


7 Segment Display Unit large(W32×H57mm) and high bright LED

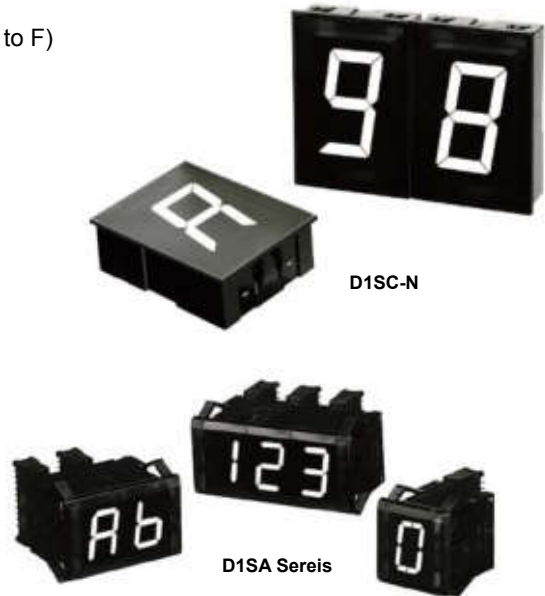
■ Features

- Selectable decimal(0 to 9) or hexadecimal(0 to 9, A to F) indication code
 Selectable positive or negative input logic
 Selectable serial or parallel data input method
- 7 Segment, red/green display (D1SA Series)
- Power source: 12-24VDC
- Wide range on signal input voltage level
 (Low: Max. 0-1.2VDC, High: 4.5-24VDC)
- Easy multi-stages connection (D1SA Series)
- Zero Blanking function

■ Applications

- Display for PLC
- Display for computer
- Various display

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



■ Specifications

| Model | D1SC-N | D1SA-RN | D1SA-GN ^{※1} |
|---------------------------------|--|--|------------------------------|
| Display method | 7 Segment LED display(red) | | 7 Segment LED display(green) |
| Power supply | 12-24VDC | | |
| Allowable voltage range | 90 to 110% of rated voltage | | |
| Current consumption | Max. 70mA | Max. 35mA | |
| Character size | W32 × H57mm | W11×H22mm | |
| Display character ^{※2} | • Decimal number : 0 to 9, decimal point • Hexadecimal number : 0 to 9, A to F, decimal point | | |
| Input | • Parallel : Parallel 4bit data, latch, zero blanking, decimal point • Serial : Serial 4bit or 5bit data, clock, zero blanking, latch, decimal point(for 4 bit input) | | |
| Input resistance | 12kΩ | 20kΩ | |
| Input level | High : 4.5-24VDC, Low : 0-1.2VDC | | |
| Max. response CLOCK | Max. 3kHz | | |
| Output | Data output (serial input), zero blanking output | | |
| Input logic | Selectable positive logic (PNP) or negative logic (NPN) (D1SC-N: by the function set switch, D1SA Series: by inner soldering) | | |
| Noise strength | ±300V the square wave noise (pulse width: 1us) by the noise simulator | | |
| Environment | Ambient temperature | 0 to 60°C, storage : -10 to 85°C | |
| | Ambient humidity | 35 to 85%RH, storage: 35 to 85%RH | |
| Accessory | Housing[5264-10], Terminal[5263(PBT)], Sub-PCB for multi-stage connection | Connector(CT-10S), Cap | |
| Unit weight | Approx. 100g | Approx. 22g(including right/left caps) | |

※1: It is option

※2: Only D1SC-N supports Minus displaying.

※The max. response CLOCK is when the duty ratio is 1:1.

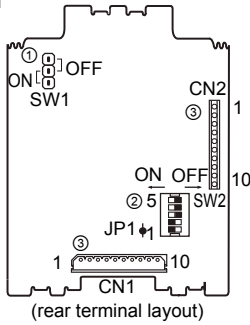
※Environment resistance is rated at no freezing or condensation.

- (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 mode power supply
- (Q) Stepper motor& Driver&Controller
- (R) Graphic/ Logic panel
- (S) Field network device
- (T) Software
- (U) Other

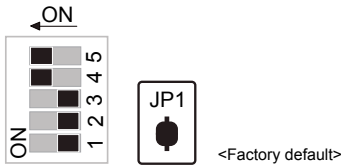
D1SC-N/D1SA Series

Terminal layout and function

D1SC-N



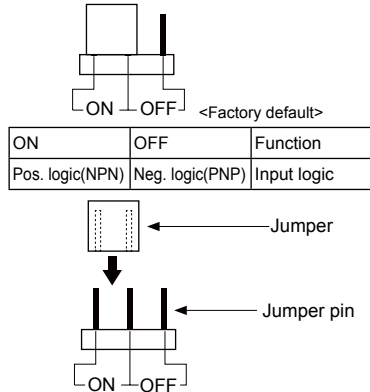
Function set switches(SW2, JP1)



| No. | ON | OFF | Function |
|-----|------------|-------------|----------------------------------|
| SW2 | 1 Decimal | Hexadecimal | Characters |
| | 2 Parallel | Serial | Input |
| | 3 4Bit | 5Bit | Serial input |
| | 4 Used | Not used | Serial data output ^{*1} |
| | 5 Used | Not used | Zero Blanking |
| JP1 | 7Segment | Minus | Minus |

*1: For Serial input, set this as ON.
For Parallel input, set this as OFF.

Function set jumper(SW1)



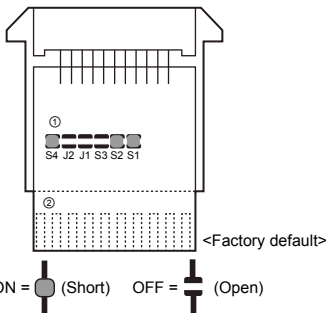
Input/Output terminals

| Terminal | Input | | Serial input | |
|----------|-------|----------------------|--------------|-------------------------|
| | Code | Function | Code | Function |
| 1 | V+ | 12-24VDC | VCC | 12-24VDC |
| 2 | D0 | Data input | N-C | Do not connect anything |
| 3 | D1 | | CK | Clock input |
| 4 | D2 | | DI | Data input |
| 5 | D3 | | DO | Data output |
| 6 | BI | Zero blanking input | BI | Zero blanking input |
| 7 | BO | Zero blanking output | BO | Zero blanking output |
| 8 | LE | Latch input | LE | Latch input |
| 9 | DP | Decimal point input | DP | Decimal point input |
| 10 | GND | 0V | GND | 0V |

*Terminals of CN1 and CN2 is corresponding 1:1.

D1SA Series

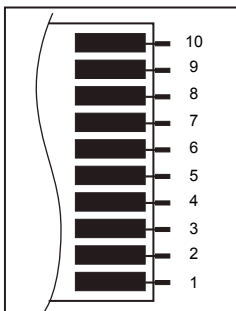
Function set switches



| No. | ON | OFF | Function |
|-----|-----------------|-----------------|----------------------------------|
| S1 | Decimal | Hexadecimal | Characters |
| S2 | Parallel | Serial | Input |
| S3 | 4Bit | 5Bit | Serial input |
| J1 | Used | Not used | Serial data output ^{*1} |
| J2 | Used | Not used | Zero Blanking |
| S4 | Neg. logic(NPN) | Pos. logic(PNP) | Input logic |

*1: For Serial input, set this as ON. For Parallel input, set this as OFF.

Input/Output terminals

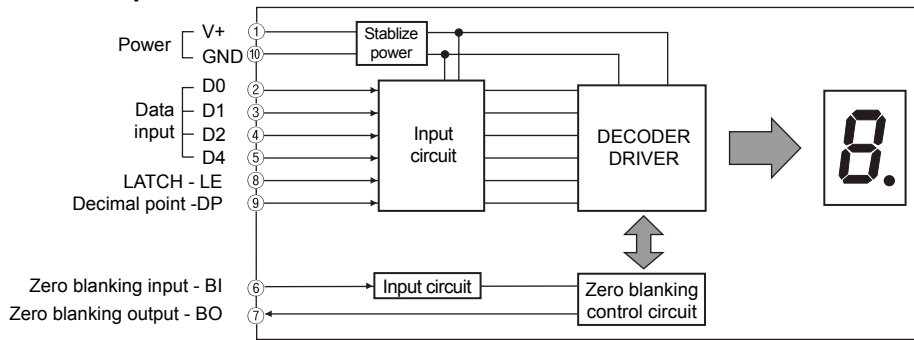


| Terminal | Input | | Serial input | |
|----------|-------|----------------------|--------------|-------------------------|
| | Code | Function | Code | Function |
| 1 | V+ | 12-24VDC | VCC | 12-24VDC |
| 2 | D0 | Data input | N-C | Do not connect anything |
| 3 | D1 | | CK | Clock input |
| 4 | D2 | | DI | Data input |
| 5 | D3 | | DO | Data output |
| 6 | BI | Zero Blanking input | BI | Zero Blanking input |
| 7 | BO | Zero Blanking output | BO | Zero Blanking output |
| 8 | LE | LATCH input | LE | LATCH input |
| 9 | DP | Point input | DP | Point input |
| 10 | GND | 0V | GND | 0V |

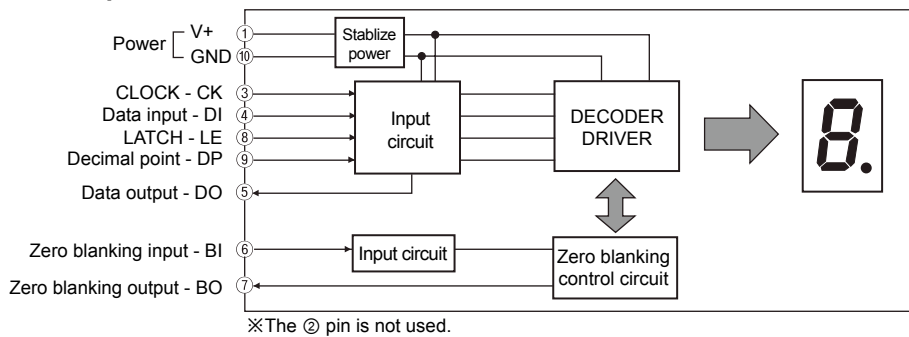
7 Segment Display Unit

Block diagram

Parallel input



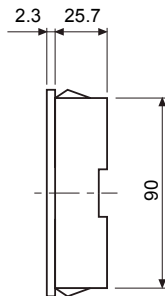
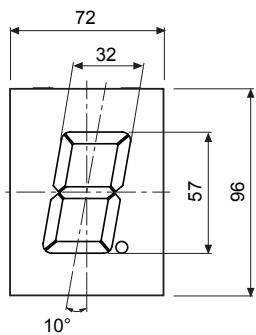
Serial input



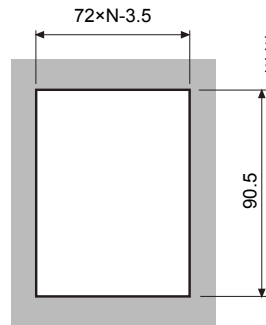
Dimensions

(unit: mm)

D1SC-N

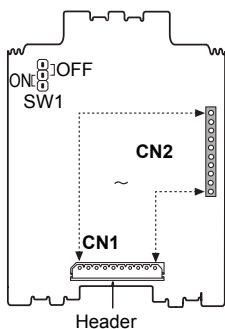


Panel cut-out



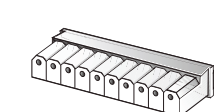
※N: Number of units
※Panel thickness: 2 to 4mm

Accessories

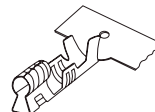


■ CN1 : Connector specification

- Connector maker: Korea Morex
- Housing: 5264-10
- Header: 5264-10A(Straight)
- Terminal: 5263(PBT)
- Using cable specification
- AWG28 to 22(cable diameter: Max. \varnothing 1.9mm)
- Shielding length of wire cover: 2.4 to 2.9mm



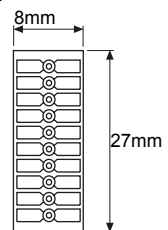
Housing[5264-10]



Terminal[5263(PBT)]

■ CN2 : Connector for multi-stage

- This connector must be used with connection PCB
- CN1 and CN2 must be connected as below drawing.

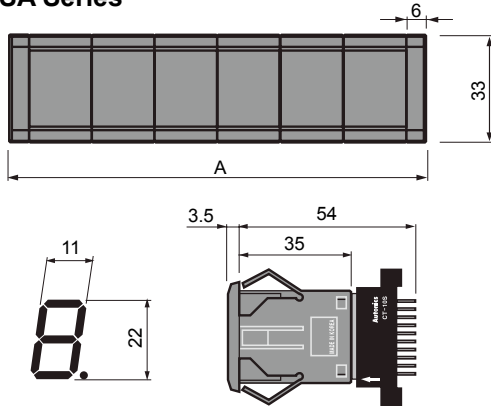


Multi-stage connector

| | |
|-----|----------------------------------|
| (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 |
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| (S) | Field network device |
| (T) | Software |
| (U) | Other |

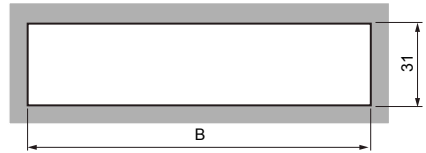
D1SC-N/D1SA Series

○ D1SA Series



● Panel cut-out

(unit: mm)

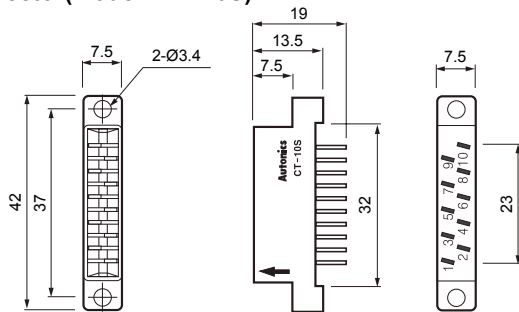


● Panel cut-out chart

| Digit(N) | A(20×N+12) | B(20×N+10) |
|----------|------------|------------|
| 1 | 32 | 30±0.1 |
| 2 | 52 | 50±0.1 |
| 3 | 72 | 70±0.1 |
| 4 | 92 | 90±0.1 |
| 5 | 112 | 110±0.1 |
| 6 | 132 | 130±0.1 |
| 7 | 152 | 150±0.1 |
| 8 | 172 | 170±0.1 |

○ Accessory

● Connector(Model : CT-10S)



○ Sold separately

● CAP



- D1SA-RN: DAR(L) -R (left/right 1 set)
 - D1SA-GN: DAR(L) -BL (left/right 1 set)
- ※Cap is optional (1set).

■ Input data chart

| Indication | | | | Negative input | | | | Positive input | | | |
|---------------------|---------|--------------|---------|----------------|---|---|---|----------------|---|---|---|
| Minus ^{※1} | | 7 Segment | | D | C | B | A | D | C | B | A |
| Hexa decimal | Decimal | Hexa decimal | Decimal | | | | | | | | |
| Blank | Blank | 0 | 0 | H | H | H | H | L | L | L | L |
| Blank | Blank | 1 | 1 | H | H | H | L | L | L | L | H |
| - | - | 2 | 2 | H | H | L | H | L | L | H | L |
| - | - | 3 | 3 | H | H | L | L | L | L | H | H |
| - | - | 4 | 4 | H | L | H | H | L | H | L | L |
| - | - | 5 | 5 | H | L | H | L | L | H | L | H |
| - | - | 6 | 6 | H | L | L | H | L | H | H | L |
| Blank | Blank | 7 | 7 | H | L | L | L | L | H | H | H |
| - | - | 8 | 8 | L | H | H | H | H | L | L | L |
| - | - | 9 | 9 | L | H | H | L | H | L | L | H |
| - | Blank | A | Blank | L | H | L | H | H | L | H | L |
| - | Blank | b | Blank | L | H | L | L | H | L | H | H |
| Blank | Blank | c | Blank | L | L | H | H | H | H | L | L |
| - | Blank | d | Blank | L | L | H | L | H | H | L | H |
| - | Blank | E | Blank | L | L | L | H | H | H | H | L |
| - | Blank | F | Blank | L | L | L | L | H | H | H | H |

※When BI terminal connect GND, "0" is displayed. When BI terminal is open, it is blank (not display)

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

※1: Only D1SC-N supports Minus display. Set the rear JP1 as OFF.

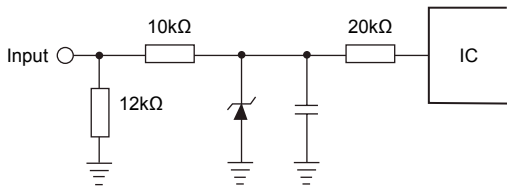
※Blank: If input signal as input DATA, it does not display.

7 Segment Display Unit

Input circuit

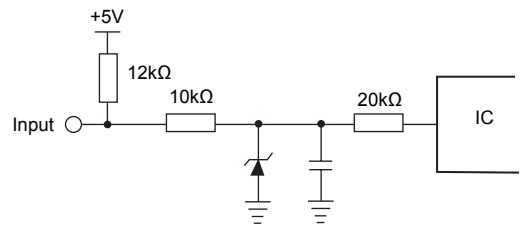
D1SC-N

Positive logic(PNP) input (SW1: OFF)



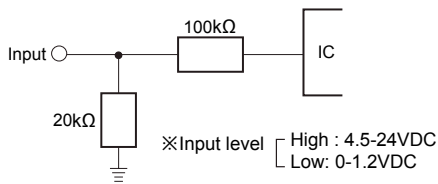
※Input level - High : 4.5-24VDC, Low: 0-1.2VDC

Negative logic(NPN) input (SW1: ON)



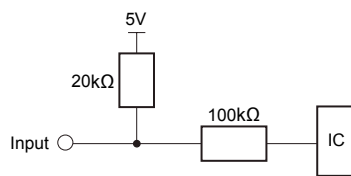
D1SA Series

Positive logic(PNP)input (SW1: OFF)



※Input level [High : 4.5-24VDC
Low: 0-1.2VDC

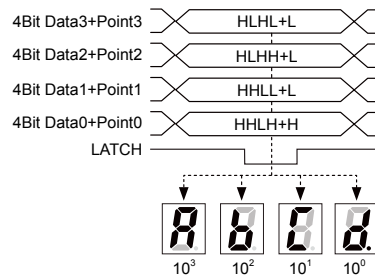
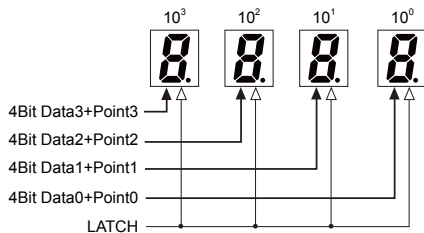
Negative logic(NPN) input (SW1: ON)



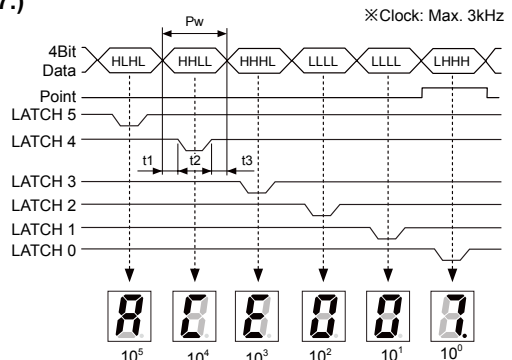
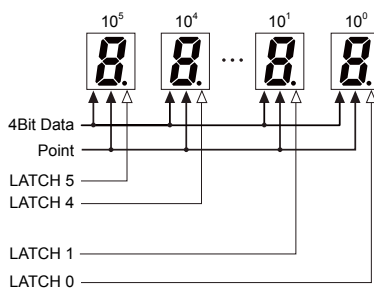
Data input method

Parallel input

4Bit Static Parallel input(ex: displays ABCD.)



4Bit Dynamic Parallel input(ex: displays ACE007.)



※Pw=t1+t2+t3
Pw: 0.33ms(Min.)
t1: 0.05ms(Min.) → Data LATCH
t2: 0.23ms(Min.) → Data move
t3: 0.05ms(Min.) → Data

| | |
|-----|----------------------------------|
| (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 |
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| (P) | Switching mode power supply |
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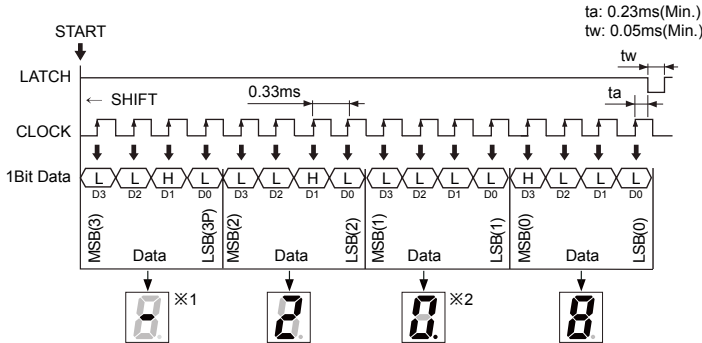
D1SC-N/D1SA Series

Serial input

6Bit Serial input(ex: displays -20.8)

※Clock max. 3kHz

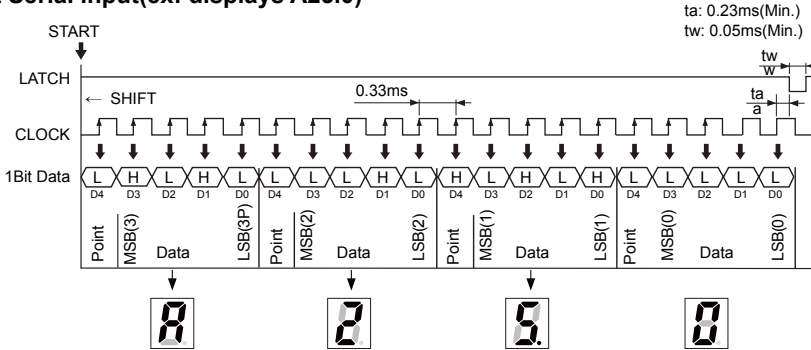
※In case of positive logic (PNP), hexadecimal number



※1: To display Minus, set the rear JP1 as OFF.

※2: In case of 4Bit Serial input, to display decimal point, connect DP of the rear input terminal to V+.
In case of negative logic(NPN), connect DP to GND.

5Bit Serial input(ex: displays A25.0)



Multi-stage connection method

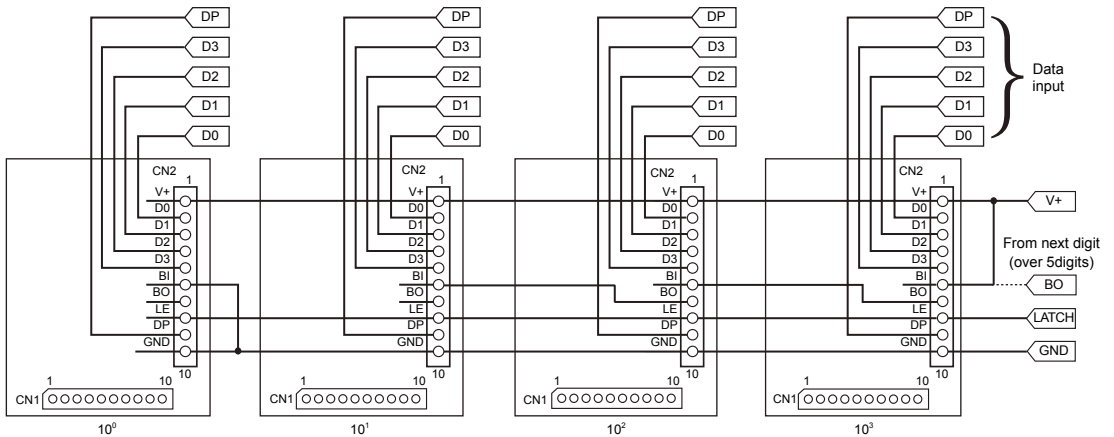
Parallel input : 4digit

※ The below connection is example of D1SC-N. Fro D1SA, connection is same but the order of pin is reverse.
(connector image(refer to N-14 page of the 9th catalogue)

※CN1, CN2 terminals of D1SC-N corresponds 1:1 and it is able to connect as CN1 depending on the need.

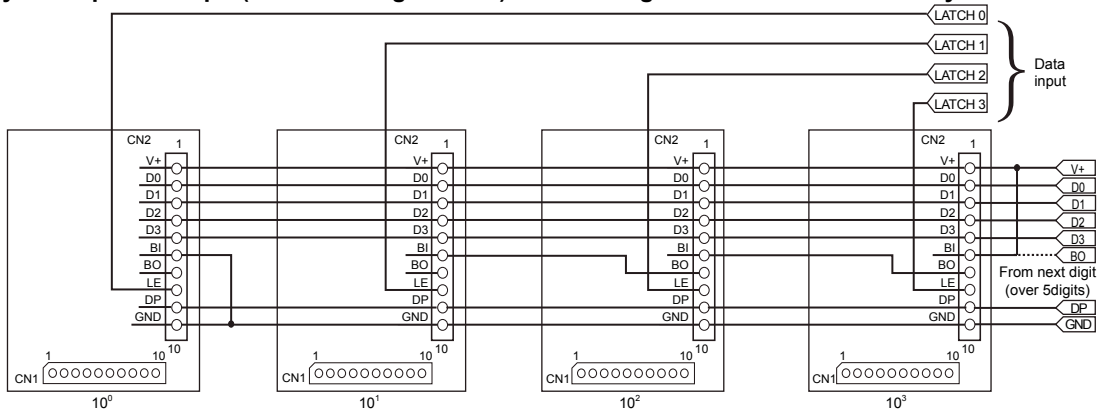
※When not using Zero Blanking, connect BI terminal to GND.

Static parallel input(Zero blanking method): These diagrams are to wire at rear layout of the unit.



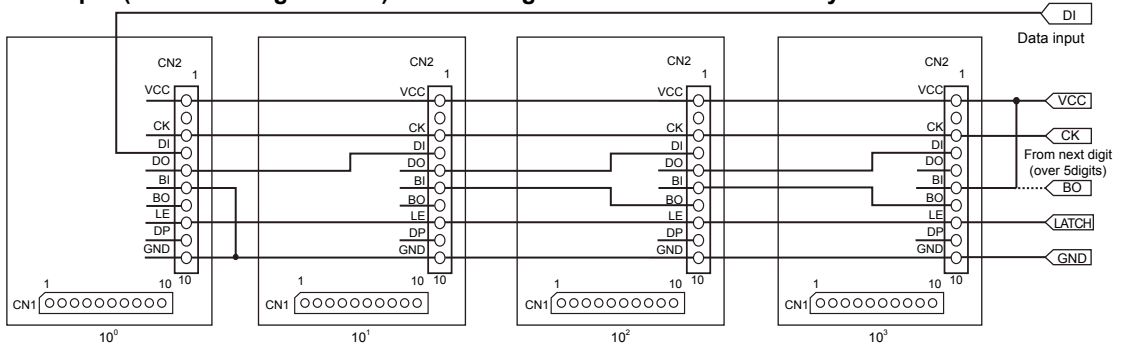
7 Segment Display Unit

• **Dynamic parallel input (Zero blanking method) :** These diagrams are to wire at rear layout of the unit.



◎ Serial input : 4digit

• **Serial input (Zero blanking method) :** These diagrams are to wire at rear layout of the unit.

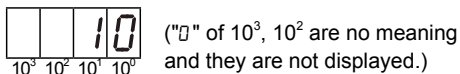


■ Zero blanking method?

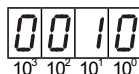
It is to remove "0" indication which is no meaning.

Ex1) When displaying 10

① Using Zero Blanking



② Not using Zero Blanking



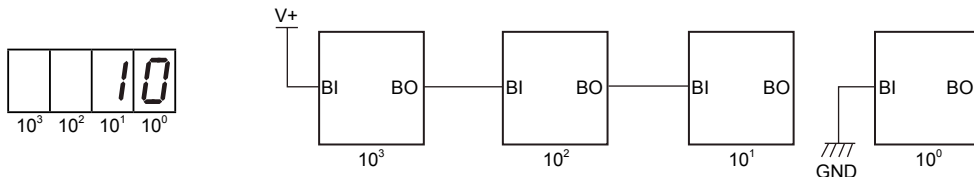
※If indication data is "101", meaningful tens place "0" will be displayed.

◎ Using Zero Blanking for multi-stage

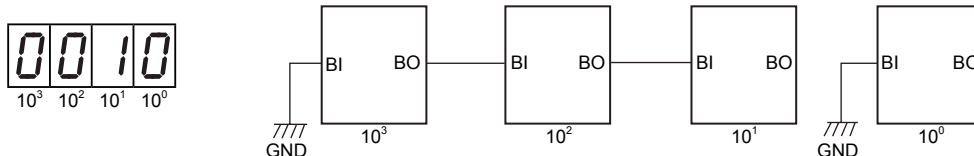
Set no.5 (Zero Blanking output) of the rear function set switch(SW2) as ON.

For 10(0) to display '0', set this as OFF.

1) Using Zero Blanking



2) Not using Zero Blanking

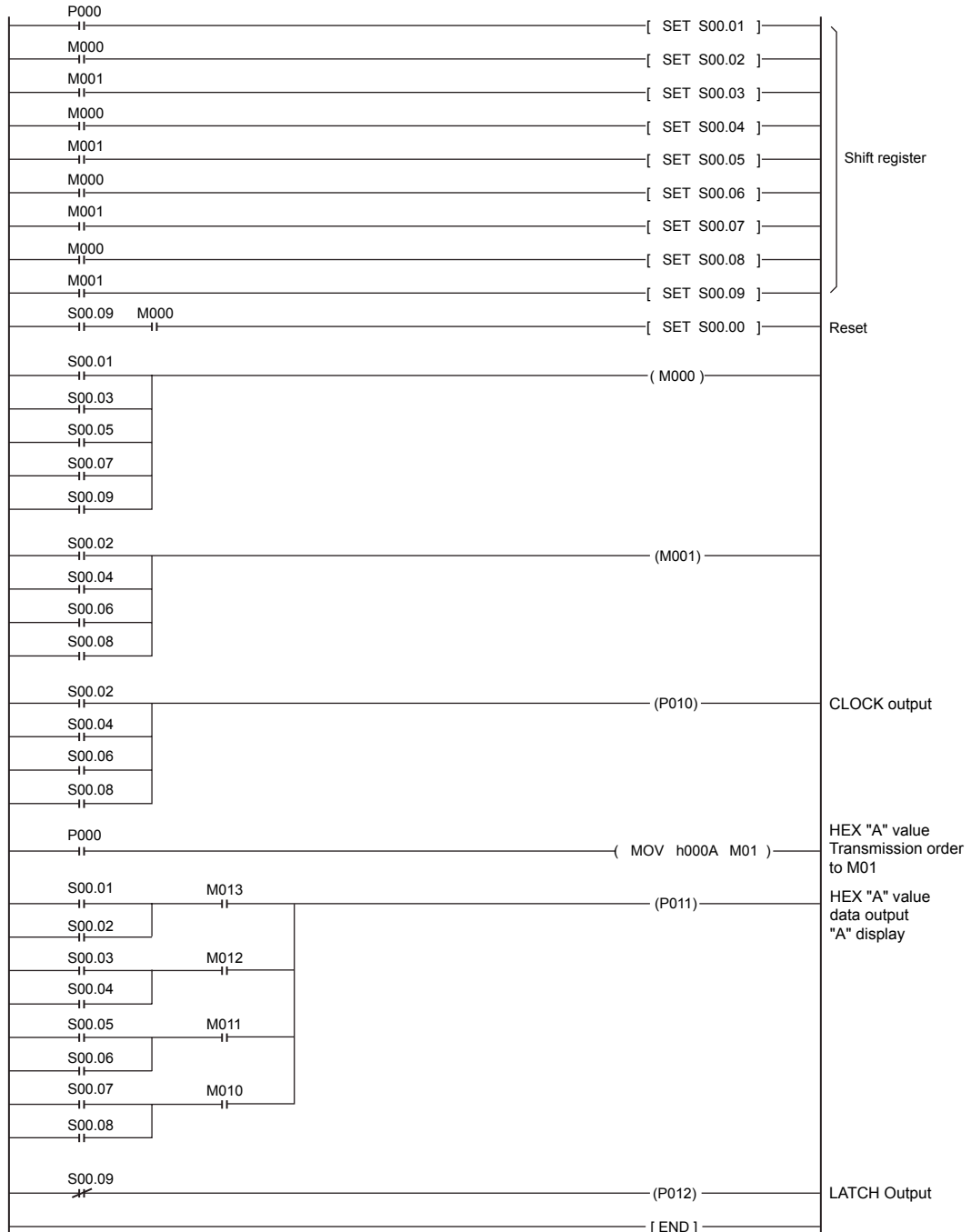


| | |
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| (R) | Graphic/ Logic panel |
| (S) | Field network device |
| (T) | Software |
| (U) | Other |

D1SC-N/D1SA Series

■ The application of PLC program[Serial input type]

1. Display Unit D1SA-□
2. Data input type: Serial
3. Connection type: See serial connection type when using more than 2EA
4. Display result: "A" Display
5. PLC: LSIS(LS Industrial Systems), MASTER-K Series
6. When using serial type, use transistor output card of PLC
7. Negative logic(NPN)



※Visit our web site(www.autonics.com) to download various applications of PLC program.