

Electromagnetic RFID System V700


- **Cost-effective and very reliable.**
- **It is ideal for use in conveyor sorting systems, tool identification in assembly lines, process control in automated production lines, inventory control in warehouses, general tracking and tracing of goods and optimizing distribution management.**
- **Tags for use in temperature ranges up to 180 °C**



Omron's V700 is a high-performance Radio Frequency Identification (RFID) system that can locate, track & trace and deliver important data on almost any kind of product or object in any industrial application. The system provides fast, reliable contact-less read/write (R/W) communication over long distances, even when operating in the toughest environmental coupled with the V700's integrated antenna and controller, make it a compact and cost-effective conditions. Low-cost ID tags, solution, especially in applications that require multiple tags. The V700's multiple read function enables it to provide convenient bulk identification, and controllers can be grouped together for synchronized reading/writing to prevent mutual interference.

Ordering information

List of Models

Name	Model	Model	Specifications/Design	
ID Tag	V700-D23P31		20 dia. × t 2.7 mm	Coin-shaped 256 bytes (with user area of 240 bytes)
	V700-D23P41		3.9 dia. × 25 mm	Stick-shaped 256 bytes (with user area of 240 bytes)
	V700-D23P61		40 x 40 x 4.5 mm	Square-shaped 256 bytes (with user area of 240 bytes)
ID Tag Holder	V700-A80		Special holder for the V700-D23P31 (There is no ID Tag provided with the product.)	
Compact Reader Writer	V700-HMD11		40 × 53 × 23 mm	RS-232C interface 5 VDC supplied via AC Adapter 2-m cable
	V700-HMD11-1			RS-232C interface 5 VDC supplied from connector
ID Link Unit	V700-L12		110 × 65 × 64 mm	RS-232C and RS-485 interface Unit for multiple connections



A versatile system that's easily expandable. Any number of tags can be added to the V700 system, and it's also possible to keep expanding the system via RS-232C/RS-485 link units (V700-L12/ addressable). The V700 conforms to CE and FCC standards, making it suitable for use throughout Europe and the USA.

Tags that can handle the toughest conditions

The tags meet IEC IP67 requirements and are designed for the harshest environments. They can operate in temperatures varying from -40° to $+180^{\circ}\text{C}$ (for the V700-D23P31) during transmission, and are unaffected by storage temperatures ranging from -40° to $+110^{\circ}\text{C}$. Designed for long-term operation, these tags can be read to and written from more than 100.000 times! Their robust design makes them ideal for use in laundries, paint shops and almost any outdoor application.

No mutual interference

In a situation where several antennas are operating close together, it's possible to synchronize the controllers to prevent mutual interference of the antennae.

Dry cleaning

The ability of the V700's tags to withstand chemical influences and heat make them ideal for use in the extreme conditions associated with the chemical dry-cleaning process.




The compact tags can be sewn directly into garments, and remain attached even during cleaning, which makes the sorting process easier afterwards.

Paint-shop production lines

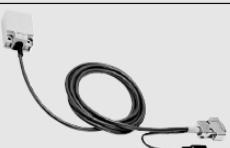

The V700 guarantees very reliable identification, especially when used with Omron PLCs and sensors, which makes it ideal for use in smart automation control. Postal sorting The V700 is like an electronic accompanying goods note, enabling operators to track and trace post boxes and optimize distribution management.

Specifications


ID Tags

Item	Model		
	V700-D23P31 	V700-D23P41 	V700-D23P61 
Memory capacity	240 bytes (user area)		
Memory type	EEPROM		
Data backup time	10 years after data written		
Data writing times	100,000 times per address		
Ambient operating temperature (during transmission)	-20 to 70°C (with no icing)	-25 to 70°C (with no icing)	-10 to 70°C
Ambient operating temperature (not during transmission)	-40 to 110°C (with no icing) Heat resistance: Constant high temperature: 180°C for 200 hours Thermal cycle: 25°C/180°C, 30 minutes, 200 cycles	-40 to 110°C (with no icing)	-10 to 70°C (with no icing)
Ambient storage temperature	-40 to 110°C (with no icing)	-40 to 110°C (with no icing)	-10 to 70°C (with no icing)
Ambient operating humidity	No restrictions	35% to 95% (with no condensation)	35% to 85%
Degree of protection	IEC 60529: IP68	IEC 60529: IP67	IEC 60529: IP67
Vibration resistance	10 to 2,000 Hz, 0.75-mm single amplitude, 150-m/s ² acceleration with 10 sweeps of 15 min each in X, Y, and Z directions		10 to 2,000 Hz, 1.5-mm double amplitude, acceleration maximum value 150-m/s ² with 10 sweeps of 15 min each in X, Y, and Z directions
Shock resistance	500-m/s ² acceleration for 3 times each in X, Y, and Z directions (18 times in total)		
Material	PPS resin	Case: PBT resin; Filling: Epoxy resin	ABS, filled with epoxy resin
Weight	Approx. 2 g	Approx. 1 g	Approx. 6 g


Compact Reader Writers

Item	Model	
	V700-HDM11 	V700-HMD11-1 
Host interface	RS-232C	
Power consumption	5 VDC ±5% (supplied via V600-A20 AC Adapter) Oscillating: 200 mA max.; Not oscillating: 25 mA max.	5 VDC ±5% (supplied via connector) 250 mA max.
Insulation resistance	50 MΩ min. (at 500 VDC) between the cable terminals and the case	
Dielectric strength	1,000 VAC (50/60 Hz, 1 minute) between the cable terminals and the case (leakage current: 1 mA max.)	
Vibration resistance	10 to 150 Hz, 1.50-mm double amplitude with 4 sweeps of 8 min each in X, Y, and Z directions	
Shock resistance	300-m/s ² acceleration for 3 times each in X, Y, and Z directions (18 times in total)	
Ambient operating temperature	-10 to 55°C (with no icing)	
Ambient operating humidity	25% to 85% (with no condensation)	
Ambient storage temperature	-25 to 65°C (with no icing)	
Ambient storage humidity	25% to 95% (with no condensation)	
Degree of protection	IEC 60529: IP67 The connector is not resistant to water or oil.	
Material	Case: ABS resin; Filling: Epoxy resin; Cable: PVC (oil-resistant)	
Cable length	2 m (RS-232C signal lines can be extended up to a total length of 15 m.)	1, 2, 4 m
Weight	Approx. 210 g	Approx. 210 g (2 m)

ID Link Unit

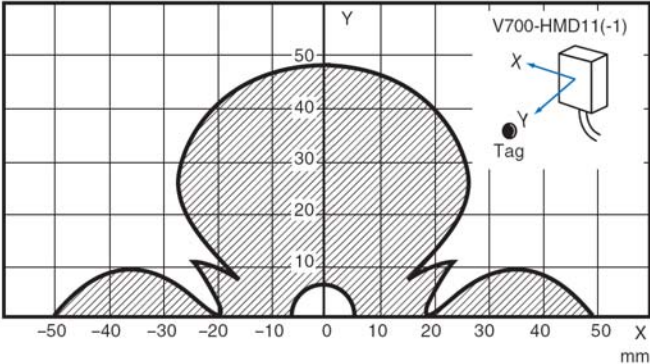
Item	V700-L12 
Host interface	RS-232C or RS-485 (special 1:N protocol)
Number of connectable Antennas	1
Power supply voltage	24 VDC +10%/-15%
Power consumption	10 W max.
Insulation resistance	50 MΩ min. (at 500 VDC) between the power supply terminals and the ground terminal
Dielectric strength	1,000 VAC (50/60 Hz, 1 minute) between the power supply terminals and the ground terminal (leakage current: 5 mA max.)
Vibration resistance	10 to 150 Hz, 0.20-mm double amplitude, 15-m/s ² acceleration with 10 sweeps of 8 min each in X, Y, and Z directions
Shock resistance	150-m/s ² acceleration for 3 times each in X, Y, and Z directions (18 times in total)
Ambient operating temperature	0 to 40° C (with no icing)
Ambient operating humidity	35% to 85% (with no condensation)
Ambient storage temperature	-15 to 50° C (with no icing)
Ambient storage humidity	35% to 85% (with no condensation)
Degree of protection	IEC 60529: IP20
Ground	Ground at a resistance of less than 100 Ω. If grounding is not performed properly, transmission specifications may be adversely affected by the surrounding environment.
Weight	Approx. 185 g

ID Tag Holder (for V700-D23P31 Coin-shaped ID Tag)

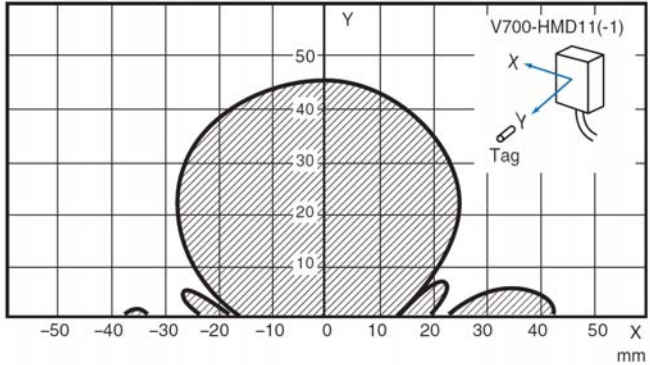
Item	V700-A80 
Ambient storage temperature	Conforms to the specifications for the V700-D13P31 Coin-shaped ID Tag.
Ambient operating humidity	No restrictions
Material	PPS resin
Weight	Approx. 5 g

Communication diagram

V700-HMD11(-1) & V700-D23P31



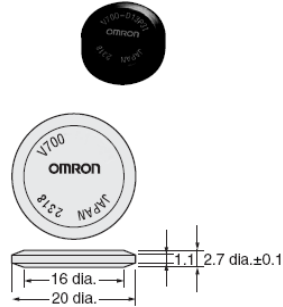
V700-HMD11(-1) & V700-D23P41



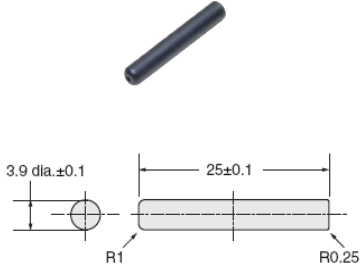
Dimension drawings – Tags & Reader

ID Tag

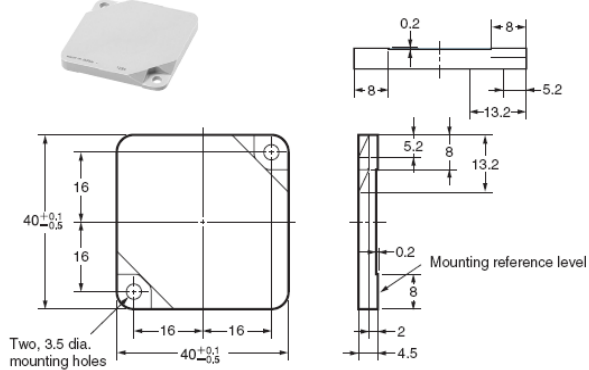
V700-D23P31
Coin-shaped ID Tag



V700-D23P41
Stick-shaped ID Tag

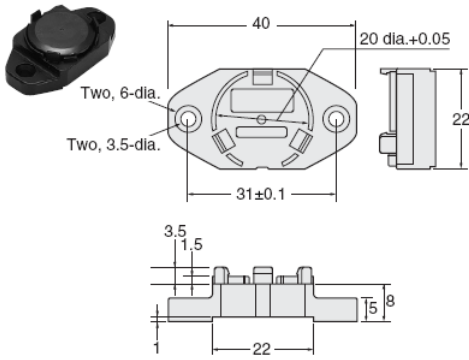


V700-D23P61
Square-shaped ID Tag



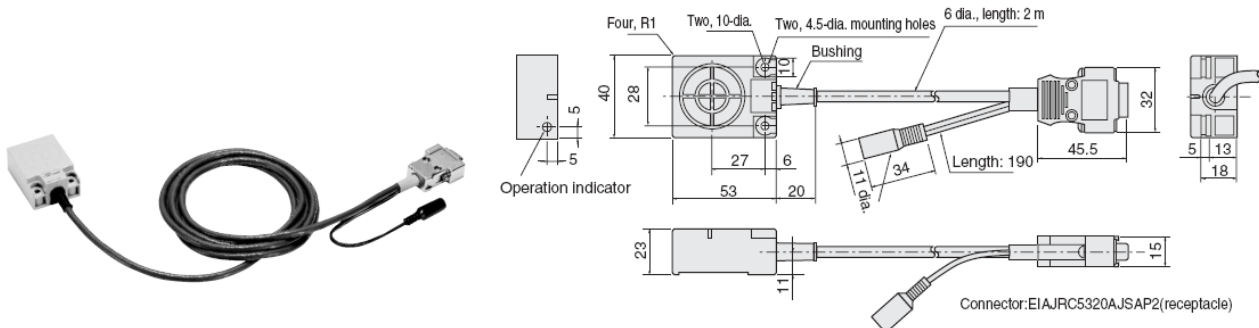
ID Tag Holder (for V700-D23P31)

V700-A80

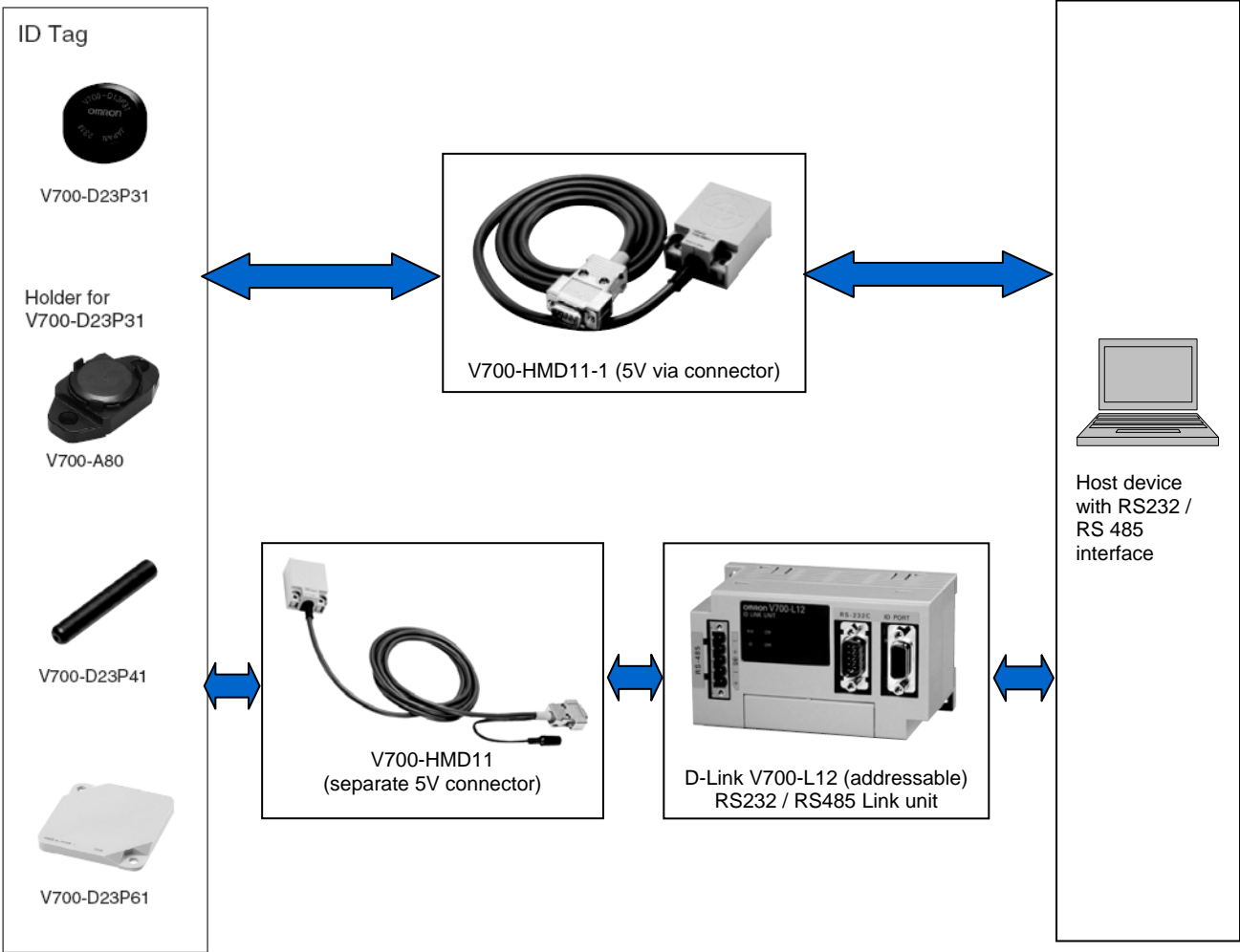


Compact Reader Writer

V700-HMD11



System Configuration



Functions

Transmission Functions

	V700-HMD11 /-1
Single access	Provided
FIFO	Provided
Multiple access	Not provided
Selective	Not provided

ID Tag	Transmission distance
V700-D23-P31	8 to 43 mm
V700-D23-P41	0 to 37 mm

Transmission Time (Reference)

The transmission time is the time required for transmission between antenna and ID tag and does not include time required for host communication.

V700-HMD11 /-1	
Read	$T = 48N + 66$
Write	$T = 55N + 120$

Note: T = Transmission time
N = Number of pages (1 page = 8 bytes)

Precautions for using the product near noise sources

This product makes transmissions to ID Tags using a frequency of 125kHz. Transceivers, motors, monitoring devices, and power supplies have parts that generate electromagnetic waves (noise). These waves may interfere with transmissions to ID Tags. Before using this product near these kinds of devices, check that there is no adverse affect on transmissions.

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