

SD24 Series Display Units

4-digit, 7-segment LED decimal display unit DIN 24 by 48mm size

- 8mm-high characters
- 4-digit decimal display with 3 decimal points
- Binary-coded input
- Available in positive and negative input logic types.
- Easy maintenance
- Units can be mounted vertically or horizontally.
- Red or green LED illumination



Types

Display Type		Input Logic	Type No.	
			Red LED Display	Green LED Display
Decimal Display Unit (4 digits) (Housing Color: Black)	Standard Type 	Negative	SD24-S41C2B-R	SD24-S41C2B-G
		Positive	SD24-S42C2B-R	SD24-S42C2B-G
	Marking Type 	Negative	SD24-S41R2B-R	SD24-S41R2B-G
		Positive	SD24-S42R2B-R	SD24-S42R2B-G

Note: Two Mounting Clips (SLD-K01) and one Strain Relief (SD24-ST1) are supplied with each display unit.

• Accessories (Optional)

Name		Type No.	Ordering Type No.	Package Quantity
Mother Board	Vertical one row (for 4 units)	SD24-MB1	SD24-MB1	1
	Horizontal one row (for 4 units)	SD24-MB2	SD24-MB2	1
Mother Board Support (Note 1)		SD24-SP1	SD24-SP1	1
Strain Relief (on display unit) (Note 2)		SD24-ST1	SD24-ST1	1
Cross-Shaped Joint		SLD-F24	SLD-F24PN05	5
Connector	Type A	SD24-JE1A□	SD24-JE1A□	1
	Type B	SD24-JE1B□	SD24-JE1B□	1
	Type C	SD24-JE1C□	SD24-JE1C□	1

Note 1: Mother Board Support is supplied with the Mother Board.

Note 2: Strain Relief is supplied with the display unit.

Note 3: Specify a cable length code in place of □ in the Type No. as shown below.

• Cable Length Code

Code	0.5	1	2	3	4	5
Cable Length (mm)	500	1,000	2,000	3,000	4,000	5,000

Note 1: Select a cable with sufficient length.

Note 2: Since the connector for the display unit is supplied with strain relief, the actual cable length is approx. 10 mm shorter than the normal length.

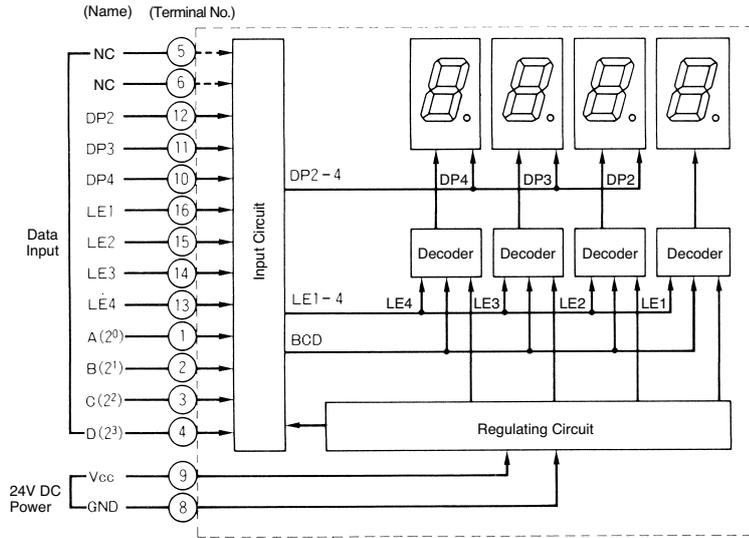
Note 3: Input connector types
 SD24-JE1A□: Flat cable connector for direct mounting on PC board
 SD24-JE1B□: Flat cable connector conforming to MIL Standard
 SD24-JE1C□: None (soldering, etc.)

Specifications

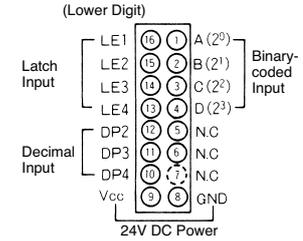
Power Voltage	24V DC ±10%
Power Consumption	Approx. 1.8W
Operating Temperature	-10 to + 55°C (no freezing)
Operating Humidity	35 to 85% RH (no condensation)
Data Input	L: 0 to 2V H: 12 to 30V
Display Character	7-segment LED display (red or green) 0 to 9, decimal point
Character Size	8 × 4 mm
Input	Binary-coded, Latch and DP inputs
Input Logic	Positive or negative
No. of Digits	4
Panel Mounting	Screw Mounting: Single, vertical (4 units max.) or horizontal (20 units max.) one-row mounting
Weight (Approx.)	Display Unit: 60g Two Mounting Clips: 12g

Terminal Connection

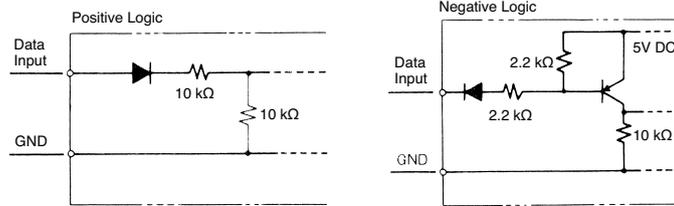
• Connection Diagram



• Terminal Arrangement (Bottom View)



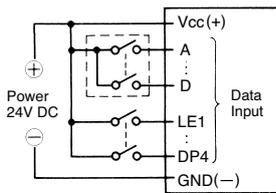
(Internal Input Circuit)



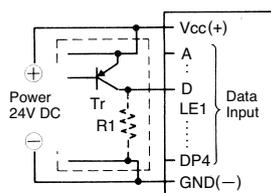
External Wiring

• Positive Logic

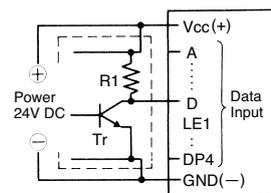
[Contact Input (Digital Switch)]



[Transistor Input]



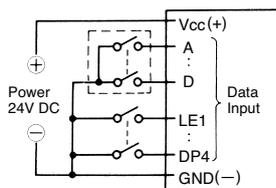
When Tr is on, output goes to H.



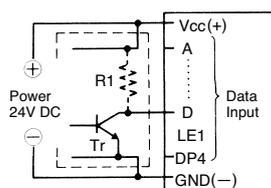
When Tr is off, output goes to H.

• Negative Logic

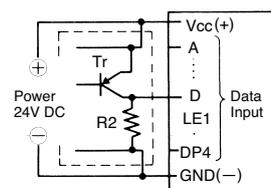
[Contact Input (Digital Switch)]



[Transistor Input]



When Tr is on, output goes to L.



When Tr is off, output goes to L.

Note: When connecting a pull-up or pull-down resistor to the external circuit, R1 and R2 should be 2.2 to 10 kΩ and 1.5 to 2.2 kΩ, respectively.

Flush Silhouette
Control Units
Display Lights
Display Units
Safety Products
Terminal Blocks
Comm Terminals
AS-Interface
Relays & Timers
Sockets
Circuit Protectors
Power Supplies
PLCs & SmartRelay
Operator Interfaces
Sensors
Control Stations
Explosion Protection
References

SD24 Series Display Units

Function Table

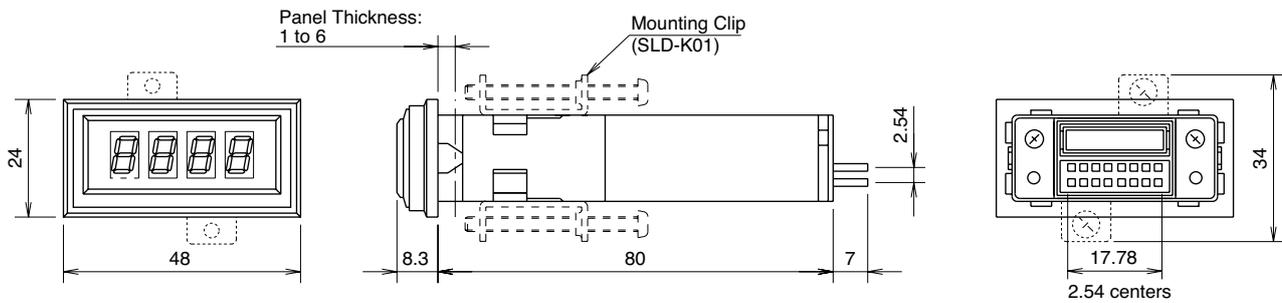
Data Input (H, L: Voltage Level)											LED Display
Positive Logic Type					Negative Logic Type						
D	C	B	A	Latch	D	C	B	A	Latch		
L	L	L	L	L	H	H	H	H	H		0
L	L	L	H	L	H	H	H	L	H		1
L	L	H	L	L	H	H	L	H	H		2
L	L	H	H	L	H	H	L	L	H		3
L	H	L	L	L	H	L	H	H	H		4
L	H	L	H	L	H	L	H	L	H		5
L	H	H	L	L	H	L	L	H	H		6
L	H	H	H	L	H	L	L	L	H		7
H	L	L	L	L	L	H	H	H	H		8
H	L	L	H	L	L	H	H	L	H		9
x	x	x	x	H	x	x	x	x	L		maintain

If any data other than the above are inputted, nothing is displayed.
 Note: x indicates the display after inputting the Latch signal is maintained regardless of the voltage level of H or L.

Input Functions

- A, B, C, and D (binary code) input**
 Decimal data input corresponding to each code of 1, 2, 4 or 8
- Latch Input: LE 1 to 4**
 When the Latch input is set to level H for the positive logic type or level L for the negative logic type, the display at the time is maintained. (DP inputs are independent.)
- DP (Decimal Point) Input: DP 2 to 4**
 When the DP input is set to level H for the positive logic type or level L for the negative logic type, the decimal point turns on.

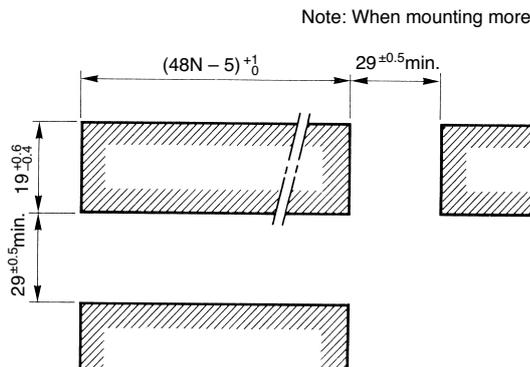
Dimension & Panel Cut-out



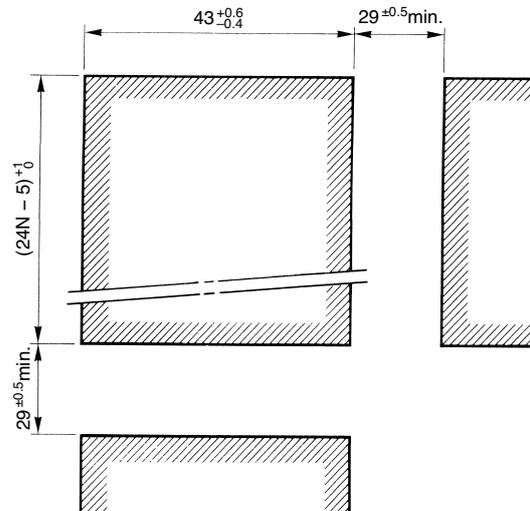
Note: Two Mounting Clips (SLD-K01) are supplied with each display unit. (Tightening torque: 0.35 N·m)

Panel Cut-out (N: No. of Units)

• Single or Horizontal One-Row (1 ≤ N ≤ 20)



• Vertical One-Row (N ≤ 4)



All dimensions in mm.

Accessories (Optional)

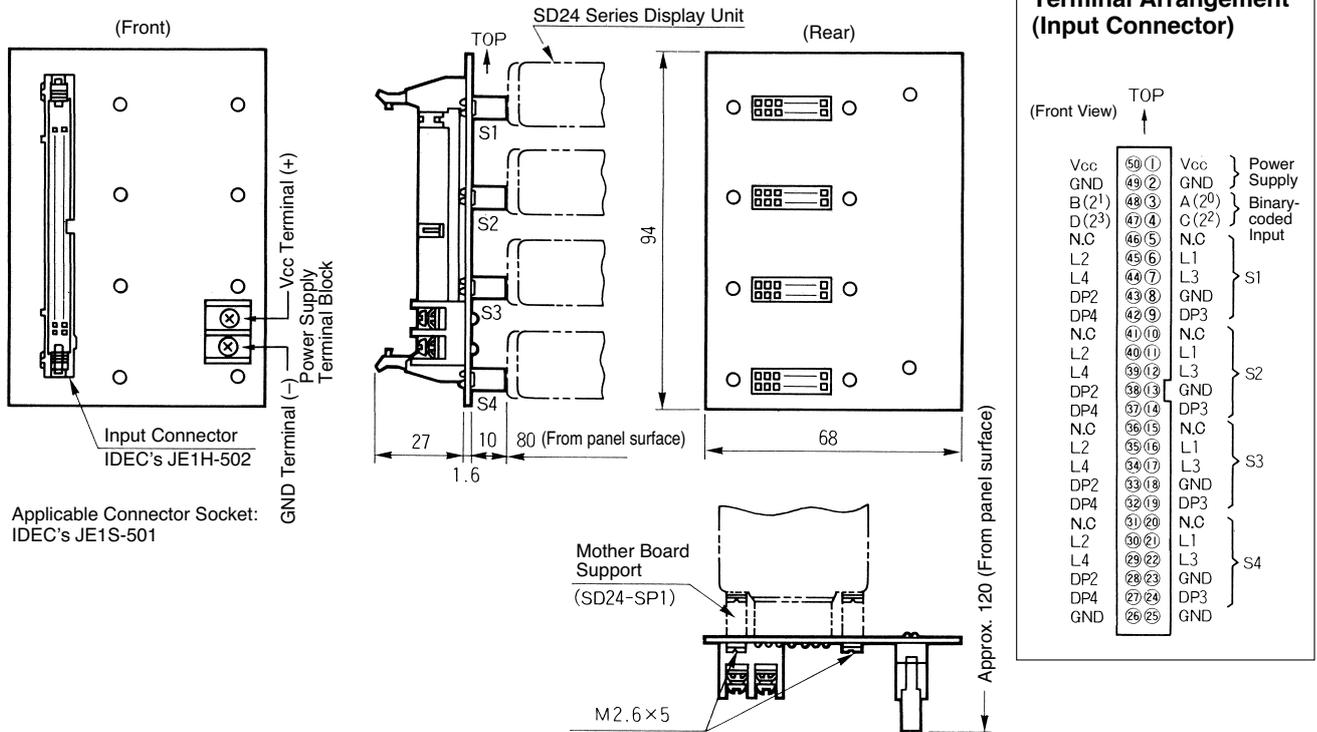
• Mother Board

Available for vertical or horizontal types.
Mother Board is for mounting 4 display units.

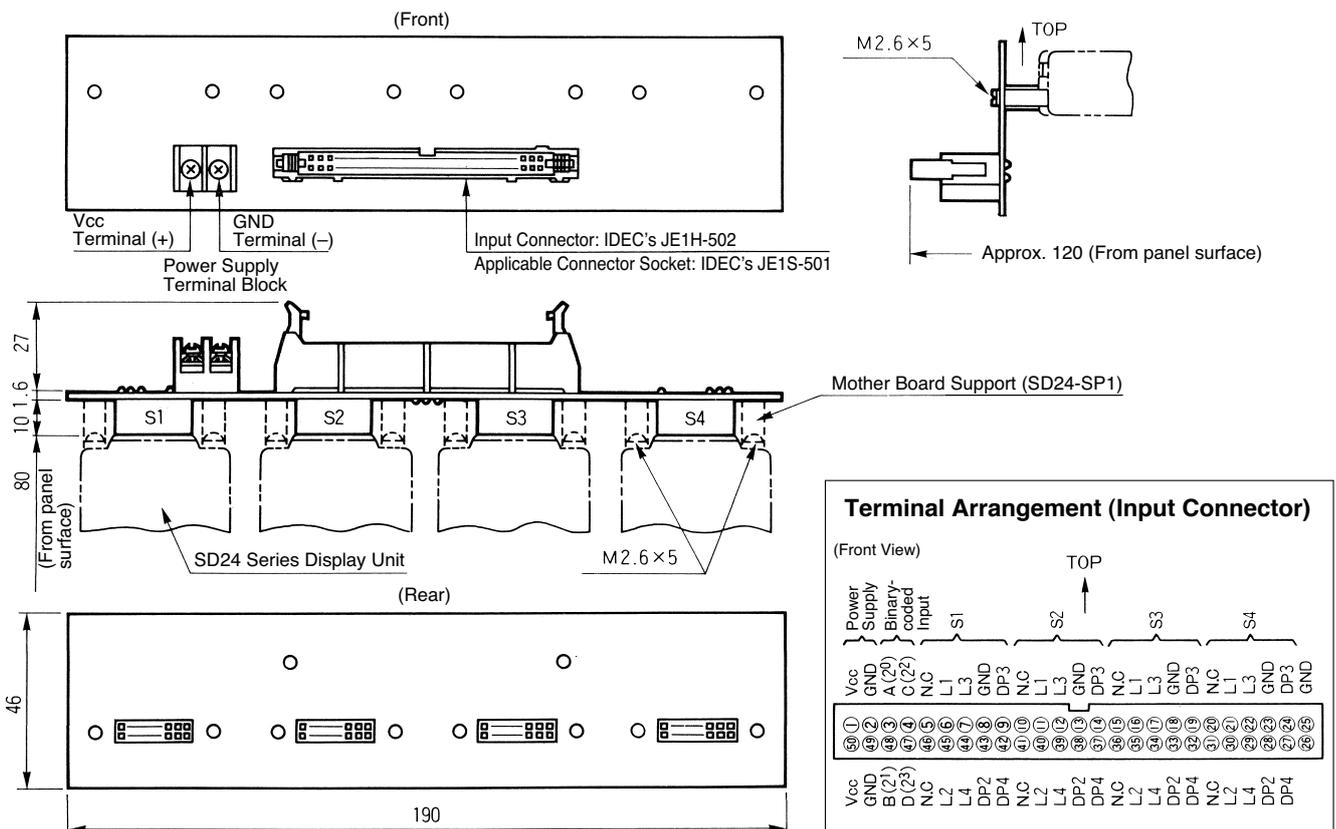
All dimensions in mm.

Note 1: The Vcc and GND terminals on the power supply terminal block are connected to corresponding terminals on the input connector.
Note 2: Four sets (two screws for one set) of Mother Board Supports (SD24-SP1) are supplied with each Mother Board.

• Vertical Mounting Type (Type No.: SD24-MB1)



• Horizontal Mounting Type (Type No.: SD24-MB2)



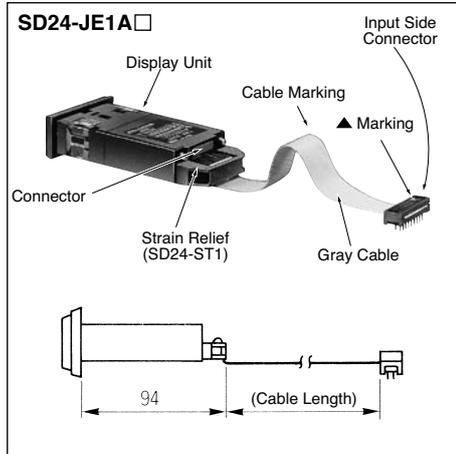
Flush Silhouette
Control Units
Display Lights
Display Units
Safety Products
Terminal Blocks
Comm Terminals
AS-Interface
Relays & Timers
Sockets
Circuit Protectors
Power Supplies
PLCs & SmartRelay
Operator Interfaces
Sensors
Control Stations
Explosion Protection
References

SD24 Series Display Units

• Connectors

Three types of connectors are available for display units. The connector on the display unit has a strain relief to prevent connector removal if the cable is pulled.

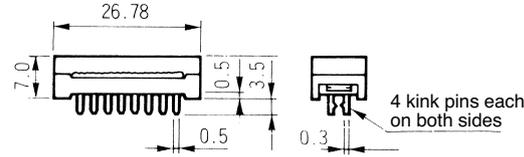
For Direct Connection to PC Board



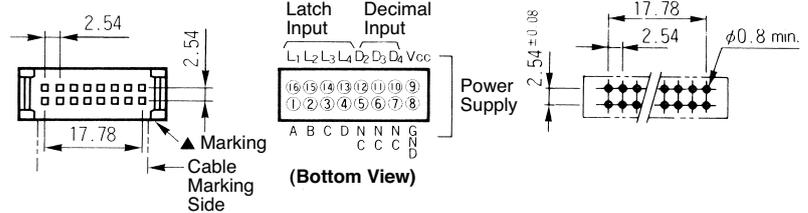
[Input Side Connector]

Flat cable connector for direct connection to PC board

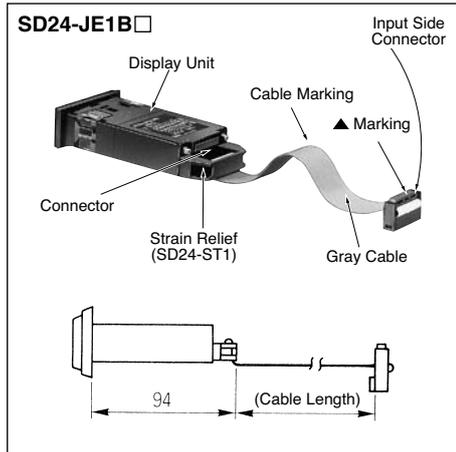
• Dimensions



• Terminal Arrangement • PC Board Drilling Layout



For Connection to Connector Header

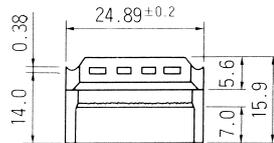


[Input Side Connector]

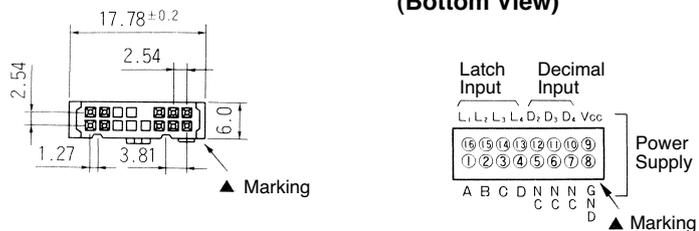
MIL type flat cable connector.
IDEC's JE1S-161 (with strain relief)

<Applicable Connector Header>
IDEC's JE1H-161 long latch, right angle type
IDEC's JE1H-162 long latch, straight type

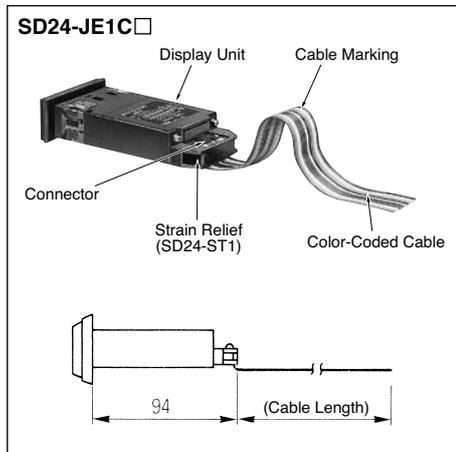
• Dimensions



• Terminal Arrangement (Bottom View)



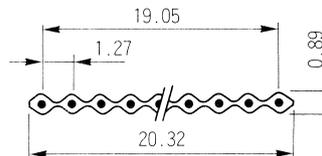
For Soldering Connection to PC Board or Others



[Input Side Connector]

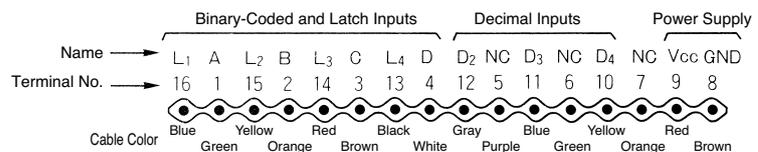
Not provided.

• Flat Cable



• Material

Conductor	AWG28 (7 cores/0.127 mm) Tinned annealed copper wire
Insulator	Heat-resistant vinyl



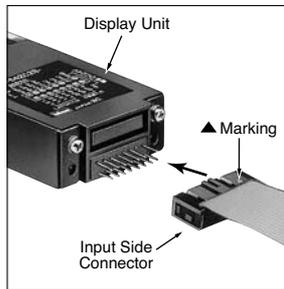
Note 1: Specify a cable length code (0.5: 500 mm, 1: 1000 mm, 2: 2000 mm, 3: 3000 mm, 4: 4000 mm, 5: 5000 mm) in place of □ in the Type No.
Note 2: As a strain relief is supplied with the connector on the display unit, the actual cable length reduces by 10 mm from the normal length.

Installation

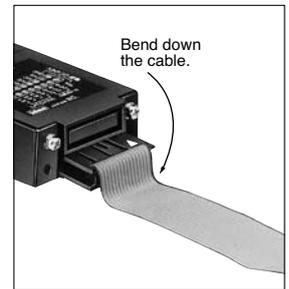
•Installing the Strain Relief

The strain relief prevents the connector from removal and works as cable protection. Install the strain relief correctly as follows.

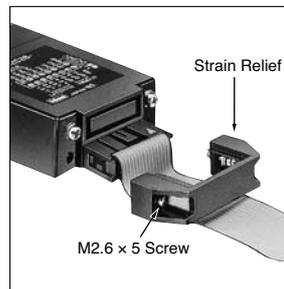
1. Place the ▲ marking on the connector in the same direction as the TOP marking on the display unit housing, and push the connector toward the display unit.



2. Bend down the cable as shown.



3. Install the strain relief on the connector holding down the cable. Fasten the strain relief to the display unit using the supplied mounting screws (M2.6 x 5).



•Illumination Units

Legends and symbols can be engraved on the filter of a marking type display unit. In this case, the illumination unit must be removed as follows.

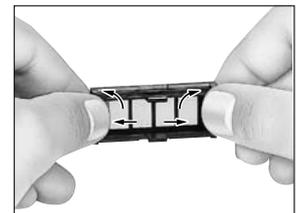
1. Removing the illumination Window

The illumination windows can be removed by inserting a screwdriver into the recess on the top or bottom of the filter frame.



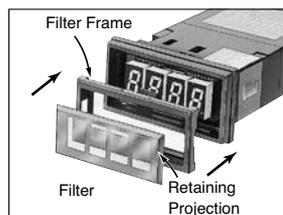
2. Removing the Filter

The filter has two retaining projections on the right and left sides. To remove the filter from the filter frame, push the filter frame open with both hands as shown.



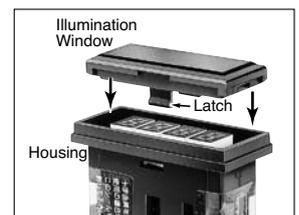
3. Installing the Filter

To install the filter, insert one of its retaining projections into the recess inside the filter frame, and press the filter on the other side into the filter frame.



4. Installing the Illumination Window

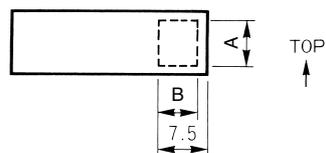
Insert the latches of the filter frame into the recesses of the housing. And press the illumination window.



(Filter Engraving)

Legend and symbols can be engraved in the black area on the back of the filter for the marking type unit as shown below.

Engraving Area:
 A = 10 mm maximum
 B = 6.5 mm maximum
 Engraving Depth:
 Approx. 1 mm



•Filter Types

Standard Type



Marking Type



- Flush Silhouette
- Control Units
- Display Lights
- Display Units
- Safety Products
- Terminal Blocks
- Comm Terminals
- AS-Interface
- Relays & Timers
- Sockets
- Circuit Protectors
- Power Supplies
- PLCs & SmartRelay
- Operator Interfaces
- Sensors
- Control Stations
- Explosion Protection
- References

SD24 Series Display Units

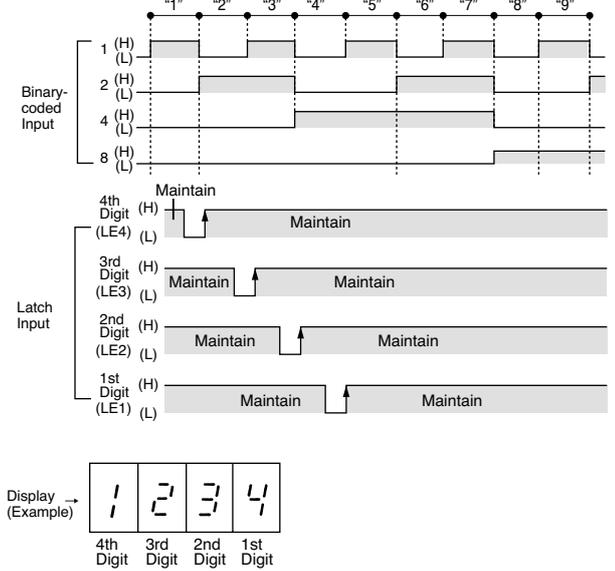
• Panel Mounting

Mounting Style	Single	Horizontal One-Row	Vertical One-Row
Appearance		<p>Maximum No. of Units: 20</p>	<p>Maximum No. of Units: 4</p>
Mounting Method	Install two mounting clips (supplied) and tighten the screws.	Install two mounting clips (supplied) to each unit and tighten the screws.	Install two mounting clips (supplied) to combine adjoining SD24 units and one mounting clip each at the top and bottom of the row, and tighten the screws.

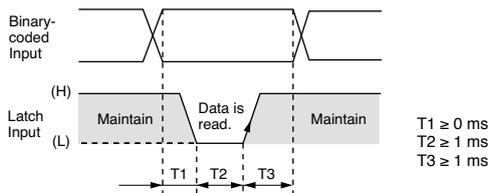
Note: Mounting Clips require only light tightening (0.34 ± 0.04 N·m).
SD24 Series display units cannot be mounted together in an integrated form because of heat generation.

Latch Input

• Latch Operation



• Latch Input Timing Chart



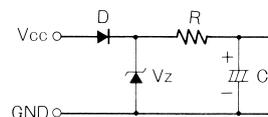
Note 1: The above chart represents positive logic type units. Negative logic type units have characteristics with (H) and (L) reversed.

Note 2: The rise and fall times of input pulses should be made as short as possible (0.1 ms maximum)

Note 3: If the data input is changed in the period of T2, the display will change.

Instructions

- When cleaning the filter surface, use a soft cloth; do not use thinner or acid.
- When the display unit is mounted in a panel cut-out, do not place a metal object or power line within 40 mm from the end of the connector terminals at the rear of the display unit.
- When the display units are subjected to voltage surges, install a surge suppressor in the power line.
- Do not install input lines in parallel with high-voltage or motor lines. Use shielded wires or a metal conduit for input lines, and make the input lines as short as possible.
- Use shielded cable or metal conduit for the input line. Run the input wiring as far away as possible from high-voltage and motor lines. Make the input line as short as possible.
- Do not use the display units where they are subjected to strong shocks or vibrations, or where the display units are always exposed to strong shocks or vibrations.
- Do not use the display units where they are subjected to corrosive gases, water, oil, dust, direct sunlight, or organic solvents.
- The filter is made of acrylic.
- Do not input the Latch input within 0.5 second after power is turned on, otherwise the read data may not be latched correctly.
- The SD24 power circuit flows an inrush current of approximately 1A (for 10 ms maximum) when the power is turned on. Note this value when determining the size of the external power supply.
- The power supply input circuit is shown below.



- When connecting a pull-up or pull-down resistor to the input terminal, ensure compatibility with the input resistor in the display unit.

SD72 Series Display Units

4-digit, 7-segment LED decimal display units DIN36 by 72mm size

- Suitable for PLC (programmable logic controller) display units.
- Zero suppression function is provided.
- Easy maintenance
- Available in positive and negative input logic types.
- Character size: 14.3H × 8.0W mm



Types

Series	Display Type	Input Logic	Type No.	
			Red LED Display	Green LED Display
SD72	4 digits and – sign	Negative	SD72-S53C2B-R	SD72-S53C2B-G
		Positive	SD72-S54C2B-R	SD72-S54C2B-G

Note: Two Mounting Clips (SLD-K01), one Strain Relief (SD72-ST2), and two Leaf Springs for vertical mounting are supplied with each display unit.

Accessories (Optional)

Name	Type No.	Ordering Type No.	Package Quantity	
Strain Relief (on square display)	SD72-ST2	SD72-ST2	1	
Cross-Shaped Joint	SLD-F30	SLD-F30PN05	5	
I-Shaped Joint	SLD-L72	SLD-L72PN05	5	
Connector	Type A	SD72-JE1A□	SD72-JE1A□	1
	Type B	SD72-JE1B□	SD72-JE1B□	1
	Type C	SD72-JE1C□	SD72-JE1C□	1

Note: Specify a cable length code in place of □ in the Type No. as shown below.

Cable Length Code

Code	0.5	1	2	3	4	5
Cable Length (mm)	500	1,000	2,000	3,000	4,000	5,000

Note 1: Select a cable with sufficient length.

Note 2: Since the connector for the display unit is supplied with strain relief, the actual cable length is approx. 10 mm shorter than the normal length.

Note 3: Input connector types

SD72-JE1A□: Flat cable connector for direct mounting on PC board

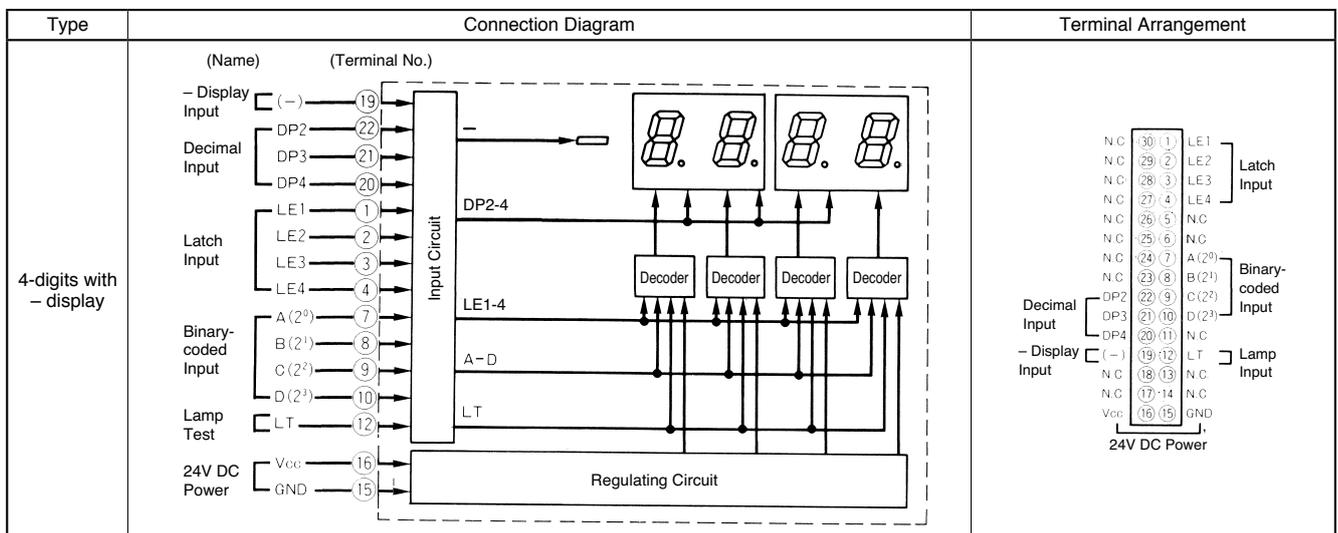
SD72-JE1B□: Flat cable connector conforming to MIL Standard

SD72-JE1C□: None (soldering, etc.)

Specifications

Power Voltage	24V DC ±10%
Power Consumption (Approx.)	2.6W
Operating Temperature	–10 to +55°C (no freezing)
Operating Humidity	35 to 85% RH (no condensation)
Data Input	L: 0 to 2V H: 12 to 30V
Display Character	7-segment LED display (red or green) Decimal display unit: 0 to 9, decimal point, –
Character Height	14.3 mm
Input	Binary-coded, Latch, DP, and – inputs
Input Logic	Positive or negative
No. of Digits	4 with – sign
Weight (Approx.)	Display unit: 130g Two mounting clips: 12g

Terminal Connection

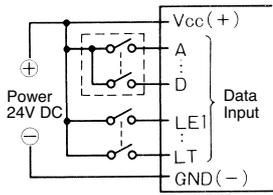


SD72 Series Display Units

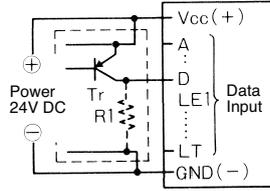
External Wiring

• Positive Logic

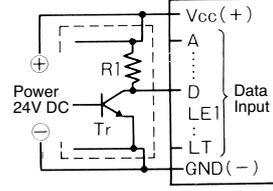
[Contact Input (Digital Switch)]



[Transistor Input]



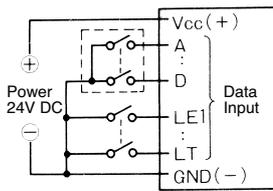
When Tr is on, output goes to H.



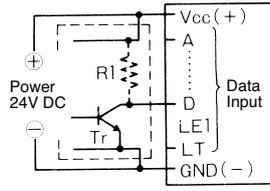
When Tr is off, output goes to H.

• Negative Logic

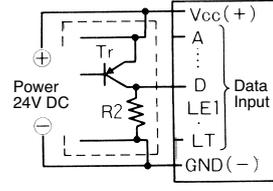
[Contact Input (Digital Switch)]



[Transistor Input]



When Tr is on, output goes to L.



When Tr is off, output goes to L.

Note: When connecting a pull-up or pull-down resistor to the external circuit, R1 and R2 should be 2.2 to 10 kΩ and 2.2 to 3.3 kΩ, respectively.

Function Table

Data Input (H, L: Voltage Level)													LED Display	
Positive Logic Type						Negative Logic Type								
D	C	B	A	Latch	DP	LT	D	C	B	A	Latch	DP	LT	
L	L	L	L	L	L	L	H	H	H	H	H	H	H	0 or blank*
L	L	L	L	L	H	L	H	H	H	L	H	H	H	1
L	L	H	L	L	L	L	H	H	L	H	H	H	H	2
L	L	H	H	L	L	L	H	H	L	L	H	H	H	3
L	H	L	L	L	L	L	H	L	H	H	H	H	H	4
L	H	L	H	L	L	L	H	L	H	L	H	H	H	5
L	H	H	L	L	L	L	H	L	L	H	H	H	H	6
L	H	H	H	L	L	L	H	L	L	L	H	H	H	7
H	L	L	L	L	L	L	L	H	H	H	H	H	H	8
H	L	L	H	L	L	L	L	H	H	L	H	H	H	9
H	L	H	L	L	L	L	L	H	L	H	H	H	H	blank
H	L	H	H	L	L	L	L	H	L	L	H	H	H	blank
H	H	L	L	L	L	L	L	L	H	H	H	H	H	blank
H	H	L	H	L	L	L	L	L	H	L	H	H	H	blank
H	H	H	L	L	L	L	L	L	L	H	H	H	H	blank
H	H	H	H	L	L	L	L	L	L	L	H	H	H	blank
x	x	x	x	H	L	L	x	x	x	x	L	H	H	maintain
x	x	x	x	x	x	H	x	x	x	x	x	x	L	all ON

Note: x indicates the display is not affected by voltage level of H or L.
* Leading zeros are suppressed while zeros in lower digits are displayed.

Input Functions

- A, B, C, and D (binary code) Input**
 Decimal data input corresponding to each code of 1, 2, 4 or 8.
- Latch Input**
 When the Latch Input is set to level H for the positive logic type or level L for the negative logic type, the display at the time is maintained. (DP, -, and LT inputs are independent.)
- DP and - Display Inputs**
 When these inputs are set to level H for the positive logic type or level L for the negative logic type, the decimal point or - sign turns on.
- LT Input (Lamp Test Input)**
 When the LT input is set to level H for the positive logic type or level L for the negative logic type, the entire display turns on. As the latched data is maintained internally, the data is displayed when the LT input is turned off.

• Zero Suppression Function

Display characters can be read easily as unnecessary zeros are not displayed. Zeros in the upper digits than the digit in which decimal point is turning on are not displayed. "0" in the lower digits are displayed. Zero suppression function does not apply to the lowest digit. If all data of 1st to 4th data are "0", the display is as shown in "Display Example 3."

(Example)

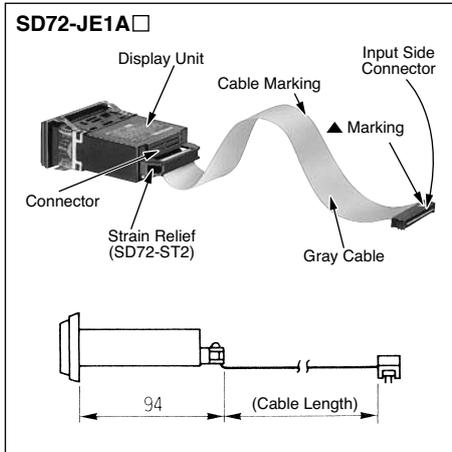
	4th Data	3rd Data	2nd Data	1st Data	Display Example 1	Display Example 2	Display Example 3
	0	0	9	0	□□90	0 Depends on decimal point position	0 □□□0
	0	0	0	0	□0.90	0 □0.90	□: blank

Connectors

Three types of connectors are available for display units. The connector on the display unit has a strain relief to prevent connector removal if the cable is pulled.

See Installing the Strain Relief on page 573.

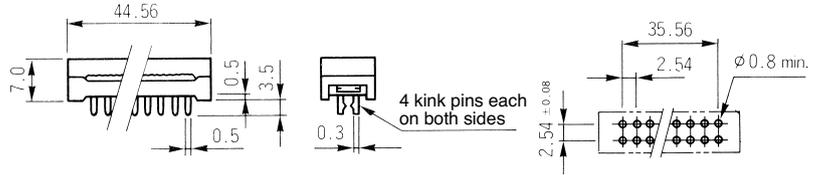
For Direct Connection to PC Board



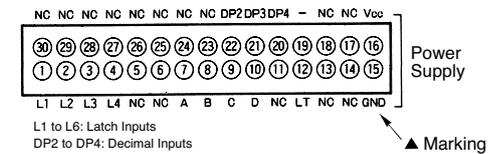
[Input Side Connector]

Flat cable connector for direct connection to PC board.

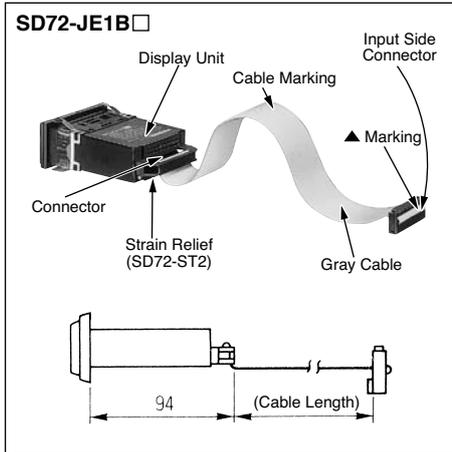
• Dimensions



• Terminal Arrangement (Bottom View)



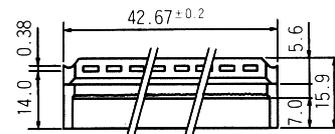
For Connection to Connector Header



[Input Side Connector]

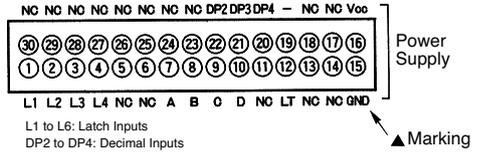
MIL type flat cable connector.
 IDEC's JE1S-301 (with strain relief)

• Dimensions

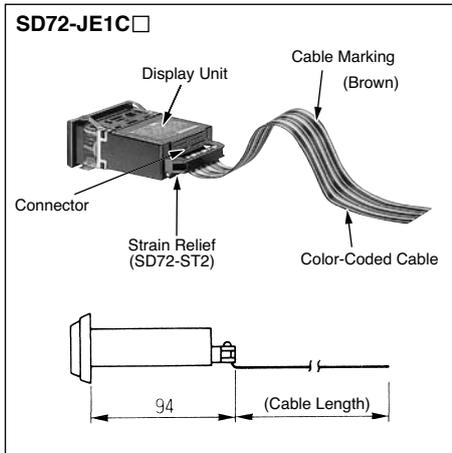


<Applicable Connector Header>
 IDEC's JE1H-301 long latch, right angle type
 IDEC's JE1H-302 long latch, straight type

• Terminal Arrangement (Bottom View)



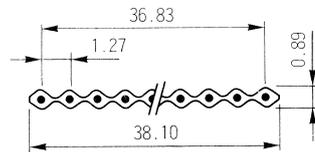
For Soldering Connection to PC Board or Others



[Input Side Connector]

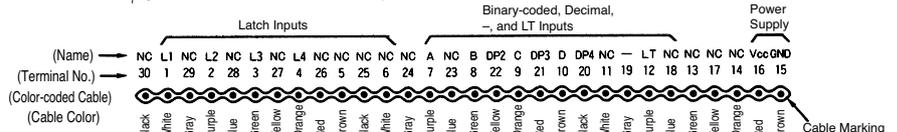
Not provided (soldering etc.)

• Flat Cable



• Material

Conductor	AWG28 (7 cores/0.127 mm) Tinned annealed copper wire
Insulator	Heat-resisting vinyl

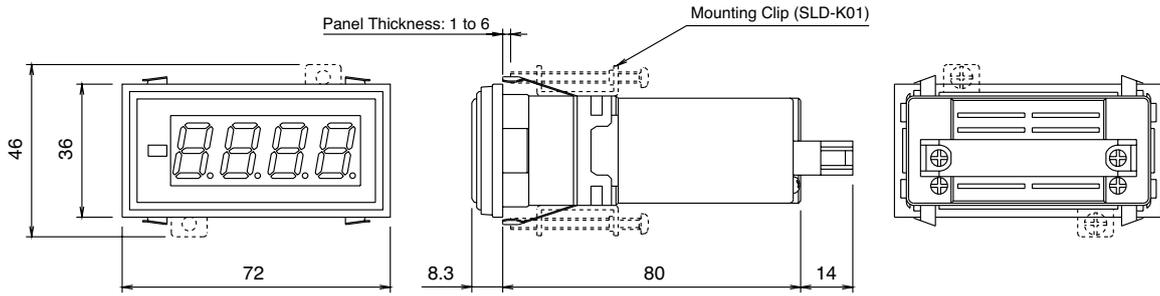


Note 1: Specify a cable length code (0.5: 500 mm, 1: 1000 mm, 2: 2000 mm, 3: 3000 mm, 4: 4000 mm, 5: 5000 mm) in place of □ in the Type No.
 Note 2: As a strain relief is supplied with the connector on the display unit, the actual cable length reduces by 10 mm from the normal length.

SD72 Series Display Units

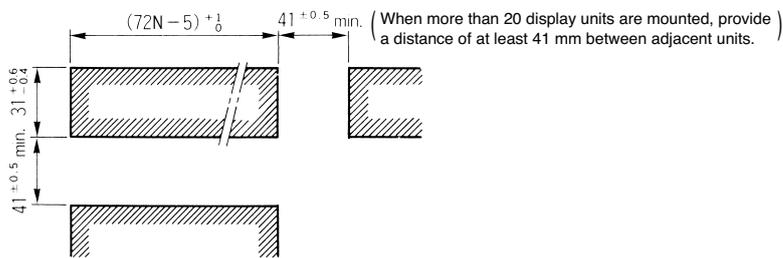
Dimensions & Panel Cut-out

•SD72



(Panel Cut-Out) N: No. of Units

•Single or Horizontal One-Row Mounting ($1 \leq N \leq 20$)



Note: Two Mounting Clips (SLD-K01) are supplied with each display unit. (Tightening torque: 0.35 N-m)
Two Leaf Springs for vertical mounting are also supplied.

Panel Mounting

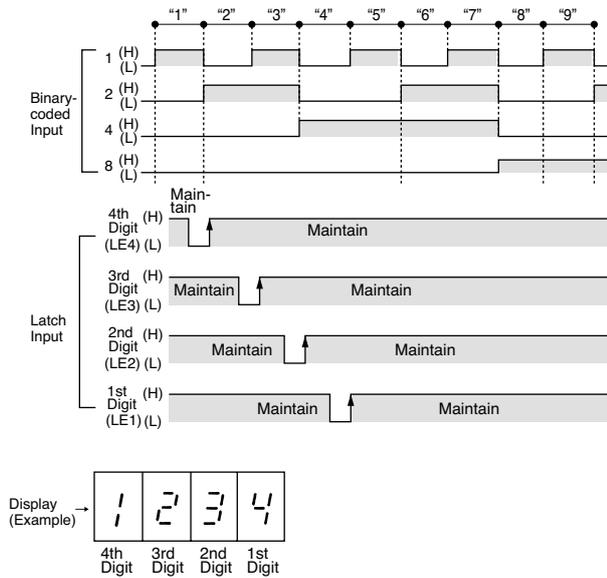
Mounting Style	Single	Horizontal One-Row
Appearance		<p style="text-align: right;">Maximum No. of Units: 20</p>
Mounting Method	Install two mounting clips (supplied) and tighten the screws.	Install two mounting clips (supplied) to each unit and tighten the screws.

Note: Mounting Clips require only light tightening (0.34 ± 0.04 N-m).

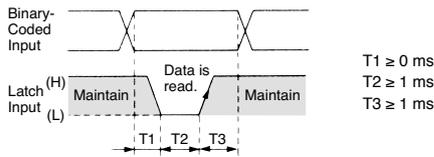
SD72 display units cannot be mounted together in an integrated form and in a vertical row because of heat generation.

Latch Input

• Latch Operation



• Latch Input Timing Chart



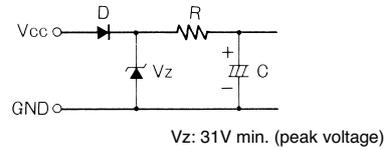
Note 1: The above chart represents positive logic type units. Negative logic type units have characteristics with (H) and (L) reversed.

Note 2: The rise and fall times of input pulses should be made as short as possible (0.1 ms maximum).

Note 3: If the data input is changed in the period of T2, the display will change.

Instructions

- When cleaning the surface of the filter and housing, use a soft cloth. Do not use thinner or acid to clean the surface.
- When the display unit is mounted in a panel cut-out, do not place a metal object or power line within 40 mm or shorter distance from the end of the connector terminals at the rear of the display unit.
- If the display units are subjected to voltage surges, install a surge suppressor in the power line.
- Use shielded cable or metal conduit for the input line. Run the input wiring as far away as possible from high-voltage and motor lines. Make the input line as short as possible.
- Use shielded cable or metal conduit for the input line. Run the input wiring as far away as possible from high-voltage and motor lines. Make the input line as short as possible.
- Avoid using the display unit in a place where excessive and frequent vibration or impact may occur.
- Avoid using the display unit in a place where it is exposed to corrosive gas, water or oil splashes, dust or direct sunlight, or in a place where organic solvents are used.
- The filter is made of acrylic.
- If the Latch input is on when the SD72 is powered up, the data input cannot be read correctly or wrong data may be maintained. Do not turn on the Latch input until at least 0.5 sec after the SD72 is powered up.
- The SD72 power circuit flows an inrush current of approximately 3A (for 10 ms maximum) when the power is turned on. Note this value when determining the size of the external power supply.
- The power supply input circuit is shown below.



- When connecting a pull-up or pull-down resistor to the input terminals, ensure compatibility with the input resistor of the SD72 internal circuit.

Flush Silhouette
Control Units
Display Lights
Display Units
Safety Products
Terminal Blocks
Comm Terminals
AS-Interface
Relays & Timers
Sockets
Circuit Protectors
Power Supplies
PLCs & SmartRelay
Operator Interfaces
Sensors
Control Stations
Explosion Protection
References