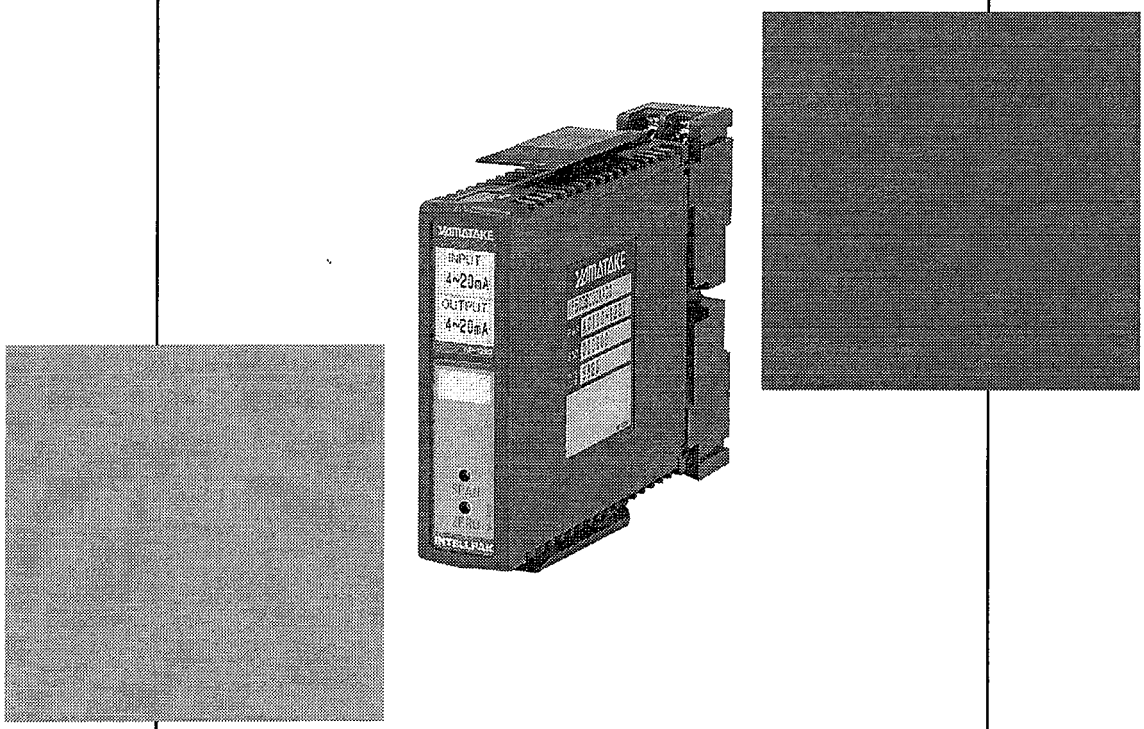
azbil

No. CP-UM-1401E

IP50DBE (Non-Insulated Type)
IP50DBC (Insulated Type)
INTELLPAK
Distributor

User's Manual



Yamatake Corporation

RESTRICTIONS ON USE

This product has been designed, developed and manufactured for general-purpose application in machinery and equipment.
Accordingly, when used in applications outlined below, special care should be taken to implement a fail-safe and/or redundant design concept as well as a periodic maintenance program.

- Safety devices for plant worker protection
- Start/stop control devices for transportation and material handling machines
- Aeronautical/aerospace machines
- Control devices for nuclear reactors

Never use this product in applications where human safety may be put at risk.

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NOTICE

Be sure that the user receives this manual before the product is used.

Copying or duplicating this user's manual in part or in whole is forbidden. The information and specifications in this manual are subject to change without notice.

Considerable effort has been made to ensure that this manual is free from inaccuracies and omissions. If you should find an error or omission, please contact Yamatake Corporation.

In no event is Yamatake Corporation liable to anyone for any indirect, special or consequential damages as a result of using this product.

SAFETY PRECAUTIONS

⚠WARNING Warnings are indicated when mishandling this product might result in death or serious injury.

⚠CAUTION Cautions are indicated when mishandling this product might result in minor injury to the user, or only physical damage to the product.

⚠WARNING

- Before wiring, or removing/mounting the IP50, be sure to turn the power OFF. Failure to do so might cause electric shock.

⚠CAUTION

- Before removing or mounting the IP50, be sure to turn the power OFF. Failure to do so might cause electric shock.
- Use the IP50 within the operating ranges recommended in the specifications (temperature, humidity, voltage, vibration, shock, mounting direction, atmosphere, etc.).
- Do not block ventilation holes. Doing so might cause fire or faulty operation.
- Do not disassemble the IP50. Doing so might cause electric shock or faulty
- Before wiring the IP50, be sure to turn the power OFF. Failure to do so might cause electric shock.
- Do not touch electrically charged parts such as the power terminals. Doing so might cause electric shock.
- Do not allow lead clippings, chips or water to enter the controller case. Doing so might cause fire or faulty operation.
- Firmly tighten the terminal screws at the torque listed in the specifications. Insufficient tightening of terminal screws might cause electric shock or fire.
- Do not use unused terminals on the IP50 as relay terminals. Doing so might cause electric shock, fire, or faulty operation.

1. INTRODUCTION AND SPECIFICATIONS

1. Introduction

The INTELLPAK IP50DBE (non-insulated type) and IP50DBC (insulated type) are designed as a distributor to feed power to a 2-wire type transmitter and output a voltage signal directly after converting a current signal from the transmitter into the voltage signal.

2. Specifications

Output ass'y	Response time	Insulated type: 25ms (90% response)	
	Converted output type	4 to 20mA DC or 1 to 5V DC (selectable)	
	Conversion output circuit	2 circuits	
	Feed output voltage	24 ±1V DC (for transmitter)	
	Zero and span adjustment	Non-insulated type: None	
		Insulated type: Zero & span About ±10% FS (3-turns trimmer)	
	Output impedance	4 to 20mA DC: Non-insulated type Same as the output impedance of the transmitter Insulated type Higher than 5MΩ	
		1 to 5V DC: Non-insulated type 250Ω ±1% Insulated type Lower than 0.1Ω	
General specifications	Accuracy	±0.1% FS at reference temperature 23°C	
	Power supply type	AC	DC
	Rated power voltage	Insulated type: 100/110/120V AC 200/220/240V AC Non-insulated type: 100/110V AC 120V AC 200/220V AC or 240V AC 50/60Hz	24V DC
	Working power voltage	Rated voltage ±10%	24V DC ±10%
	Power consumption	Non-insulated type: Approx. 5.0VA	Non-insulated type: Approx. 2.6VA
		Insulated type: Approx. 6.0VA	Insulated type: Approx. 2.6VA
	Starting current	—	Non-insulated type: 0.11A max. Insulated type: 0.15A max.
	Peak value and width of the current when turning on the power supply	Lower than 10A, 1ms	Lower than 5A, 1ms
	Insulation resistance	Higher than 100MΩ by a 500V DC megger between input/output terminals and power terminals and also between mutual input/output terminals (insulated type)	
	Dielectric strength	2000V AC, 1min between input/output terminals and power terminals and also between mutual input/output terminals (insulated type)	
	Power supply characteristic	±0.1% FS at rated voltage ±10% (Insulated type)	
	Temperature characteristic	Non-insulated type: ±0.1% FS/10°C	
		Insulated type: ±0.1% FS/10°C	
	Working ambient temperature	−5 to +55°C No freezing is allowable.	
	Storage ambient temperature	−20 to +70°C No freezing is allowable.	
	Working ambient humidity	Lower than 90% RH No dew condensation is allowable.	
	Storage ambient humidity	Lower than 90% RH No dew condensation is allowable.	
	Vibration resistance	Less than 4.9m/s² at 10 to 60Hz in X, Y, Z directions for 2 hours each (with a vibration absorbing bracket)	Not applicable when this unit is mounted on DIN rails
	Shock resistance	Less than 490m/s² 3 times each in vertical direction	
	Case material	Heat-resisting ABS resin	
	Case color	Grey, Munsell code 2.5PB3.5/1	
	Wiring terminal screw	M3.5	
	Installation	Installed on a wall or DIN rails.	
	Mass	Approx. 200g (including the base socket)	
	Standard accessories	Base socket Part No. QN719A	

		Part name	Part No.	Part name	Part No.
Auxiliary parts	Option	Vibration-absorbing bracket	QN718A	250Ω resistor for 1 to 5V conversion	81404382-001
		Current-check diode	81404381-001	—	—

3. Auxiliary Parts (option)

(1) Vibration-absorbing bracket (QN718A)

Use this bracket when the distributor is mounted at place where vibrations occur. Use a screwdriver for mounting or dismounting this bracket.

(2) Current check diode (81404381-001)

This diode is mounted at No. 2 output (across terminals ① – ②) of a 4 to 20mA DC output model to measure an output current value by an ammeter. It cannot be used together with the 250Ω resistor for 1 to 5V conversion in (3). Also, No. 2 output cannot be used.

(3) 250Ω resistor for 1 to 5V conversion (81404382-001)

This resistor is mounted at No. 2 output (across terminals ① – ②) of a 4 to 20mA DC model to convert No. 2 output into 1 to 5V DC. Accuracy: ±0.05% (This resistor cannot be used together with the current check diode in (2).)

4. Cautions

(1) This input side (transmitter power supply side) and the output side are not isolated from each other. The input and output are isolated from an instrument power supply.

(2) Use an integrated type high-speed A/D converter for A/D convertion of the unit output.
If a successive approximation type high-speed /AD converter is used, confirm its functionality with a combination test or other means in advance (in case of a 24V DC power supply only).

(3) This unit uses a switching type power supply unit. It is possible that some distortion of the transmitter output signal may occur.
Confirm its functionality with a combination test or other means in advance.

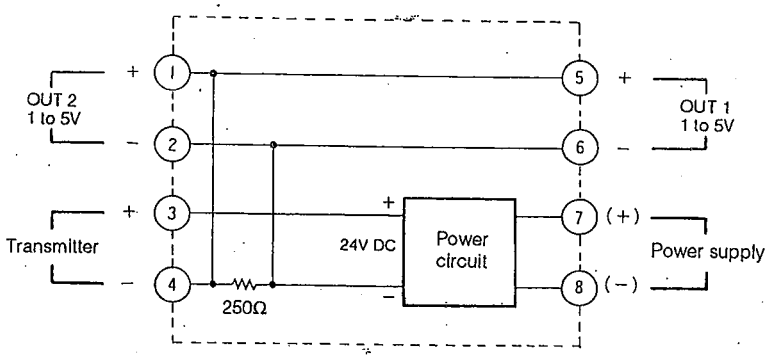
2. MODEL NUMBER

Model number configuration [I] [II] [III] [IV] [V] **Example: IP50DBE00AA00**

I	II	III	IV	V	Contents
Basic model No.	Input type	Output type	Power voltage	Additional processing	
IP50DBE					Non-insulated type distributor The power supply model numbers are selectable from 1, 2, 5, 6 and D only.
IP50DBC					Insulated type distributor Either power supply model number A, B or D is selectable.
	00				4 to 20mA DC 2-wire type transmitter (Supply current 25mA)
	01				4 to 20mA DC 2-wire type transmitter (Supply current 40mA)
		A			4 to 20mA DC
		H			1 to 5V DC
			A		100/110/120V AC 50/60Hz
			B		200/220/240V AC 50/60Hz
			D		24V DC
				00	None
				T0	Tropical processing is provided.
				D0	Inspection certificate provided.
				B0	Tropical processing is provided, and test data are attached.
				Y0	Complying with the traceability certification

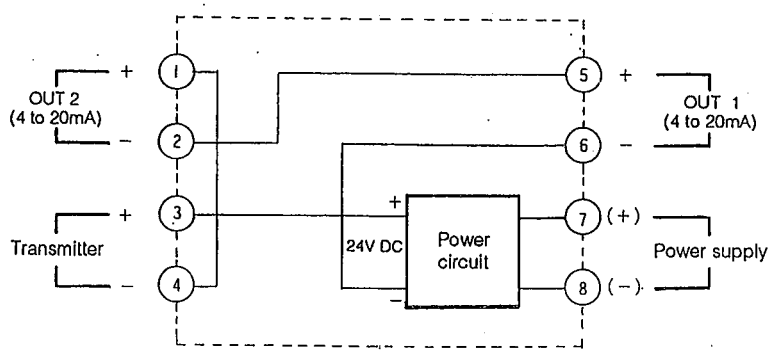
3. CIRCUIT BLOCK DIAGRAM

IP50DBE00H



1 to 5V DC output

IP50DBE00A



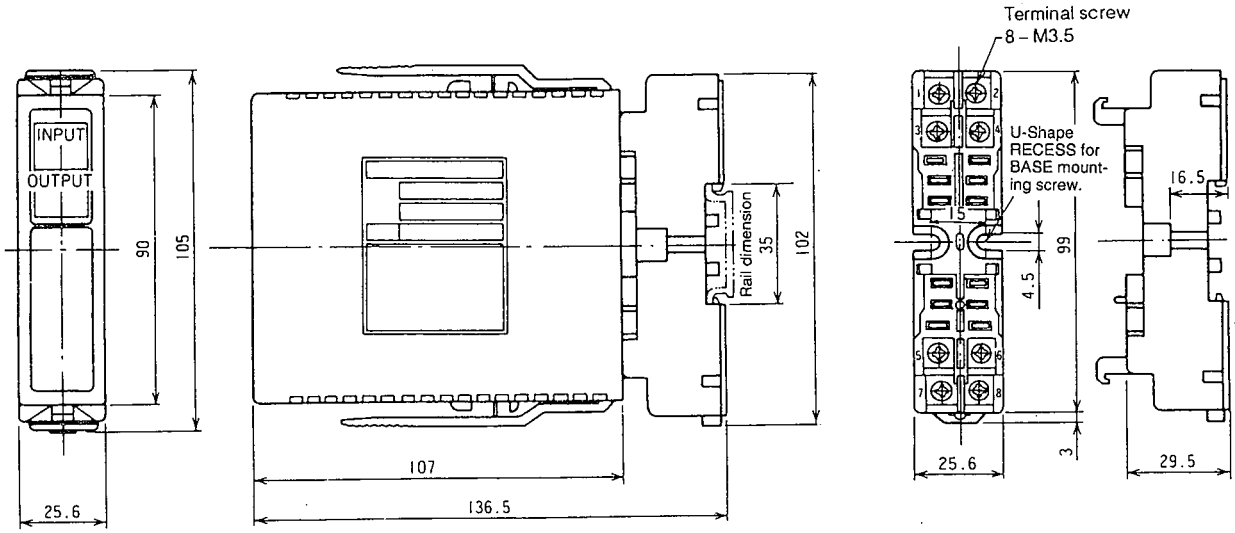
4 to 20mA DC output

4. EXTERNAL DIMENSION DRAWING

External dimension drawing

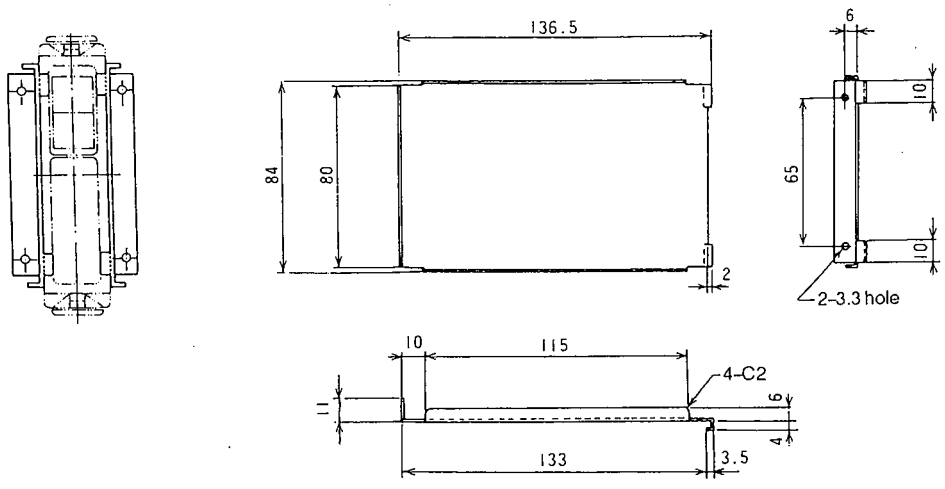
Unit: mm

Base socket Part No. QN719A



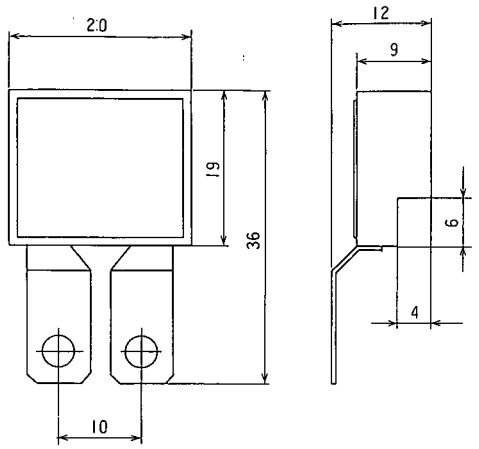
With the vibration-absorbing bracket mounted

Vibration-absorbing bracket Part No. QN718A



Material: Cold-rolled steel plate SPCC t1
Galvanized, and chrome processed

Current check diode (81404381-001)
250Ω resistor for 1 to 5V conversion (81404382-001)



5. INSTALLATION

1. Cautions In Installation

(1) Handling

When removing or mounting the main unit from/to the socket, be sure to turn OFF the power supply and the input signal in advance to prevent the occurrence of problems.

(2) Installation

(a) When the equipment is to be installed in places where there is excessive dust or chips, house it in a dust-proof cabinet which has heat radiation function.

(b) Avoid exposing the equipment to vibration and shocks as much as possible, since they may cause malfunctions.

(3) Wiring

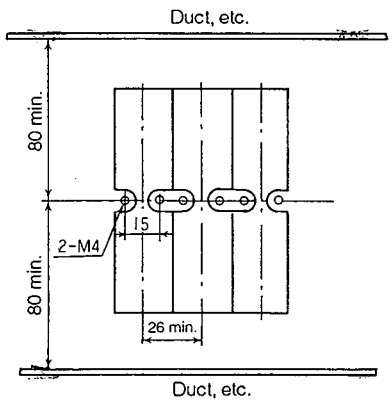
(a) Don't lay the power line, input signal line, and output signal line near a noise generator, or relay drive line.

(b) Avoid clamping these lines together with a noise superimposed line or putting them together in the same duct.

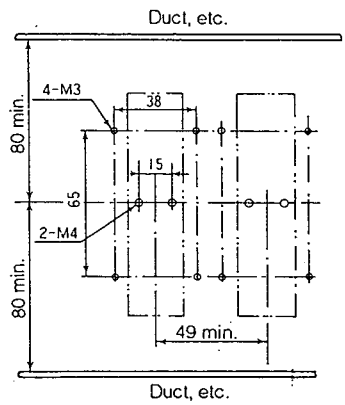
2. Installation Method

Unit: mm

Lateral installation and vertical space



Installation on vibration-absorbing bracket and vertical space



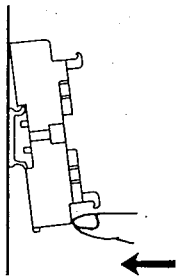
Cautions:

① When installing the equipment on a wall subject to vibration, use the vibration-absorbing bracket (option, QN718A). Where there is vibration, the equipment cannot be installed on the DIN rail.

3. Mounting and Removing To/From The Din Rail

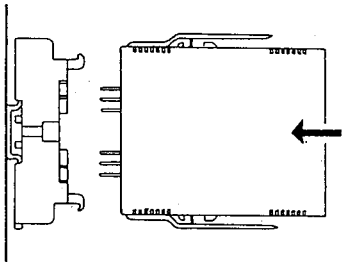
(1) How to fix the socket

Hook the click to the rail with the slider on the socket bottom-down, and push in the lower part of the socket in the direction of the arrow, as shown in the figure, until it is fixed.



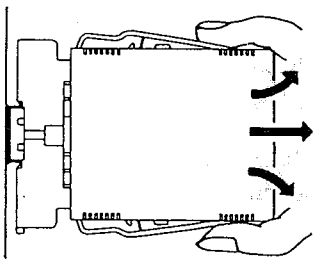
(2) How to fix the main unit to the socket

Set the main unit so that the label can be properly read, and insert it straight and level. At this time, insert it until the hooks are restored to a parallel position with the main unit case, and they are completely engaged with the projection of the socket.



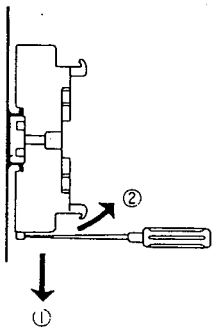
(3) How to remove the main unit from the socket

Push in the main unit, and spread the upper and lower hooks simultaneously, and then extract the main unit forward. Note that the socket may be damaged if both hooks are not spread sufficiently.

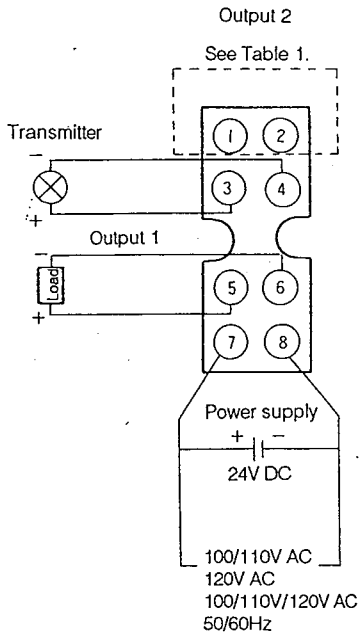


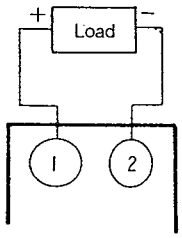
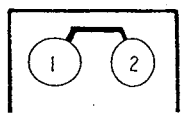
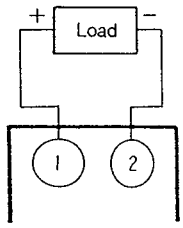
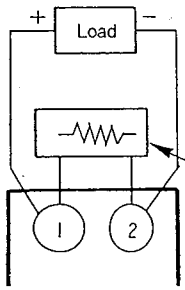
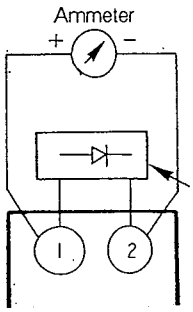
(4) How to remove the socket

Insert a screwdriver in the slider groove of the socket. While pulling the screwdriver in the direction of the arrow as shown in the figure, draw the lower part of the socket forward until it is removed.



6. WIRING



TYPE		Connections
1 to 5V output type		 No. 2 output to 5V (No signal is connected to terminals 1 2 when No. 2 output is not used.)
4 to 20mA output types	When No. 2 output is not used	Attachment: A short bar 
	When No. 2 output of 4 to 20mA is used	 No. 2 output 4 to 20mA
	When No. 2 output of 1 to 5V is used	 No. 2 output 1 to 5V 250Ω resistor (81404382-001) (Option)
	When No. 2 output is used for checking a current	 Current check diode (81404381-001) (Option)

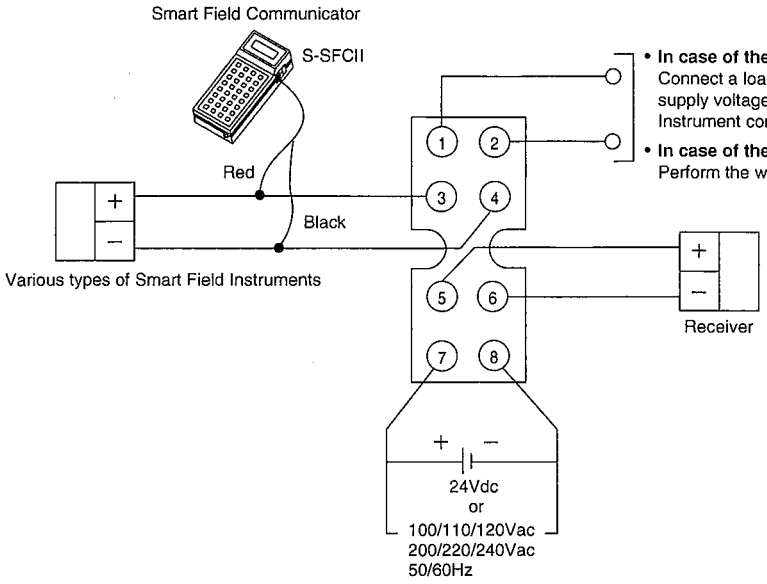
CAUTION

A/D conversion of outputs

Use an integrated type A/D converter for A/D conversion of IP50 series outputs.

If a successive approximation type high-speed A/D converter or the like is used, confirm its functions by a combination test and other means in advance.

Connection with various types of Smart Field Instruments



- **In case of the IP50DBE current output model**
  Connect a load resistance of 250‰ or more according to the supply voltage vs load resistance characteristics of the Smart Field Instrument connected.
- **In case of the IP50DBE voltage output model or the IP50DBC**
  Perform the wiring according to the table for output 2 (on page 8).

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Specifications are subject to change without notice.

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URL: http://www.azbil.com

Printed on recycled paper. (06)

Printed in Japan.
1st Edition: Issued in Feb. 1992
9th Edition: Issued in July 2006 (M)