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# **User's Manual**

## **Model 707823 16-Bit Digital Input Terminal Box**

IM 707823-01E  
1st Edition

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Thank you for purchasing the 16-bit Digital Input Terminal Box 707823.

This User's Manual contains useful information about the precautions, function, and operations of the instrument. This manual assumes that you will be using the terminal box with the 32-Bit Digital I/O Module WE7262 of the PC-based Measurement Instruments WE7000. To ensure the correct use of the module, please read this manual thoroughly before operation.

Keep this manual in a safe place for quick reference in the event a question arises.

The manuals listed below are included with the measuring station and module. Read them along with this manual.

Manual Title	Manual No.
WE7000 User's Manual	IM707001-01E
WE7261/7262 32-Bit Digital I/O Module User's Manual	IM707261-01E

## Notes

- The contents of this manual are subject to change without prior notice as a result of continuing improvements to the instrument's performance and functions. In addition, the figures given in this manual may differ slightly from the actual contents displayed on the screen.
- Every effort has been made in the preparation of this manual to ensure the accuracy of its contents. However, should you have any questions or find any errors, please contact your nearest YOKOGAWA dealer as listed on the back cover of this manual.
- Copying or reproducing any or all of the contents of this manual without YOKOGAWA's permission is strictly prohibited.

## Trademarks

- Company and product names used in this manual are trademarks or registered trademarks of their respective holders.

## Revisions

1st Edition: July 1999

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## Checking the Contents of the Package

Unpack the box and check the contents before operating the instrument. If the contents are not correct or missing or if there is physical damage, contact the dealer from which you purchased them.

### Check the Contents

- Input terminal box
- Connection cable (for connecting to the WE7262: 2 m, shielded cable) 1 piece
- User's Manual (this manual) 1 piece

### Spare Parts (sold separately)

Connection cable A1363WL

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## Symbol Marks used on the Terminal Box



"Handle with care." Indicates danger to personnel or to the instrument. The symbols are used in places where the user must refer to the User's Manual or the Service Manual.



Indicates that the instrument is fully protected by reinforced insulation. The insulation between the input terminal of this instrument and the case, between the input terminal and the WE7262, and between input terminals are reinforced for safety purposes.

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## Conventions Used in this Manual

### Symbols

The following symbol marks are used to attract the operator's attention.



Affixed to the instrument. Indicates danger to personnel or to the instrument. The operator must refer to the User's Manual. The symbol is used in the User's Manual to indicate the reference.

### **WARNING**

Describes precautions that should be observed to prevent injury or death to the user.

### **CAUTION**

Describes precautions that should be observed to prevent minor or moderate injury, or damage to the instrument.

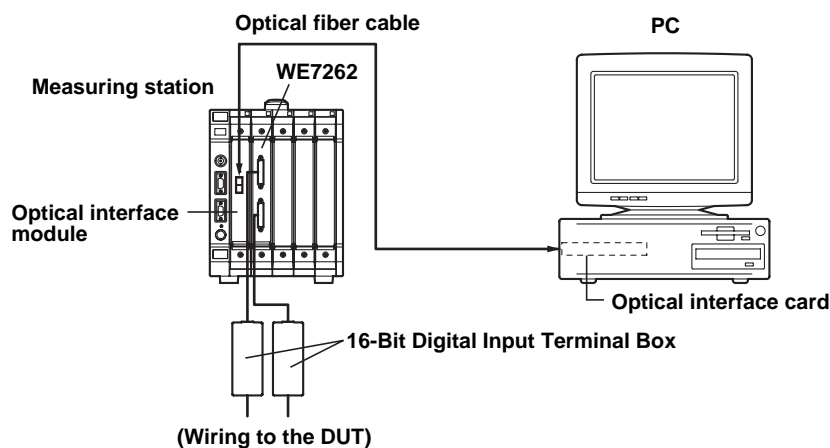
### **Note**

Provides information that is important for operating the instrument properly.

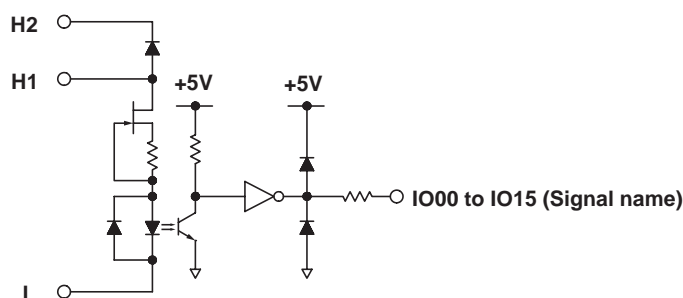
# System Configuration and Block Diagram

## System Configuration

The following is an example in which the 32-Bit Digital I/O Module WE7262 is installed into the measuring station and the measuring station is connected to the PC with the optical fiber cable.



## Block diagram



## Explanation of the Functions

The 16-bit Digital Input Terminal Box is a terminal box used to convert the input signal for the 32-Bit Digital I/O Module WE7262. The signals up to  $\pm 35$  V that are applied to the input section of this instrument are converted to TTL signals and input to the WE7262. The input section is insulated from the case and the I/O ports of the WE7262. Each input bit is also insulated from the others.

2 V or 6 V (approximate values) can be selected for the threshold of each input bit by changing the wiring of the input section.

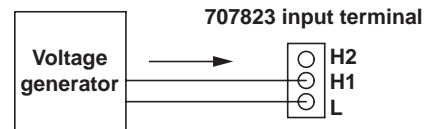
Up to two terminal boxes can be connected to the WE7262. In addition, this terminal box can be used with the 16-bit digital output terminal box (Model: 707824) (Either of the WE7262 ports, 1 or 2, can be used).

The counter function of the WE7262 cannot be used on the port to which this terminal box is connected. This terminal box also does not work with the 16-Bit Digital I/O Module WE7261.

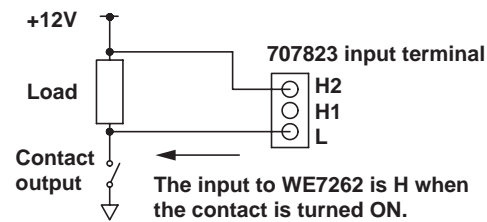
## Connection Example

On the input terminal, there are three terminals, L, H1, and H2, for each bit. The thresholds for signals applied across the L and H1 terminals and across the L and H2 terminals are approximately 2 V and 6 V, respectively. Select H1 or H2 according to the output voltage of the instrument being measured and connect them as shown in the following figure.

### Connection Example for Voltage Signal (when H level $\geq 2.5$ V)



### Connection Example for Contact Signal (when H level $\geq 8$ V)



# Connecting the Input Terminal Box and the Input Signal Wires

## Connecting the Signal Wires to the Input Terminal Box



### WARNING

Use input signal wires that have reinforced insulation that corresponds to the voltage (input voltage and common mode voltage) being used. If the wire's withstand voltage is not adequate, it can cause electric shock.

#### Relationship between the operation voltage and the wire's withstand voltage (based on JIS C 1010-1)

Operating Voltage (rms or DC)	Wire's Withstand Voltage (Reinforced Insulation: rms)
50 V or less	510 V or more
100 V or less	740 V or more
150 V or less	1,400 V or more
300 V or less	2,300 V or more

Make the stripped section of the wire less than or equal to 6 mm and insert it securely into the terminal box. Do not let any part of the twisted wire come in contact with the case or other input terminals. Electric shock may result if the wire is in contact with other parts.

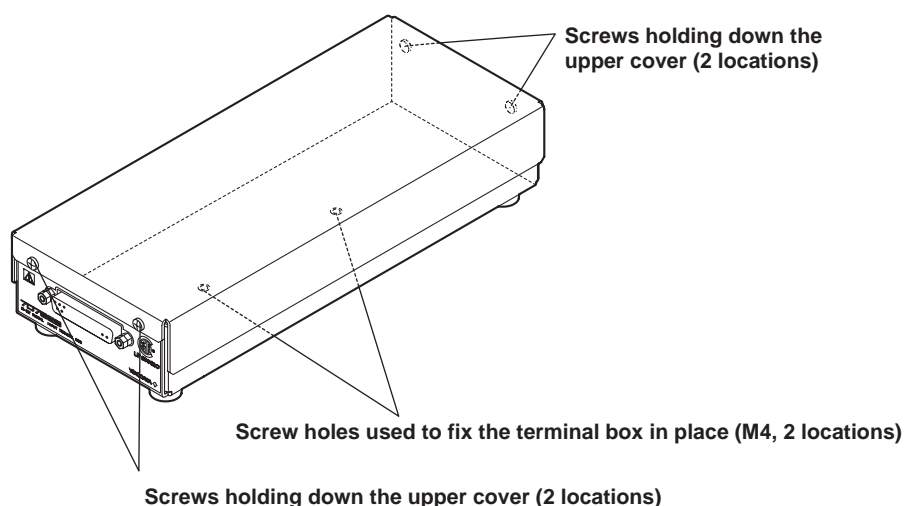


### CAUTION

- Applying a voltage exceeding the maximum input voltage can damage the input section.
- Do not apply voltage across H1 and H2. It can damage the input section.
- Do not apply voltage across H1 and L and across H2 and L of the same terminal simultaneously. It can damage the input section or cause malfunction.
- When attaching the terminal box to a wall, for example, by using the screw holes located on the bottom side, use screws of length 3 mm or less (from the surface of the terminal box inward). Using longer screws can damage the internal circuitry.

### Opening and Closing the Input Terminal Box

As indicated in the following figure, remove the four screws holding down the upper cover of the input terminal box, and remove the upper cover.



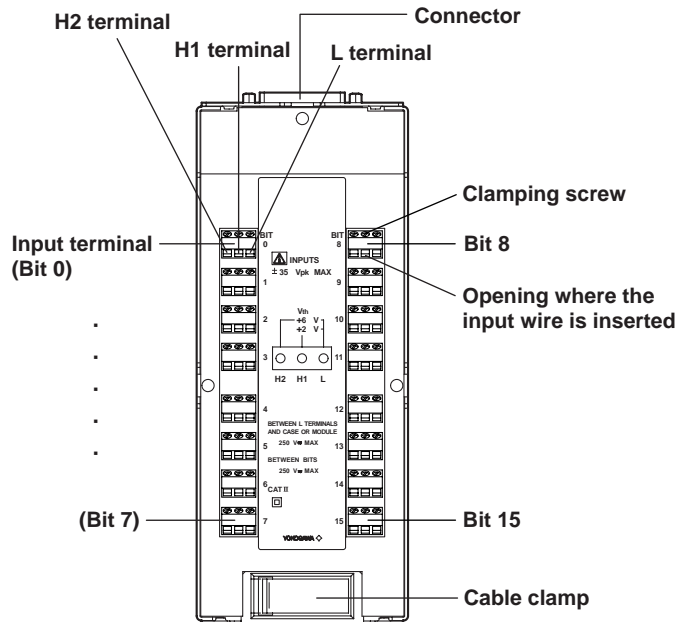
### Terminal Arrangement

The input terminal is of clamp type, and the terminal arrangement is as follows.

The threshold varies depending on the terminal being used.

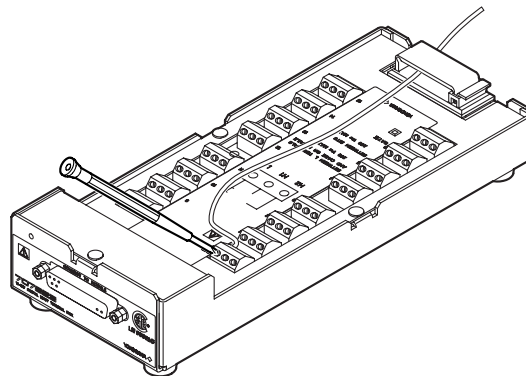
Across H1 and L : Approx. 2 V

Across H2 and L : Approx. 6 V



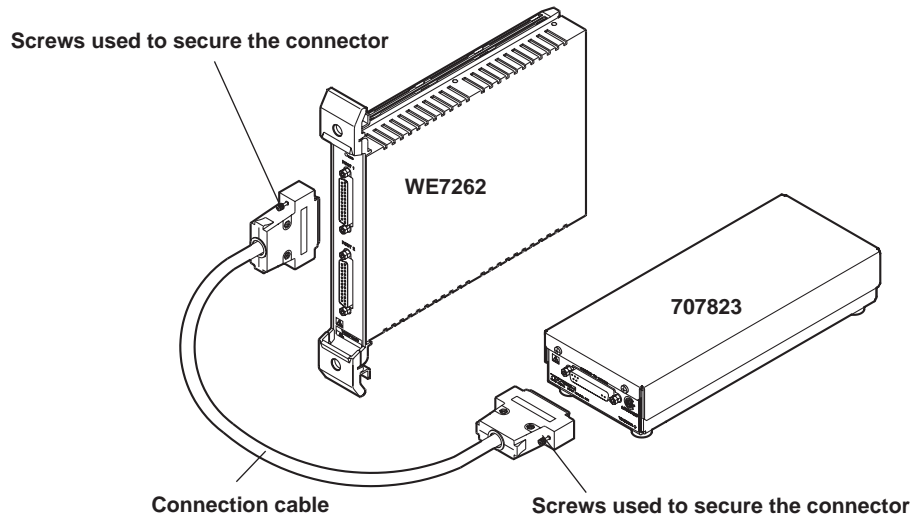
### Connecting the signal wires

To connect the input signal wire to the clamp terminal, loosen the clamping screw, insert the wire into the opening, and tighten the clamping screw. Be sure that the input signal wires pass through the cable clamp. The cable clamp can be opened and closed.



After connecting the input signal wires, place the upper cover over the input terminal box and tighten the four screws to secure the upper cover.

## Connecting the Terminal Box to the Module

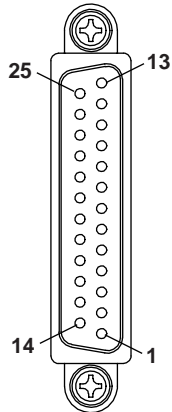


### Precautions when connecting to the module

- Use the cable that is included in the package to connect the terminal box to the WE7262. To secure the connection, make sure to tighten the cable's connector screws. After connection, the terminal box, the WE7262, and the measuring station will be at the same electric potential.
- When using a cable other than the one included in the package, use a 25-pin D-sub connector (male) for the cable connector. Connect the wires to the same connector pins on each end of the cable. The thickness of the wire must be AWG28 and the cable length less than or equal to 10 m. To suppress the influence of electro-magnetic interference, use a shielded cable, and perform other appropriate shielding measures.

### Pin Assignments of the Connector on the Module Side

Pin arrangement



The 25-pin D-sub connector of the terminal box (female) is connected to the I/O port on the front panel of the 32-Bit Digital I/O Module WE7262 using the connection cable. The pin assignments of the connector on the module side are as follows.

#### Signal and Function

IO00 to IO15 : Digital input signal

GND : Ground

VPW : External power supply (+5V)

NC : Not used (no connection)

#### Pin Assignments

Pin No.	Signal	Pin No.	Signal	Pin No.	Signal
1	GND	11	IO10	21	IO09
2	NC	12	IO12	22	IO11
3	GND	13	IO14	23	GND
4	IO00	14	VPW	24	IO13
5	IO02	15	NC	25	IO15
6	GND	16	IO01		
7	IO04	17	IO03		
8	IO06	18	IO05		
9	IO08	19	GND		
10	GND	20	IO07		



### CAUTION

Applying a voltage exceeding the maximum input voltage can damage the input section.

### Operating Procedure

See the User's Manual (IM707261-01E) for the 32-Bit Digital I/O Module WE7261/7262.



# Specifications

## Performance Specifications

Number of input points	: 16 points (16 bit)
Input voltage	
H level	: +2.5 V to +35 V (between H1 and L) or +8 V to +35 V (between H2 and L)
L level	: -35 V to +1 V (between H1 and L) or -35 V to +5 V (between H2 and L)
Input current	
H level	: +1 mA to +8 mA
L level	: 10 $\mu$ A or less
Response time	: 100 $\mu$ s (Typical value <sup>*1</sup> )
Input format	: Each input bit insulated from the case and module (WE7262), all input bits insulated from one another.

## General Specifications

Safety Standards	
Complies with CSA C22.2 No.1010.1 and EN61010-1, conforms to JIS C1010-1	
• Overvoltage Category CAT I and II <sup>*2</sup>	
• Pollution Degree 1 and 2 <sup>*3</sup>	
EMC Standards	
Emission	
Complying Standard	
EN55011 Group 1 Class A	
This product is a Class A (for industrial environment) product. Operation of this product in a residential area may cause radio interference in which case the user is required to correct the interference.	
Immunity	
Complying Standard	
EN50082-2	
Testing Condition	
• Input: Connect with 3 m twisted pair wire.	
• Interface: Connect to WE7262 with 2 m, 25 pin shielded cable (accessory)	
Allowed input voltage range	
Between H1 and L, H2 and L	: $\pm 35$ V (DC or peak) Overvoltage Category CAT I and CAT II Pollution degree 1 and 2
Maximum common mode voltage	
Between input terminal and WE7262	: $\pm 250$ VDC or 250 VACrms
Between input terminal and case	: $\pm 250$ VDC or 250 VACrms
Between input terminals	: $\pm 250$ VDC or 250 VACrms
Insulated withstand voltage	
Between input terminal and WE7262	: 2,300 VACrms for one minute
Between input terminal and case	: 2,300 VACrms for one minute
Between input terminals	: 2,300 VACrms for one minute
Operating conditions	
Temperature	: 5 to 40°C
Humidity	: 20 to 80% RH (no condensation)
Storage conditions	
Temperature	: -20 to 60°C
Humidity	: 20 to 80% RH

Acceptable diameter of the wire	: 0.14 to 1.38 mm <sup>2</sup>
Length of the stripped wire	: 6 mm or less
Connectable module	: 32-Bit Digital I/O Module WE7262 (Model: 707262)
Maximum power consumption	: 0.1 W
External dimensions (projections excluded)	: Approx. 97(W) × 42(H) × 234(D) mm
Weight	: Terminal box Approx. 0.5 kg, Connection cable Approx. 0.3 kg

## Others

Standard accessories	: Connection cable (for connecting 707823 and 707262, 2 m, shielded cable) 1 piece User's Manual (this manual) 1 piece
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\*<sup>1</sup> Typical value represents a typical or average value. It is not strictly guaranteed.

\*<sup>2</sup> Overvoltage Categories define transient overvoltage levels, including impulse withstand voltage levels.

Overvoltage Category I: Applies to equipment supplied with electricity from a circuit containing an overvoltage control device.

Overvoltage Category II: Applies to equipment supplied with electricity from fixed installations like a distribution board.

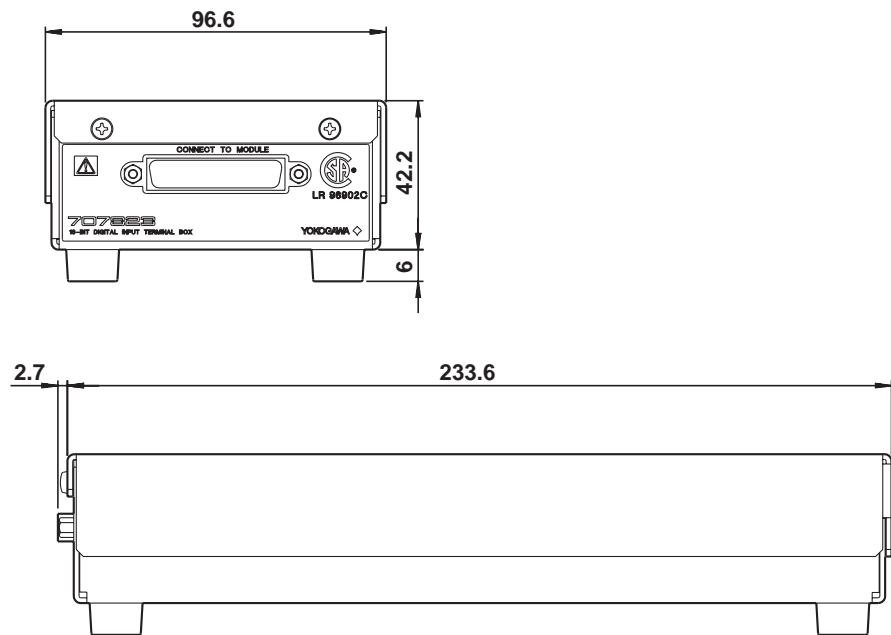
\*<sup>3</sup> Pollution Degree: Applies to the degree of adhesion of a solid, liquid, or gas which deteriorates withstand voltage or surface resistivity.

Pollution Degree 1: Applies to closed atmospheres (with no, or only dry, non-conductive pollution).

Pollution Degree 2: Applies to normal indoor atmospheres (with only non-conductive pollution).

## Dimensional Drawings

Unit: mm



If not specified, the tolerance is  $\pm 3\%$ . However, in cases of less than 10 mm, the tolerance is  $\pm 0.3$  mm.