



# User's Manual

## MX100/MW100 Handling of the Input/Output Modules



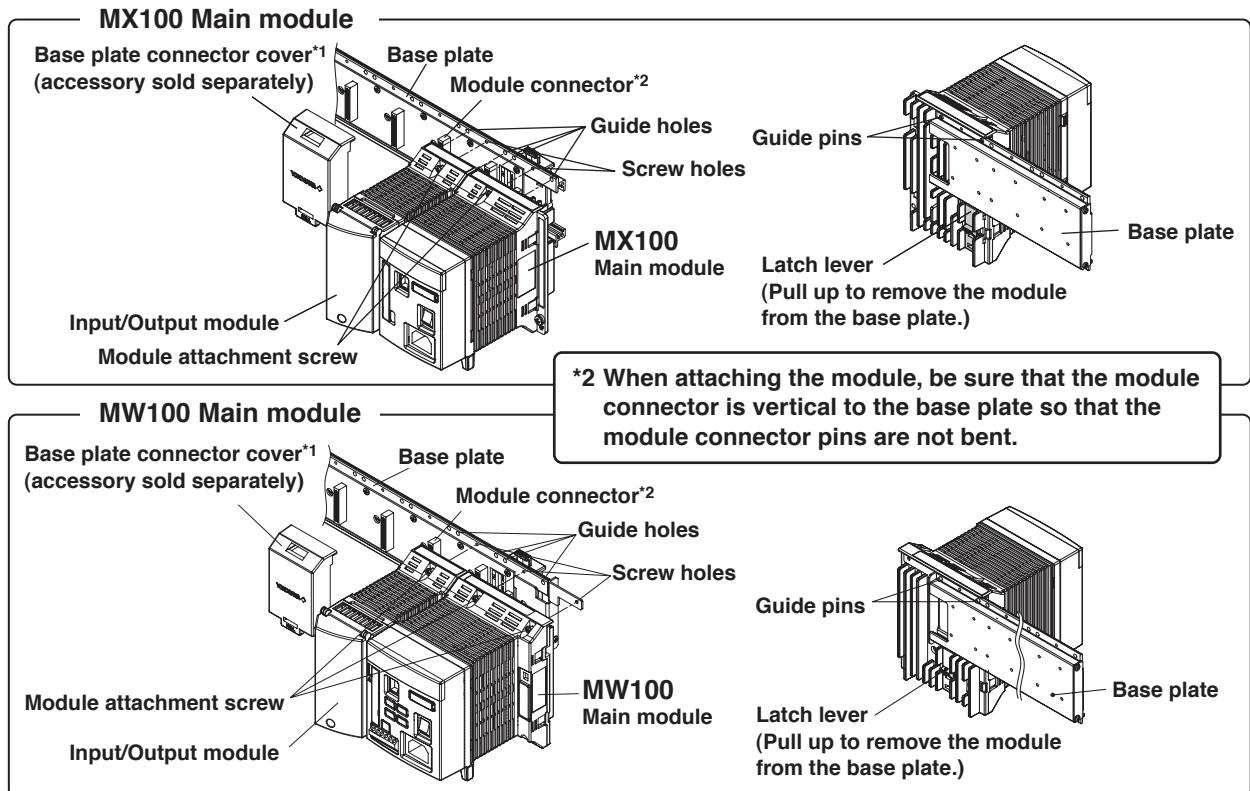
### WARNING

- To prevent electric shock and instrument breakdown, do not connect the power supply to the main module when attaching modules.

### Attachment Procedure

1. Check that the power supply is not connected to the main module.
2. Align the connector on the rear panel of the module to the connector at the desired position of the base plate and insert the connector.  
When the connectors are correctly connected, the guide pin on the rear panel of the module is inserted into the guide hole on the base plate. In addition, the module is secured to the base plate with the latch lever locking in place at the bottom section of the base plate.
3. Fasten the attachment screws (M3) at the top of the module.

To remove the module, loosen the attachment screw, pull down on the latch lever on the rear panel of the module, and pull the module straight from the base plate.



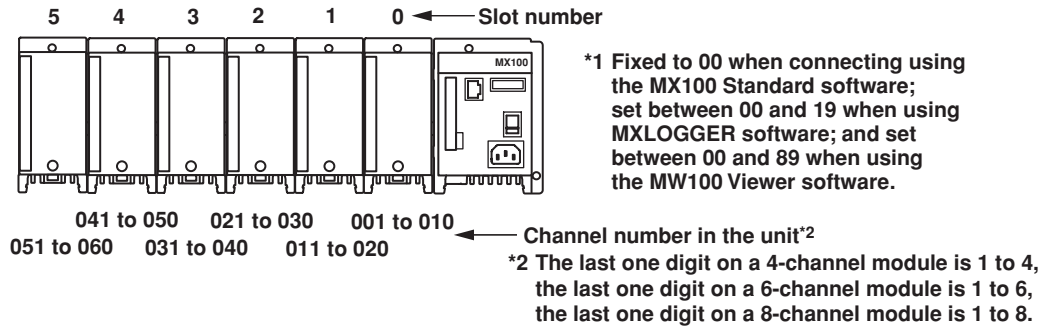
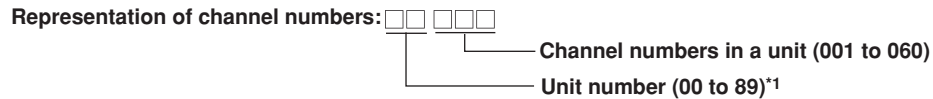
\*1 Can be attached by hooking the top section of the cover to the top edge of the base plate and pressing down on the lower section of the cover

### Note

- Attach the main module to the right-most position on the base plate.
- The 30-CH, Medium Speed DCV/TC/DI Input Module takes up three modules worth of space when attaching to the base plate. If attached incorrectly, damage or malfunction can result.
- The 10-CH, Pulse Input Module is compatible with the MW100.

## Attachment Positions and Channel Numbers

The figure below shows how the channel numbers are identified on the PC.



## General Precautions When Wiring the Input/Output Signal Wires



### WARNING

- To prevent the possibility of electric shock when wiring, confirm that the power supply source and the signal source are turned OFF. After making the connections, secure the terminal cover and do not touch the terminals with your hands.
- For signal wires on which voltage exceeding 30 VAC/60 VDC is applied relative to the ground potential or between signals, use double (reinforced) insulation wires. For all other signal wires, use basic insulation wires. For the withstand voltage of insulation wires, see the table below.

| Applied Voltage (Vrms or VDC) | Basic Insulation | Double (reinforced) Insulation |
|-------------------------------|------------------|--------------------------------|
| 30 (60 VDC) to 100            | 620 Vrms         | 1000 Vrms                      |
| 101 to 150                    | 840 Vrms         | 1400 Vrms                      |
| 151 to 300                    | 1390 Vrms        | 2300 Vrms                      |
| 301 to 600                    | 2210 Vrms        | 3700 Vrms                      |

- To avoid electric shock when removing the screw terminal block and screw terminal plate, be sure to attach the screw terminal block and screw terminal plate to the input modules before inputting signals. Electric shock or fire can result if signals are applied to the terminals when the screw terminal block or screw terminal plate is removed from the input modules.
- When wiring to screw terminals, use round, insulation coated crimp-on lugs on the terminals (4-mm screws on the screw terminal block, and 3-mm screws on the screw terminals and screw terminal plate) that do not come out when loose.
- To prevent fire, use signal wires of the following temperature ratings.

| Module Type  | Temp. Rating |
|--|--------------|
| Screw terminal block   | 75°C         |
| Universal input module, DCV/TC/DI input module, 4-wire RTD resistance input module, Strain input module, Pulse input module, Digital input module, Digital output module | 80°C         |
| Analog output module, PWM output module  | 85°C         |



## CAUTION

- If a large pulling force is applied to the input/output signal wires connected to the MX100 and MW100, the terminal or signal wire may break. To prevent this from happening, secure all the wiring cables to the installation panel.
- Do not apply a voltage exceeding the value indicated below to the input terminals of the universal input modules. Doing so can damage the modules.
  - Maximum input voltage  
Voltage range of 1 VDC or less, TC, RTD, and DI (contact):  $\pm 10$  VDC  
Voltage range of 2 VDC or more, and DI (LEVEL):  $\pm 120$  VDC
  - Maximum common mode voltage  
Between channels: 250 VACrms (50/60 Hz) (-H04)  
120 VACrms (50/60 Hz) (-M10)  
Input to ground: 600 VACrms (50/60 Hz)
- Do not apply a voltage exceeding the value indicated below to the input terminals of the DCV/TC/DI input module. Doing so can damage the module.
  - Maximum input voltage  
Voltage range of 1 VDC or less, TC, and DI (contact):  $\pm 10$  VDC  
Voltage range of 2 VDC or more, and DI (LEVEL):  $\pm 120$  VDC
  - Maximum common mode voltage  
Between channels: 120 VACrms (50/60 Hz)  
Input to ground: 600 VACrms (50/60 Hz)
- Do not apply a voltage exceeding the value indicated below to the input terminals of the Four-wire RTD resistance input module. Doing so can damage the module.
  - Maximum input voltage  
Voltage range of 1 VDC or less, RTD, resistance, and DI (contact):  $\pm 10$  VDC  
Voltage range of 2 VDC or more, and DI (LEVEL):  $\pm 120$  VDC
  - Maximum common mode voltage  
Between channels: 120 VACrms (50/60 Hz)  
Input to ground: 600 VACrms (50/60 Hz)
- Wiring of the Strain Input Module (-NDI)  
When connecting a bridge head, in order that the empty weight of the cable does not exceed 5 kg, ensure that the cable does not hang down more than 1.5 m (the distance to the floor). If the cable hangs longer than 1.5 m, secure the cable to the installation panel or some other location.
- Do not apply a voltage exceeding the value indicated below to the input terminals of the strain input modules. Doing so can damage the modules.
  - Maximum input voltage:  $\pm 10$  VDC
  - Maximum common mode voltage  
Between channels: 30 VACrms (50/60 Hz)  
Input to ground: 250 VACrms (-B12, -B35), 30 VACrms (-NDI) (50/60 Hz)
- Do not apply a voltage exceeding the value indicated below to the input terminals of the pulse input module. Doing so can damage the module.
  - Maximum input voltage:  $\pm 10$  VDC
  - Maximum common mode voltage  
Input to ground: 250 VACrms (50/60 Hz)
- When using the pulse input module with contact input, the measured signal becomes easily affected by wiring impedance at high speed. The cable should be approximately 25 m or less when the pulse width is 0.05 ms, or 500 m or less at 0.5 ms.  
The wiring impedance varies depending on the such things as the cable length, type, and wiring conditions.

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- Do not apply a voltage exceeding the value indicated below to the input terminals of the 10-CH, High-Speed Digital Input module and the output terminals of the 10-CH, Medium-Speed Digital Output module. Doing so can damage the modules.
    - Maximum input voltage
      - 10-CH, High-Speed Digital Input Module:  $\pm 10$  VDC (-D05),  $\pm 50$  VDC (-D24)
      - 10-CH, Medium-Speed Digital Output module:  $\pm 250$  VAC or 250 VDC
    - Maximum common mode voltage
      - Input/output terminal to ground: 250 VACrms (50/60 Hz)
  - Do not apply a voltage exceeding the value indicated below to the input terminals of the analog output modules or the PWM output modules. Doing so can damage the modules.
    - Maximum common mode voltage
      - Output terminal to ground: 250 VACrms (50/60 Hz)
  - The MX100 and MW100 are a measurement category II (IEC61010-1) and overvoltage category II (CSA1N.61010-1) instrument.
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### **Wiring Procedure, Specifications, and Other Items Related to the Input/Output Modules**

See the MX100/MW100 Data Acquisition Unit Installation and Connection Guide (IM MX100-72E) provided with the main module, or the MX100 Data Acquisition Unit User's Manual (IM MX100-01E) or the MW100 Data Acquisition Unit User's Manual (IM MW100-01E) contained in the manual CD-ROM.