OMRON

RFID System

V680 Series

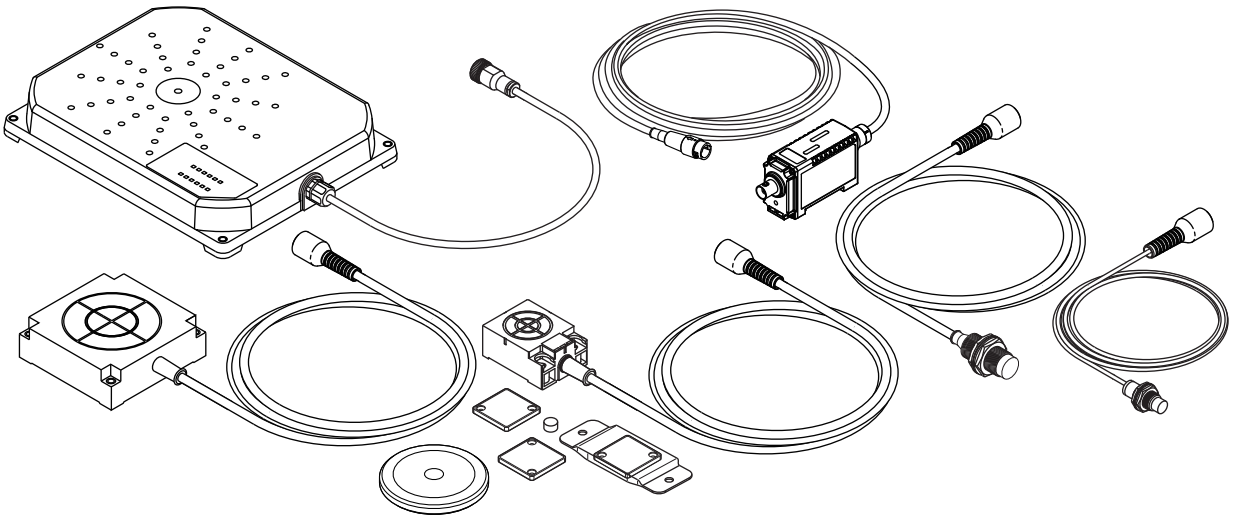
User's Manual for Amplifiers, Antennas, and ID Tags (EEPROM)

Amplifier and Antennas

V680-HA63A
V680-HS51
V680-HS52
V680-HS63
V680-HS65
V680-H01-V2

ID Tags

V680-D1KP52MT
V680-D1KP66T
V680-D1KP66MT
V680-D1KP66T-SP
V680-D1KP58HT



Cat. No.: Z262-E1-04

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-HA63A	Amplifier
V680-HS51	Antenna
V680-HS52	Antenna
V680-HS63	Antenna
V680-HS65	Antenna
V680-H01-V2	Antenna
V680-D1KP52MT	ID Tag
V680-D1KP66T	ID Tag
V680-D1KP66MT	ID Tag
V680-D1KP66T-SP	ID Tag
V680-D1KP58HT	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.
IN NO EVENT SHALL OMRON BE RESPONSIBLE FOR WARRANTY, REPAIR, OR OTHER CLAIMS REGARDING THE PRODUCTS UNLESS OMRON'S ANALYSIS CONFIRMS THAT THE PRODUCTS WERE PROPERLY HANDLED, STORED, INSTALLED, AND MAINTAINED AND NOT SUBJECT TO CONTAMINATION, ABUSE, MISUSE, OR INAPPROPRIATE MODIFICATION OR REPAIR.

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.
OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the product.
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-HS51, V680-HS52, V680-HS63, V680-HS65, V680-H01-V2, V680-HA63A, V680-D1KP52MT, V680-D1KP66T, V680-D1KP66MT, V680-D1KP66T-SP, and V680-D1KP58HT. 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

	Amplifier	Antenna
This product complies with Part 15 Subpart C of the FCC Rules. FCC ID: E4E6CYSIDV6800406	V680-HA63A	V680-HS51 V680-HS52 V680-HS63 V680-HS65
This product complies with Part 15 Subpart C of the FCC Rules. FCC ID: E4E6CYSIDV6800308	---	V680-H01-V2

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 Type ZCAT1730-0730A:V680-HS52/-HS63/-HS65, TDK Type ZCAT1525-0430AP:V680-HS51, TDK Type ZCAT2035-0930:V680-H01-V2) installed on the cables to suppress RF interference.

2. Europe

	Amplifier	Antenna
(Radio and Telecommunication Terminal Equipment Directive 1999/5/EC) Radio: EN 300 330-2 EMC: EN 301 489-1 EN 301 489-3	V680-HA63A	V680-HS51 V680-HS52 V680-HS63 V680-HS65
Safety: EN 61010	---	V680-H01-V2

CE

English	Hereby, Omron, declares that the RFID System, V680-HS51 Series, V680-HS52 Series, V680-HS63 Series, V680-HS65 Series, V680-H01-V2 Series and V680-HA63A 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-H01-V2 Series, V680-HA63A 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-H01-V2 ´Serie, V680-HA63A ´Serie in overeenstemming is met de essentiële eisen en de andere relevante bepalingen van richtlijn 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-H01-V2 Série, V680-HA63A 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-H01-V2 Serie, V680-HA63A 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-HS51 Serie, V680-HS52 Serie, V680-HS63 Serie, V680-H01-V2 Serie, V680-HS65 Serie, 680-HA63A 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-H01-V2 Serie, V680-HA63A Serie in Übereinstimmung mit den grundlegenden Anforderungen und den anderen relevanten Vorschriften der Richtlinie 1999/5/EG befindet. (BMWi)
Greek	ΜΕ ΤΗΝ ΠΑΡΟΥΣΑ Omron ΔΗΛΟΝΕΙ RFID ΟΥΟΓΗΜΑ, V680-HS51 ΟΕΙΡΑ, V680-HS52 ΟΕΙΡΑ, V680-HS63 ΟΕΙΡΑ, V680-HS65 ΟΕΙΡΑ, V680-H01-V2 ΟΕΙΡΑ, V680-HA63A ΟΕΙΡΑ ΣΥΜΜΟΡΦ ΟΝΕΤΑΙ ΠΡΟΣ ΤΙΣ ΟΥΣΙΟΔΕΙΣ ΑΠΑΙΤΗΣΕΙΣ ΚΑΙ ΤΙΣ ΛΟΙΠΕΣ ΣΧΕΤΙΚΕΣ ΔΙΑΤΑΞΕΙΣ ΤΗΣ ΟΔΗΓΙΑΣ 1999/5/ΕΚ.
Italian	Con la presente Omron dichiara che la RFID Sistema, V680-HS51Serie, V680-HS52Serie, V680-HS63 Serie,V680-HS65 Serie,V680-H01-V2 Serie, V680-HA63A 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-H01-V2 Serie, V680-HA63A 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-H01-V2 Série, V680-HA63A 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-H01-V2, V680-HA63A este conform cu cerinţele principale çi cu celelalte prevederi relevanate ale Directivei 1999/5/EC.

3. Japan

	Amplifier	Antenna
Equipment using high frequencies: Inductive Reading/Writing Communications Equipment Conforming standards: Inductive Reading/Writing Communications Equipment; Standard: ARIB STD-T82 EC-06019	V680-HA63A	V680-HS51 V680-HS52 V680-HS63 V680-HS65
Equipment using high frequencies: Inductive Reading/Writing Communications Equipment Conforming standards: Inductive Reading/Writing Communications Equipment; Standard: ARIB STD-T82 EC-□□□□□	---	V680-H01-V2

4. Canada

	Amplifier	Antenna
IC ID:850J-V68HA63A	V680-HA63A	V680-HS51 V680-HS52 V680-HS63 V680-HS65
IC ID:850J-V6800308	---	V680-H01-V2

This device complies with RSS-Gen of IC Rules.
Operation is subject to the following two conditions:(1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

5. China

	Amplifier	Antenna
CMII ID:2008DJ0884	V680-HA63A	V680-HS51
CMII ID:2007DJ0577	V680-HA63A	V680-HS52-R
CMII ID:2007DJ0575	V680-HA63A	V680-HS52-W
CMII ID:2007DJ0571	V680-HA63A	V680-HS63-R
CMII ID:2007DJ0573	V680-HA63A	V680-HS63-W
CMII ID:2008DJ0141	V680-HA63A	V680-HS65-R
CMII ID:2008DJ0142	V680-HA63A	V680-HS65-W

1. 本产品的使用方法等请参见产品说明书。本产品的技术参数如下:
   ■使用频率为:13.553-13.567MHz
   ■所发射的电场强度在距设备10米处不得超过42dBμA/m(采用准峰值检波);
   ■频率容限:≤100×10-6
   ■杂散辐射等其他技术指标请参照2005/423号文件
2. 使用者不得擅自更改发射频率、加大发射功率(包括额外加装射频功率放大器),不得擅自外接天线或改用其它发射天线;
3. 使用时应注意不得对各种合法的无线电通信业务产生有害干扰;一旦发现有干扰现象时,应立即停止使用,并采取措施消除干扰后方可继续使用;
4. 本产品为微功率无线电设备,能够承受各种无线电业务的干扰或工业、科学及医疗应用设备的辐射干扰;
5. 本产品不得在飞机和机场附近使用。

6. Korea

	Amplifier	Antenna
OMR-V680-HA63A	V680-HA63A	V680-HS51 V680-HS52 V680-HS63 V680-HS65

급 기기 (가정용 정보통신기기)
이 기기는 가정용으로 전자파적합등록을 한 기기로서 주거지역에서는 물론 모든 지역에서 사용할 수 있습니다.

7. Taiwan

	Amplifier	Antenna
CCAB07LP1220T4	V680-HA63A	V680-HS51 V680-HS52 V680-HS63 V680-HS65

低功率電波輻射性電機管理辦法
第十二條
經型式認證合格之低功率射頻電機,非經許可,公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。
第十四條
低功率射頻電機之使用不得影響飛航安全及干擾合法通信;經發現有干擾現象時,應立即停用,並改善至無干擾時方得繼續使用。
前項合法通信,指依電信法規定作業之無線電通信。
低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

8. Hong Kong

	Amplifier	Antenna
LP407043	V680-HA63A	V680-HS52 V680-HS63

9. Singapore

	Amplifier	Antenna
S0294-07	V680-HA63A	V680-HS51 V680-HS52 V680-HS63 V680-HS65

10.Malaysia

	Amplifier	Antenna
A011578	V680-HA63A	V680-HS51 V680-HS52 V680-HS63 V680-HS65

If the product is used in Malaysia, a label must be attached on-site to the side of the V680-HA63A. Please consult your OMRON sales representative for details.

11.Philippine

	Amplifier	Antenna
ESD-0702971C	V680-HA63A	V680-HS51 V680-HS52 V680-HS63 V680-HS65

12.Mexico

	Amplifier	Antenna
COFETEL:RLVOMV607-622-A2	V680-HA63A	V680-HS51 V680-HS52 V680-HS63 V680-HS65

Este equipo opera a titulo secundario, consecuentemente, debe aceptar interferencias perjudiciales incluyendo equipos de la misma clase y puede no causar interferencias a sistemas operando a titulo primario.

13.Thailand

The certification is unnecessary, so the product can be used.

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 Type ZCAT1730-0730A:V680-HS52/-HS63/-HS65, TDK Type ZCAT1525-0430AP:V680-HS51, TDK Type ZCAT2035-0930:V680-H01-V2) installed on the cables to suppress RF interference.

Precautions for Safe Use

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

1. Do not use the Products in environments with flammable, explosive, or corrosive gasses.
2. Do not attempt to disassemble, repair, or modify any Product.
3. Tighten mounting screws securely.
4. Because a cable has a locking mechanism, make sure that it has been locked before using the cable.
5. Do not allow water or pieces of wire to enter from openings in the case. Doing so may cause fire or electric shock.
6. Turn OFF the Controller power supply before mounting or removing an Antenna or Amplifier.
7. Turn OFF the power supply to the Controller before changing settings.
   Attach a Setting switch protection Cover after setting Switch.
8. If an error is detected in any Product, immediately stop operation and turn OFF the power supply. Consult with an OMRON representative.
9. Dispose of the Products as industrial waste.
10. Observe all warnings and precautions given in the body of this manual.
11. Do not touch the product immediately after usage at high temperatures. Doing so may occasionally result in burning.
12. Do not open the back cover of the V680-H01-V2 antenna.
13. Do not install the Products near equipment that generates a large amount of heat, such as a heater, transformer, or high-capacity resistor.

Precautions for Correct Use

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

1. Installation Environment

Do not use the Products in the following locations.

- Locations exposed to direct sunlight
- Locations exposed to corrosive gases, dust, metallic powder, or salts
- Locations not within the specified operating temperature range
- Locations subject to rapid changes in temperature or condensation
- Locations not within the specified humidity range
- Locations subject to direct vibration or shock outside the specified ranges
- Locations subject to spray of water, oil, or chemicals

2. Installation

The Products communicate with Tags using the 13.56-MHz frequency band. Some motors, inverters, and switching power supplies generate noise that can affect communications with the Tags and cause errors. If such devices are located near the Tags, always test operation in advance to confirm whether the system will be affected.

- Observe the following precautions to minimize the effects of normal noise.
  (1) Ground all metal objects in the vicinity of the Products to 100 Ω or less.
  (2) Do not use the Products near high-voltage or high-current lines.
- Do not use non-waterproof Products in an environment where mist is present.
- Do not expose the Products to chemicals that adversely affect the Product materials.
- When mounting the Products, tighten the screws to the following torques.
  V680-HS51: 6 N·m
  V680-HS52: 40 N·m
  V680-HS63: 1.2 N·m
  V680-HS65: 1.2 N·m
  V680-H01-V2: 1.2 N·m
- Do not pull the Antenna connector over the power of 30 N.
  The Antenna connector may be broken.
- Transmission will not be possible if the front and back panels are mistakenly reversed and the Unit is mounted to a metallic surface.
  V680-D1KP66MT
- The transmission distance will be reduced when the Unit is not mounted to a metallic surface.
  V680-D1KP66MT
- If multiple Antennas are mounted near each other, communications performance may decrease due to mutual interference. Refer to *Installing Antennas on page 56* and check to make sure there is no mutual interference.
- Depending on the operating environment, the case surface may become fogged, but basic performance will not be affected.

3. Storage

Do not store the Products in the following locations.

- Locations exposed to direct sunlight
- Locations exposed to corrosive gases, dust, metallic powder, or salts
- Locations not within the specified storage temperature range
- Locations subject to rapid changes in temperature or condensation
- Locations not within the specified storage humidity range
- Locations subject to direct vibration or shock outside the specified ranges
- Locations subject to spray of water, oil, or chemicals

4. Cleaning

- Do not clean the Products with paint thinner or the equivalent. Paint thinner, benzene, acetone, and kerosene or the equivalent will dissolve the resin materials and case coating.

5. Combination of the Amplifier

- Use the V680-D1KP52MT, V680-D1KP66T, V680-D1KP66MT, and V680-D1KP66T-SP ID Tags in combination with only the V680-HA63A Amplifier. Do not use these ID Tags together with the V680-HA63B Amplifier.

Meanings of Symbols

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

Indicates page numbers containing relevant information.

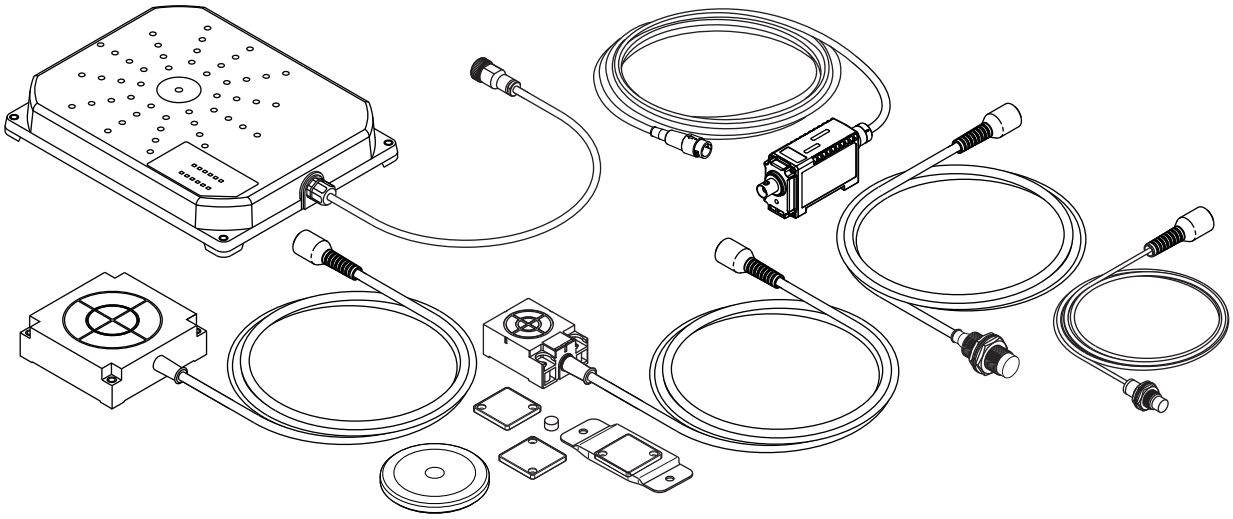
Table of Contents

MEMO

Section 1
Product Overview

Features

The V680-series RFID System actively supports many different types of system, such as distributed-control systems and many-product, small-lot production systems, with non-contact data communications using electromagnetic induction.



■ Non-contact Data Communications

The V680 Series uses electromagnetic induction to enable non-contact, bi-directional data communications between Antennas and Tags.

■ EEPROM Memory

EEPROM (non-volatile memory) is used for Tag memory. No battery is required, so there is no need to be concerned about battery service life.

■ CRC Used for Transmission Error Detection

A bi-directional 16-bit CRC (Cyclic Redundancy Check) has been added as the error detection method for wire transmissions between ID Controllers and Antennas, and for wireless transmissions between Antennas and Tags. This method maintains superior communications reliability even where problems such as noise occur.

■ 1,000byte of Memory

Tags have 1,000byte of memory. In addition to the ID data required on-site, data such as model numbers and inspection information can be input.

■ Long Service Life of 100,000 Data Rewrites at Normal Temperatures

When the Tag is used at temperatures of up to 25°C, each block of EEPROM data can be rewritten up to 100,000 times (in units of single block, 8-bytes).

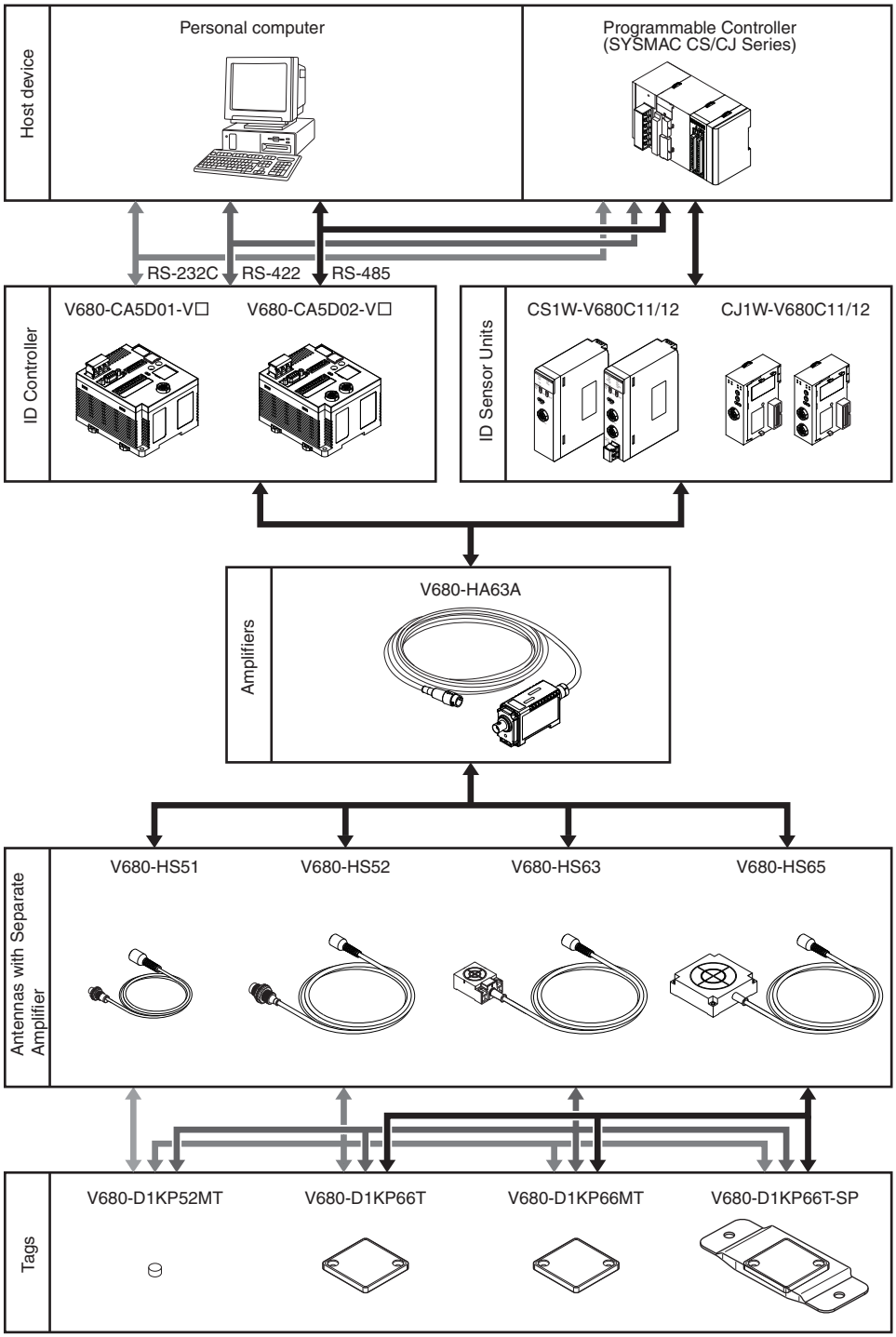
■ Superior Environmental Resistance and High Reliability

Antennas and Tags now have greater environmental resistance and are not affected by vibration, oil, or water.

Product Configuration

A V680-series RFID System consists of an ID Controller, one or more Amplifiers, one or two Antennas, and Tags. Select the models suitable for the application.

■ Using Antennas with Separate Amplifiers



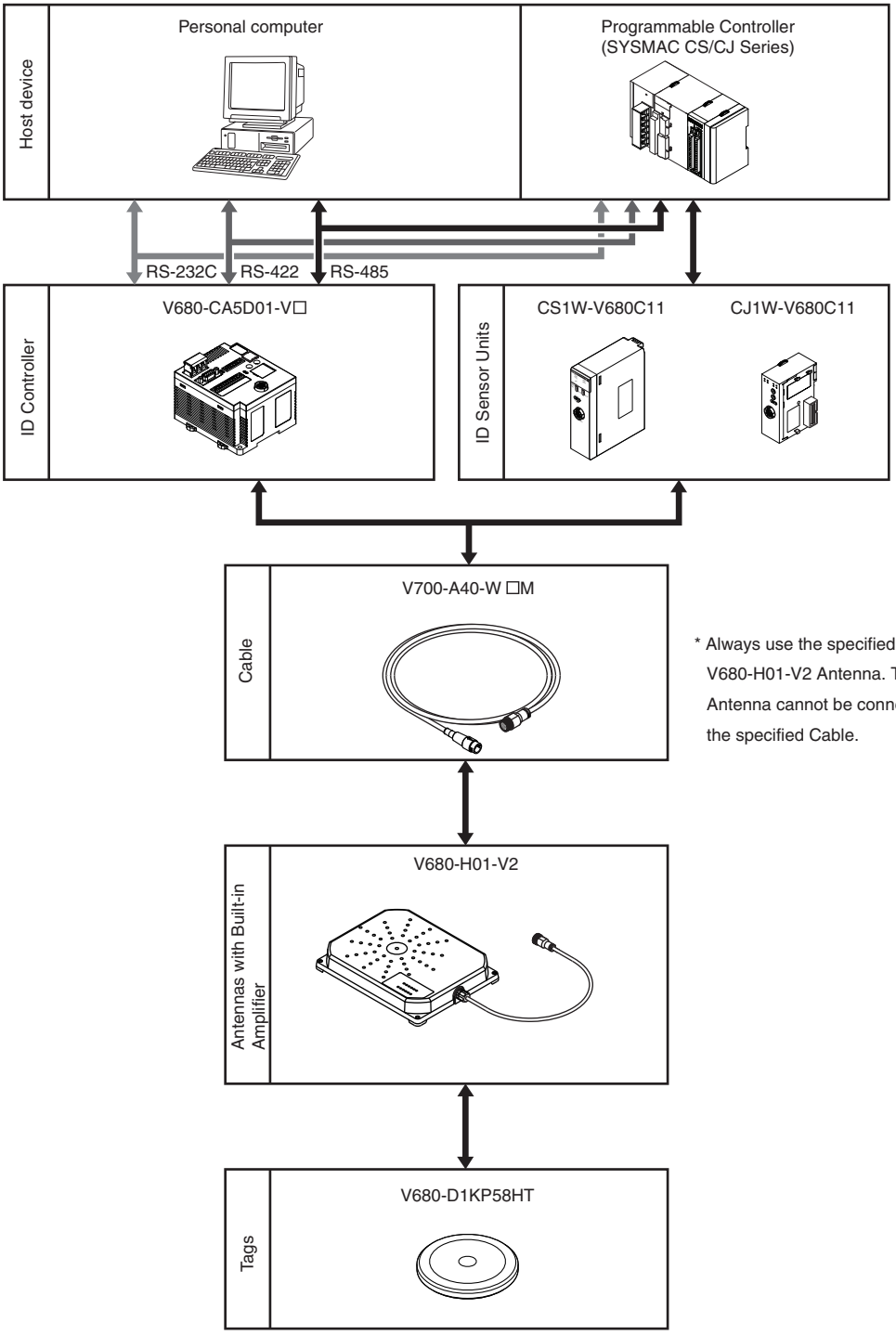
CHECK!

When embedding the V680-D1KP52MT into a metal surface, use the V680-HS51, V680-HS52 Antenna. Transmission will not be possible if the V680-HS63 Antenna is used.

CHECK!

Use the V680-D1KP52MT, V680-D1KP66T, V680-D1KP66MT, and V680-D1KP66T-SP ID Tags in combination with only the V680-HA63A Amplifier, Do not use these ID Tags together with the V680-HA63B Amplifier.

■ Using a V680-H01-V2 Antenna with Built-in Amplifier



* Always use the specified Cable to connect a V680-H01-V2 Antenna. The V680-H01-V2 Antenna cannot be connected without using the specified Cable.

Section 2
Specifications and Performance

Antennas with Separate Amplifier

V680-HS51

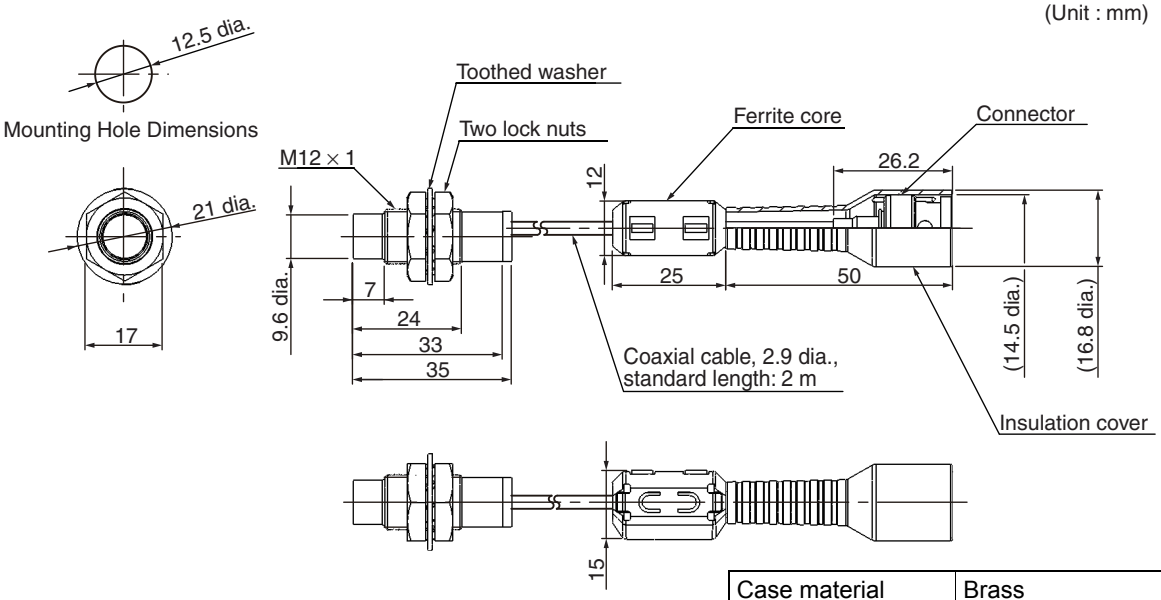
■ General Specifications

Item / Model	V680-HS51
Ambient operating temperature	−10 to 60°C (with no icing)
Ambient storage temperature	−25 to 75°C (with no icing)
Ambient operating humidity	35% to 95% (with no condensation)
Insulation resistance	20 MΩ min. (at 500 VDC) between connector terminals and case
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between connector terminals and case
Degree of protection	IP67.(IEC60529) In-house standard for antenna oil resistance (former JEM standard equivalent to IP67g) **Note:** The connectors are not waterproof.
Dielectric strength	10 to 2,000 Hz, 1.5-mm double amplitude, acceleration: 150 m/s², 10 sweeps in each of 3 axis directions (up/down, left/right, and forward/backward) for 15 minutes each
Shock resistance	1,000 m/s², 3 times each in 6 directions (Total: 18 times)
Dimensions	M12 × 35 mm
Material	ABS resin, brass, and epoxy resin filler
Weight	Approx. 55 g
Cable length	Standard lengths of 2 m

■ Dimensions

• V680-HS51

(Unit : mm)



Case material	Brass
Communications surface	ABS resin
Fill resin	Epoxy resin
Cable	PVC (black)

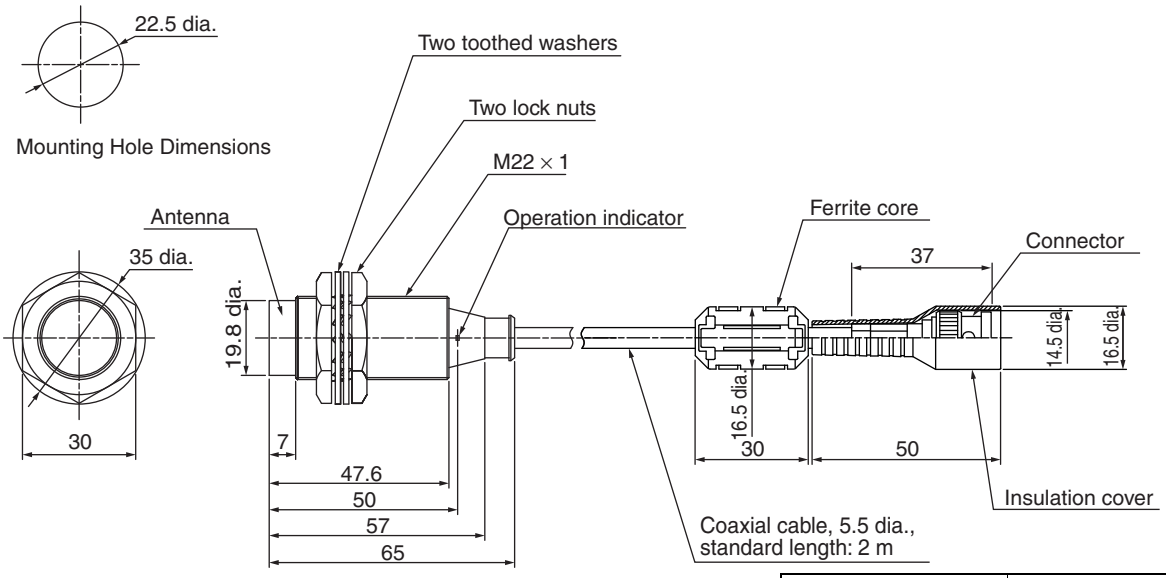
V680-HS52

■ General Specifications

Item / Model	V680-HS52-W (Standard cable, waterproof connector)	V680-HS52-R (Flexible cable, non-waterproof connector)
Ambient operating temperature	−10 to 60°C (with no icing)	
Ambient storage temperature	−25 to 75°C (with no icing)	
Ambient operating humidity	35% to 95% (with no condensation)	
Insulation resistance	20 MΩ min. (at 500 VDC) between connector terminals and case	
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between connector terminals and case	
Degree of protection	IP67.(IEC60529) In-house standard for antenna oil resistance (former JEM standard equivalent to IP67g) **Note:** The connector specifications are IP67 and IP65.(IEC60529)	IP67.(IEC60529) In-house standard for antenna oil resistance (former JEM standard equivalent to IP67g) **Note:** The connectors are not waterproof.
Dielectric strength	10 to 500 Hz, 1.5-mm double amplitude, acceleration: 100 m/s², 10 sweeps in each of 3 axis directions (up/down, left/right, and forward/backward) for 8 minutes each	
Shock resistance	500 m/s², 3 times each in 6 directions (Total: 18 times)	
Dimensions	M22 × 65 mm	
Material	ABS resin, brass, and epoxy resin filler	
Weight	Approx. 850 g (with 12.5 m cable)	
Cable length	Standard lengths of 2 and 12.5 m	

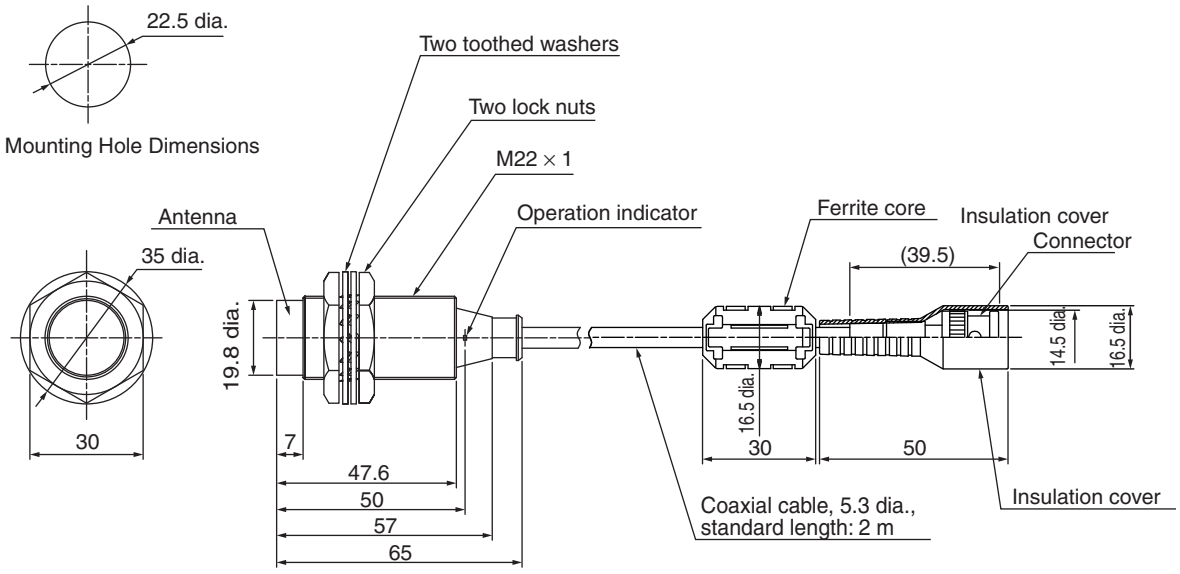
■ Dimensions

• V680-HS52-W



Case material	Brass
Communications surface	ABS resin
Fill resin	Epoxy resin
Cable	PVC (gray)

• V680-HS52-R



Case material	Brass
Communications surface	ABS resin
Fill resin	Epoxy resin
Cable	PVC (black)

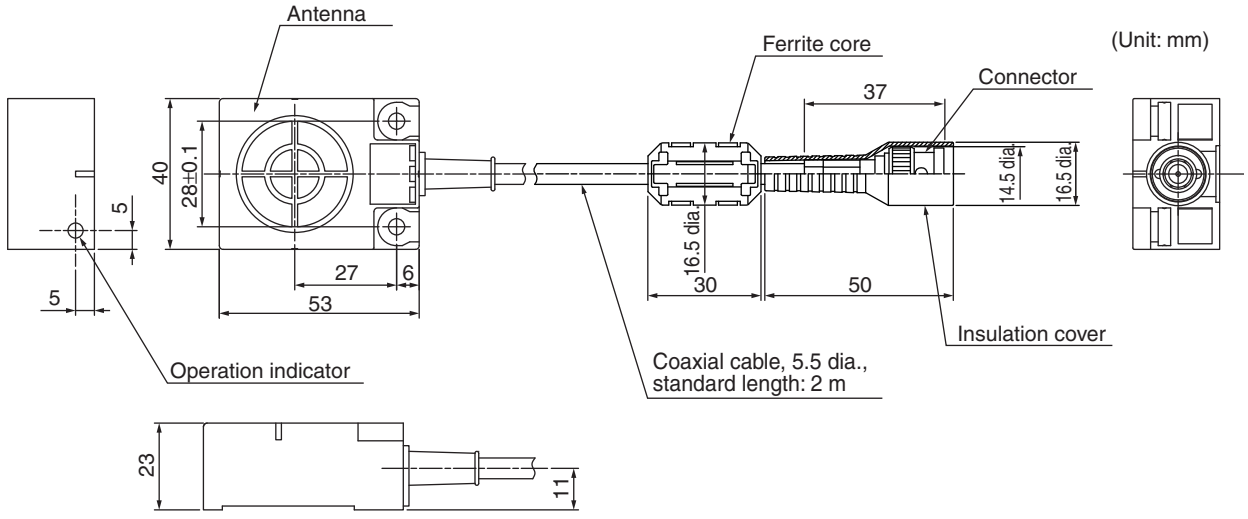
V680-HS63

■ General Specifications

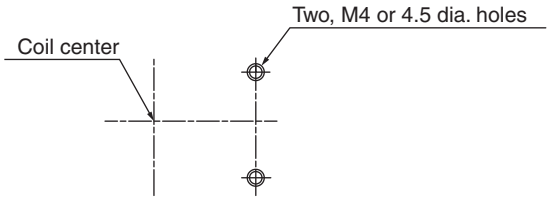
Item / Model	V680-HS63-W (Standard cable, waterproof connector)	V680-HS63-R (Flexible cable, non-waterproof connector)
Ambient operating temperature	−10 to 60°C (with no icing)	
Ambient storage temperature	−25 to 75°C (with no icing)	
Ambient operating humidity	35% to 95% (with no condensation)	
Insulation resistance	20 MΩ min. (at 500 VDC) between cable terminals and case	
Dielectric strength	1,000 VAC, 50/60Hz for 1 min between cable terminals and case	
Degree of protection	IP67.(IEC60529) In-house standard for antenna oil resistance (former JEM standard equivalent to IP67g) **Note:** The connector specifications are IP67 and IP65.(IEC60529)	IP67.(IEC60529) In-house standard for antenna oil resistance (former JEM standard equivalent to IP67g) **Note:** The connectors are not waterproof.
Vibration resistance	10 to 500 Hz, 1.5-mm double amplitude, acceleration: 100 m/s², 10 sweeps in each of 3 axis directions (up/down, left/right, and forward/backward) for 11 minutes each	
Shock resistance	500 m/s², 3 times each in 6 directions (Total: 18 times)	
Dimensions	40 × 53 × 23 mm	
Material	ABS resin case, epoxy resin filler	
Weight	Approx. 850 g (with 12.5 m cable)	
Cable length	Standard lengths of 2 and 12.5 m	

■ Dimensions

• V680-HS63-W

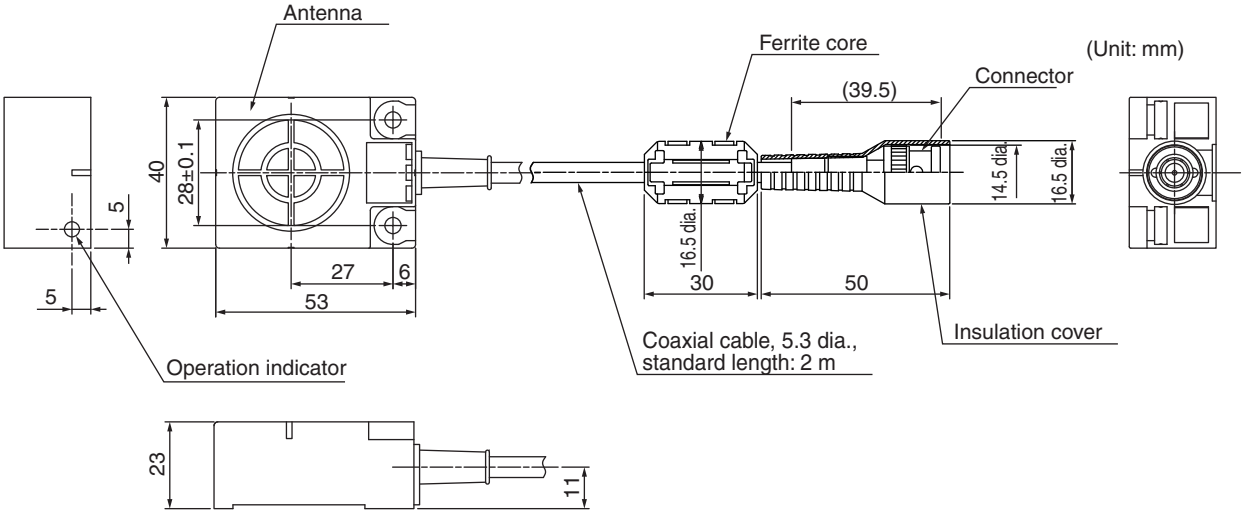


Note: Mounting Hole Dimensions

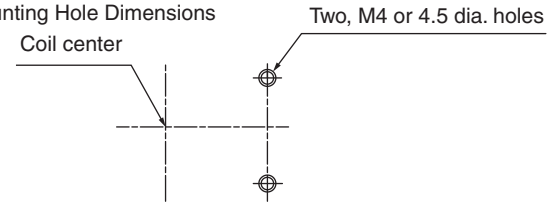


Case material	ABS resin
Fill resin	Epoxy resin
Cable	PVC (gray)

V680-HS63-R



Note: Mounting Hole Dimensions



Case material	ABS resin
Fill resin	Epoxy resin
Cable	PVC (black)

V680-HS65

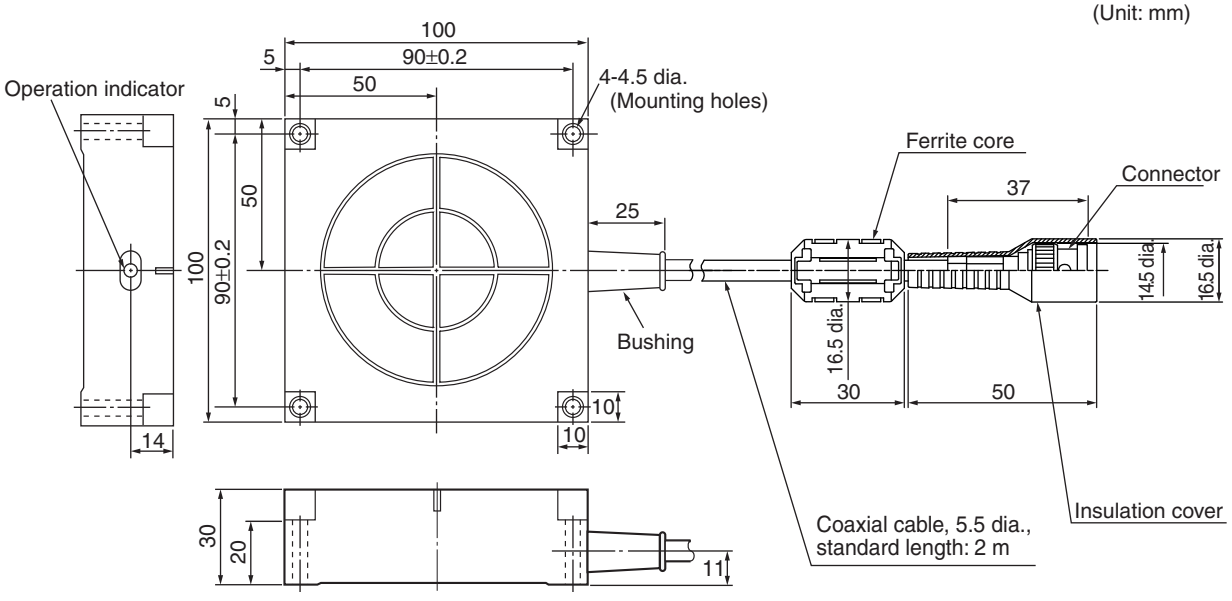
■ General Specifications

Item / Model	V680-HS65-W (Standard cable, waterproof connector)	V680-HS65-R (Flexible cable, non-waterproof connector)
Ambient operating temperature	−25 to 70°C (with no icing)	
Ambient storage temperature	−40 to 85°C (with no icing)	
Ambient operating humidity	35% to 95% (with no condensation)	
Insulation resistance	20 MΩ min. (at 500 VDC) between connector terminals and case	
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between connector terminals and case	
Degree of protection	IP67 (IEC60529) In-house standard for antenna oil resistance (former JEM standard equivalent to IP67g) **Note:** The connector specifications are IP67 and IP65 (IEC 60529).	IP67 (IEC60529) In-house standard for antenna oil resistance (former JEM standard equivalent to IP67g) **Note:** The connectors are not waterproof.
Dielectric strength	10 to 500 Hz, 1.5-mm double amplitude, acceleration: 100 m/s², 10 sweeps in each of 3 axis directions (up/down, left/right, and forward/backward) for 11 minutes each	
Shock resistance	500 m/s², 3 times each in 6 directions (Total: 18 times)	
Dimensions	100 × 100 × 30 mm	
Material	ABS resin case, epoxy resin filler	
Weight	Approx. 1100 g (with 12.5 m cable)	
Cable length	Standard lengths of 2 and 12.5 m	

■ Dimensions

• V680-HS65-W

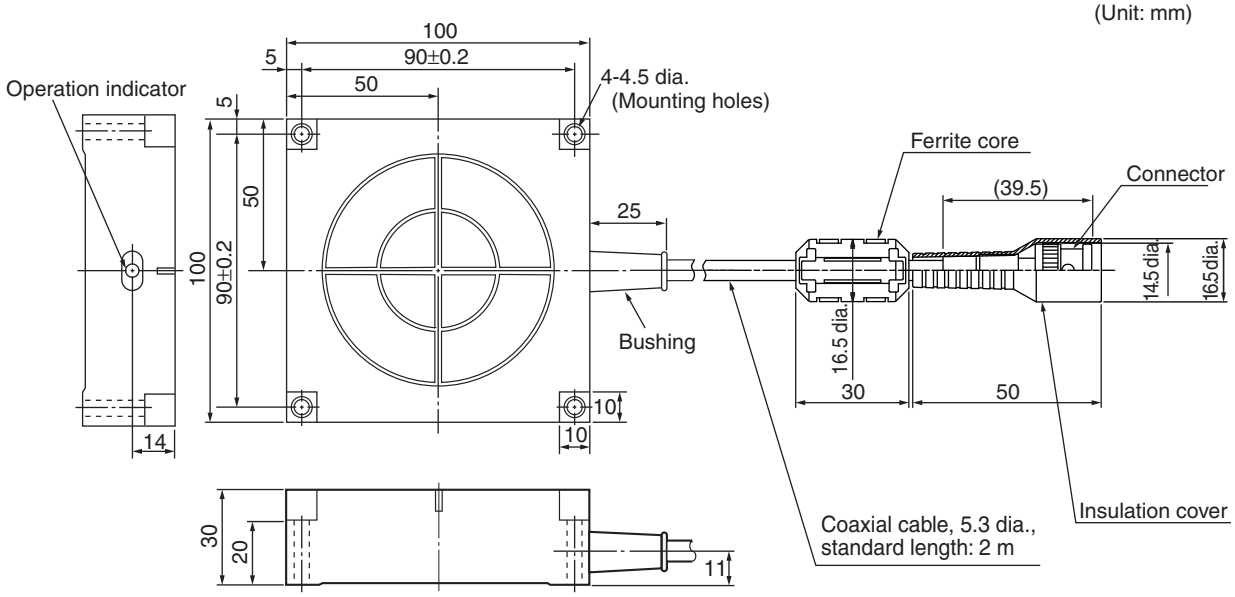
(Unit: mm)



Case material	ABS resin
Fill resin	Epoxy resin
Cable	PVC (gray)

V680-HS65-R

(Unit: mm)



Case material	ABS resin
Fill resin	Epoxy resin
Cable	PVC (black)

Antennas with Built-in Amplifier

V680-H01-V2

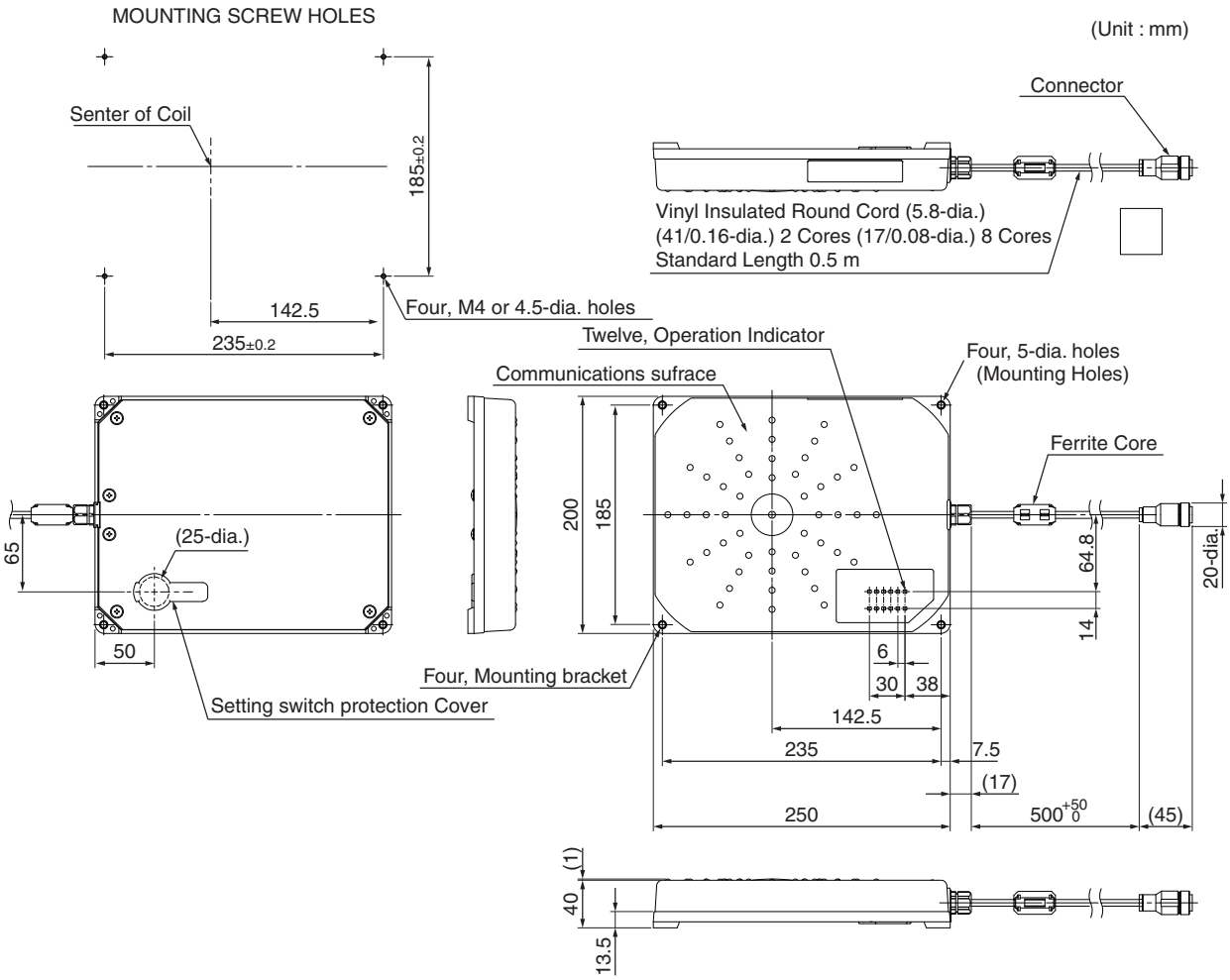
■ General Specifications

Item / Model	V680-H01-V2
Ambient operating temperature	−10 to 55°C (with no icing)
Ambient storage temperature	−35 to 65°C (with no icing)
Ambient operating humidity	35% to 85% (with no condensation)
Insulation resistance	20 MΩ min. (at 100 VDC) between connector terminals and the rear plate
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between connector terminals and the rear plate
Degree of protection	IP63.(IEC60529); Mounting direction: Communications surface facing up
Dielectric strength	10 to 150 Hz, 0.35-mm single amplitude, acceleration: 50 m/s², 10 sweeps in each of 3 axis directions (up/down, left/right, and forward/backward) for 8 minutes each
Shock resistance	150 m/s², 3 times each in 6 directions (Total: 18 times)
Cable length	0.5 m (use an extension cable to connect to the Controller up to 30.5 m)
LED indicators	RUN, COMM, NORM, ERR, CNT-TYPE, TAG-TYPE, Error Code, Level
Weight	Approx. 900 g

■ Communications Specifications

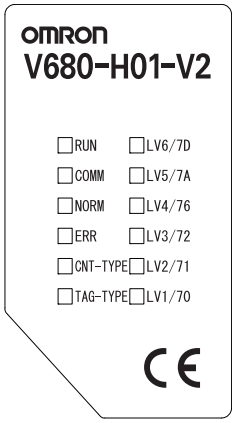
Item / Model	V680-H01-V2
Communications method	Electromagnetic induction
Operating frequency	13.56 MHz ± 7KHz
Modulation	ASK

■ Dimensions



Case material	PC/ASA resin
Rear Panel	Aluminum
Cable	PVC

■ Operation Indicator



name	Color	Meaning
RUN	Green	Lit when the power is ON.
COMM	Yellow	Lit when a command is being sent.
NORM	Green	Lit when communications with a Tag are normal in Normal Communications Mode.
ERR	Red	Lit when an error occurs in communications with a Tag in Normal Communications Mode.
CNT-TYPE	Yellow	Lit when in V680-CA□D Controller connection mode (SW1-1 setting: ON).
TAG-TYPE	Yellow	For expansion (not used): Always OFF.
LV6/7D	Yellow	Maintenance Mode: Lit at distance or speed level 6. Normal Communications Mode: Lit when a write protection error occurs.
LV5/7A	Yellow	Maintenance Mode: Lit at distance or speed level 5 or higher. Normal Communications Mode: Lit when an address error occurs.
LV4/76	Yellow	Maintenance Mode: Lit at distance or speed level 4 or higher. Normal Communications Mode: Lit when a Tag memory error occurs.
LV3/72	Yellow	Maintenance Mode: Lit at distance or speed level 3 or higher. Normal Communications Mode: Lit when a no Tag error occurs.
LV2/71	Yellow	Maintenance Mode: Lit at distance or speed level 2 or higher. Normal Communications Mode: Lit when a verification error occurs.
LV1/70	Yellow	Maintenance Mode: Lit at distance or speed level 1 or higher. Normal Communications Mode: Lit when a Tag communications error occurs.

CHECK!

The distance level will vary greatly depending on the surrounding environment. The setting position will serve as a guide, but use RUN mode to conduct a sufficient number of tests in the actual operating environment.
Values of distance level 4 or above may not be displayed, but this will not affect the RUN mode performance and does not indicate a malfunction.

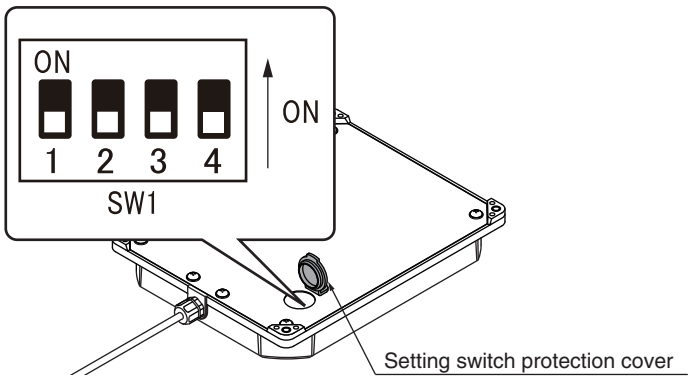
CHECK!

Differences between the V680-H01 and the V680-H01-V2

As shown in the following table, the V680-H01-V2 provides additional indicators.
Turn ON SW1-1(Antenna) when using the V680-CA1D/CA2D.

display functions	V680-H01-V2		V680-H01
	SW1-1: OFF	SW1-1: ON	no switch
RUN (POWER/COMM)	OK	OK	OK
COMM (POWER/COMM)	OK	OK	OK
NORM	OK	NO	NO
ERR	OK	NO	NO
CNT-TYPE	OK	OK	NO
TAG-TYPE	---	---	---
LV6/7D	OK	NO	NO
LV5/7A	OK	NO	NO
LV4/76	OK	NO	NO
LV3/72	OK	NO	NO
LV2/71	OK	NO	NO
LV1/70	OK	NO	NO

■ Setting Switch



Note: Please attach a setting switch protection cover after setting switch.

Setting	Function	Default setting
SW1-1	Controller selection OFF:V680-CA5D01-V□, CS1W-V680C11, or CJ1W-V680C11 ON: V680-CA1D/−CA2D	OFF
SW1-2	Reserved by System (Always set this Switch to OFF.)	---
SW1-3	Reserved by System (Always set this Switch to OFF.)	---
SW1-4	Reserved by System (Always set this Switch to OFF.)	---

Set SW1-1 on the V680-H01-V2 Antenna and the Controller as shown in the following table.

Antenna setting	Controller setting		
V680-H01-V2	**V680-CA5D01-V□**	**CS1W-V680C11 CJ1W-V680C11**	**V680-CA1D V680-CA2D**
SW1-1: OFF	SW4-8: OFF	DM20000 + 100 × m+3=0000	×
SW1-1: ON	SW4-8: ON **See Note.**	DM20000 + 100 × m+3=0001 **See Note.**	○ **See Note.**

× : Cannot be used.
○ : Can be used.(Controller setting not required.)

Note: The high-speed mode cannot be used by the controller's setting.

CHECK!

Differences between the V680-H01 and the V680-H01-V2

As shown in the following table, the V680-H01-V2 supports additional maintenance functions.
Turn ON SW1-1(Antenna) when using the V680-CA1D/CA2D.

display functions	V680-H01-V2		V680-H01
	SW1-1: OFF	SW1-1: ON	no switch
Communication Test Mode	OK	OK	OK
Noise Level Measurement Mode	OK	NO	NO
Distance Level Measurement Mode	OK	NO	NO
Speed Level Measurement Mode	OK	NO	NO
Communications Success Rate Measurement Mode	OK	NO	NO

Cables (V680-H01-V2 exclusive use)

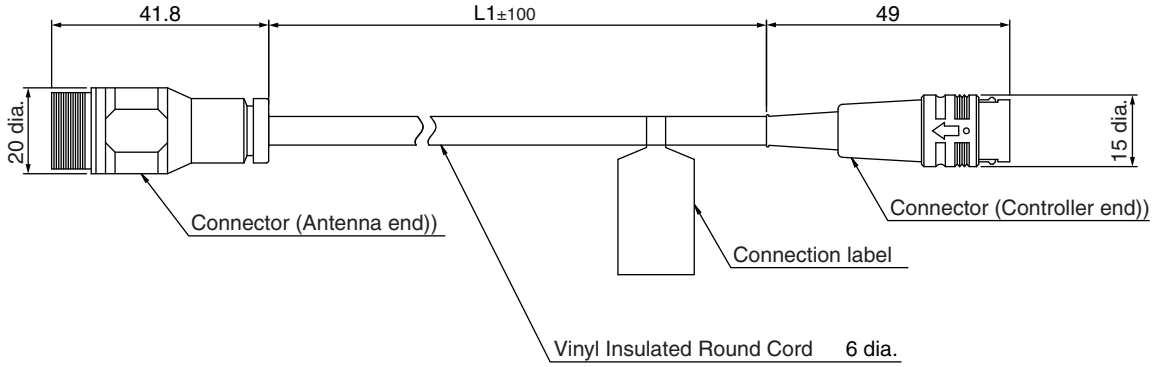
■ Specifications

Item Model	V700-A40-W
Number of conductors	10
Insulation resistance	5 MΩ min. (at 500 VDC) between terminals and sheath
Dielectric strength	500 VAC, 1 min

■ Dimensions

Item Model	V700-A40-W 2M	V700-A40-W 5M	V700-A40-W 10M	V700-A40-W 20M	V700-A40-W 30M
Length (L1)	Approx.2m	Approx. 5 m	Approx.10m	Approx. 20 m	Approx. 30 m
Weight	Approx. 150 g	Approx.360 g	Approx. 700 g	Approx.1,350 g	Approx.2,000 g
L1	2,000	5,000	10,000	20,000	30,000

(Unit: mm)



Cable	PVC

Amplifier

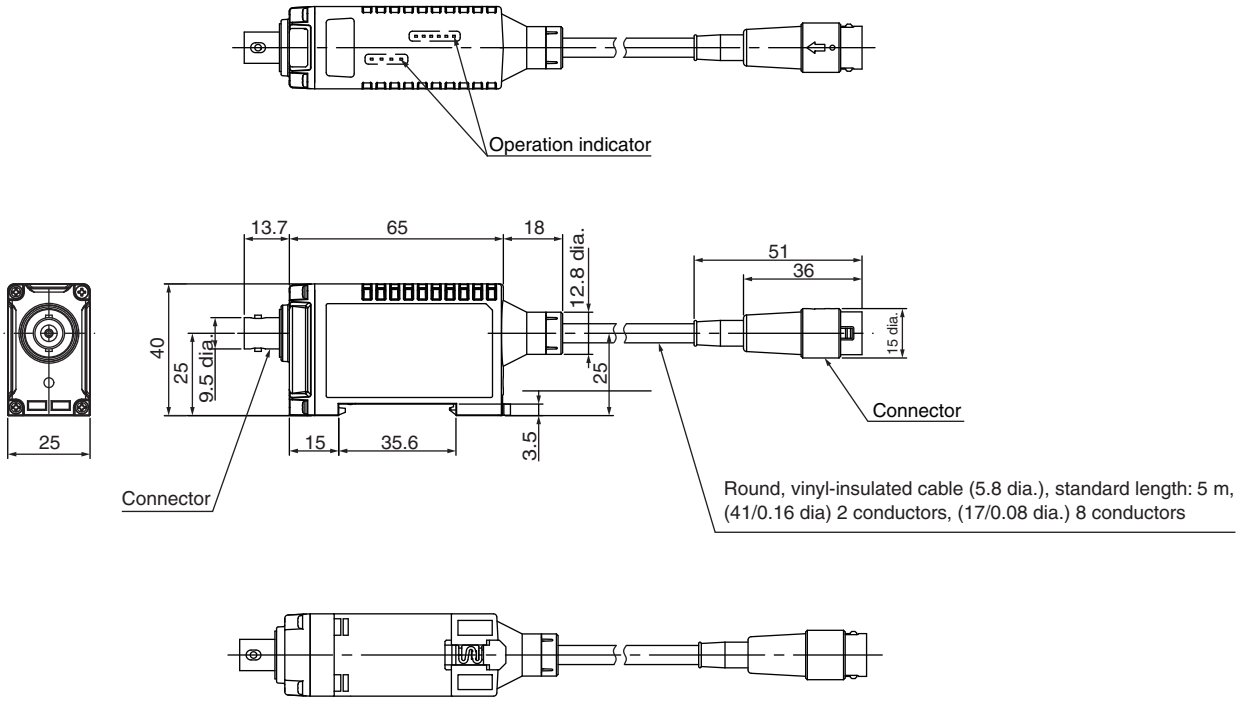
V680-HA63A

■ General Specifications

Item / Model	V680-HA63A	
Ambient operating temperature	−10 to 55°C (with no icing)	
Ambient storage temperature	−25 to 65°C (with no icing)	
Ambient operating humidity	35% to 85% (with no condensation)	
Insulation resistance	20 MΩ min. (at 500 VDC) between cable terminals and case	
Dielectric strength	1,000 VAC, 50/60 Hz for 1 minute between cable terminals and case.	
Degree of protection	IP67, IP65 (IEC 60529) **Note:** Not including connector at Controller end. (When V680-HS52-W, V680-HS63-W, and V680-HS65-W is connected)	IP40 (IEC 60529) (When V680-HS51, V680-HS52-R, V680-HS63-R, and V680-HS65-R is connected)
Dielectric strength	10 to 500 Hz, 1.5-mm double amplitude, acceleration:100 m/s², 10 sweeps in each of 3 axis directions (up/down, left/right, and forward/backward) for 11 minutes each	
Shock resistance	500 m/s², 3 times each in 6 directions (Total: 18 times)	
Dimensions	25 × 40 × 65 mm (Not including protrusions.)	
Materials	PC	
Weight	Approx. 650 g (with 10 m cable)	
Cable length	Standard lengths of 5 and 10 m	

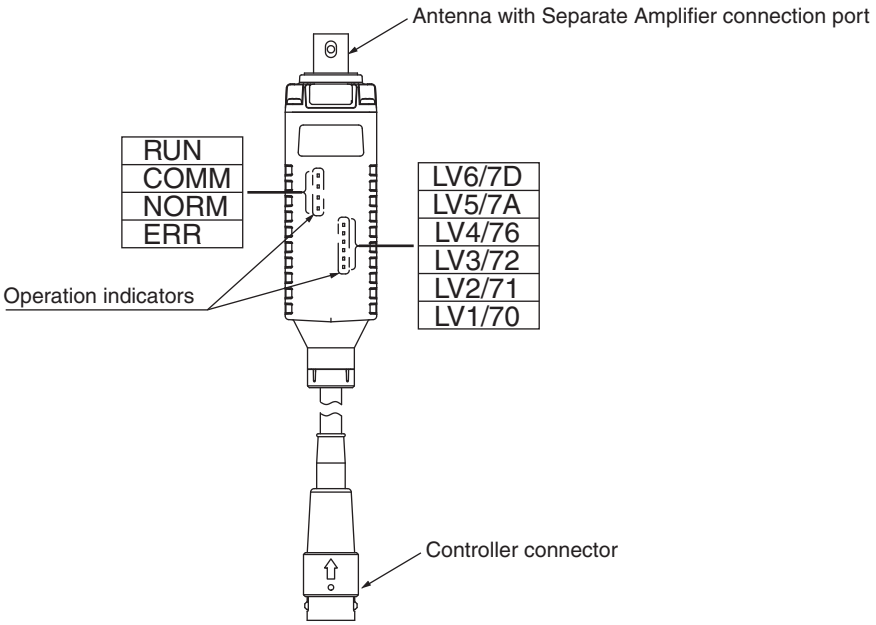
Note: The maximum total cable extension is 50 m (including the Amplifier cable). A maximum of two extension cables can be connected.

■ Dimensions



Case material	PC resin
Cable	PVC

Nomenclature



■ Antenna Connection Port

The Antenna connection port is connected a V680-series Antenna.

■ Controller Connector

The Controller connector is connected to Antenna connection port on the Controller.

■ Operation Indicators (LEDs)

Name	Color	Meaning
RUN	Green	Lit when the power is ON.
COMM	Yellow	Lit when a command is being sent.
NORM	Green	Lit when communications with a Tag are normal in Normal Communications Mode.
ERR	Red	Lit when an error occurs in communications with a Tag in Normal Communications Mode.
LV6/7D	Yellow	Maintenance Mode: Lit at distance or speed level 6. Normal Communications Mode: Lit when a write protection error occurs.
LV5/7A	Yellow	Maintenance Mode: Lit at distance or speed level 5 or higher. Normal Communications Mode: Lit when an address error occurs.
LV4/76	Yellow	Maintenance Mode: Lit at distance or speed level 4 or higher. Normal Communications Mode: Lit when a Tag memory error occurs.
LV3/72	Yellow	Maintenance Mode: Lit at distance or speed level 3 or higher. Normal Communications Mode: Lit when a no Tag error occurs.
LV2/71	Yellow	Maintenance Mode: Lit at distance or speed level 2 or higher. Normal Communications Mode: Lit when a verification error occurs.
LV1/70	Yellow	Maintenance Mode: Lit at distance or speed level 1 or higher. Normal Communications Mode: Lit when a Tag communications error occurs.

CHECK!

The distance level will vary greatly depending on the surrounding environment. The setting position will serve as a guide, but use RUN mode to conduct a sufficient number of tests in the actual operating environment.
Values of distance level 4 or above may not be displayed, but this will not affect the RUN mode performance and does not indicate a malfunction.

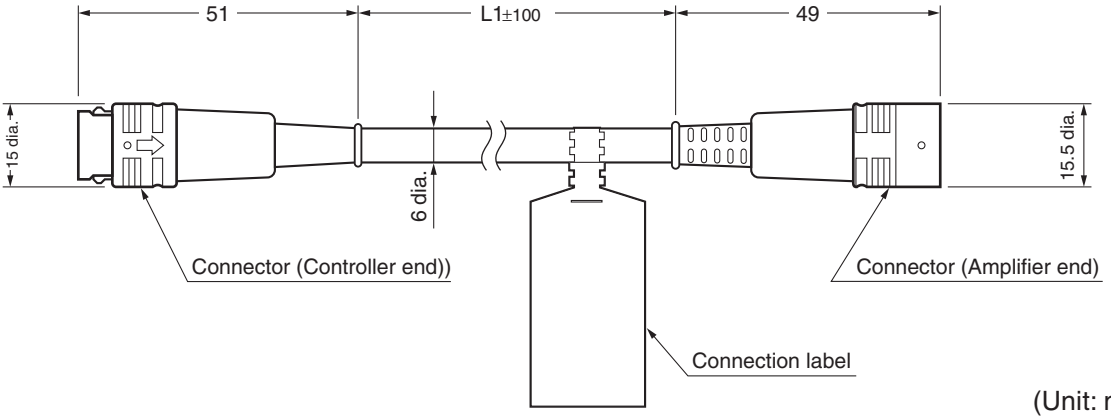
Cables (V680-HA63 exclusive use)

■ Specifications

Item / Model	V700-A43/V700-A44
Number of conductors	10
Insulation resistance	5 MΩ min. (at 500 VDC) between terminals and sheath
Dielectric strength	500 VAC, 1 min

■ Dimensions

Item / Model	V700-A43	V700-A44
Length (L1)	Approx.10m	Approx. 20 m
Weight	Approx. 700 g	Approx.1,350 g



(Unit: mm)

Cable	PVC

Tags

Specifications and Dimensions

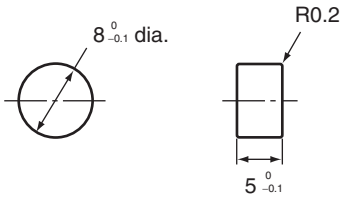
■ V680-D1KP52MT

• General Specifications

Item / Model	V680-D1KP52MT
Memory capacity	1,000 bytes (user area)
Memory type	EEPROM
Data backup time	10 years after writing (85°C or less), 0.5 years after writing (85°C to 125°C) Total data backup time at high temperatures exceeding 125°C is 10 houres (See note.)
Memory longevity	100,000 times per block (25°C)
Ambient operating temperature	–25 to 85°C (with no icing)
Ambient storage temperature	–40 to 125°C (with no icing)
Ambient operating humidity	35% to 95%
Degree of protection	IP68 (IEC 60529) In-house standard for antenna oil resistance (former JEM standard equivalent to IP67g)
Vibration resistance	10 to 2,000 Hz, 1.5-mm double amplitude, acceleration: 150 m/s², 10 sweeps each in X, Y, and Z directions for 15 minutes each
Shock resistance	500 m/s², 3 times each in X, Y, and Z directions (Total: 18 times)
Dimensions	8 dia. × 5 mm
Materials	Case: PPS resin, Fill resin: Epoxy resin
Weight	Approx. 0.5 g
Metal countermeasures	Yes

Note: After string data at high temperatures, rewrite the data even if changes are not required, In this manual, high temperatures are those exceeding 125°C up to 180°C.

• Dimensions



(Unit : mm)

Case material	PPS resin
Fill resin	Epoxy resin

CHECK! When embedding the V680-D1KP52MT into a metal surface, use the V680-HS51, V680-HS52 Antenna. Transmission will not be possible if the V680-HS63 Antenna is used.

CHECK! The side with the markings is the communications surface. Mount the Tag with this side facing the Antenna.

CHECK! The ID code is written in the memory of the Tag and may be affected by data retention characteristics at high temperatures. Take suitable precautions when using the READ ID command for Tags operating at high temperatures.

■ V680-D1KP66T/66MT

• General Specifications

Item / Model	V680-D1KP66T	V680-D1KP66MT
Memory capacity	1,000 bytes (user area)	
Memory type	EEPROM	
Data backup time	10 years after writing (85°C or less), 0.5 years after writing (85°C to 125°C) Total data backup time at high temperatures exceeding 125°C is 10 houres (See note.)	
Memory longevity	100,000 times per block (25°C)	
Ambient operating temperature	−25 to 85°C (with no icing)	
Ambient storage temperature	−40 to 125°C (with no icing)	
Ambient operating humidity	35% to 95%	
Degree of protection	IP68 (IEC 60529) In-house standard for antenna oil resistance (former JEM standard equivalent to IP67g)	
Vibration resistance	10 to 2,000 Hz, 1.5-mm double amplitude, acceleration: 150 m/s^2,10 sweeps each in X, Y, and Z directions for 15 minutes each	
Shock resistance	500 m/s^2, 3 times each in X, Y, and Z directions (Total: 18 times)	
Dimensions	34 × 34 × 3.5 mm	
Materials	Case: PPS resin	
Weight	Approx. 6 g	Approx. 7.5 g
Metal countermeasures	None	Yes

Note: After string data at high temperatures, rewrite the data even if changes are not required, In this manual, high temperatures are those exceeding 125°C up to 180°C.

The V680-D1KP66MT is designed to be mounted directly to metal. The V680-D1KP66T and V680-D1KP66MT markings are shown in the following diagrams.

●V680-D1KP66MT

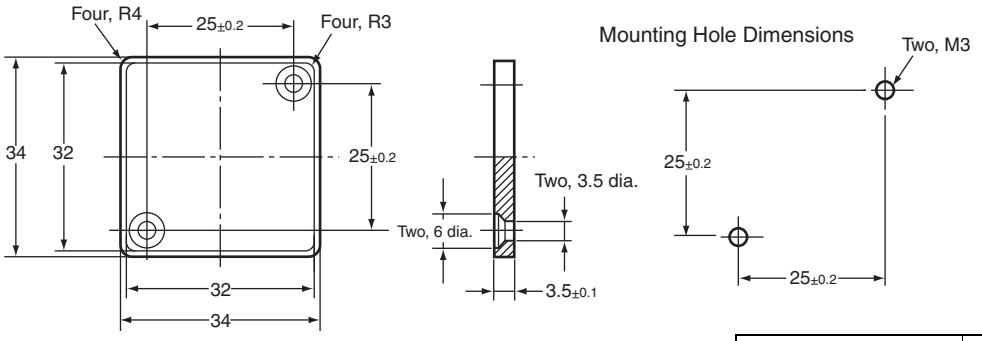
●V680-D1KP66T

CHECK! The side with the markings is the communications surface. Mount the Tag with this side facing the Antenna.

CHECK! The ID code is written in the memory of the Tag and may be affected by data retention characteristics at high temperatures. Take suitable precautions when using the READ ID command for Tags operating at high temperatures.

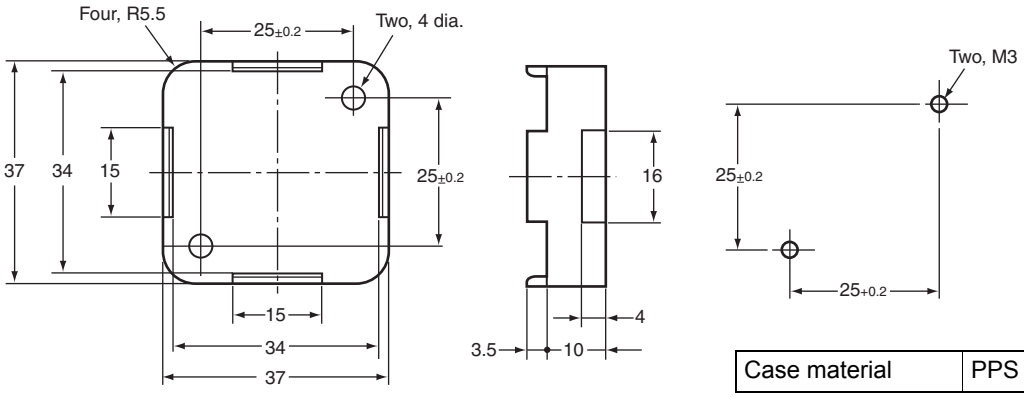
• Dimensions

V680-D1KP66T/66MT



Case material	PPS resin

V600-A86 Attachment



Case material	PPS resin

Tag Heat Resistivity

- Storing Tags under high temperatures will adversely affect the performance of the internal parts and the service life of the Tags.
- An LTPD of 10% was determined during the evaluation for Tags that reached the end of their life after testing under the following test conditions.

Heat cycle	−10°C/+150°C, 30 minutes each for 1,000 cycles
	−100°C/+180°C,30 minutes each for 200 cycles
High temperatures	+150°C, 1,000 hours
	+180°C, 200 hours

CHECK!

LTPD: Lot tolerance percent defective
The lower limit of the malfunction rate for lots to be considered unacceptable during reliability testing.

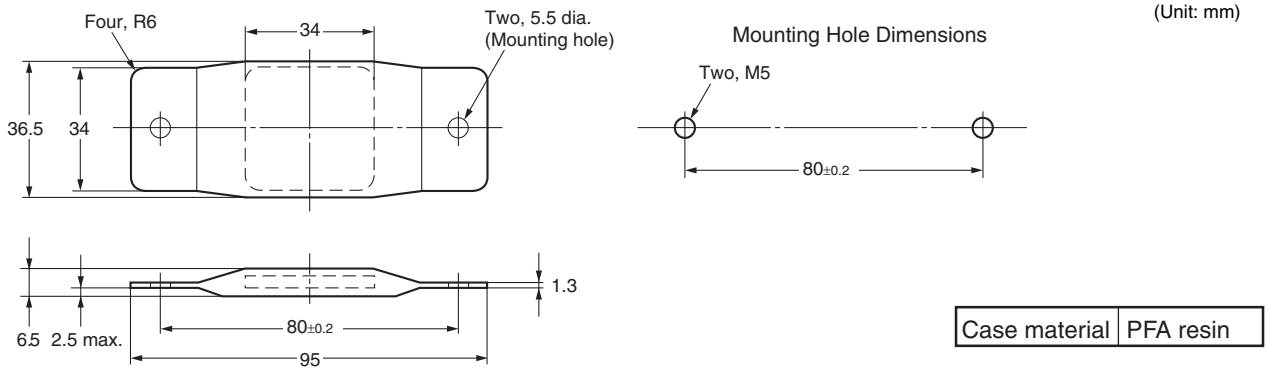
■ V680-D1KP66T-SP

• General Specifications

Item / Model	V680-D1KP66T-SP
Memory capacity	1,000 bytes (user area)
Memory type	EEPROM
Data backup time	10 years after writing (85°C or less)
Memory longevity	100,000 times per block (25°C)
Ambient operating temperature when communicating	−25 to 70°C (with no icing)
Ambient operating temperature when not communicating	−40 to110°C (with no icing)
Ambient storage temperature	−40 to 110°C (with no icing)
Ambient operating humidity	35% to 95%
Degree of protection	IP67
Vibration resistance	10 to 2,000 Hz, 1.5-mm double amplitude, acceleration: 150 m/s^2,10 sweeps each in X, Y, and Z directions for 15 minutes each
Shock resistance	500 m/s^2, 3 times each in X, Y, and Z directions (Total: 18 times)
Dimensions	95 × 36.5 × 6.5 mm (excluding protruding parts)
Materials	External coatiog: Fluororesin (PFA) Tag body: PPS resin
Weight	Approx. 20 g
Mounting method	Two M5 screws
Metal countermeasures	None

• Dimensions

(Unit: mm)



Case material	PFA resin

CHECK!

The side with the markings is the communications surface. Mount the Tag with this side facing the Antenna.

■ V680-D1KP58HT

• General Specifications

Item / Model	V680-D1KP58HT
Memory capacity	1,000 bytes (user area)
Memory type	EEPROM
Data backup time	10 years after writing (85°C or less), 2 years after writing (85°C to 110°C) Total data backup time at high temperatures exceeding 110°C is 10 houres (See note.)
Memory longevity	100,000 times per block (25°C)
Ambient operating temperature	−10 to 85°C (with no icing)
Ambient storage temperature	−40 to 110°C (with no icing)
Degree of protection	IP67 (IEC 60529)
Vibration resistance	10 to 2,000 Hz, 1.5-mm double amplitude, acceleration: 150 m/s^2,10 sweeps each in X, Y, and Z directions for 15 minutes each
Shock resistance	500 m/s^2, 3 times each in X, Y, and Z directions (Total: 18 times)
Materials	Coatiog: PPS resin
Weight	Approx. 90 g

Note: After string data at high temperatures, rewrite the data even if changes are not required, In this manual, high temperatures are those exceeding 110°C up to 200°C.

CHECK! The maximum operating temperature during communication is 85°C. The temperature of the actual Tag must not be higher than 85°C when the Tag enters the Antenna's communications area. When using a Tag after storage at high temperature, perform tests before use, and make sure that the temperature of the Tag does not exceed 85°C during operation.

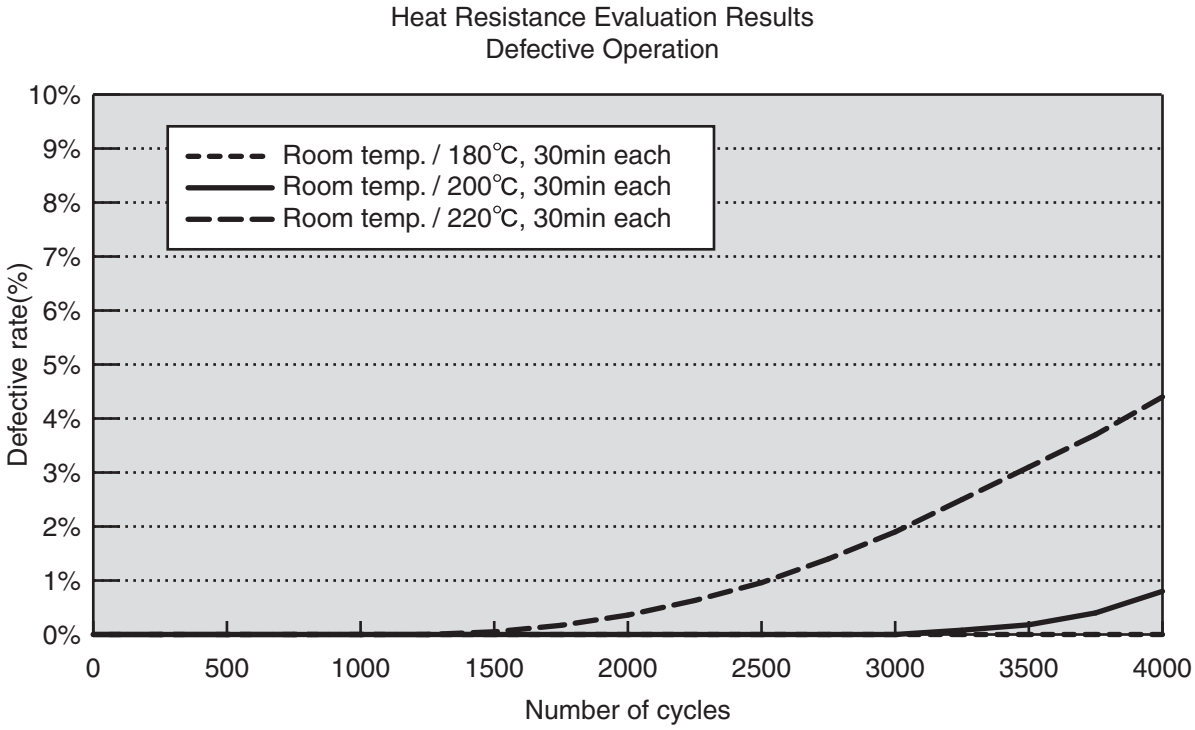
• Tag Heat Resistivity

- Storing Tags under high temperatures will adversely affect the performance of the internal parts and the service life of the Tags.
- An LTPD of 10% was determined during the evaluation for Tags that reached the end of their life after testing under the following test conditions
- Heat cycle: Room temperature/200ÅãC, 30 minutes each for 2,000 cycles.
- Normal operation has been confirmed after performing the above tests, although minor cracks may occur.

CHECK!

LTPD: Lot tolerance percent defective
The lower limit of the malfunction rate for lots to be considered unacceptable during reliability testing.

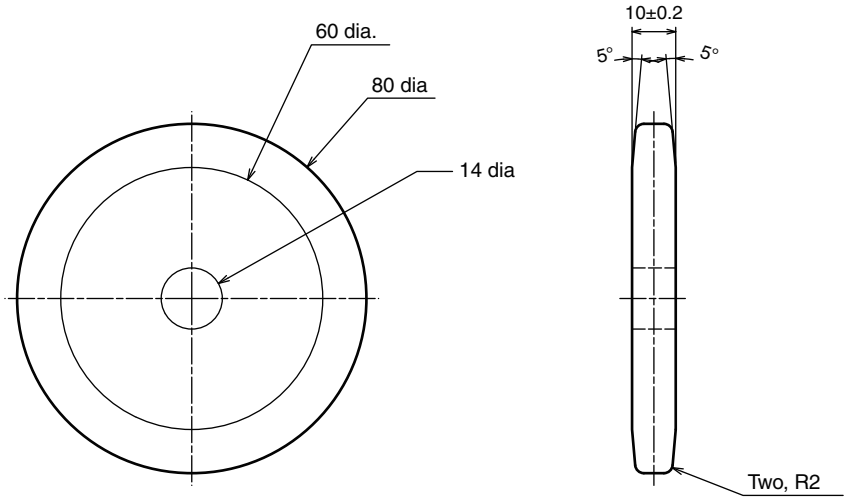
- Reference Data (Evaluation Test Results)



• Dimensions

V680-D1KP58HT

(Unit: mm)



Case material	PPS resin

CHECK!

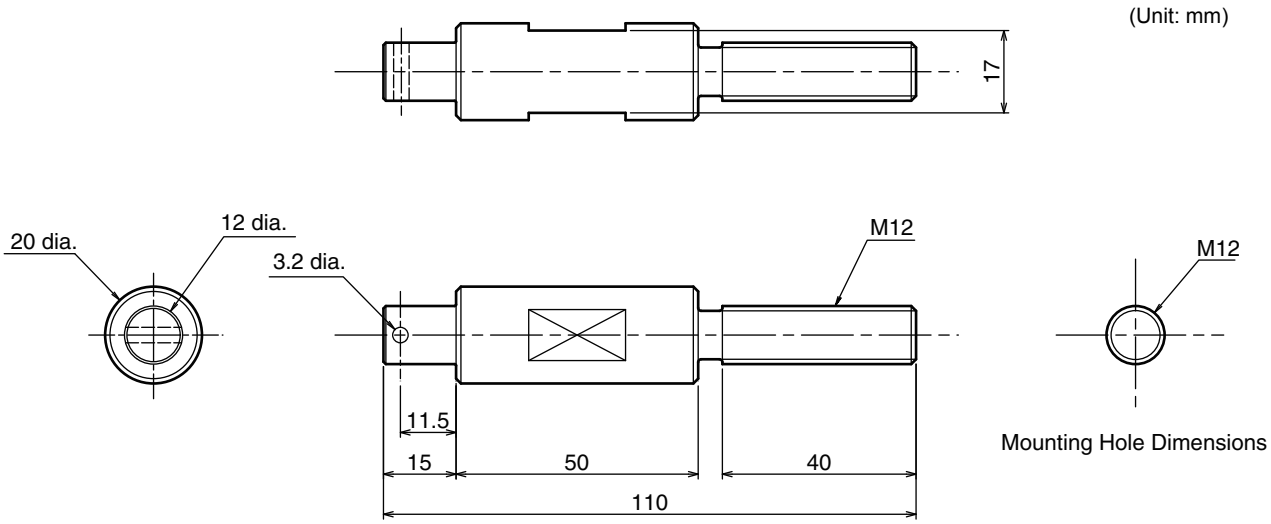
The side with the markings is the communications surface. Mount the Tag with this side facing the Antenna.

V680-A80 (Attachment)

This Attachment is specifically designed to secure V680-D1KP58HT Tags to the workpiece.

Applicable Tag model: V680-D1KP58HT

(Unit: mm)



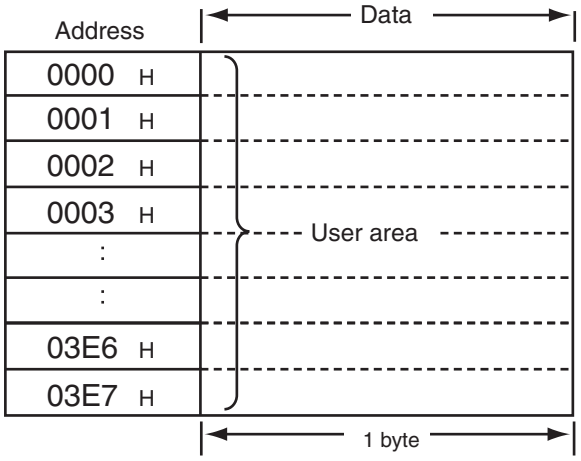
Mounting Hole Dimensions

Provided Parts

Nuts (M12): 2

Split pin (3.2 × 20 mm): 1

Memory Map



EEPROM is used as memory in the Tags.
The memory capacity available to the user is 1,000 bytes, including 0000H to 0003H (the Write Protection Setting Area).

CHECK!

The access to the memory is executed at every block.
1 block is 8 bytes (8 addresses).

Write Protection Function

The write protection function prevents important data, such as product information, stored in memory in a Tag from being inadvertently overwritten.

After important data has been written to memory, it can be write-protected using the following method.

CHECK! The write protection function can be switched with SW4-7 (Write Protection Function Setting) of the V680-CA5D□□-V□ Controller or with word (Write Protection Function Setting) in the DM(m+2)CH Area words allocated to the C□1W-V680C□□ ID Sensor Unit.

■ Setting the Write Protection Function

Write protection is set in Tag addresses 0000H to 0003H.

The setting for the most significant bit of address 0000H specifies whether or not write protection is enabled.

Address	Bit	7	6	5	4	3	2	1	0
0000H		YES/ NO	Upper two digits of start address (00H to 7FH)						
0001H		Lower two digits of start address (00H to FFH)							
0002H		Upper two digits of end address (00H to FFH)							
0003H		Lower two digits of end address (00H to FFH)							

- **Write-protect Bit (Most significant bit of address 0000H)**

  1: Write-protected (Yes)

  0: Not write-protected (No)

- **Write Protection Setting Area**

  Start address: 0000H to 7FFFH

  End address: 0000H to FFFFH

■ Write Protection Setting Examples

• Settings to write-protect addresses 0008H through 03E7H:

Address	Bit	7	6	5	4	3	2	1	0
0000H		1	0	0	0	0	0	0	0
		8				0			
0001H		0	0	0	0	1	0	0	0
		0				8			
0002H		0	0	0	0	0	0	1	1
		0				3			
0003H		1	1	1	0	0	1	1	1
		E				7			

• Settings to not write-protect any addresses:

Address	Bit	7	6	5	4	3	2	1	0
0000H		0	0	0	0	0	0	0	0
		0				0			
0001H		0	0	0	0	0	0	0	0
		0				0			
0002H		0	0	0	0	0	0	0	0
		0				0			
0003H		0	0	0	0	0	0	0	0
		0				0			

CHECK! The write protection function is a function of the V680-CA5D□□-V□ Controller and the C□1W-V680C□□ ID Sensor Unit. It is not supported by reader/writer units from other manufacturers.

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