

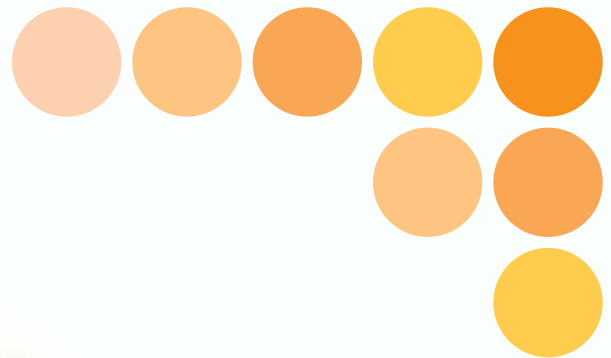
NEW

OMRON

# RFID System

## V680 Series

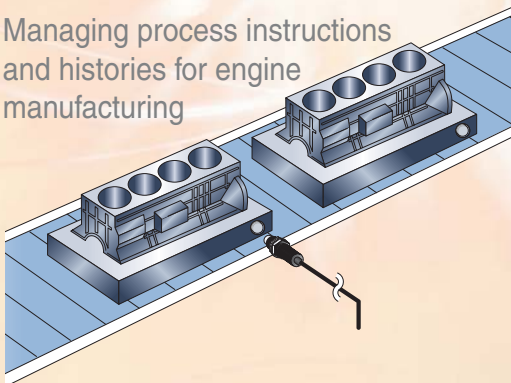
Next-Generation RFID System  
Conforming to ISO/IEC 18000-3  
(ISO/IEC 15693).



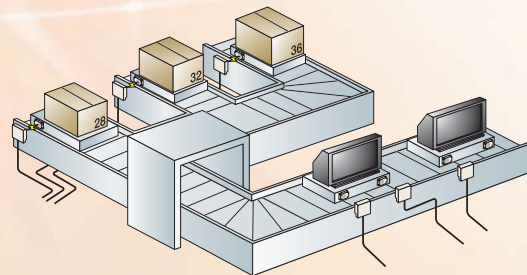
**Visualize data transmission on  
production lines.**



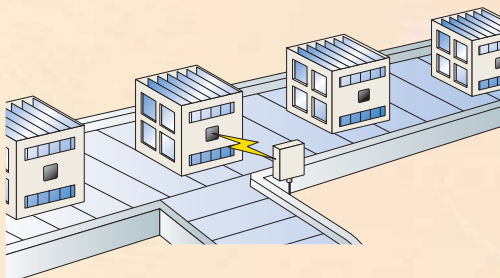
Managing process instructions  
and histories for engine  
manufacturing



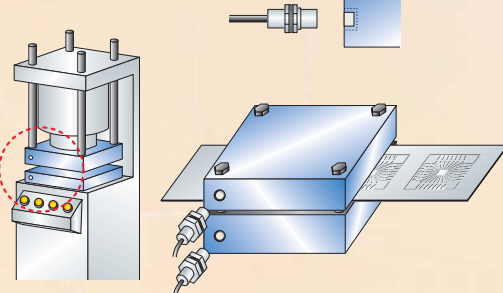
Managing manufacturing process  
traceability



Managing the manufacture of LCDs  
and color filters



Managing dies, die histories,  
and die service lives



realizing

## Versatile Functions for Optimal Use on Production Lines

### Conforms to ISO/IEC 18000-3 (ISO/IEC 15693)

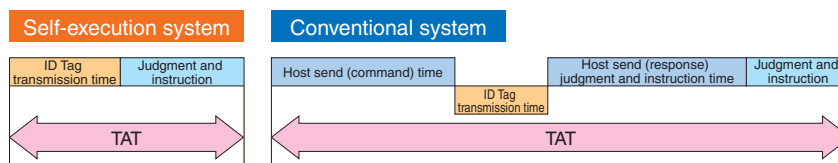
#### Can be used in many countries around the world.

The V680 Series can be used in many parts of the world because it meets the requirements of radio wave regulations in Japan, Europe, the U.S.A., Canada, Mexico, Singapore, Malaysia, the Philippines, China, Hong Kong, Taiwan, and Korea. Contact your OMRON sales representative for details on use in other countries.

### Enables High-speed Data Transmission

#### High-speed transmission of 27 kbps achieved.

The V680 Series offers data transmission speeds as high as 27 kbps at an operating frequency of 13.56 MHz, and dramatically shortens turn around time (TAT) with a Self-execution Mode that eliminates the need for host access.



### A Wide Range of ID Tags Available for Various Production Lines

These ultra-compact Tags also feature high environmental durability, long service lives, and maintenance-free operation.

- ID Tags can be either embedded in metal or mounted on non-metallic objects without requiring any extra attachments.
- A long service life enables 10 billion accesses. (for tag which Memory type use FRAM)
- A new battery-less model with a large, 32-Kbyte capacity has been added to the line-up. In addition to managing the growing amount of production and quality data on today's factory floors, this new Tag makes it easy to build a system with
- traceability.

The V680 Series features the same level of environmental durability as the previous V600 Series.



**10  
billion  
accesses**  
Long service life

**Battery-less**

### No Changes Needed when Switching from an Existing System

The V680 Series also supports V600-series commands, so there is no need to change command systems.

## Easier Startup and Maintenance. Simpler Operation.

### Lets You Visualize Data Transmission

Contributes to higher efficiency for on-site startup and maintenance.

Seven maintenance modes make it easy to diagnose the optimal usage conditions for the V680 RFID System. Startup is also easier because the system can be checked without having to use a personal computer or other host device.

Maintenance modes are quickly switched with the DIP switch on the front of the Controller.



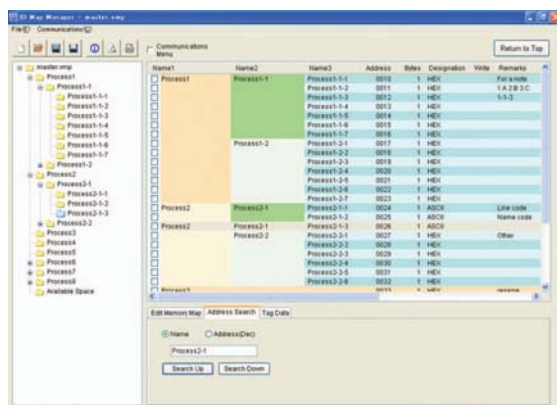
The Amplifier Unit is also equipped with an indicator that displays the communications condition, for easy confirmation from the location nearest the production line.



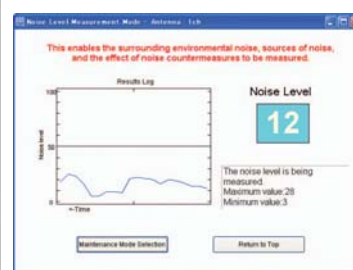
### Strong Support for Creating ID Tag Memory Maps

Using the ID Map Manager dramatically shortens the time required to allocate ID Tag memory and complete system designs.

Work efficiency is greatly increased because the ID Map Manager includes an ID Tag read/write test function and communications checking function in addition to memory map definition and editing functions. Memory map data created by the ID Map Manager can also be easily shared between the production line design department and the vendors that are building the line.



V680-A-IMMEG-P01





# Visualize Data Transmission without the Need for a Host Device. Perform Simple Diagnosis of Communications Conditions.

## Distance Level Measurement Mode

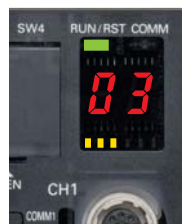
Confirms correct mounting positions for the Read/Write Antenna and ID Tag.

The distance between the Read/Write Antenna and ID Tag mounting locations relative to the communications range is displayed using six levels.

Controller

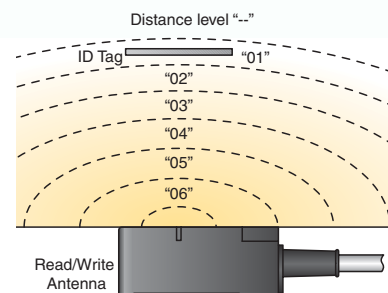


Distant



Close

Amplifier Unit



## Noise Level Measurement Mode

Confirms spatial noise, noise sources, and noise countermeasure effects.

Measures the ambient noise level and displays it in levels ranging from 00 to 99.

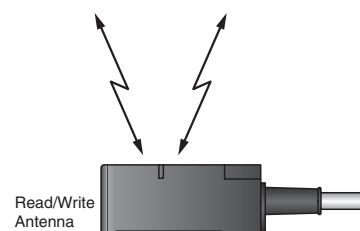
Controller



Little noise



Much noise



## Speed Level Measurement Mode (Read/Write)

Confirms the speed of moving ID Tags and the number of usable bytes.

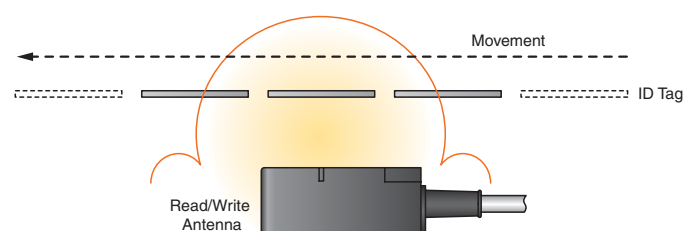
Data is transmitted repeatedly to moving ID Tags, and the number of successful communications and speed level are displayed in levels ranging from 01 to 99.

(No data is actually written to the ID Tags during the write part of the Speed Level Measurement Mode.)

Controller



More than 99 successful communications



Seven maintenance modes make it easy to diagnose the communications conditions from the front panel of the Controller or Amplifier Unit. The data can also be output from the USB port of the Controller to a personal computer or other monitoring device.

(Maintenance Mode cannot be used with the V680-H01 or V680-CH.)

## Communications Success Rate Measurement Mode

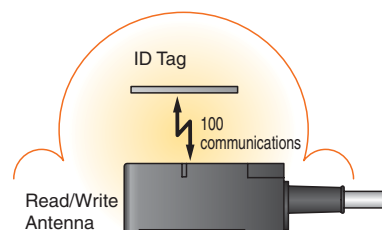
**Confirms the communications success rate between the Read/Write Antenna and ID Tags.**

A total of 100 communications are executed without retries, and the rate of communications success is displayed in levels ranging from 01 to 99.

Controller



Communications successes: 23

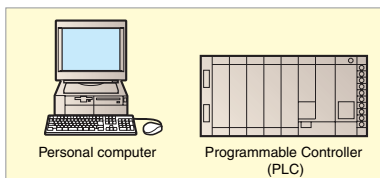


## Host Device Communications Monitor Mode (Protocol Analyzer Function)

**This mode can be used as a protocol analyzer function for host device communications lines.**

The communications commands sent from the host device and the execution result responses can be output from the USB port of the Controller.

Host device



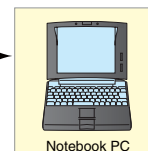
Command:  
RDSTH100100010\*CR

Response:  
RD72\*CR

Monitor:  
RDSTH100100010\*CR  
RD72\*CR



Monitor



## Tag Communications Test Mode

**Confirms communications ability between the Read/Write Antenna and ID Tags.**

The end codes are displayed to show the results of communications between the Read/Write Antenna and ID Tags. When the Controller is mounted inside a control panel, or in some other location, this data can be output from the Controller's USB port and easily checked on a monitor.

(The Tag Communications Test Mode uses only read operations.)

Controller



Normal communication



Communications error

## Host Device Communications Confirmation Mode

**Confirms whether the signals sent from the Controller are being correctly transferred to an external device.**

The communications commands and responses between the Controller and a host device are output from the Controller's USB port for easy identification of problems, such as incorrect communications parameters or wiring.

# RFID System V680 Series

## New, Next-generation RFID Systems with ISO/IEC 18000-3 (ISO/IEC15693) Compliance

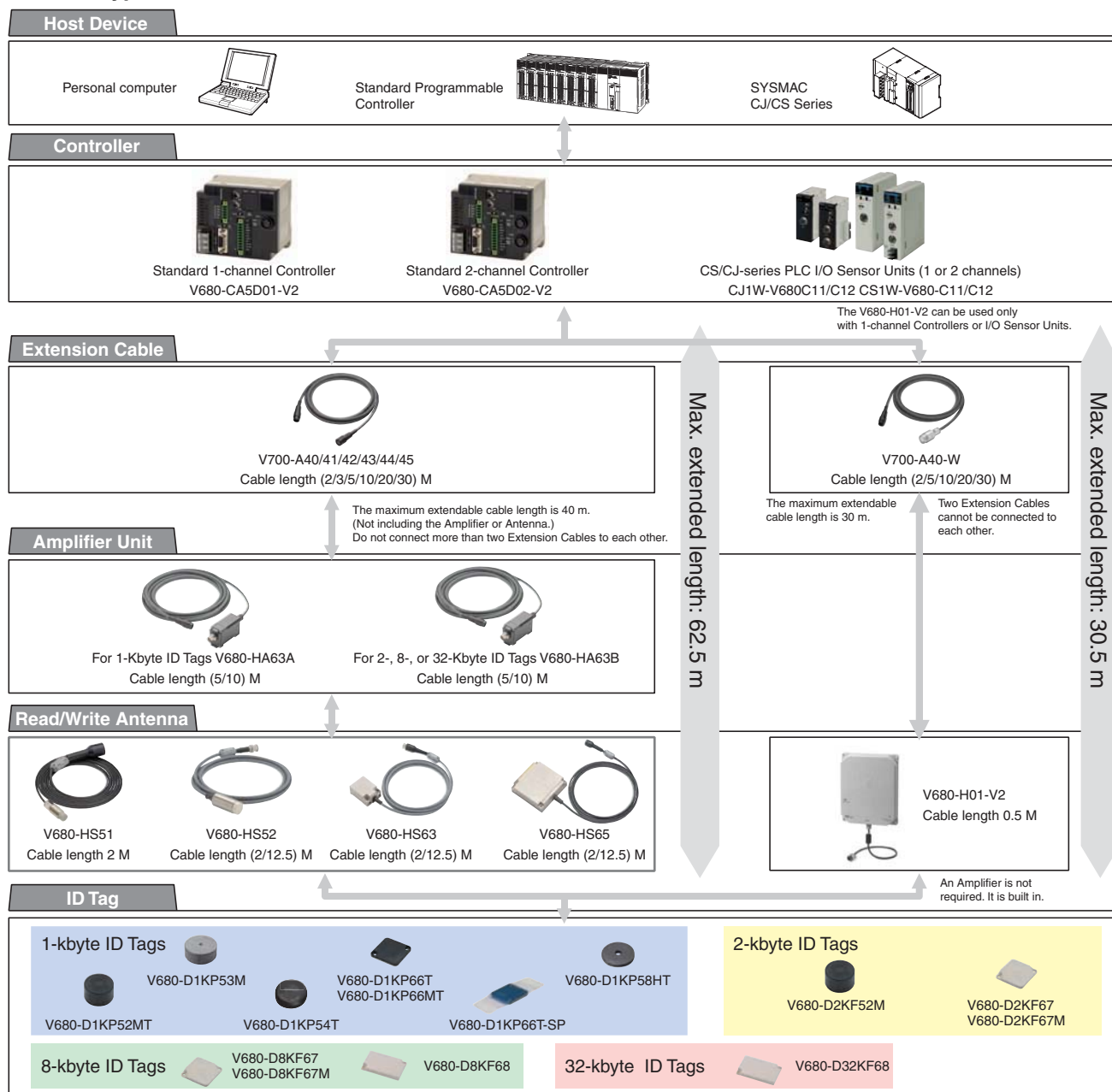
- High-Speed, 27kbps communication rate. For V680-D□KF68, communication rate from tag to Antenna is 53kbps.
- Read/Write Antennas and ID Tags with excellent environmental resistance.
- Wide line-up of ultra-compact, long-life ID Tags, with capacities from 1 to 32 kbytes.
- Seven modes make it possible to visualize data transmission.
- ID Map Manager simplifies memory map designing for ID Tags.
- Complies with FCC Standards and R&TTE Directive.



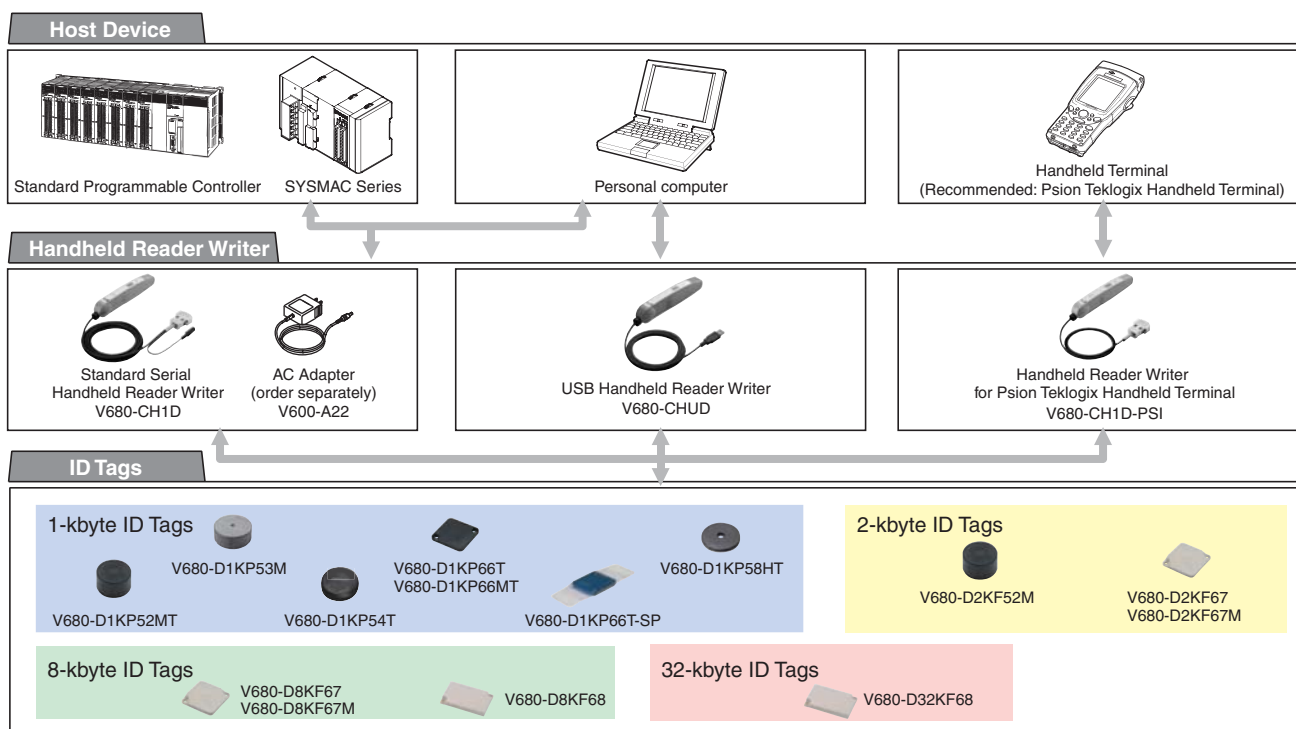
## System Configuration

Connect V680 Read/Write Antennas and Amplifier Units to a V680-series Controller, and read or write data from or to ID Tags.

### Controller Type



# Handheld Type



## Connection List for Amplifier Unit, Antenna, and Tag

| Amplifier Unit                                           | Antenna   | EEPROM             |              |              |              |               |                 |               |   |
|----------------------------------------------------------|-----------|--------------------|--------------|--------------|--------------|---------------|-----------------|---------------|---|
|                                                          |           | 1-kbyte            |              |              |              |               |                 |               |   |
|                                                          |           | V680-D1KP52MT      | V680-D1KP53M | V680-D1KP54T | V680-D1KP66T | V680-D1KP66MT | V680-D1KP66T-SP | V680-D1KP58HT |   |
| For 1-kbyte ID Tags<br>V680-HA63A                        | V680-HS51 | ●                  | ●            |              |              |               |                 |               |   |
|                                                          | V680-HS52 | ●                  | ●            | ●            | ●            | ●             | ●               |               |   |
|                                                          | V680-HS63 | ●<br>(See note 1.) |              | ●            | ●            | ●             | ●               |               |   |
|                                                          | V680-HS65 |                    |              | ●            | ●            | ●             | ●               |               |   |
| V680-H01-V2 (Read/Write Antenna with Built-in Amplifier) |           |                    |              |              | ●            |               |                 |               | ● |
| V680-CH□D (Handheld Reader Writer)                       |           | ●                  | ●            | ●            | ●            | ●             | ●               | ●             | ● |

| Amplifier Unit                                           | Antenna   | FRAM               |             |              |             |              |             |              |   |
|----------------------------------------------------------|-----------|--------------------|-------------|--------------|-------------|--------------|-------------|--------------|---|
|                                                          |           | 2-kbyte            |             |              | 8-kbyte     |              |             | 32-kbyte     |   |
|                                                          |           | V680-D2KF52M       | V680-D2KF67 | V680-D2KF67M | V680-D8KF67 | V680-D8KF67M | V680-D8KF68 | V680-D32KF68 |   |
| For 2/8/32-kbyte ID Tags<br>V680-HA63B                   | V680-HS51 | ●                  |             |              | ●           | ●            |             |              |   |
|                                                          | V680-HS52 | ●                  | ●           | ●            | ●           | ●            |             |              |   |
|                                                          | V680-HS63 | ●<br>(See note 1.) | ●           | ●            | ●           | ●            | ●           | ●            |   |
|                                                          | V680-HS65 |                    | ●           | ●            | ●           | ●            | ●           | ●            |   |
| V680-H01-V2 (Read/Write Antenna with Built-in Amplifier) |           |                    | ●           |              | ●           |              | ●           |              | ● |
| V680-CH□D (Handheld Reader Writer)                       |           | ●                  | ●           | ●            | ●           | ●            | ●           | ●            | ● |

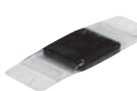
**Note 1.** Use a V680-HS51/HS52 Antenna if the V680-D1KP52MT or V680-D2KF52M is to be embedded in metal. V680-HS63 Antenna can not be used in this condition.

**2.** For details, refer to the following User's Manuals (Cat. No. Z248, Z249, Z262, Z271 and Z272).

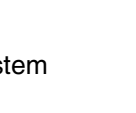
Transmission is also possible with ID Tags other than those of the V680 Series as long as they comply with ISO/IEC 18000-3 (ISO/IEC 15693). However, transmission with ID Tags other than those of the V680 Series cannot be assured. The user must confirm transmission capabilities carefully prior to use.

# Ordering Information

## ID Tag

| Type         | Memory capacity | Appearance                                                                          | Size               | Metallic compatibility                            | Model           |
|--------------|-----------------|-------------------------------------------------------------------------------------|--------------------|---------------------------------------------------|-----------------|
| Battery-less | 1 kbyte         |    | 8 dia. × 5 mm      | For embedding in metallic or non-metallic surface | V680-D1KP52MT   |
|              |                 |    | 10 dia. × 4.5 mm   | For embedding in metallic or non-metallic surface | V680-D1KP53M    |
|              |                 |    | 20 dia. × 2.7 mm   | For flush mounting on non-metallic surface        | V680-D1KP54T    |
|              |                 |    | 34 × 34 × 3.5 mm   | For flush mounting on metallic surface            | V680-D1KP66MT   |
|              |                 |                                                                                     |                    | For flush mounting on non-metallic surface        | V680-D1KP66T    |
|              |                 |    | 95 × 36.5 × 6.5 mm | For flush mounting on non-metallic surface        | V680-D1KP66T-SP |
|              | 2 kbytes        |    | 8 dia. × 5 mm      | For embedding in metallic or non-metallic surface | V680-D1KP58HT   |
|              |                 |   | 40 × 40 × 4.5 mm   | For flush mounting on metallic surface            | V680-D2KF52M    |
|              |                 |                                                                                     |                    | For flush mounting on non-metallic surface        | V680-D2KF67M    |
|              |                 |                                                                                     |                    | For flush mounting on metallic surface            | V680-D2KF67     |
|              |                 |                                                                                     |                    | For flush mounting on non-metallic surface        | V680-D8KF67M    |
|              | 8 kbytes        |  | 86 × 54 × 10 mm    | For flush mounting on non-metallic surface        | V680-D8KF67     |
|              |                 |                                                                                     |                    | For flush mounting on non-metallic surface        | V680-D8KF68     |
|              | 32 kbytes       |  |                    |                                                   | V680-D32KF68    |

## Read/Write Antenna (Detachable Amplifier Unit Type)

| Type        | Appearance                                                                          | Size              | Cable length | Model             |
|-------------|-------------------------------------------------------------------------------------|-------------------|--------------|-------------------|
| Cylindrical |  | M22 × 65 mm       | 2 m          | V680-HS52-W 2M    |
|             |                                                                                     |                   | 12.5 m       | V680-HS52-W 12.5M |
|             |  | M12 × 35 mm       | 2 m          | V680-HS52-R 2M    |
|             |                                                                                     |                   | 12.5 m       | V680-HS52-R 12.5M |
| Square      |  | 40 × 53 × 23 mm   | 2 m          | V680-HS51 2M      |
|             |                                                                                     |                   |              |                   |
|             |  | 100 × 100 × 30 mm | 2 m          | V680-HS63-W 2M    |
|             |                                                                                     |                   | 12.5 m       | V680-HS63-W 12.5M |
|             |  |                   | 2 m          | V680-HS63-R 2M    |
|             |                                                                                     |                   | 12.5 m       | V680-HS63-R 12.5M |
|             |  |                   | 2 m          | V680-HS65-W 2M    |
|             |                                                                                     |                   | 12.5 m       | V680-HS65-W 12.5M |
|             |  |                   | 2 m          | V680-HS65-R 2M    |
|             |                                                                                     |                   | 12.5 m       | V680-HS65-R 12.5M |



### Read/Write Antenna with Built-in Amplifier

| Type   | Appearance                                                                        | Size              | Cable length      | Model       |
|--------|-----------------------------------------------------------------------------------|-------------------|-------------------|-------------|
| Square |  | 250 × 200 × 35 mm | 0.5 m (See note.) | V680-H01-V2 |

**Note:** Use an Antenna Cable (V700-A40-W □M) to connect the Read/Write Antenna to the Controller.  
The maximum cable length is 30.5 m.

### Amplifier Unit

| Type                      | Appearance                                                                        | Size            | Cable length | Model          |
|---------------------------|-----------------------------------------------------------------------------------|-----------------|--------------|----------------|
| For 1-kbyte memory        |  | 25 × 40 × 65 mm | 5 m          | V680-HA63A 5M  |
|                           |                                                                                   |                 | 10 m         | V680-HA63A 10M |
| For 2-/8-/32-kbyte memory |  | 25 × 40 × 65 mm | 5 m          | V680-HA63B 5M  |
|                           |                                                                                   |                 | 10 m         | V680-HA63B 10M |

### Controller

| Type            | No. of connectable Amplifiers | Appearance                                                                         | Size             | Transmission interface | Model          |
|-----------------|-------------------------------|------------------------------------------------------------------------------------|------------------|------------------------|----------------|
| DC power supply | Single                        |   | 105 × 90 × 65 mm | RS232C,<br>RS422/RS485 | V680-CA5D01-V2 |
|                 | Dual                          |  |                  |                        | V680-CA5D02-V2 |

### ID Sensor Units

| Type                 | Unit name                                                                           | Connected ID System | External power supply | No. of unit numbers used | Current consumption (A) |                     |          | Model        |
|----------------------|-------------------------------------------------------------------------------------|---------------------|-----------------------|--------------------------|-------------------------|---------------------|----------|--------------|
|                      |                                                                                     |                     |                       |                          | 5 V                     | 24 V                | External |              |
| CJ1 Special I/O Unit |  | V680 Series         | 1 Head                | 1 unit number            | 0.26                    | 0.13<br>(See note.) | ---      | CJ1W-V680C11 |
|                      |                                                                                     |                     |                       | 2 unit numbers           | 0.32                    | 0.26                | ---      | CJ1W-V680C12 |

| Type                 | Unit name                                                                           | Connected ID System | External power supply | No. of unit numbers used | Current consumption (A) |                     |          | Model        |
|----------------------|-------------------------------------------------------------------------------------|---------------------|-----------------------|--------------------------|-------------------------|---------------------|----------|--------------|
|                      |                                                                                     |                     |                       |                          | 5 V                     | 26 V                | External |              |
| CS1 Special I/O Unit |  | V680 Series         | 1 Head                | 1 unit number            | 0.26                    | 0.13<br>(See note.) | ---      | CS1W-V680C11 |
|                      |                                                                                     |                     |                       | 2 unit numbers           | 0.32                    | ---                 | 0.36     | CS1W-V680C12 |

**Note:** When connected to the V680-H01: 0.28 A

### Handheld Reader Writers

| Name                                        | Model          |
|---------------------------------------------|----------------|
| Model with standard serial connector        | V680-CH1D      |
| Model with USB connector and 0.8-m cable    | V680-CHUD 0.8M |
| Model with USB connector and 1.9-m cable    | V680-CHUD 1.9M |
| Models for Psion Teklogix Handheld Terminal | V680-CH1D-PSI  |
| AC Adapter (for V680-CH1D)                  | V600-A22       |

**Accessories (Order Separately)**  
**ID Tag Attachment**

| Type                       | Appearance                                                                        | Model    |
|----------------------------|-----------------------------------------------------------------------------------|----------|
| For the V680-D1KP66T       |  | V600-A86 |
| For the V680-D□KF68        |  | V680-A81 |
| To mount the V680-D1KP58HT |  | V680-A80 |
| For the V680-D1KP54T       |  | V700-A80 |

**Amplifier Unit Special Extension Cable (Amplifier Unit to Controller)**

| Cable length | Appearance                                                                        | Model         |
|--------------|-----------------------------------------------------------------------------------|---------------|
| 2 m          |  | V700-A40 2M.  |
| 3 m          |                                                                                   | V700-A41 3M.  |
| 5 m          |                                                                                   | V700-A42 5M.  |
| 10 m         |                                                                                   | V700-A43 10M. |
| 20 m         |                                                                                   | V700-A44 20M. |
| 30 m         |                                                                                   | V700-A45 30M. |

**Note:** The cable can be extended up to 40 m. Up to two extension cables can be used.

**V680-H01 Read/Write Antenna Special Cable (Read/Write Antenna to Controller)**

| Cable length | Appearance                                                                          | Model          |
|--------------|-------------------------------------------------------------------------------------|----------------|
| 2 m          |  | V700-A40-W 2M  |
| 5 m          |                                                                                     | V700-A40-W 5M  |
| 10 m         |                                                                                     | V700-A40-W 10M |
| 20 m         |                                                                                     | V700-A40-W 20M |
| 30 m         |                                                                                     | V700-A40-W 30M |

**Note:** The cable can be extended up to 30 m. Only one extension cable can be used.

**RS-232C Communications Connector**

| Name           | Model         |
|----------------|---------------|
| Connector Plug | XM3B-0922-111 |
| Connector Hood | XM2S-0911     |

**Note:** An RS422/RS485 Communications Connector is attached to the Controller (V680-CA5D0X-V2).

**ID Map Manager (for Windows)**

| Type            | Model            |
|-----------------|------------------|
| English version | V680-A-IMMEG-P01 |

## Psion Teklogix Handheld Terminals

We recommend connecting the V600-V680-CH-PSI Handheld Reader Writer to a Psion Teklogix WORKABOUT PRO-series Handheld Terminal. Psion Teklogix products can be purchased directly from OMRON.

### Handheld Terminal Set

| Name                               | Configuration                                                                                      | OMRON model number          |
|------------------------------------|----------------------------------------------------------------------------------------------------|-----------------------------|
| Handheld Terminal Set (English OS) | Handheld Terminal, Serial End Cap, hand strap, charger (standard model), and High-capacity Battery | <b>V680-A-7527S-G2-EG-S</b> |

**Note:** The Handheld Terminal Set includes the V600/V680 EasyAccess/CBAccess Demo Software preinstalled in a 7527S-G2 Psion Teklogix Handheld Terminal and the configuration parts listed above.

### Handheld Terminal Only

| Name                           | Configuration                                                                | Appearance                                                                        | OMRON model number        |
|--------------------------------|------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|---------------------------|
| Handheld Terminal (English OS) | Handheld Terminal, Serial End Cap, and hand strap (Battery sold separately.) |  | <b>V680-A-7527S-G2-EG</b> |

**Note:** The Handheld Terminal includes the V600/V680 EasyAccess/CBAccess Demo Software preinstalled in a 7527S-G2 Psion Teklogix Handheld Terminal and the configuration parts listed above. The High-capacity Battery is not included.

### Handheld Terminal Accessories

| Name                     | Appearance                                                                          | Psion Teklogix model number | OMRON model number   |
|--------------------------|-------------------------------------------------------------------------------------|-----------------------------|----------------------|
| High-capacity Battery    |    | <b>WA3006</b>               | <b>V680-A-WA3006</b> |
| Charger (standard model) |   | <b>PS1050-G1</b>            | <b>V680-A-CA1053</b> |
| Charger (advanced model) |  | <b>WA4003-G2</b>            | <b>V680-A-WA4003</b> |
| Carrying Case            |  | <b>WA6197-G2</b>            | <b>V680-A-WA6197</b> |

Refer to the following website for detailed information on Psion Teklogix Handheld Terminals.  
<http://www.psionteklogix.com/products/handheld/workaboutpro.htm>

# Ratings and Performance

## ID Tag (1-kbyte Memory)

| Item                                                | Model                                                                                                                                                                                                                                                                                     | V680-D1KP52MT                | V680-D1KP53M       | V680-D1KP54T     | V680-D1KP66T  | V680-D1KP66MT                              | V680-D1KP66T-SP                            |
|-----------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|--------------------|------------------|---------------|--------------------------------------------|--------------------------------------------|
| Memory capacity                                     | 1,000 byte (user area)                                                                                                                                                                                                                                                                    |                              |                    |                  |               |                                            |                                            |
| Memory type                                         | EEPROM                                                                                                                                                                                                                                                                                    |                              |                    |                  |               |                                            |                                            |
| Data backup time (See note 1.)                      | 10 years after writing (85°C max.)                                                                                                                                                                                                                                                        |                              |                    |                  |               |                                            |                                            |
| Memory longevity                                    | 100,000 times per block (at 25°C)                                                                                                                                                                                                                                                         |                              |                    |                  |               |                                            |                                            |
| Ambient operating temperature (during transmission) | -25 to 85°C (with no icing)                                                                                                                                                                                                                                                               |                              |                    |                  |               |                                            | -25 to 70°C (with no icing)                |
| Ambient storage temperature (during data backup)    | -40 to 125°C (with no icing)<br>Heat resistance: 1,000 thermal cycles each of 30 minutes at -10°C/150°C, High-temperature storage: 1,000 hours at 150°C (See note 2.)<br>200 thermal cycles each of 30 minutes at -10°C/180°C, High-temperature storage: 200 hours at 180°C (See note 3.) |                              |                    |                  |               |                                            | -40 to 110°C (with no icing)               |
| Ambient operating humidity                          | 35 to 95%                                                                                                                                                                                                                                                                                 |                              |                    |                  |               |                                            |                                            |
| Degree of protection                                | IEC 60529, IP68<br>In-house standard for antenna oil resistance (former JEM1030 standard equivalent to IP67g) (See note 4.)                                                                                                                                                               |                              |                    |                  |               |                                            | IP67                                       |
| Vibration resistance                                | 10 to 2,000 Hz, 1.5-mm double amplitude at 150 m/s <sup>2</sup> acceleration with 10 sweeps in X, Y, and Z directions for 15 minutes each                                                                                                                                                 |                              |                    |                  |               |                                            |                                            |
| Shock resistance                                    | 500 m/s <sup>2</sup> in X, Y, and Z directions 3 times each (18 times in total)                                                                                                                                                                                                           |                              |                    |                  |               |                                            |                                            |
| Appearance                                          | 8 dia. × 5 mm                                                                                                                                                                                                                                                                             | 10 dia. × 4.5 mm (DIN698373) | 20 dia. × 2.7 mm   | 34 × 34 × 3.5 mm |               | 95 × 36.5 × 6.5 mm (excluding protrusions) |                                            |
| Materials                                           | Case: PPS resin<br>Filling: Epoxy resin                                                                                                                                                                                                                                                   |                              | Molding: PPS resin |                  |               |                                            | External resin: PFA<br>Tag body: PPS resin |
| Weight                                              | Approx. 0.5 g                                                                                                                                                                                                                                                                             | Approx. 1 g                  | Approx. 2 g        | Approx. 6 g      | Approx. 7.5 g | Approx. 20 g                               |                                            |
| Metallic compatibility                              | Yes                                                                                                                                                                                                                                                                                       | Yes                          | No                 | No               | Yes           | No                                         |                                            |

**Note 1.** Refer to the *User's Manual* (Cat. No. Z262) for data backup time for temperatures of 85°C or higher. If the V680 has been stored at 125°C or higher, write the data again even if the data does not need to be changed.

- 150°C heat resistance: The heat resistance has been checked at 150°C for up to 1,000 hours, and thermal shock has been checked through testing 1,000 thermal cycles each of 30 minutes at -10/150°C. (Test samples: 22, defects: 0)
- 180°C heat resistance: The heat resistance has been checked at 180°C for up to 200 hours, and thermal shock has been checked through testing 200 thermal cycles each of 30 minutes at -10°C/180°C. (Test samples: 22, defects: 0)
- This OMRON in-house standard confirms resistance to cutting and other oils. It is equivalent to the former JEM1030 standard.
- For details, refer to the *User's Manual* (Cat. No. Z262).

## ID Tag with 1-kbyte Memory with High-temperature Capability

| Item                                                | Model | V680-D1KP58HT                                                                                                                                                      |
|-----------------------------------------------------|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Memory capacity                                     |       | 1,000 byte (user area)                                                                                                                                             |
| Memory type                                         |       | EEPROM                                                                                                                                                             |
| Data backup time                                    |       | 10 years after writing (See note.)                                                                                                                                 |
| Memory longevity                                    |       | 100,000 times per block (at 85°C)                                                                                                                                  |
| Ambient operating temperature (during transmission) |       | -10 to 85°C (with no icing)                                                                                                                                        |
| Ambient storage temperature (during data backup)    |       | -40 to 110°C (with no icing)<br>Heat resistance: 2,000 thermal cycles each of 30 minutes at room temperature/200°C (Refer to Heat Resistance, below, for details.) |
| Ambient operating humidity                          |       | No limits.                                                                                                                                                         |
| Degree of protection                                |       | IEC 60529, IP67                                                                                                                                                    |
| Vibration resistance                                |       | 10 to 2,000 Hz, 3.0-mm double amplitude at 150 m/s <sup>2</sup> acceleration with 10 sweeps in X, Y, and Z directions for 15 minutes each                          |
| Shock resistance                                    |       | 500 m/s <sup>2</sup> in X, Y, and Z directions 3 times each (18 times in total)                                                                                    |
| Materials                                           |       | PPS resin                                                                                                                                                          |
| Weight                                              |       | Approx. 90 g                                                                                                                                                       |

**Note:** The data storage time at high temperatures (110 to 200°C) is 10 hours. Rewrite the data before 10 hours has lapsed.

## Heat Resistance

Sufficient heat resistance has been confirmed by evaluation testing comprising 2,000 thermal cycles each of 30 minutes at room temperature/200°C.

The lifetime of the V680-D1KP58HT is affected by high-temperature storage, due to the effects of high temperatures on internal components. For details on the relationship between heat resistance and lifetime, refer to the *User's Manual* (Cat. No. Z262).



## ID Tag (2-kbyte Memory)

| Item                           | Model                                                                                                                                     | V680-D2KF52M | V680-D2KF67                                | V680-D1KF67M |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------------------|--------------|
| Memory capacity                | 2,000 bytes (user area)                                                                                                                   |              |                                            |              |
| Memory type                    | FRAM                                                                                                                                      |              |                                            |              |
| Data backup time (See note 1.) | 10 years after writing (55°C or less)                                                                                                     |              |                                            |              |
| Memory longevity               | 10 billion times per block. Access frequency (See note 2.): 10 billion times                                                              |              |                                            |              |
| Ambient operating temperature  | -25 to 85°C (with no icing)                                                                                                               |              |                                            |              |
| Ambient storage temperature    | -40 to 85°C (with no icing)                                                                                                               |              |                                            |              |
| Ambient operating humidity     | 35 to 95%                                                                                                                                 |              | 35 to 85%                                  |              |
| Degree of protection           | IEC 60529, IP67<br>In-house standard for antenna oil resistance (former JEM1030 standard equivalent to IP67g) (See note 3.)               |              |                                            |              |
| Vibration resistance           | 10 to 2,000 Hz, 1.5-mm double amplitude at 150 m/s <sup>2</sup> acceleration with 10 sweeps in X, Y, and Z directions for 15 minutes each |              |                                            |              |
| Shock resistance               | 500 m/s <sup>2</sup> in X, Y, and Z directions 3 times each (18 times in total)                                                           |              |                                            |              |
| Appearance                     | 8 dia. × 5 mm                                                                                                                             |              | 40 × 40 × 4.5 mm                           |              |
| Materials                      | Case: PPS resin<br>Filling: Epoxy resin                                                                                                   |              | Molding: PBT resin<br>Filling: Epoxy resin |              |
| Weight                         | Approx. 0.5 g                                                                                                                             |              | Approx. 6.5 g                              | Approx. 7 g  |
| Metallic compatibility         | Yes                                                                                                                                       |              | No                                         | Yes          |

**Note 1.** Refer to the *User's Manual* (Cat. No. Z248) for data backup time for temperatures of 55°C or higher.

**2.** The total Read or Write communication frequency is called the access frequency.

**3.** This OMRON in-house standard confirms resistance to cutting and other oils. It is equivalent to the former JEM1030 standard.

**4.** For details, refer to the *User's Manual* (Cat. No. Z248).

## ID Tag with 8-/32-kbyte Memory

| Item                           | Model | V680-D8KF67                                                                                                                               | V680-D8KF67M  | V680-D8KF68                                                                                                                             | V680-D32KF68             |
|--------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------------------|--------------------------|
| Memory capacity                |       | 8,192 bytes (user area)                                                                                                                   |               |                                                                                                                                         | 32,744 bytes (user area) |
| Memory type                    |       | FRAM                                                                                                                                      |               |                                                                                                                                         |                          |
| Data backup time (See note 1.) |       | 10 years (at 70°C max.) after data is written                                                                                             |               |                                                                                                                                         |                          |
| Memory longevity               |       | 10 billion times per block at 85°C max. Access frequency (See note 2.): 10 billion times                                                  |               |                                                                                                                                         |                          |
| Ambient operating temperature  |       | −20 to 85°C (with no icing)                                                                                                               |               |                                                                                                                                         |                          |
| Ambient storage temperature    |       | −40 to 85°C (with no icing)                                                                                                               |               |                                                                                                                                         |                          |
| Ambient operating humidity     |       | 35 to 85%                                                                                                                                 |               |                                                                                                                                         |                          |
| Degree of protection           |       | IEC 60529, IP67<br>In-house standard for antenna oil resistance (former JEM1030 standard equivalent to IP67g) (See note 3.)               |               |                                                                                                                                         |                          |
| Vibration resistance           |       | 10 to 2,000 Hz, 1.5-mm double amplitude at 150 m/s <sup>2</sup> acceleration with 10 sweeps in X, Y, and Z directions for 15 minutes each |               | 10 to 500 Hz, 1.5-mm double amplitude at 100 m/s <sup>2</sup> acceleration with 10 sweeps in X, Y, and Z directions for 11 minutes each |                          |
| Shock resistance               |       | 500 m/s <sup>2</sup> in X, Y, and Z directions 3 times each (18 times in total)                                                           |               |                                                                                                                                         |                          |
| Dimensions                     |       | 40 × 40 × 4.5 mm                                                                                                                          |               | 86 × 54 × 10 mm                                                                                                                         |                          |
| Materials                      |       | Case: PBT resin<br>Filling: Epoxy resin                                                                                                   |               |                                                                                                                                         |                          |
| Weight                         |       | Approx. 8 g                                                                                                                               | Approx. 8.5 g | Approx. 50 g                                                                                                                            |                          |
| Metallic compatibility         |       | No                                                                                                                                        | Yes           | No                                                                                                                                      |                          |

**Note 1.** Refer to the *User's Manual* (Cat. No. Z248) for data backup time for temperatures of 70°C or higher.

**2.** The total Read or Write communication frequency is called the access frequency.

**3.** This OMRON in-house standard confirms resistance to cutting and other oils. It is equivalent to the former JEM1030 standard.

**4.** For details, refer to the *User's Manual* (Cat. No. Z248).

### Cylindrical Read/Write Antenna (Detachable Amplifier Unit Type)

| Item                          | Model | V680-HS52-W<br>(Standard Cable, Waterproof Connector)                                                                                                      | V680-HS52-R<br>(Flexible Cable, Non-waterproof Connector)                                                                                                | V680-HS51<br>(Standard 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 the cable terminals and the case                                                                                           |                                                                                                                                                          |                                                                                                                                                               |
| Dielectric strength           |       | 1,000 VAC (50/60 Hz) for 1 minute between the cable terminals and the case with a current leakage of 5 mA max.                                             |                                                                                                                                                          |                                                                                                                                                               |
| Degree of protection          |       | IP67 (IEC60529)<br>In-house standard for antenna oil resistance (former JEM1030 standard equivalent to IP67g) (Read/Write Antenna portion) (See note 1.)   | IP67 (IEC60529)<br>In-house standard for antenna oil resistance (former JEM1030 standard equivalent to IP67g) (Read/Write Antenna portion) (See note 2.) |                                                                                                                                                               |
| Vibration resistance          |       | 10 to 500 Hz variable vibration, 1.5-mm double amplitude at 100 m/s <sup>2</sup> acceleration, with 10 sweeps in X, Y, and Z directions for 8 minutes each |                                                                                                                                                          | 10 to 2,000 Hz variable vibration, 1.5-mm double amplitude at 150 m/s <sup>2</sup> acceleration, with 10 sweeps in X, Y, and Z directions for 15 minutes each |
| Shock resistance              |       | 500 m/s <sup>2</sup> in X, Y, and Z directions 3 times each (18 times in total)                                                                            |                                                                                                                                                          | 1,000 m/s <sup>2</sup> in X, Y, and Z directions 3 times each (18 times in total)                                                                             |
| Appearance                    |       | M22 × 65 mm                                                                                                                                                |                                                                                                                                                          | M12 × 35 mm                                                                                                                                                   |
| Materials                     |       | ABS, brass, epoxy resin filling                                                                                                                            |                                                                                                                                                          |                                                                                                                                                               |
| Weight                        |       | Approx. 850 g (with 12.5-m cable)                                                                                                                          |                                                                                                                                                          | Approx. 55 g (with 2-m cable)                                                                                                                                 |

**Note 1.** The degree of protection for the Connector is IP67/IP65. This OMRON in-house standard confirms resistance to cutting and other oils. It is equivalent to the former JEM1030 standard.

**2.** The Connector is not waterproof. This OMRON in-house standard confirms resistance to cutting and other oils. It is equivalent to the former JEM1030 standard.

**3.** For details, refer to the *User's Manual* (Cat. No. Z248 or Z262).

### Square Read/Write Antenna (Detachable Amplifier Unit Type)

| Item                          | Model | V680-HS63-W<br>(Standard Cable, Waterproof Connector)                                                                                                       | V680-HS63-R<br>(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 the cable terminals and the case                                                                                            |                                                                                                                                                          |
| Dielectric strength           |       | 1,000 VAC (50/60 Hz) for 1 minute between the cable terminals and the case with a current leakage of 5 mA max.                                              |                                                                                                                                                          |
| Degree of protection          |       | IP67 (IEC60529)<br>In-house standard for antenna oil resistance (former JEM1030 standard equivalent to IP67g) (Read/Write Antenna portion) (See note 1.)    | IP67 (IEC60529)<br>In-house standard for antenna oil resistance (former JEM1030 standard equivalent to IP67g) (Read/Write Antenna portion) (See note 2.) |
| Vibration resistance          |       | 10 to 500 Hz variable vibration, 1.5-mm double amplitude at 100 m/s <sup>2</sup> acceleration, with 10 sweeps in X, Y, and Z directions for 11 minutes each |                                                                                                                                                          |
| Shock resistance              |       | 500 m/s <sup>2</sup> in X, Y, and Z directions 3 times each (18 times in total)                                                                             |                                                                                                                                                          |
| Appearance                    |       | 40 × 53 × 23 mm                                                                                                                                             |                                                                                                                                                          |
| Materials                     |       | ABS, epoxy resin filling                                                                                                                                    |                                                                                                                                                          |
| Weight                        |       | Approx. 850 g (with 12.5-m cable)                                                                                                                           |                                                                                                                                                          |

| Item                          | Model | V680-HS65-W<br>(Standard Cable, Waterproof Connector)                                                                                                       | V680-HS65-R<br>(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 the cable terminals and the case                                                                                            |                                                                                                                                                           |
| Dielectric strength           |       | 1,000 VAC (50/60 Hz) for 1 minute between the cable terminals and the case with a current leakage of 5 mA max.                                              |                                                                                                                                                           |
| Degree of protection          |       | IP67 (IEC 60529)<br>In-house standard for antenna oil resistance (former JEM1030 standard equivalent to IP67g) (Read/Write Antenna portion) (See note 1.)   | IP67 (IEC 60529)<br>In-house standard for antenna oil resistance (former JEM1030 standard equivalent to IP67g) (Read/Write Antenna portion) (See note 2.) |
| Vibration resistance          |       | 10 to 500 Hz variable vibration, 1.5-mm double amplitude at 100 m/s <sup>2</sup> acceleration, with 10 sweeps in X, Y, and Z directions for 11 minutes each |                                                                                                                                                           |
| Shock resistance              |       | 500 m/s <sup>2</sup> in X, Y, and Z directions 3 times each (18 times in total)                                                                             |                                                                                                                                                           |
| Appearance                    |       | 100 × 100 × 30 mm                                                                                                                                           |                                                                                                                                                           |
| Materials                     |       | ABS, epoxy resin filling                                                                                                                                    |                                                                                                                                                           |
| Weight                        |       | Approx. 1,100 g (with 12.5-m cable)                                                                                                                         |                                                                                                                                                           |

**Note 1.** The degree of protection for the Connector is IP67/IP65. This OMRON in-house standard confirms resistance to cutting and other oils. It is equivalent to the former JEM1030 standard.

**2.** The Connector is not waterproof. This OMRON in-house standard confirms resistance to cutting and other oils. It is equivalent to the former JEM1030 standard.

**3.** For details, refer to the *User's Manual* (Cat. No. Z248 or Z262).

**Square Read/Write Antenna with Built-in Amplifier**

| 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 the back plate and the case                                                         |
| Dielectric strength           |       | 1,000 VAC (50/60 Hz) for 1 minute between the back plate and the case with a current leakage of 1 mA max.           |
| Degree of protection          |       | IEC 60529: IP63 (Mounting direction: Transmission surface facing up)                                                |
| Vibration resistance          |       | 10 to 150 Hz variable vibration, 0.7-mm double amplitude with 4 sweeps in X, Y, and Z directions for 8 minutes each |
| Shock resistance              |       | 150 m/s <sup>2</sup> in X, Y, and Z directions 3 times each                                                         |
| Appearance                    |       | 200 × 250 × 40 mm                                                                                                   |
| Material                      |       | Polycarbonate (PC) resin, ASA resin / Rear Panel: Aluminum                                                          |
| Weight                        |       | Approx. 900 g                                                                                                       |
| Cable length                  |       | 0.5 m                                                                                                               |

**Note:** For details, refer to the *User's Manual* (Cat. No. Z248 or Z262).

**Amplifier Unit**

| Item                          | Model | V680-HA63A                                                                                                                                                  | V680-HA63B                         |
|-------------------------------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
| 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 the cable terminals and the case                                                                                            |                                    |
| Dielectric strength           |       | 1,000 VAC (50/60 Hz) for 1 minute between the cable terminals and the case with a current leakage of 5 mA max.                                              |                                    |
| Degree of protection          |       | IP40 (IEC60529) (See note 1.)                                                                                                                               | IP67/IP65 (IEC60529) (See note 2.) |
| Vibration resistance          |       | 10 to 500 Hz variable vibration, 1.5-mm double amplitude at 100 m/s <sup>2</sup> acceleration, with 10 sweeps in X, Y, and Z directions for 11 minutes each |                                    |
| Shock resistance              |       | 500 m/s <sup>2</sup> in X, Y, and Z directions 3 times each (18 times in total)                                                                             |                                    |
| Appearance                    |       | 25 × 40 × 65 mm (not including projections)                                                                                                                 |                                    |
| Material                      |       | Polycarbonate (PC) resin                                                                                                                                    |                                    |
| Weight                        |       | Approx. 650 g (with 10-m cable)                                                                                                                             |                                    |
| Cable length                  |       | 5 m, 10 m                                                                                                                                                   |                                    |
| Transmittable ID Tags         |       | 1-kbyte memory                                                                                                                                              | 2-, 8-, 32-kbyte memory            |

**Note 1.** When connected to the V680-HS63-R or V680-HS52-R.

**2.** When connected to the V680-HS63-W or V680-HS52-W. (Not including the Connector on the Controller.)

**3.** For details, refer to the *User's Manual* (Cat. No. Z248 or Z262).

## Controller

| Item                                                                                             | Model | V680-CA5D01-V2                                                                                                                                            | V680-CA5D02-V2 |
|--------------------------------------------------------------------------------------------------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Power supply voltage<br>(Power consumption)                                                      |       | 24 VDC (–15% to +10%)<br>15 W max., 0.8 A max.                                                                                                            |                |
| Communications Specifications                                                                    |       | RS-232C, RS-422, RS-485                                                                                                                                   |                |
| Input Specifications (Input voltage)<br>RST, TRG1, and TRG2                                      |       | 24 VDC (+10% to –15%, including ripple) (PNP and NPN compatible)                                                                                          |                |
| Output Specifications (Maximum switching capacity)<br>RUN, BUSY/OUTS, ERROR/OUT4, OUT1, and OUT2 |       | 24 VDC (+10% to –15%, including ripple)<br>100-mA photoMOS output (PNP and NPN compatible)                                                                |                |
| Ambient operating temperature                                                                    |       | –10 to 55°C (with no icing)                                                                                                                               |                |
| Ambient storage temperature                                                                      |       | –25 to 65°C (with no icing)                                                                                                                               |                |
| Ambient operating humidity                                                                       |       | 25% to 85% (with no condensation)                                                                                                                         |                |
| Insulation resistance                                                                            |       | 20 MΩ min. (at 500 VDC) applied as follows:<br>(1) Between power supply terminals and grounded case<br>(2) Between ground and terminals                   |                |
| Dielectric strength                                                                              |       | 1,000 VAC (50/60 Hz) for 1 minute<br>(1) Between power supply terminals and grounded case<br>(2) Between ground and terminals                             |                |
| Degree of protection                                                                             |       | Panel mounted (equivalent to IP20)                                                                                                                        |                |
| Vibration resistance                                                                             |       | 10 to 150 Hz variable vibration, 0.2-mm double amplitude at 15 m/s <sup>2</sup> acceleration, with 10 sweeps in X, Y, and Z directions for 8 minutes each |                |
| Shock resistance                                                                                 |       | 150 m/s <sup>2</sup>                                                                                                                                      |                |
| Appearance                                                                                       |       | 105 × 90 × 65 mm (not including projections)                                                                                                              |                |
| Material                                                                                         |       | Polycarbonate (PC) resin, ABS resin                                                                                                                       |                |
| Weight                                                                                           |       | Approx. 300 g                                                                                                                                             |                |
| Connectable Amplifier Units                                                                      |       | 1                                                                                                                                                         | 2              |

**Note:** For details, refer to the *User's Manual* (Cat. No. Z249).

## ■ USB Port

The USB port is used for a simple connection with a personal computer using a USB cable. The port complies with USB 1.1, and the USB cable uses a series A or series mini-B connector. A USB port driver must be separately provided. Consult with your OMRON representative for details.

When connected to a host device via USB, the communications will use 1:1 protocol regardless of the setting of DIP switches 3 to 9.

The USB port is not used for control purposes. When building a system, be sure to provide an RS-232C port or RS-422/RS-485C port.

## ID Sensor Units

| Item                          | Model               | CJ1W-V680C11                                                                                                                                                                                    | CJ1W-V680C12 | CS1W-V680C11                              | CS1W-V680C12 |
|-------------------------------|---------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-------------------------------------------|--------------|
| Current consumption           | Internal: 5 V       | 260 mA                                                                                                                                                                                          | 320 mA       | 260 mA                                    | 320 mA       |
|                               | Internal: 24 V/26 V | 130 mA (See note.)                                                                                                                                                                              | 260 mA       | 125 mA (See note.)                        | ---          |
|                               | External: 24 V      | ---                                                                                                                                                                                             | ---          | ---                                       | 360 mA       |
| Ambient operating temperature |                     | 0 to 55°C                                                                                                                                                                                       |              |                                           |              |
| Ambient storage temperature   |                     | –20 to 75°C                                                                                                                                                                                     |              |                                           |              |
| Ambient operating humidity    |                     | 10% to 90% (with no condensation)                                                                                                                                                               |              |                                           |              |
| Insulation resistance         |                     | 20 mΩ min. at 500 VDC                                                                                                                                                                           |              |                                           |              |
| Dielectric strength           |                     | 1,000 VAC for 1 minute                                                                                                                                                                          |              |                                           |              |
| Degree of protection          |                     | Mounted in panel (IP30)                                                                                                                                                                         |              |                                           |              |
| Vibration resistance          |                     | 10 to 57 Hz variable vibration, 0.075-mm double amplitude and 57 to 150 Hz variable vibration at 9.8 m/s <sup>2</sup> acceleration, with 10 sweeps in X, Y, and Z directions for 8 minutes each |              |                                           |              |
| Shock resistance              |                     | 147 m/s <sup>2</sup> in X, Y, and Z directions 3 times each                                                                                                                                     |              |                                           |              |
| Appearance                    |                     | 31 × 65 × 90 mm (excluding protrusions)                                                                                                                                                         |              | 35 × 130 × 101 mm (excluding protrusions) |              |

**Note:** When connected to the V680-H01: 280 mA

## Functional Specifications of ID Sensor Units

| Item                                  | Model | CJ1W-V680C11                                                                                                                                                                                                                                                                                                                                                                                                                             | CJ1W-V680C12 | CS1W-V680C11 | CS1W-V680C12 |
|---------------------------------------|-------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------|--------------|
| Communications control protocol       |       | Special protocol for CS1 and CJ1 PLCs                                                                                                                                                                                                                                                                                                                                                                                                    |              |              |              |
| Number of Read/Write Head connections |       | 1                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2            | 1            | 2            |
| Commands                              |       | Supported commands: Read, Write, Bit Set/Bit Clear, Mask Bit Write, Calculation Write, Data Fill, Data Check, Number of Writes Control, Copy, Read with Error Correction/Write with Error Correction, UID Read, and Noise Measurement.<br>The following communications options are supported: Single trigger, Single auto, Repeat auto, FIFO trigger, FIFO repeat (See note.), Multi-access trigger, and Multi-access repeat (See note.) |              |              |              |
| Data transfer quantity                |       | 2,048 bytes max. (160 bytes/scan)                                                                                                                                                                                                                                                                                                                                                                                                        |              |              |              |
| Diagnostic function                   |       | (1) CPU watchdog timer<br>(2) Communications error detection with ID Tag<br>(3) Antenna power supply error                                                                                                                                                                                                                                                                                                                               |              |              |              |
| Monitoring/testing functions          |       | Tag communications can be tested in Test Mode. Status is displayed by LED indicators.                                                                                                                                                                                                                                                                                                                                                    |              |              |              |
| Number of allocated words             |       | 10 words                                                                                                                                                                                                                                                                                                                                                                                                                                 | 20 words     | 10 words     | 20 words     |

**Note 1.** Cannot be used for communications with the V680-D1KP□□.

**2.** For details, refer to the *User's Manual* (Cat. No. Z271).

## Handheld Reader Writers

| Item                                               | Model | V680-CHUD 0.8M                                                                                    | V680-CHUD 1.9M                                   | V680-CH1D                                            | V680-CH1D-PSI                                    |
|----------------------------------------------------|-------|---------------------------------------------------------------------------------------------------|--------------------------------------------------|------------------------------------------------------|--------------------------------------------------|
| Power supply voltage                               |       | 5 VDC±5%                                                                                          |                                                  |                                                      |                                                  |
| Current consumption                                |       | 500 mA max. (for a power supply voltage of 5.0 V)                                                 |                                                  |                                                      |                                                  |
| Communications specifications                      |       | USB (Series A plug) Ver.1.1                                                                       |                                                  | RS-232C (D-SUB 9-pin)<br>(compatible with IBM PC/AT) | RS-232C (D-SUB 9-pin)                            |
| Ambient operating temperature during communication |       | 0 to +40°C                                                                                        |                                                  |                                                      |                                                  |
| Ambient storage temperature                        |       | -25 to +65°C                                                                                      |                                                  |                                                      |                                                  |
| Ambient operating humidity during communication    |       | 35% to 85% (with no condensation)                                                                 |                                                  |                                                      |                                                  |
| Insulation resistance                              |       | 50 MΩ min. (at 500 VDC) between connector and case                                                |                                                  |                                                      |                                                  |
| Dielectric strength                                |       | 1,000 VAC, 50/60 Hz for 1 min (leakage current: 1 mA max.) between connectors and case            |                                                  |                                                      |                                                  |
| Degree of protection                               |       | IEC 60529: IP63 (See note 2.)                                                                     |                                                  |                                                      |                                                  |
| Vibration resistance                               |       | Destruction: 10 to 150 Hz, 0.2-mm double amplitude, with 10 sweeps for 8 min each in 6 directions |                                                  |                                                      |                                                  |
| Shock resistance                                   |       | Destruction: 150 m/s <sup>2</sup> , 3 times each in X, Y, and Z directions                        |                                                  |                                                      |                                                  |
| Weight                                             |       | Approx. 110 g<br>(including connector and cable)                                                  | Approx. 140 g<br>(including connector and cable) | Approx. 170 g<br>(including connector and cable)     | Approx. 120 g<br>(including connector and cable) |
| Cable length                                       |       | 0.8 m                                                                                             | 1.9 m                                            | 2.5 m                                                | 0.8 m                                            |

**Note 1.** Refer to the *User's Manual* (Cat. No. Z272) for details.

**2.** This does not include the connector section. The main unit is not resistant to chemical or oils.

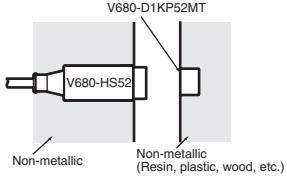
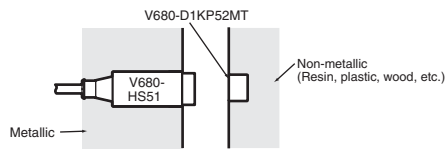
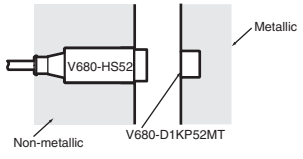
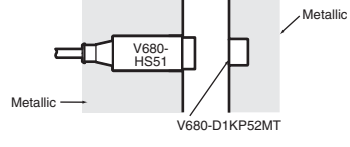
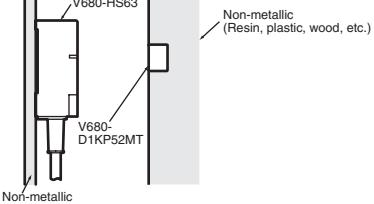
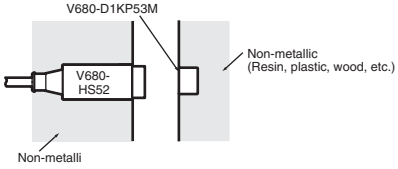
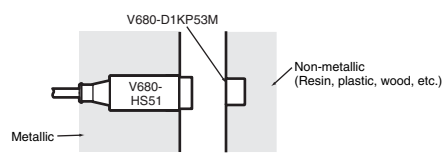
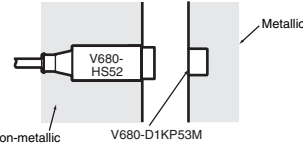
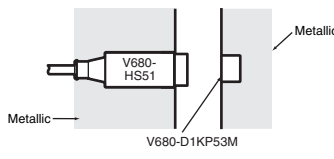
## AC Adapter (for V680-CH1D)

| Item                          | Model | V600-A22                                                                                              |
|-------------------------------|-------|-------------------------------------------------------------------------------------------------------|
| Input voltage                 |       | 100 to 120 VAC at 50/60 Hz                                                                            |
| Input current                 |       | 100 VAC: 200 mA ±20%, 120 VAC: 170 mA ±20%                                                            |
| Output voltage                |       | 5 VDC ±0.25 V                                                                                         |
| Ambient operating temperature |       | 0 to 40°C (with no icing)                                                                             |
| Ambient storage temperature   |       | -40 to 70°C (with no icing)                                                                           |
| Ambient operating humidity    |       | 25% to 85% (with no condensation)                                                                     |
| Insulation resistance         |       | 100 MΩ min. (at 500 VDC) between input terminals and output terminals                                 |
| Dielectric strength           |       | 1,500 V for 1 minute between input terminals and output terminals with a current leakage of 5 mA max. |
| Weight                        |       | Approx. 85 g                                                                                          |
| Applicable standards          |       | UL/CSA                                                                                                |

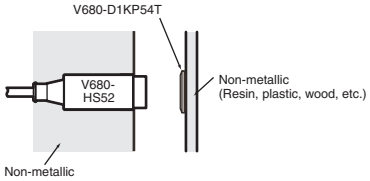
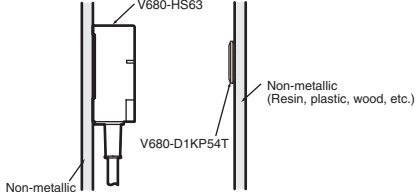
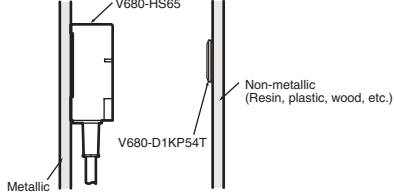
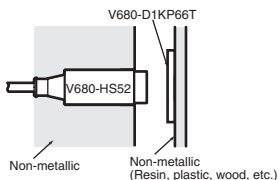
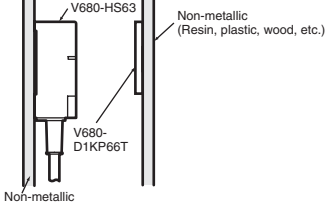
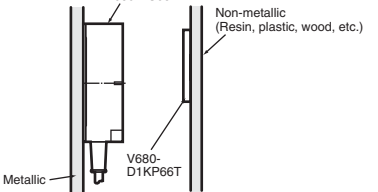
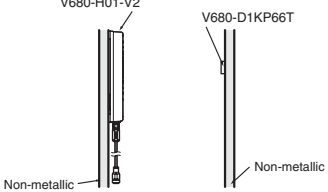


# ■ Performance Specifications

## ID Tag (1-kbyte Memory) Transmission

| Recommended combination                                                             |                                                                                     | Function       | Transmission distance<br>(unit: mm)                        | ID Tag and Read/Write Antenna mounting conditions                                     |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|------------------------------------------------------------|---------------------------------------------------------------------------------------|
| ID Tag                                                                              | Read/Write Antenna                                                                  |                |                                                            |                                                                                       |
|    |    | Read distance  | 0 to 9.0 mm<br>(axial deviation $\pm 2$ )                  |    |
|                                                                                     |                                                                                     | Write distance | 0 to 8.5 mm<br>(axial deviation $\pm 2$ )                  |                                                                                       |
|                                                                                     |    | Read distance  | 0.5 to 6.5 mm<br>(axial deviation $\pm 2$ )                |     |
|                                                                                     |                                                                                     | Write distance | 0.5 to 6.0 mm<br>(axial deviation $\pm 2$ )                |                                                                                       |
|    |    | Read distance  | 0 to 4.5 mm<br>(axial deviation $\pm 2$ )                  |    |
|                                                                                     |                                                                                     | Write distance | 0 to 4.0 mm<br>(axial deviation $\pm 2$ )                  |                                                                                       |
|                                                                                     |   | Read distance  | 0.5 to 3.5 mm<br>(axial deviation $\pm 2$ )                |    |
|                                                                                     |                                                                                     | Write distance | 0.5 to 3.5 mm<br>(axial deviation $\pm 2$ )                |                                                                                       |
|  |  | Read distance  | 0 to 12.0 mm<br>(axial deviation $\pm 2$ )                 |  |
|                                                                                     |                                                                                     | Write distance | 0 to 9.5 mm<br>(axial deviation $\pm 2$ )                  |                                                                                       |
|  |  | Read distance  | 0 to 9.0 mm<br>(axial deviation $\pm 2$ )                  |  |
|                                                                                     |                                                                                     | Write distance | 0 to 8.5 mm<br>(axial deviation $\pm 2$ )                  |                                                                                       |
|                                                                                     |  | Read distance  | 0.5 to 6.5 mm<br>(axial deviation $\pm 2$ )                |   |
|                                                                                     |                                                                                     | Write distance | 0.5 to 6.0 mm<br>(axial deviation $\pm 2$ )                |                                                                                       |
|  |  | Read distance  | 0 to 4.5 mm<br>(axial deviation $\pm 2$ )<br>(See note.)   |  |
|                                                                                     |                                                                                     | Write distance | 0 to 4.0mm<br>(axial deviation $\pm 2$ )<br>(See note.)    |                                                                                       |
|                                                                                     |  | Read distance  | 0.5 to 3.5 mm<br>(axial deviation $\pm 2$ )<br>(See note.) |   |
|                                                                                     |                                                                                     | Write distance | 0.5 to 3.0 mm<br>(axial deviation $\pm 2$ )<br>(See note.) |                                                                                       |

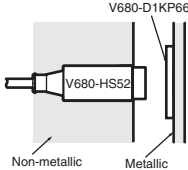
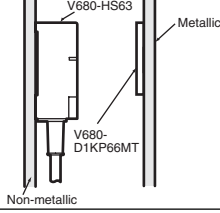
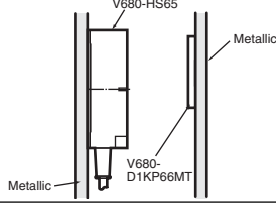
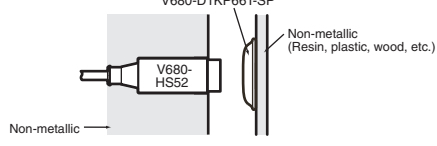
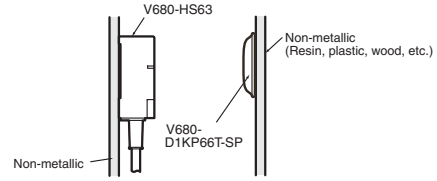
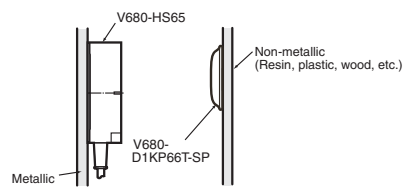
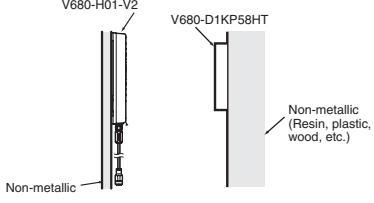
**Note:** When using the V680-D1KP53M embedded in metal, use the V680-HS51/-HS52 Antenna. Communications will not be possible with a V680-HS63 Antenna.

| Recommended combination                                                             |                                                                                                    | Function       | Transmission distance<br>(unit: mm)                          | ID Tag and Read/Write Antenna mounting conditions                                     |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------|
| ID Tag                                                                              | Read/Write Antenna                                                                                 |                |                                                              |                                                                                       |
|    | V680-HS52<br>     | Read distance  | 0 to 17.0 mm<br>(axial deviation $\pm 2$ )                   |    |
|                                                                                     |                                                                                                    | Write distance | 0 to 15.0 mm<br>(axial deviation $\pm 2$ )                   |                                                                                       |
|                                                                                     | V680-HS63<br>     | Read distance  | 0 to 24.0 mm<br>(axial deviation $\pm 10$ )                  |    |
|                                                                                     |                                                                                                    | Write distance | 0 to 20.0 mm<br>(axial deviation $\pm 10$ )                  |                                                                                       |
|                                                                                     | V680-HS65<br>     | Read distance  | 0 to 33.0 mm<br>(axial deviation $\pm 10$ )                  |    |
|                                                                                     |                                                                                                    | Write distance | 0 to 28.0 mm<br>(axial deviation $\pm 10$ )                  |                                                                                       |
|  | V680-HS52<br>     | Read distance  | 0 to 17.0 mm<br>(axial deviation $\pm 2$ )<br>(See note 2.)  |   |
|                                                                                     |                                                                                                    | Write distance | 0 to 17.0 mm<br>(axial deviation $\pm 2$ )<br>(See note 2.)  |                                                                                       |
|                                                                                     | V680-HS63<br>   | Read distance  | 0 to 30.0 mm<br>(axial deviation $\pm 10$ )<br>(See note 2.) |  |
|                                                                                     |                                                                                                    | Write distance | 0 to 25.0 mm<br>(axial deviation $\pm 10$ )<br>(See note 2.) |                                                                                       |
|                                                                                     | V680-HS65<br>   | Read distance  | 0 to 47.0 mm<br>(axial deviation $\pm 10$ )<br>(See note 2.) |  |
|                                                                                     |                                                                                                    | Write distance | 0 to 42.0 mm<br>(axial deviation $\pm 10$ )<br>(See note 2.) |                                                                                       |
|                                                                                     | V680-H01-V2<br> | Read distance  | 0 to 100.0 mm<br>(axial deviation $\pm 10$ )                 |  |
|                                                                                     |                                                                                                    | Write distance | 0 to 100.0 mm<br>(axial deviation $\pm 10$ )                 |                                                                                       |

**Note 1.** When mounting the V680-HS65, be sure to attach the Mounting Brackets at the base of the Antenna.

The enclosed Mounting Brackets do not need to be used, however, if the mounting brackets on the Antenna are metal plates and their dimensions are larger than the dimensions of the Antenna (100 × 100 mm).  
For details, refer to the *User's Manual* (Cat. No. Z248 or Z262).

**2.** The transmission distance may be reduced if the V680-D1KP66T is mounted onto a metallic surface. Refer to the *User's Manual* (Cat. No. Z262) for details.

| Recommended combination                                                                                                                       |                                                                                                 | Function       | Transmission distance<br>(unit: mm)         | ID Tag and Read/Write Antenna mounting conditions                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|----------------|---------------------------------------------|--------------------------------------------------------------------------------------|
| ID Tag                                                                                                                                        | Read/Write Antenna                                                                              |                |                                             |                                                                                      |
| V680-D1KP66MT<br>(flush-mounted on metallic surface: steel)  | V680-HS52      | Read distance  | 0 to 16.0 mm<br>(axial deviation $\pm 2$ )  |   |
|                                                                                                                                               |                                                                                                 | Write distance | 0 to 14.0 mm<br>(axial deviation $\pm 2$ )  |                                                                                      |
|                                                                                                                                               | V680-HS63      | Read distance  | 0 to 25.0 mm<br>(axial deviation $\pm 10$ ) |   |
|                                                                                                                                               |                                                                                                 | Write distance | 0 to 20.0 mm<br>(axial deviation $\pm 10$ ) |                                                                                      |
|                                                                                                                                               | V680-HS65      | Read distance  | 0 to 25.0 mm<br>(axial deviation $\pm 10$ ) |   |
|                                                                                                                                               |                                                                                                 | Write distance | 0 to 20.0 mm<br>(axial deviation $\pm 10$ ) |                                                                                      |
| V680-D1KP66T-SP                                            | V680-HS52     | Read distance  | 0 to 17.0 mm<br>(axial deviation $\pm 2$ )  |   |
|                                                                                                                                               |                                                                                                 | Write distance | 0 to 17.0 mm<br>(axial deviation $\pm 2$ )  |                                                                                      |
|                                                                                                                                               | V680-HS63    | Read distance  | 0 to 30.0 mm<br>(axial deviation $\pm 10$ ) |  |
|                                                                                                                                               |                                                                                                 | Write distance | 0 to 25.0 mm<br>(axial deviation $\pm 10$ ) |                                                                                      |
|                                                                                                                                               | V680-HS65    | Read distance  | 0 to 47.0 mm<br>(axial deviation $\pm 10$ ) |  |
|                                                                                                                                               |                                                                                                 | Write distance | 0 to 42.0 mm<br>(axial deviation $\pm 10$ ) |                                                                                      |
| V680-D1KP58HT                                              | V680-H01-V2  | Read distance  | 0 to 150 mm<br>(See note 2.)                |  |
|                                                                                                                                               |                                                                                                 | Write distance |                                             |                                                                                      |

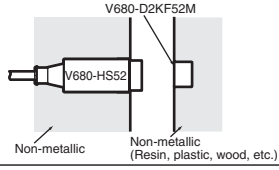
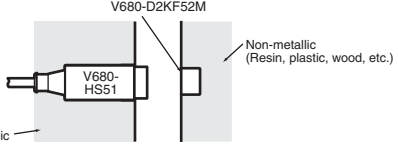
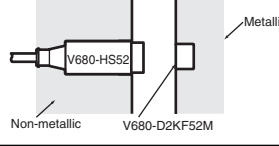
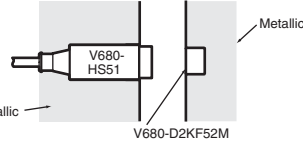
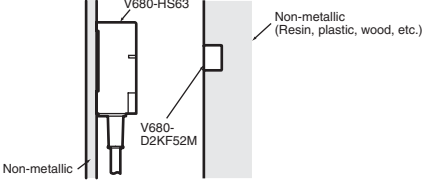
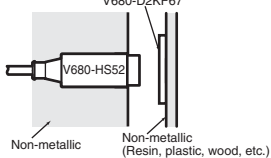
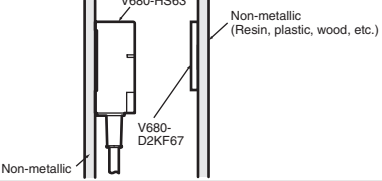
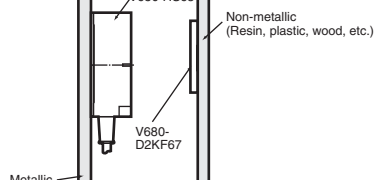
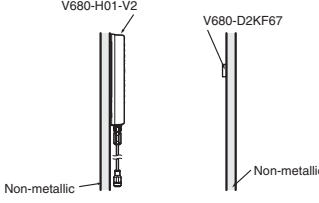
**Note 1.** When mounting the V680-HS65, be sure to attach the Mounting Brackets at the base of the Antenna.

The enclosed Mounting Brackets do not need to be used, however, if the mounting brackets on the Antenna are metal plates and their dimensions are larger than the dimensions of the Antenna (100 × 100 mm).

For details, refer to the *User's Manual* (Cat. No. Z248 or Z262).

**2.** The transmission distance may be reduced if the V680-D1KP58HT is mounted onto a metallic surface. Refer to the *User's Manual* (Cat. No. Z262) for details.

# ID Tag (2-kbyte Memory) Transmission

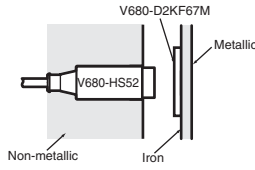
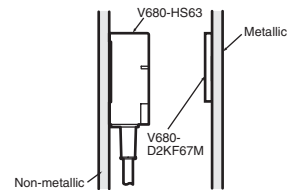
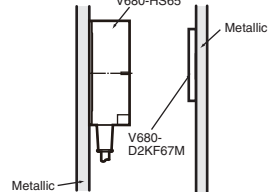
| Recommended combination                                                                                                                    |                                                                                                    | Function       | Transmission distance<br>(unit: mm)                        | ID Tag and Read/Write Antenna mounting conditions                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|----------------|------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ID Tag                                                                                                                                     | Read/Write Antenna                                                                                 |                |                                                            |                                                                                                                                                            |
| V680-D2KF52M<br>                                          | V680-HS52<br>     | Read distance  | 0 to 8.0 mm<br>(axial deviation $\pm 2$ )                  |  <p>Non-metallic<br/>Non-metallic (Resin, plastic, wood, etc.)</p>      |
|                                                                                                                                            |                                                                                                    | Write distance | 0 to 8.0 mm<br>(axial deviation $\pm 2$ )                  |                                                                                                                                                            |
|                                                                                                                                            | V680-HS51<br>     | Read distance  | 0.5 to 5.5 mm<br>(axial deviation $\pm 2$ )                |  <p>Non-metallic (Resin, plastic, wood, etc.)<br/>Metallic</p>          |
|                                                                                                                                            |                                                                                                    | Write distance | 0.5 to 5.5 mm<br>(axial deviation $\pm 2$ )                |                                                                                                                                                            |
| V680-D2KF52M<br>(embedded in metallic surface: steel)<br> | V680-HS52<br>     | Read distance  | 0 to 3.0 mm<br>(axial deviation $\pm 2$ )                  |  <p>Non-metallic<br/>Metallic<br/>V680-D2KF52M</p>                      |
|                                                                                                                                            |                                                                                                    | Write distance | 0 to 3.0 mm<br>(axial deviation $\pm 2$ )                  |                                                                                                                                                            |
|                                                                                                                                            | V680-HS51<br>     | Read distance  | 0 to 3.5 mm<br>(axial deviation $\pm 2$ )                  |  <p>Metallic<br/>Metallic<br/>V680-D2KF52M</p>                          |
|                                                                                                                                            |                                                                                                    | Write distance | 0 to 3.5 mm<br>(axial deviation $\pm 2$ )                  |                                                                                                                                                            |
| V680-D2KF52M<br>                                        | V680-HS63<br>    | Read distance  | 0 to 9.5 mm<br>(axial deviation $\pm 2$ )                  |  <p>Non-metallic (Resin, plastic, wood, etc.)<br/>Non-metallic</p>     |
|                                                                                                                                            |                                                                                                    | Write distance | 0 to 9.5 mm<br>(axial deviation $\pm 2$ )                  |                                                                                                                                                            |
| V680-D2KF67<br>                                         | V680-HS52<br>   | Read distance  | 0 to 17.0 mm<br>(axial deviation $\pm 2$ )<br>(See note.)  |  <p>Non-metallic<br/>Non-metallic (Resin, plastic, wood, etc.)</p>    |
|                                                                                                                                            |                                                                                                    | Write distance | 0 to 17.0 mm<br>(axial deviation $\pm 2$ )<br>(See note.)  |                                                                                                                                                            |
|                                                                                                                                            | V680-HS63<br>   | Read distance  | 7 to 30.0 mm<br>(axial deviation $\pm 10$ )<br>(See note.) |  <p>Non-metallic (Resin, plastic, wood, etc.)<br/>Non-metallic</p>    |
|                                                                                                                                            |                                                                                                    | Write distance | 7 to 30.0 mm<br>(axial deviation $\pm 10$ )<br>(See note.) |                                                                                                                                                            |
|                                                                                                                                            | V680-HS65<br>   | Read distance  | 0 to 42.0 mm<br>(axial deviation $\pm 10$ )<br>(See note.) |  <p>Non-metallic (Resin, plastic, wood, etc.)<br/>Metallic</p>        |
|                                                                                                                                            |                                                                                                    | Write distance | 0 to 42.0 mm<br>(axial deviation $\pm 10$ )<br>(See note.) |                                                                                                                                                            |
|                                                                                                                                            | V680-H01-V2<br> | Read distance  | 0 to 100.0 mm<br>(axial deviation $\pm 10$ )               |  <p>V680-H01-V2<br/>V680-D2KF67<br/>Non-metallic<br/>Non-metallic</p> |
|                                                                                                                                            |                                                                                                    | Write distance | 0 to 100.0 mm<br>(axial deviation $\pm 10$ )               |                                                                                                                                                            |

**Note 1.** When mounting the V680-HS65, be sure to attach the Mounting Brackets at the base of the Antenna.

The enclosed Mounting Brackets do not need to be used, however, if the mounting brackets on the Antenna are metal plates and their dimensions are larger than the dimensions of the Antenna (100 × 100 mm).

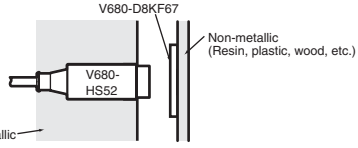
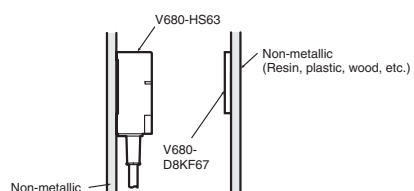
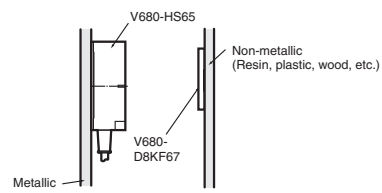
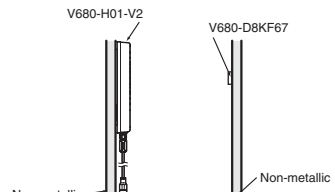
For details, refer to the *User's Manual* (Cat. No. Z248 or Z262).

**2.** The transmission distance may be reduced if the V680-D2KF67 is mounted onto a metallic surface. Refer to the *User's Manual* (Cat. No. Z248) for details.

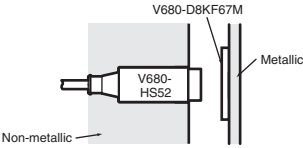
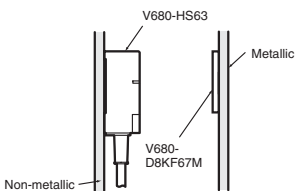
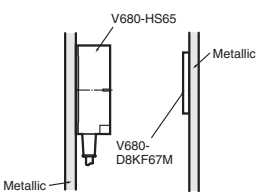
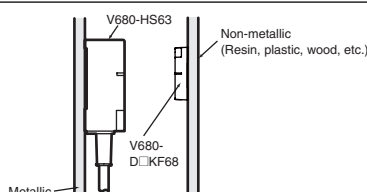
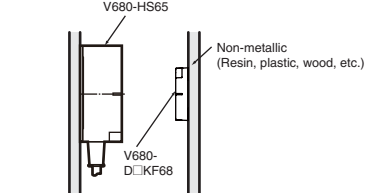
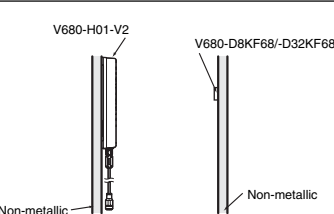
| Recommended combination                                                                                                                   |                                                                                             | Function       | Transmission distance<br>(unit: mm)      | ID Tag and Read/Write Antenna mounting conditions                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|----------------|------------------------------------------|-------------------------------------------------------------------------------------|
| ID Tag                                                                                                                                    | Read/Write Antenna                                                                          |                |                                          |                                                                                     |
|  V680-D2KF67M (flush-mounted on metallic surface: steel) |  V680-HS52 | Read distance  | 0 to 16.0 mm (axial deviation $\pm 2$ )  |  |
|                                                                                                                                           |                                                                                             | Write distance | 0 to 16.0 mm (axial deviation $\pm 2$ )  |                                                                                     |
|                                                                                                                                           |  V680-HS63 | Read distance  | 6 to 25.0 mm (axial deviation $\pm 10$ ) |  |
|                                                                                                                                           |                                                                                             | Write distance | 6 to 25.0 mm (axial deviation $\pm 10$ ) |                                                                                     |
|                                                                                                                                           |  V680-HS65 | Read distance  | 0 to 25.0 mm (axial deviation $\pm 10$ ) |  |
|                                                                                                                                           |                                                                                             | Write distance | 0 to 25.0 mm (axial deviation $\pm 10$ ) |                                                                                     |

**Note:** When mounting the V680-HS65, be sure to attach the Mounting Brackets at the base of the Antenna.  
The enclosed Mounting Brackets do not need to be used, however, if the mounting brackets on the Antenna are metal plates and their dimensions are larger than the dimensions of the Antenna (100 × 100 mm).  
For details, refer to the *User's Manual* (Cat. No. Z248 or Z262).

## ID Tag (8-/32-kbyte Memory) Transmission

| Recommended combination                                                                         |                                                                                                 | Function       | Transmission distance<br>(unit: mm)       | ID Tag and Read/Write Antenna mounting conditions                                     |
|-------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|----------------|-------------------------------------------|---------------------------------------------------------------------------------------|
| ID Tag                                                                                          | Read/Write Antenna                                                                              |                |                                           |                                                                                       |
|  V680-D8KF67 |  V680-HS52   | Read distance  | 0 to 17.0 mm (axial deviation $\pm 2$ )   |  |
|                                                                                                 |                                                                                                 | Write distance | 0 to 17.0 mm (axial deviation $\pm 2$ )   |                                                                                       |
|                                                                                                 |  V680-HS63   | Read distance  | 0 to 30.0 mm (axial deviation $\pm 10$ )  |  |
|                                                                                                 |                                                                                                 | Write distance | 0 to 30.0 mm (axial deviation $\pm 10$ )  |                                                                                       |
|                                                                                                 |  V680-HS65   | Read distance  | 0 to 42.0 mm (axial deviation $\pm 10$ )  |  |
|                                                                                                 |                                                                                                 | Write distance | 0 to 42.0 mm (axial deviation $\pm 10$ )  |                                                                                       |
|                                                                                                 |  V680-H01-V2 | Read distance  | 0 to 100.0 mm (axial deviation $\pm 10$ ) |  |
|                                                                                                 |                                                                                                 | Write distance | 0 to 100.0 mm (axial deviation $\pm 10$ ) |                                                                                       |

**Note:** When mounting the V680-HS65, be sure to attach the Mounting Brackets at the base of the Antenna.  
The enclosed Mounting Brackets do not need to be used, however, if the mounting brackets on the Antenna are metal plates and their dimensions are larger than the dimensions of the Antenna (100 × 100 mm).  
For details, refer to the *User's Manual* (Cat. No. Z248 or Z262).

| Recommended combination                                 |                                                                                     | Function       | Transmission distance<br>(unit: mm)                    | ID Tag and Read/Write Antenna mounting conditions                                     |
|---------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|--------------------------------------------------------|---------------------------------------------------------------------------------------|
| ID Tag                                                  | Read/Write Antenna                                                                  |                |                                                        |                                                                                       |
| V680-D8KF67M (flush-mounted on metallic surface: steel) |    | Read distance  | 0 to 16.0 mm (axial deviation $\pm 2$ )                |    |
|                                                         |                                                                                     | Write distance | 0 to 16.0 mm (axial deviation $\pm 2$ )                |                                                                                       |
|                                                         |    | Read distance  | 0 to 25.0 mm (axial deviation $\pm 10$ )               |    |
|                                                         |                                                                                     | Write distance | 0 to 25.0 mm (axial deviation $\pm 10$ )               |                                                                                       |
|                                                         |    | Read distance  | 0 to 25.0 mm (axial deviation $\pm 10$ )               |    |
|                                                         |                                                                                     | Write distance | 0 to 25.0 mm (axial deviation $\pm 10$ )               |                                                                                       |
| V680-D8KF68/-D32KF68                                    |    | Read distance  | 0 to 45.0 mm (axial deviation $\pm 10$ ) (See note 2.) |    |
|                                                         |                                                                                     | Write distance | 0 to 45.0 mm (axial deviation $\pm 10$ ) (See note 2.) |                                                                                       |
|                                                         |  | Read distance  | 0 to 75.0 mm (axial deviation $\pm 10$ ) (See note 2.) |  |
|                                                         |                                                                                     | Write distance | 0 to 75.0 mm (axial deviation $\pm 10$ ) (See note 2.) |                                                                                       |
|                                                         |  | Read distance  | 0 to 150.0 mm (axial deviation $\pm 10$ )              |  |
|                                                         |                                                                                     | Write distance | 0 to 150.0 mm (axial deviation $\pm 10$ )              |                                                                                       |

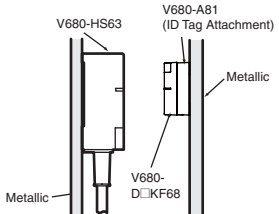
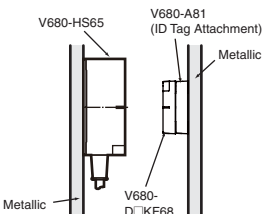
**Note 1.** When mounting the V680-HS65, be sure to attach the Mounting Brackets at the base of the Antenna.

The enclosed Mounting Brackets do not need to be used, however, if the mounting brackets on the Antenna are metal plates and their dimensions are larger than the dimensions of the Antenna (100 × 100 mm).

For details, refer to the *User's Manual* (Cat. No. Z248 or Z262).

**2.** The transmission distance may be reduced if the V680-D8KF68 is mounted onto a metallic surface. Refer to the *User's Manual* (Cat. No. Z248) for details.



| Recommended combination                                                                                      |                    | Function       | Transmission distance<br>(unit: mm)         | ID Tag and Read/Write Antenna mounting conditions                                   |
|--------------------------------------------------------------------------------------------------------------|--------------------|----------------|---------------------------------------------|-------------------------------------------------------------------------------------|
| ID Tag                                                                                                       | Read/Write Antenna |                |                                             |                                                                                     |
| V680-D8KF68/<br>-D32KF68<br>(Special attachment<br>provided; flush-mounted<br>on metallic surface:<br>steel) | V680-HS63          | Read distance  | 0 to 35.0 mm<br>(axial deviation $\pm 10$ ) |  |
|                                                                                                              |                    | Write distance | 0 to 35.0 mm<br>(axial deviation $\pm 10$ ) |                                                                                     |
|                                                                                                              | V680-HS65          | Read distance  | 0 to 55.0 mm<br>(axial deviation $\pm 10$ ) |  |
|                                                                                                              |                    | Write distance | 0 to 55.0 mm<br>(axial deviation $\pm 10$ ) |                                                                                     |

**Note 1.** When mounting the V680-HS65, be sure to attach the Mounting Brackets at the base of the Antenna.

The enclosed Mounting Brackets do not need to be used, however, if the mounting brackets on the Antenna are metal plates and their dimensions are larger than the dimensions of the Antenna (100 × 100 mm).

For details, refer to the *User's Manual* (Cat. No. Z248 or Z262).

- 2.** The transmission distance may be reduced if the V680-D□KF68 is mounted onto a metallic surface. Use V680-A81 special attachment. Refer to the *User's Manual* (Cat. No. Z248) for details.

## Characteristic Data (Typical)

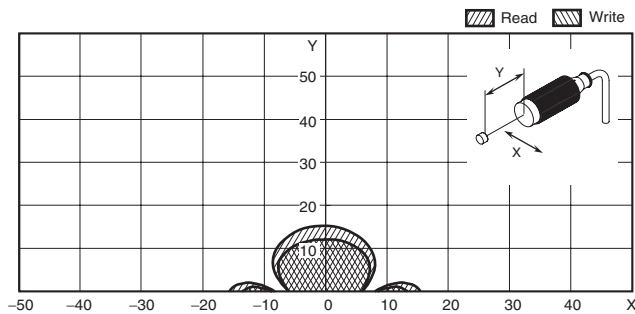
### Transmission Range

(unit: mm)

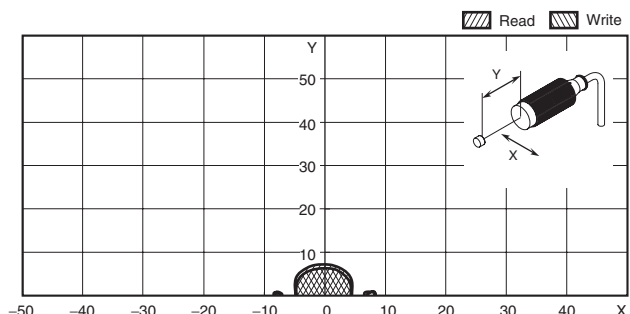
#### 1-kbyte Memory ID Tag

The values given for communications ranges are reference values. Refer to pages 18 to 20 for communications distance specifications. The communications distance will depend on the ID Tags, ambient temperature, surrounding metal, noise, and other factors. Test operation completely when installing a system.

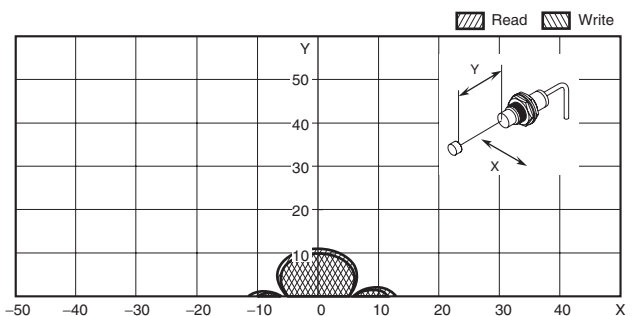
#### V680-HS52 (embedded in non-metallic material) & V680-D1KP52MT (embedded in non-metallic material)



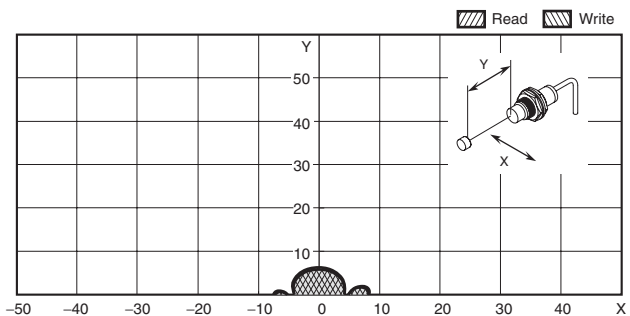
#### V680-HS52 (embedded in non-metallic material) & V680-D1KP52MT (embedded in metallic surface: steel)



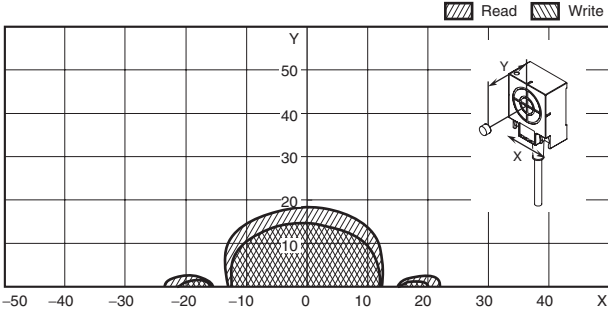
#### V680-HS51 (embedded in metallic material) & V680-D1KP52MT (embedded in non-metallic material)



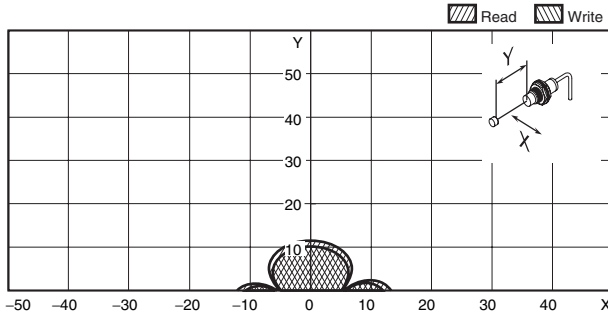
#### V680-HS51 (embedded in metallic material) & V680-D1KP52MT (embedded in metallic surface: steel)



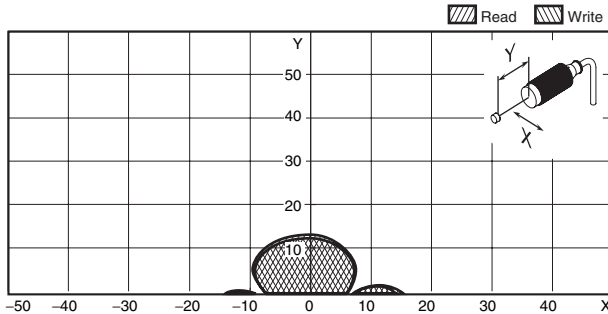
**V680-HS63 (mounted on non-metallic material) & V680-D1KP52MT (embedded in non-metallic material)**



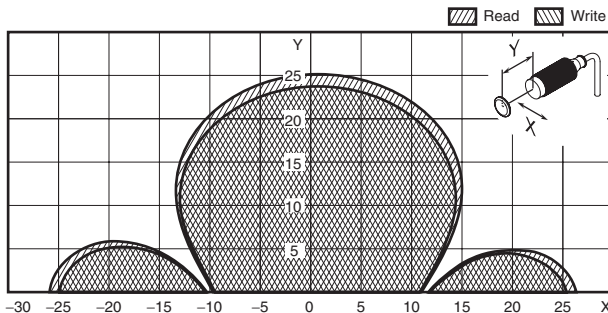
**V680-HS51 (embedded in metallic material) & V680-D1KP53M (embedded in non-metallic material)**



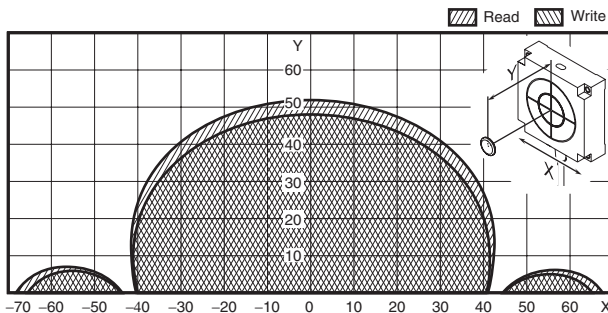
**V680-HS52 (embedded in non-metallic material) & V680-D1KP53M (embedded in non-metallic material)**



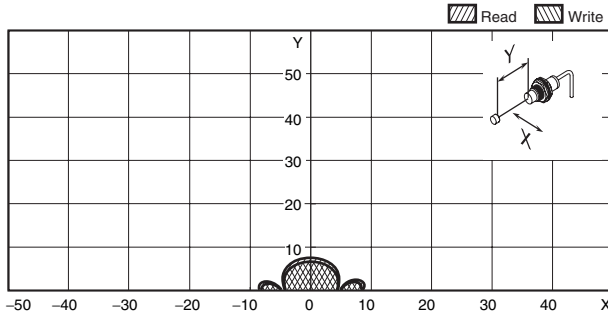
**V680-HS52 (embedded in non-metallic material) & V680-D1KP54T (mounted on non-metallic material)**



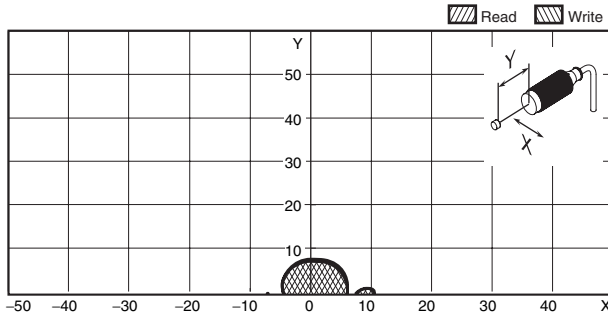
**V680-HS65 (mounted on metallic material) & V680-D1KP54T (mounted on non-metallic material)**



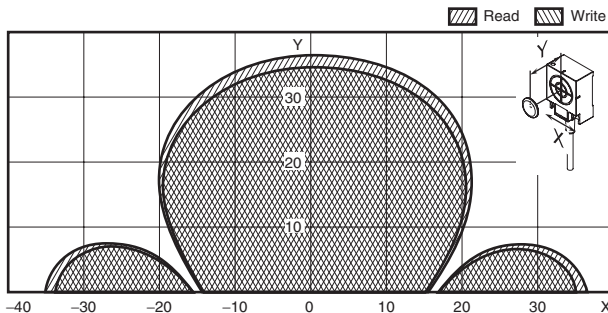
**V680-HS51 (embedded in metallic material) & V680-D1KP53M (embedded in metallic surface: steel)**



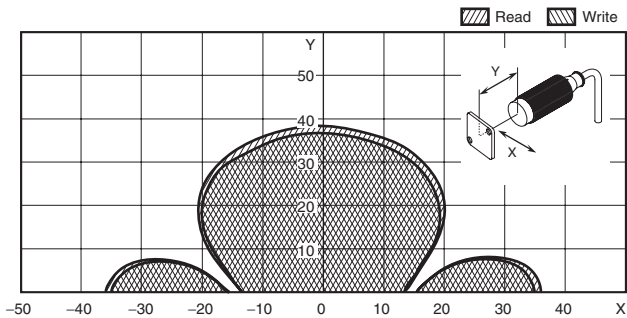
**V680-HS52 (embedded in non-metallic material) & V680-D1KP53M (embedded in metallic surface: steel)**



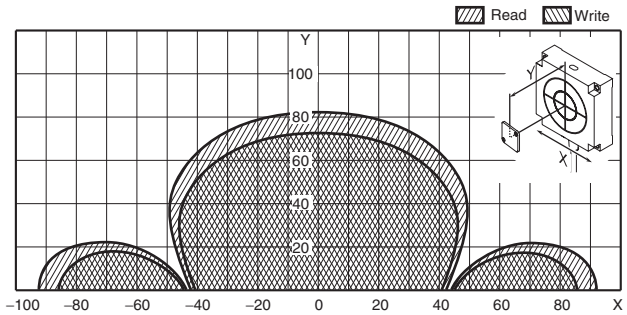
**V680-HS63 (mounted on non-metallic material) & V680-D1KP54T (mounted on non-metallic material)**



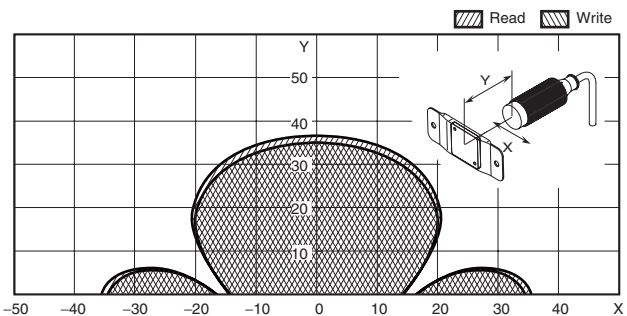
**V680-HS52 (embedded in non-metallic material) & V680-D1KP66T (mounted on non-metallic material)**



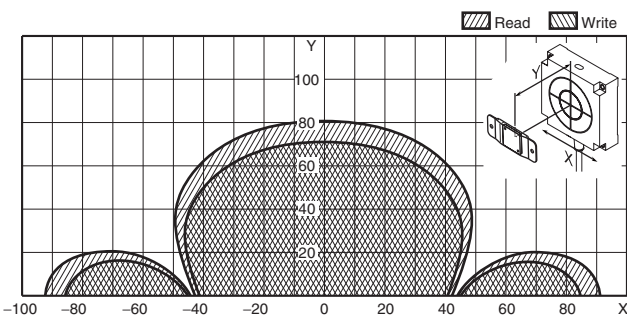
**V680-HS65 (mounted on metallic material) & V680-D1KP66T (mounted on non-metallic material)**



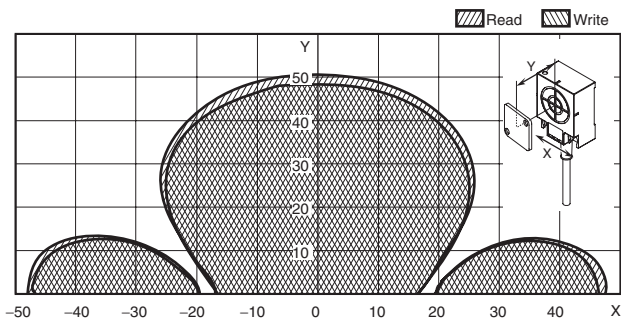
**V680-HS52 (embedded in non-metallic material) & V680-D1KP66T-SP (embedded in non-metallic material)**



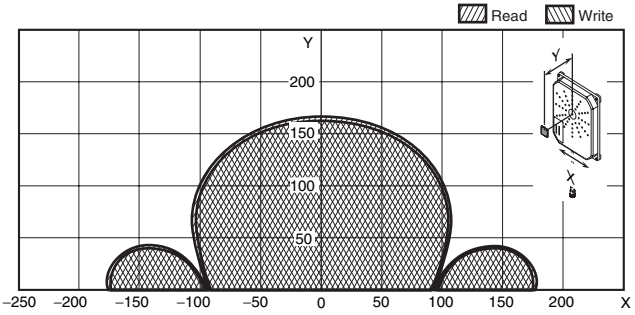
**V680-HS65 (mounted on metallic material) & V680-D1KP66T-SP (mounted on non-metallic material)**



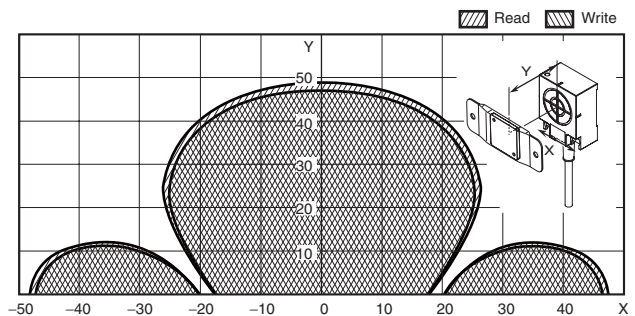
**V680-HS63 (mounted on non-metallic material) & V680-D1KP66T (mounted on non-metallic material)**



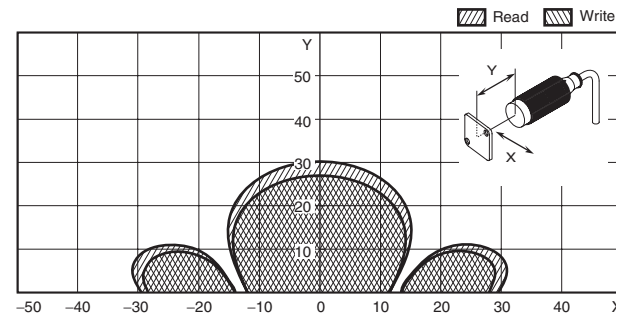
**V680-H01-V2 (mounted on non-metallic material) & V680-D1KP66T (mounted on non-metallic material)**



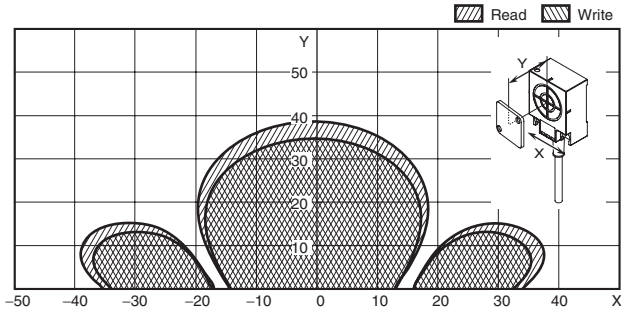
**V680-HS63 (mounted on non-metallic material) & V680-D1KP66T-SP (mounted on non-metallic material)**



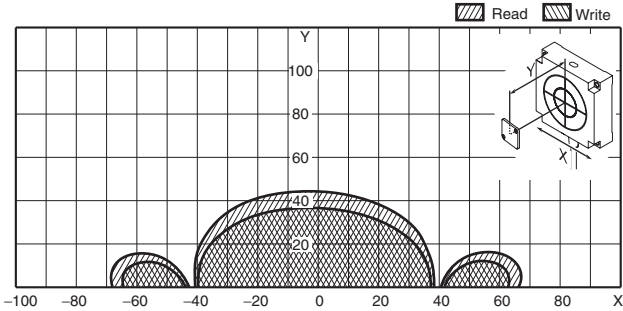
**V680-HS52 (embedded in non-metallic material) & V680-D1KP66MT (mounted on metallic surface: steel)**



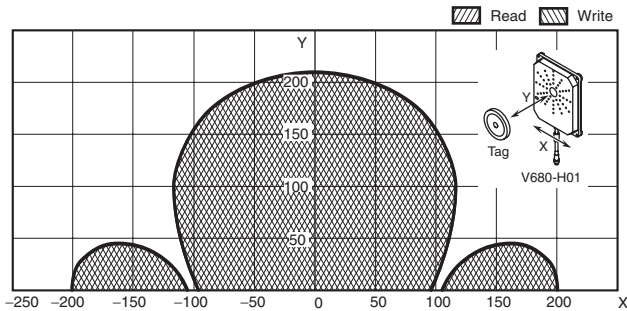
**V680-HS63 (mounted on non-metallic material) & V680-D1KP66MT (mounted on metallic surface: steel)**



**V680-HS65 (mounted on metallic material) & V680-D1K66MT (mounted on metallic surface: steel)**



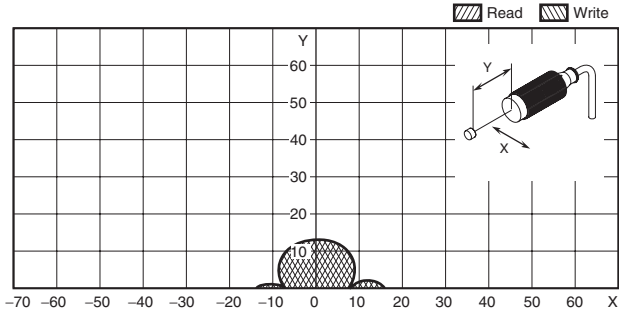
**V680-H01-V2 (mounted on non-metallic material) & V680-D1KP58HT (mounted on non-metallic material)**



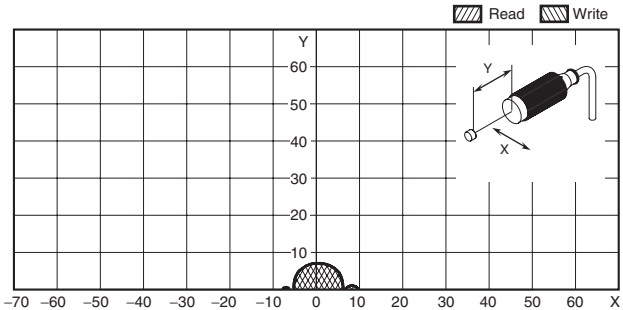
### 2-kbyte Memory ID Tag

The values given for communications ranges are reference values. Refer to pages 21 to 22 for communications distance specifications. The communications distance will depend on the ID Tags, ambient temperature, surrounding metal, noise, and other factors. Test operation completely when installing a system.

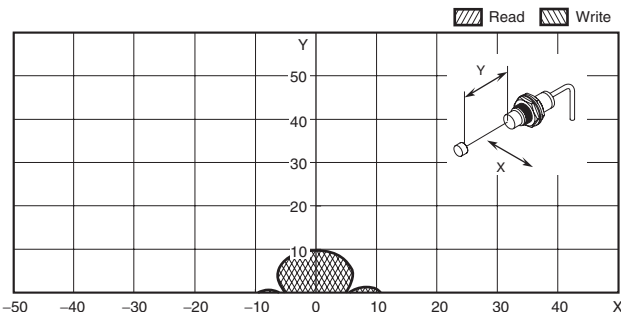
**V680-HS52 (embedded in non-metallic material) & V680-D2KF52M (embedded in non-metallic material)**



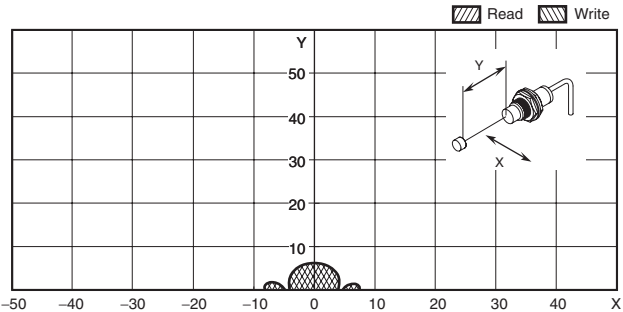
**V680-HS52 (embedded in non-metallic material) & V680-D2KF52M (embedded in metallic surface: steel)**



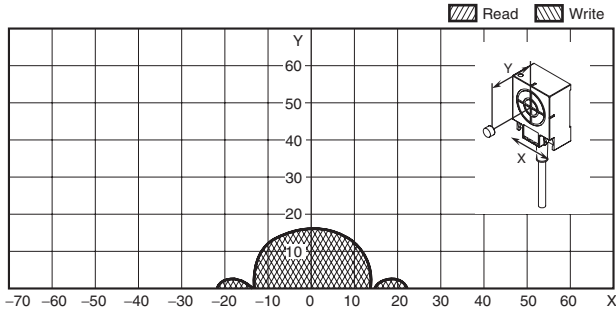
**V680-HS51 (embedded in metallic material) & V680-D2KF52M (embedded in non-metallic material)**



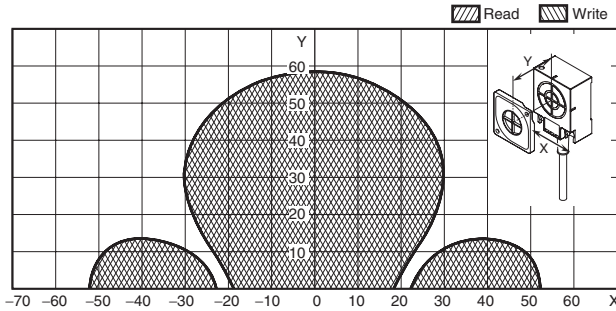
**V680-HS51 (embedded in metallic material) & V680-D2KF52M (embedded in metallic surface: steel)**



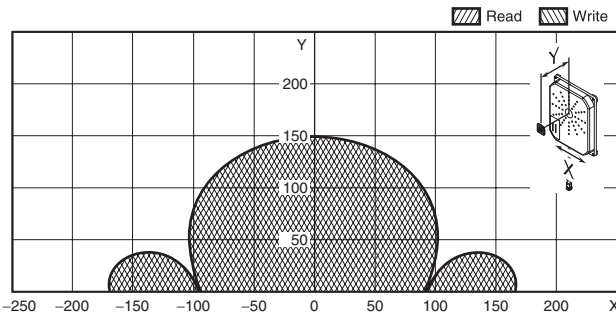
**V680-HS63 (mounted on non-metallic material) & V680-D2KF52M (embedded in non-metallic material)**



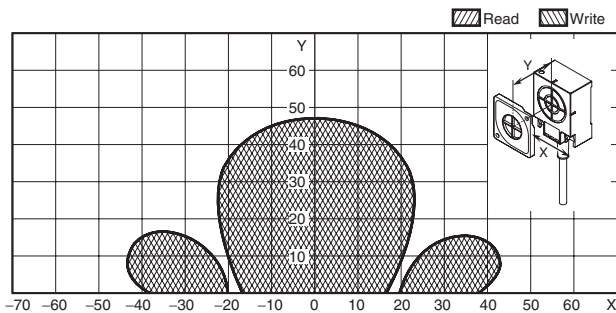
**V680-HS63 (mounted on non-metallic material) & V680-D2KF67 (mounted on non-metallic material)**



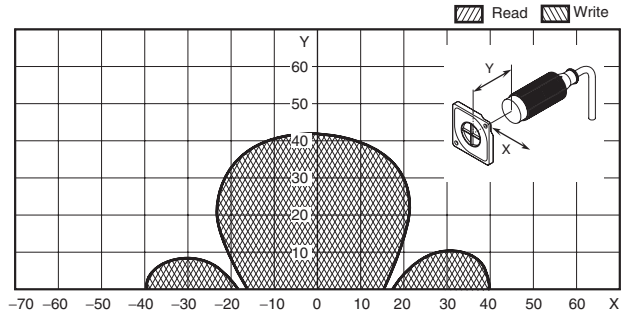
**V680-H01-V2 (mounted on non-metallic material) & V680-D2KF67 (mounted on non-metallic material)**



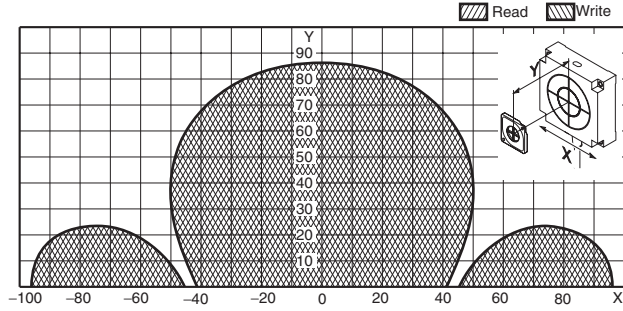
**V680-HS63 (mounted on non-metallic material) & V680-D2KF67M (mounted on metallic surface: steel)**



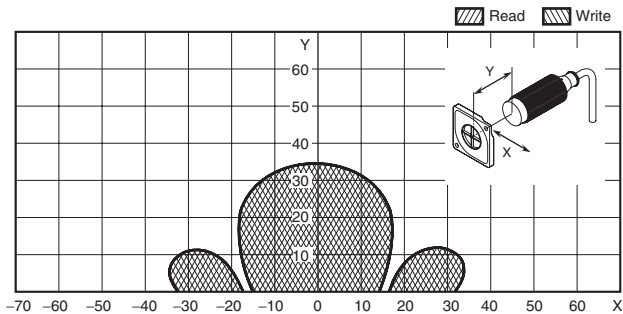
**V680-HS52 (embedded in metallic material) & V680-D2KF67 (mounted on non-metallic material)**



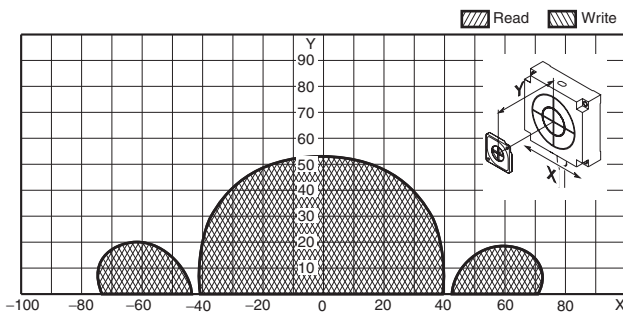
**V680-HS65 (mounted on metallic material) & V680-D2KF67 (mounted on non-metallic material)**



**V680-HS52 (embedded in non-metallic material) & V680-D2KF67M (mounted on metallic surface: steel)**



**V680-HS65 (mounted on metallic material) & V680-D2KF67M (mounted on metallic surface: steel)**

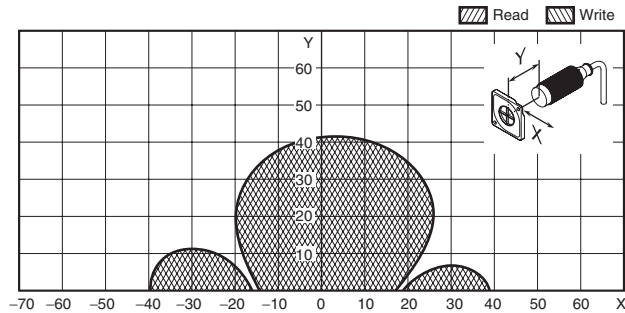




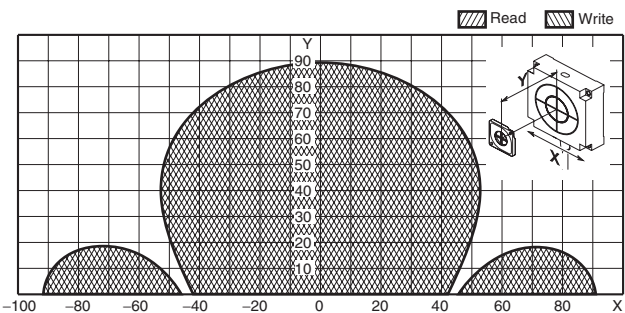
# 8-/32-kbyte Memory ID Tag

The values given for communications ranges are reference values. Refer to page 22 to 24 for communications distance specifications. The communications distance will depend on the ID Tags, ambient temperature, surrounding metal, noise, and other factors. Test operation completely when installing a system.

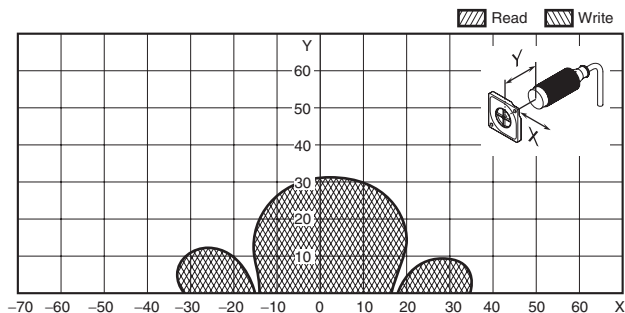
## V680-HS52 (embedded in non-metallic material) & V680-D8KF67 (mounted on non-metallic material)



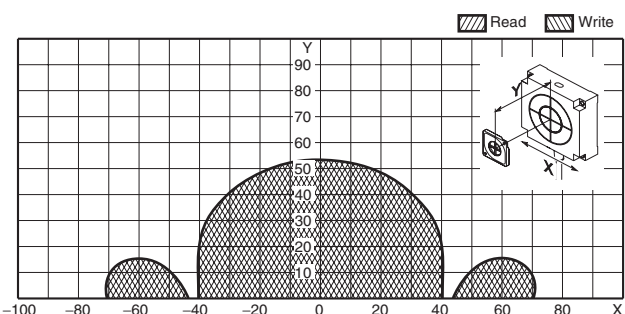
## V680-HS65 (mounted on metallic material) & V680-D8KF67 (mounted on non-metallic material)



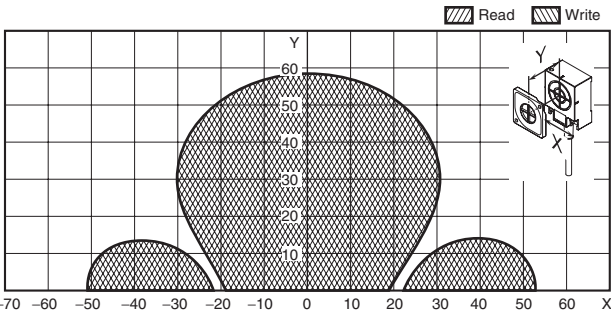
## V680-HS52 (embedded in non-metallic material) & V680-D8KF67M (mounted on metallic surface: steel)



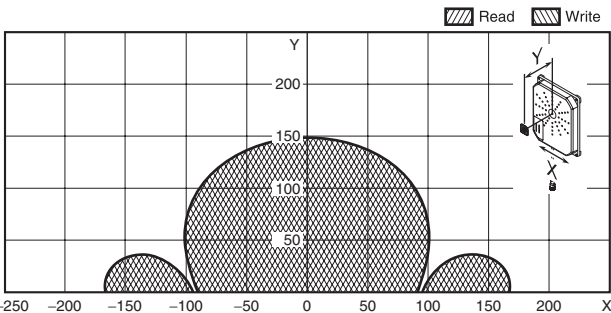
## V680-HS65 (mounted on metallic material) & V680-D8KF67M (mounted on metallic surface: steel)



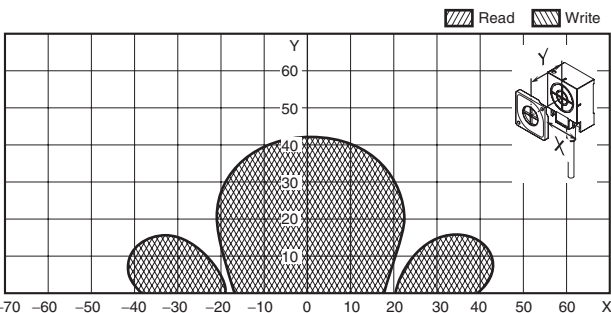
## V680-HS63 (mounted on non-metallic material) & V680-D8KF67 (mounted on non-metallic material)



## V680-H01-V2 (mounted on non-metallic material) & V680-D8KF67 (mounted on non-metallic material)

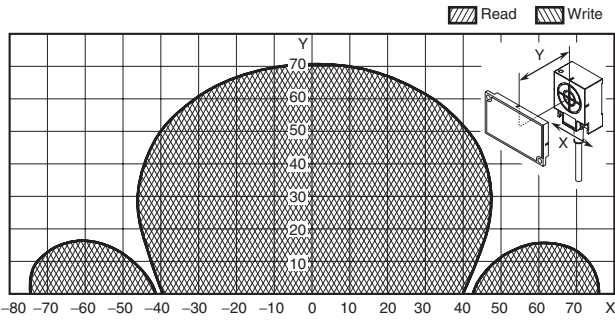


## V680-HS63 (mounted on non-metallic material) & V680-D8KF67M (mounted on metallic surface: steel)

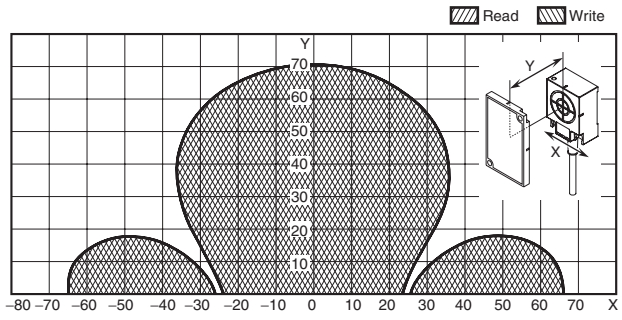




**V680-HS63 (mounted on metallic material) & V680-D8KF68/-D32KF68 (mounted on non-metallic material) (Horizontal-facing ID Tag)**

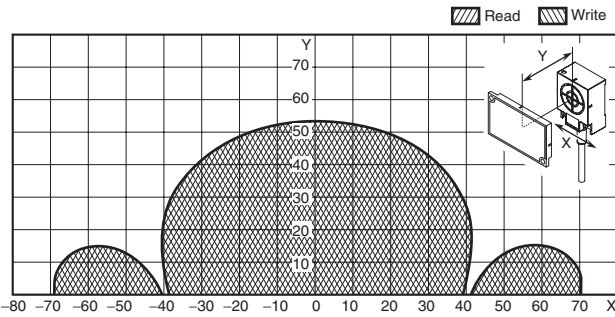


**V680-HS63 (mounted on metallic material) & V680-D8KF68/-D32KF68 (mounted on non-metallic material) (Vertical-facing ID Tag)**



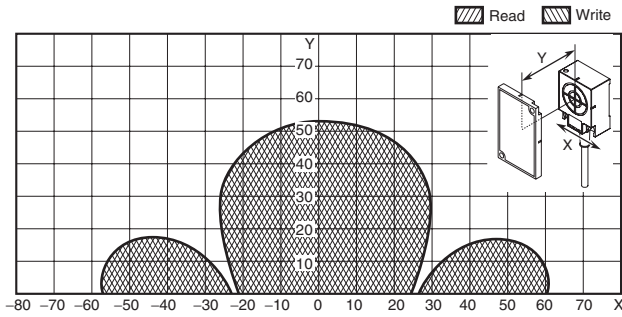
**V680-HS63 (mounted on metallic material) & V680-D8KF68/-D32KF68**

**Mounted on metallic surface: steel (Horizontal-facing ID Tag) When the V680-A81 ID Tag Attachment is mounted.**

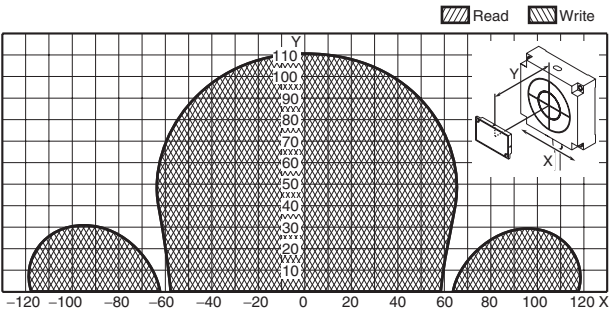


**V680-HS63 (mounted on metallic material) & V680-D8KF68/-D32KF68**

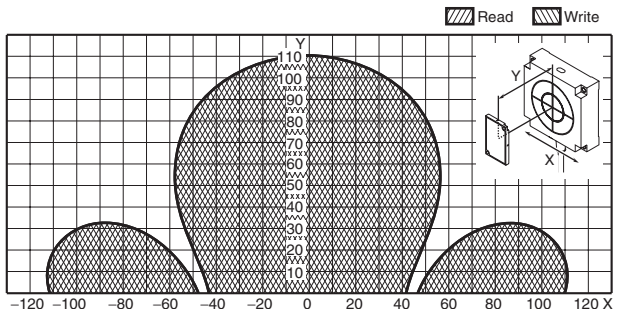
**Mounted on metallic surface: steel (Vertical-facing ID Tag) When the V680-A81 ID Tag Attachment is mounted.**



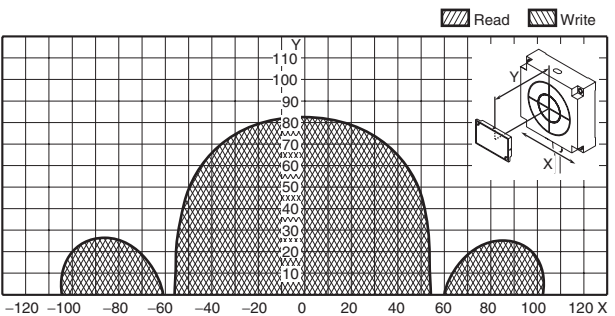
**V680-HS65 (mounted on metallic material) & V680-D8KF68/-D32KF68 (Horizontal-facing ID Tag)**



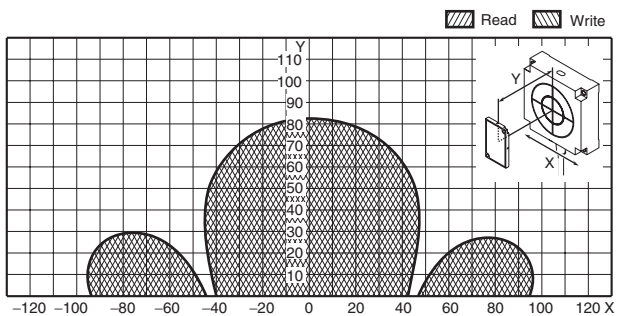
**V680-HS65 (mounted on metallic material) & V680-D8KF68/-D32KF68 (Vertical-facing ID Tag)**



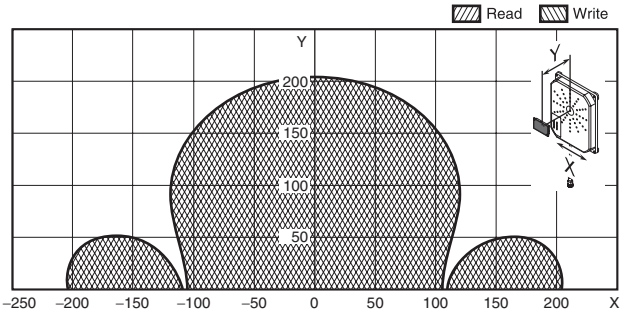
**V680-HS65 (mounted on metallic material) & V680-D8KF68/-D32KF68 Flush-mounted on metallic surface: steel (Horizontal-facing ID Tag) When the V680-A81 ID Tag Attachment is mounted.**



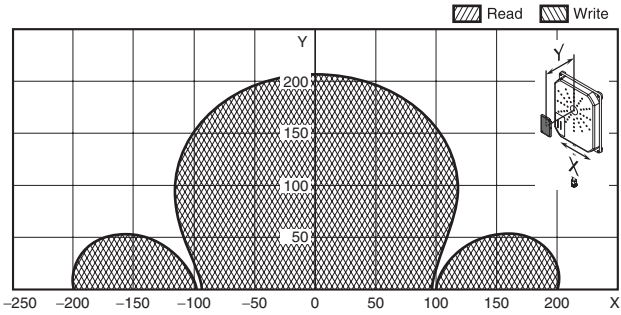
**V680-HS65 (mounted on metallic material) & V680-D8KF68/-D32KF68 Flush-mounted on metallic surface: steel (Vertical-facing ID Tag) When the V680-A81 ID Tag Attachment is mounted.**



V680-H01-V2 (mounted on non-metallic material) & V680-D8KF68/-D32KF68 (Horizontal-facing ID Tag)



V680-H01-V2 (mounted on non-metallic material) & V680-D8KF68/-32KF68 (Vertical-facing ID Tag)



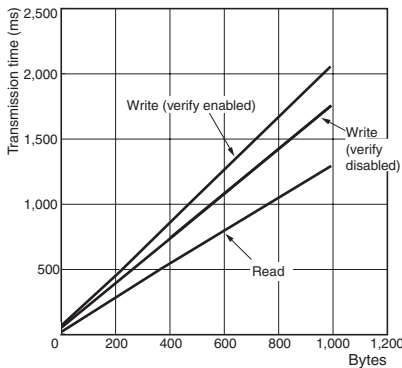
## Communications Time

### Communications Time between Antennas and Tags

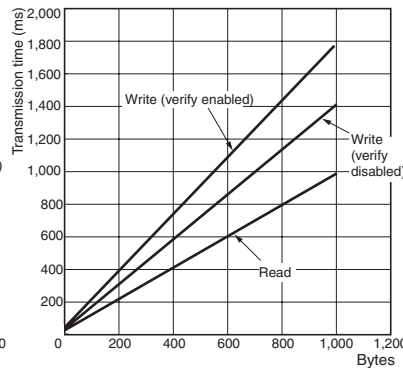
#### 1-kbyte Memory ID Tag

V680-D1KP□ (used in combination with the V680-HS□□ Read/Write Antenna and V680-HA63A Amplifier Unit)  
V680-D1KP58HT (used in combination with the V680-H01 Read/Write Antenna)

##### ● Transmission speed: Normal mode



##### ● Transmission speed: High-speed mode



| Controller or ID Sensor Unit transmission speed setting | Command | Write verification setting | Transmission time (ms)<br>N = Number of processing bytes |
|---------------------------------------------------------|---------|----------------------------|----------------------------------------------------------|
| Normal mode                                             | Read    | ---                        | $T = 1.3N + 31$                                          |
|                                                         | Write   | Enabled                    | $T = 2.1N + 58$                                          |
|                                                         |         | Disabled                   | $T = 1.8N + 56$                                          |
| High-speed mode<br>(See notes 1 and 2.)                 | Read    | ---                        | $T = 1.0N + 29$                                          |
|                                                         | Write   | Enabled                    | $T = 1.8N + 51$                                          |
|                                                         |         | Disabled                   | $T = 1.5N + 47$                                          |

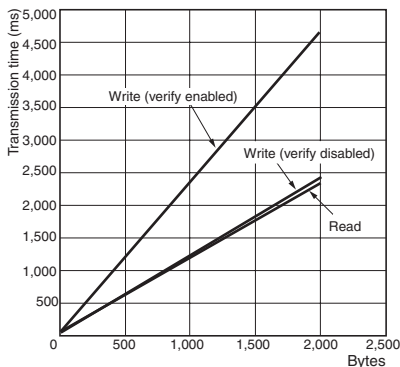
**Note 1.** The V680-H01 Read/Write Antenna cannot be used in high-speed mode.

**2.** When multi-access or FIFO is selected as the transmission option, the transmission time will be the same as in normal mode even when the transmission speed is set to high-speed mode.

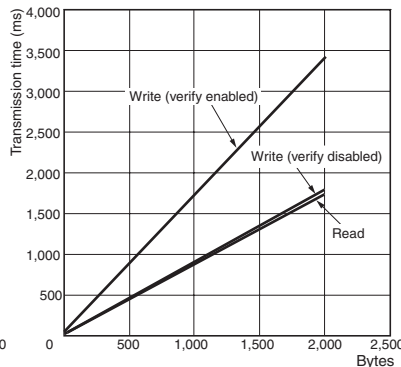
#### 2-kbyte Memory ID Tag

V680-D2KF□□ (used in combination with the V680-HS□□ Read/Write Antenna and V680-HA63B Amplifier Unit)

##### ● Transmission speed: Normal mode



##### ● Transmission speed: High-speed mode



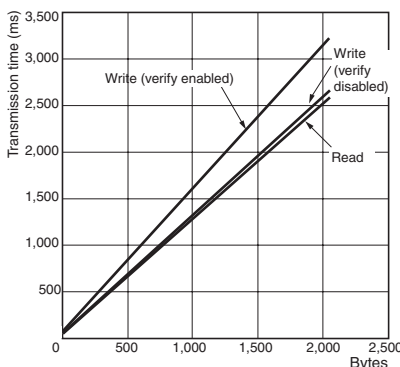
| Controller or ID Sensor Unit transmission speed setting | Command | Write verification setting | Transmission time (ms)<br>N = Number of processing bytes |
|---------------------------------------------------------|---------|----------------------------|----------------------------------------------------------|
| Normal mode                                             | Read    | ---                        | $T = 1.2N + 30$                                          |
|                                                         | Write   | Enabled                    | $T = 2.4N + 49$                                          |
|                                                         |         | Disabled                   | $T = 1.2N + 49$                                          |
| High-speed mode<br>(See note.)                          | Read    | ---                        | $T = 0.9N + 27$                                          |
|                                                         | Write   | Enabled                    | $T = 1.7N + 49$                                          |
|                                                         |         | Disabled                   | $T = 0.9N + 41$                                          |

**Note:** When multi-access or FIFO is selected as the transmission option, the transmission time will be the same as in normal mode even when the transmission speed is set to high-speed mode.

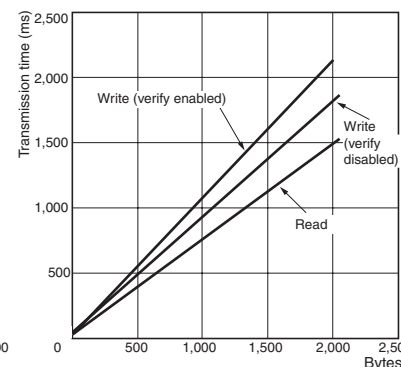
#### 8-/32-kbyte Memory ID Tag

V680-D8KF□□, V680-D32KF□□ (used in combination with the V680-HS□□ Read/Write Antenna and V680-HA63B Amplifier Unit)

##### ● Transmission speed: Normal mode



##### ● Transmission speed: High-speed mode



| Controller or ID Sensor Unit transmission speed setting | Command | Write verification setting | Transmission time (ms)<br>N = Number of processing bytes |
|---------------------------------------------------------|---------|----------------------------|----------------------------------------------------------|
| Normal mode                                             | Read    | ---                        | $T = 1.3N + 30$                                          |
|                                                         | Write   | Enabled                    | $T = 1.6N + 59$                                          |
|                                                         |         | Disabled                   | $T = 1.3N + 50$                                          |
| High-speed mode<br>(See note.)                          | Read    | ---                        | $T = 0.8N + 25$                                          |
|                                                         | Write   | Enabled                    | $T = 1.1N + 41$                                          |
|                                                         |         | Disabled                   | $T = 0.9N + 40$                                          |

**Note:** When multi-access or FIFO is selected as the transmission option, the transmission time will be the same as in normal mode even when the transmission speed is set to high-speed mode.

# TAT When Using an ID Controller (Reference Values)

## TAT (Turn Around Time)

TAT refers to the total time required from the point at which a host device (such as a personal computer) starts sending a command until a response is received.

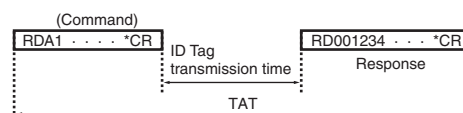
$$\text{TAT} = \text{Command send time} + \text{ID Tag transmission time} + \text{response receipt time}$$

Command send time: This is the time required for sending a command from the host device to the Controller.  
It varies depending on the communications speed and format.

ID Tag transmission time: This is the time required for transmission between the Read/Write Antenna and the ID Tag.

Response receipt time: This is the time required for returning a response from the Controller to the host device.  
It varies depending on the communications speed and format.

## For an ordinary command



## 1-kbyte Memory ID Tag

V680-D1KP□ (used in combination with the V680-HS□□ Read/Write Antenna and V680-HA63A Amplifier Unit)

V680-D1KP58HT (used in combination with the V680-H01 Read/Write Antenna)

| Controller or ID Sensor Unit transmission speed setting | Command | Write verification setting | Number of bytes to processed (byte) | TAT (ms) (See note 1.) |
|---------------------------------------------------------|---------|----------------------------|-------------------------------------|------------------------|
| Normal mode                                             | Read    | ---                        | 100                                 | 173                    |
|                                                         |         |                            | 256                                 | 389                    |
|                                                         |         |                            | 512                                 | 747                    |
|                                                         |         |                            | 1,000                               | 1,431                  |
|                                                         | Write   | Enabled                    | 100                                 | 280                    |
|                                                         |         |                            | 256                                 | 621                    |
|                                                         |         |                            | 512                                 | 1,184                  |
|                                                         |         |                            | 1,000                               | 2,258                  |
|                                                         |         | Disabled                   | 100                                 | 248                    |
|                                                         |         |                            | 256                                 | 542                    |
|                                                         |         |                            | 512                                 | 1,028                  |
|                                                         |         |                            | 1,000                               | 1,956                  |
| High-speed mode<br>(See notes 2 and 3.)                 | Read    | ---                        | 100                                 | 141                    |
|                                                         |         |                            | 256                                 | 310                    |
|                                                         |         |                            | 512                                 | 591                    |
|                                                         |         |                            | 1,000                               | 1,129                  |
|                                                         | Write   | Enabled                    | 100                                 | 243                    |
|                                                         |         |                            | 256                                 | 537                    |
|                                                         |         |                            | 512                                 | 1,023                  |
|                                                         |         |                            | 1,000                               | 1,951                  |
|                                                         |         | Disabled                   | 100                                 | 209                    |
|                                                         |         |                            | 256                                 | 456                    |
|                                                         |         |                            | 512                                 | 865                    |
|                                                         |         |                            | 1,000                               | 1,647                  |

**Note 1.** These are the TAT values for a baud rate of 115,200 bps. For information on the TAT for baud rates other than 115,200 bps, refer to the *User's Manual*.

**2.** The V680-H01 Read/Write Antenna cannot be used in high-speed mode.

**3.** When multi-access or FIFO is selected as the transmission option, the transmission time will be the same as in normal mode even when the transmission speed is set to high-speed mode.

**4.** The value given for TAT data assumes that communications settings for the V680-CA5D01/02-V2 ID Controller are as follows:

Data length: 8 bits, Stop bits: 1, Parity: Odd.

In this example, communications are continuous, with no gaps between characters.

**5.** The number of bytes of TAT data is the number of bytes when ASCII is specified as the code.

## 2-kbyte Memory ID Tag

V680-D2KF□□ (used in combination with the V680-HS□□ Read/Write Antenna and V680-HA63B Amplifier Unit)

| Controller or ID Sensor<br>Unit transmission<br>speed setting | Command | Write verification<br>setting | Number of bytes to<br>processed (byte) | TAT (ms) (See note 1.) |
|---------------------------------------------------------------|---------|-------------------------------|----------------------------------------|------------------------|
| Normal mode                                                   | Read    | ---                           | 100                                    | 162                    |
|                                                               |         |                               | 256                                    | 363                    |
|                                                               |         |                               | 512                                    | 695                    |
|                                                               |         |                               | 1,000                                  | 1,330                  |
|                                                               |         |                               | 2,000                                  | 2,620                  |
|                                                               | Write   | Enabled                       | 100                                    | 301                    |
|                                                               |         |                               | 256                                    | 689                    |
|                                                               |         |                               | 512                                    | 1,328                  |
|                                                               |         |                               | 1,000                                  | 2,549                  |
|                                                               |         |                               | 2,000                                  | 5,039                  |
|                                                               |         | Disabled                      | 100                                    | 181                    |
|                                                               |         |                               | 256                                    | 382                    |
|                                                               |         |                               | 512                                    | 714                    |
|                                                               |         |                               | 1,000                                  | 1,349                  |
|                                                               |         |                               | 2,000                                  | 2,639                  |
| High-speed mode<br>(See note 2.)                              | Read    | ---                           | 100                                    | 132                    |
|                                                               |         |                               | 256                                    | 286                    |
|                                                               |         |                               | 512                                    | 541                    |
|                                                               |         |                               | 1,000                                  | 1,030                  |
|                                                               |         |                               | 2,000                                  | 2,020                  |
|                                                               | Write   | Enabled                       | 100                                    | 231                    |
|                                                               |         |                               | 256                                    | 510                    |
|                                                               |         |                               | 512                                    | 970                    |
|                                                               |         |                               | 1,000                                  | 1,849                  |
|                                                               |         |                               | 2,000                                  | 3,639                  |
|                                                               |         | Disabled                      | 100                                    | 143                    |
|                                                               |         |                               | 256                                    | 297                    |
|                                                               |         |                               | 512                                    | 552                    |
|                                                               |         |                               | 1,000                                  | 1,041                  |
|                                                               |         |                               | 2,000                                  | 2,031                  |

- Note 1.** These are the TAT values for a baud rate of 115,200 bps. For information on the TAT for baud rates other than 115,200 bps, refer to the *User's Manual*.
- 2.** When multi-access or FIFO is selected as the transmission option, the transmission time will be the same as in normal mode even when the transmission speed is set to high-speed mode.
- 3.** The value given for TAT data assumes that communications settings for the V680-CA5D01/02-V2 ID Controller are as follows:  
Data length: 8 bits, Stop bits: 1, Parity: Odd.  
In this example, communications are continuous, with no gaps between characters.
- 4.** The number of bytes of TAT data is the number of bytes when ASCII is specified as the code.

# 8-/32-kbyte Memory ID Tag

V680-D8KF□□, V680-D32KF□□ (used in combination with the V680-HS□□ Read/Write Antenna and V680-HA63B Amplifier Unit)

| Controller or ID Sensor<br>Unit transmission<br>speed setting | Command | Write verification<br>setting | Number of bytes to<br>processed (byte) | TAT (ms) (See note 1.) |
|---------------------------------------------------------------|---------|-------------------------------|----------------------------------------|------------------------|
| Normal mode                                                   | Read    | ---                           | 100                                    | 172                    |
|                                                               |         |                               | 256                                    | 388                    |
|                                                               |         |                               | 512                                    | 746                    |
|                                                               |         |                               | 1,000                                  | 1,430                  |
|                                                               |         |                               | 2,000                                  | 2,820                  |
|                                                               | Write   | Yes                           | 100                                    | 231                    |
|                                                               |         |                               | 256                                    | 494                    |
|                                                               |         |                               | 512                                    | 929                    |
|                                                               |         |                               | 1,000                                  | 1,759                  |
|                                                               |         |                               | 2,000                                  | 3,449                  |
|                                                               |         | No                            | 100                                    | 192                    |
|                                                               |         |                               | 256                                    | 408                    |
|                                                               |         |                               | 512                                    | 766                    |
|                                                               |         |                               | 1,000                                  | 1,450                  |
|                                                               |         |                               | 2,000                                  | 2,840                  |
| High-speed mode<br>(See note 2.)                              | Read    | ---                           | 100                                    | 117                    |
|                                                               |         |                               | 256                                    | 255                    |
|                                                               |         |                               | 512                                    | 485                    |
|                                                               |         |                               | 1,000                                  | 925                    |
|                                                               |         |                               | 2,000                                  | 1,815                  |
|                                                               | Write   | Yes                           | 100                                    | 163                    |
|                                                               |         |                               | 256                                    | 348                    |
|                                                               |         |                               | 512                                    | 655                    |
|                                                               |         |                               | 1,000                                  | 1,241                  |
|                                                               |         |                               | 2,000                                  | 2,431                  |
|                                                               |         | No                            | 100                                    | 142                    |
|                                                               |         |                               | 256                                    | 296                    |
|                                                               |         |                               | 512                                    | 551                    |
|                                                               |         |                               | 1,000                                  | 1,040                  |
|                                                               |         |                               | 2,000                                  | 2,030                  |

**Note 1.** These are the TAT values for a baud rate of 115,200 bps. For information on the TAT for baud rates other than 115,200 bps, refer to the *User's Manual*.

**2.** When multi-access or FIFO is selected as the transmission option, the transmission time will be the same as in normal mode even when the transmission speed is set to high-speed mode.

**3.** The value given for TAT data assumes that communications settings for the V680-CA5D01/02-V2 ID Controller are as follows:

Data length: 8 bits, Stop bits: 1, Parity: Odd.

In this example, communications are continuous, with no gaps between characters.

**4.** The number of bytes of TAT data is the number of bytes when ASCII is specified as the code.



# Safety Precautions

## ⚠ WARNING

Do not use this product as a detection device to protect people.



**Note:** This catalog is intended only to help select the appropriate product. Be sure to read the User's Manual for usage precautions prior to using the product.

### Precautions for Safe Use

To ensure safety, be sure to follow the following precautions:

1. Do not operate this product in any flammable, explosive, or corrosive gas environment.
2. Do not disassemble, repair, or remodel this product.
3. Tighten the base lock screws and terminal block screws completely.
4. Be sure to use wiring crimp terminals of the specified size.
5. If any cable has a locking mechanism, be sure to check that it has been locked before using it.
6. The DC power supply must be within the specified rating (24 VDC +10%/–15%).
7. Do not reverse the power supply connection.
8. Do not insert water, wire, etc., into any of the gaps in the case. Doing so may cause fire or electric shock.
9. Turn OFF the Controller or ID Sensor Unit power before attaching or removing the Read/Write Antenna.
10. In the event that the product exhibits any abnormal condition, immediately stop using the system, turn OFF the power, and contact your OMRON sales representative.
11. Dispose of this product as industrial waste.
12. Be sure to follow any other warnings, cautions, and notices given in this document.

### Precautions for Correct Use

Please observe the following precautions to prevent failure to operate, malfunctions, or undesirable effects on product performance.

#### Installation Site

Install the product at a location where:

- It is not exposed to corrosive gases, dust, metal chips, or salt.
- The ambient operating temperature is within the range stipulated in the specifications.
- There are no sudden variations in temperature (no condensation).
- The ambient operating humidity is within the range stipulated in the specifications.
- No vibration or shock exceeding the values stipulated in the specifications is transmitted directly to the body of the product.
- It is not subject to splashing water, oil, or chemical substances.

#### Installation

- The product uses the 13.56-MHz frequency band to communicate with ID Tags. Some devices, such as some motors, inverters, and switching power supplies, generate electromagnetic waves (i.e., noise) that can affect communications with ID Tags. If any of these devices are nearby, communications with ID Tags may be affected or ID 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, observe the following precautions:
  1. Ground any metallic material located around this device to 100  $\Omega$  or less.
  2. Keep the product away from high voltage and heavy current.
- Do not use products that are not waterproof in misty environments.

- Do not subject the products to chemicals that adversely affect product materials.
- When installing the product, tighten screws to the following torque:

|                                         |                |
|-----------------------------------------|----------------|
| Controller:                             | 1.2 N·m max.   |
| ID Sensor Unit:                         | 0.4 N·m        |
| V680-HS51 Read/Write Antenna:           | 6 N·m          |
| V680-HS52 Read/Write Antenna:           | 40 N·m         |
| V680-HS63 Read/Write Antenna:           | 1.2 N·m        |
| V680-HS65 Read/Write Antenna:           | 1.2 N·m        |
| (Attach the enclosed Mounting Brackets) |                |
| V680-D1KP66T/-D1KP66MT:                 | 0.5 N·m        |
| V680-D1KP66T-SP:                        | 1.2 N·m        |
| V680-D1KP54T:                           | 0.3 to 0.5 N·m |
| V680-D2KF67/-D2KF67M:                   | 0.6 N·m        |
| V680-D8KF67/-D8KF67M:                   | 0.6 N·m        |
| V680-D8KF68/-D32KF68:                   | 1.2 N·m        |

- When Read/Write Antennas are mounted side-by-side, mutual interference may reduce the transmission performance. Refer to the *RFID System Amplifier and Antennas/ID Tags User's Manual* to mount them in a way that will prevent mutual interference.

#### Storage

Store the product at a location where:

- It is not exposed to corrosive gases, dust, metal chips, or salt.
- The ambient storage temperature is within the range stipulated in the specifications.
- There are no sudden variations in temperature (no condensation).
- The ambient storage humidity is within the range stipulated in the specifications.
- No vibration or shock exceeding the values stipulated in the specifications is transmitted directly to the body of the product.
- It is not subject to splashing water, oil, or chemical substances.

#### Cleaning

Do not use thinner, benzene, acetone, or kerosene for cleaning. Using these substances may dissolve the resin material and the case.

# Dimensions

**Note:** All units are in millimeters unless otherwise indicated.

## ID Tag

V680-D1KP52MT/-D2KF52M

|               |             |
|---------------|-------------|
| Case material | PPS resin   |
| Filling       | Epoxy resin |

V680-D1KP53M

|               |             |
|---------------|-------------|
| Case material | PPS resin   |
| Filling       | Epoxy resin |

V680-D1KP54T

|               |           |
|---------------|-----------|
| Case material | PPS resin |
|---------------|-----------|

V680-D1KP66T/-D1KP66MT

Mounting Hole Dimensions

|               |           |
|---------------|-----------|
| Case material | PPS resin |
|---------------|-----------|

V680-D1KP66T-SP

Mounting Hole Dimensions

|               |           |
|---------------|-----------|
| Case material | PFA resin |
|---------------|-----------|

V680-D2KF67/-D2KF67M

Mounting Hole Dimensions

|               |             |
|---------------|-------------|
| Case material | PBT resin   |
| Filling       | Epoxy resin |

V680-D8KF67/-D8KF67M

Mounting Hole Dimensions

|               |             |
|---------------|-------------|
| Case material | PBT resin   |
| Filling       | Epoxy resin |

V680-D8KF68/-D32KF68

Mounting Hole Dimensions

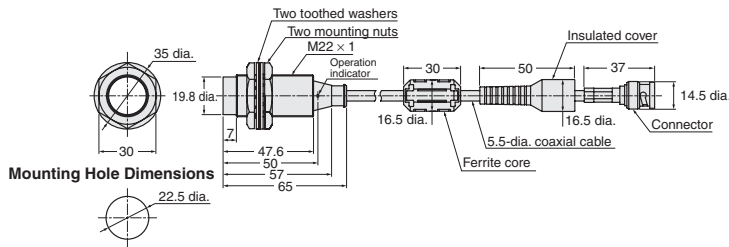
|               |             |
|---------------|-------------|
| Case material | PBT resin   |
| Filling       | Epoxy resin |

V680-D1KP58HT

|         |           |
|---------|-----------|
| Coating | PPS resin |
|---------|-----------|

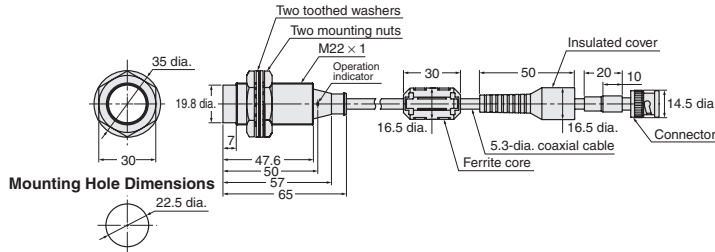
# Read/Write Antenna with Detachable Amplifier Unit

## V680-HS52-W



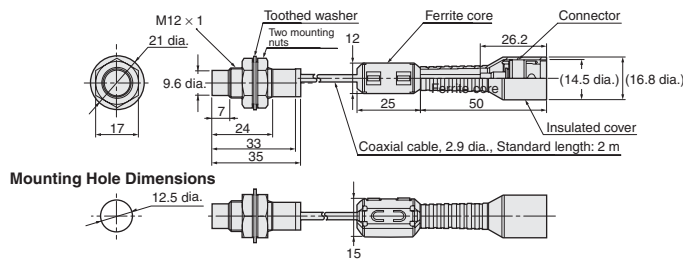
|                      |             |
|----------------------|-------------|
| Case material        | Brass       |
| Transmission surface | PBT resin   |
| Filling              | Epoxy resin |
| Cable                | PVC         |

## V680-HS52-R



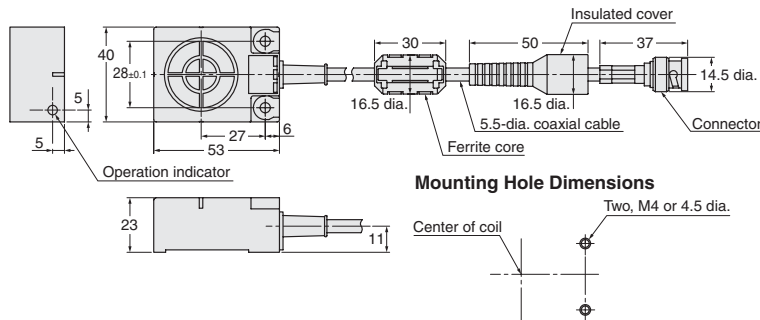
|                      |             |
|----------------------|-------------|
| Case material        | Brass       |
| Transmission surface | PBT resin   |
| Filling              | Epoxy resin |
| Cable                | PVC         |

## V680-HS51



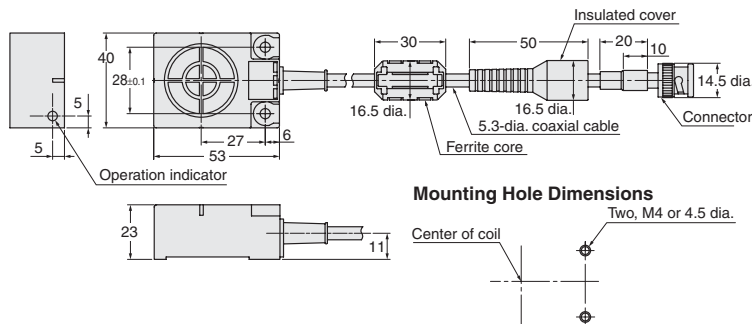
|                      |             |
|----------------------|-------------|
| Case material        | Brass       |
| Transmission surface | ABS resin   |
| Filling              | Epoxy resin |
| Cable                | PVC         |

## V680-HS63-W



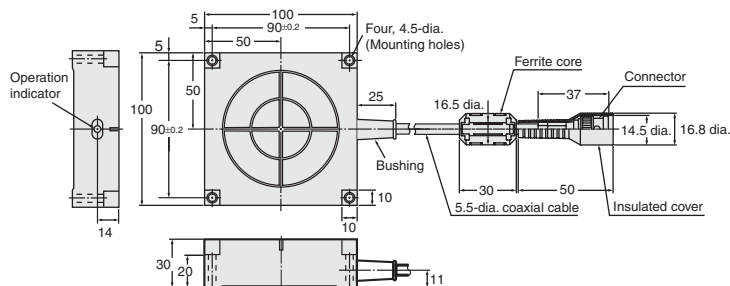
|               |             |
|---------------|-------------|
| Case material | ABS resin   |
| Filling       | Epoxy resin |
| Cable         | PVC         |

## V680-HS63-R



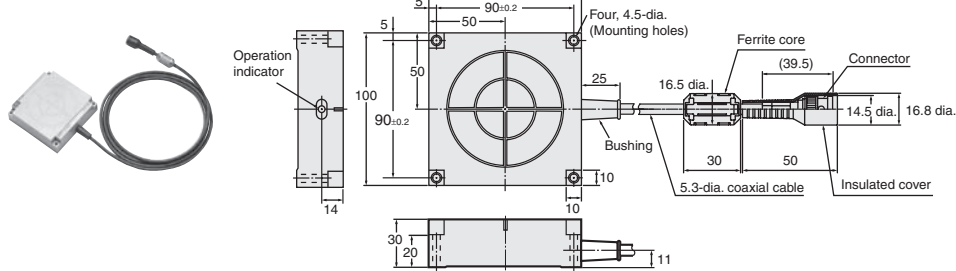
|               |             |
|---------------|-------------|
| Case material | ABS resin   |
| Filling       | Epoxy resin |
| Cable         | PVC         |

## V680-HS65-W



|               |             |
|---------------|-------------|
| Case material | ABS resin   |
| Filling       | Epoxy resin |
| Cable         | PVC (gray)  |

V680-HS65-R

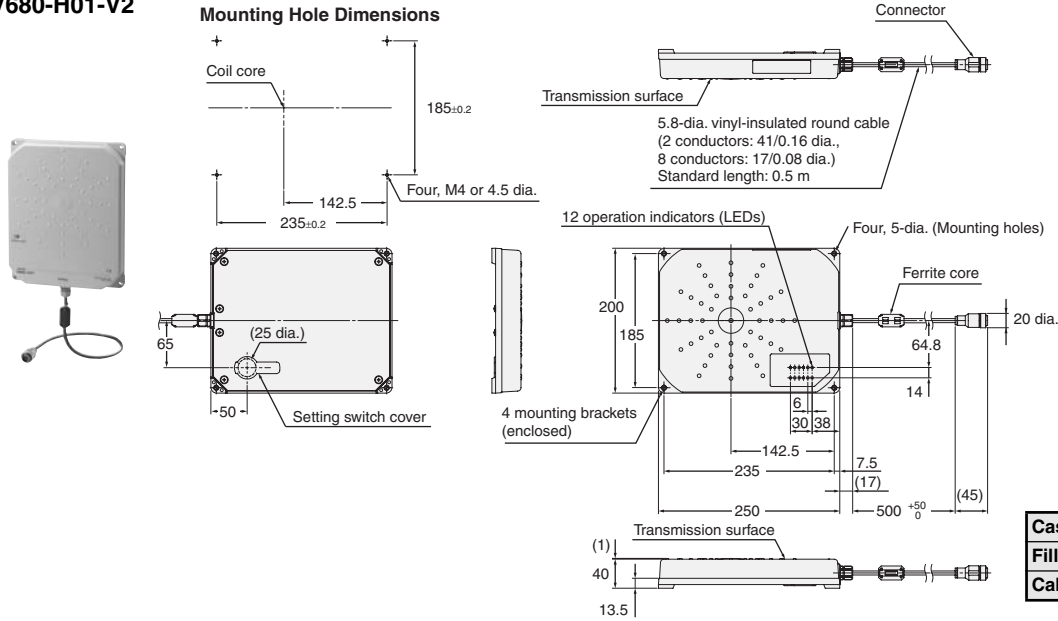


|               |             |
|---------------|-------------|
| Case material | ABS resin   |
| Filling       | Epoxy resin |
| Cable         | PVC (black) |

Read/Write Antenna with Built-in Amplifier Unit

V680-H01-V2

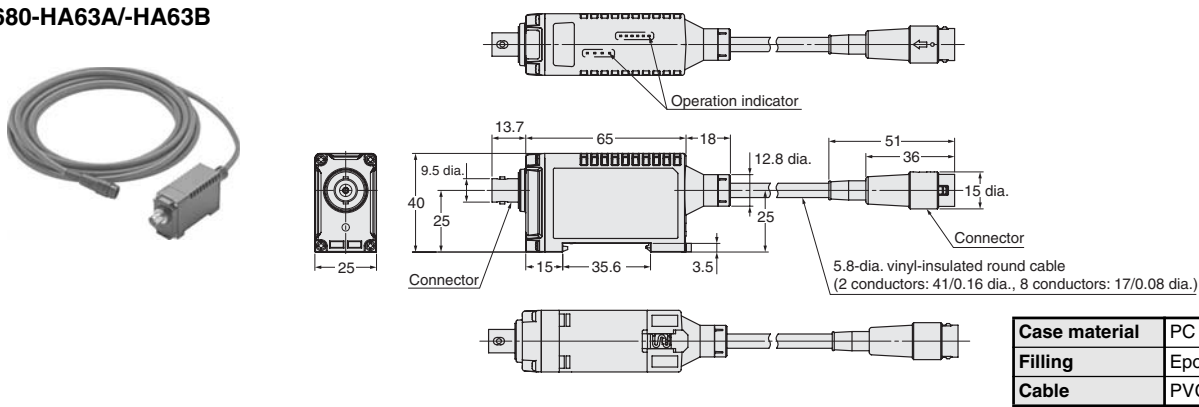
Mounting Hole Dimensions



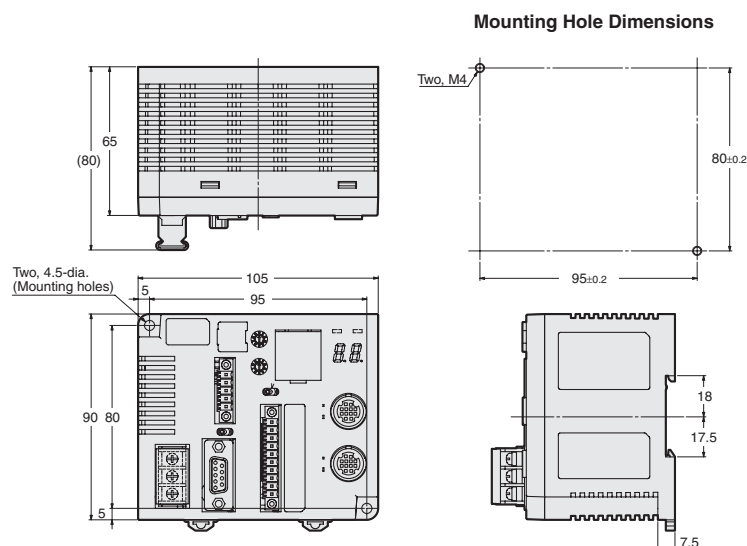
|               |              |
|---------------|--------------|
| Case material | PC/ASA resin |
| Filling       | Aluminum     |
| Cable         | PVC          |

Amplifier Unit

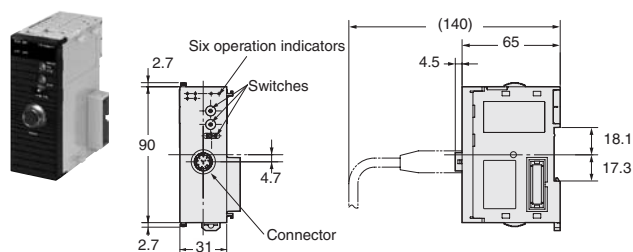
V680-HA63A/-HA63B



|               |             |
|---------------|-------------|
| Case material | PC resin    |
| Filling       | Epoxy resin |
| Cable         | PVC         |



**CJ1W-V680C11**



**Figure 6-10** Dimensions of the power supply unit.

The figure illustrates the physical dimensions of the power supply unit in millimeters (mm). It includes a photograph of the unit and two technical drawings.

- Front View (Left):** Shows the unit's height as 130 mm and its width as 35 mm. Six operation indicators are located near the top, and a connector is positioned near the bottom.
- Side View (Right):** Shows the unit's depth as 123 mm and its width as 101 mm. A cable is depicted connected to the side of the unit.

Technical drawing of the E2000 power supply unit, showing front and side views with dimensions in millimeters.

**Front View Dimensions:**

- Overall height: 130
- Distance from top to first switch: 51
- Distance between switches: 25
- Distance from bottom to terminals: 3.6
- Overall width: 35

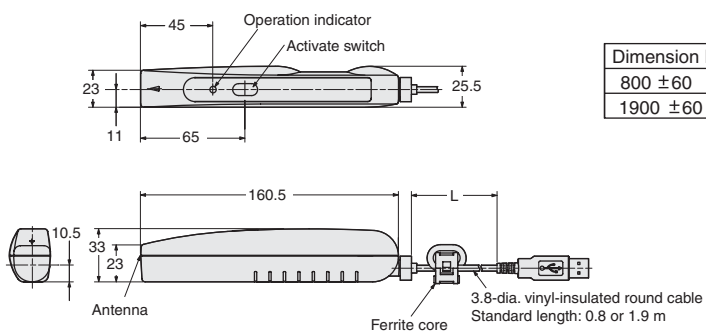
**Side View Dimensions:**

- Overall depth: 123
- Distance from front panel to rear terminals: 101
- Distance from front panel to rear connectors: 15
- Distance from front panel to rear switches: 8
- Distance from front panel to rear top edge: 193

**Labels:**

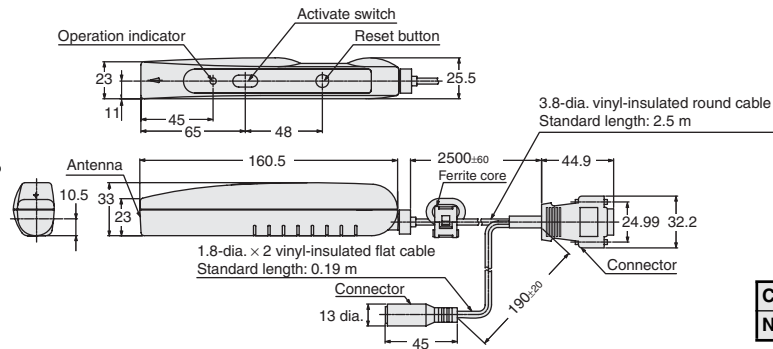
- Eight operation indicators
- Switches
- Connectors
- Terminals
- With cover mounted: 16.5

## V680-CHUD



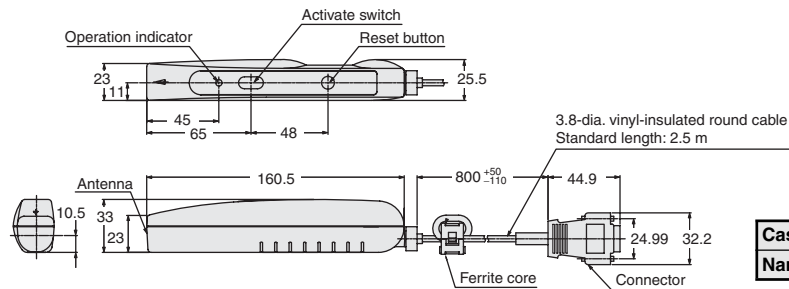
|                           |           |
|---------------------------|-----------|
| <b>Case material</b>      | ABS resin |
| <b>Nameplate material</b> | PET resin |

V680-CH1D



|                    |           |
|--------------------|-----------|
| Case material      | ABS resin |
| Nameplate material | PET resin |

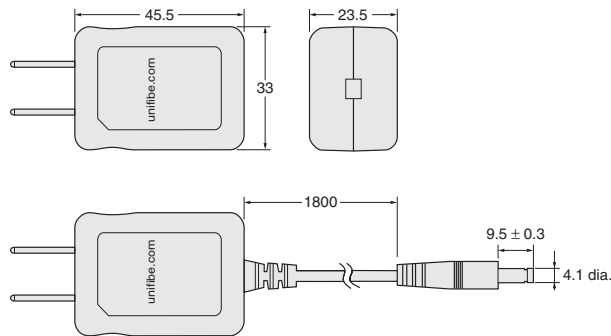
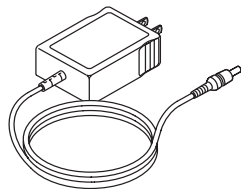
V680-CH1D-PSI



|                    |           |
|--------------------|-----------|
| Case material      | ABS resin |
| Nameplate material | PET resin |

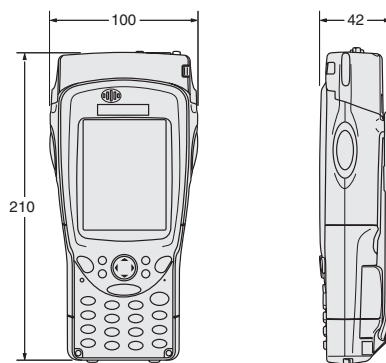
AC Adapter

V600-A22



Handheld Terminal (Recommended)

Recommended Handheld Terminal  
Psion Teklogix model 7527S-G2-□□-S  
(V680-A-7527S-G2-□□-S)

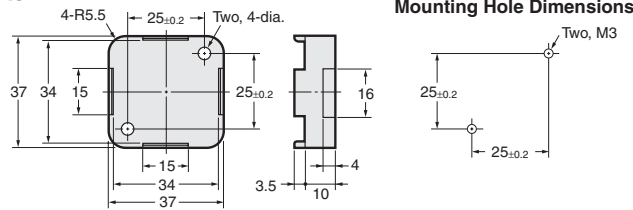




## Accessories

### V680-D1KP66T Attachments

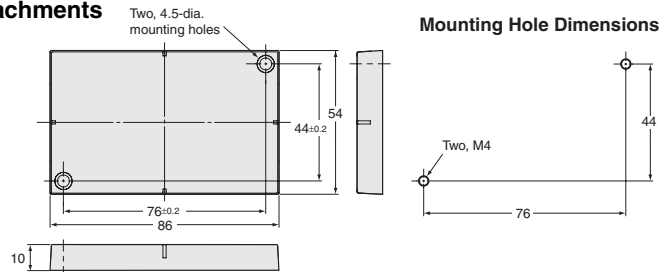
#### V600-A86 Holder



|               |           |
|---------------|-----------|
| Case material | PPS resin |
|---------------|-----------|

### V680-D8KF68/-D32KF68 Attachments

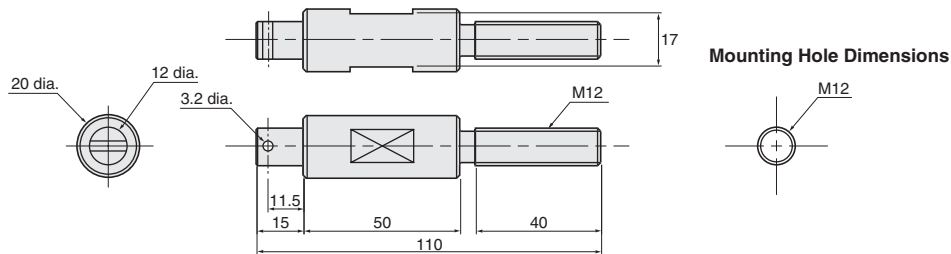
#### V600-A81 Holder



|               |             |
|---------------|-------------|
| Case material | PBT resin   |
| Filling       | Epoxy resin |

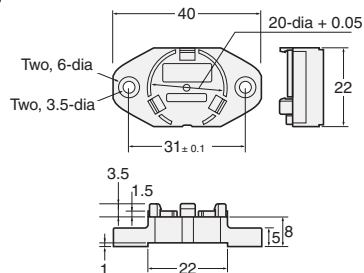
### V680-D1KP58HT Attachments

#### V680-A80



### V680-D1KP54T Attachments

#### V700-A80



### Amplifier Unit Special Extension Cable

#### V700-A40 2M.

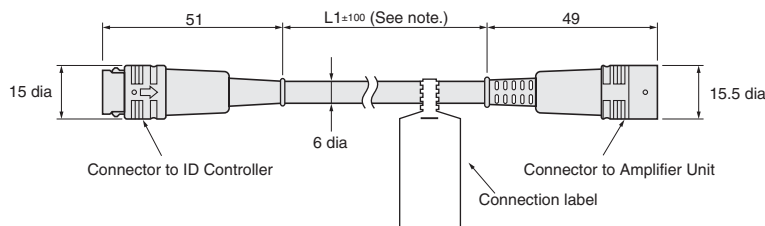
#### V700-A41 3M.

#### V700-A42 5M.

#### V700-A43 10M.

#### V700-A44 20M.

#### V700-A45 30M.



**Note:** The model numbers for each length (L1) are as follows:

| Model         | Length L1 |
|---------------|-----------|
| V700-A40 2M.  | 2,000     |
| V700-A41 3M.  | 3,000     |
| V700-A42 5M.  | 5,000     |
| V700-A43 10M. | 10,000    |
| V700-A44 20M. | 20,000    |
| V700-A45 30M. | 30,000    |

|          |     |
|----------|-----|
| Material | PVC |
|----------|-----|

### V680-H01 Special Cables

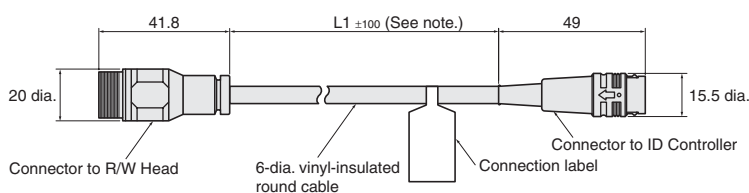
#### V700-A40-W 2M

#### V700-A40-W 5M

#### V700-A40-W 10M

#### V700-A40-W 20M

#### V700-A40-W 30M



**Note:** The model numbers for each length (L1) are as follows:

| Model          | Length L1 |
|----------------|-----------|
| V700-A40-W 2M  | 2,000     |
| V700-A40-W 5M  | 5,000     |
| V700-A40-W 10M | 10,000    |
| V700-A40-W 20M | 20,000    |
| V700-A40-W 30M | 30,000    |

|          |     |
|----------|-----|
| Material | PVC |
|----------|-----|

**ALL DIMENSIONS SHOWN ARE IN MILLIMETERS.**  
To convert millimeters into inches, multiply by 0.03937. To convert grams into ounces, multiply by 0.03527.

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