

OMRON

RFID System V680S Series

RFID Conforming to ISO/IEC 18000-3 (15693)



EtherNet/IP® 

» Easy Operation using a web browser

» 3 in 1 RFID: Antenna, Amplifier & Controller

» Easy Connection via Ethernet

realizing

OMRON Prom

Over 25 Years of History
and Experience

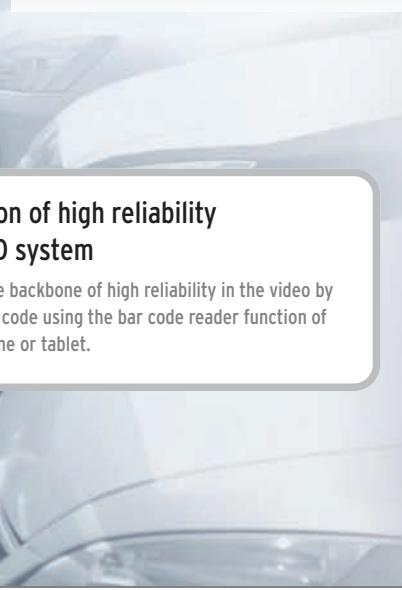
Experience in all sectors of
Transportation Manufacturing.
Bringing High quality to your
Manufacturing Process.

Industry-leading service for
RFID system with over 25 years of
experience.



Introduction of high reliability of the RFID system

You can see the backbone of high reliability in the video by
reading the 2D code using the bar code reader function of
your smartphone or tablet.



ises 2 Trusts.

Radio Regulations Compliance for More than 50 Countries



Radio waves for mobile phone, TV, and Industrial Components are national public goods. RFID system must comply with Radio Regulations.

Continued Compliance that our products can comply with Radio Regulations in more countries as global standards for RFID system.

| |
|---|
| Japan |
| Europe |
| Americas (United States, Canada, Mexico, Brazil) |
| Asia (China, South Korea, Taiwan, Philippines, Vietnam, Thailand, Singapore, Indonesia, Malaysia, India) |
| Oceania (Australia, New Zealand) |

Contact your OMRON sales representative for details on whether application is supported in other countries. The latest information on the status of certification for radio regulations in various countries can be confirmed on the OMRON website.

Simple 3 in 1 RFID Featuring the 3 "Easy"

3in1 Plus+ Ethernet
RFID

CONTROLLER

ANTENNA

AMPLIFIER



RFID
V680



system S Series

Easy Connection ▶ P.6

EtherNet/IP™, PROFINET or Ethernet (Modbus TCP) is provided as a standard feature. PLC direct connection.

Read the 2D code on the left with your smartphone or tablet to see "Easy Connection" in the video.

Easy Installation ▶ P.7

Stable communications are possible just by installing within a specified range.

Read the 2D code on the left with your smartphone or tablet to see "Easy Installation" in the video.

Easy Operation ▶ P.8

The Interface using a web browser enables setting for reading/writing data without special software.

Read the 2D code on the left with your smartphone or tablet to see "Easy Operation" in the video.

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Easy Connection

Simple system configuration
Connect with just one cable via built-in Ethernet

One Connection

Embedded Ethernet I/F realizes just one connection to the system without any network converter. Wiring work can be reduced.

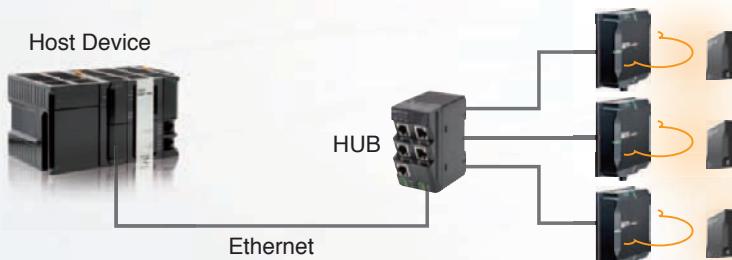
Easy Programming

3 types of industrial Ethernet protocols enable to connect any type of PLC with easy programming.

EtherNet/IP **PROFINET** **Modbus**

Easy System Expansion

Multiple Reader/Writers can be easily connected by using a Switching HUB. System design and system expansion can be configured easily.



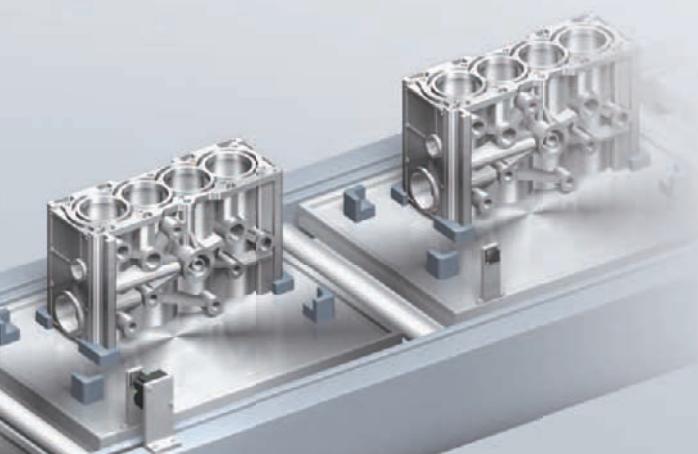
Plus+

The Connection Procedure Manual for OMRON NJ Series and CJ Series is available.

Note : Contact your OMRON sales representative for the Connection Procedure Manual.



Ethernet



Note: Power must be supplied to the Reader/Writer.
Refer to the V680S Series User's Manual
(Cat. No. Z339 or Z353) for details.

Easy Installation

Easy to find the best installation location

Communication Diagnostic via LED status indicators

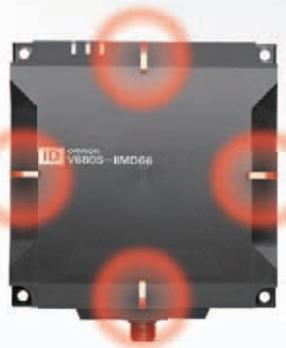
Visualized Communications Status

On-site operators can easily check the communications status with the indicators of the Reader/Writer. The indicators using easy-to-see high-brightness LED can be easily seen from a distance.

Good



Error



Plus+

Communications status can be checked from **four directions**.

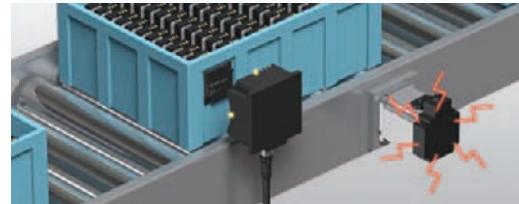
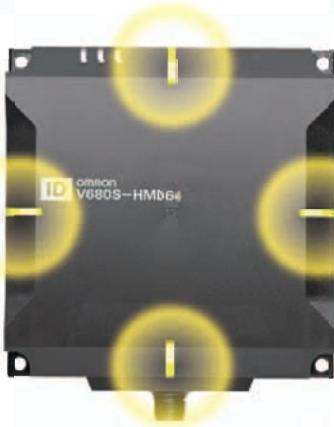


Diagnosis of Communications

The Reader/Writer measures the communications signal and ambient noise levels to diagnose its stability, then indicates in LED and report to Host System. Easily and quickly checks the proper installation of the system, and helps to reduce startup time. This can be used for preventing errors during operation.

Warning

Indicates "Warning" states communication in yellow.

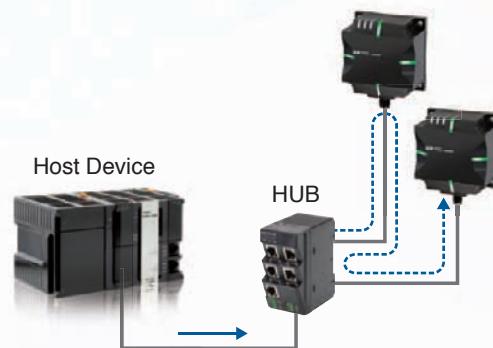
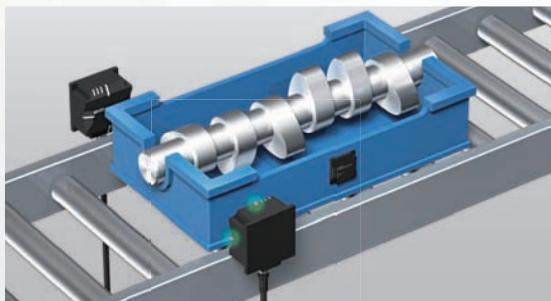


Note: 1. Communication Diagnostic is disabled in the default settings.
2. The communication time is longer when enabling Communication Diagnostic.
For details, refer to the User's Manual (Cat. No. Z339 or Z353).

Interrogation Zone Extended Mode

Can control multiple Reader/Writers by sending just one command.

The Reader/Writers installed on both sides of the conveyor can access the RF Tags on the pallets even if the pallets are not placed with the same orientation.



Easy Operation

No special software nor expert RFID knowledge required
Operate via web browser on your computer

WEB Browser I/F

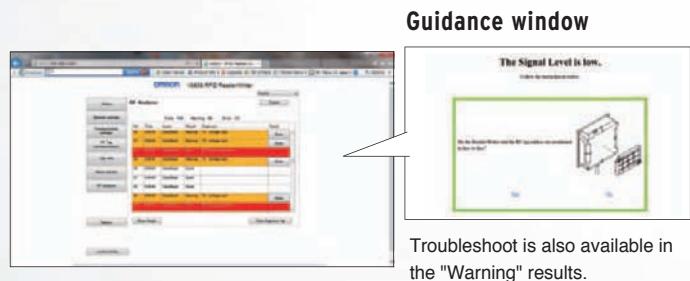
Enable all parameter settings, execute RF Tag communications, and check the operation log anywhere by just connecting the computer.

Easy Troubleshooting

Up to 2000 communication results are stored and guidance for the "Warning" results is provided. Can be quickly recovered from trouble without expert knowledge.

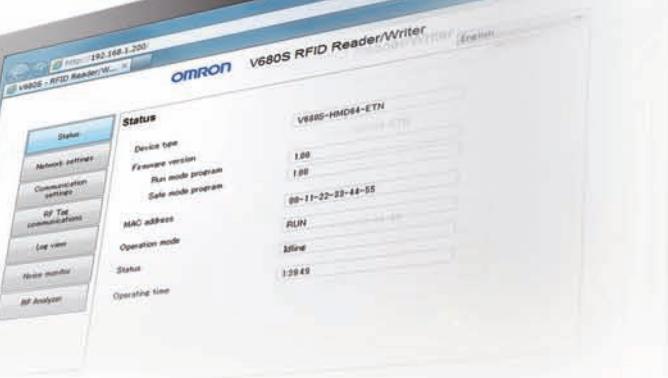
■ List

Latest 2,048 communication results are logged and checked.



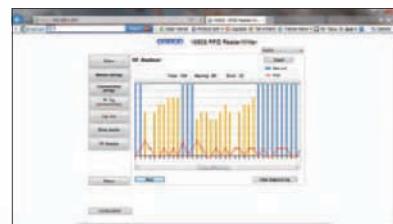
Guidance window

Troubleshoot is also available in the "Warning" results.



■ Graph

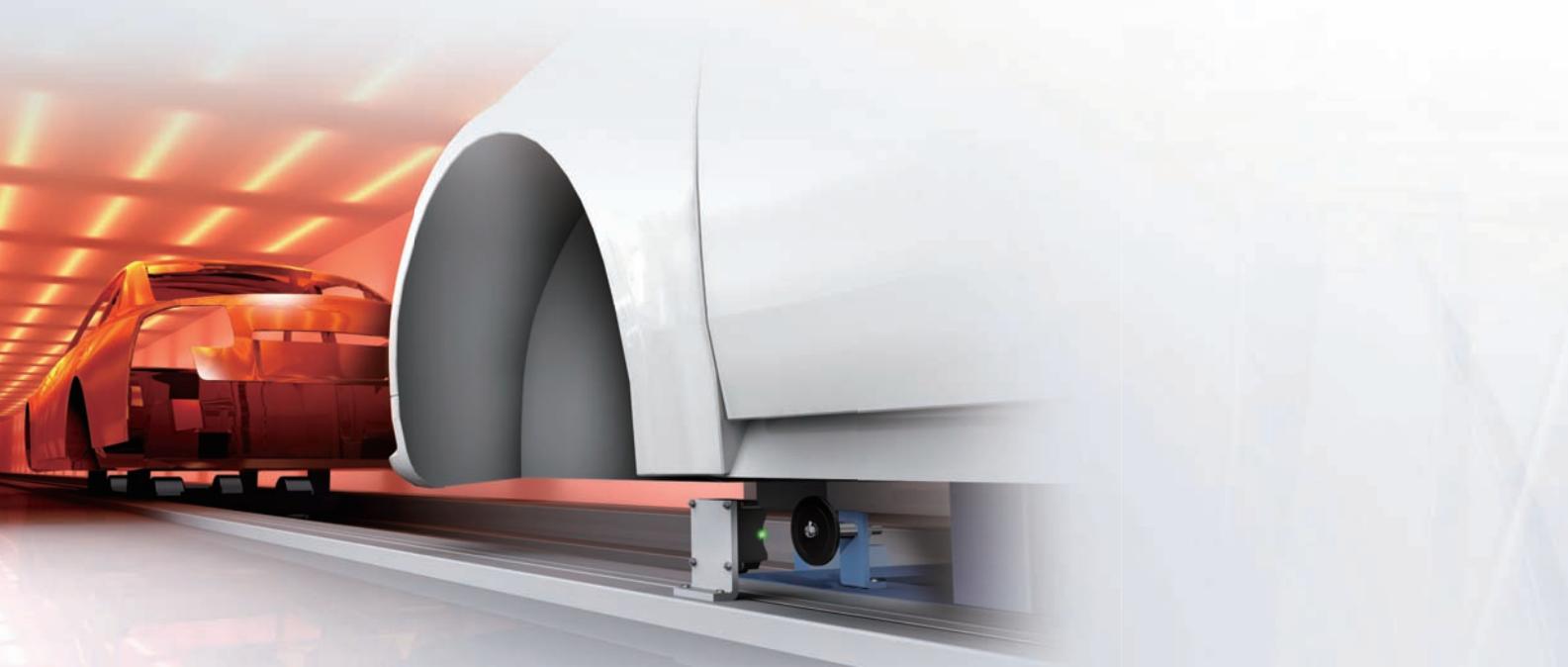
Diagnostic results can be shown by the graph. Analysis time to identify the cause of unstable communication can be reduced by checking the time-series signal and noise levels. The results can be output to CSV files.



Plus+

Four Language Support

Select from four languages: English, Chinese, Korean and Japanese.



V680S Series RF Tag

Contributes to shorter set-up time and more stable operation
Versatile selection, IPx9K support, and longer communication range

Easy to Select Suitable RF Tag for Your Application

V680S RF Tag series offers 8 kinds of full combinations based on Communication Range, Mounting Materials, Memory Sizes. Making it Easy to find the suitable RF Tag for your application.

| Size | Memory Capacity | Metallic Compatibility |
|----------|-----------------|------------------------|
| 40×40 mm | 2K bytes | On Metal |
| 86×54 mm | 8K bytes | Non-Metal |

Durable to High-temperature Wash Down : IP68 + IPx9K*1 Support

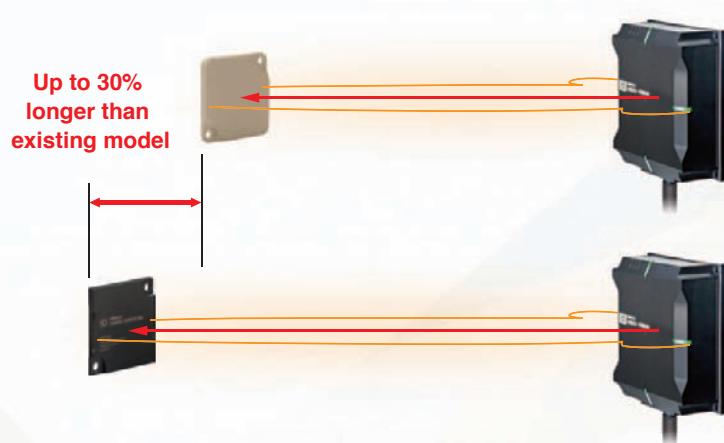
RF Tag is molded by PPS resin which has superior oil and chemical resistance specification. It can be washed-down by a steam cleaner without removing from the pallet.

*1. IPx9K is a protection standard regarding high temperature and high-pressure water.



Longer Communication Range*2

V680S series RF Tags are optimally designed to be used with V680S series Reader/Writers. Communication Range are up to 30% longer than those of existing models. This enables more flexible system design.



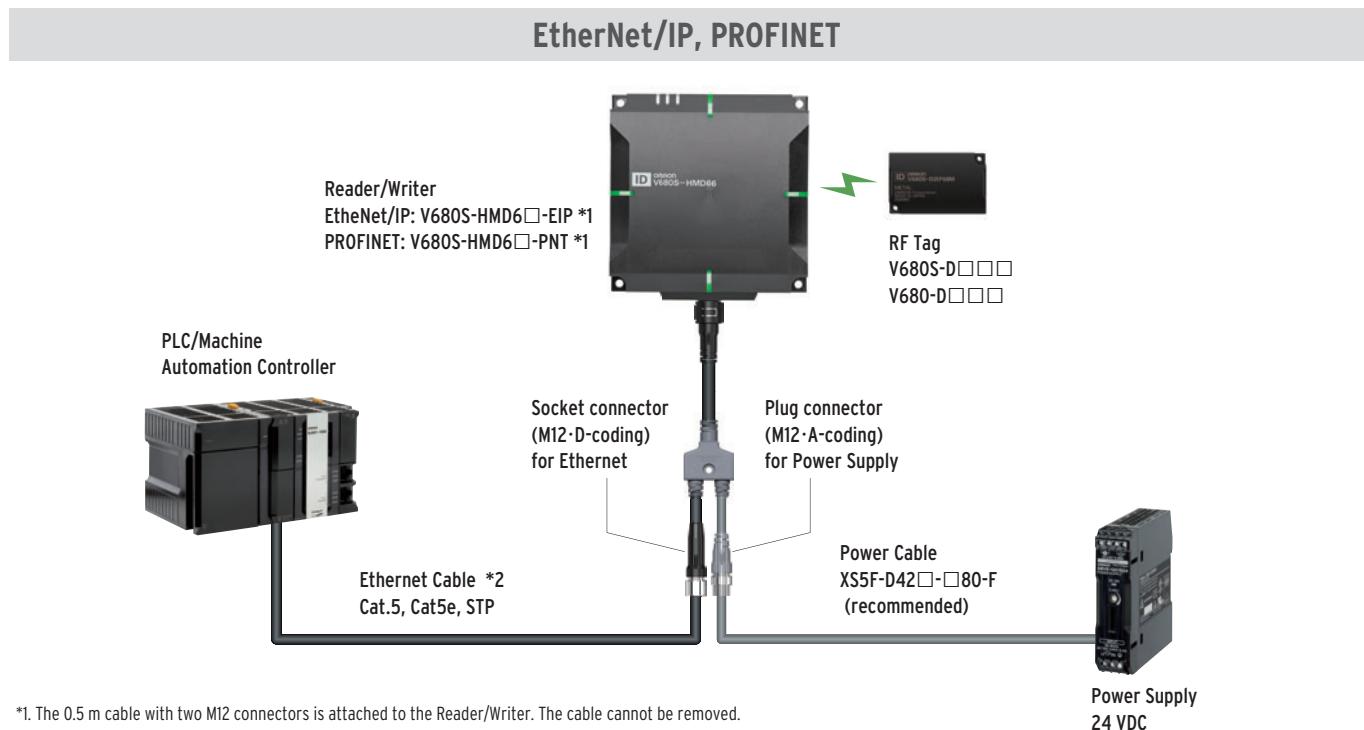
Combination Examples

| Size | Memory Capacity | Reader/ Writer | Communication Range | |
|---------------------------------|-----------------|-------------------|----------------------------------|----------------------------------|
| | | | Existing Model | V680S series |
| 40×40 mm (40 mm×40 mm×5 mm) | 8K bytes | V680S-HMD64-ETN | V680-D8KF67 5.0 to 50.0 mm | V680S-D8KF67 5.0 to 65.0 mm |
| 86×54 mm (86 mm×54 mm×10 mm) | 8K bytes | V680S-HMD66-ETN | V680-D8KF68A 10.0 to 100.0 mm | V680S-D8KF68 10.0 to 115.0 mm |

*2. When using some combinations of V680S series RF Tag and V680S series Reader/Writer.

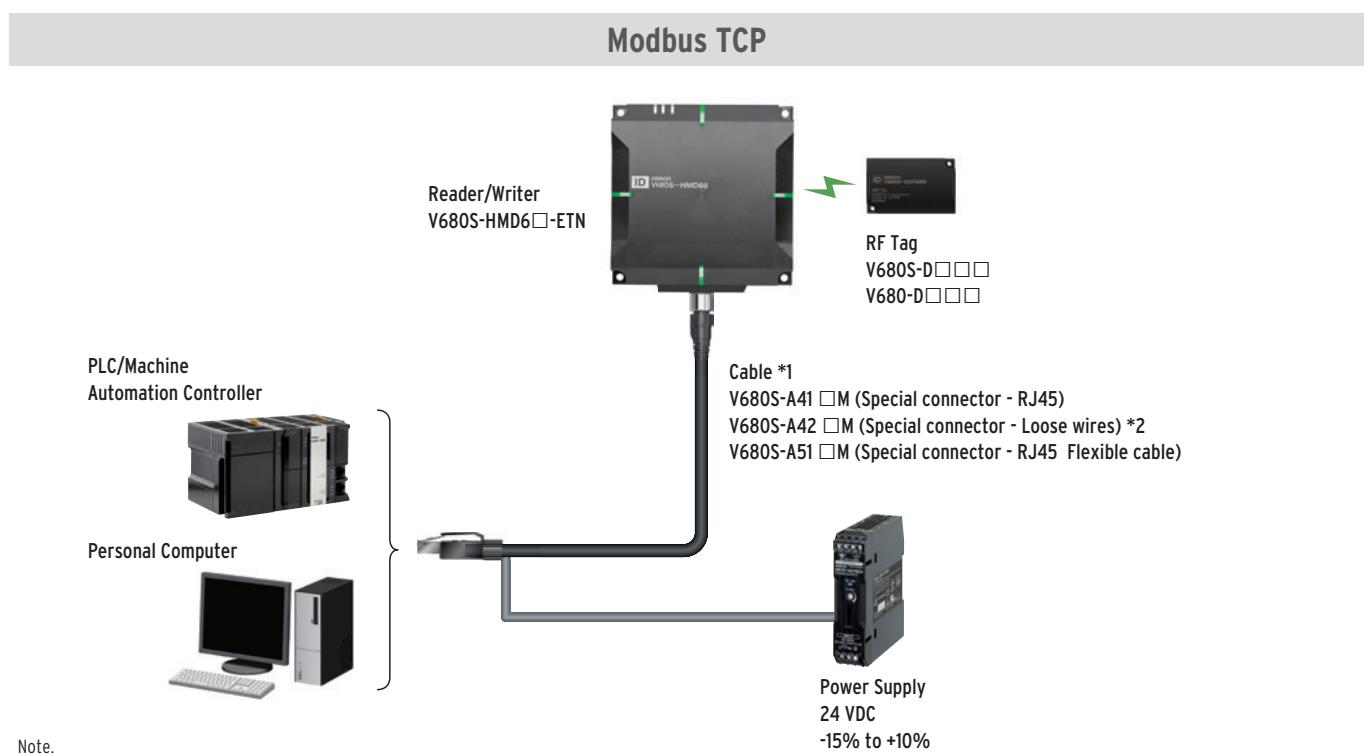
System Configuration

The below shows the configuration for 1 to 1 connection. Multiple Reader/Writers can be connected by using a Switching HUB.



*1. The 0.5 m cable with two M12 connectors is attached to the Reader/Writer. The cable cannot be removed.

*2. The maximum extension length of the Ethernet cable is 100 m.



Note.

The cable can be extended up to 60 m by using the Extension Cable V680S-A40 □M (cable length: 10/20/50 m) or V680S-A50 □M (Flexible cable, cable length: 2/10/20m).

Use the extension cable between the Reader/Writer and cable.

Only one extension cable can be used.

*1. The length of the Cable V680S-A41 □M/-A42 □M/-A51 □M is 2, 5, or 10 m.

*2. The end of the cable should be prepared before connecting.

Reader/Writer - RF Tag Communication Range Table

V680S series RF Tag (2K bytes/8K bytes)

(Unit: mm)

| RF Tag | | Reader/Writer | | |
|--|--------------|---------------------|-----------------|-----------------|
| Model | Installation | V680S-HMD63-□□□ | V680S-HMD64-□□□ | V680S-HMD66-□□□ |
|  40x40x5 | V680S-DKF67 | nonmetallic surface | 7.0 to 40.0 | 5.0 to 65.0 |
| | V680S-DKF67M | metallic surface | 6.0 to 30.0 | 3.0 to 40.0 |
|  86x54x10 | V680S-DKF68 | nonmetallic surface | * | 7.5 to 75.0 |
| | V680S-DKF68M | metallic surface | * | 5.5 to 55.0 |

Note: The data above table shows the communication ranges for both Read and Write operation.

* This combination is not guaranteed due to the size mismatch between the Reader/Writer and RF Tag.

V680 series RF Tag (1K bytes)

(Unit: mm)

| RF Tag | | Reader/Writer | | |
|---|-----------------|---------------------|------------------------------|------------------------------|
| Model | Installation | V680S-HMD63-□□□ | V680S-HMD64-□□□ | V680S-HMD66-□□□ |
|  φ20xt2.7 | V680-D1KP54T | nonmetallic surface | 0.0 to 24.0 (0.0 to 20.0) | 0.0 to 33.0 (0.0 to 28.0) |
| | V680-D1KP66T | nonmetallic surface | 0.0 to 30.0 (0.0 to 25.0) | 0.0 to 47.0 (0.0 to 42.0) |
|  34x34x3.5 | V680-D1KP66MT | metallic surface | 0.0 to 25.0 (0.0 to 20.0) | 0.0 to 35.0 (0.0 to 30.0) |
| | V680-D1KP66T-SP | nonmetallic surface | 0.0 to 25.0 (0.0 to 20.0) | 0.0 to 42.0 (0.0 to 37.0) |
|  95x36.5x6.5 | V680-D1KP58HTN | nonmetallic surface | * | 7.5 to 75.0 (7.5 to 75.0) |

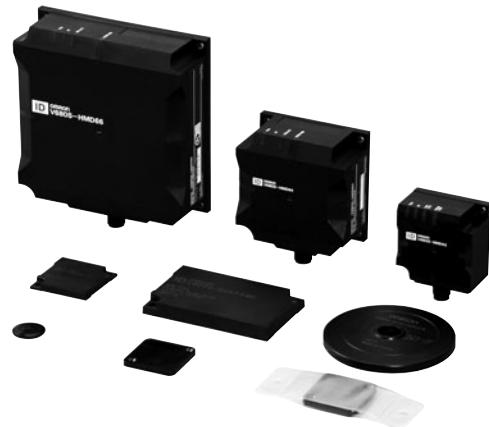
Note: The data above table shows the communication ranges for both Read and Write operation.

* This combination is not guaranteed due to the size mismatch between the Reader/Writer and RF Tag.

V680S Series

3 in 1 RFID: Antenna, Amplifier & Controller

- Conforms to ISO/IEC 18000-3 (15693).
- Standard-feature Ethernet (EtherNet/IP, PROFINET, Modbus TCP) enables easy connection with one cable.
- Easy installation and "visualized" communications status minimize startup work and downtime.
- WEB browser can be used for setting, monitoring, and communications with RF Tags.



Ordering Information

Reader/Writer

| Appearance | Size | Network | Model |
|---|-------------------|---------------------|-------------------------------------|
|  | 50 × 50 × 30 mm | EtherNet/IP | V680S-HMD63-EIP NEW |
| | | PROFINET | V680S-HMD63-PNT NEW |
|  | 75 × 75 × 40 mm | EtherNet/IP | V680S-HMD64-EIP NEW |
| | | PROFINET | V680S-HMD64-PNT NEW |
|  | 120 × 120 × 40 mm | EtherNet/IP | V680S-HMD66-EIP NEW |
| | | PROFINET | V680S-HMD66-PNT NEW |
|  | 50 × 50 × 30 mm | Modbus TCP (TCP/IP) | V680S-HMD63-ETN NEW |
|  | 75 × 75 × 40 mm | | V680S-HMD64-ETN |
|  | 120 × 120 × 40 mm | | V680S-HMD66-ETN |

RF Tag**V680S-series**

| Type | Memory capacity | Appearance | Size | Installation | Model |
|--------------|-----------------|---|-----------------|---|-----------------|
| Battery-less | 2 K bytes |  | 40 × 40 × 5 mm | For flush mounting on metallic surface | V680S-D2KF67M |
| | | | | For flush mounting on nonmetallic surface | V680S-D2KF67 |
| | 8 K bytes |  | 86 × 54 × 10 mm | For flush mounting on metallic surface | V680S-D2KF68M |
| | | | | For flush mounting on nonmetallic surface | V680S-D2KF68 |
| | 8 K bytes |  | 40 × 40 × 5 mm | For flush mounting on metallic surface | V680S-D8KF67M * |
| | | | | For flush mounting on nonmetallic surface | V680S-D8KF67 * |

* V680S-D8KF6□M/V680S-D8KF6□ can be used with V680S series Reader/Writer version 2.00 or higher.

V680-series

| Type | Memory capacity | Appearance | Size | Installation | Model |
|---|-----------------|---|--------------------|---|-----------------|
| Battery-less | 1 K bytes |  | 20 dia. × 2.7 mm | For flush mounting on nonmetallic surface | V680-D1KP54T |
| | |  | 34 × 34 × 3.5 mm | For flush mounting on metallic surface | V680-D1KP66MT |
| | | | | For flush mounting on nonmetallic surface | V680-D1KP66T |
| Environment-resistant type Battery-less | |  | 95 × 36.5 × 6.5 mm | For flush mounting on nonmetallic surface | V680-D1KP66T-SP |
| High-temperature type Battery-less | |  | 80 dia. × t10 mm | For mounting with special attachment | V680-D1KP58HTN |

Note: V680 series 8K-byte RF Tag can communicate with V680S series Reader/Writer.

For details, contact your OMRON representative.

RF Tag Attachment

| Type | Appearance | Model |
|------------------------|---|----------|
| For the V680-D1KP66T |  | V600-A86 |
| For the V680-D1KP58HTN |  | V680-A80 |
| For the V680-D1KP54T |  | V700-A80 |

Cable**Recommended Ethernet Cable for EtherNet/IP and PROFINET (Connection between Host Device and Reader/Writer)**

Use STP (shielded twisted-pair) cable of category 5 or higher.

| Item | Cable length (m) * | Model |
|--|--------------------|-----------------|
| Wire Gauge and Number of Pairs: AWG22, 2-pair Cable | 0.3 | XS5W-T421-AMC-K |
| | 0.5 | XS5W-T421-BMC-K |
| | 1 | XS5W-T421-CMC-K |
| | 2 | XS5W-T421-DMC-K |
| | 5 | XS5W-T421-GMC-K |
| | 10 | XS5W-T421-JMC-K |
| Rugged type Cable with Connectors on Both Ends (M12 Straight/RJ45) | 0.3 | XS5W-T422-AMC-K |
| | 0.5 | XS5W-T422-BMC-K |
| | 1 | XS5W-T422-CMC-K |
| | 2 | XS5W-T422-DMC-K |
| | 5 | XS5W-T422-GMC-K |
| | 10 | XS5W-T422-JMC-K |

* Rugged type cables length 0.3, 0.5, 1, 2, 3, 5, 10 and 15m are available.

Note: For details, refer to the Industrial Ethernet Connectors Catalog (Cat.No.G019).**Recommended Power Cable for EtherNet/IP and PROFINET (Connection between Power Supply and Reader/Writer)**

XS5F-D42□-□80-□

| Cable specifications | Cable length L (m) | Cable outer diameter (mm) | Straight Connectors | Angled Connectors | Minimum order |
|-----------------------------|--------------------|---------------------------|---------------------|-------------------|---------------|
| | | | Model | Model | |
| Fire-retardant, Robot cable | 1 | 6 | XS5F-D421-C80-F | XS5F-D422-C80-F | 10 |
| | 2 | | XS5F-D421-D80-F | XS5F-D422-D80-F | 5 |
| | 3 | | XS5F-D421-E80-F | XS5F-D422-E80-F | |
| | 5 | | XS5F-D421-G80-F | XS5F-D422-G80-F | |
| | 10 | | XS5F-D421-J80-F | XS5F-D422-J80-F | 1 |

Note: For details, refer to the Industrial Connectors Catalog (Cat. No. X082).**Cable for Modbus TCP (Connection between Host Device and Reader/Writer)**

| Type | Appearance | Length | Model |
|--|---|--------|---------------|
| Special connector – RJ45 |  | 2 m | V680S-A41 2M |
| | | 5 m | V680S-A41 5M |
| | | 10 m | V680S-A41 10M |
| Special connector – RJ45 (Flexible cables) |  | 2 m | V680S-A51 2M |
| | | 5 m | V680S-A51 5M |
| | | 10 m | V680S-A51 10M |
| Special connector – Loose wires |  | 2 m | V680S-A42 2M |
| | | 5 m | V680S-A42 5M |
| | | 10 m | V680S-A42 10M |

Extension Cable for Modbus TCP (Connection between Host Device and Reader/Writer)

| Type | Appearance | Length | Model |
|---|---|--------|---------------|
| Special connector – Special connector |  | 10 m | V680S-A40 10M |
| | | 20 m | V680S-A40 20M |
| | | 50 m | V680S-A40 50M |
| Special connector – Special connector (Flexible cables) |  | 2 m | V680S-A50 2M |
| | | 10 m | V680S-A50 10M |
| | | 20 m | V680S-A50 20M |

Note: 1. The extension cable can be used for the Reader/Writer for Modbus TCP V680S-HMD6□-ETN.

2. The cable can be extended up to 60 m by using an extension cable. Only one extension cable can be used.

Industrial Switching Hubs (Recommended Hubs)

| Type | Appearance | Specifications | | | Model |
|---------------------------|---|--|--------------|-------------------|-----------------|
| | | Functions | No. of ports | Failure detection | |
| Industrial Switching Hubs |  | Quality of Service (QoS): EtherNet/IP control data priority Failure detection: Broadcast storm and LSI error detection 10/100BASE-TX, Auto-Negotiation | 3 | No | W4S1-03B |
| |  | | 5 | No | W4S1-05B |
| |  | | 5 | Yes | W4S1-05C |

Ratings and Performance

Reader/Writer

EtherNet/IP, PROFINET

| Item | Model | V680S-HMD63-EIP V680S-HMD63-PNT | V680S-HMD64-EIP V680S-HMD64-PNT | V680S-HMD66-EIP V680S-HMD66-PNT |
|---|-------|--|--|--|
| Dimensions | | 50W × 50H × 30D (excluding protruding parts and cables) | 75W × 75H × 40D (excluding protruding parts and cables) | 120W × 120H × 40D (excluding protruding parts and cables) |
| Power supply voltage | | 24 VDC (−15% to +10%) | | |
| Consumption current | | 0.2A max. | | |
| Ambient operating temperature | | −10 to +55 °C (with no icing) | | |
| Ambient operating humidity | | 25% to 85% (with no condensation) | | |
| Ambient storage temperature | | −25 to 70 °C (with no icing) | | |
| Ambient storage humidity | | 25% to 85% (with no condensation) | | |
| Insulation resistance | | 20 MΩ min. (at 500 VDC) between cable terminals and case | | |
| Dielectric strength | | 1,000 VAC, 50/60 Hz for 1 min between cable terminals and case | | |
| Vibration resistance | | No abnormality after application of 10 to 500 Hz, 1.5-mm double amplitude, acceleration: 100 m/s ² , 10 sweeps in each of 3 axis directions (up/down, left/right, and forward/backward) for 11 minutes each | | |
| Shock resistance | | No abnormality after application of 500 m/s ² , 3 times each in 6 directions (Total: 18 times) | | |
| Degree of protection | | IP67 (IEC 60529: 2001) Oil resistance equivalent to IP67F (JIS C 0920: 2003, Appendix 1) * | | |
| Materials | | Case: PBT resin, Filled resin: Urethane resin | | |
| Mass | | Approx. 240g | Approx. 390g | Approx. 760g |
| Installation method | | Reader/Writer: Two M4 screws (Use a screw of 12 mm or more in length.) Branch cable joint: One M4 screws | Four M4 screws (Use a screw of 12 mm or more in length.) | |
| Host device communications interface | | Ethernet 10BASE-T/100BASE-TX | | |
| Host device communications protocol | | EtherNet/IP, PROFINET | | |
| Accessories | | Instruction Sheet, Description of Regulations and Standard, IP address label | | |

* Oil resistance has been tested using a specific oil as defined in the OMRON test method.

Note: The 0.5 m cable with two M12 connectors is attached to the Reader/Writer. The cable cannot be removed.

Modbus TCP

| Item | Model | V680S-HMD63-ETN | V680S-HMD64-ETN | V680S-HMD66-ETN |
|---|-------|--|--|---|
| Dimensions | | 50W × 50H × 30D (excluding protruding parts) | 75W × 75H × 40D (excluding protruding parts) | 120W × 120H × 40D (excluding protruding parts) |
| Power supply voltage | | 24 VDC (−15% to +10%) | | |
| Consumption current | | 0.2A max. | | |
| Ambient operating temperature | | −10 to +55 °C (with no icing) | | |
| Ambient operating humidity | | 25% to 85% (with no condensation) | | |
| Ambient storage temperature | | −25 to 70 °C (with no icing) | | |
| Ambient storage humidity | | 25% to 85% (with no condensation) | | |
| Insulation resistance | | 20 MΩ min. (at 500 VDC) between cable terminals and case | | |
| Dielectric strength | | 1,000 VAC, 50/60 Hz for 1 min between cable terminals and case | | |
| Vibration resistance | | No abnormality after application of 10 to 500 Hz, 1.5-mm double amplitude, acceleration: 100 m/s ² , 10 sweeps in each of 3 axis directions (up/down, left/right, and forward/backward) for 11 minutes each | | |
| Shock resistance | | No abnormality after application of 500 m/s ² , 3 times each in 6 directions (Total: 18 times) | | |
| Degree of protection | | IP67 (IEC 60529: 2001) Oil resistance equivalent to IP67F (JIS C 0920: 2003, Appendix 1) *1 | | |
| Materials | | Case: PBT resin, Filled resin: Urethane resin | | |
| Mass | | Approx. 120g | Approx. 270g | Approx. 640g |
| Installation method | | Two M4 screws (Use a screw of 12 mm or more in length.) | Four M4 screws (Use a screw of 12 mm or more in length.) | |
| Host device communications interface | | Ethernet 10BASE-T/100BASE-TX | | |
| Host device communications protocol | | MODBUS TCP | | |
| Accessories | | Instruction sheet, Description of Regulations and Standard, IP address label, Ferrite core *2 | | |

*1 Oil resistance has been tested using a specific oil as defined in the OMRON test method.

*2 Provided only with the V680S-HMD66-ETN.

RF Tag**V680S-series****RF Tag (2K-byte Memory)**

| Item | Model | V680S-D2KF67 | V680S-D2KF67M | V680S-D2KF68 | V680S-D2KF68M |
|--------------------------------------|-------|--|---------------|--|---------------|
| Memory capacity | | 2,000 bytes (user area) | | | |
| Memory type | | FRAM | | | |
| Data Retention | | 10 years after writing (85 °C or less) | | | |
| Memory life | | One trillion writes for each block (85 °C or less), Access frequency *1 : One trillion accesses | | | |
| Ambient operating temperature | | −20 to 85 °C (with no icing) | | | |
| Ambient storage temperature | | −40 to 125 °C (with no icing) | | | |
| Ambient operating humidity | | 35% to 85% | | | |
| Degree of protection | | IP68 (IEC 60529:2001), Oil resistance equivalent to IP67G (JIS C 0920:2003, Appendix 1) *2. IPX9K (DIN 40 050) | | | |
| Vibration resistance | | No abnormality after application of 10 to 2,000 Hz, 1.5-mm double amplitude, acceleration: 150 m/s ² , 10 sweeps each in X, Y, and Z directions for 15 minutes each | | No abnormality after application of 10 to 500 Hz, 1.5-mm double amplitude, acceleration: 100 m/s ² , 10 sweeps each in X, Y, and Z directions for 11 minutes each | |
| Shock resistance | | No abnormality after application of 500 m/s ² , 3 times each in X, Y, and Z directions (Total: 18 times) | | | |
| Dimensions | | 40 × 40 × 5 mm (W × H × D) | | 86 × 54 × 10 mm (W × H × D) | |
| Materials | | PPS resin | | | |
| Weight | | Approx. 11.5 g | Approx. 12 g | Approx. 44 g | Approx. 46 g |
| Metal countermeasures | | None | Provided | None | Provided |

*1 The number of accesses is the total number of reads and writes.

*2 Oil resistance has been tested using a specific oil as defined in the OMRON test method.

Note: For details, refer to the User's Manual (Cat. No. Z339).

RF Tag (8K-byte Memory)

| Item | Model | V680S-D8KF67 | V680S-D8KF67M | V680S-D8KF68 | V680S-D8KF68M |
|--------------------------------------|-------|--|---------------|--|---------------|
| Memory capacity | | 8,192 bytes (user area) | | | |
| Memory type | | FRAM | | | |
| Data Retention | | 10 years after writing (85 °C or less) | | | |
| Memory life | | One trillion writes for each block (85 °C or less), Access frequency *1 : One trillion accesses | | | |
| Ambient operating temperature | | −20 to 85 °C (with no icing) | | | |
| Ambient storage temperature | | −40 to 125 °C (with no icing) | | | |
| Ambient operating humidity | | 35% to 85% | | | |
| Degree of protection | | IP68 (IEC 60529:2001), Oil resistance equivalent to IP67G (JIS C 0920:2003, Appendix 1) *2. IPX9K (DIN 40 050) | | | |
| Vibration resistance | | No abnormality after application of 10 to 2,000 Hz, 1.5-mm double amplitude, acceleration: 150 m/s ² , 10 sweeps each in X, Y, and Z directions for 15 minutes each | | No abnormality after application of 10 to 500 Hz, 1.5-mm double amplitude, acceleration: 100 m/s ² , 10 sweeps each in X, Y, and Z directions for 11 minutes each | |
| Shock resistance | | No abnormality after application of 500 m/s ² , 3 times each in X, Y, and Z directions (Total: 18 times) | | | |
| Dimensions | | 40 × 40 × 5 mm (W × H × D) | | 86 × 54 × 10 mm (W × H × D) | |
| Materials | | PPS resin | | | |
| Weight | | Approx. 11.5 g | Approx. 12 g | Approx. 44 g | Approx. 46 g |
| Metal countermeasures | | None | Provided | None | Provided |

*1 The number of accesses is the total number of reads and writes.

*2 Oil resistance has been tested using a specific oil as defined in the OMRON test method.

Note: For details, refer to the User's Manual (Cat. No. Z339).

V680-series**RF Tag (1K-byte Memory)**

| Item | Model | V680-D1KP54T | V680-D1KP66T | V680-D1KP66MT | V680-D1KP66T-SP |
|--|--|--|---------------|---|-----------------|
| Memory capacity | 1,000 bytes (user area) | | | | |
| Memory type | EEPROM | | | | |
| Data retention time | 10 years after writing (85 °C or less), 0.5 year after writing (85 °C to 125 °C) Total data retention at high temperatures exceeding 125 °C is 10 hours *1 | | | 10 years after writing (85 °C or less) | |
| Write endurance | 100,000 writes for each block (25 °C) | | | | |
| Ambient operating temperature (during transmission) | −25 to 85 °C (with no icing) | | | During RF Tag communications: −25 to 70 °C (with no icing) Not during RF Tag communications: −40 to 110 °C (with no icing) | |
| Ambient storage temperature (during data backup) | −40 to 125 °C (with no icing) Heat resistance: 1,000 thermal cycles each of 30 minutes at −10 °C/150 °C, High temperature storage: 1,000 hours at 150 °C *2 200 thermal cycles each of 30 minutes at −10 °C/180 °C, High temperature storage: 200 hours at 180 °C *3 | | | −40 to 110 °C (with no icing) | |
| Ambient operating humidity | 35 to 95% | | | | |
| Degree of protection | IP67 (IEC 60529:2001) Oil resistance equivalent to IP67G (JIS C 0920:2003, Appendix 1) *4 | IP68 (IEC 60529:2001) Oil resistance equivalent to IP67G (JIS C 0920:2003, Appendix 1) *4 | | IP67 | |
| Vibration resistance | No abnormality after application of 10 to 2,000 Hz, 1.5-mm double amplitude, acceleration: 150 m/s ² , 10 sweeps each in X, Y, and Z directions for 15 minutes each | | | | |
| Shock resistance | No abnormality after application of 500 m/s ² , 3 times each in X, Y, and Z directions (Total: 18 times) | | | | |
| Appearance | 20 dia. × 2.7 mm | 34 × 34 × 3.5 mm | | 95 × 36.5 × 6.5 mm (excluding protruding parts) | |
| Materials | PPS resin | | | Exterior: PFA fluororesin RF Tag filling: PPS resin | |
| Weight | Approx. 2 g | Approx. 6 g | Approx. 7.5 g | Approx. 20 g | |
| Metal countermeasures | None | None | Provided | None | |

*1 After storing data at high temperatures, rewrite the data even if changes are not required. High temperatures are those exceeding 125 °C up to 180 °C.

*2 150 °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)

*3 180 °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)

*4 Oil resistance has been tested using a specific oil as defined in the OMRON test method.

Note: For details, refer to the User's Manual (Cat. No. Z339).

RF Tag (1K-byte Memory with High-temperature Capability)

| Item | Model | V680-D1KP58HTN |
|--|--|----------------|
| Memory capacity | 1,000 bytes (user area) | |
| Memory type | EEPROM | |
| Data Retention | 10 years after writing (85 °C or less), 0.5 year after writing (85 °C to 125 °C) Total data retention at high temperatures exceeding 125 °C is 10 hours *1 | |
| Write Endurance | 100,000 writes for each block (25 °C) | |
| Ambient operating temperature (during transmission) | −25 to 85 °C (with no icing) | |
| Ambient storage temperature (during data backup) | −40 to 250 °C (with no icing) *2 (Data retention: −40 to 125 °C) 1. 2,000 cycles of 30 minutes each between room temperature and 200 °C 2. 500 hours at 250 °C | |
| Ambient storage humidity | No restrictions. | |
| Degree of protection | IP67 (IEC 60529:2001) Oil resistance equivalent to IP67G (JIS C 0920:2003, Appendix 1) *3 | |
| Vibration resistance | No abnormality after application of 10 to 2,000 Hz, 1.5-mm double amplitude, acceleration: 150 m/s ² , 10 sweeps each in X, Y, and Z directions for 15 minutes each | |
| Shock resistance | No abnormality after application of 500 m/s ² , 3 times each in X, Y, and Z directions (Total: 18 times) | |
| Materials | PPS resin | |
| Weight | Approx. 70 g | |

*1. After storing data at high temperatures, rewrite the data even if changes are not required. High temperatures are those exceeding 125 °C up to 250 °C.

*2 Storing RF Tags under high temperatures or under heat cycles will adversely affect the performance of the internal parts and the service life of the RF Tags. The RF Tag were placed in the following high temperatures and then evaluated in-house. It was confirmed that no problems occurred.

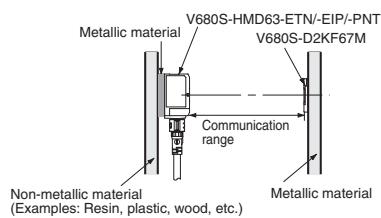
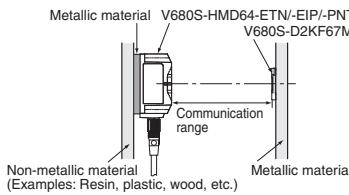
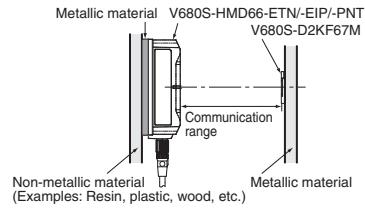
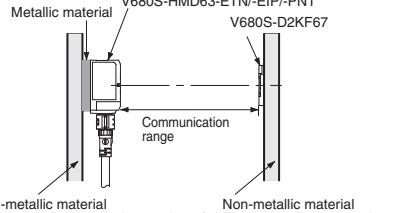
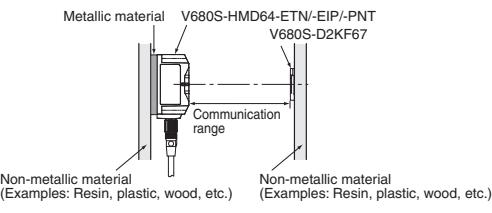
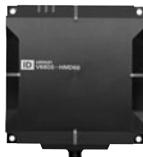
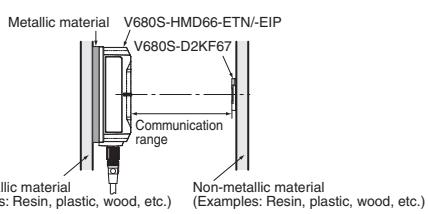
1. 2,000 cycles of 30 minutes each between room temperature and 200 °C.
2. 500 hours at 250 °C.

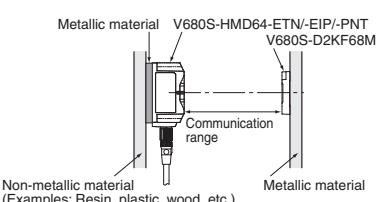
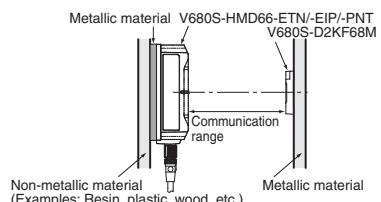
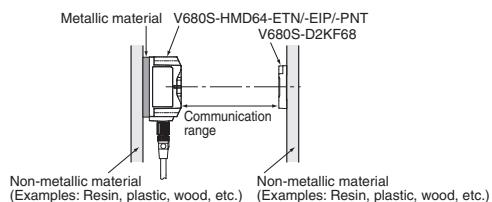
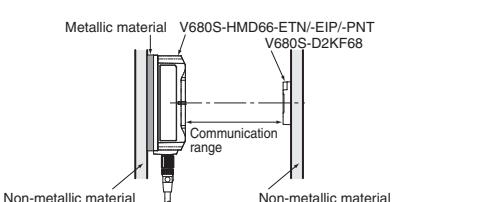
*3 Oil resistance has been tested using a specific oil as defined in the OMRON test method.

Note: For details, refer to the User's Manual (Cat. No. Z339, Z353 or Z354).

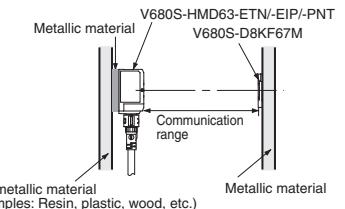
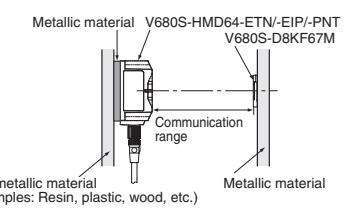
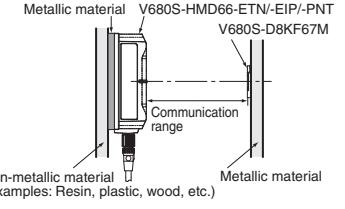
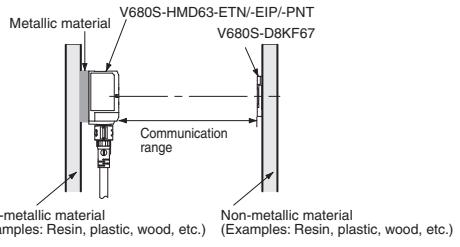
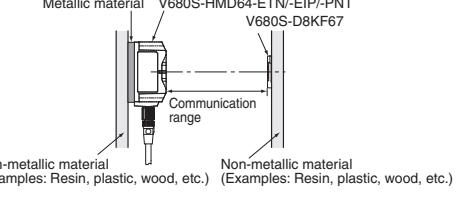
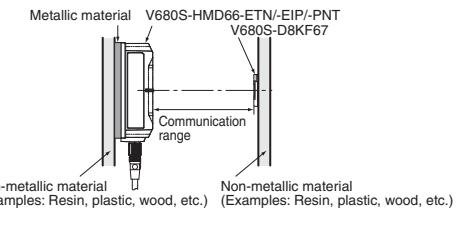
Communication Specifications

V680S-series RF Tag (2K-byte Memory)

| Combination | | Function | Communication range (unit: mm) | RF Tag and Reader/Writer mounting conditions |
|--|--|------------|--|--|
| RF Tag | Reader/Writer | | | |
| V680S-D2KF67M (mounted to metallic material) | V680S-HMD63-ETN/-EIP/-PNT  | Read/Write | 6.0 to 30.0 (axis offset ± 10) |  Metallic material V680S-HMD63-ETN/-EIP/-PNT V680S-D2KF67M Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) Metallic material |
| | V680S-HMD64-ETN/-EIP/-PNT  | Read/Write | 3.0 to 40.0 (axis offset ± 10) |  Metallic material V680S-HMD64-ETN/-EIP/-PNT V680S-D2KF67M Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) Metallic material |
| | V680S-HMD66-ETN/-EIP/-PNT  | Read/Write | 4.0 to 45.0 (axis offset ± 10) |  Metallic material V680S-HMD66-ETN/-EIP/-PNT V680S-D2KF67M Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) Metallic material |
| V680S-D2KF67 (mounted to non-metallic material) | V680S-HMD63-ETN/-EIP/-PNT  | Read/Write | 7.0 to 40.0 (axis offset ± 10) |  Metallic material V680S-HMD63-ETN/-EIP/-PNT V680S-D2KF67 Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.) |
| | V680S-HMD64-ETN/-EIP/-PNT  | Read/Write | 5.0 to 65.0 (axis offset ± 10) |  Metallic material V680S-HMD64-ETN/-EIP/-PNT V680S-D2KF67 Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.) |
| | V680S-HMD66-ETN/-EIP/-PNT  | Read/Write | 7.0 to 85.0 (axis offset ± 10) |  Metallic material V680S-HMD66-ETN/-EIP/-PNT V680S-D2KF67 Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.) |

| Combination | | Function | Communication range (unit: mm) | RF Tag and Reader/Writer mounting conditions |
|--|--|------------|--|---|
| RF Tag | Reader/Writer | | | |
| V680S-D2KF68M (mounted to metallic material) | V680S-HMD64-ETN/-EIP/-PNT  | Read/Write | 5.5 to 55.0 (axis offset ± 10) |  Metallic material V680S-HMD64-ETN/-EIP/-PNT V680S-D2KF68M Non-metallic material (Examples: Resin, plastic, wood, etc.) Communication range Metallic material |
| | V680S-HMD66-ETN/-EIP/-PNT  | | |  Metallic material V680S-HMD66-ETN/-EIP/-PNT V680S-D2KF68M Non-metallic material (Examples: Resin, plastic, wood, etc.) Communication range Metallic material |
| V680S-D2KF68 (mounted to non-metallic material) | V680S-HMD64-ETN/-EIP/-PNT  | Read/Write | 7.5 to 75.0 (axis offset ± 10) |  Metallic material V680S-HMD64-ETN/-EIP/-PNT V680S-D2KF68 Non-metallic material (Examples: Resin, plastic, wood, etc.) Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) |
| | V680S-HMD66-ETN/-EIP/-PNT  | | |  Metallic material V680S-HMD66-ETN/-EIP/-PNT V680S-D2KF68 Non-metallic material (Examples: Resin, plastic, wood, etc.) Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) |

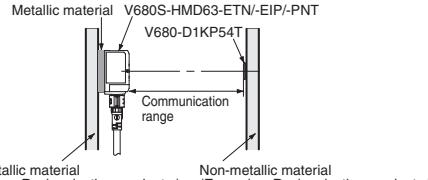
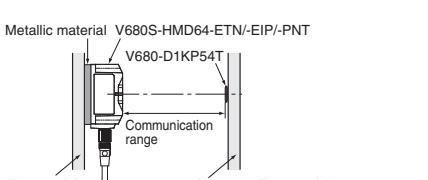
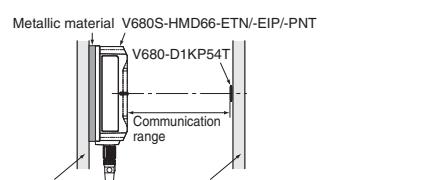
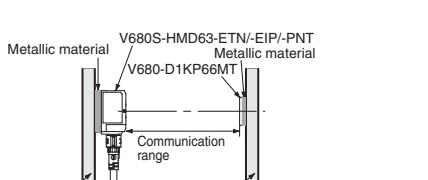
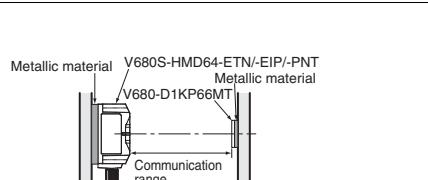
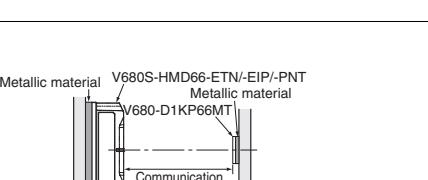
RF Tag (8K-byte Memory)

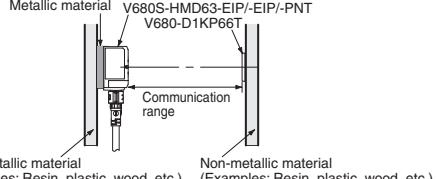
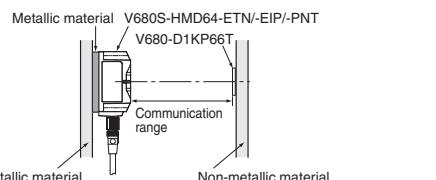
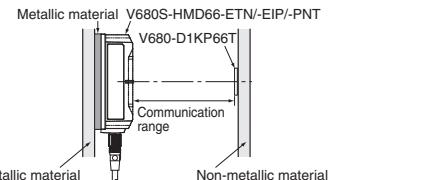
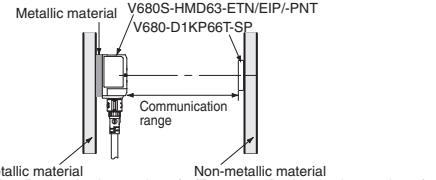
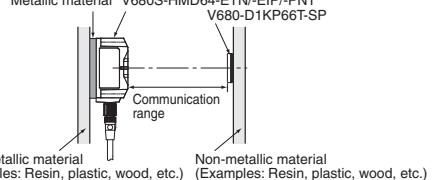
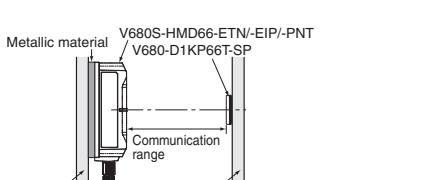
| Combination | | Function | Communication range (unit: mm) | RF Tag and Reader/Writer mounting conditions |
|--|---------------------------|------------|--|---|
| RF Tag | Reader/Writer | | | |
| V680S-D8KF67M (mounted to metallic material) | V680S-HMD63-ETN/-EIP/-PNT | Read/Write | 6.0 to 30.0 (axis offset ± 10) |  |
| | V680S-HMD64-ETN/-EIP/-PNT | | |  |
| | V680S-HMD66-ETN/-EIP/-PNT | | |  |
| V680S-D8KF67 (mounted to non-metallic material) | V680S-HMD63-ETN/-EIP/-PNT | Read/Write | 7.0 to 40.0 (axis offset ± 10) |  |
| | V680S-HMD64-ETN/-EIP/-PNT | | |  |
| | V680S-HMD66-ETN/-EIP/-PNT | | |  |

| Combination | | Function | Communication range (unit: mm) | RF Tag and Reader/Writer mounting conditions |
|--|---------------------------|------------|--|---|
| RF Tag | Reader/Writer | | | |
| V680S-D8KF68M (mounted to metallic material) | V680S-HMD64-ETN/-EIP/-PNT | Read/Write | 5.5 to 55.0 (axis offset ± 10) |  |
| | V680S-HMD66-ETN/-EIP/-PNT | | |  |
| V680S-D8KF68 (mounted to non-metallic material) | V680S-HMD64-ETN/-EIP/-PNT | Read/Write | 7.5 to 75.0 (axis offset ± 10) |  |
| | V680S-HMD66-ETN/-EIP/-PNT | | |  |

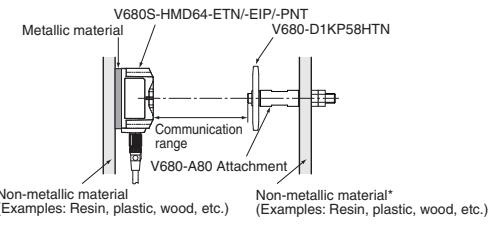
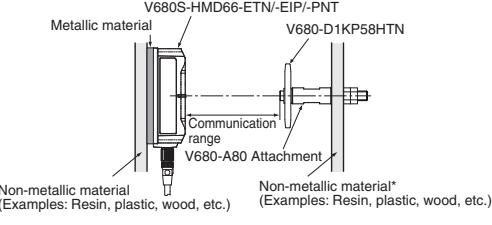
V680-series

RF Tag (1K-byte Memory)

| Combination | | Function | Communication range (unit: mm) | RF Tag and Reader/Writer mounting conditions |
|--|---------------------------|----------|--|--|
| RF Tag | Reader/Writer | | | |
| V680-D1KP54T (mounted to non-metallic material) | V680S-HMD63-ETN/-EIP/-PNT | Read | 0.0 to 24.0 (axis offset ± 10) |  <p>Metallic material V680S-HMD63-ETN/-EIP/-PNT V680-D1KP54T Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.) Communication range</p> |
| | | Write | 0.0 to 20.0 (axis offset ± 10) | |
| | V680S-HMD64-ETN/-EIP/-PNT | Read | 0.0 to 33.0 (axis offset ± 10) |  <p>Metallic material V680S-HMD64-ETN/-EIP/-PNT V680-D1KP54T Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.) Communication range</p> |
| | | Write | 0.0 to 28.0 (axis offset ± 10) | |
| V680-D1KP66MT (mounted to metallic material) | V680S-HMD63-ETN/-EIP/-PNT | Read | 0.0 to 45.0 (axis offset ± 10) |  <p>Metallic material V680S-HMD63-ETN/-EIP/-PNT V680-D1KP66MT Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.) Communication range</p> |
| | | Write | 0.0 to 38.0 (axis offset ± 10) | |
| | V680S-HMD64-ETN/-EIP/-PNT | Read | 0.0 to 25.0 (axis offset ± 10) |  <p>Metallic material V680S-HMD64-ETN/-EIP/-PNT V680-D1KP66MT Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.) Communication range</p> |
| | | Write | 0.0 to 20.0 (axis offset ± 10) | |
| | V680S-HMD66-ETN/-EIP/-PNT | Read | 0.0 to 35.0 (axis offset ± 10) |  <p>Metallic material V680S-HMD66-ETN/-EIP/-PNT V680-D1KP66MT Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.) Communication range</p> |
| | | Write | 0.0 to 30.0 (axis offset ± 10) | |
| | V680S-HMD66-ETN/-EIP/-PNT | Read | 0.0 to 37.0 (axis offset ± 10) |  <p>Metallic material V680S-HMD66-ETN/-EIP/-PNT V680-D1KP66MT Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.) Communication range</p> |
| | | Write | 0.0 to 30.0 (axis offset ± 10) | |

| Combination | | Function | Communication range (unit: mm) | RF Tag and Reader/Writer mounting conditions |
|---|--|----------|-----------------------------------|--|
| RF Tag | Reader/Writer | | | |
| V680-D1KP66T (mounted to non-metallic material) | V680S-HMD63-ETN/-EIP/-PNT  | Read | 0.0 to 30.0 (axis offset ±10) |  <p>Metallic material V680S-HMD63-ETN/-EIP/-PNT V680-D1KP66T Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.)</p> |
| | | Write | 0.0 to 25.0 (axis offset ±10) | |
| V680-D1KP66T-SP (mounted to non-metallic material) | V680S-HMD64-ETN/-EIP/-PNT  | Read | 0.0 to 47.0 (axis offset ±10) |  <p>Metallic material V680S-HMD64-ETN/-EIP/-PNT V680-D1KP66T Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.)</p> |
| | | Write | 0.0 to 42.0 (axis offset ±10) | |
| V680-D1KP66T-SP (mounted to non-metallic material) | V680S-HMD66-ETN/-EIP/-PNT  | Read | 0.0 to 64.0 (axis offset ±10) |  <p>Metallic material V680S-HMD66-ETN/-EIP/-PNT V680-D1KP66T Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.)</p> |
| | | Write | 0.0 to 57.0 (axis offset ±10) | |
| V680-D1KP66T-SP (mounted to non-metallic material) | V680S-HMD63-ETN/-EIP/-PNT  | Read | 0.0 to 25.0 (axis offset ±10) |  <p>Metallic material V680S-HMD63-ETN/-EIP/-PNT V680-D1KP66T-SP Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.)</p> |
| | | Write | 0.0 to 20.0 (axis offset ±10) | |
| | V680S-HMD64-ETN/-EIP/-PNT  | Read | 0.0 to 42.0 (axis offset ±10) |  <p>Metallic material V680S-HMD64-ETN/-EIP/-PNT V680-D1KP66T-SP Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.)</p> |
| | | Write | 0.0 to 37.0 (axis offset ±10) | |
| V680-D1KP66T-SP (mounted to non-metallic material) | V680S-HMD66-ETN/-EIP/-PNT  | Read | 0.0 to 59.0 (axis offset ±10) |  <p>Metallic material V680S-HMD66-ETN/-EIP/-PNT V680-D1KP66T-SP Communication range Non-metallic material (Examples: Resin, plastic, wood, etc.) Non-metallic material (Examples: Resin, plastic, wood, etc.)</p> |
| | | Write | 0.0 to 52.0 (axis offset ±10) | |

RF Tag (1K-byte memory with High-temperature Capability)

| Combination | | Function | Communication range (unit: mm) | RF Tag and Reader/Writer mounting conditions |
|---|---------------------------|----------|---|--|
| RF Tag | Reader/Writer | | | |
| V680-D1KP58HTN (mounted with special attachment) | V680S-HMD64-ETN/-EIP/-PNT | Read | 7.5 to 75.0 (axis offset ± 10) |  |
| | | Write | 7.5 to 75.0 (axis offset ± 10) | |
| | V680S-HMD66-ETN/-EIP/-PNT | Read | 10.0 to 90.0 (axis offset ± 10) |  |
| | | Write | 10.0 to 80.0 (axis offset ± 10) | |

* The communications range will decrease if the RF Tag is mounted on a metallic surface.

Refer to the Influence of Metal at Back Surface in the User's Manual (Cat. No. Z339, Z353 or Z354) for details.

Characteristic Data

RF Tag Interrogation Zone (for Reference Only)

The values given for communications ranges are reference values. Refer to pages 19 to 25 for communications distance specifications.

Communication range depends on the RF Tags, ambient temperature, surrounding metal, noise, and other factors.

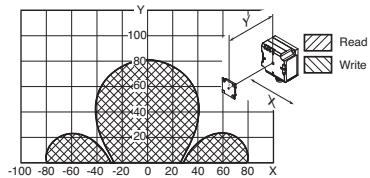
Carefully check the operation when installing a system.

V680S-series

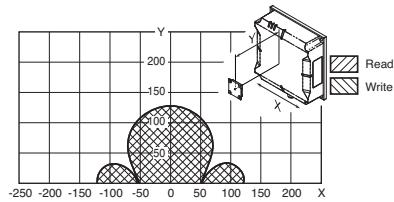
RF Tag (2K-byte memory)

V680S-D2KF67

V680S-HMD63-□□□ and V680S-D2KF67
(Back Surface: Metal)

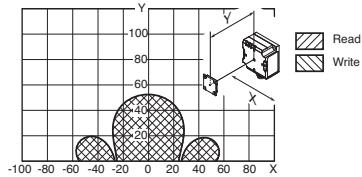


V680S-HMD66-□□□ and V680S-D2KF67
(Back Surface: Metal)

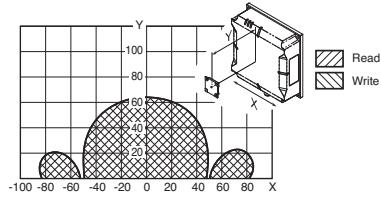


V680S-D2KF67M

V680S-HMD63-□□□ and V680S-D2KF67M
(Back Surface: Metal) (Back Surface: Metal)

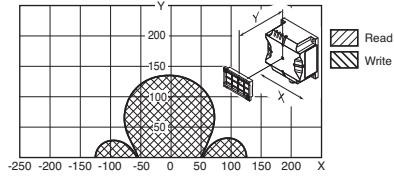


V680S-HMD66-□□□ and V680S-D2KF67M
(Back Surface: Metal) (Back Surface: Metal)

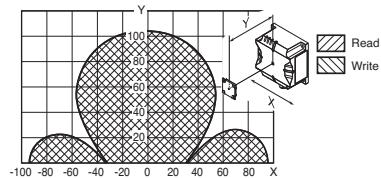


V680S-D2KF68

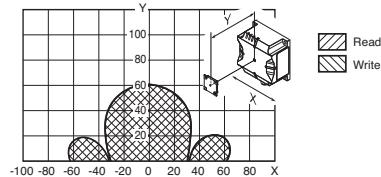
V680S-HMD64-□□□ and V680S-D2KF68
(Back Surface: Metal) (Tag direction: Horizontal)



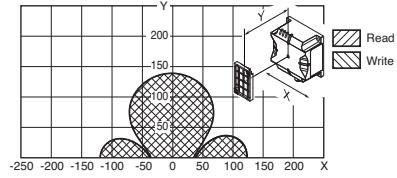
V680S-HMD64-□□□ and V680S-D2KF67
(Back Surface: Metal)



V680S-HMD64-□□□ and V680S-D2KF67M
(Back Surface: Metal) (Back Surface: Metal)

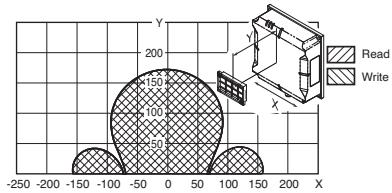


V680S-HMD64-□□□ and V680S-D2KF68
(Back Surface: Metal) (Tag direction: Vertical)



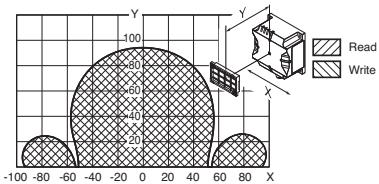
V680S-D2KF68

V680S-HMD66-□□□ and V680S-D2KF68
(Back Surface: Metal) (Tag direction: Horizontal)

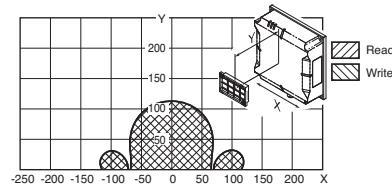


V680S-D2KF68M

V680S-HMD64-□□□ and V680S-D2KF68M
(Back Surface: Metal) (Tag direction: Horizontal)



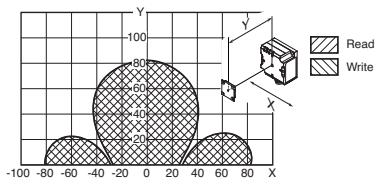
V680S-HMD66-□□□ and V680S-D2KF68M
(Back Surface: Metal) (Tag direction: Horizontal)



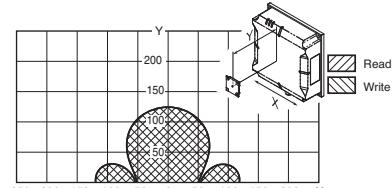
RF Tag (8K-byte memory)

V680S-D8KF67

V680S-HMD63-□□□ and V680S-D8KF67
(Back Surface: Metal)

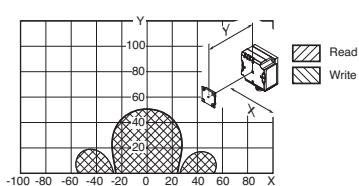


V680S-HMD66-□□□ and V680S-D8KF67
(Back Surface: Metal)



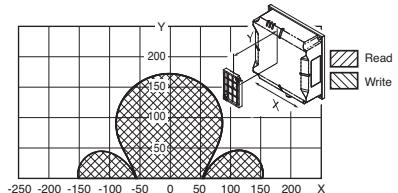
V680S-D8KF67M

V680S-HMD63-□□□ and V680S-D8KF67M
(Back Surface: Metal) (Back Surface: Metal)



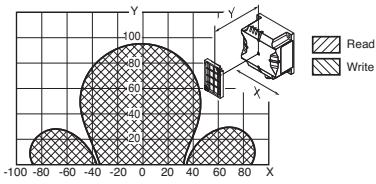
V680S-HMD66-□□□ and V680S-D2KF68

(Back Surface: Metal) (Tag direction: Vertical)



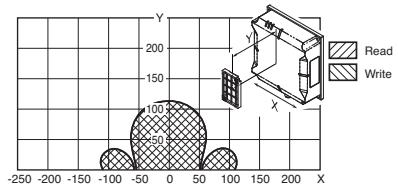
V680S-HMD64-□□□ and V680S-D2KF68M

(Back Surface: Metal) (Tag direction: Vertical)



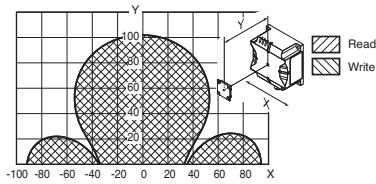
V680S-HMD66-□□□ and V680S-D2KF68M

(Back Surface: Metal) (Tag direction: Vertical)



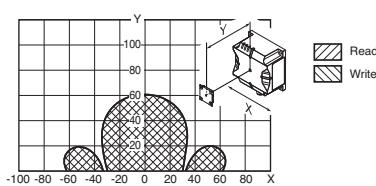
V680S-HMD64-□□□ and V680S-D8KF67

(Back Surface: Metal)



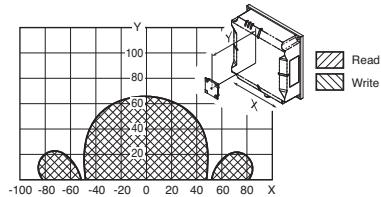
V680S-HMD64-□□□ and V680S-D8KF67M

(Back Surface: Metal) (Back Surface: Metal)



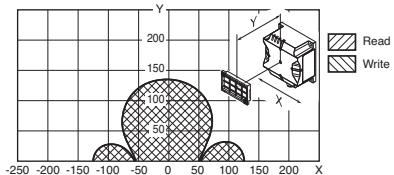
V680S-D8KF67M

V680S-HMD66-□□□ and V680S-D8KF67M
(Back Surface: Metal) (Back Surface: Metal)



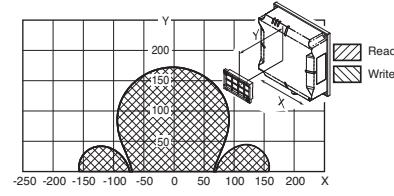
V680S-D8KF68

V680S-HMD64-□□□ and V680S-D8KF68
(Back Surface: Metal) (Tag direction: Horizontal)



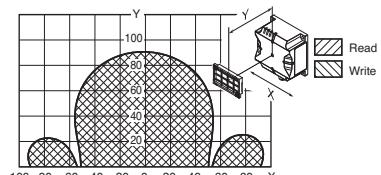
V680S-HMD66-□□□ and V680S-D8KF68

(Back Surface: Metal) (Tag direction: Horizontal)



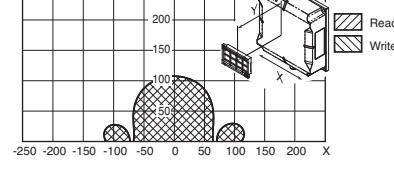
V680S-D8KF68M

V680S-HMD64-□□□ and V680S-D8KF68M
(Back Surface: Metal) (Tag direction: Horizontal)



V680S-HMD66-□□□ and V680S-D8KF68M

(Back Surface: Metal) (Tag direction: Horizontal)

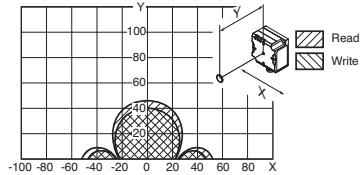


V680-series

RF Tag (1K-byte memory)

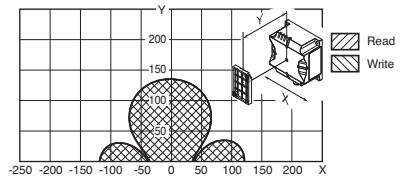
V680-D1KP54T

V680S-HMD63-□□□ and V680-D1KP54T
(Back Surface: Metal)



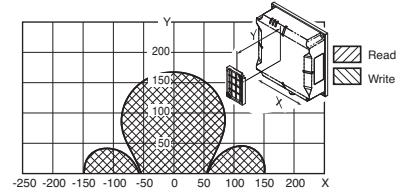
V680S-HMD64-□□□ and V680S-D8KF68

(Back Surface: Metal) (Tag direction: Vertical)



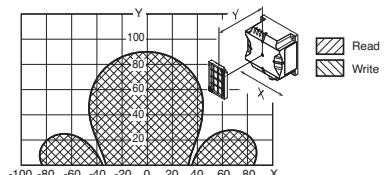
V680S-HMD66-□□□ and V680S-D8KF68

(Back Surface: Metal) (Tag direction: Vertical)



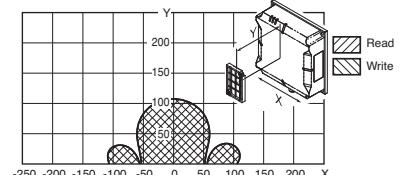
V680S-HMD64-□□□ and V680S-D8KF68M

(Back Surface: Metal) (Tag direction: Vertical)



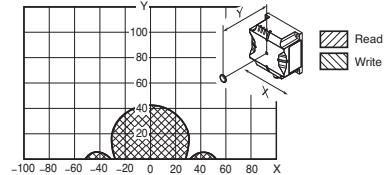
V680S-HMD66-□□□ and V680S-D8KF68M

(Back Surface: Metal) (Tag direction: Vertical)



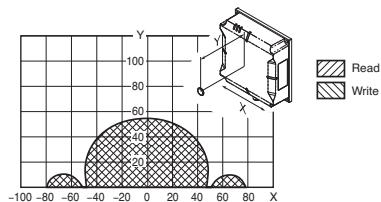
V680S-HMD64-□□□ and V680-D1KP54T

(Back Surface: Metal)



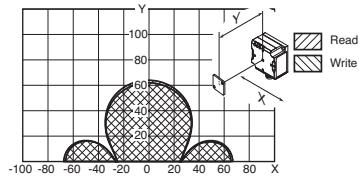
V680-D1KP54T

V680S-HMD66-□□□ and V680-D1KP54T
(Back Surface: Metal)

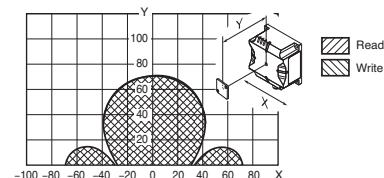


V680-D1KP66T

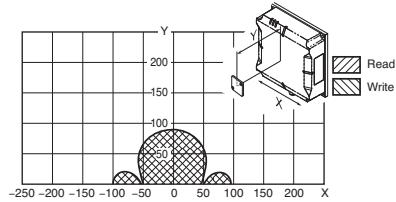
V680S-HMD63-□□□ and V680-D1KP66T
(Back Surface: Metal)



V680S-HMD64-□□□ and V680-D1KP66T
(Back Surface: Metal)

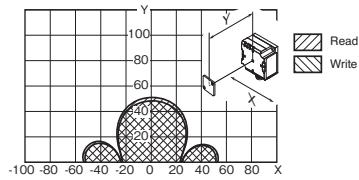


V680S-HMD66-□□□ and V680-D1KP66T
(Back Surface: Metal)

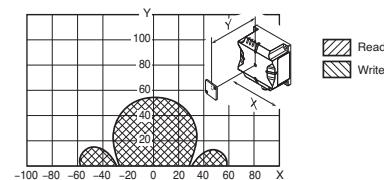


V680-D1KP66MT

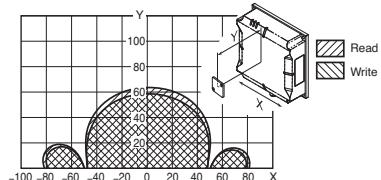
V680S-HMD63-□□□ and V680-D1KP66MT
(Back Surface: Metal) (Back Surface: Metal)



V680S-HMD64-□□□ and V680-D1KP66MT
(Back Surface: Metal) (Back Surface: Metal)

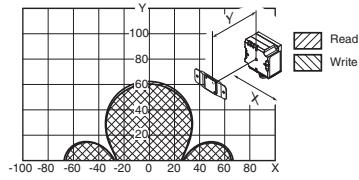


V680S-HMD66-□□□ and V680-D1KP66MT
(Back Surface: Metal) (Back Surface: Metal)

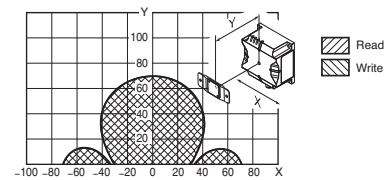


V680-D1KP66T-SP

V680S-HMD63-□□□ and V680-D1KP66T-SP
(Back Surface: Metal)

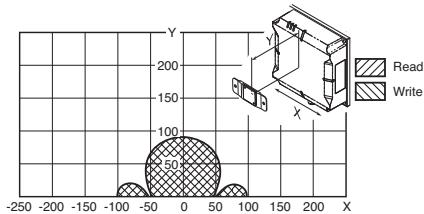


V680S-HMD64-□□□ and V680-D1KP66T-SP
(Back Surface: Metal)

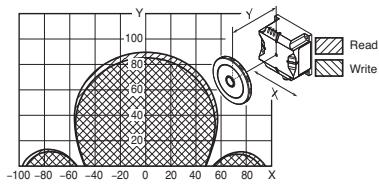


V680-D1KP66T-SP

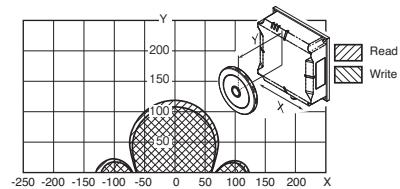
V680S-HMD66-□□□ and V680-D1KP66T-SP
(Back Surface: Metal)

**V680-D1KP58HTN**

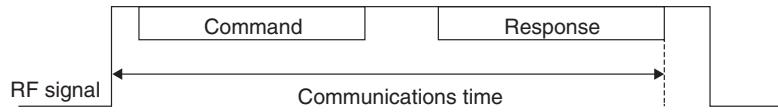
V680S-HMD64-□□□ and V680-D1KP58HTN
(Back Surface: Metal) (with Attachment, V680-A80)



V680S-HMD66-□□□ and V680-D1KP58HTN
(Back Surface: Metal) (with Attachment, V680-A80)

**RF Tag Communication Time (for Reference Only)**

The communication time is the time from when the Reader/Writer turns ON the RF signal until it receives the last bit of the response from the RF Tag.



RF signal: The radio wave that the Reader/Writer transmits to the RF Tag.
The Reader/Writer turns ON this RF signal and then sends the command to start communications with the RF Tag.
When the communications end, the Reader/Writer turns OFF the RF signal.

Command: The command that the Reader/Writer sends to the RF Tag.

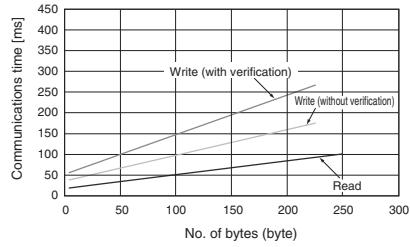
Response: The response that the RF Tag returns to the Reader/Writer.

V680S series**RF Tag (2k-byte Memory)**

V680S-HMD6□-□□□:

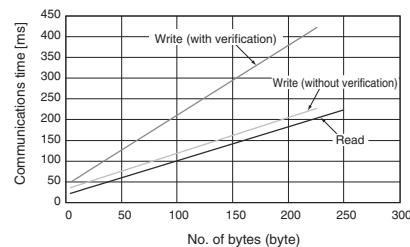
V680S-D2KF6□ (M) (Communications speed setting: High speed)

| Query | Communications time (ms) N: No. of bytes processed |
|-------------------------------------|---|
| Read | $T = 0.4N + 17.4$ |
| Write (with verification) | $T = 1.0N + 51.9$ |
| Write (without verification) | $T = 0.7N + 35.2$ |



V680S-HMD6□-□□□:
V680S-D2KF6□ (M) (Communications speed setting: Normal speed)

| Query | Communications time (ms) N: No. of bytes processed |
|-------------------------------------|---|
| Read | $T = 0.9N + 18.7$ |
| Write (with verification) | $T = 1.7N + 42.1$ |
| Write (without verification) | $T = 0.9N + 32.0$ |

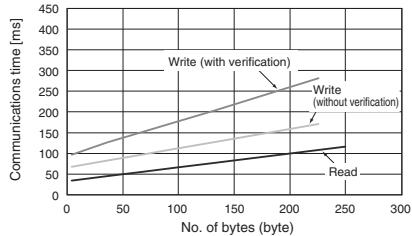


RF Tag (8k-byte Memory)

V680S-HMD6□-□□□:

V680S-D8KF6□ (M) (Communications speed setting: High speed)

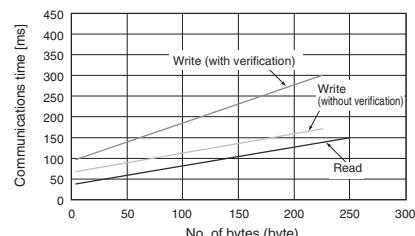
| Query | Communications time (ms) N: No. of bytes processed |
|------------------------------|---|
| Read | $T = 0.4N + 33.0$ |
| Write (with verification) | $T = 0.9N + 95.1$ |
| Write (without verification) | $T = 0.5N + 65.8$ |



V680S-HMD6□-□□□:

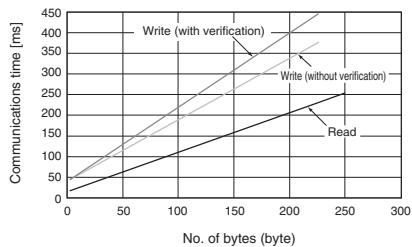
V680S-D8KF6□ (M) (Communications speed setting: Normal speed)

| Query | Communications time (ms) N: No. of bytes processed |
|------------------------------|---|
| Read | $T = 0.5N + 36.1$ |
| Write (with verification) | $T = 1.0N + 93.0$ |
| Write (without verification) | $T = 0.5N + 65.8$ |

**V680 series****RF Tag (1K-byte memory)**V680S-HMD6□-□□□: V680-D1KP□□□T, V680-D1KP66MT,
V680-D1KP66T-SP, V680-D1KP58HTN

There are no differences between Communication speed: "normal" and "high".

| Query | Communications time (ms) N: No. of bytes processed |
|------------------------------|---|
| Read | $T = 1.0N + 20.1$ |
| Write (with verification) | $T = 1.8N + 45.2$ |
| Write (without verification) | $T = 1.5N + 41.4$ |

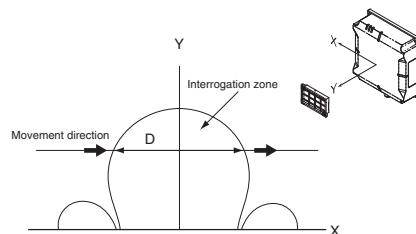
**Travel Speed Calculations**

When communicating with a moving RF Tag, specify a Repeat mode for EtherNet/IP and PROFINET or an AUTO mode for Modbus TCP. The maximum speed for communicating with the RF Tag can be calculated simply using the following formula.

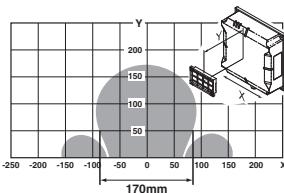
$$\text{Maximum speed} = \frac{D \text{ (Distance travelled in Interrogation zone)}}{T \text{ (Communications time)}}$$

D (Distance travelled in Interrogation zone) is calculated from the actual measurement or the Interrogation zone between the Reader/Writer and RF Tag.

In order to ensure a margin, it is preferable that the communication time is calculated at twice.

**Calculation Example**

The following example is for reading 128 bytes with the V680S-D2KF68, and V680S-HMD66-ETN.



From the left chart,
Distance travelled in Interrogation zone = 170 mm when Y (communications distance) is 50 mm
Communications time T = 267.8 ms (calculated from the communications time, i.e., 2 times $\times (0.9 \times 128 \text{ bytes} + 18.7)$)

Therefore, the maximum speed of the Tag is as follows:

$$\text{Maximum speed} = \frac{D \text{ (Distance travelled in Interrogation zone)}}{T \text{ (Communications time)}} = \frac{170 \text{ (mm)}}{267.8 \text{ (ms)}} = 38.1 \text{ m/min}$$

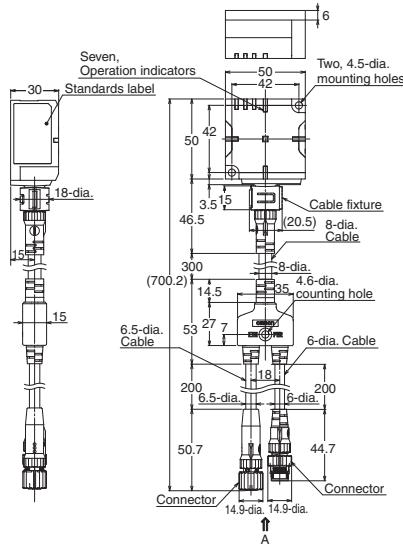
Dimensions

Reader/Writer

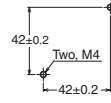
EtherNet/IP, PROFINET

V680S-HMD63-EIP

V680S-HMD63-PNT



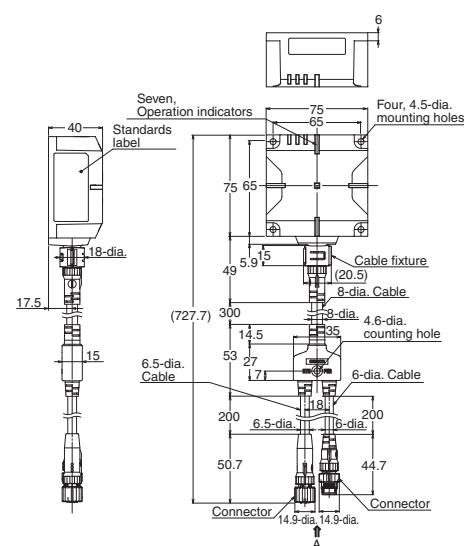
Mounting Hole Dimensions



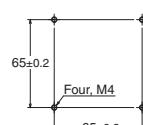
Side A

V680S-HMD64-EIP

V680S-HMD64-PNT



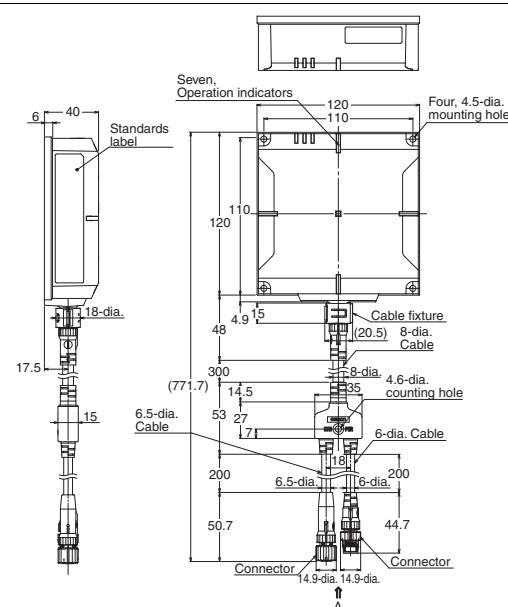
Mounting Hole Dimensions



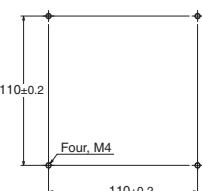
Side A

V680S-HMD66-EIP

V680S-HMD66-PNT



Mounting Hole Dimensions



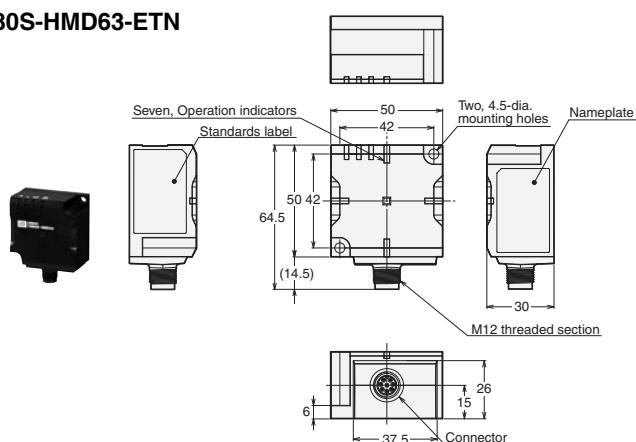
Side A

Modbus TCP

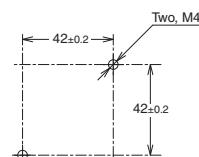
(Unit: mm)

Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

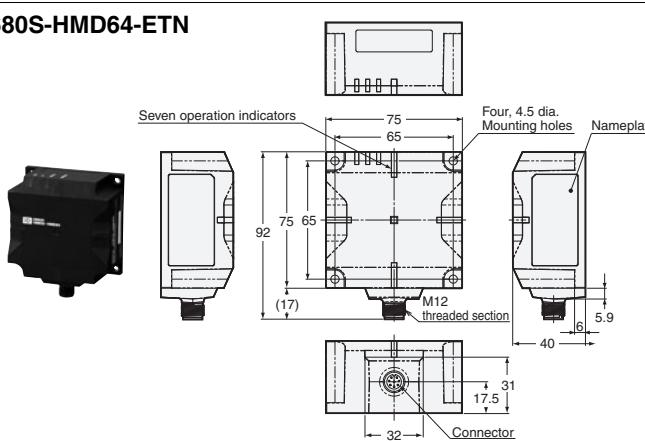
V680S-HMD63-ETN



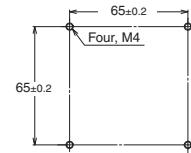
Mounting Hole Dimensions



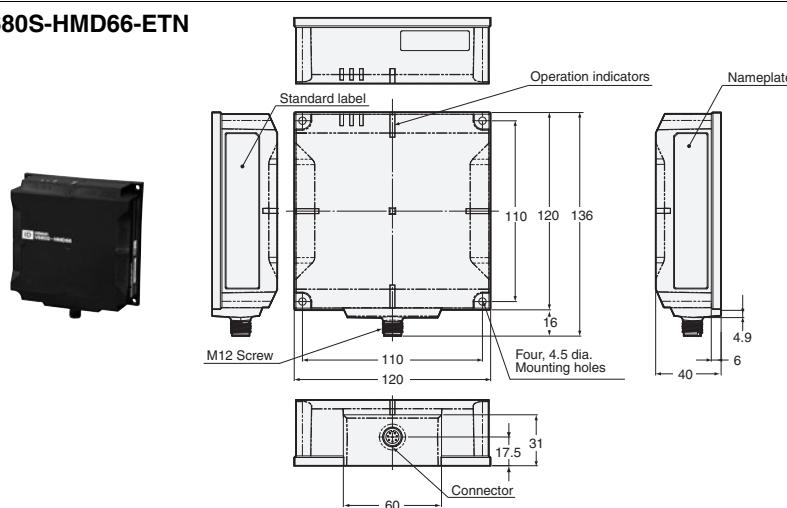
V680S-HMD64-ETN



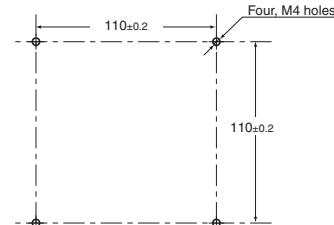
Mounting Hole Dimensions



V680S-HMD66-ETN



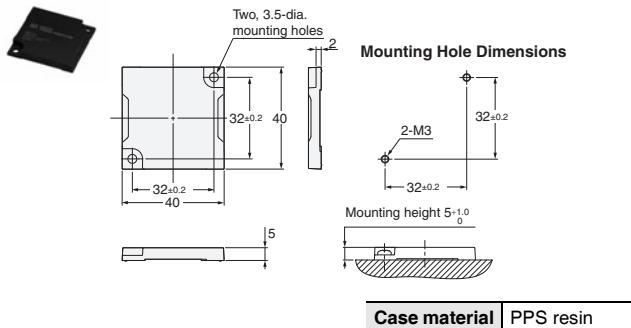
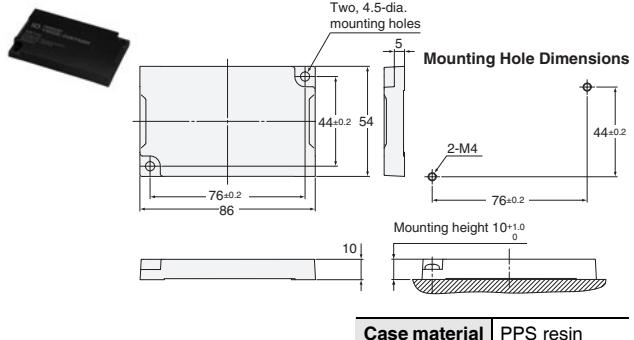
Mounting Hole Dimensions



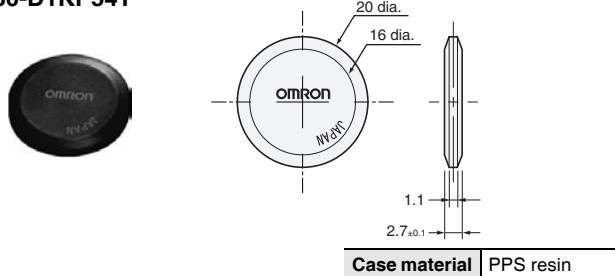
RF Tag

(Unit: mm)

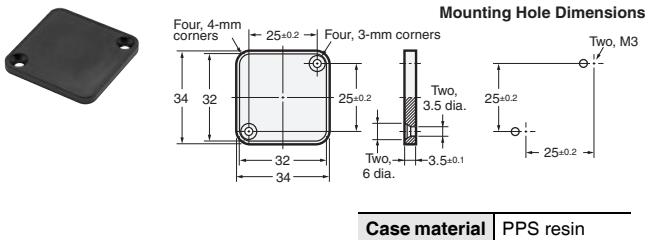
Tolerance class IT16 applies to dimensions in this datasheet unless otherwise specified.

V680S-D2KF67/-D2KF67M
V680S-D8KF67/-D8KF67MV680S-D2KF68/-D2KF68M
V680S-D8KF68/-D8KF68M

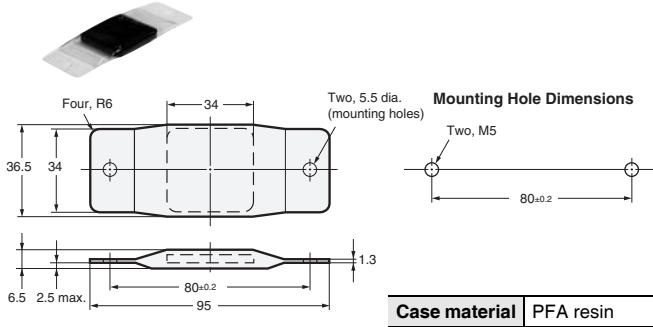
V680-D1KP54T



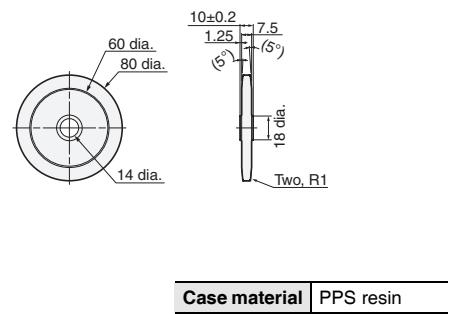
V680-D1KP66T/-D1KP66MT



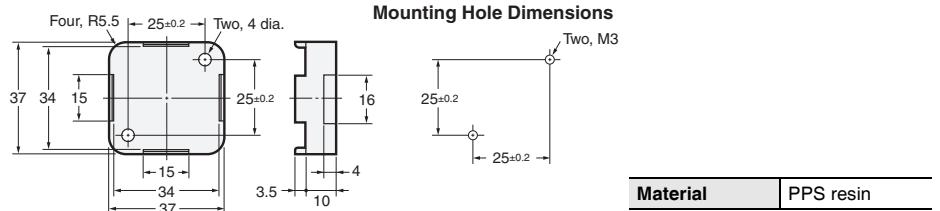
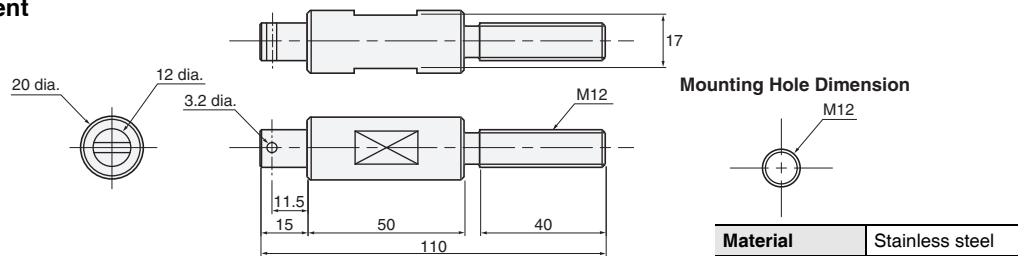
V680-D1KP66T-SP



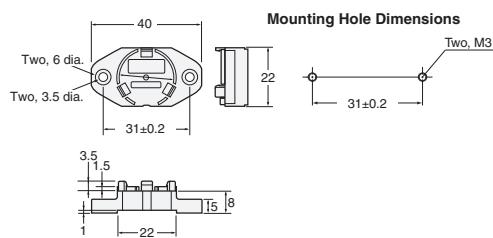
V680-D1KP58HTN



RF Tag Attachment

V680-D1KP66T Attachment
V600-A86V680-D1KP58HTN Attachment
V680-A80

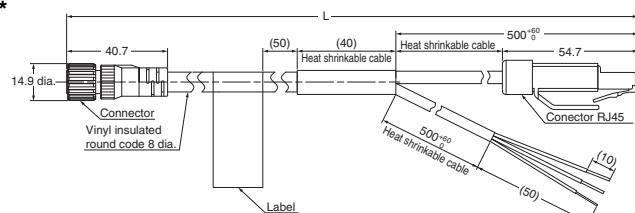
V680-D1KP54T Attachment V700-A80



Material PPS resin

Cable for Modbus TCP

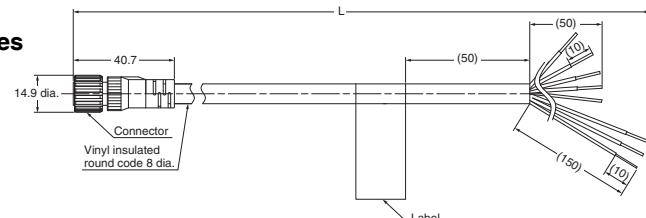
V680S-A41 □M/V680S-A51 □M * Special connector – RJ45



| Model | L Length |
|---------------|-------------------------------------|
| V680S-A41 2M | 2000 ⁺¹⁵⁰ ₀ |
| V680S-A51 2M | |
| V680S-A41 5M | 5000 ⁺³⁰⁰ ₀ |
| V680S-A51 5M | |
| V680S-A41 10M | 10000 ⁺¹⁰⁰⁰ ₀ |
| V680S-A51 10M | |

* V680S-A51 □M is Flexible cables. Cable color is black.

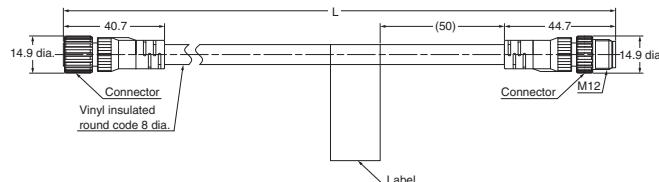
V680S-A42 □M Special connector – Loose wires



| Model | L Length |
|---------------|-------------------------------------|
| V680S-A42 2M | 2000 ⁺¹⁵⁰ ₀ |
| V680S-A42 5M | 5000 ⁺³⁰⁰ ₀ |
| V680S-A42 10M | 10000 ⁺¹⁰⁰⁰ ₀ |

Extension Cable for Modbus TCP

V680S-A40 □M/V680S-A50 □M * Special connector – Special connector



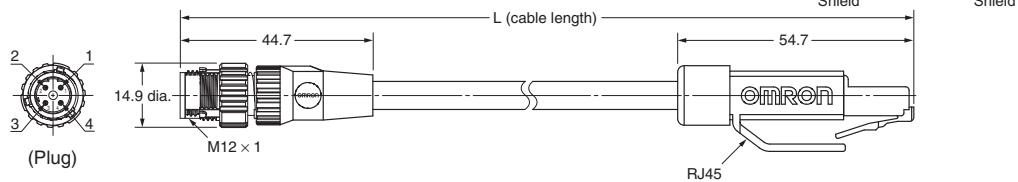
| Model | L Length |
|---------------|-------------------------------------|
| V680S-A50 2M | 2000 ⁺¹⁵⁰ ₀ |
| V680S-A40 10M | 10000 ⁺¹⁰⁰⁰ ₀ |
| V680S-A50 10M | |
| V680S-A40 20M | |
| V680S-A50 20M | 20000 ⁺²⁰⁰⁰ ₀ |
| V680S-A40 50M | 50000 ⁺⁵⁰⁰⁰ ₀ |

* V680S-A51 □M is Flexible cables. Cable color is black.

Recommended Ethernet Cable for EtherNet/IP and PROFINET

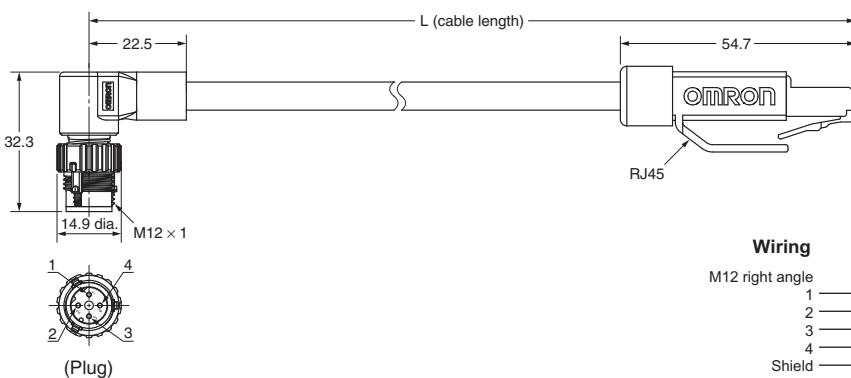
Cable with Plugs on Both Ends (M12 Straight/RJ45)

XS5W-T421-□MC-K



Cable with Plugs on Both Ends (M12 Right-angle/RJ45)

XS5W-T422-□MC-K

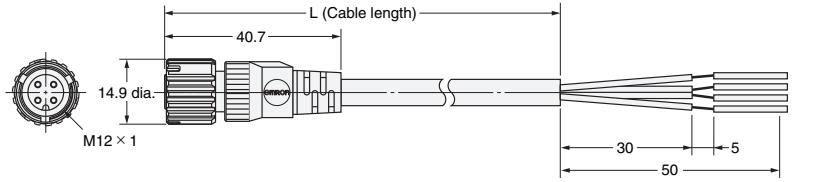


Note: For details, refer to the Industrial Ethernet Connectors Catalog (Cat.No.G019).

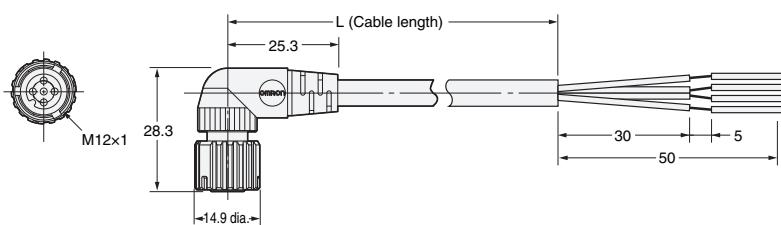
Recommended Power Cable for EtherNet/IP and PROFINET

XS5F-D42□-□80-□

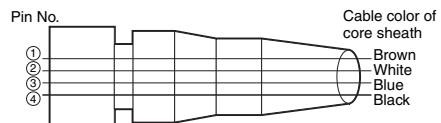
Straight



Angled



Wiring Diagram for 4 Cores



Note: 1. Fire-retardant, Robot cable (XS5F-D42□-□80-F) have warm gray covers.
 2. For details, refer to the Industrial Connectors Catalog (Cat. No. X082).

Related Manuals

| English Cat. No. | Japanese Cat. No. | Model | Name |
|------------------|-------------------|-----------------|--|
| Z339 | SDGR-709 | V680S-HMD6□-ETN | RFID system V680S Series User's Manual (Modbus TCP) |
| Z353 | SDGR-710 | V680S-HMD6□-EIP | RFID system V680S Series User's Manual (EtherNet/IP) |
| Z354 | SDGR-711 | V680S-HMD6□-PNT | RFID system V680S Series User's Manual (PROFINET) |

Caution for Radio Regulations

As soon as the V680S Series has been certified to comply with Radio Regulations of each country, the product label will be subject to change to include a certificate number without any advance notice. For update on compliance with Radio Regulations, refer to "Models with Standards Certification" on the OMRON website (<http://www.ia.omron.com/>).

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CSM_8_2_0317

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