

D1AA

Number, Alphabet, Symbol etc. Displayable 60kinds of characters
DATA input method selection and change function
(SERIAL and PARALLEL method)
Input logic selection and change function(Positive/Negative logic)

■ Features

- DATA input selection and change function
: Parallel or Serial
- Displayable Number, Alphabet, Symbol etc
60kinds of characters
- Wide range of input signal level
Low: 0–1.2VDC, High : 4.5–24VDC
- Input logic selection and change function
: Positive / Negative logic input
- 12–24VDC power supply
- Multi stage connection available
- Clear display by high brightness LED



■ Applications

- Display for PLC
- Display for computer
- Various display

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

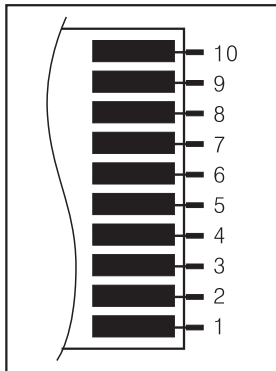
■ Specifications

Model	D1AA-RN	※ D1AA-GN
Indication	Red (16 Segment)	Green (16 Segment)
Power supply	12–24VDC ±10%	
Current consumption	12VDC : Max. 32mA, 24VDC : Max. 25mA	
Character size	W11×H20mm	
Display	0~9, A~Z, Decimal point, Symbol(24 kinds)	
Input	Parallel : Parallel 6Bit Binary Data, Latch, Decimal point Serial : Serial 6Bit or 7Bit (Decimal point), Clock, 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)	
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°C (at non-freezing status)	
Storage temperature	-10 ~ 85°C (at non-freezing status)	
Ambient humidity	35 ~ 85%RH	
Weight	Approx. 22g (Include Right/Left cap)	

※ Green LED type is optional.

16 Segment Display Unit

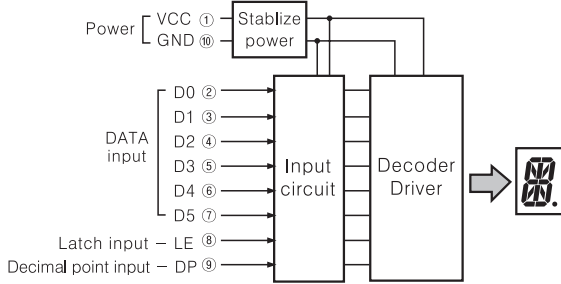
Terminal layout



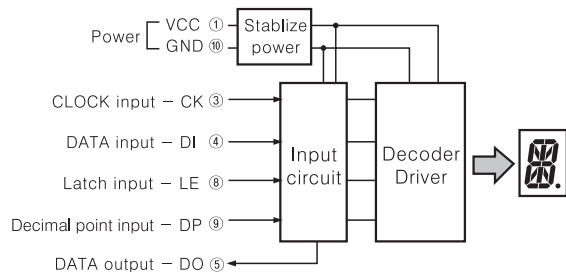
Terminal No.	Parallel input		Serial input	
	Code	Function	Code	Function
1	VCC	12-24VDC	VCC	12-24VDC
2	D0	Data input	NC	Don't connect anything
3	D1		CK	Clock input
4	D2		DI	Data input
5	D3		DO	Data output
6	D4		NC	Don't connect anything
7	D5	NC		
8	LE	Latch input	LE	Latch input
9	DP	Decimal point input	DP	Decimal point input
10	GND	0V	GND	0V

Block diagram

Parallel input

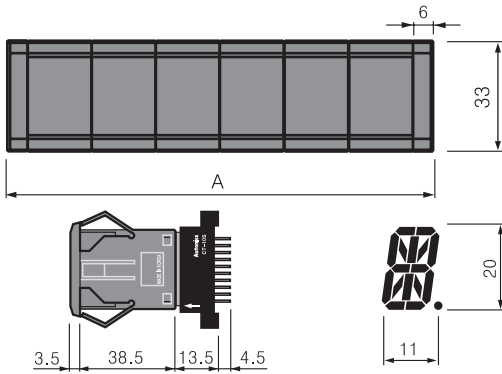


Serial input

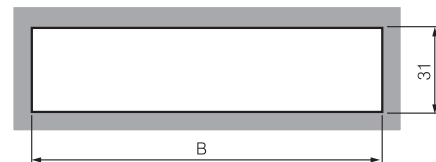


※②, ⑥, ⑦ pin are not used.

Dimensions



Panel cut-out

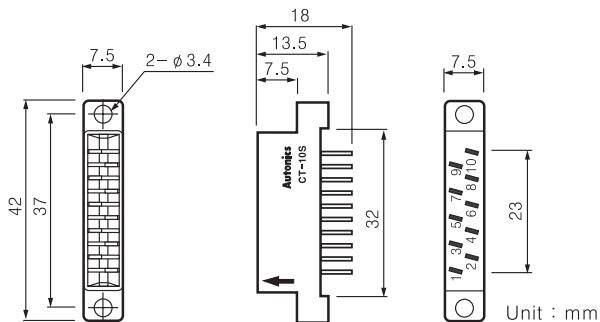


Panel cut-out chart

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

Connector (Model: CT-10S)



Cap



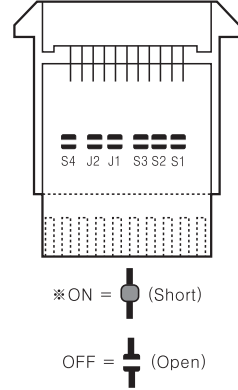
- Red FND : DAR(L) - R (Left/Right 1Set)
- Green FND : DAR(L) - BL (Left/Right 1Set)
- ※Cap is optional(1 set)

D1AA

Operation specification

Selection of switch Operation	*1 S1	S2	S3	S4	*2 J1	*3 J2	Bit 1 digit
		ON=Parallel OFF=Serial	ON= Serial with DOT OFF= Serial without DOT	Positive logic : S4=OFF Negative logic : S4=ON	Serial data out		
Parallel decimal negative logic	×	ON	OFF	S4=ON	OFF	OFF	—
Parallel decimal positive logic	×	ON	OFF	S4=OFF	OFF	OFF	—
Serial decimal without DOT negative logic	×	OFF	OFF	S4=ON	ON	OFF	6bit
Serial decimal without DOT positive logic	×	OFF	OFF	S4=OFF	ON	OFF	6bit
Serial decimal with DOT negative logic	×	OFF	ON	S4=ON	ON	OFF	*4 7bit
Serial decimal with DOT positive logic	×	OFF	ON	S4=OFF	ON	OFF	*4 7bit

©Function selection switch position



(*1) There is no function for S1. It does not matter if it is ON or OFF.

(*2) J1 must be OFF in Parallel operation.

(*3) J2 must be OFF always.

(*4) 1 bit will be added, if DOT used in Serial operation.

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

⇨ Factory specification (Negative logic Parallel) (S1: OFF, S2: ON, S3: OFF, S4: ON, J1: OFF, J2: OFF)

Input data chart

Upper 2Bit Data(PNP Type) in Positive logic				Lower 4Bit Data(PNP Type) in Positive logic						
D5	D4	D5	D4	D5	D4	Data input(H=HIGH level, L=LOW level)				
L	L	L	H	H	L	H	H	H		
0H	1H	2H	3H	Hexa decimal	D3	D2	D1	D0		
Blank	P	Blank	0	0H	L	L	L	L		
A	0	Blank	1	1H	L	L	L	H		
B	R	"	2	2H	L	L	H	L		
C	S	⊗	3	3H	L	L	H	H		
D	T	\$	4	4H	L	H	L	L		
E	U	%	5	5H	L	H	L	H		
F	V	Blank	6	6H	L	H	H	L		
G	W	'	7	7H	L	H	H	H		
H	X	:	8	8H	H	L	L	L		
I	Y	:	9	9H	H	L	L	H		
J	Z	*	A	AH	H	L	H	L		
K	[+	B	BH	H	L	H	H		
L	\	°	C	CH	H	H	L	L		
M]	-	D	DH	H	H	L	H		
N	^	°	E	EH	H	H	H	L		
O	←	/	F	FH	H	H	H	H		

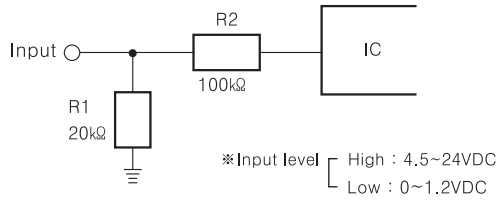
*Negative logic (NPN Type): DATA input level of D5, D4, D3, D2, D1, D0 will be opposite state.

*Blank : Even though DATA is input as signal, it does not display.

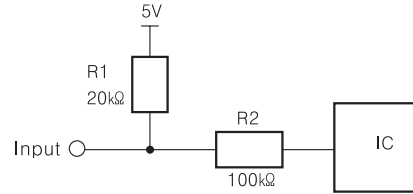
16 Segment Display Unit

Input circuit

◎Positive logic



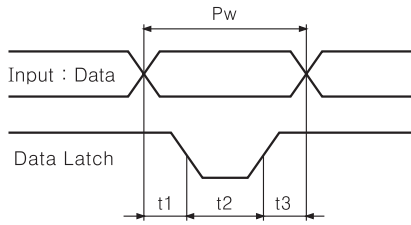
◎Negative logic



Input timing

◎Parallel input

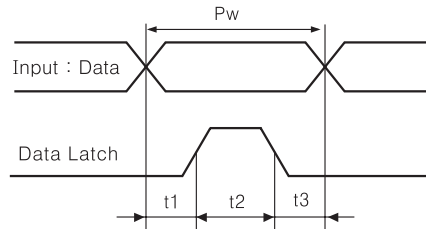
●Positive logic(S4 : OFF)



$Pw = t1 + t2 + t3$

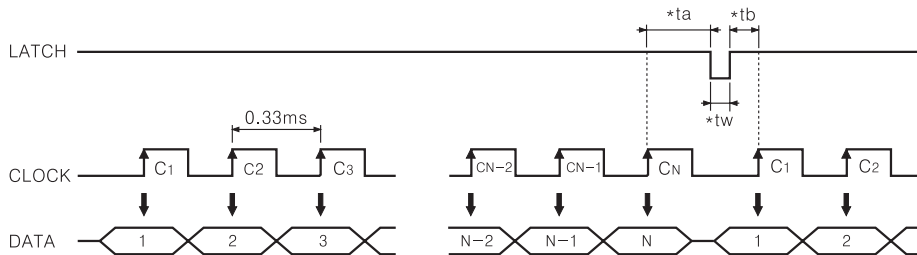
- $Pw : 0.33\text{ms} [\text{Min.}]$
- $t1 : 0.05\text{ms} [\text{Min.}] \rightarrow \text{Data latch(Latch)}$
- $t2 : 0.23\text{ms} [\text{Min.}] \rightarrow \text{Data shift}$
- $t3 : 0.05\text{ms} [\text{Min.}] \rightarrow \text{Data latch(Latch)}$

●Negative logic(S4 : ON)

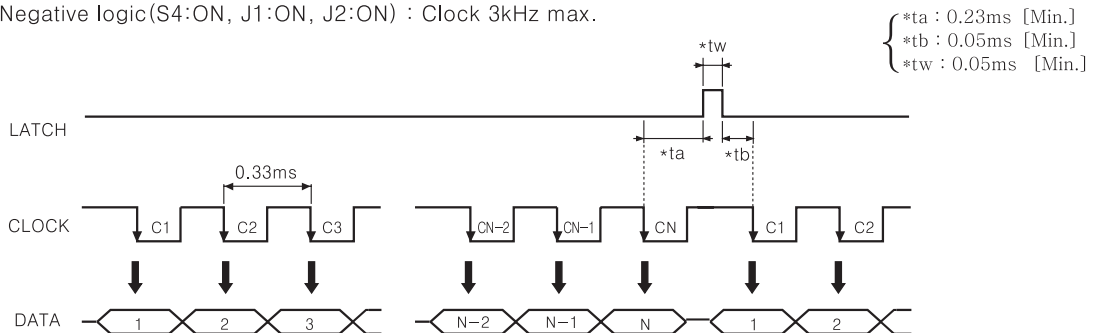


◎Serial input

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



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

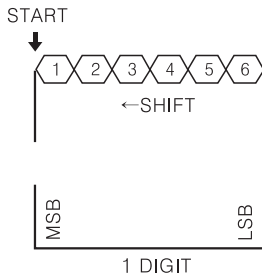


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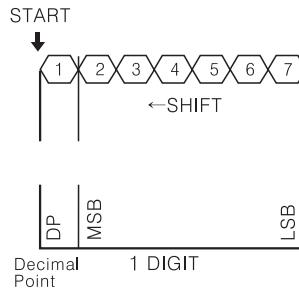
■ Data input method to transfer serial input

○ Single input method

● 6 BIT data input(S3:OFF, J1:ON)

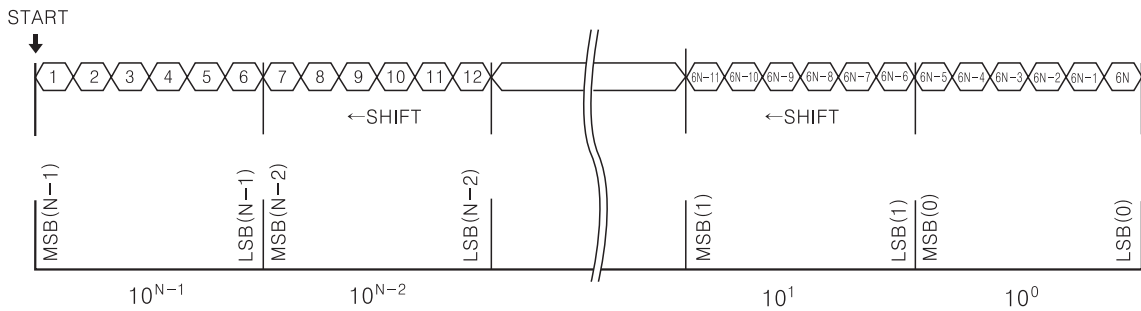


● 7 BIT data input(S3:ON, J1:ON)

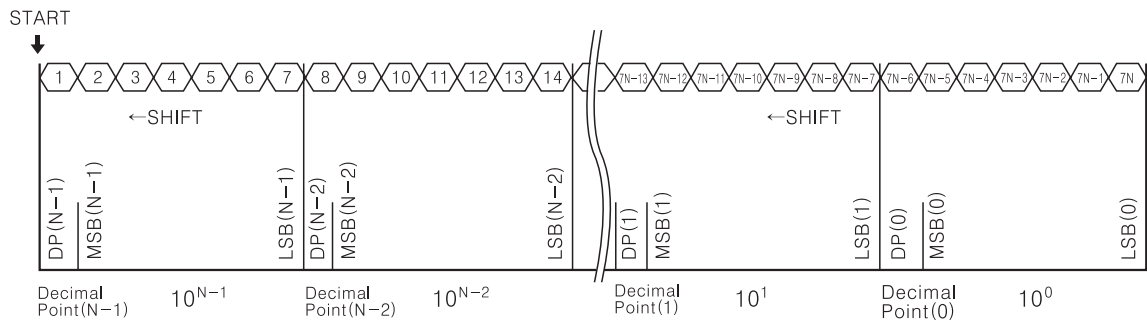


○ Multi-stage connection input method

● 6 BIT data input(S3:OFF, J1:ON)



● 7 BIT data input(S3:ON, J1:ON)



● Arrangement



10^{N-1}



10^{N-2}



10^1



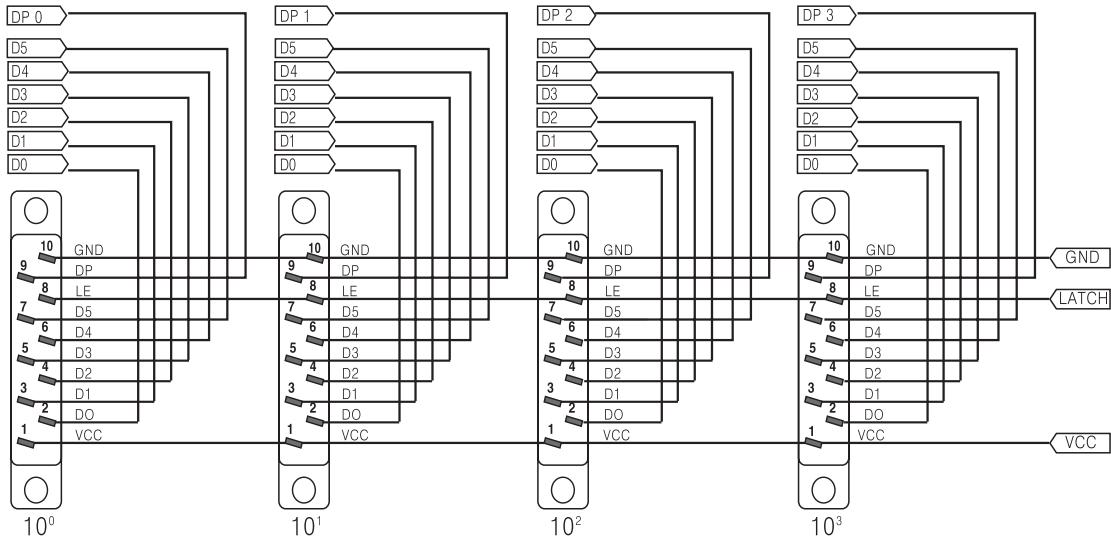
10^0

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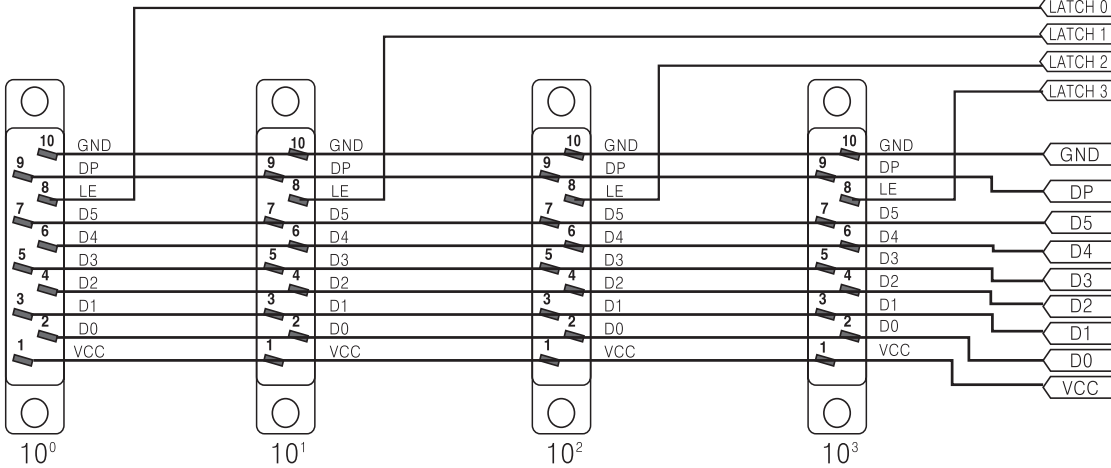
Multi-stage connection method

Parallel input

- Static connection . . . 4 digit

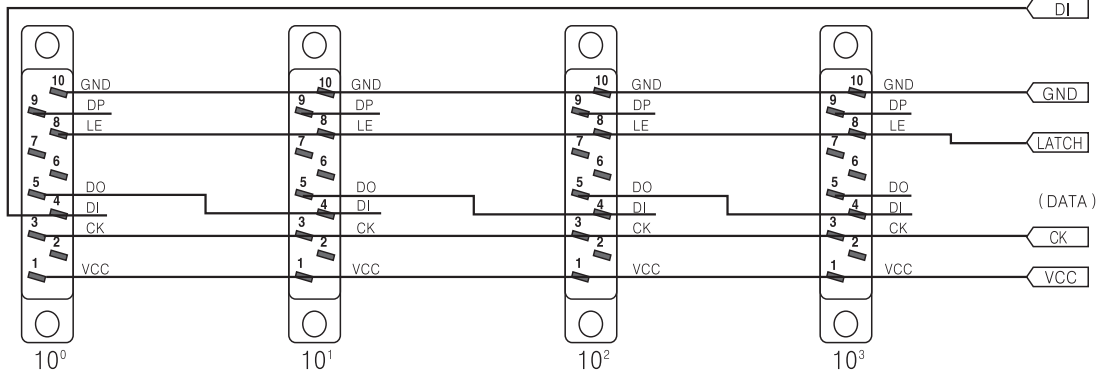


- Dynamic connection . . . 4 digit



Serial input

- Serial connection . . . 4 digit



※ DP display method in 6Bit Serial Data input

▶ Positive logic : Connect DP terminal to VCC.

▶ Negative logic : Connect DP terminal to GND
(DP display method in Serial Data input)

※ DP display method in 7Bit Serial Data input

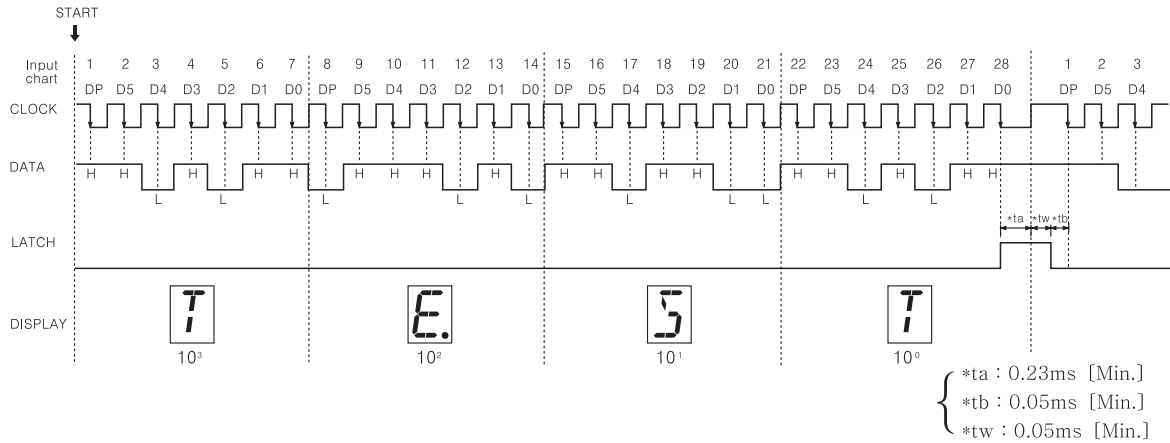
▶ Input DP Data added to Bit Serial Data
(DP Data is MSB of 7Bit)

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Multi-stage connection method

Example

- ▶ Input mode : Negative logic of serial decimal with DOT-(S1:X, S2:OFF, S3:ON, S4:ON, J1:ON, J2:OFF)
- ▶ Display value : TE.ST Data input



- ▶ 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 change to low.

The application of PLC Program(Serial input type-)

- ① Display Unit D1AA-□
- ② Data transmission type: Serial input
- ③ Connection type: See serial connection type when using more than 2EA
- ④ Display result : "A 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



16 Segment Display Unit

