### **Autonics**

### **DISPLAY UNIT**

## **D5Y/D5W SERIES** INSTRUCTION MANUAL



Thank you very much for selecting Autonics products. For your safety, please read the following before using.

### ■ Safety Considerations

XPlease observe all safety considerations for safe and proper product operation to avoid hazards. XSafety considerations are categorized as follows.

**∆Warning** Failure to follow these instructions may result in serious injury or death.

▲Caution Failure to follow these instructions may result in personal injury or product damage. \*The symbols used on the product and instruction manual represent the following

symbol represents caution due to special circumstances in which hazards may occur

### **⚠** Warning

- 1. 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 fire, personal injury, or economic loss
- 2. Install on a device panel to use. Failure to follow this instruction may result in electric shock or fire.
- Do not connect, repair, or inspect the unit while connected to a power source.
   Failure to follow this instruction may result in electric shock or fire.
- 4. Check 'Connections' before wiring.
- Failure to follow this instruction may result in fire.

  5. Do not disassemble or modify the unit.
- Failure to follow this instruction may result in electric shock or fire

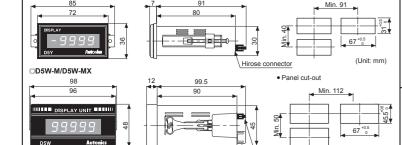
### **⚠** Caution

- When connecting the power input of D5W-MX, use AWG 24(0.20mm²) to AWG 15(1.65mm²) cable or over and tighten the terminal screw with a tightening torque of 0.98 to 1.18N·m.
   Failure to follow this instruction may result in fire or malfunction due to contact failure.

  2. Use the unit within the rated specifications.
- Failure to follow this instruction may result in fire or product damage
- Use dry cloth to clean the unit, and do not use water or organic solvent. Failure to follow this instruction may result in electric shock or fire.
- 4. Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present. Failure to follow this instruction may result in fire or explosion.
- Keep metal chip, dust, and wire residue from flowing into the unit.
   Failure to follow this instruction may result in fire or product damage.
- Model

Model	Display digit	Size	Input	Power supply		
D5Y-M	99999 (5 digit)	DIN W72×H36mm	Static, Dynamic, 4/5 Bit serial, Serial(16/20/25 Bit)	12-24VDC		
D5W-M		DINI WOCALI 140				
D5W-MX	(o digit)			110/220VAC 50/60Hz×1		
×1. AC power is only for D5W and it is ontional						

### Dimensions



When it is AC power option.

\*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.

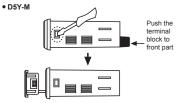


Push the lock part on the side to the direction ①

and then push the terminal block to the direction @

• D5Y-M

### ■ Case Detachment



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

×Be careful in order not to be wounded.

Please turn off the power before detaching the case.

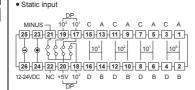
\*\*The above specifications are subject to change and some models may be discontinued without notice.

\*\*Be sure to follow cautions written in the instruction manual and the technical descriptions

### 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		1.1W		2VA		
Size		DIN W72×H36mm	DIN W96×H48mm			
Display method		7Segment LED Display				
Display digit		4 digit(or 4 ½ digit including sign bit), 5 digit				
Max. response CLOCK		100Hz to 5kHz(Except for Static input type)				
Input level		High: 5V-24VDC==, Low: 0-1.2VDC==				
Input logic		Positive logic (PNP), Negative logic (NPN)				
Input		Static, Dynamic, 4/5 Bit serial, Serial(16/20/25 Bit)				
Insulation resistance		100MΩ(at 500VDC megger)				
Dielectric strength		2000VAC 50/60Hz for 1 minute				
Noise resistance		±1kV the square wave noise(pulse width: 1μs) by the noise simulator				
\ (ib reties	Mechanical	0.75mm amplitude at frequency of 10 to 55Hz(for 1 min.) in each of X, Y, Z directions for 1 hour				
Vibration	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 X, Y, Z directions for 3 times				
	Malfunction	100m/s²(Approx. 10G) in X, Y, Z directions for 3 times				
Environ	Ambient temperature	-10 to 50°C, Storage: -25 to 65°C				
-ment Ambient humidity		35 to 85%RH, Storage: 35 to 85%RH				
Unit weight		Approx. 75g	Approx. 165g	Approx. 267g		
<u></u> <u></u> <u> </u> <u> </u> Environr	ment resistance is ra	ated at no freezing or conde	nsation.			

### Connections



• 4/5 Bit serial input 25 23 21 19 17 15 13 11 9 7 5 3 1 BCD 26 24 22 20 18 16 14 12 10 8 6 4 2 12-24VDC NC +5V 102

-25-23-21-19-17-15-13-11-9-7-5-3-1 26 24 22 20 18 16 14 12 10 8 6 4 2 LATCH D B 12-24VDC NC +5V 10<sup>2</sup> LATCH CLOCK

Dynamic input

12-24VDC NC +5V 10

Serial input

• Power terminal for AC power option of D5W series 1 2 3 4 5 6 7 8

SOURCE \*Use teminals of size specified below. a b Min. 3.5mm

%In case of static input, 5 digit cannot be used because of

-25-23-21-19-17-15-13-11-9-7-15-3-1

26 24 22 20 18 16 14 12 10 8 6 4 2

LATCH BCD

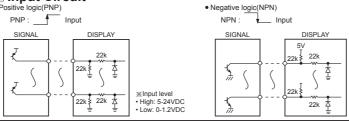
external terminal. %To display 5 digit in dynamic, 4/5 bit serial, serial input, display range is 0 to 99999 and it cannot display minus sign. Therefore, the applied signal to the external MINUS sign input terminal (pin no.21) is ignored.

sign input terminal (pin no.21) is ignored.

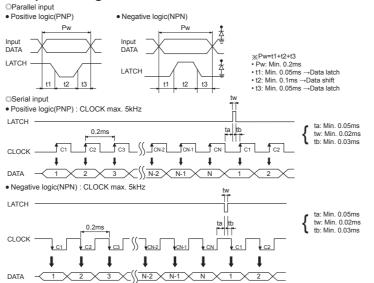
Kegardless of input logic, connect external DP terminal (pin no.17, 18, 19) or external MINUS sign input terminal (pin no.21) to +5V (pin no.20) and it displays decimal point and prince pine.

## ※Above terminal connection diagrams's number set by pin no.1 of hirose connector. Please note that "\(\triangle\)" mark indicates pin no.1 of hirose connector.

### ■ Input Circuit

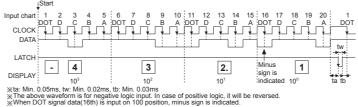


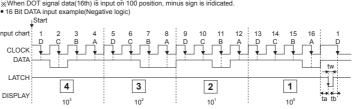
### Input Timing



### ■ Time Chart (4-digit)

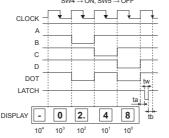
Serial input(Serial connection)





xta: Min. 0.05ms, tw: Min. 0.02ms, tb: Min. 0.03ms \*\*The above waveform is for negative logic input. In case of positive logic, 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.

### ODynamic input(Parallel connection 04/5 Bit serial input(Serial connection) nner selection switch: SW1 $\rightarrow$ ON, SW2 $\rightarrow$ ON, SW3 $\rightarrow$ OFF. Inner selection switch: SW1 $\rightarrow$ ON, SW2 $\rightarrow$ ON, SW3 $\rightarrow$ OFF. SW4 → ON, SW5 → OFF



kta: Min. 0.05ms, tw: Min. 0.02ms, tb: Min. 0.03ms The above waveform is for negative logic input. n case of positive logic, it will be reversed. 

terminal, it displays minus sign (Inner selection switch SW4 →ON)

(Initial selection Switch SWY——ON)
(Wising external DP terminal and MINUS terminal, it displays decimal point and minus sign. 
(Inner selection switch SW4—OFF)

«The above example of DISPLAY is for non-using zero blanking function. If using zero blanking function, the "0" of 10<sup>3</sup> position is not displayed. (Inner selection switch SW3 →ON)

10<sup>4</sup> 10<sup>3</sup> 10<sup>2</sup> 10<sup>1</sup> 10<sup>0</sup> \*Pw: Min 0.2ms t1: Min 0.05ms t2: Min 0.10ms t3: Min 0.05ms \*\*The above waveform is for negative logic input. In case of posi logic, it will be reversed.

\*\*For 4 digit, external 104 LATCH input terminal is not available.

0 2 4.

t1 t2 t3 Pw

LATCH

input SIG

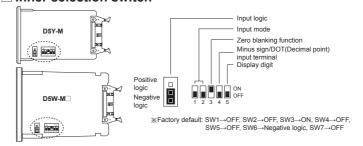
input SIG

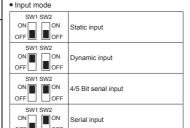
If DOT siganl is inputted on 100 position by external DOT terminal, it displays minus sign.(Inner selection switch SW4 →ON) x/Lising external DP terminal and MINLIS terminal, it displays

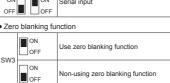
XUSING EXERTING DETERMINED AND MINUS TERMINED, IL OSPANS OECOME
 ACTION THAT AND MINUS TERMINED AND THE MINUS TERMINED AND THE MINUS TERMINED AND THE MINUS TERMINED AND THE MINUS AND THE MINUS THE M

function. If using zero blanking function, the "0" of 103 position is not displayed. (Inner selection switch SW3 —ON)

## Inner selection switch





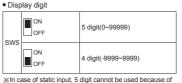


×Zero blanking function It is to remove "0" indication which is no meaning EX)When data value is "10"(4 digit)

Zero blanking function is applied:

Minus sign/DOT(Decimal point) input terminal

CWA	OFF	Using DOT terminal(pin no. 5)
3004	ON	Using external DP(pin no. 17, 18, 19, 20) terminal and minus(pin no. 21) terminal



external terminal



it does not operate as a changed mode. If the mode is changed when power is ON please turn OFF and their turn ON the power

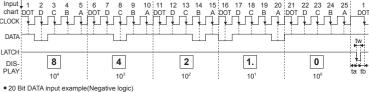
### LATCH input signal

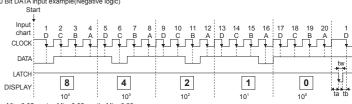


positive logic(PNP). If connecting D5Y/W, use it after setting SW6 to NPN and soldering(ON) the semi-contact(SW7) of inner PCB

### ■ Time Chart (5-digit)

Serial input(Serial connection)
 25 Bit DATA input example(Negative logic)





\* ta: Min. 0.05ms, tw: Min. 0.02ms, tb: Min. 0.03ms

The above waveform is for negative logic input. In case of positive logic, it will be reversed

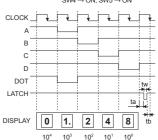
Minus sign cannot be indicated in 5 digit type. [The input of DOT signal on 100 position and MINUS terminal(pin no. 21)

is ignition.)

&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.

### 04/5 Bit serial input(Serial connection) Inner selection switch: SW1 $\rightarrow$ ON, SW2 $\rightarrow$ ON, SW3 $\rightarrow$ OFF, SW4 $\rightarrow$ ON, SW5 $\rightarrow$ ON



The above waveform is for negative logic input. In case of positive logic, it will be reversed. Minus sign cannot be indicated in 5 digit type.

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

The above example of DISPLAY is for non-using zero blanking function. If using zero blanking function, the "0" of 10<sup>4</sup> position is not displayed. (Inner selection switch SW3 →ON)

# input SIG

ODynamic input(Parallel connection)

Inner selection switch: SW1  $\rightarrow$  ON, SW2  $\rightarrow$  OFF, SW3  $\rightarrow$  OFF SW4  $\rightarrow$  ON, SW5  $\rightarrow$  ON

input SIG

DISPLAY 0 1. 2 4 8 10<sup>4</sup> 10<sup>3</sup> 10<sup>2</sup> 10<sup>1</sup> 10<sup>0</sup> 10<sup>0</sup> %Pw: Min. 0.2ms, t1: Min. 0.05ms, t2: Min. 0.10ms, t3: Min. 0.05ms

The above waveform is for negative logic input. In case of positive logic, it will be reversed. ×Minus sign cannot be indicated in 5 digit type LATCH input should be later than BCD input, otherwise, it will

display the previous DATA.

(The above example of DISPLAY is for non-using zero blanking function. If using zero blanking function, the using zero blanking function, the "0" of 10° position is past displayed. not displayed. (Inner selection switch SW3 →ON)

### ■ Input DATA Chart

Negative logic(NPN) input

\*\*Above DATA chart is for negative logic (NPN). In case of positive logic (PNP), DATA input levels are reversed ※Input level: High →5-24VDC, Low →0-1.2VDC \*X": Either high or low level can be inpu

## Decimal Point

• DOT (decimal point) and minus sign input is not Serial input. [SW4 = OFF]

Terminal 17-20 : 8 8 8 8 8 18-20 : 8 8 8 8 8 19-20 :8 8.8 8 21-20 :- RRRR OPEN:88888

# DOT (decimal point) and minus sign input is Serial input.[SW4 = ON]

①When it is dynamic input and 4/5 bit input, it connects with no.5 pin.(Refer to time chart (4 digit).) @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 (4 digit).)

### Cautions during Use

. Follow instructions in 'Cautions during Use'.

Otherwise. It may cause unexpected accidents

2. 12-24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply device 8. 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')

②Altitude max. 2.000m

3Pollution degree 2 4 Installation category II

### Major Products

■ Photoelectric Sensors ■ Temperature Controllers ■ Fiber Optic Sensors ■ Temperature/Humidity Transducers ■ Door Sensors ■ SSRs/Power Controllers ■ Counters

Area Sensors Timers ■ Proximity Sensors
■ Pressure Sensors ■ Panel Meters

■ Tachometers/Pulse (Rate) Meters Rotary Encoders Display Units ■ Connector/Sockets ■ Senso
■ Switching Mode Power Supplies

## ■ Control Switches/Lamps/Buzzers

■ I/O Terminal Blocks & Cables

■ Stepper Motors/Drivers/Motion Controllers

Graphic/Logic Panels

■ Field Network Devices

■ Laser Marking System (Fiber, Co<sub>2</sub>, Nd:YAG)
■ Laser Welding/Cutting System

# **Autonics** Corporation

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