

**NWA300
Field-Based Analog
4 - 20mA DC Current Meter
User's Manual**

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General Precautions

- Checking the Product** The NWA is a precision instrument. When unpacking the unit, handle all materials carefully to prevent accident or damage.
Confirm that you have received the following items:
- NWA main unit
 - Standard accessories
- Checking the Specifications** The specifications of the NWA meter are inscribed on the nameplate. Make sure that the specifications are correct, referencing the appendix "Indication Of NWA Standard Specifications And Tag No.". Pay special attention to the following two items:
- Structure of the main unit
 - Scale type
- Inquiries** If you find errors in the specification, or have any questions regarding the specifications, please contact the azbil Group sales office.
In this case be sure to inform us of the NWA Tag and Product Numbers.
- Notes on Storage** When storing the NWA before installation, pay attention to the following:
- Store it indoors in a place with constant room temperature and humidity, and where it is not subject to vibration or shock.
 - Store it as originally packed.

Chapter 1

Configuration And Structure Of NWA Current Indication System

Overview

This chapter introduces the configuration of the NWA current indication system, and includes:

- The structure of the NWA main unit, with the names and functions of each section.
- Notes regarding use of the explosion-proof NWA.

1-1 System Configuration

Overview

The NWA analog meter displays analog DC signals in the 4 to 20 mA range, obtained from various field instruments.

Current Indication Using the NWA

The following shows the configuration of a typical current indication system using the NWA.

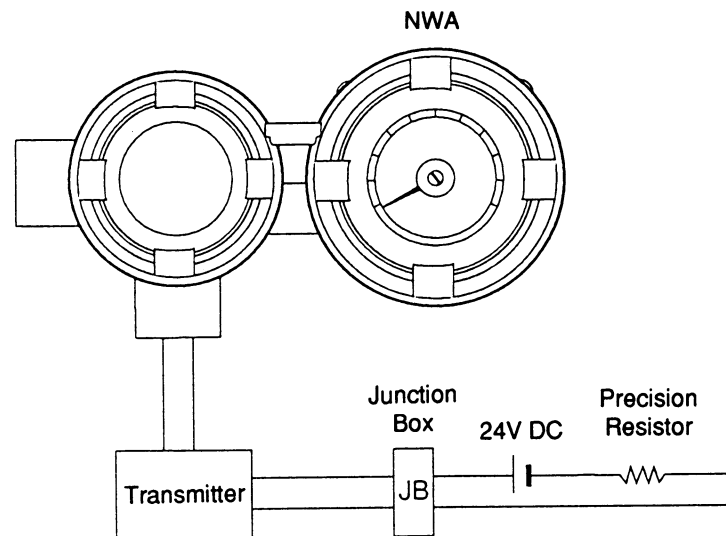


Fig1-1 Configuration of the NWA
Current Indication System

1-2 Notes on the Explosion-proof NWA

Overview

The NWA explosion-proof model is certified to comply with Japan's Industrial Safety and Health Laws, and can thus be used in dangerous locations. For proper use, the following guidelines must be followed.

Pressure-Resistant, Explosion-proof Structure

The pressure-resistant and explosion-proof structure is totally sealed, which contains possible internal explosions, and prevents ignition of external explosive gases.

Selection of Mounting Location

When selecting a mounting location for the NWA, observe the following conditions:

-Dangerous locations in which the NWA can be safely installed are defined as follows:

Gases classed as requiring explosion-proof instruments

Atmospheres with a flashpoint of 85C or higher

The NWA analog meter can be installed in Type 1 or 2 locations; **it cannot be installed in Type 0 locations.**

Installation

-When installing the NWA, in either dangerous or nondangerous locations, always refer to the Appendix "Installation Specifications" to confirm correct wiring.

-Perform all external wiring following the cable installation procedures given in the document "Recommended Practice for Explosion-Protected Installations in General Industries", published by Japan's Ministry of Labor's Research Institute for Industrial Safety.


For cable installation, be sure to attach the standard Azbil Corporation pressure-resistant packing cable adapter to the wiring port of the terminal box.

-The explosion-proof properties of the pressure-resistant explosion-proof structure are maintained by the length of the flamepath, gap, and by the mechanical strength of the casing. Therefore, make sure that there is no corrosion, distortion, or scarring of the case cover, any of which may cause reduced mechanical strength. Handle the meter carefully to avoid damage to screws and joints.

If any of the above conditions is not satisfied, the NWA's explosion-proofing cannot be guaranteed. Install and use the NWA only under the proper conditions. If the NWA becomes damaged, contact the azbil Group sales office.

Nameplate

The NWA explosion-proof model is certified to comply with Japan's Industrial Safety and Health Laws for use in dangerous locations. A certification mark is attached to the nameplate of explosion-proof products, as shown below. **Check that mark is present.**

	TAG NO.	<input type="text"/>	<input type="checkbox"/>
	MODEL	<input type="text"/>	
	PROD.	<input type="text"/>	DATE <input type="text"/>
	INPUT	4-20mA DC ANALOG/DIGITAL	
	ExdIICT6X: INDOOR AND OUTDOOR HAZARDOUS LOCATIONS		
	AMBIENT TEMP. -20~+60 °C		
注 意: 通電中はカバーを開けないで下さい。配線は最高許容温度65°C			
Azbil Corporation		以上のケーブルを使用下さい。MADE IN JAPAN	

勞()検
第 号
アズビル株式会社

Figure1-2 Nameplate

1-3 Structure and Function

Structure

Major components

The NWA analog meter consists of the main unit indicator and the terminal box, as shown below.

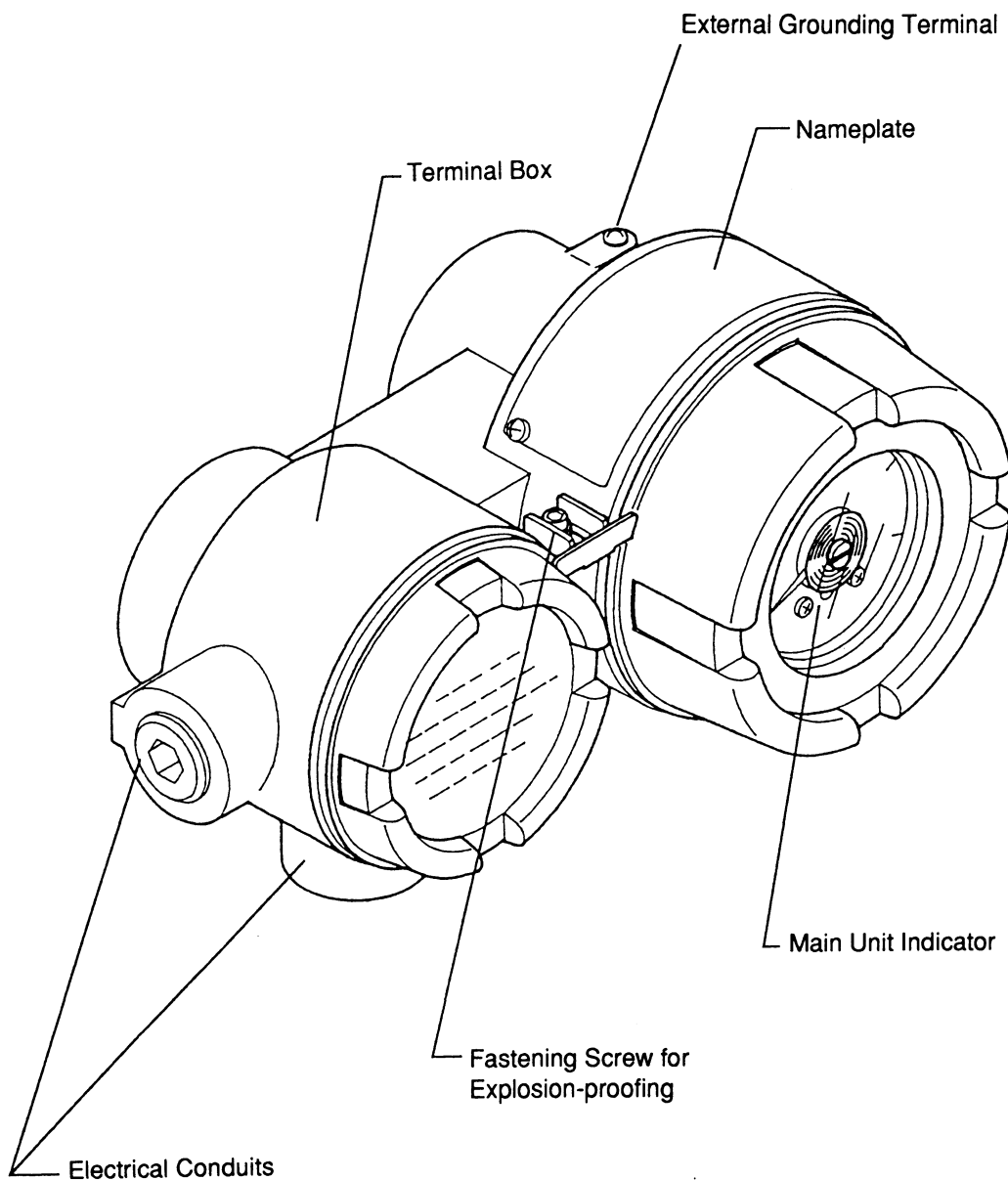


Figure1-3

General View of the NWA

Names and Functions of each Section

The following table shows the name and function of each section of the NWA.

<Name>	<Function>
Main unit indicator	Receives analog signal from the transmitter and indicates values
Terminal box	Accommodates input signal terminals
Fastening screw for explosion-proofing	For explosion-proof model, be sure to fasten this screw when in use
Nameplate	The Model No. and Product No. are inscribed, and the explosion-proofing certification seal is stamped
Pressure-resistant packing cable adapter	Seals the cable terminals to maintain explosion-proofing and improve insulation properties and mechanical strength. This adapter is required for explosion-proof instrumentation. See Figure 1-4 and 1-5.
External grounding terminal	Connect the ground lead from this terminal to a good ground as close as possible to the unit, Be sure to use signal point (Type3) grounding. Caution: The NWA analog meter may not operate normally without proper grounding.

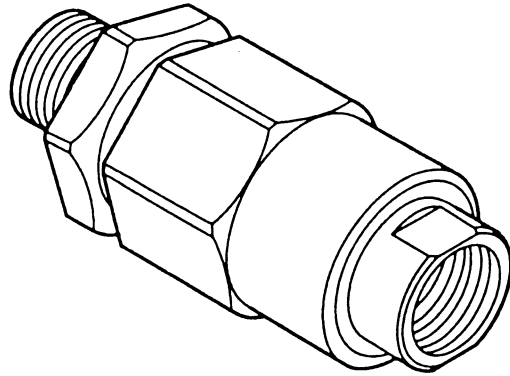


Figure1-4 General View of the Pressure-Resistant Packing Cable Adapter

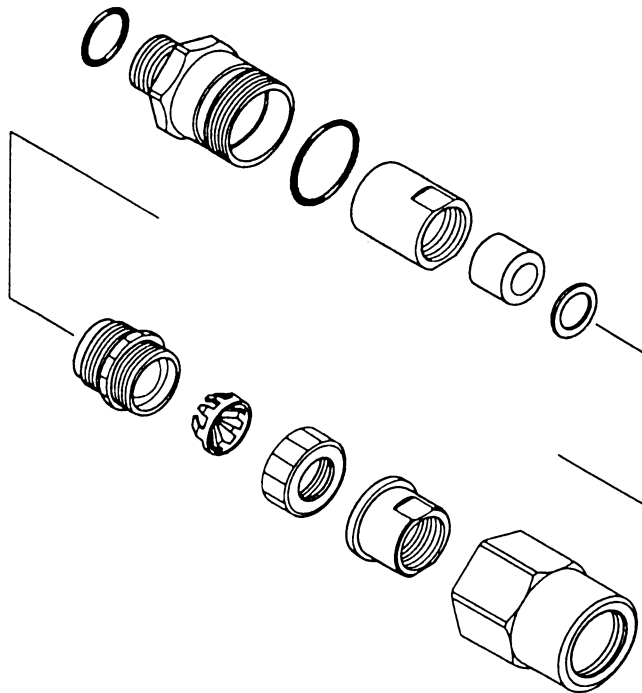


Figure1-5 Assemblies of the Pressure-Resistant Packing Cable Adapter

Main Unit Indicator

Description

The functions and structure of the main unit indicator are as follows:
-Receives analog signal from the transmitter and indicates values

Name of each Section

The following shows the name of each section of the main unit indicator.

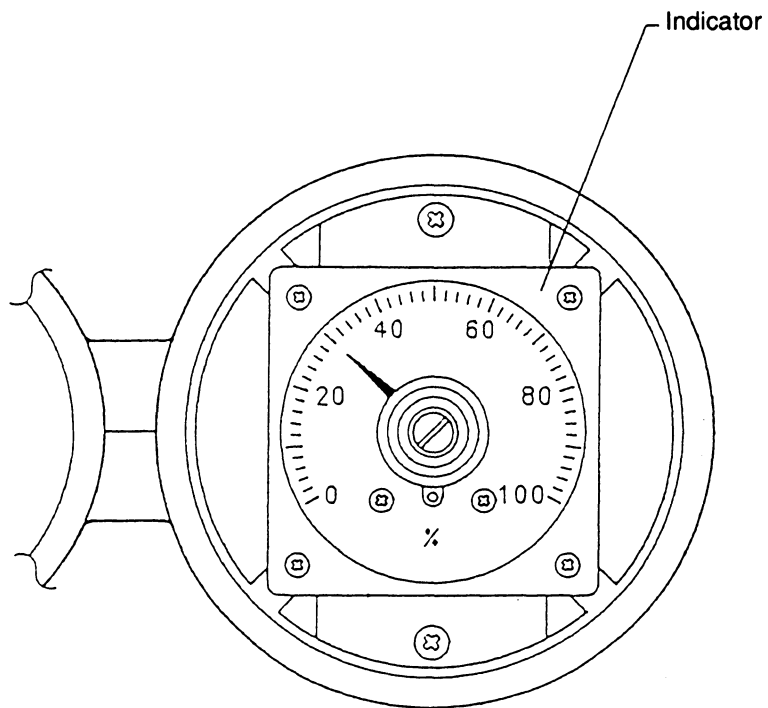


Figure1-7 Main Unit Indicator Detail

Function of each section

The following table shows the function of each section of the main unit indicator.

<Name>	<Function>
Indicator	Incorporates 240° meter

Terminal Box

Description

The terminal box is provided with output signal terminals.

Name of section

The following shows the name of each section of the terminal box.

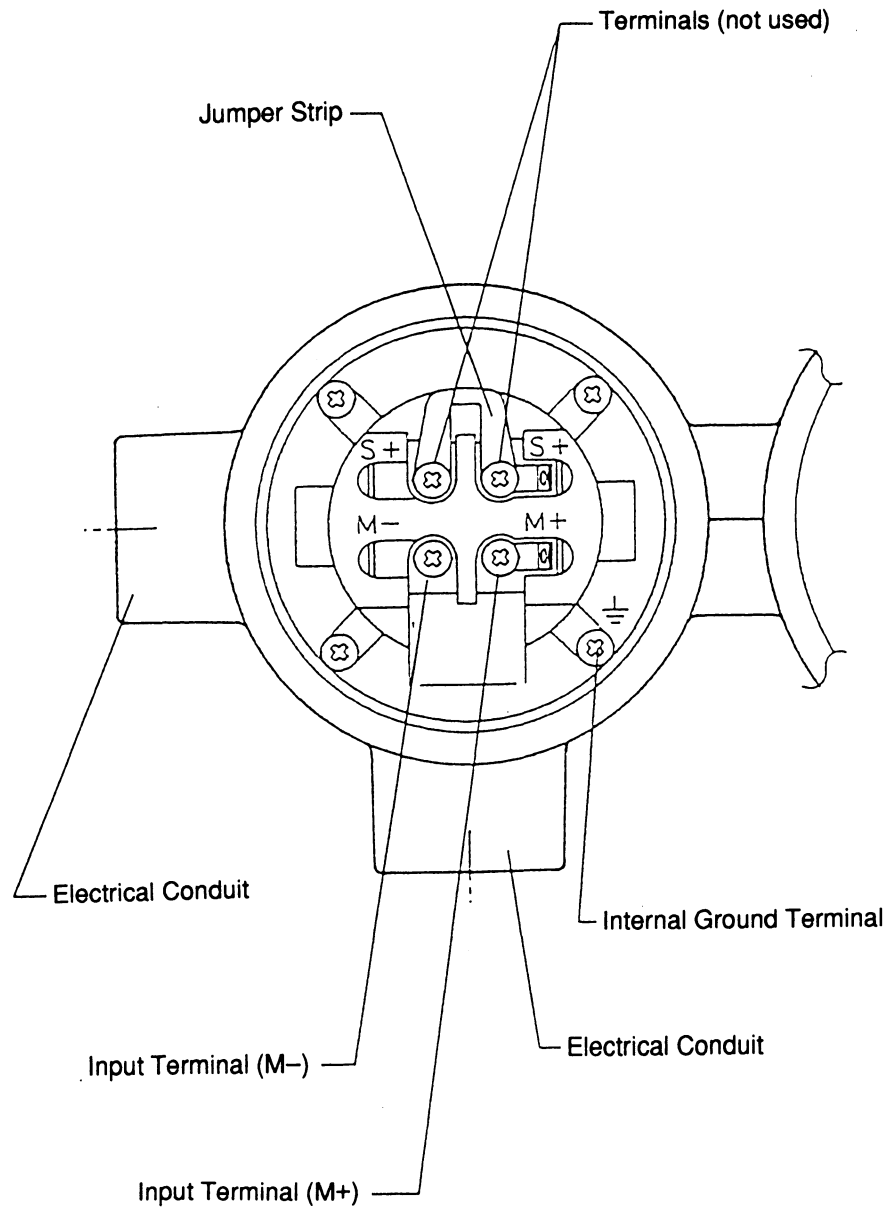


Figure 1-8 Terminal Box Detail

Function of each section

The following table shows the function of each section of the terminal box:

<Name>	<Function>
Input signal terminal	M+ or M- is indicated.
Unconnected terminals	These terminals are not normally used. They are used as relay terminals when multiple NWA meters are connected. See the subsection "Electrical Installation (4)" on page 19.
Internal grounding terminal	-If the NWA meter is not immune to electrical noise, connect one end of the shield wire to this terminal.(Not normally used) -This terminal is internally connected to the external grounding terminal. When this terminal is used, make sure that two-point grounding is not made.

Chapter 2

Installation

Overview

This chapter covers the mounting and the electrical installation procedures for the NWA meter, which differ according to whether or not the transmitter is provided with an output terminal for external meters, and to whether one or multiple NWAs are used.

It covers:

- Selection of mounting location
- Mounting procedure
- Wiring procedure
- Notes on wiring the pressure-resistant explosion-proof model

2-1 Before Installation

Mounting Environment

Overview	To assure the long-term performance and reliability of the NWA, select the mounting location according to the following criteria:
Environmental conditions	<ul style="list-style-type: none">-Install the meter in a location with ambient temperatures within -10 to +60°C and ambient humidity within 5 to 100% RH, and which is not subject to rapid temperature or humidity changes.-Avoid installing the meter near large-current cables, motors, or transformers that might cause electromagnetic interference.-Avoid installing the meter in locations subject to excessive vibration or shock, or locations where corrosive gas may be present.-Avoid installing the meter in locations exposed to direct sunlight or inclement weather.-Perform all wiring(in either dangerous or non-dangerous locations) with reference to the Appendix "Installation Specifications".-When installing the meter in dangerous locations, ensure that wiring work also meets the requirements of Section 1.2, "Notes on the Explosion-Proof Analog Meter".

2-2 Installation

Mounting

Procedure

Follow the steps below:

<Step>

1

<Procedure>

Attach the bracket using the four bracket mounting holes at the back of the main unit. (See Figure2-1)

2

Using the mounted bracket, secure the main unit to the 2B pipe vertically or horizontally with a U bolt. (See Figure2-2)

Notes: Make sure that the 2B pipe is fixed securely.

Figure

Figure2-1 shows the bracket mounting holes. Figure2-2 shows the NWA meter mounted on a 2B pipe.

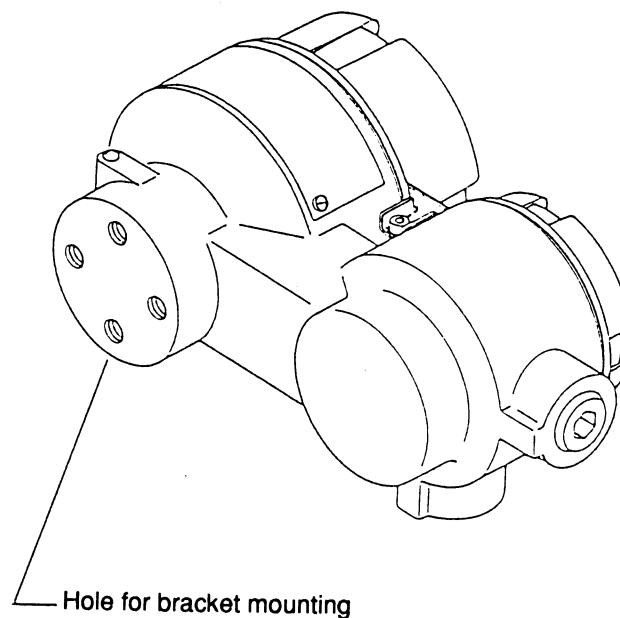


Figure2-1 Rear of the NWA

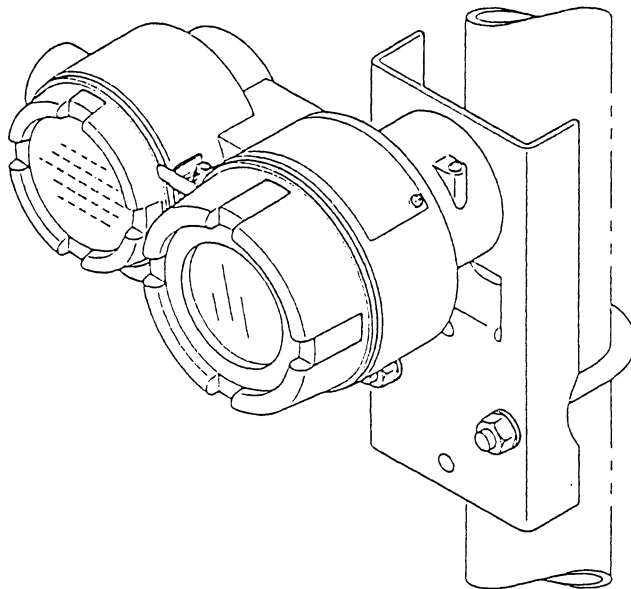


Figure2-2 NWA Analog Meter Mounted on 2" Pipe

2-3 Wiring

Overview

This subsection covers the following items regarding electrical installation of the NWA:

- Cable connection position
- Cable selection and installation
- Wiring procedure

Caution

Avoid connecting the NWA to commercial power. Otherwise, the internal measurement circuit may be irrevocably damaged.

Connection position

The following shows the terminal block of the terminal box:

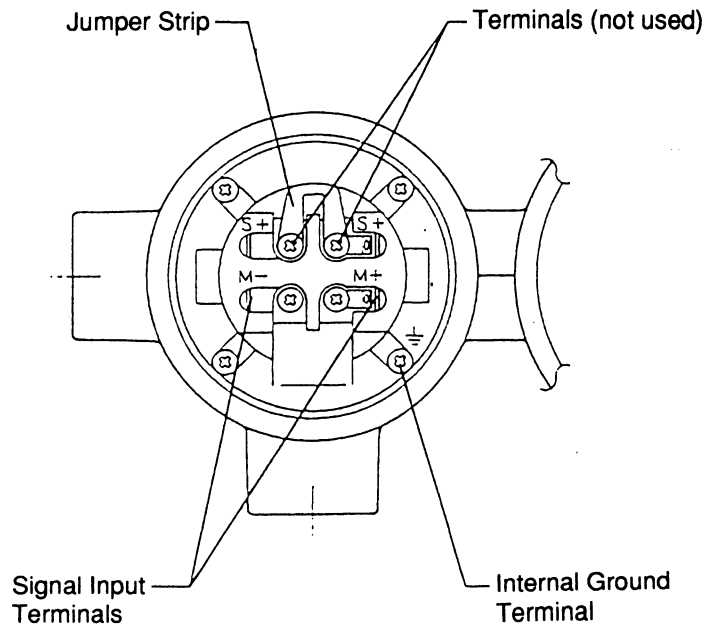


Figure2-3 Terminal Block

Cable selection

Twisted 600V vinyl sheath lead CVV(JIS C3401) with a cross section of 2mm², or equivalent, is recommended.

For wiring in locations subject to electrical noise, shielded leads are recommended.

The cable is connected to the terminal box through the conduit jointer(G1/2 female screw). The optimum diameter of the cable is Ø11.

For termination, a crimp contact(M4 screw) with insulated sleeve is recommended.

Cable installation

When installing the cable between the NWA and the transmitter, keep the following points in mind:

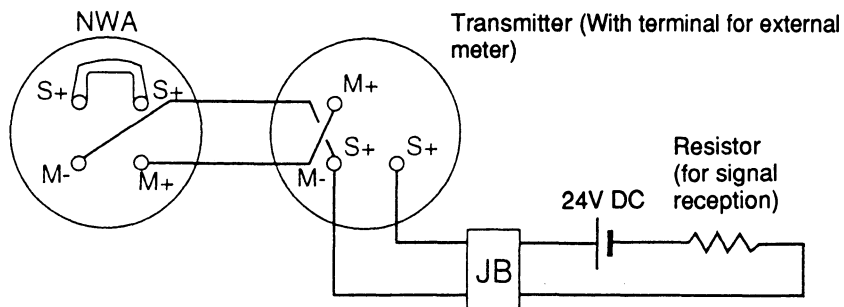
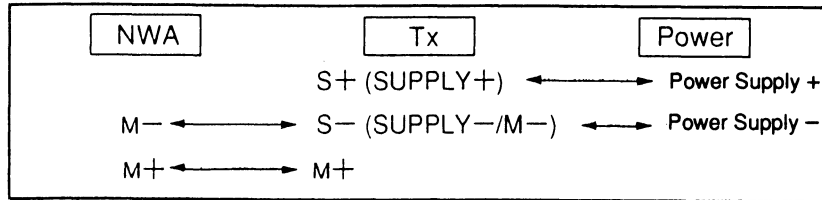
-Avoid installing the cable near electrical noise-emitting equipment such as large-current transformers, motors, or power supplies. Do not lay the cables in trays or ducts with other power cables.

-To protect the NWA from water, it is recommended that wiring be performed using conduit tubes and ducts. Use water-proof glands at conduit joints.

Wiring when only one NWA is used

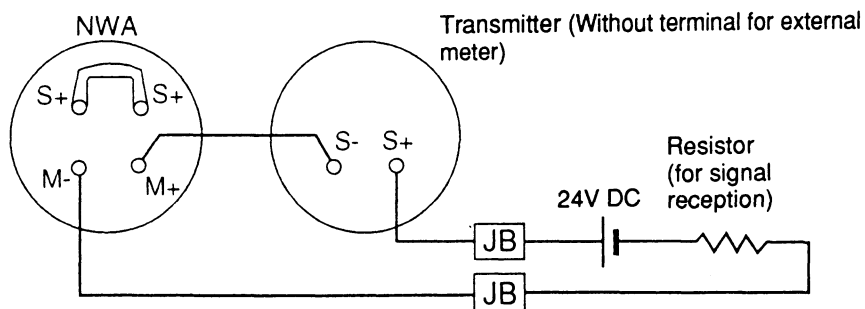
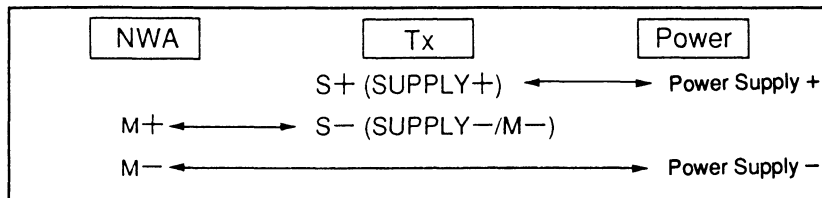
When the transmitter is provided with an output signal terminal for external meters

<Case1>



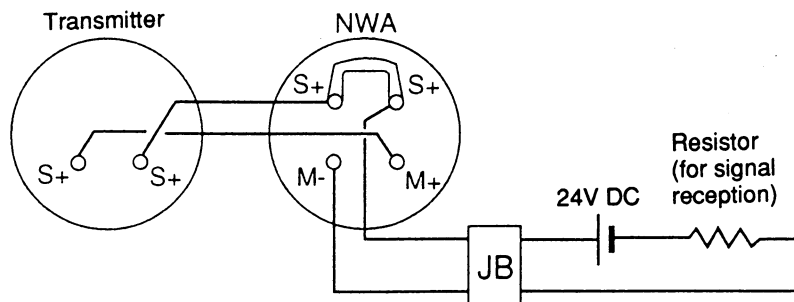
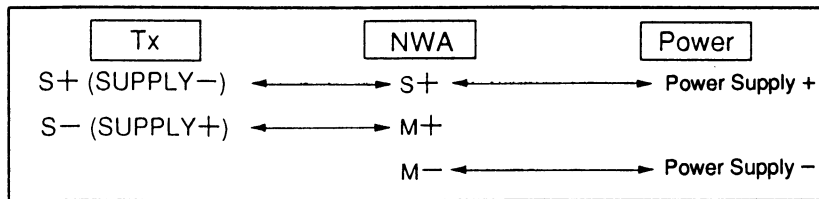
Notes: Don't remove a jumper board on the terminal board (M+andM-).

<Case2>



Notes: Don't remove a jumper board on the terminal board (M+andM-).

When the transmitter is **not** provided with an output signal terminal for external meters



Notes: Don't remove a jumper board on the terminal board (M+andM-).

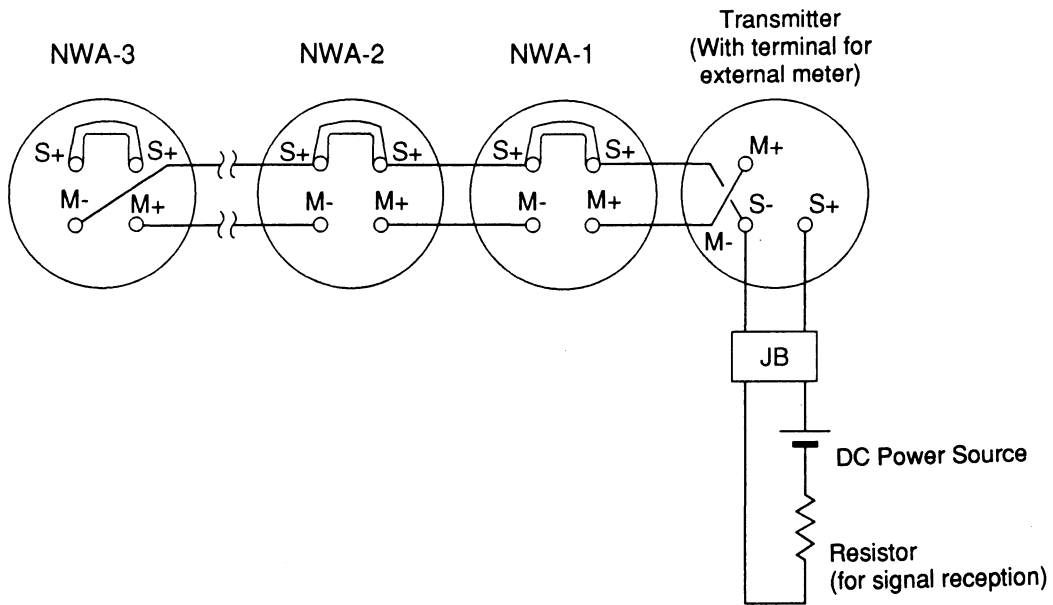
Wiring when multiple NWAs are used

Notes on using multiple NWAs

-Internal resistance of the NWA is 10 ohms.

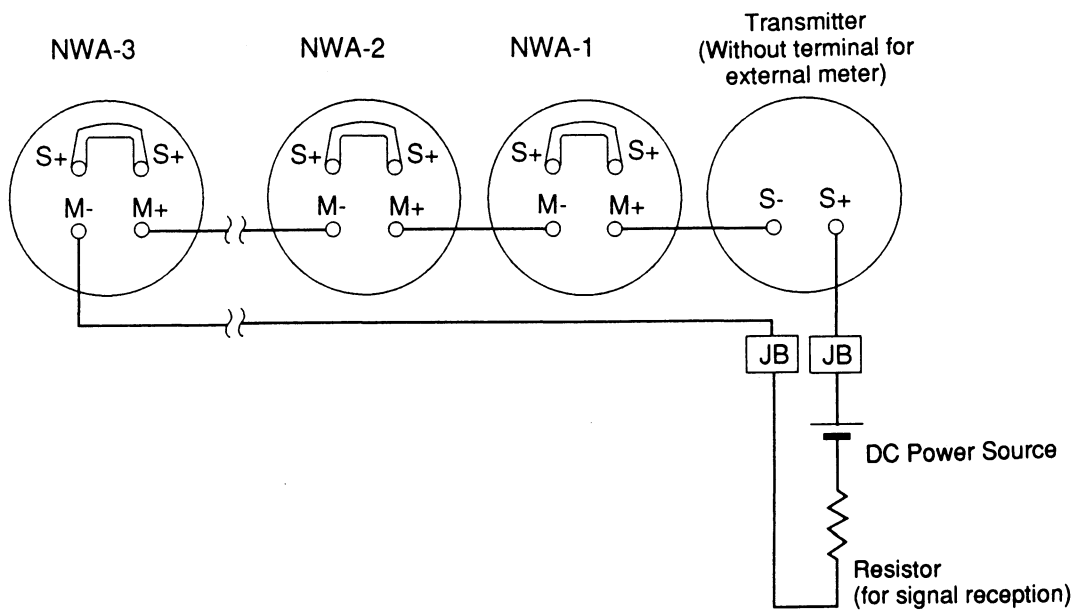
-Determine the number of NWAs to be used, taking the loop voltage and internal impedance of each device into account.

When the transmitter is provided with an output signal terminal for external meter.



Notes: Don't remove a jumper board on the terminal board (M+andM-).

When the transmitter is **not** provided with an output signal terminal for external meters.



Notes: Don't remove a jumper board on the terminal board (M+andM-).

Wiring for the pressure-resistant, explosion-proof model

Notes:

When wiring for the pressure-resistant, explosion-proof model, observe the following.

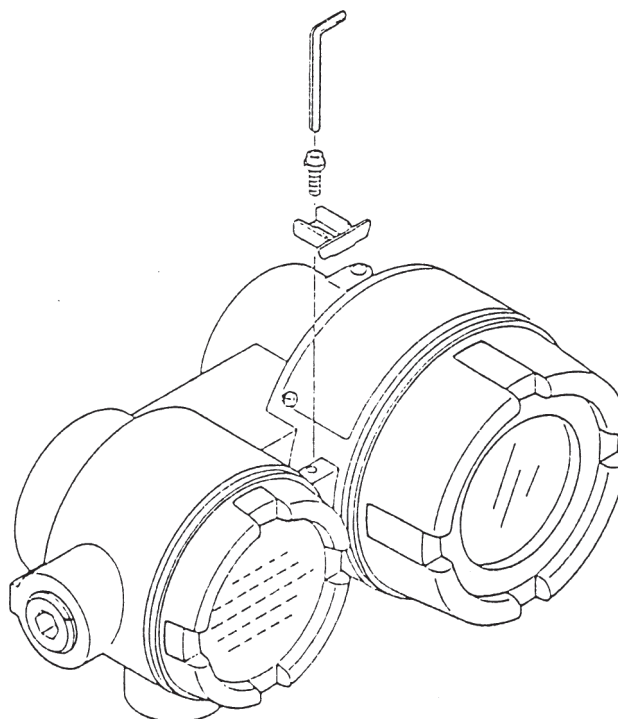
-The main unit and terminal box of the explosion and pressure-resistant model have a locking structure. After wiring, close the terminal cover securely, then lock it using a 3 mm hexagonal wrench.

-Lock both the main unit cover and the terminal cover at the same time.(See Fig.2-4.)

-As products from Azbil Corporation employ a pressure-resistant packing system, pressure-resistant packing is required for cable installation in areas requiring explosion and pressure-resistance.

-Use Azbil Corporation's standard pressure-resistant packing adapter.

-For details of wiring, refer to technical information (RIKS-TR) from Japan's Technical Institute for Industrial Safety.



Chapter 3

NWA Operation

Overview

This chapter discusses initial start-up of the NWA. Read this chapter when activating the NWA for the first time.

3.1 Start-up

Procedure

<Step>	<Description>
1	Make sure that wiring for the NWA is completed.
2	Make sure that notes and cautions regarding use of the NWA have been fully observed.
3	Turn on the power to the transmitter This completes start-up of the NWA

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