Prelimirary

OMRON

RFID System

V680 Series

ID Sensor User's Manual

ID Sensor

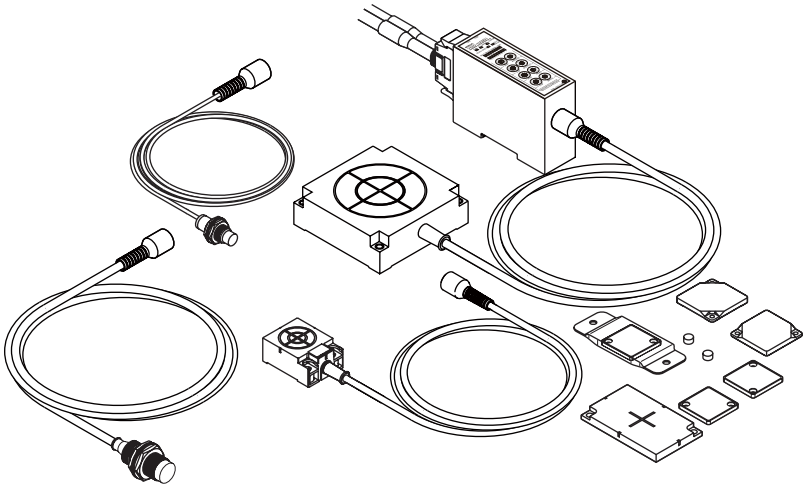
V680-HAM91
V680-HAM81

Antenna

V680-HS51
V680-HS52
V680-HS63
V680-HS65

ID Tags

V680-D1KP52MT
V680-D1KP66T/-D1KP66MT
V680-D1KP66T-SP
V680-D2KF52M
V680-D2KF67/-D2KF67M
V680-D8KF68/-D32KF68



Cat.No.:Z279-E1-01

Introduction

Thank you for purchasing a V680-series RFID System. This manual describes the functions, performance, and application methods needed for optimum use of the V680-series RFID System.

Please observe the following items when using the RFID System.

- Allow the RFID System to be installed and operated only by qualified specialist with a sufficient knowledge of electrical systems.
- Read and understand this manual before attempting to use the RFID System and use the RFID System correctly.
- Keep this manual in a safe and accessible location so that it is available for reference when required.

RFID System

V680-HAM91	ID Sensor
V680-HAM81	ID Sensor
V680-HS51	Antenna
V680-HS52	Antenna
V680-HS63	Antenna
V680-HS65	Antenna
V680-D1KP52MT	ID Tag
V680-D1KP66T/-D1KP66MT	ID Tag
V680-D1KP66T-SP	ID Tag
V680-D2KF52M	ID Tag
V680-D2KF67/-D2KF67M	ID Tag
V680-D8KF68/-D32KF68	ID Tag

User's Manual

READ AND UNDERSTAND THIS DOCUMENT

Please read and understand this document before using the products. Please consult your OMRON representative if you have any questions or comments.

WARRANTY

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.
OMRON MAKES NO WARRANTY OR REPRESENTATION, EXPRESS OR IMPLIED, REGARDING NON-INFRINGEMENT, MERCHANTABILITY, OR FITNESS FOR PARTICULAR PURPOSE OF THE PRODUCTS. ANY BUYER OR USER ACKNOWLEDGES THAT THE BUYER OR USER ALONE HAS DETERMINED THAT THE PRODUCTS WILL SUITABLY MEET THE REQUIREMENTS OF THEIR INTENDED USE. OMRON DISCLAIMS ALL OTHER WARRANTIES, EXPRESS OR IMPLIED.

LIMITATIONS OF LIABILITY

OMRON SHALL NOT BE RESPONSIBLE FOR SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES, LOSS OF PROFITS OR COMMERCIAL LOSS IN ANY WAY CONNECTED WITH THE PRODUCTS, WHETHER SUCH CLAIM IS BASED ON CONTRACT, WARRANTY, NEGLIGENCE, OR STRICT LIABILITY.
In no event shall responsibility of OMRON for any act exceed the individual price of the product on which liability is asserted.
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SUITABILITY FOR USE

THE PRODUCTS CONTAINED IN THIS DOCUMENT ARE NOT SAFETY RATED. THEY ARE NOT DESIGNED OR RATED FOR ENSURING SAFETY OF PERSONS, AND SHOULD NOT BE RELIED UPON AS A SAFETY COMPONENT OR PROTECTIVE DEVICE FOR SUCH PURPOSES. Please refer to separate catalogs for OMRON's safety rated products.
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At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.
The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.
NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

PERFORMANCE DATA

Performance data given in this document is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

CHANGE IN SPECIFICATIONS

Product specifications and accessories may be changed at any time based on improvements and other reasons.
It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the product may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

DIMENSIONS AND WEIGHTS

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

ERRORS AND OMISSIONS

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

PROGRAMMABLE PRODUCTS

OMRON shall not be responsible for the user's programming of a programmable product, or any consequence thereof.

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Safety Precautions

Alert Symbols for Safe Use

The following symbols are used in this manual to indicate precautions that must be observed to ensure safe use of the V680-HAM91/-HAM81, V680 Series Antennas, and V680 Series ID Tags. The precautions provided here contain important safety information. Be sure to observe these precautions.

The following signal words are used in this manual.

⚠ WARNING	Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally, there may be significant property damage.

Meanings of Alert Symbols

	Indicates general prohibitions for which there is no specific symbol.

Warning

⚠ WARNING

These Products are not designed to be used either directly or indirectly in applications that detect human presence for the purpose of maintaining safety. Do not use these Products as a sensing means for protecting human lives.

Regulations and Standards

The Products conform to the following overseas regulations and standards.

1. The United States

	Antenna
This product complies with Part 15 Subpart C of the FCC Rules. FCC ID: E4E6CYSIDV6800208	V680-HS51 V680-HS52 V680-HS63 V680-HS65

FCC NOTICE

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference.

(2) This device must accept any interference received, including interference that may cause undesired operation.

FCC WARNING

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Do not remove the ferrite core (TDK model ZCAT1730-0730A:V680-HS52/-HS63/-HS65, TDK Type model ZCAT1525-0430AP:V680-HS51) installed on the cbles to suppress RF interference.

NOTICE

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna

-Increase the separation between the equipment and receiver

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

This class B digital apparatus complies with Canadian ICES-003.

Cet appareil numerique de la classe B est conforme a la norme NMB-003 du Canada.

2. Europe

	DeviceNet Remote ID Controller	Antenna
(Radio and Telecommunication Terminal Equipment Directive 1999/5/EC) Radio: EN 300 330-2V1.3.1 (04-2006) EN 300 330-1V1.5.1 (04-2006) EMC: EN 301 489-3V1.4.1 (08-2002) EN 301 489-1V1.6.1 (09-2005) Safety: EN 61010-1:2001 (2nd Edition)	V680-HAM42-DRT	V680-HS51 V680-HS52 V680-HS63 V680-HS65

CE

English	Hereby, Omron, declares that the RFID System, V680-HS51 Series, V680-HS52 Series, V680-HS63 Series, V680-HS65 Series, and V680-HAM42-DRT Series are in compliance with the essential requirements and other relevant provisions of Directive 1999/5/EC.
Finnish	Omron vakuuttaa täten että RFID Säännös, V680-HS51 Series,, V680-HS52 Series, V680-HS63 Series, V680-HS65 Series, V680-HAM42-DRT Series tyyppinen laite on direktiivin 1999/5/EY oleellisten vaatimusten ja sitä koskevien direktiivin muiden ehtojen mukainen.
Dutch	Hierbij verklaart Omron dat het toestel de RFID Systeem, V680-HS51 ´Serie, V680-HS52 ´Serie, V680-HS63 ´Serie, V680-HS65 ´Serie, V680-HAM42-DRT ´Serie in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijh 1999/5/EG.
French	Par la présente Omron déclare que la RFID Système, V680-HS51 Série, V680-HS52 Série, V680-HS63 Série, V680-HS65 Série, V680-HAm42-DRT Série sont conforme aux exigences essentielles et aux autres dispositions pertinentes de la directive 1999/5/CE.
Swedish	Härmed intygar Omron att den RFID System, V680-HS51 Serie, V680-HS52 Serie, V680-HS63 Serie, V680-HS65 Serie, V680-HAM42-DRT Serie stär l överensstämmelse med de väsentliga egenskapskrav och övriga relevanta bestämmelser som framgår av direktiv 1999/5/EG.
Danish	Undertegnede Omron erklærer herved, at følgende den RFID System, V680-HS51Serie, V680-HS52 Serie, V680-HS63 Serie, V680-HS65 Serie, 680-HAM43-DRT Serie overholder de væsentlige krav og øvrige relevante krav i direktiv 1999/5/EF.
German	Hiermit erklärt Omron, die RFID System, V680-HS51 Serie, V680-HS52 Serie, V680-HS63 Serie, V680-HS65 Serie, V680-HAM42-DRT Serie in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet. (BMWi)
Greek	ΜΕ ΤΗΝ ΡΑΡΟΥΣΑ Omron DHLONEI RFID OYOGHMA, V680-HS51 OEIPA, V680-HS52 OEIPA, V680-HS63 OEIPA, V680-HS65 OEIPA, V680-HAM42-DRT OEIPA SYMMOPF ONETAI PPOS TIS OYSIODEIS APAITHSEIS KAI TIS LOIPES SXETIKES DIATAXEIS THS ODHGIAS 1999/5/EK.
Italian	Con la presente Omron dichiara che la RFID Sistem, V680-HS51 Seriea, V680-HS52 Serie, V680-HS63 Serie, V680-HS65 Serie, V680-HAM42-DRT Serie sono conforme ai requisiti essenziali ed alle altre disposizioni pertinenti stabilite dalla direttiva 1999/5/CE.
Spanish	Por medio de la presente Omron declara que el RFID Sistema, V680-HS51 Serie, V680-HS52 Serie, V680-HS63 Serie, V680-HS65 Serie, V680-HAM42-DRT Serie esta conforme a los requisitos esenciales y cualesquiera otras disposiciones aplicables o exigibles de la Directiva 1999/5/CE.
Portuguese	Omron declara que a RFID Sistema, V680-HS51 Série, V680-HS52 Série, V680-HS63 Série, V680-HS65 Série, V680-HAM42-DRT Série ser conforme com os tequisitos essenciais e outras disposições da Directiva 1999/5/CE.
Romanian	Prin prezenta, Omron declară că acest V680-HS51,V680-HS52,V680-HS63,V680-HS65, V680-HAM42-DRT este conform cu cerinţele principale çi cu celelalte prevederi relevanate ale Directivei 1999/5/EC.

Precautions for Safe Use

Be sure to observe the following precautions to ensure safe use of the Products.

1. Do not use the product in environments subject to inflammable, explosive, or corrosive gas.
2. Do not disassemble, repair, or modify the product in any way.
3. Because a cable has a locking mechanism, make sure that it has been locked before using the cable.
4. Confirm that the DC power supply is within the rated powersupply voltage (24 VDC +10%/-15%) before using it.
5. Do not reverse polarity when connecting the power supply.
6. Do not allow water to enter or insert wire in the gaps of the case. Fire or electric shock may result.
7. Provide enough space around the controller for ventilation.
8. Avoid setting up the unit near a highly heat-generating device (such as heater, transformer and large-capacity resistor).
9. Always turn OFF the power supply to the product before attaching or removing the Antenna.
10. If you suspect that anything is wrong with the product at any time, stop using it immediately, turn OFF the power supply, and consult with your OMRON representative.
11 When disposing of the product, dispose of it as industrial waste.
12. Do not use thinners, benzenes, acetones and kerosenes for cleaning.
13. Communications performance may be reduced due to mutual interference if more than one Read/Write Antenna is installed in the same vicinity. Refer to the Operating Manual (Cat.No.SCHI-707) and confirm that there is no mutual interference between Read/Write Antennas.
14. Multiply the tool by the installation hook, and detach it slowly when you remove the main body.
15. Stop miswiring and the load short-circuit.There is fear of exploding and damaging.
16. Do not assume it in the oil environment.

Precautions for Correct Use

Always observe the following precautions to prevent operation failures, malfunctions, and adverse effects on performance and equipment.

1. Installation Location

Do not install and storage the product in the follwing locations:

- Locations subject to corrosive gases, dust, dirt, metal powder, or salt.
- Locations where the specified ambient temperature and ambient humidity range is exceeded.
- Locations subject to extreme temperature changes that may result in condensation.
- Locations where the product would be directly subjected to vibration or shock exceeding specifications.
- Locations subject to contact with water, oil, or chemicals

2. Installation

- The product uses the 13.56MHz frequency band to communicate with Tags. Some devices, such as some tranceivers, mortors, inverters, and switch mode power supplies, generate electromagnetic waves (i.e., noise) that can affect communications with the Tags. If any of these devices are nearby, communications with Tags may be affected or Tags may be destroyed, If the product is to be used near such devices, check the effects on communications before using the product.
- To minimize the general influence of noise, follow the following precautions:

(1) Ground the earth terminal of this product and any metallic material located around the product to 100 Ω or less.

(2) Keep product wiring away from high voltage or heavy current.

- Do not pull the cable part strongly.
- The product does not provide a water-proof structure. Do not use it where mists are present.
- Please avoid the medicine that there is an influence in the material of the product.

3. About communication with upstream equipment

- Start to communicate with upstream equipment after booting up this product. It is possible that this product sends indetermination data to upstream equipment during booting up this product. So clear the communication buffer of upstream equipment before start to communicate.

Meanings of Symbols

Indicates particularly important points related to a function, including precautions and application advice.

Indicates page numbers containing relevant information.

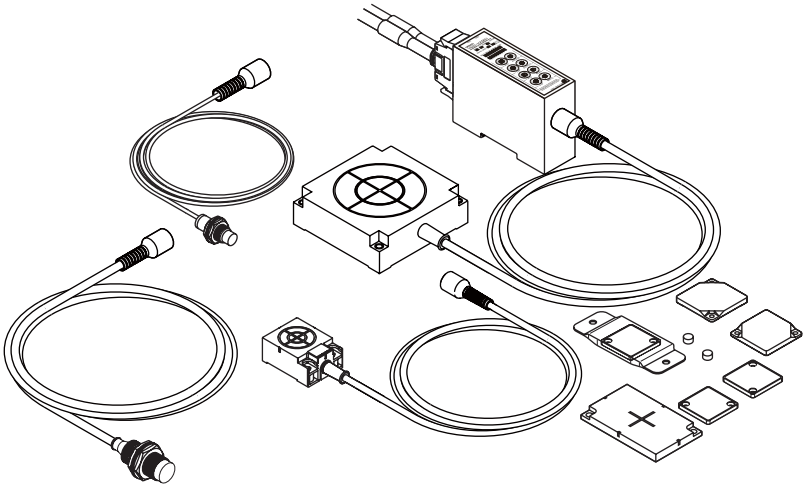
Table of Contents

MEMO

Section 1
Product Overview

Features

The V680 Series for RFID Systems uses electromagnetic induction in the 13.56-MHz bandwidth, which conforms to the international standards in ISO/IEC 18000-3 (ISO/IEC 15693). A V680-series RFID System enables reading and writing ID Tag data without contact by connecting a V680-HAM91/V680HAM81 ID Sensor to a V680-series Antenna. With control performed in connection with the Basic I/O Units of a Programmable Controller, ID Sensors provide data management for applications such as quality and process control at production sites.



■ Simple Operation with I/O Control as Simple as Using a Regular Sensor

The V680-HAM91 and V680-HAM81 can be used right away to create an RFID System with operation as easy as with regular Sensors. Start operation simply by setting the mode switch on the ID Sensor to output the read results to the I/O interface.

■ Advanced Line Management

When accessing ID Tag data, up to 64,000 IDs are possible with 16-bit data. And, using the address shift function enables accessing up to 128 bits, making it possible to build advanced lines.

■ Conforms to International Standards of ISO/IEC 18000-3 (ISO/IEC 15693)

Compliance with international standards enables the V680 to be exported to and used in the world's main countries.

■ ID Tags Available with EEPROM or FRAM

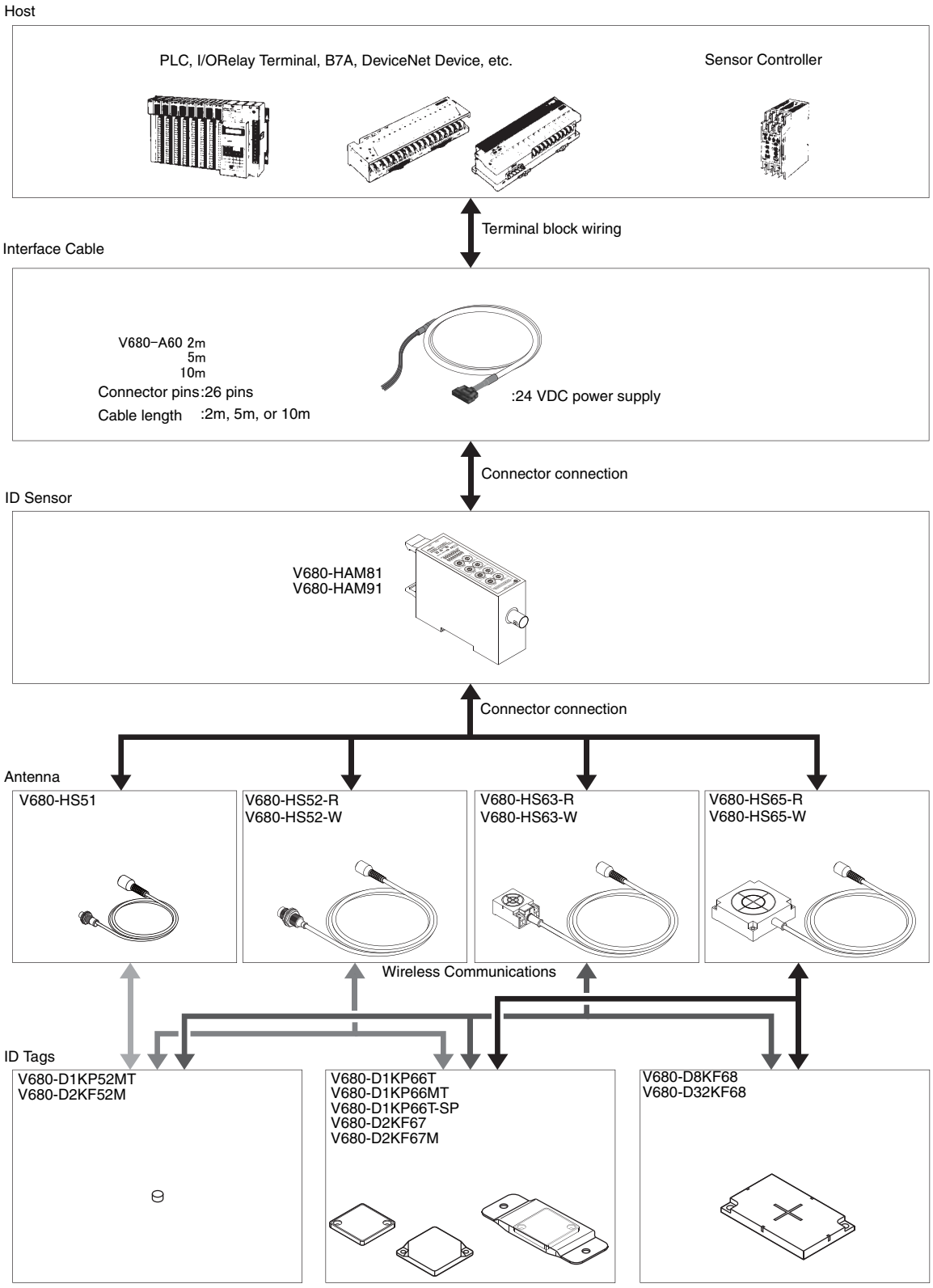
Two types of ID Tag memory are available: EEPROM, with a maximum heat resistance of 180°C (30 min./200 cycles) and a capacity of 1,000 bytes, and FRAM, with a capacity of 2, 8, or 32 kilobytes, and long service life of 10 billion accesses. Chose the ideal type for various worksite applications.

■ Smooth Replacement of Previous RFID Systems

All functions of the previous V600 Series are supported, so assets on existing lines can still be used.

Product Configuration

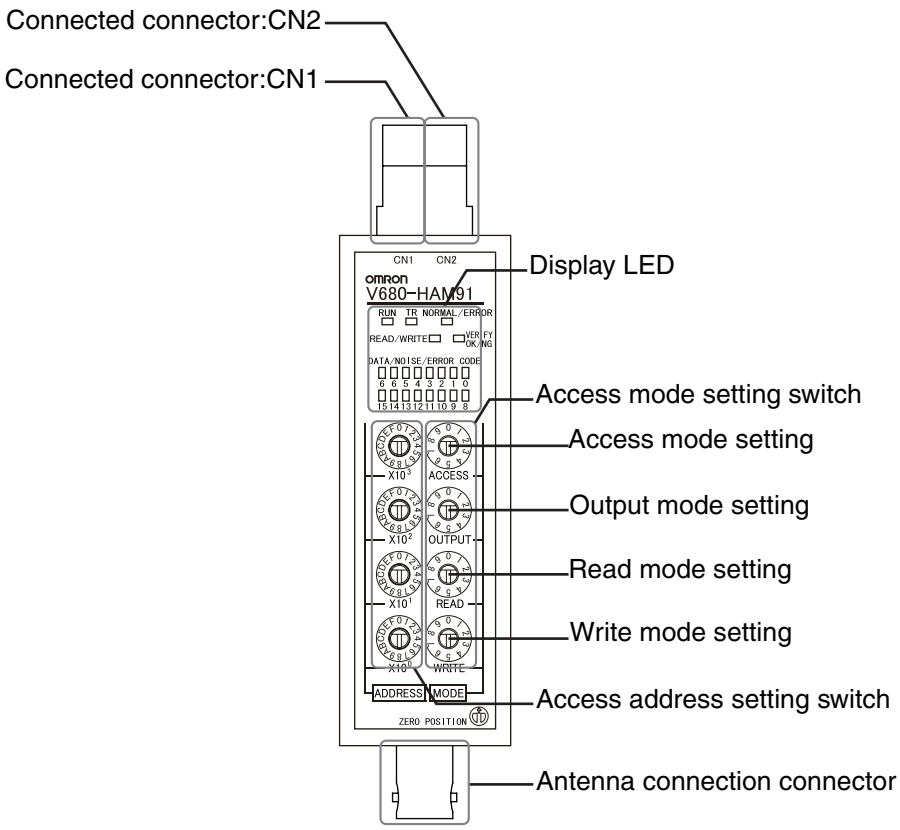
The ID Sensor is connected to a Programmable Controller or wire-reduction device using open-collector I/O. The ID Sensor can be connected with a connector by using a special interface cable. All of the various V680-series Antennas and ID Tags can be used.



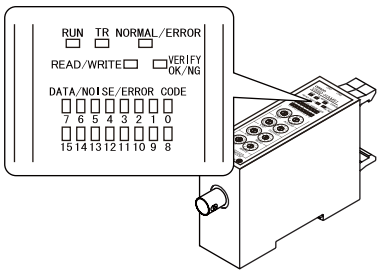
MEMO

Section 2
Part Names and Functions

ID Sensor



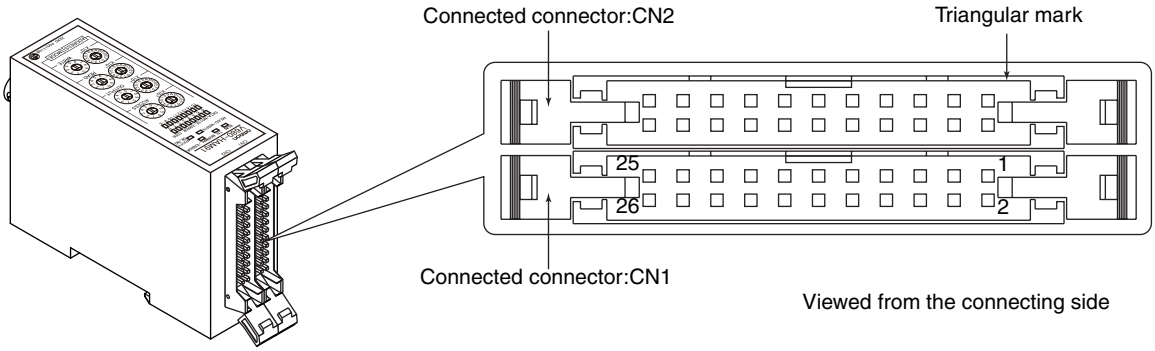
■ Display LED



Name	Color	Description
RUN	Green	The working condition of the ID sensor is displayed.
TR	Yellow	The communication with the ID Tag is displayed.
NORMAL/ ERROR	Green/ Red	Communication completion display.
READ/WRITE	Green/ Yellow	The communication result with the ID Tag is displayed.
VERIFY OK/NG	Green/ Red	The result of the verification lead is displayed.
DATA/NOISE/ ERROR CODE	Green/ Red	Lighting display of Read and Write data in green . The display of error code is blinked in red. The noise level is displayed in green. (At the noise measurement mode.)

■ Connected connector:CN1

A high-ranking equipment of PLC is connected.



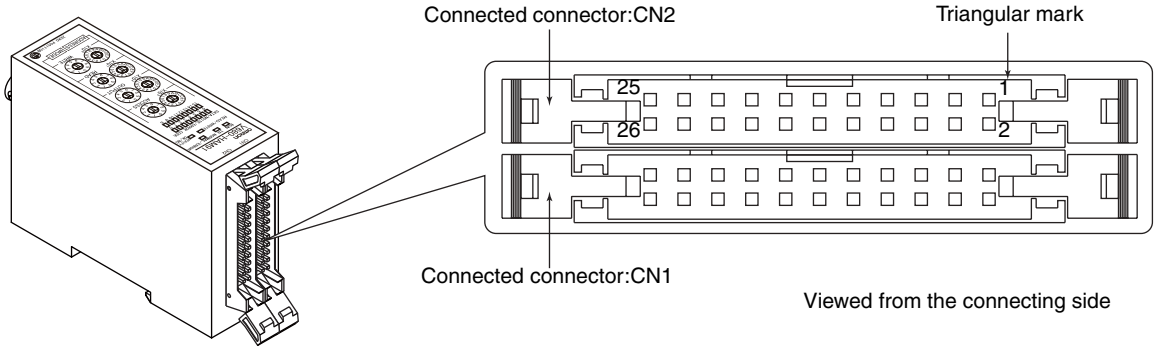
Military Standard(MIL-C-83503) conforming connector(use connector: Type XG4A-2639-A and made in OMRON)

Pin No	Signal name	Lead wire color	Description	I/O
1	FG	Shield	Grownd to 100Ω or less	FG
2	---	---	---	---
3	---	---	---	---
4	NOISE_OUT	Gray/Red	Noise-sheck out put	Output
5	0 V	Blue	Power input	Power supply
6	24 VDC	Brown	Power input	Power supply
7	PARITY	Gray/White	Parity-check output(OFF when number,ON when odd number)	Output
8	INHIBIT/TRIG	Red	Inhibit input (AUTO)	Input
			Trigger input (SYNC)	
9	NORM/STRB	Light green	Read normal termination output (for OUTPUT MODE1)	Output
			Strobe output (for OUTPUT MODE2)	
10	ERR	Violet	Error output (see note1.)	Output
11	OD9	White/Red	Read data input bit10	Output
12	OD8	White/Black	Read data input bit9	Output
13	OD11	White/Yellow	Read data input bit12	Output
14	OD10	White/Green	Read data input bit11	Output
15	OD13	White/Blue	Read data input bit14	Output
16	OD12	White/Brown	Read data input bit13	Output
17	OD15	Gray/Black	Read data input bit16	Output
18	OD14	White/Orenge	Read data input bit15	Output
19	OD1	Yellow	Read data input bit2	Output
20	OD0	Green	Read data input bit1	Output
			Agreement output (Verify)	
21	OD3	Black	Read data input bit4	Output
22	OD2	White	Read data input bit3	Output
23	OD5	Bitter orange	Read data input bit6	Output
24	OD4	Gray	Read data input bit5	Output
25	OD7	Pink	Read data input bit8	Output
26	OD6	Light blue	Read data input bit7	Output

Note 1. Only the error output line is active when the singnal level is low(OFF). It is set to ON when the power is turned on. The error output line thus also serves as a RUN output line for powwer-on verification.

■ Connected connector:CN2

A high-ranking equipment of PLC is connected.



Military Standard(MIL-C-83503) conforming connector(use connector: Type XG4A-2639-A and made in OMRON)

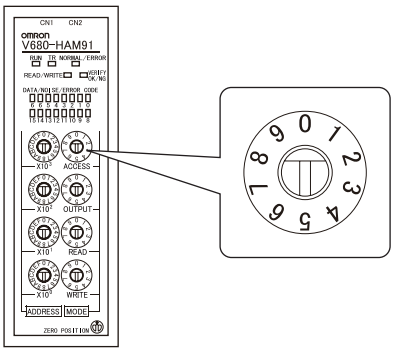
Pin No	Signal name	Lead wire color	Description	I/O
1	FG	Shield	Grownd to 100Ω or less	FG
2	---	---	---	---
3	---	---	---	---
4	---	Gray/Red	---	---
5	R/W	Blue	R/W switching input: (R: OFF, W: ON)	Input
6	NOISE_IN/WRITE PROTECT	Brown	Noise check seeing input Write protect (ON: effective, OFF: invalid)	Input
7	ADDRS2	Gray/White	Adress chift input bit2	Input
8	---	Red	---	---
9	ADDRS0	Light green	Adress chift input bit0	Input
10	ADDRS1	Violet	Adress chift input bit1	Input
11	ID9	White/Red	Write data input bit10 (Write) Verify data input bit10 (Verify)	Input
12	ID8	White/Black	Write data input bit9 (Write) Verify data input bit9 (Verify)	Input
13	ID11	White/Yellow	Write data input bit12 (Write) Verify data input bit12 (Verify)	Input
14	ID10	White/Green	Write data input bit11 (Write) Verify data input bit11 (Verify)	Input
15	ID13	White/Blue	Write data input bit14 (Write) Verify data input bit14 (Verify)	Input
16	ID12	White/Brown	Write data input bit13 (Write) Verify data input bit13 (Verify)	Input
17	ID15	Gray/Black	Write data input bit16 (Write) Verify data input bit16 (Verify)	Input
18	ID14	White/Orenge	Write data input bit15 (Write) Verify data input bit15 (Verify)	Input
19	ID1	Yellow	Write data input bit2 (Write) Verify data input bit2 (Verify)	Input
20	ID0	Green	Write data input bit1 (Write) Verify data input bit1 (Verify)	Input
21	ID3	Black	Write data input bit4 (Write) Verify data input bit4 (Verify)	Input
22	ID2	White	Write data input bit3 (Write) Verify data input bit3 (Verify)	Input
23	ID5	Bitter orange	Write data input bit6 (Write) Verify data input bit6 (Verify)	Input
24	ID4	Gray	Write data input bit5 (Write) Verify data input bit5 (Verify)	Input
25	ID7	Pink	Write data input bit8 (Write) Verify data input bit8 (Verify)	Input
26	ID6	Light blue	Write data input bit7 (Write) Verify data input bit7 (Verify)	Input

Note 1. Only the error output line is active when the singnal level is low(OFF). It is set to ON when the power is turned on. The error output line thus also serves as a RUN output line for powwer-on verification.

■ Mode Setting Switch

•Access Mode Setting

Set the opeation mode for communications with the ID Tag.



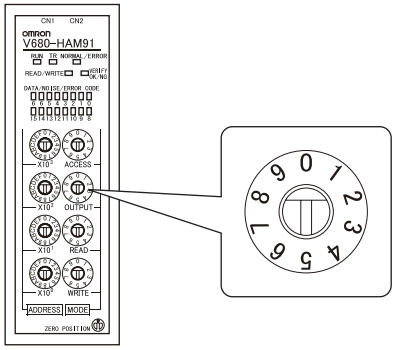
The position of the arrow in the figure is the direction in which the setting is made.

No.	Name	Description	Remarks
0	SYNC_MODE 1	Operates as Trigger Mode 1.	Communications with the ID Tag will start with input.
1	AUTO_MODE 1	Operates as Auto Mode 1.	Once the power supply is turned ON, communications with the ID Tag will start automatically when the ID Tag enters the communications range of the Antenna.
2	SYNC_MODE 2	Operates as Trigger Mode 2.	The result output method is different for Trigger Modes 1 and 3. CHECK! For details, refer to Mode 2 in Section 5 I/O Interface Control. p.75
3	AUTO_MODE 2	Operates as Auto Mode 2.	The result output method is different for Trigger Modes 1 and 3. CHECK! For details, refer to Mode 2 in Section 5 I/O Interface Control. p.76
4	SYNC_MODE 3	Operates as Trigger Mode 3.	The result output method is different for Trigger Modes 1 and 2. CHECK! For details, refer to Mode 3: Wire Saving in Section 5 I/O Interface Control. p.84
5	AUTO_MODE 3	Operates as Auto Mode 3.	The result output method is different for Auto Modes 1 and 2. CHECK! For details, refer to Mode 3: Wire Saving in Section 5 I/O Interface Control. p.74
6	NOISE CHECK	Operates as Noise Measurement Mode.	Maintenance mode for measuring environmental noise. CHECK! For details, refer to ntlp Noise Check in ntlp Section 5 I/O Interface Control. p.103
7	-	Setting prohibited (An access mode setting error will occur.)	
8			
9			

CHECK! Mode setting switch setting are read only when the power supply is turned ON. Therefore, settings cannot be changed while the power is being supplied. Turn the power supply OFF before changing the settings.

•Output Mode Setting

Set the output mode and output time width.



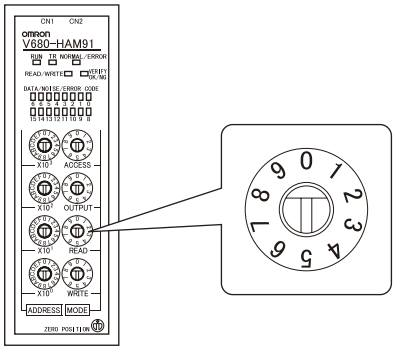
The position of the arrow in the figure is the direction in which the setting is made.

No.	Setting	Description	Combination with access mode
0	10msec OFFDELAY	10-ms ON-delay	Auto Mode 1, Auto Mode 3, or Trigger Mode 3 Note: A mode setting error will occur if the access mode setting is not one of the above.
1	50msec OFFDELAY	50-ms ON-delay	
2	500msec OFFDELAY	500-ms ON-delay	
3	10 ms	10-ms output	Auto Mode 2 or Trigger Mode 3 Note: A mode setting error will occur if the access mode setting is not one of the above.
4	50 ms	50-ms output	
5	CONTINOUS	Continuous output	
6	-	Setting prohibited (An access mode setting error will occur.)	
7			
8			
9			

Mode setting switch setting are read only when the power supply is turned ON. Therefore, settings cannot be changed while the power is being supplied. Turn the power supply OFF before changing the settings.

•Read Mode Setting

Set the operation mode for reading data.



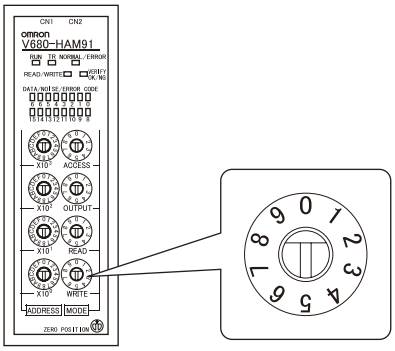
The position of the arrow in the figure is the direction in which the setting is made.

No.	Name	Description
0	DATA READ1	Outputs read data.
1	DATA READ2	Outputs read data as the wire-saving mode. CHECK! For details, refer to Mode 2 in Section 5 I/O Interface Control. p.74
2	VERIFY	Compares external input with read data and output match/mismatch. CHECK! For details, refer to Mode 2 in Section 5 I/O Interface Control. p.63
3	-	Setting prohibited (An access mode setting error will occur.)
4		
5		
6		
7		
8		
9		

CHECK! Mode setting switch setting are read only when the power supply is turned ON. Therefore, settings cannot be changed while the power is being supplied. Turn the power supply OFF before changing the settings.

•Write Mode Setting

Set the operation mode for writing data.



The position of the arrow in the figure is the direction in which the setting is made.

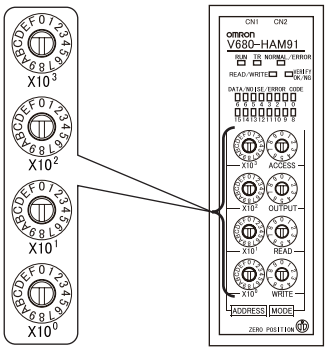
No.	Name	Description
0	2bytes WRITE	Write the 2 bytes (16 bits) of data input to the external data input (ID 0 to ID15) to the ID Tag.
1	BIT SET	When external data input (ID0 to ID15) is received, only the bit turned ON will be set (i.e., turned ON).
2	BIT CLEAR	When external data input (ID0 to ID15) is received, only the bit turned ON will be cleared (i.e., turned OFF). The other bits will not be changed.
3	1byte WRITE	Write the 1 byte (8 bits) of data input to the external data input (ID 0 to ID15) to the ID Tag. Input for the external data input (ID 0 to ID15) will be ignored. Note: This function is provided to support the previous model (the V600HAM91).
4	-	Setting prohibited (An access mode setting error will occur.)
5		
6		
7		
8		
9		

CHECK!

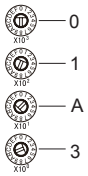
Mode setting switch setting are read only when the power supply is turned ON. Therefore, settings cannot be changed while the power is being supplied. Turn the power supply OFF before changing the settings.

■Access Address Setting Switch

Set the operation mode for reading data.



The position of the arrow in the figure is the direction in which the setting is made.

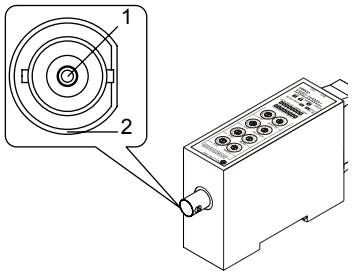
Item	Description
Setting method	Specify the memory address of the ID Tag in 4-digit hexadecimal. To specify an ID Tag memory address of 01A3 hex: 
Setting range	0000 hex to FFFF hex (See note.) Default setting: 0000 hex

Note: Note: The upper 8 bits are not read when FFFF hex is specified using 16-bit read/write. Output for all will be OFF. .

The access address setting switches are read only when the power supply is turned ON.
Therefore, settings cannot be changed while the power is being supplied. Turn the power supply OFF before changing the settings.

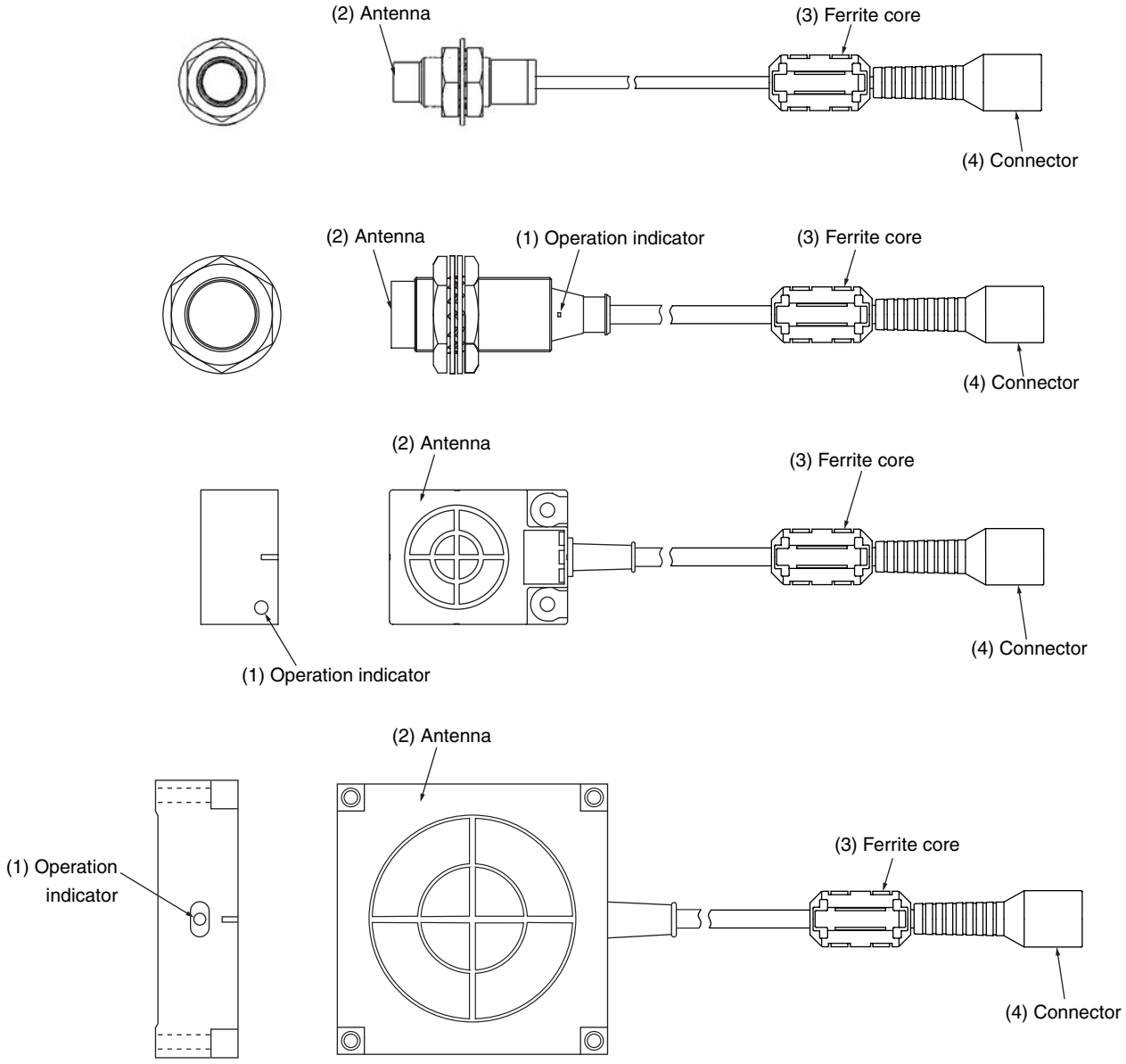
■ Antenna Connector

Connect this connector to the V680-series Antenna.



Pin No.	Name	Signal type	I/O
1	S	Signal line	---
2	GND	Analog ground	---

Antenna



No.	Name	Description
1	Operation Indicator	発信時に点灯します。
2	Antenna	タグに向けて取り付けます。
3	Ferrite core	外部ノイズを減衰させます。
4	Connector	リーダライタと接続します。

ID Tag

Mount the ID Tag to face the character printed surface with Antenna surface.

MEMO

Section 4
Installation

ID Sensor

Installation

To ensure full functionality of the V680-HAM91/-HAM81 ID Sensor, follow the instructions provided in this section for installation.

■ Installation Site

Do not install the ID Controller in the following locations.

- Locations exposed to ambient temperatures that are not between -10 and 55°C or where there are radical temperature changes resulting in condensation
- Locations exposed to humidity that is not between 25% and 85%
- Locations subject to corrosive gas, flammable gas, dust, salt, or metal powder
- Locations that will expose the ID Controller to direct vibration or shock
- Locations exposed to direct sunlight
- Locations exposed to spray of water, oil, or chemicals
- Locations more than 2,000 m above sea level

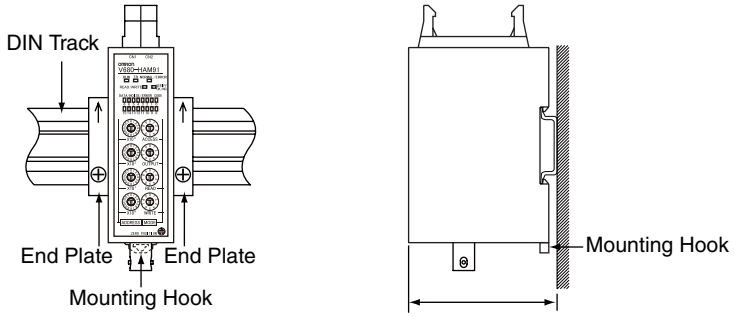
■ Mounting in a Panel

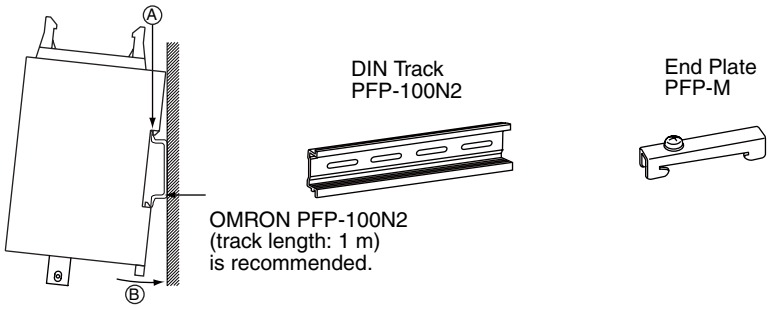
The ID Sensor Unit can be used at an ambient temperature range of -10 to 55°C. Be sure to observe the following precautions.

- Make sure that the Unit is provided with sufficient ventilation space.
- Do not install the Unit close to heaters, transformers, or large-capacity resistors that radiate excessive heat.

■ Installation Method

1. First hook the ID Sensor Unit to part A, then press it in direction B to mount it to the DIN Track.
2. To disconnect the ID Sensor Unit from the DIN Track, pull the mounting hook downwards, and then lift the Unit upwards.



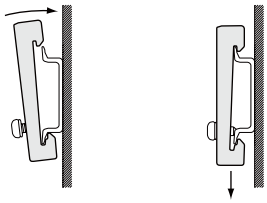


CHECK!

Attaching the End Plates

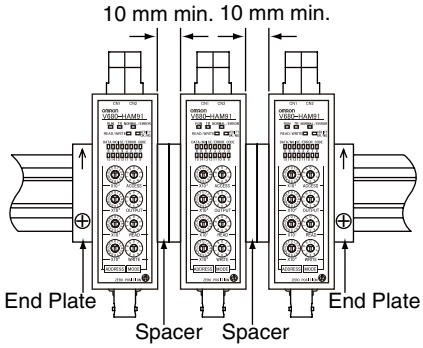
To mount an End Plate easily, first hook the bottom of the End Plate and then hook the top on the DIN Track, pull the End Plate downwards and tighten the screw.

Recommended tightening torque: 1.2 N·m.

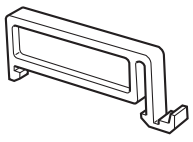


■ Mounting Interval

The V680-HAM91/-HAM81 ID Sensor Units will generate heat if they are mounted side-by-side. Leave space between Units of at least 10 mm.



Use at least 2 OMRON DIN Track Spacers. (Each Spacer is 5 mm wide.)



Spacer
PFP-S

Connection and Wiring

■ Interface Cable

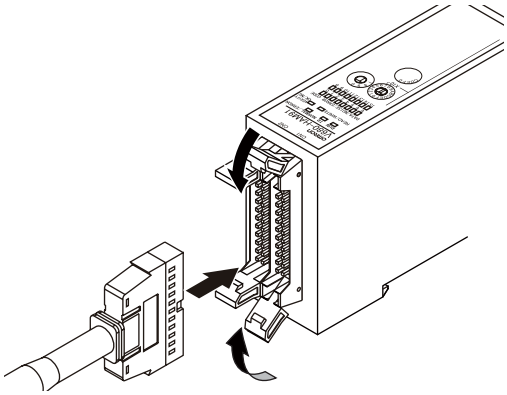
▪ Detaching with ID Sensor

Mounting Procedure

CHECK!

Line up the direction of the triangle mark on the connectors of the ID Sensor and the interface cable, and then press in the connector of the interface cable

The lock will engage when the interface cable is pressed into the connector on the ID Sensor.

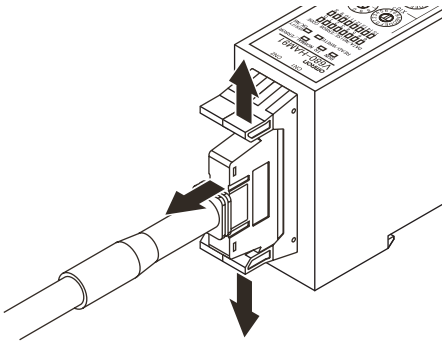


Removal Procedure

CHECK!

To remove the connector of the interface cable, always hold the connector and pull it out in a straight line. Pulling the cable may result in severing the cable or other product failure.

Unlock the connector on the ID Sensor and pull out the connector of the interface cable.



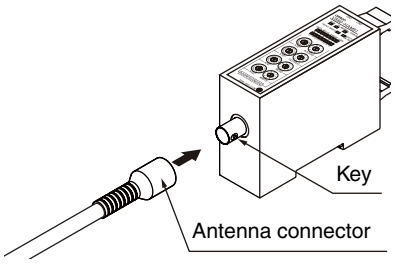
▪ Connecting to and Disconnecting from the PLC

Mounting Procedure

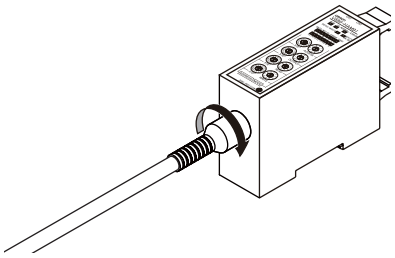
■ Antenna Connector

▪ Mounting the Antenna

1. Hold the connector part of the Antenna and insert it into the Antenna port while matching the key on the Unit with the groove on the connector.

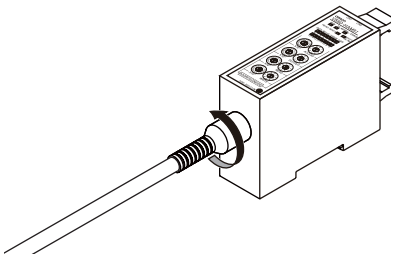


2. Turn the connector clockwise to lock it in place.

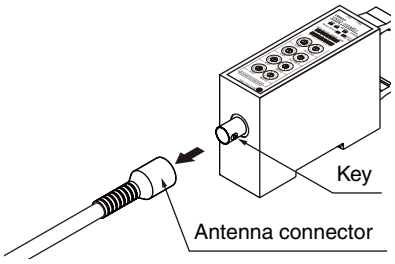


▪ **Removing the Antenna**

1. Turn the connector in counterclockwise to release the lock.



2. Pull the connector straight out of the port.



CHECK!

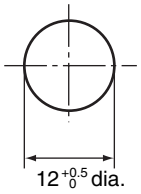
The connector cannot be removed without turning it to release the lock.
If the cable is pulled without releasing the lock, it may cause the cable or wires to break. Make sure that the lock is released before pulling out the connector.

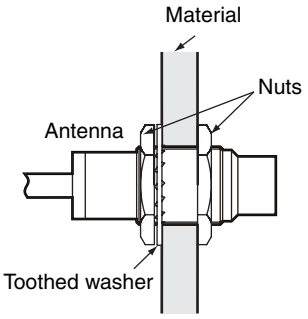
Installing Antennas

V680-HS51

Install the Antenna using the nuts and toothed washers that are provided on both sides of the mounting material, as shown in the diagram below.

Mounting Hole Dimensions





CHECK! 取り付けに際しては、第7章「付録」の「アンテナ取り付け時の注意事項」を参照してください。

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CHECK! Securely tighten the screws to a maximum torque of 6 N·m.

V680-HS52

Install the Antenna using the nuts and toothed washers that are provided on both sides of the mounting material, as shown in the diagram below.

CHECK! When the Antenna is mounted to a metal object, the communications distance will be reduced by approximately 10% compared with mounting to a non-metallic object. For details on the effect of metal surrounding the Antenna, refer to *アンテナ取り付け時の注意事項* on page 145.

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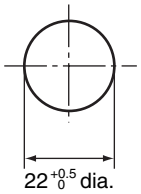
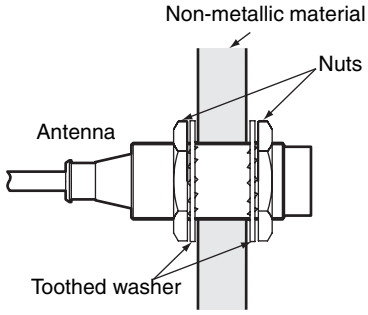
Mounting Hole Dimensions





CHECK! 取り付けに際しては、第7章「付録」の「アンテナ取り付け時の注意事項」を参照してください。

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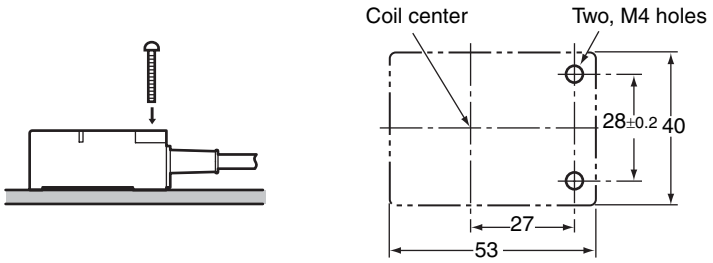
CHECK! Securely tighten the screws to a maximum torque of 40 N·m.

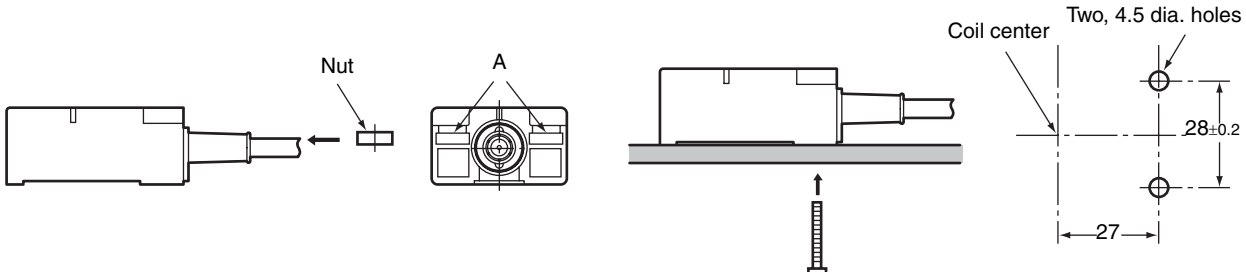
V680-HS63

■ Installation from the Front



■ Installation from the Back

Insert the nuts that come with the Antenna into sections A.



CHECK! 取り付けに際しては、第7章「付録」の「アンテナ取り付け時の注意事項」を参照してください。

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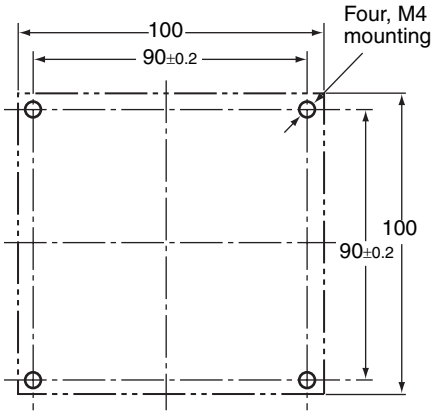
CHECK! Securely tighten screws to a maximum torque of 1.2 N·m.

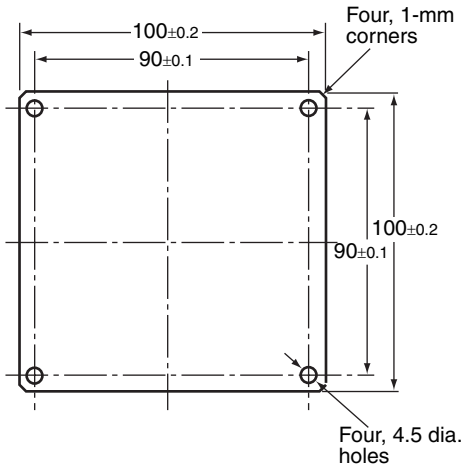
V680-HS65



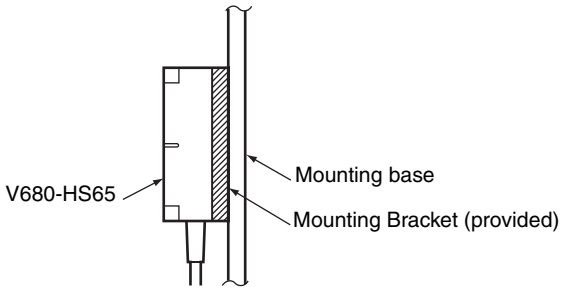
Use M4 screws and spring washers (in four places) for Antenna installation.
Tighten the screws to a torque of 0.7 to 1.2 N·m.
There are no restrictions on the mounting direction or the direction of access to the Tag, but if the Antenna is to be installed near a device such as a conveyance belt, make sure there is no danger of the Antenna being accidentally struck.

CHECK! Securely tighten screws to a torque of 0.7 to 1.2 N·m.

■ Mounting Bracket Dimensions (Provided Only with the V680-HS65)



Note: When installing the Antenna, mount it on the enclosed Mounting Bracket. The Mounting Bracket is not necessary, however, if the Antenna is mounted on a metal base that is larger than the Antenna (100 × 100 mm).



CHECK! 取り付けに際しては、第7章「付録」の「アンテナ取り付け時の注意事項」を参照してください。

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Installing Tags

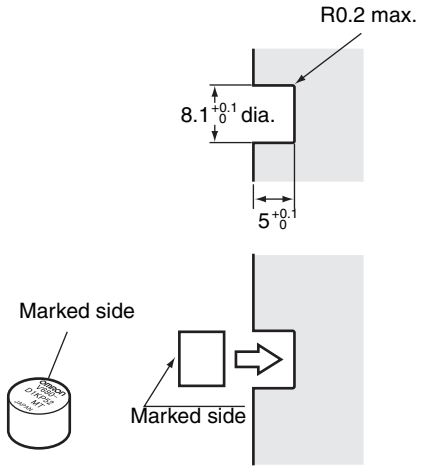
V680-D1KP52MT

■ Tag Installation Direction

Mount Tags as shown in the diagram on the right.

The epoxy adhesives listed in the following table are recommended for the given temperature ranges.

Ambient operating temperature	Product name	Manufacturer
–40 to 70°C	Two-part Epoxy-compound Resin: TB2001 (main agent)/ TB2105C (curing agent)	Three Bond Co., Ltd.
	One-part Moisture-curing Elastic Adhesive TB1530	Three Bond Co., Ltd.
–40 to 150°C	One-part Epoxy Resin: TB2285	Three Bond Co., Ltd.
	Two-part Epoxy Resin: TB2087	Three Bond Co., Ltd.



CHECK! 取り付けに際しては、第7章「付録」の「アンテナ取り付け時の注意事項」を参照してください。

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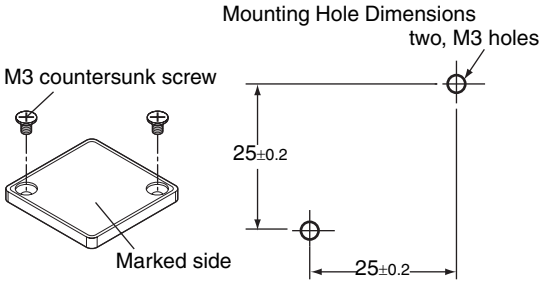
CHECK! When embedding the V680-D1KP52M into a metal surface, use the V680-HS51, V680-HS52Antenna. Transmission will not be possible if the V680-HS63 Antenna is used.

V680-D1KP66T

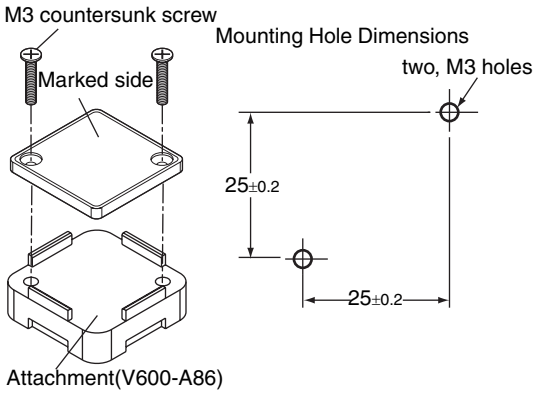
■Mount on non-metal surface

Secure the Tag with M3 screws. Tighten the screws to a torque of 0.6 N·m or less.



■Mount on metal surface

The V680-D1KP66T communications distance is reduced if there is any metal material behind the Tag. If the Tag is to be mounted to metal, then either use a V600-A86 Attachment (sold separately) or insert a non-metal spacer (such as plastic or resin).



CHECK! 取り付けに際しては、第7章「付録」の「アンテナ取り付け時の注意事項」を参照してください。

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CHECK! 形V680-D1KP66Tの背面金属の影響は、第7章「付録」の「背面金属の影響(参考)」を参照してください。

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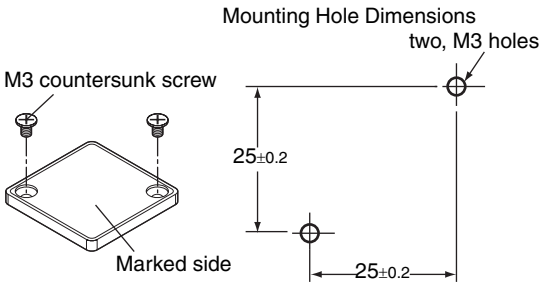
V680-D1KP66MT

Secure the Tag with M3 screws. Tighten the screws to a torque of 0.6 N·m or less.



CHECK! 取り付けに際しては、第7章「付録」の「アンテナ取り付け時の注意事項」を参照してください。

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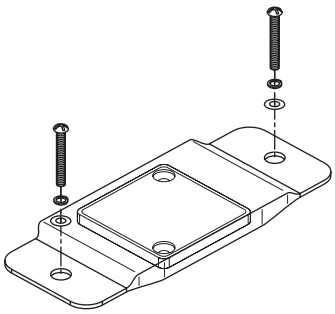
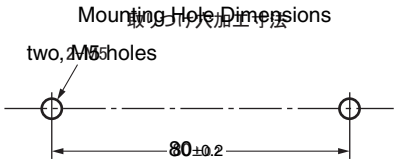
V680-D1KP66T-SP

Mount the ID Tags with M5 screws and washers.Tightening torque: 1.2 N·m.
There are no restrictions to the mounting direction of the ID Tags or the direction of movement for Antennas.





CHECK! 取り付けに際しては、第7章「付録」の「アンテナ取り付け時の注意事項」を参照してください。

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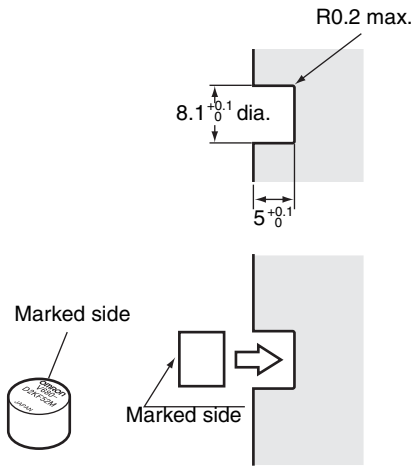
V680-D2KF52M

■ Tag Installation Direction

Mount Tags as shown in the diagram on the right.

The epoxy adhesives listed in the following table are recommended for the given temperature ranges.

Ambient operating temperature	Product name	Manufacturer
–40 to 70°C	Two-part Epoxy-compound Resin: TB2001 (main agent)/ TB2105C (curing agent)	Three Bond Co., Ltd.
	One-part Moisture-curing Elastic Adhesive TB1530	Three Bond Co., Ltd.
–40 to 85°C	One-part Epoxy Resin: TB2285	Three Bond Co., Ltd.
	Two-part Epoxy Resin: TB2087	Three Bond Co., Ltd.



CHECK! 取り付けに際しては、第7章「付録」の「アンテナ取り付け時の注意事項」を参照してください。

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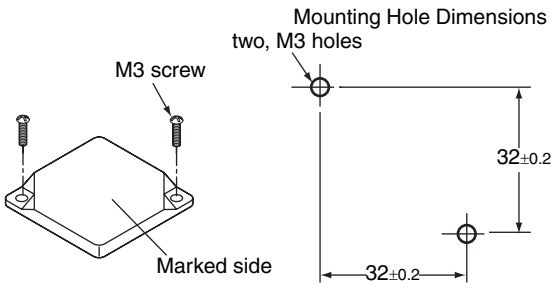
CHECK! When embedding the V680-D2KF52MT into a metal surface, use the V680-HS52 Antenna. Transmission will not be possible if the V680-HS63 Antenna is used.

V680-D2KF67/-D2KF67M

■ Tag Installation Direction

Secure the Tag with M3 screws. Tighten the screws to a torque of 0.6 N·m or less.



CHECK! 取り付けに際しては、第7章「付録」の「アンテナ取り付け時の注意事項」を参照してください。

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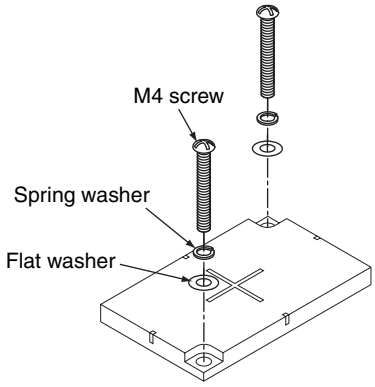
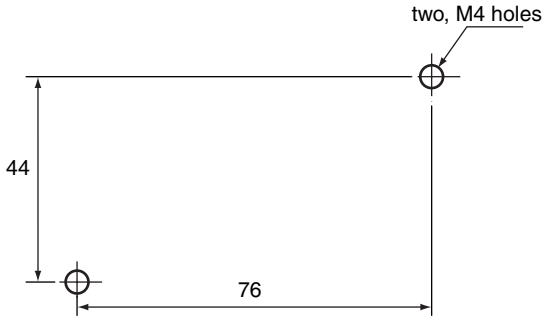
V680-D8KF68/-D32KF68

■ Tag Installation Direction

Secure the Tag with M4 screws. Tighten the screws to a torque of 0.7 to 1.2 N·m.





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