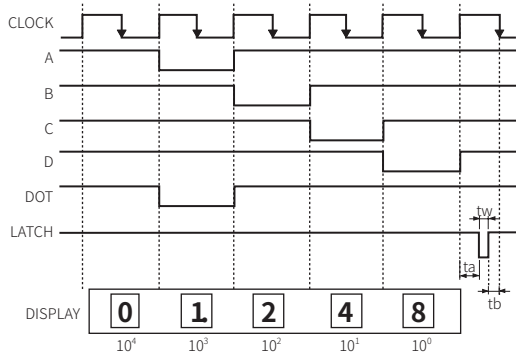
[Serial Input Model] 5-digit Data Input Method

- $t_a: \geq 0.05 \text{ ms}$ / $t_w: \geq 0.02 \text{ ms}$ / $t_b: \geq 0.03 \text{ ms}$
- These are examples for negative logic (NPN).

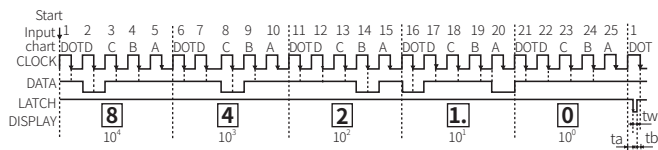
■ 4 / 5-bit Serial input

- Function set switches

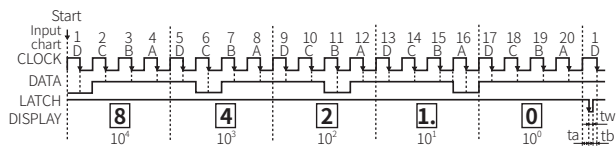
SW1	SW2	SW3	SW4	SW5
ON	ON	OFF	ON	ON



■ 25-bit Serial input



■ 20-bit Serial input



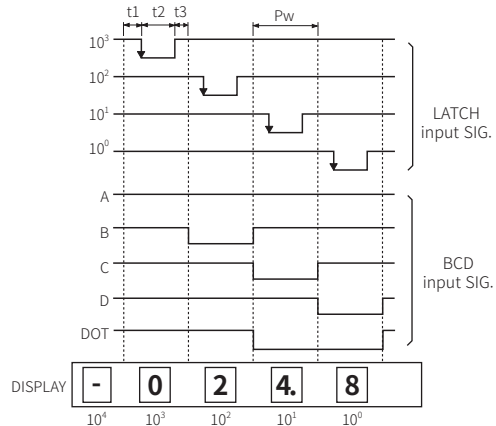
[Parallel Input Model] Data Input Method

- $P_w = t_1 + t_2 + t_3$
 $P_w: \geq 0.2 \text{ ms}$ / $t_1: \geq 0.05 \text{ ms}$ / $t_2: \geq 0.10 \text{ ms}$ / $t_3: \geq 0.05 \text{ ms}$
- These are examples for negative logic (NPN).

■ 4-digit Dynamic Parallel input

- Function set switches

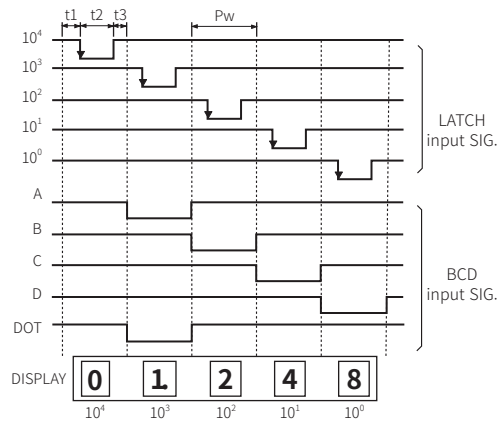
SW1	SW2	SW3	SW4	SW5
ON	OFF	OFF	ON	OFF



■ 5-digit Dynamic Parallel input

- Function set switches

SW1	SW2	SW3	SW4	SW5
ON	OFF	OFF	ON	ON



Example Programs

Download the various example programs from the Autonics website.