

D1SA

Bright LED(W11×H20mm) and 12–24VDC power supply Selectable SERIAL or PARALLEL data input method Selectable POSITIVE or NEGATIVE Logic input

■ Features

- Selectable Decimal(0~9) or Hexa-decimal (0~9, A~F) Indication code
- Selectable positive or negative input logic
- Selectable serial or Parallel data input method
- Power supply : 12–24VDC
- Wide range of signal input voltage level (Low : Max. 0–1.2VDC, High : 4.5–24VDC)
- Able to connect as multi-stages
- Easy to read H20 × W11mm bright LED display
- Zero blank function built in



■ Applications

- Display for PLC
- Display for computer
- Various display

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

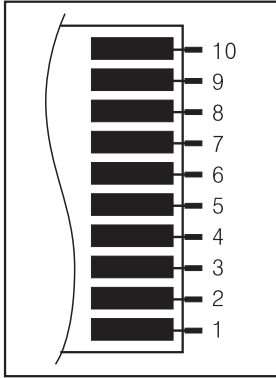
■ Specifications

Model	D1SA-RN	* D1SA-GN
Indication	Red(7 Segment)	Green(7 Segment)
Power supply	12–24VDC ±10%	
Current consumption	12VDC : Max. 35mA, 24VDC : Max. 24mA	
Character size	W11×H20mm	
Display	●Decimal code : 0~9, Decimal point ●Hexa-decimal code : 0~9, A~F, Decimal point	
Input	Parallel : Parallel 4Bit Binary Data, Zero Blank, Latch, Decimal point Serial : Serial 4Bit or 5Bit(Decimal point), Clock, Zero Blank, Latch, Decimal point (When not selecting Serial DOT)	
Input level	High : 4.5–24VDC, Low : 0–1.2VDC	
Max. frequency	Max. 3kHz	
Input resistance	20kΩ	
Output	DATA OUT(Serial DATA input method), Zero Blank OUT	
Input logic	Selectable and Changeable Positive /Negative logic (By inner soldering)	
Noise strength	The square wave noise by simulator (Pulse width:1μs, Display time:1ns, Polarity:±, 100times / every sec.) Between power terminals : ±300V, Between input terminals : ±300V	
Ambient temperature	0 ~ 60℃ (at non-freezing status)	
Storage temperature	-10 ~ 85℃ (at non-freezing status)	
Ambient humidity	35 ~ 85%RH	
Weight	Approx. 22g(Include Right/Left cap)	

*Green LED type is optional.

7 Segment Display Unit

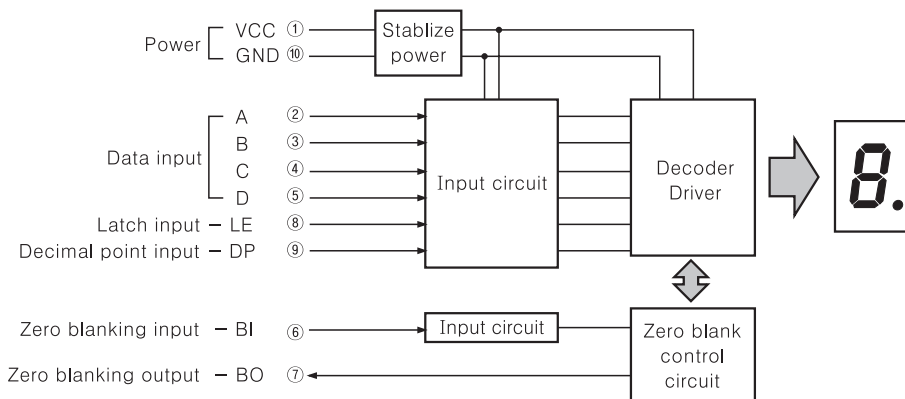
Terminal layout



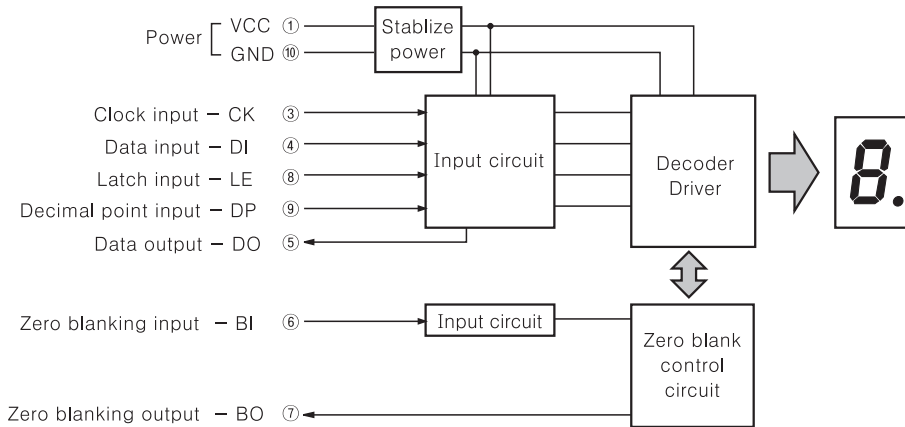
Terminal No.	Parallel input		Serial input	
	Code	Function	Code	Function
1	VCC	12-24VDC	VCC	12-24VDC
2	A	Data input	NC	Don't connect anything
3	B		CK	Clock input
4	C		DI	Data input
5	D		DO	Data output
6	BI	Zero blank input	BI	Zero blank input
7	BO	Zero blank output	BO	Zero blank output
8	LE	Latch input	LE	Latch input
9	DP	Decimal point input	DP	Decimal point input
10	GND	0V	GND	0V

Block diagram

Parallel input



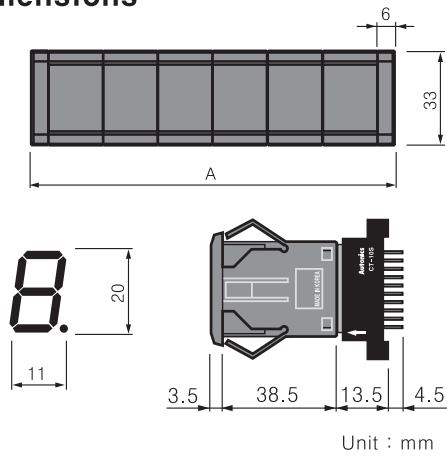
Serial input



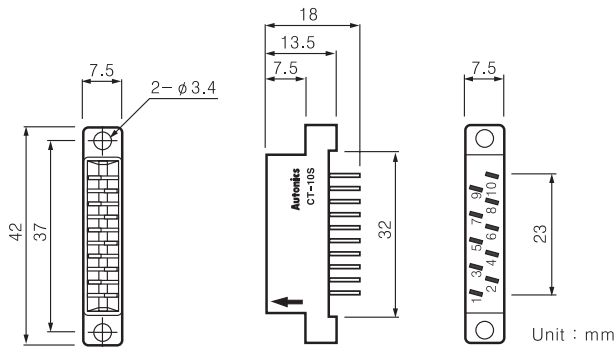
*② pin is not used.

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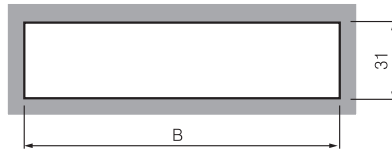
Dimensions



Connector (Model: CT-10S)



Panel cut-out

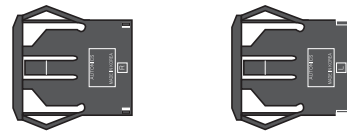


Panel cut-out chart

Unit:mm

Digit (N)	Dimension A (20×N+12)	Dimension 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

Cap



- Red FND : DAR(L) – R (Left/Right 1Set)
- Green FND : DAR(L) – BL (Left/Right 1Set)
- ※ Cap is optional(1 set)

Operation specification

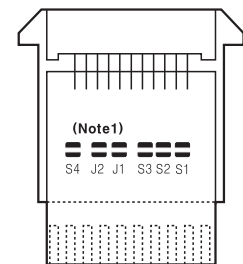
Selection of switch / Operation	S1	S2	S3	S4	J1	J2	Serial data out
	ON=Decimal OFF=Hexa decimal	ON=Parallel OFF=Serial	ON= Serial with DOT OFF=Serial without DOT	Positive logic : S4=OFF Negative logic : S4=ON	Serial data out	Zero blank out	
Parallel decimal negative logic	ON	ON	OFF	S4=ON	*1 OFF	ON	—
Parallel decimal positive logic	ON	ON	OFF	S4=OFF	*1 OFF	ON	—
Parallel hexa-decimal negative logic	OFF	ON	OFF	S4=ON	*1 OFF	ON	—
Parallel hexa-decimal positive logic	OFF	ON	OFF	S4=OFF	*1 OFF	ON	—
Serial decimal without DOT negative logic	ON	OFF	OFF	S4=ON	ON	ON	4bit
Serial decimal without DOT positive logic	ON	OFF	OFF	S4=OFF	ON	ON	4bit
Serial decimal with DOT negative logic	ON	OFF	ON	S4=ON	ON	ON	*2 5bit
Serial decimal with DOT positive logic	ON	OFF	ON	S4=OFF	ON	ON	*2 5bit
Serial hexa-decimal without DOT negative logic	OFF	OFF	OFF	S4=ON	ON	ON	4bit
Serial hexa-decimal without DOT positive logic	OFF	OFF	OFF	S4=OFF	ON	ON	4bit
Serial hexa-decimal with DOT negative logic	OFF	OFF	ON	S4=ON	ON	ON	*2 5bit
Serial hexa-decimal with DOT positive logic	OFF	OFF	ON	S4=OFF	ON	ON	*2 5bit

*1 : J1 must be OFF in Parallel operation.

*2 : 1 bit will be added, if DOT used in serial operation.

*Note : Please use it according to operation specification, otherwise product might be damaged.

Function selection switch position



※ ON= (Short), OFF= (Open)

※ (Note1) J2 must be ON when using Zero Blank function

☞ Factory default (Negative Parallel 10 decimal)
(S1: ON, S2: ON, S3: OFF, S4: ON, J1: OFF, J2: OFF)

7 Segment Display Unit

Input data chart

Dsiplay		Negative input						Positive input					
Hexa decimal	Decimal	D	C	B	A	BI	LATCH	D	C	B	A	BI	LATCH
Zero Blank	Zero Blank	H	H	H	H	H	H	L	L	L	L	H	L
0	0	H	H	H	H	L	H	L	L	L	L	L	L
1	1	H	H	H	L	X	H	L	L	L	H	X	L
2	2	H	H	L	H	X	H	L	L	H	L	X	L
3	3	H	H	L	L	X	H	L	L	H	H	X	L
4	4	H	L	H	H	X	H	L	H	L	L	X	L
5	5	H	L	H	L	X	H	L	H	L	H	X	L
6	6	H	L	L	H	X	H	L	H	H	L	X	L
7	7	H	L	L	L	X	H	L	H	H	H	X	L
8	8	L	H	H	H	X	H	H	L	L	L	X	L
9	9	L	H	H	L	X	H	H	L	L	H	X	L
A	Blank	L	H	L	H	X	H	H	L	H	L	X	L
b	Blank	L	H	L	L	X	H	H	L	H	H	X	L
c	Blank	L	L	H	H	X	H	H	H	L	L	X	L
d	Blank	L	L	H	L	X	H	H	H	L	H	X	L
e	Blank	L	L	L	H	X	H	H	H	H	L	X	L
F	Blank	L	L	L	L	X	H	H	H	H	H	X	L
HOLD		X	X	X	X	X	L	X	X	X	X	X	H

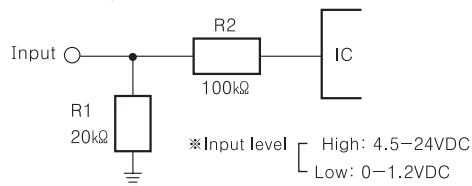
* "X" : Either High or Low level can be input.

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

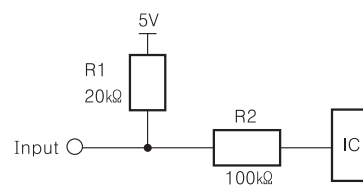
* If connect BI terminal to VCC(High level), Zero Blanking will be run and connect GND(Low level) terminal, "0" will be displayed.

Input circuit

◎Positive logic



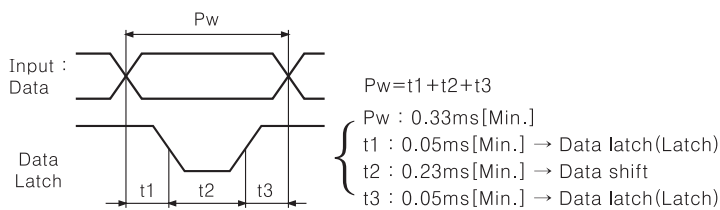
◎Negative logic



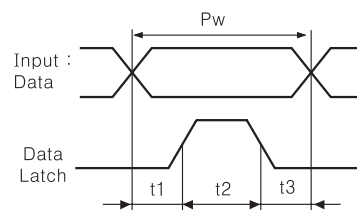
Input time

◎Parallel input

●Positive logic(S4 : OFF)



●Negative logic(S4 : ON)

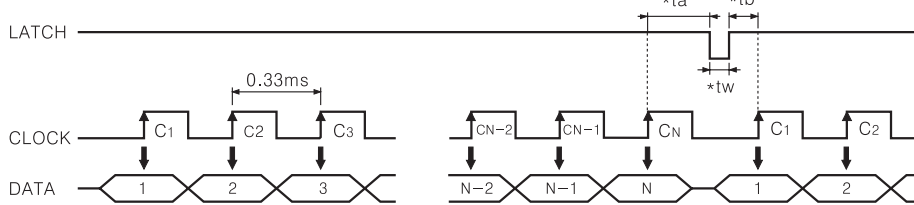


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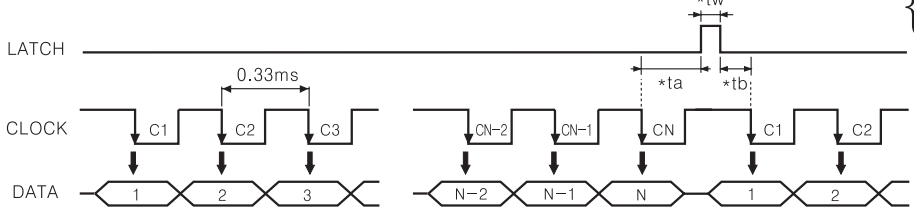
Input timing

Serial input

- Negative logic (S4:ON, J1:ON, J2:ON) : Clock 3kHz max.



- Positive logic (S4:OFF, J1:ON, J2:ON) : Clock 3kHz max.

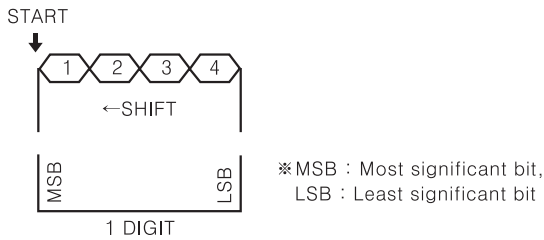


$*ta : 0.23\text{ms}$ [Min.]
 $*tb : 0.05\text{ms}$ [Min.]
 $*tw : 0.05\text{ms}$ [Min.]

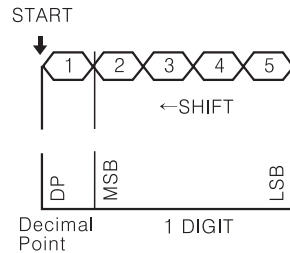
Data input method to transfer serial input

Single input method

- 4 BIT data input (S3:OFF, J1:ON, J2:ON)

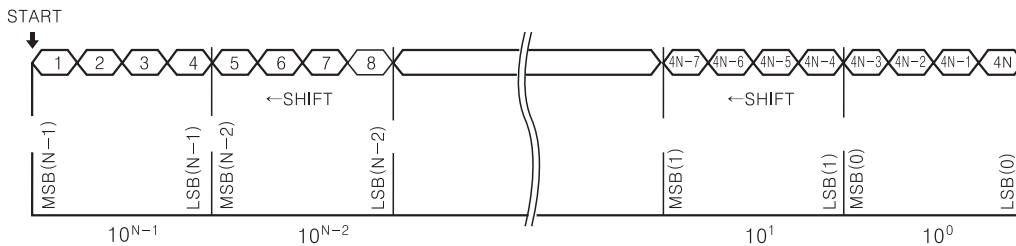


- 5 BIT data input (S3:ON, J1:ON, J2:ON)

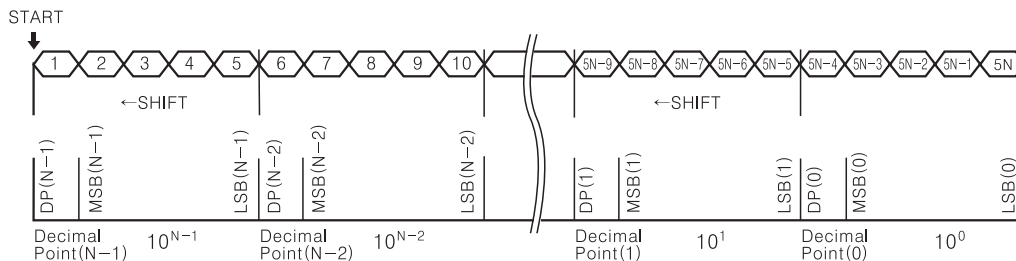


Multi-stage connection input method

- 4 BIT data input (S3:OFF, J1:ON, J2:ON)



- 5 BIT data input (S3:ON, J1:ON, J2:ON)



- Arrangement

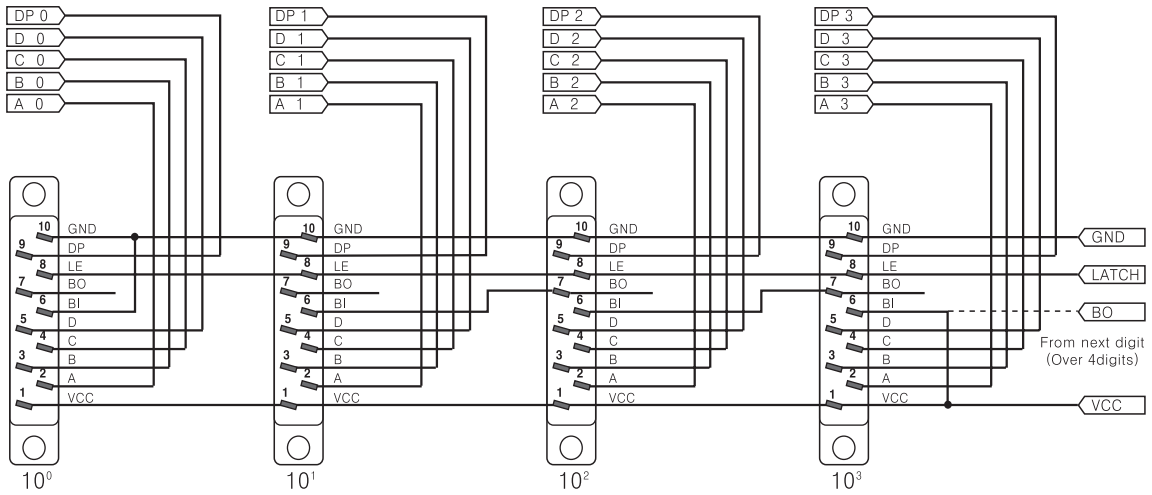


7 Segment Display Unit

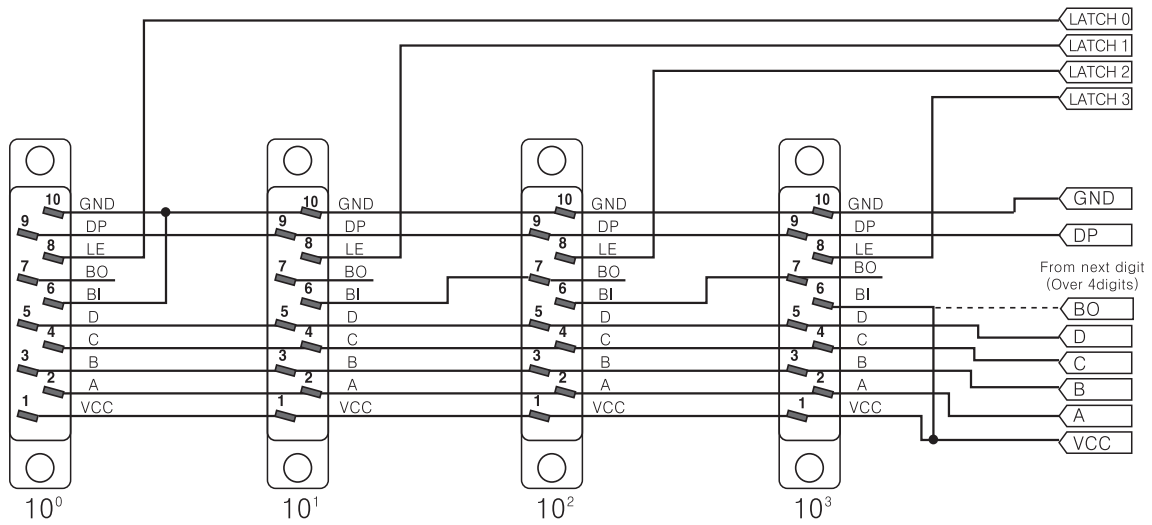
Multi-stage connection method

Parallel input

- Static connection (Zero blanking method) 4 digit

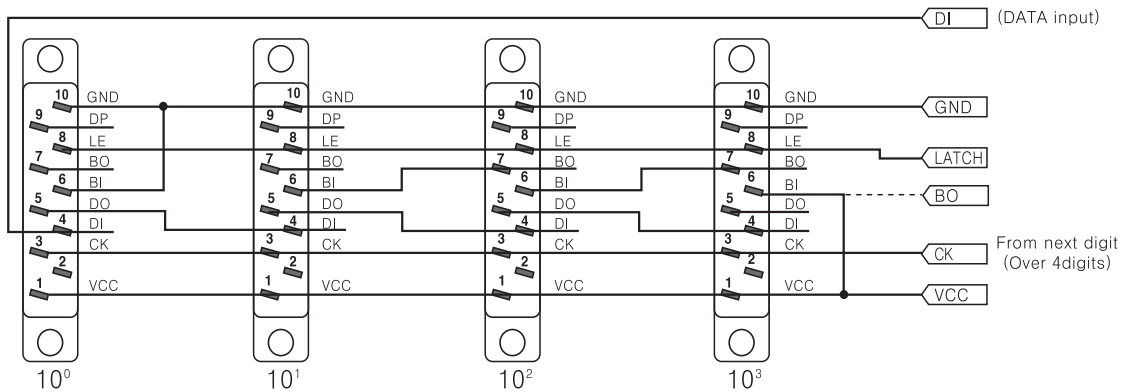


- Dynamic connection (Zero blanking method) 4 digit



Serial input

- Serial connection (Zero blanking method) 4 digit

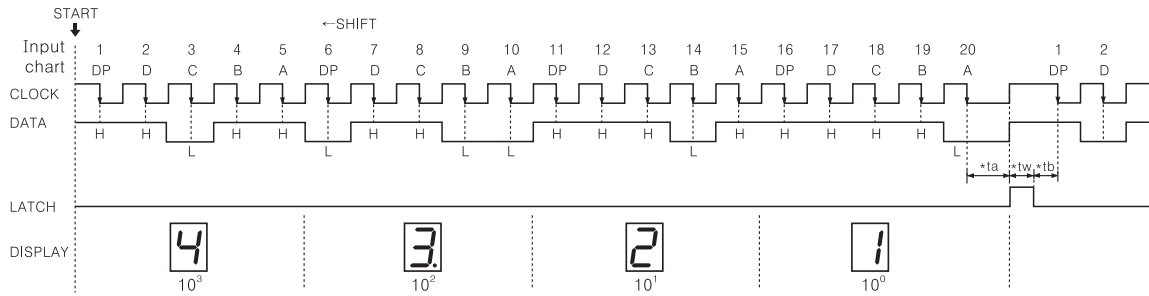


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Multi-stage connection input method

Example

- Input mode : Negative logic of serial decimal with DOT- (S1:ON, S2:OFF, S3:ON, S4:ON, J1:ON, J2:ON)
- Display value : 43.21



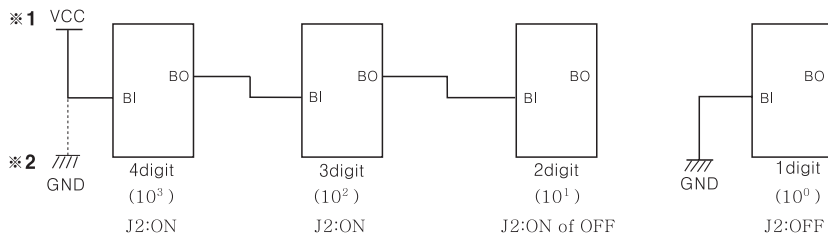
*Data is recorded when clock changes from high to low.

*In negative logic, data is read while Latch signal is held at High, but data is held when it changes to low.

{ *ta : 0.23ms [Min.]
*tb : 0.05ms [Min.]
*tw : 0.05ms [Min.]

What is the Zero Blank?

: This function is to delete "0" which is meaningless in multi connection.



1) When do not use Zero Blank function (DATA is 10)

: If connect BI terminal of MSB(10^3) to GND(*2), "0" will be displayed 3 digit and 4 digit. Ex) **0010**

2) When use Zero blank function (DATA is 10)

: If connect BI terminal of MSB(10^3) to VCC(*1), "0" will be deleted in 3 digit and 4 digit. Ex) **10**

3) If connect BI terminal of LSB(10^0) to GND, "0" will be displayed not related to Zero blank function.

Indicating Decimal point for Serial Data

DP indication for 4Bit serial data input

- Positive logic input : DP input terminal which is going to indicate DP connects with VCC.
- Negative logic input : DP input terminal which is going to indicate DP connects with GND.

DP indication for 5Bit serial data input

- Please input DP data with serial data. (DP data is highset-rank Bit among 5Bit)

7 Segment Display Unit

■ The application of PLC Program (Serial input type-7 Segment)

- ① Display Unit D1SA-□
- ② Data transmission type: Serial input
- ③ Connection type: See serial connection type when using more than 2EA
- ④ Display result : "6 Display"
- ⑤ P.L.C : See LG electronics, MASTER-K Series.
- ⑥ When using serial type, use TR output card of P.L.C card
- ⑦ Negative logic

