

RFID Selection Guide

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RFID Systems

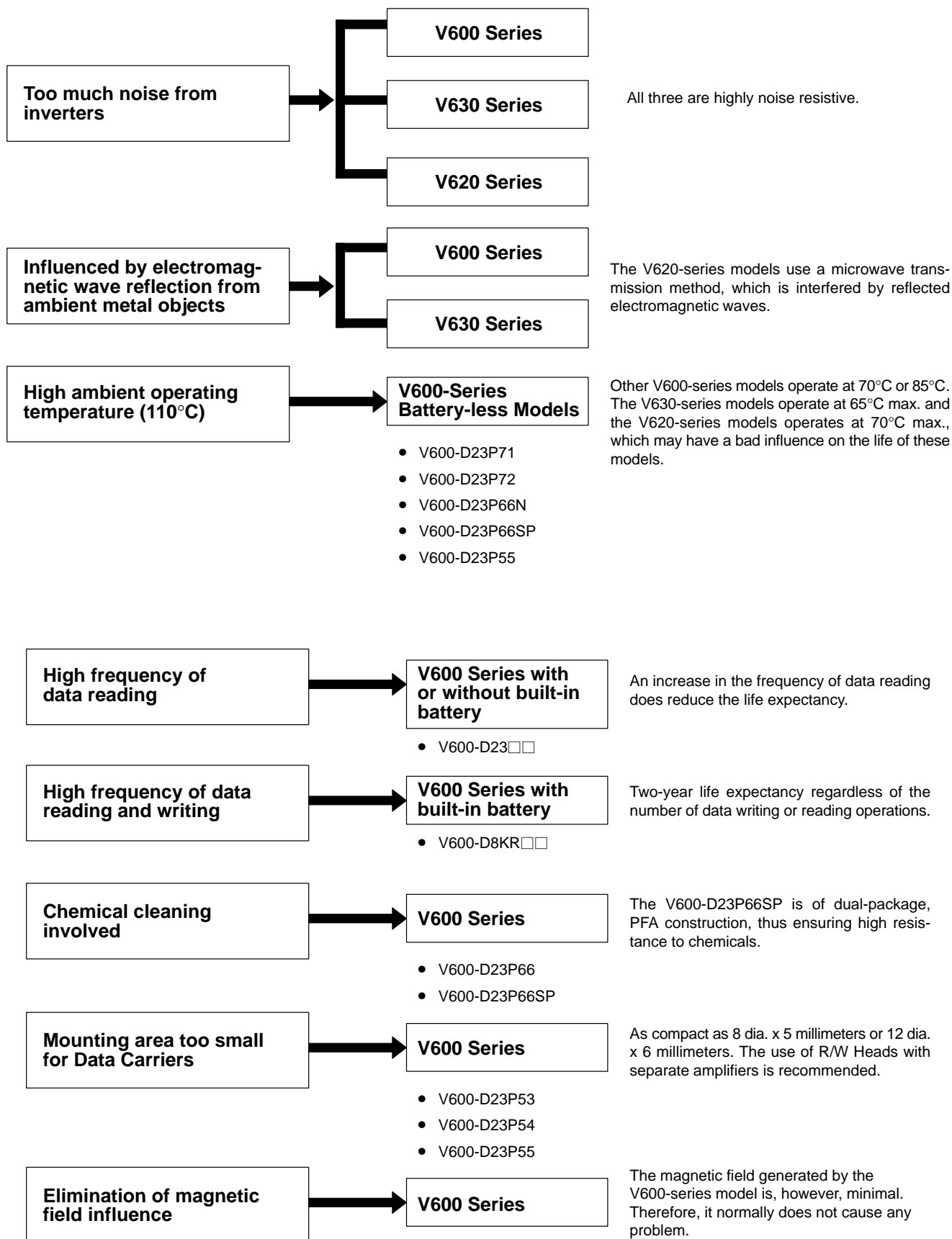
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Selection of an RFID System

Selection According to Operating Environment

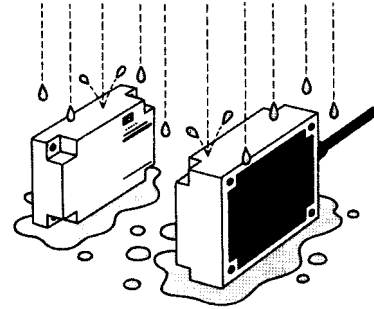


Selection of a V600 Model

V600-series Data Carrier

Highly Resistant to the Environment

The Data Carrier satisfies the requirements of IEC 60529 IP67 protection ratings, thus withstanding water droplets. Furthermore, it is highly vibration- and shock-resistant and can be used in harsh operating environments. The R/W Heads also have superior environmental resistance for reliable operation in harsh conditions.

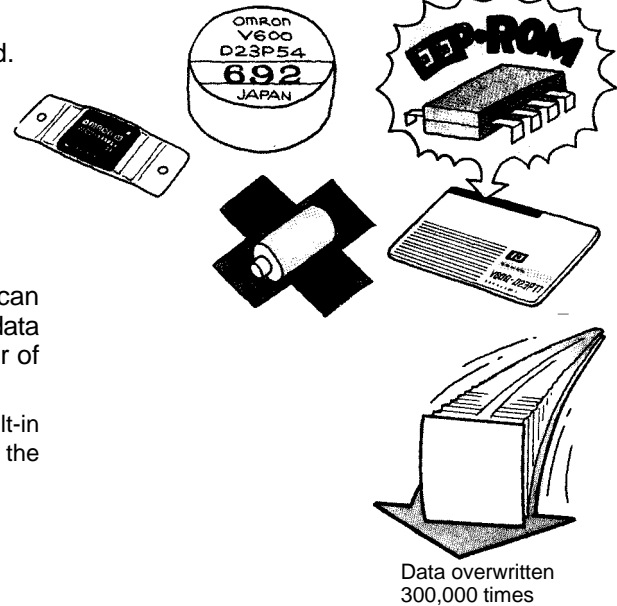


Battery-less Data Carriers

- A nonvolatile EEPROM memory is used, so a battery is not required.
- A memory capacity of 256 bytes is provided.
- A line of thin, compact Data Carriers is available.
- Low cost
- Withstands an environment temperature of 110°C.
- Chemical-resistive models are available.
- Each memory address in the Data Carrier can be overwritten up to 300,000 times and the data in the Data Carrier can be read any number of times.

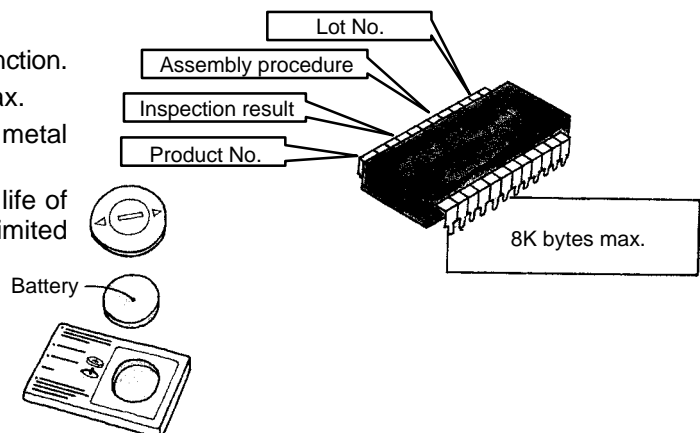
Note: The battery-less Data Carrier with a built-in EEPROM can be used in combination with the following Controllers and ID Sensor Units.

- V60-CA1A-□/CA2A-□/CA8A-□/CA9A-□
(Provided that the software version is 5.0 or later.)
- V600-CD1D-V3/CM1D/CF1A
(Provided that the software version is 2.0 or later.)
- V600-CB/CB-US
(Provided that the software version is 2.0 or later.)
- ID Sensor Units:
C200H-IDS01-V1, C500-IDS01-V2, and C500-IDS02-V1




Built-in-battery Data Carriers


- Incorporates a SRAM.
- Incorporates a battery life detecting function.
- High memory capacity of 8K bytes max.
- All models can be mounted to metal surfaces.
- Built-in battery models with a battery life of two years are available with unlimited memory access.




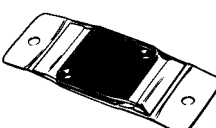
1 System Configuration for Battery-less Data Carriers


Data Carriers


V600-D23P71

 86 × 54 × 1.5 mm


V600-D23P72

 50 × 34 × 1.5 mm


V600-D23P66N

 34 × 34 × 3.5 mm

V600-D23P66SP

 95 × 36.5 × 6.5 mm

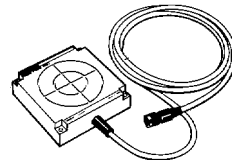
V600-D23P81

 30 mm dia.

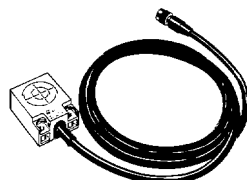
V600-D23P61

 32 × 24 × 6 mm

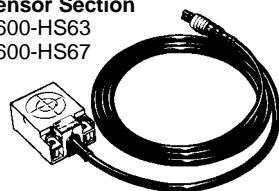
V600-D23P53/D23P55

 8 dia. × 5 mm


V600-D23P54

 12 dia. × 6 mm


R/W Heads


V600-H07



V600-H11


Sensor Section
V600-HS63
V600-HS67


V600-H51


V600-H52


Sensor Section
V600-HS51


Sensor Section
V600-HS61


ID Controllers

Amplifier Section
V600-HAR91/
HAM91/
HAR92 (NPN)
V600-HAR81/
HAM81 (PNP)

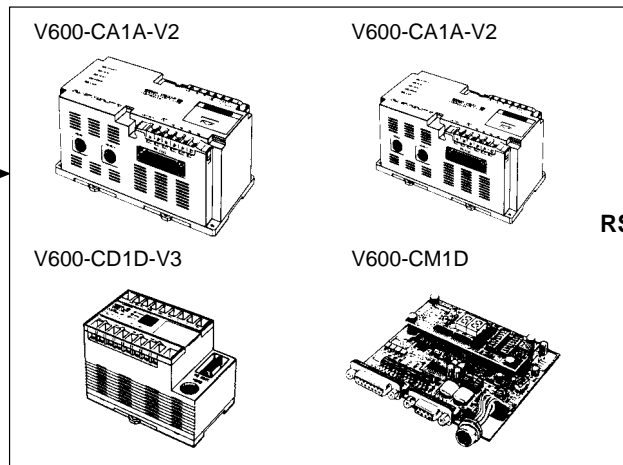
ID Controllers

Amplifier Section
V600-HA51

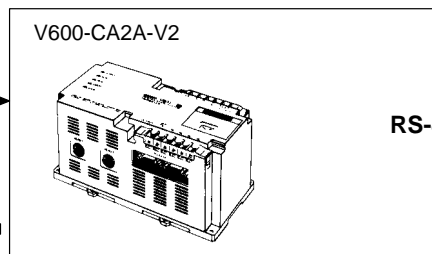
Amplifier Section
V600-HAM42-DRT
(DeviceNet)

Note: The EEPROM Data Carriers can be used with the ID Controllers and ID Sensor Units listed below:
 V600-CA1A and V600-CA2A ID Controllers with Version-5.0 or higher software
 V600-CD1D ID Controllers with Version-2.0 or higher software (V600-CD1D-V2)
 Handheld ID Controllers with Version-2.0 or higher software
 C200H-IDS01-V1, C500-IDS01-V2, and C500-IDS02-V1 ID Sensor Units

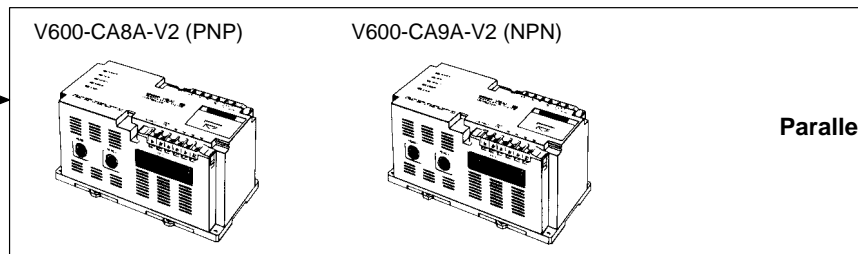
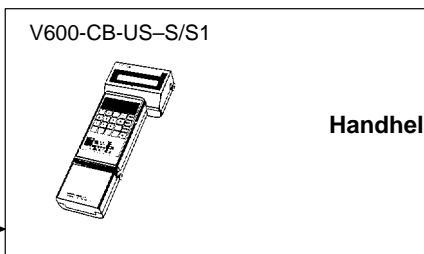
ID Controllers



RS-232C I/F

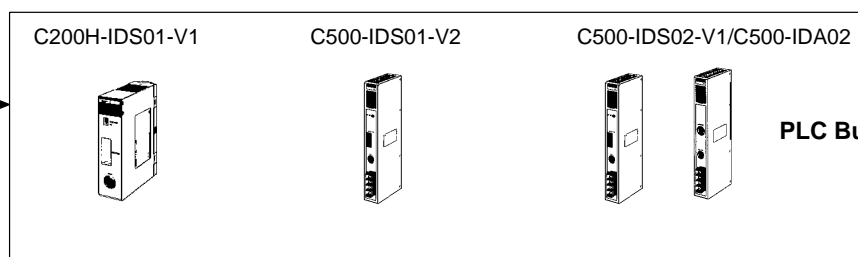


RS-422 I/F

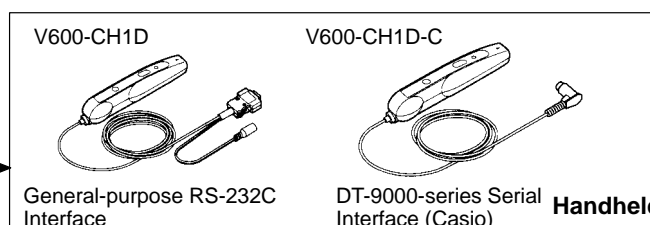


Parallel Interface

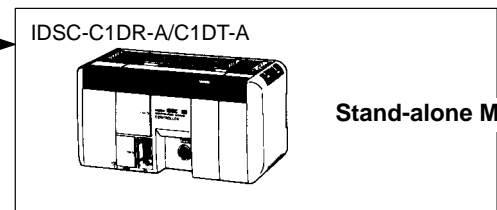
8/16-bit Parallel Interface (NPN, PNP)



PLC Bus (Direct Line)



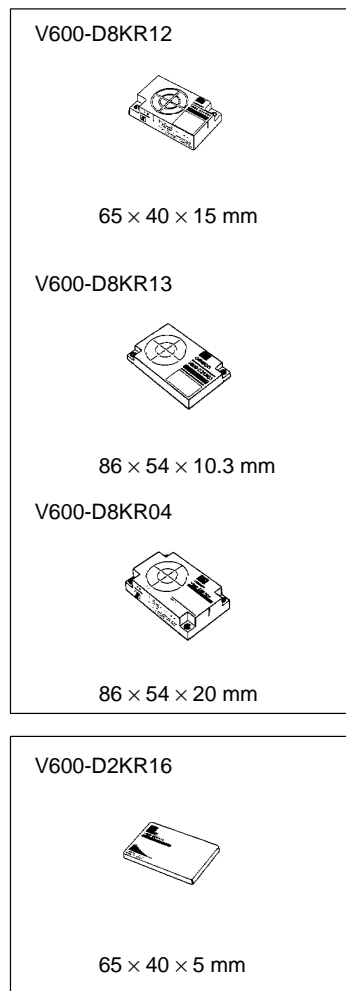
Handheld Reader Writers



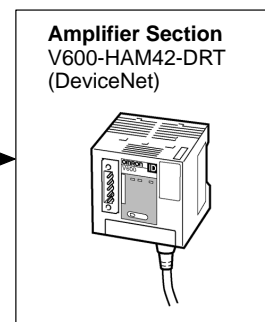
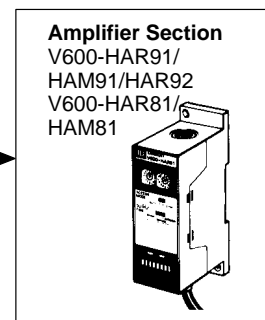
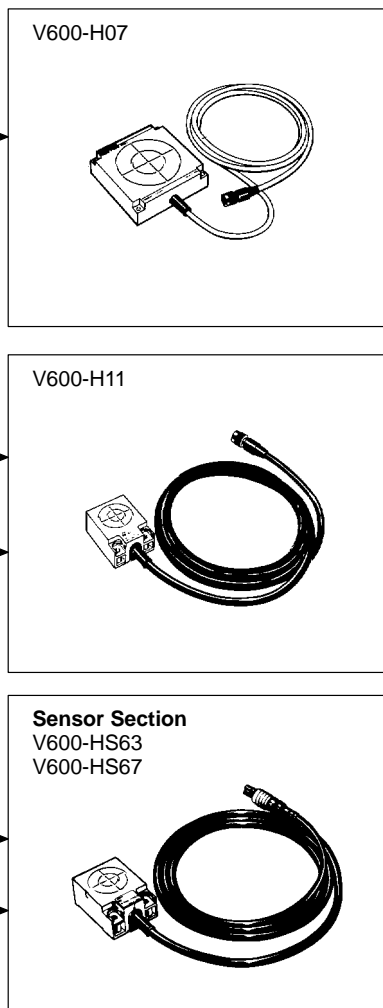
DeviceNet Master

2 System Configuration for Built-in-battery Data Carriers

Data Carriers

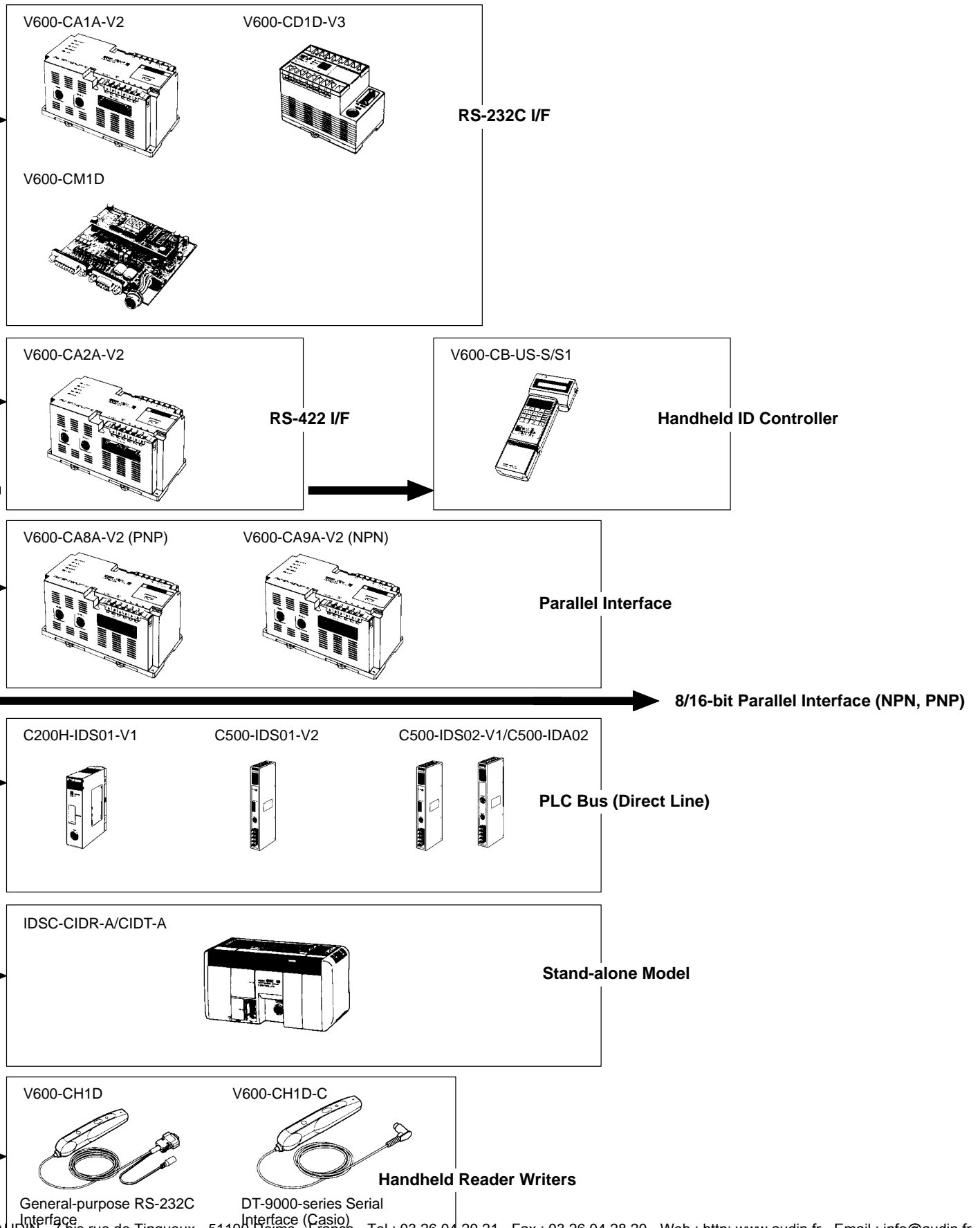


R/W Heads



DeviceNet Master

ID Controllers

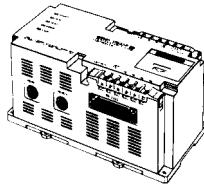


■ RFID Controller Selection: V600 Series

RS-232C I/F

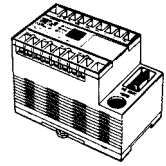
V600-CA1A-V2

- Two R/W Head connectors
- One built-in RS-232C port
- 100 to 240 VAC, 50/60 Hz
- Can be mounted to Monitor Unit
- Conforms to EC Directives



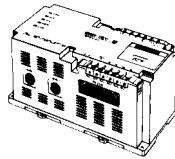
V600-CD1D-V3

- R/W Head connectors
- One built-in RS-232C port
- 24 VDC
- Compact
- Conforms to EC Directives



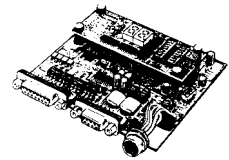
V600-CA1A-F-V2

- Same functions as V600-CA1A ID Controllers, plus FANUC protocol compatibility
- Conforms to EC Directives



V600-CM1D

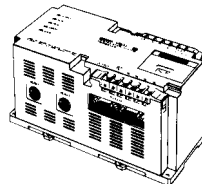
- 24 VDC, 5-VDC dual system input
- One built-in RS-232C port
- R/W Head connectors
- Panel model for combination with other devices



RS-422 I/F

V600-CA2A-V2

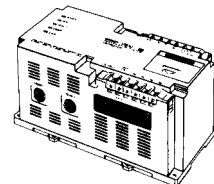
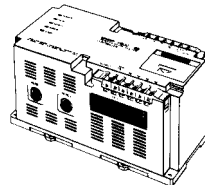
- Two R/W Head connectors
- One built-in RS-422 port
- Up to 16 Units can be connected using multi-drop lines
- 100 to 240 VAC, 50/60 Hz
- Can be mounted to Monitor Unit
- Conforms to EC Directives



Parallel PNP Interface

V600-CA8A-V2/V600-CA9A-V2

- Two R/W Head connectors
- Transistor output (V600-CA8A: Parallel PNP interface, V600-CA9A: Parallel NPN interface)
- 100 to 240 VAC, 50/60 Hz
- Can be mounted to Monitor Unit
- Conforms to EC Directives



PLC Bus (Direct Line) ID Sensor Units

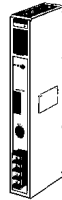
C200H-IDS01-V1

- Can be mounted to SYSMAC C200H and C200HX PLCs
- R/W Head connectors



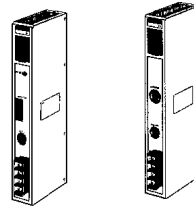
C500-IDS01-V2

- Can be mounted to SYSMAC C-series and CV-series PLCs
- R/W Head connectors



C500-IDS02-V1/C500-IDA02

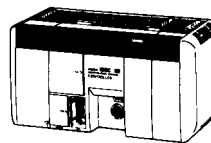
- Can be mounted to SYSMAC C-series and CV-series PLCs
- R/W Head connectors
- An R/W Head can be extended up to 200 m.



Stand-alone Models

IDSC-CIDR-A/IDSC-CIDT-A

- R/W Head connectors
- 100 to 240 VAC, 50/60 Hz
- 16 inputs and 16 outputs
- Built-in RS-232C port can be used to connect display devices



Handheld Models

V600-CB-US-S/S1

- Stand-alone model for easy on-site maintenance
- Transmission with all V600-series Data Carriers
- Connects to previous R/W Heads
 - S model: With V600-A14 Battery Charger
 - S1 model: Without V600-A14 Battery Charger

V600-CH1D

- Handheld model combining the ID Controller and R/W Head
- Can be combined with other devices with an RS-232C interface such as personal computers, handheld terminals, and PLCs

V600-CH1D-C

- Handheld Reader Writer that connects to DT-9000-series devices (Casio)
- Powerful enough to be used as an on-site operation terminal

Electromagnetic RFID System

V600



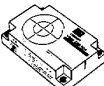








Non-contact Data Communications System

- Superior environmental resistance.
- High memory capacity of 8K bytes for Built-in-battery Data Carriers and 254 bytes for Battery-less Data Carriers.
- Built-in-battery Data Carriers have a battery life detecting function.
- Data of battery-less Data Carriers can be overwritten 300,000 times.
- Thin, compact, and low-cost Data Carriers are available.
- Transmission distance of 100 mm max.










Ordering Information

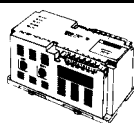
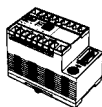
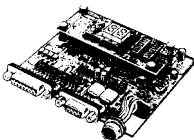

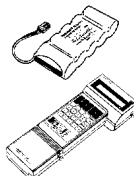
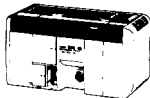
■ Data Carriers

Item	Model		Specifications/Design	
Built-in-battery DCs	V600-D8KR12		Compact 65 × 40 × 15 mm	8k bytes
	V600-D8KR13		Thin 86 × 54 × 10.3 mm	8k bytes
	V600-D8KR04		Intermediate-range 86 × 54 × 20 mm	8k bytes
Replaceable-battery DCs	V600-D2KR16		Compact 65 × 40 × 5 mm	2k bytes
Battery-less DCs	V600-D23P71		Card-type 86 × 54 × 1.5 mm	254 bytes
	V600-D23P72		Half-size card-type 50 × 34 × 1.5 mm	
	V600-D23P66N		Rectangular 34 × 34 × 3.5 mm	
	V600-D23P66SP		Rectangular package with PFA 95 × 36.5 × 6.5 mm	
	V600-D23P61		Compact 32 × 24 × 6 mm	
	V600-D23P53/D23P55		Round super-compact 8 dia. × 5 mm	
	V600-D23P54		Round compact 12 dia. × 6 mm	

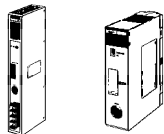

■ R/W Heads

Item	Model			Specifications/Design	
Rectangular	V600-H07 (0.5 m)			Dimensions: 100 × 100 × 30 mm	0.5-m cable
	V600-H07 (2 m)				2-m cable
	V600-H07 (5 m)				5-m cable
	V600-H07 (10 m)				10-m cable
	V600-H11 (0.5 m)			Dimensions: 53 × 40 × 23 mm	0.5-m cable
	V600-H11-R (0.5 m)				0.5-m cable
	V600-H11 (2 m)				2-m cable
	V600-H11 (5 m)				5-m cable
	V600-H11 (10 m)				10-m cable
	Cylinder type	V600-H51 (0.5 m)			Dimensions: 22 dia. × 80 mm
V600-H51 (2 m)		2-m cable			
V600-H51 (5 m)		5-m cable			
V600-H51 (10 m)		10-m cable			
V600-H52 (0.5 m)			Dimensions: 22 dia. × 85 mm	0.5-m cable	
V600-H52 (2 m)				2-m cable	
V600-H52 (5 m)				5-m cable	
V600-H52 (10 m)				10-m cable	
Separate-amplifier type	Amplifier section	V600-HA51 (2 m)		73.8 × 22.6 × 36.5 mm, with 2-m cable	
		V600-HA51 (5 m)		73.8 × 22.6 × 36.5 mm, with 5-m cable	
		V600-HA51 (10 m)		73.8 × 22.6 × 36.5 mm, with 10-m cable	
	Sensor section	V600-HS51		12 dia. × 36.5 mm deep, with 2-m cable	
		V600-HS61			30.5 × 18 × 10 mm, with a 2-m cable



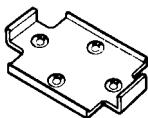
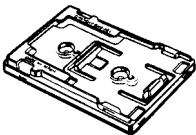


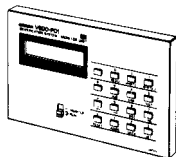
■ ID Controllers

Item	Model		Specifications/Design	
AC Power Supply	V600-CA1A-V2		100 to 240 VAC, 50/60 Hz Two R/W Head connectors 200 × 100 × 100 mm	RS-232C host interface
	V600-CA2A-V2			RS-422 host interface
	V600-CA8A-V2			Parallel PNP host interface
	V600-CA9A-V2			Parallel NPN host interface
DC Power Supply	V600-CD1D-V3		24 VDC R/W Head connectors 115 × 68 × 80 mm	RS-232C host interface
	V600-CM1D			
Handheld	V600-CB-US-S (Kit)		A Battery Charger, Ni-Cd Battery Pack, Battery Case, and Carrying Belt are included. Dispose of recyclable Ni-Cd batteries appropriately.	
	V600-CB-US-S1 (Kit)		Ni-cd Battery pack, Battery case, and Carrying Belt are included. Dispose of recyclable Ni-Cd batteries appropriately.	
AC Power Supply	IDSC-CIDR-A		100 to 240 VAC, 50/60 Hz Relay contact output type	
	IDSC-CIDT-A		150 to 240 VAC, 50/60 Hz Transistor output type	

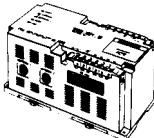
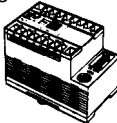
■ ID Sensor Units/ID Adapter

Model		Specifications/Design	
C500-IDS01-V2		SYSMAC CV500, CV1000, CVM1, C500(F), C1000H(F), C2000H PLCs	General-purpose
C500-IDS02-V1			Long-distance transmission
C200H-IDS01-V1		For the C200H and C200HX PLCs	General-purpose
C500-IDA02		Required when using the C500-IDS02-V1 ID Sensor Unit	Long-distance transmission

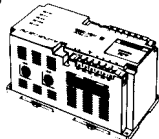
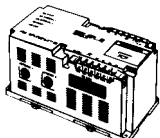
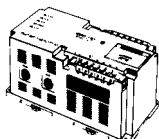
■ Accessories (Order Separately)

Item	Model		Specifications/Design	
R/W Antennas	V600-A45		Standard cable Non-water-resistant connectors	3-m cable
	V600-A44			5-m cable
	V600-A40			10-m cable
	V600-A41			20-m cable
	V600-A42			30-m cable
	V600-A56		Robotic cable Non-water-resistant connectors	3-m cable
	V600-A55			5-m cable
	V600-A50			10-m cable
	V600-A51			20-m cable
	V600-A52			30-m cable
Data Carrier Mounting Brackets	V600-A81		For the V600-D2KR16	
	V600-A84		For the V600-D23P71/D23P72	
Attachments	V600-A86		For the V600-D23P66N	
Data Carrier Battery Replacement Kit (lithium battery)	V600-A82 (5 in each set)		For the V600-D2KR16 Commercially available CR2016 battery (includes replacement battery, seal, and cover)	
Monitor Unit	V600-P01		For the V600-CA□A-□ Controller	

■ RS-232C Cables (Order Separately)









Model	Cable length	Compatible ID Controllers
XW2Z-200P	2 m	V600-CA1A-V2 
XW2Z-500P	5 m	
XW2Z-200S	2 m	V600-CD1D-V3 V600-CF1A V600-CM1D 
XW2Z-500S	5 m	

■ Connectors for ID Controllers (One Set per Unit)

Model	Name	Compatible ID Controllers
XM2A-0901	Connector Plug	V600-CA2A-V2 V600-CD1D-V3 V600-CM1D 
XM2S-0911	Connector Hood	
XM2A-2501	Connector Plug	V600-CA1A-V2 
XM2S-2511	Connector Hood	
MR-50F (Honda Tsushin Kogyo)	Connector Plug	V600-CA8A-V2 V600-CA9A-V2 
MR-50L (Honda Tsushin Kogyo)	Connector Hood	

Specifications





■ Battery-less Data Carriers

Item	Card-type	Half-size Card-type	Rectangular Compact	Chemical-resistant	Rectangular Compact	Round Super-compact	Round Compact	Round Super-compact
Model	V600-D23P71 	V600-D23P72 	V600-D23P66N 	V600-D23P66SP 	V600-D23P61 	V600-D23P53 	V600-D23P54 	V600-D23P55 
Memory Capacity	254 bytes							
Memory type	EEPROM (non-volatile memory)							
Transmission distance	Refer to page 34, <i>Transmission Distance Specifications for Battery-less DCs</i>							
Data retention time	10 years (Data is retained for 10 years after it is written)							
Number of overwrites (See note 1.)	Up to 0°C	800,000 times						
	Up to 25°C	400,000 times						
	Up to 60°C	300,000 times						
	Up to 85°C	100,000 times						
Transmission error detection	16-bit CRC in both directions							
Operating temperature	Data retention	–20° to 110°C	–40° to 150°C (See note 2.)	–40° to 110°C	–40° to 85°C			–40° to 150°C (See note 2.)
	Reading/writing	–10° to 70°C	–20° to 85°C	–20° to 70°C	–25° to 70°C			–25° to 85°C
Storage temperature	–20° to 110°C		–40° to 150°C (See note 2.)	–40° to 110°C	–40° to 85°C			–40° to 150°C (See note 2.)
Ambient humidity	Operating: 35% to 95%							
Protection rating (IEC 60529)	IP67		IP68	IP67G	IP67			IP67
Vibration resistance (destruction)	10 to 2,000 Hz, 3.0-mm double amplitude, 300 m/s ² acceleration for 30 min each in 3 directions (90 min total)		10 to 2,000 Hz, 1.5-mm double amplitude, 150 m/s ² acceleration for 15 min each in 3 directions (10 times total)	10 to 2,000 Hz, 3.0-mm double amplitude, 300 m/s ² acceleration for 30 min each in 3 directions (90 min total)				10 to 2,000 Hz, 1.5-mm double amplitude, 150 m/s ² acceleration for 15 min each in 3 directions (10 times total)
Shock resistance	Destruction: 1,000 m/s ² 3 times each in 3 directions (18 times total)		Destruction: 500 m/s ² 3 times each in 3 directions (18 times total)	Destruction: 1,000 m/s ² 3 times each in 3 directions (18 times total)				Destruction: 500 m/s ² , 3 times each in 3 directions (18 times total)
Weight	Approx. 15 g	Approx. 5 g	Approx. 6.5 g	Approx. 19 g	Approx. 5.8 g	Approx. 0.4 g	Approx. 1.0 g	Approx. 0.6 g

Note: 1. The number of overwrites shown in the table is for each address. For ambient temperature ranges, refer to the operating temperature item in the table.

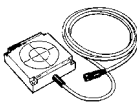



2. Heat resistance for 150°C was confirmed by an evaluation test in which the Unit was left to sit at 150°C for 1,000 hours, followed by heat shocks applied at –10°C and 150°C for 30 minutes each, for 1000 cycles. No defects were found among the 22 test samples.

■ Built-in-battery Data Carriers

Item	Compact	Thin	Intermediate Range	Compact with Replaceable Battery
Model	V600-D8KR12 	V600-D8KR13 	V600-D8KR04 	V600-D2KR16 
Memory Capacity	8K bytes/8K bytes			2K bytes
Memory type	SRAM			
Transmission distance	Refer to page 34, <i>Transmission Distance Specifications for Built-in-battery DCs</i>			
Battery life (See note 1.)	Refer to page 45, <i>Battery Life</i>			2 years (at 25°C) (See note 2.)
Number of reads/writes	Unlimited			Unlimited (Does not affect battery life)
Transmission error detection	16-bit CRC in both directions			
Ambient temperature	Operating: -40° to 70°C -25° to 70°C during R/W Storage: -40° to 70°C			Operating: -15° to 70°C 0° to 50°C during R/W Storage: -15° to 70°C
Ambient humidity	Operating: 35% to 95% Storage: 35% to 95%			Operating: 35% to 85% Storage: 35% to 95%
Protection rating (IEC 60529)	IP67			IP50 (dustproof) (See note 3.)
Vibration resistance (destruction)	10 to 500 Hz, 1.0-mm double amplitude, 150 m/s ² acceleration for 11 min each in X, Y, and Z directions			10 to 150 Hz, 0.75-mm double amplitude, 100-m/s ² acceleration for 30 min each in X, Y, and Z directions
Shock resistance (destruction)	1,000 m/s ² 3 times each in X, Y, and Z directions (18 times total)			300 m/s ² 3 times each in X, Y, and Z directions (18 times total)
Weight	Approx. 70 g		Approx. 160 g	Approx. 15 g




- Note:**
1. A low battery detection function is built-in.
 2. The battery life is applicable for batteries used at a temperature of 25°C. Refer to *Temperature and Battery Life* on page 46 for details on the relationship between temperature and battery life. The CR2016 is provided as the replacement battery. Refer to page 27 for details on accessories.
 3. The Data Carrier is dustproof when the provided battery replacement cover seal is used.

■ Read/Write (R/W) Heads

Item	V600-H07	V600-H11/H11-R	V600-H51	V600-H52
				
Transmission frequency	530 kHz			
Ambient temperature	Operating: -25° to 70°C Storage: -40° to 85°C		Operating: -10° to 60°C Storage: -25° to 75°C	
Ambient humidity	Operating: 35% to 95% Storage: 35% to 95%			
Insulation resistance	50 MΩ (at 500 VDC) between cable terminals and case			
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between cable terminals and case (leakage current: 1 mA max.)			
Protection rating (IEC 60529)	IP67			
Vibration resistance (destruction)	10 to 500 Hz, 1.0-mm double amplitude, 150 m/s ² acceleration with 3 sweeps of 11 min each in X, Y, and Z directions			
Shock resistance	Destruction: 500 m/s ² 3 times each in X, Y, and Z directions (18 times total)			
Cable length (See note 1.)	Standard lengths of 0.5 m, 2 m, 5 m, and 10 m.			
Wireless transmission error detection	16-bit CRC in both directions			
Indicators	Power: green; transmission: orange			
Weight	Approx. 1 kg (with 10-m cable)	Approx. 650 g (with 10-m cable)		

Note: 1. Extension cables are also available. The maximum cable length is 30.5 m for the V600-H07 and 50.5 m for the V600-H11/H51/H52.
2. The connectors are not water-resistant.







■ R/W Heads (with Separate Amplifier)

Item	Sensor section		Amplifier section
	V600-HS51	V600-HS61	V600-HA51
			
Transmission frequency	530 kHz		---
Ambient temperature	Operating: -10° to 60°C Storage: -25° to 75°C		Operating: -10° to 60°C Storage: -25° to 75°C
Ambient humidity	Operating: 35% to 95%		
Insulation resistance	50 MΩ (at 500 VDC) between cable terminals and case		
Dielectric strength	1,000 VAC 50/60 Hz for 1 min between cable terminals and case (leakage current: 1 mA max.)		
Protection rating (IEC 60529)	IP67		IP66
Vibration resistance (destruction)	10 to 2,000 Hz, 1.5-mm double amplitude, 300 m/s ² acceleration with 2 sweeps of 15 min each in 3 directions		Installed in panel: 10 to 2,000 Hz, 1.5-mm single amplitude, 300-m/s ² acceleration with 2 sweeps of 11 min each in 3 directions DIN Track installation: 10 to 500 Hz, 1.0-mm single amplitude, 150-m/s ² acceleration with 3 sweeps of 11 min each in 3 directions
Shock resistance (destruction)	1,000 m/s ² 3 times each in 3 directions (18 times total)		500 m/s ² 3 times each in 3 directions (18 times total)
Cable length	2 m (fixed) between sensor and amplifier		Standard lengths of 2 m, 5 m, and 10 m between amplifier and controller (See note 1.)
Wireless transmission error detection	16-bit CRC in both directions		
Indicators	---		Power: green; transmission: orange
Weight	Approx. 70 g (with 2-m cable)		Approx. 650 g (10-m cable)

Note: 1. Extension cables are also available. The maximum cable length is 50 m for the V600-HA51. Extension cables are not available for the V600-HS51/HS61.

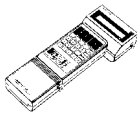
2. The connectors are not water-resistant.

■ ID Controllers

Item	V600 Series (Electromagnetic RFID System)					
	V600-CA1A-V2 (See note.) 	V600-CA2A-V2 (See note.) 	V600-CA8A-V2 (See note.) 	V600-CA9A-V2 	V600-CD1D-V3 (See note.) 	V600-CM1D 
Host interface	RS-232C	RS-422 (Maximum of 16 Units can be connected)	Parallel PNP output	Parallel NPN output	RS-232C	RS-232C
Possible number of R/W Heads	2				1	1
Power supply voltage	100 to 240 VAC, 50/60 Hz				24 VDC	24 VDC, 5 VDC
Acceptable power supply voltage	85 to 264 VAC				20.4 to 26.4 VDC	24 VDC, 20.4 to 26.4 VDC, 5 VDC, 4.5 to 5.5 VDC
Power consumption	35 VA max.				7.2 W max.	24 VDC: 7.2 W max. 5 VDC: 1.5 W max.
Insulation resistance	50 MΩ min. (at 500 VDC) between power terminals and case, between I/O terminals and case, or between the power supply terminals and I/O terminals					
Dielectric strength	1,500 VAC, 50/60 Hz for 1 min between the points listed above; Leakage current: 10 mA max.				1,000 VAC, 50/60 Hz for 1 min between the points listed above; Leakage current: 10 mA max.	
Noise immunity	1,500 V (p-p) pulses of 100 ns to 1 μs pulse width with a 1 ns rise time					
Vibration resistance	Destruction: 10 to 150 Hz, 0.3-mm double amplitude for 32 min each in X, Y, and Z directions Malfunction: 10 to 150 Hz, 0.2-mm double amplitude for 32 min each in X, Y, and Z directions					
Shock resistance	Destruction: 200 m/s ² 3 times each in X, Y, and Z directions (18 times total)					
Ambient temperature	Operating: -10° to 55°C Storage: -25° to 65°C				Operating: 0° to 50°C Storage: -15° to 70°C	
Ambient humidity	35% to 85% (with no condensation)					
Operating conditions	No corrosive gases					
Memory back-up	A capacitor backs up the most recent error data and statistical error data for up to 20 days (at 25°C) after a power interruption				Memory backup is not available. Error details, however, can be read from the personal computer when the power is turned ON.	
Diagnostic functions	Checks for CPU errors, memory errors, power interruptions, and transmission errors					
Ground	Ground to 100 Ω or less.					
Protection rating	For inter-panel installation (IEC 60529 IP30)					
Weight	Approx. 890 g	Approx. 930 g	Approx. 960 g		Approx. 360 g	Approx. 180 g

Note: The CA□A/-V2 and CD1D-V3 conform to EC Directives. Refer to page 55 for details.

■ Handheld ID Controllers

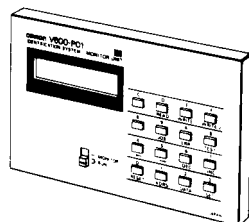
Item	V600-CB-US
	
Power supply	Built-in nickel-cadmium batteries (6 VDC) or 9-V alkaline batteries (9 VDC) (See note.)
Power consumption	700 mA max.
Continuous operating time (See note.)	3 hrs min. when using the built-in nickel-cadmium batteries; 1.5 hrs min. when using the alkaline batteries
Automatic power-saver	The power is turned OFF automatically if a key input or response is not received in 10 min
Automatic command cancellation	A command will be cancelled automatically if a response is not received from a Data Carrier within 2 min
Low battery indicator	This display appears when the battery voltage falls below the minimum voltage required for operation
User memory	32K bytes (Data will be retained for at least 24 hrs after batteries are removed)
Vibration resistance	Destruction: 10 to 150 Hz, 0.15-mm single amplitude for 32 min each in X, Y, and Z directions
Shock resistance	Destruction: 200 m/s ² 3 times each in X, Y, and Z directions (18 times total)
Ambient temperature	Operating: 0° to 45°C Storage: -20° to 60°C (excluding the battery pack)
Ambient humidity	Operating: 35% to 85%
Operating conditions	No corrosive gases
Protection rating	IEC 60529 IP30
Weight	680 g max. (including the battery pack)

Note: 1. The continuous operating time is for new, fully charged nickel cadmium batteries or new alkaline batteries used at room temperature.
2. Dispose of recyclable nickel cadmium batteries appropriately.

■ Monitor Unit

V600-P01 (for use with V600-CA□A Controllers)

The Monitor Unit is a monitoring device that can be mounted to an ID Controller. It can be used to test communications between the R/W Head and Data Carrier when the RFID System is started up, check the data in Data Carriers, and read error information or statistical error information.



The specifications conform to those of the ID Controller, except the operating temperature range is 0°C to 40°C.

■ V600-CB-US-S Configuration

Model	Name	Remarks
V600-CB-US	Handheld ID Controller	Controller
V600-A14 (See note.)	Battery Charger (120 VAC)	Accessory
V600-A11	Battery Case	Accessory (for alkaline batteries)
V600-A12	Ni-Cd Battery Pack	Accessory (built-in to ID Controller)
V600-A13	Carrying Belt	Accessory

Note The V600-CB-US-S1 is not provided with the V600-A14.

■ IDSC Series

Item	IDSC Series
	IDSC-CIDR-A IDSC-CIDT-A
Host interface	RS-232C
Possible number of R/W Heads	1
Power supply voltage	100 to 240 VAC, 50/60 Hz
Acceptable power supply voltage	85 to 264 VAC
Power consumption	60 VA max.
Insulation resistance	20 M Ω min. (at 500 VDC) between power terminals and case, between I/O terminals and case, or between the power supply terminals and I/O terminals
Dielectric strength	2,300 VAC, 50/60 Hz for 1 min between the points listed above; Leakage current: 10 mA max.
Noise immunity	1,500 V (p-p) pulses of 100 ns to 1 μ s pulse width with a 1 ns rise time
Vibration resistance	10 to 57 Hz, 0.075-mm double amplitude, 57 to 150 Hz, 9.8 m/s ² acceleration for 80 min each in X, Y, and Z directions
Shock resistance	150 m/s ² 3 times each in X, Y, and Z directions
Ambient temperature	Operating: 0° to 55°C Storage: -20° to 75°C (excluding the battery pack)
Ambient humidity	10% to 90% (with no condensation)
Operating conditions	No corrosive gases
Memory back-up	The battery life is 5 years regardless of whether an RTC is provided. The period that data is retained after a power interruption depends on the ambient temperature. Replace the battery within one week of the battery low indicator flashing.
Diagnostic functions	Checks for CPU errors, memory errors, power interruptions, and transmission errors
Ground	Ground to 100 Ω or less.
Construction	For inter-panel installation
Weight	Approx. 1,500 g



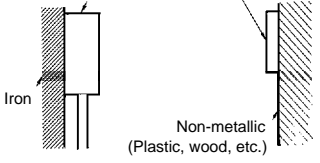



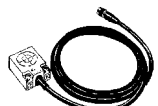


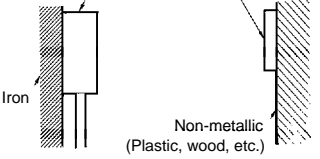
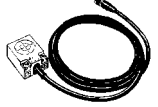
Note: Refer to the applicable ID Controller Operation Manual for details.



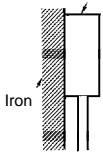
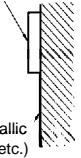

■ ID Sensor Units



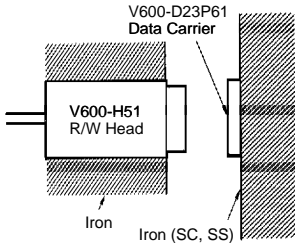
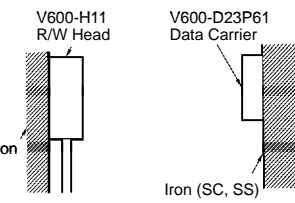

Item	C500-IDS01-V2 (for general use) C500-IDS02-V1 (for long-distance transmission) (See note.)	C200H-IDS01-V1
Communications control	Dedicated time sharing	
Possible number of R/W Heads	1 R/W Head	
DC memory format	8-bit dedicated format	
Commands	The following 7 commands are used: Read, Write, Auto read, Auto write, Abort, Cancel auto-command, Data management processing	
Transmission capacity	Up to 502 bytes (251 words) of data can be batch-transferred using the Intelligent I/O instructions (READ/WRITE)	Up to 1024 bytes (512 words) of data can be transferred (at 20 words/PLC cycle)
Diagnostic functions	1. CPU watchdog timer 2. Detects transmission error with DC, absence of DC 3. Error log function, records transmission errors (with capacitor back-up)	
Monitoring functions	A Handheld Programming Console (with a special keysheet) can be used to monitor operation (max. cable length: 4 m). The following operations are possible: Read 1-byte, Write 1-byte, Continuous write, Test, and Monitor error log	
Memory back-up	The error information has a capacitor back-up. Data retained at least 15 days (at 25°C).	
I/O word allocation	Two words are allocated when the Intelligent I/O instructions (READ/WRITE) are used Four words are allocated when the Intelligent I/O instructions (READ/WRITE) are not used (selectable)	Five words are allocated within the Special I/O (IR) area (IR 100 to IR 199)
External power supply	250 mA min. at 24 VDC	---
Internal current consumption	400 mA max. at 5 VDC	250 mA max. at 5 VDC 120 mA max. at 26 VDC (to drive the R/W Head) (See note.)
Weight	700 g max.	400 g max.



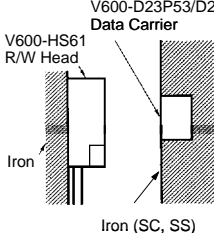
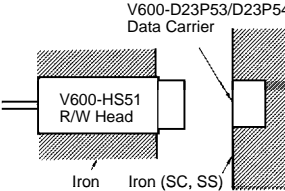
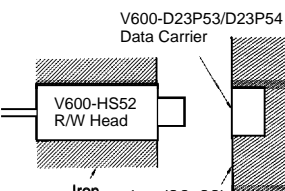


Note: The C500-IDA02 must be used with the C500-IDS02-V1. The cable can be extended to a maximum of 200 m.
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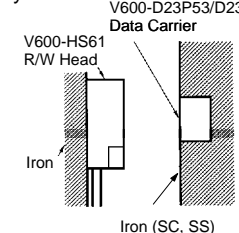
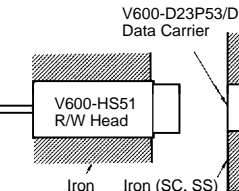
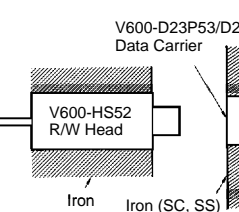


■ Transmission Distance Specifications for Battery-less DCs

Recommended combinations		Installation		Controller mode	Transmission distance	Condition for DC and R/W head Installation
Data Carrier	R/W Head					
V600-D23P71 	V600-H07 	Stationary	Read/Write distance	Irrelevant	10 to 70 mm (max. axial offset ± 10 mm)	<p>These Data Carriers are for installation on non-metallic surfaces only.</p> <p>V600-H07/11/51 R/W Head V600-D23P71/D23P72 Data Carrier</p>  <p>Note: Data transmission will be impossible if the DC is installed directly on a metal surface. The transmission distances will be reduced to 70% of the listed figures if the DC is 10 mm from the metal surface, and 90% of the listed figures if the DC is 20 mm from the metal surface. Refer to the section on installation in the Data Carrier or R/W Head's Operation Manual or Supplement for more details.</p>
		Moving			30 to 60 mm (max. axial offset ± 10 mm)	
	V600-H11/H11-R 	Stationary	Read/Write distance	Irrelevant	5 to 40 mm (max. axial offset ± 10 mm)	
		Moving			15 to 40 mm (max. axial offset ± 10 mm)	
V600-D23P72 	V600-H07 	Stationary	Read/Write distance	Irrelevant	10 to 50 mm (max. axial offset ± 10 mm)	
		Moving			30 to 40 mm (max. axial offset ± 10 mm)	
	V600-H11/H11-R 	Stationary	Read/Write distance	Irrelevant	5 to 30 mm (max. axial offset ± 10 mm)	
		Moving			15 to 30 mm (max. axial offset ± 10 mm)	
V600-D23P66N 	V600-H07 	Stationary	Read distance	Transmission distance priority	5 to 45 mm (max. axial offset ± 10 mm)	<p>V600-H07/11/51 R/W Head V600-D23P71/D23P72 Data Carrier</p>  <p>Note: Data transmission will be impossible if the DC is installed directly on a metal surface. The transmission distances will be reduced to 70% of the listed figures if the DC is 10 mm from the metal surface, and 90% of the listed figures if the DC is 20 mm from the metal surface. Refer to the section on installation in the Data Carrier or R/W Head's Operation Manual or Supplement for more details.</p>
				Transmission time priority	5 to 35 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	5 to 35 mm (max. axial offset ± 10 mm)	
		Moving	Read distance	Transmission distance priority	25 to 40 mm (max. axial offset ± 10 mm)	
				Transmission time priority	25 to 30 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	25 to 30 mm (max. axial offset ± 10 mm)	
	V600-H11/H11-R 	Stationary	Read distance	Transmission distance priority	5 to 30 mm (max. axial offset ± 10 mm)	
				Transmission time priority	5 to 25 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	5 to 25 mm (max. axial offset ± 10 mm)	
		Moving	Read distance	Transmission distance priority	15 to 25 mm (max. axial offset ± 10 mm)	
				Transmission time priority	15 to 20 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	15 to 20 mm (max. axial offset ± 10 mm)	



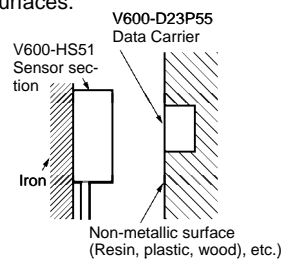
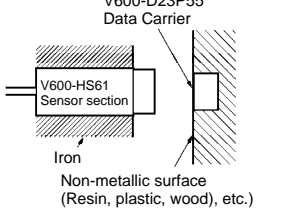
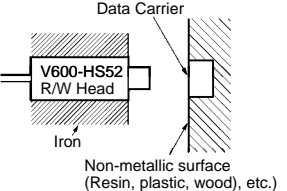


Recommended combinations		Installation		Controller mode	Transmission distance	Condition for DC and R/W head Installation
Data Carrier	R/W Head					
V600-D23P66SP 	V600-H07 	Stationary	Read distance	Transmis- sion dis- tance prior- ity	5 to 40 mm (max. axial offset ± 10 mm)	<div> <div> V600-H07/11/51 R/W Head  </div> <div> V600-D23P71/D23P72 Data Carrier  </div> </div> <p>Note: Data transmission will be impossible if the DC is installed directly on a metal surface. The transmission distances will be reduced to 70% of the listed figures if the DC is 10 mm from the metal surface, and 90% of the listed figures if the DC is 20 mm from the metal surface. Refer to the section on installation in the Data Carrier or R/W Head's <i>Operation Manual</i> or <i>Supplement</i> for more details.</p>
				Transmis- sion time priority	5 to 30 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	5 to 30 mm (max. axial offset ± 10 mm)	
		Moving	Read distance	Transmis- sion dis- tance prior- ity	20 to 40 mm (max. axial offset ± 10 mm)	
				Transmis- sion time priority	20 to 30 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	20 to 30 mm (max. axial offset ± 10 mm)	
	V600-H11/H11-R 	Stationary	Read distance	Transmis- sion dis- tance prior- ity	5 to 25 mm (max. axial offset ± 10 mm)	
				Transmis- sion time priority	5 to 20 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	5 to 20 mm (max. axial offset ± 10 mm)	
		Moving	Read distance	Transmis- sion dis- tance prior- ity	10 to 25 mm (max. axial offset ± 10 mm)	
				Transmis- sion time priority	10 to 20 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	10 to 20 mm (max. axial offset ± 10 mm)	

Recommended combinations		Installation		Controller mode	Transmission distance	Condition for DC and R/W head Installation
Data Carrier	R/W Head					
V600-D23P61 	V600-H11/H11-R 	Stationary	Read distance	Transmission distance priority	2 to 19 mm (max. axial offset ± 10 mm)	<p>These Data Carriers can be installed on all surfaces.</p>   <p>Note: The listed transmission distances apply for installation on metallic and non-metallic surfaces.</p>
				Transmission time priority	2 to 16 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	2 to 16 mm (max. axial offset ± 10 mm)	
		Moving	Read distance	Transmission distance priority	12 to 19 mm (max. axial offset ± 10 mm)	
				Transmission time priority	12 to 16 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	12 to 16 mm (max. axial offset ± 10 mm)	
V600-H51 		Stationary	Read distance	Transmission distance priority	1 to 16 mm (max. axial offset ± 10 mm)	
				Transmission time priority	1 to 14 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	1 to 14 mm (max. axial offset ± 10 mm)	
		Moving	Read distance	Transmission distance priority	7 to 16 mm (max. axial offset ± 10 mm)	
				Transmission time priority	7 to 14 mm (max. axial offset ± 10 mm)	
			Write distance	Irrelevant	7 to 14 mm (max. axial offset ± 10 mm)	

Recommended combinations		Installation		Controller mode	Transmission distance		Condition for DC and R/W head Installation
Data Carrier	R/W Head						
V600-D23P53 	V600-HS51 	Stationary	Read distance	Transmission distance priority	0.5 to 4.0 mm (max. axial offset ±2 mm)	0.5 to 4.5 mm (max. axial offset ±1 mm)	These Data Carriers are for installation in metallic surfaces only.  V600-D23P53/D23P54 Data Carrier V600-HS61 R/W Head Iron (SC, SS)  V600-D23P53/D23P54 Data Carrier V600-HS51 R/W Head Iron (SC, SS)  V600-D23P53/D23P54 Data Carrier V600-HS52 R/W Head Iron (SC, SS) Note: The listed transmission distances apply for installation in metallic and non-metallic surfaces.
				Transmission time priority	0.5 to 3.0 mm (max. axial offset ±2 mm)	0.5 to 3.5 mm (max. axial offset ±1 mm)	
		Write distance	Irrelevant	0.5 to 3.0 mm (max. axial offset ±2 mm)	0.5 to 3.5 mm (max. axial offset ±1 mm)		
	V600-HS61 	Stationary	Read distance	Transmission distance priority	0.5 to 4.0 mm (max. axial offset ±2 mm)	0.5 to 4.5 mm (max. axial offset ±1 mm)	
				Transmission time priority	0.5 to 3.0 mm (max. axial offset ±2 mm)	0.5 to 3.5 mm (max. axial offset ±1 mm)	
			Write distance	Irrelevant	0.5 to 3.0 mm (max. axial offset ±2 mm)	0.5 to 3.5 mm (max. axial offset ±1 mm)	
V600-H52 	Stationary	Read distance	Transmission distance priority	0.5 to 4.0 mm (max. axial offset ±2 mm)	0.5 to 4.5 mm (max. axial offset ±1 mm)		
			Transmission time priority	0.5 to 3.0 mm (max. axial offset ±2 mm)	0.5 to 3.5 mm (max. axial offset ±1 mm)		
		Write distance	Irrelevant	0.5 to 3.0 mm (max. axial offset ±2 mm)	0.5 to 3.5 mm (max. axial offset ±1 mm)		



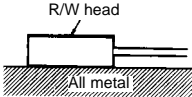
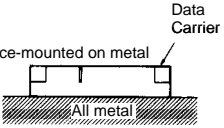
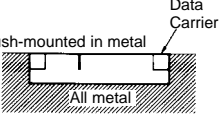
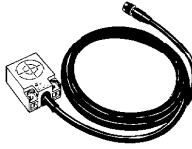

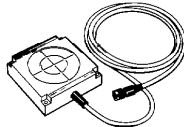
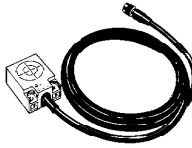
Recommended combinations		Installation		Controller mode	Transmission distance		Condition for DC and R/W head Installation
Data Carrier	R/W Head						
V600-D23P54 	V600-HS51 	Stationary	Read distance	Transmission distance priority	0.5 to 6.0 mm (max. axial offset ± 2 mm)	0.5 to 6.5 mm (max. axial offset ± 1 mm)	<p>These Data Carriers are for installation in metallic surfaces only.</p>    <p>Note: The listed transmission distances apply for installation in metallic and non-metallic surfaces.</p>
				Transmission time priority	0.5 to 5.5 mm (max. axial offset ± 2 mm)	0.5 to 6.0 mm (max. axial offset ± 1 mm)	
			Write distance	Irrelevant	0.5 to 5.0 mm (max. axial offset ± 2 mm)	0.5 to 5.5 mm (max. axial offset ± 1 mm)	
	V600-HS61 	Stationary	Read distance	Transmission distance priority	0.5 to 6.5 mm (max. axial offset ± 2 mm)	0.5 to 7.0 mm (max. axial offset ± 1 mm)	
				Transmission time priority	0.5 to 5.5 mm (max. axial offset ± 2 mm)	0.5 to 6.0 mm (max. axial offset ± 1 mm)	
			Write distance	Irrelevant	0.5 to 5.5 mm (max. axial offset ± 2 mm)	0.5 to 6.0 mm (max. axial offset ± 1 mm)	
	V600-H52 	Stationary	Read distance	Transmission distance priority	0.5 to 6.5 mm (max. axial offset ± 2 mm)	0.5 to 7.0 mm (max. axial offset ± 1 mm)	
				Transmission time priority	0.5 to 5.5 mm (max. axial offset ± 2 mm)	0.5 to 6.0 mm (max. axial offset ± 1 mm)	
			Write distance	Irrelevant	0.5 to 5.5 mm (max. axial offset ± 2 mm)	0.5 to 6.0 mm (max. axial offset ± 1 mm)	


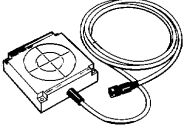
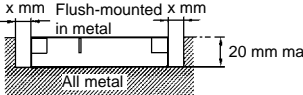
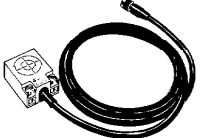


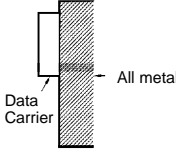
- Note:**
1. The transmission distance/transmission time priority mode setting can be made only with the lower-level communications mode setting switch with a serial-interface Controller or ID Sensor Unit. With parallel-interface Controllers, the mode setting is always transmission distance priority.
 2. With Data Carriers that can be installed on metal surfaces (V600-D23P61/D23P53/D23P54), the transmission distance will vary depending on the metal used. The figures given in the table above are valid for iron (SC, SS). Refer to the section on installation in the Data Carrier or R/W Head Operation Manual or Supplement for more details.
 3. The specifications take fluctuations in temperature and slight differences between products into account.

Recommended combinations		Installation		Controller mode	Transmission distance	Condition for DC and R/W head Installation
Data Carrier	R/W Head					
V600-D23P55 	V600-HS51 (See note 3.) 	Stationary	Read distance	Transmission distance priority	0.5 to 6.5 mm (max. axial offset ± 2 mm)	<p>These Data Carriers are for flush installation in non-metallic surfaces.</p>    <p>Note: The listed transmission distance greatly drops when the Data Carriers are installed in metallic surfaces. For details, refer to the Data Carrier Operation Manual (Cat. No. ???).</p>
				Transmission time priority	0.5 to 6.0 mm (max. axial offset ± 2 mm)	
			Write distance	Transmission distance priority	0.5 to 6.5 mm (max. axial offset ± 2 mm)	
				Transmission time priority	0.5 to 6.0 mm (max. axial offset ± 2 mm)	
	V600-HS61 (See note 3.) 	Stationary	Read distance	Transmission distance priority	0.5 to 7.0 mm (max. axial offset ± 2 mm)	
				Transmission time priority	0.5 to 6.0 mm (max. axial offset ± 2 mm)	
			Write distance	Transmission distance priority	0.5 to 7.0 mm (max. axial offset ± 2 mm)	
				Transmission time priority	0.5 to 6.0 mm (max. axial offset ± 2 mm)	
	V600-H52 (See note 3.) 	Stationary	Read distance	Transmission distance priority	0.5 to 9.0 mm (max. axial offset ± 2 mm)	
				Transmission time priority	0.5 to 8.5 mm (max. axial offset ± 2 mm)	
			Write distance	Transmission distance priority	0.5 to 8.5 mm (max. axial offset ± 2 mm)	
				Transmission time priority	0.5 to 8.5 mm (max. axial offset ± 2 mm)	

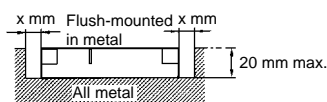
- Note:**
1. The transmission distance/transmission time priority mode setting can be made only with the lower-level communications mode setting switch with a serial-interface Controller or ID Sensor Unit. With parallel-interface Controllers, the mode setting is always transmission distance priority.
 2. The specifications take fluctuations in temperature and slight differences between products into account.
 3. The values shown in the table are those when the V600-HS□1 and V600-HA51 are used in combination.

■ Transmission Distance Specifications for Built-in-battery DCs

Recommended combinations		Installation		Controller mode	Transmission distance	Condition for DC and R/W head Installation
Data Carrier	R/W Head					
V600-D8KR12 	V600-H07 	Stationary	Flush-mounted in metal	Irrelevant	10 to 50 mm (max. axial offset ± 10 mm)	  
			Surface-mounted on metal		10 to 60 mm (max. axial offset ± 10 mm)	
		Moving	Flush-mounted in metal		25 to 50 mm (max. axial offset ± 10 mm)	
			Surface-mounted on metal		25 to 60 mm (max. axial offset ± 10 mm)	
	V600-H11 	Stationary	Flush-mounted in metal	Irrelevant	5 to 40 mm (max. axial offset ± 10 mm)	
			Surface-mounted on metal		5 to 45 mm (max. axial offset ± 10 mm)	
		Moving	Flush-mounted in metal		25 to 40 mm (max. axial offset ± 10 mm)	
			Surface-mounted on metal		25 to 45 mm (max. axial offset ± 10 mm)	
V600-D8KR13 	V600-H07 	Stationary	Flush-mounted in metal	Irrelevant	10 to 30 mm (max. axial offset ± 10 mm)	<p>Note: The listed transmission distances apply for installation to metallic and non-metallic surfaces.</p>
			Surface-mounted on metal		10 to 35 mm (max. axial offset ± 10 mm)	
		Moving	Flush-mounted in metal		20 to 30 mm (max. axial offset ± 10 mm)	
			Surface-mounted on metal		20 to 35 mm (max. axial offset ± 10 mm)	
	V600-H11 	Stationary	Flush-mounted in metal	Irrelevant	10 to 30 mm (max. axial offset ± 10 mm)	
			Surface-mounted on metal		10 to 30 mm (max. axial offset ± 10 mm)	
		Moving	Flush-mounted in metal		15 to 30 mm (max. axial offset ± 10 mm)	
			Surface-mounted on metal		15 to 30 mm (max. axial offset ± 10 mm)	

Recommended combinations		Installation		Controller mode	Transmission distance	Condition for DC and R/W head installation
Data Carrier	R/W Head					
V600-D8KR04 (unsealed) 	V600-H07 	Stationary	Flush-mounted in metal	Irrelevant	See note.	 <p>Note: The listed transmission distances apply for installation to metallic and non-metallic surfaces.</p>
			Surface-mounted on metal		10 to 100 mm (max. axial offset ± 10 mm)	
		Moving	Flush-mounted in metal		See note.	
			Surface-mounted on metal		50 to 100 mm (max. axial offset ± 10 mm)	
	V600-H11 	Stationary	Flush-mounted in metal	Irrelevant	See note.	
			Surface-mounted on metal		10 to 65 mm (max. axial offset ± 10 mm)	
		Moving	Flush-mounted in metal		See note.	
			Surface-mounted on metal		30 to 65 mm (max. axial offset ± 10 mm)	
V600-D2KR16 	V600-H11 	Stationary	Flush-mounted in metal	Irrelevant	2 to 15 mm (max. axial offset ± 10 mm)	 <p>Note: The listed transmission distances apply for installation to metallic and non-metallic surfaces.</p>
			Surface-mounted on metal		6 to 15 mm (max. axial offset ± 10 mm)	
		Moving	Flush-mounted in metal		10 to 15 mm (max. axial offset ± 10 mm)	
			Surface-mounted on metal			

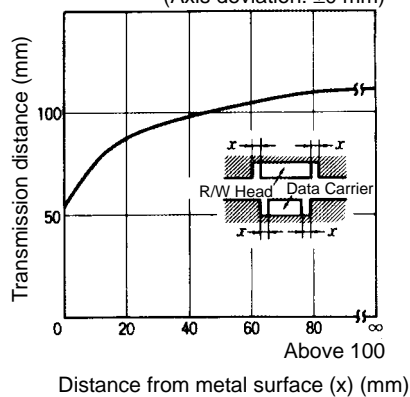
Note: When Data Carriers are flush-mounted in metal, the read/write distance will depend on the distance (x) between the side of the DC and the metal surface.



Refer to the appropriate R/W Head Operation Manual for details on the influence of metal.

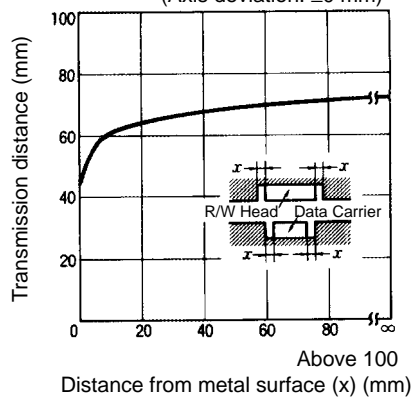
Combined with V600-H07

(Axis deviation: ± 0 mm)



Combined with V600-H11

(Axis deviation: ± 0 mm)

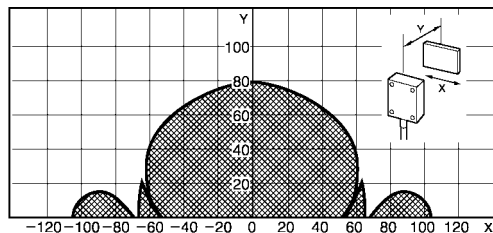


Transmission Range Graphs

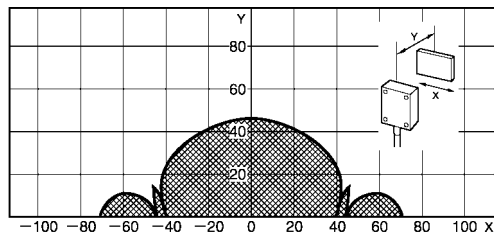
Battery-less Compact DCs

The values shown in the following graphs are in millimeters. Refer to pages 34 to 41 for details on Data Carrier and R/W Head mounting conditions.

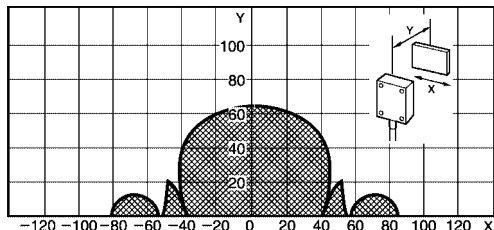
V600-D23P71 & V600-H07



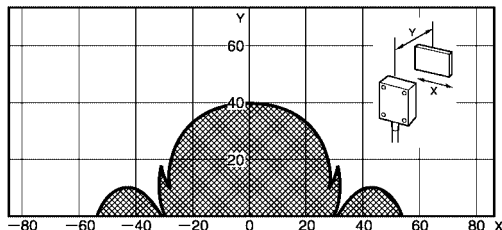
V600-D23P71 & V600-H11



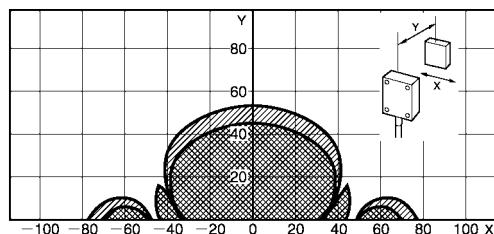
V600-D23P72 & V600-H07



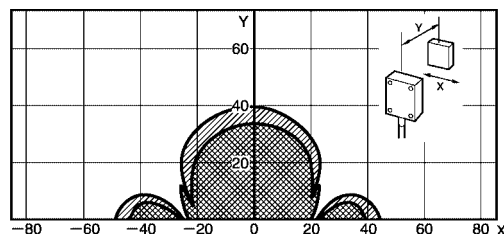
V600-D23P72 & V600-H11



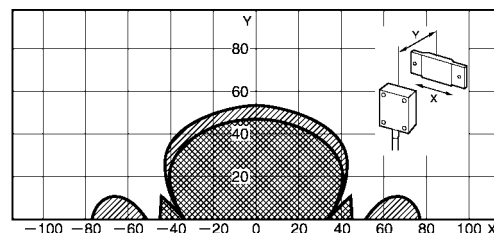
V600-D23P66N & V600-H07



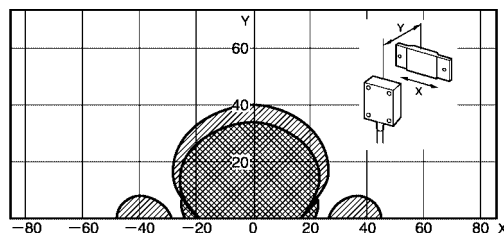
V600-D23P66N & V600-H11



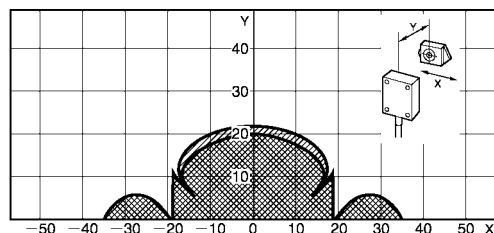
V600-D23P66SP & V600-H07



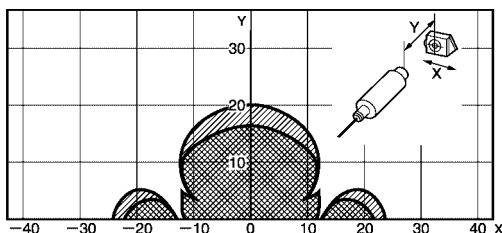
V600-D23P66SP & V600-H11




V600-D23P61 & V600-H11



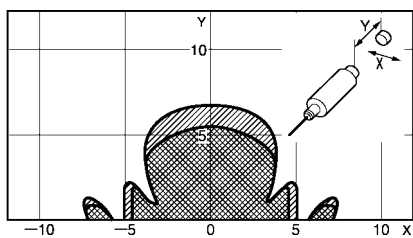
V600-D23P61 & V600-H51



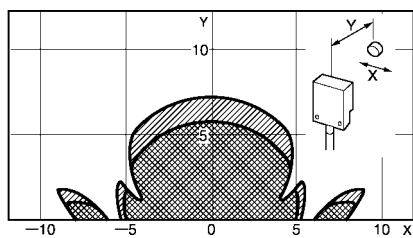
 Read range (in transmission distance priority mode)

 Write range (in transmission distance or transmission time priority mode)
Read range (in transmission time priority mode)

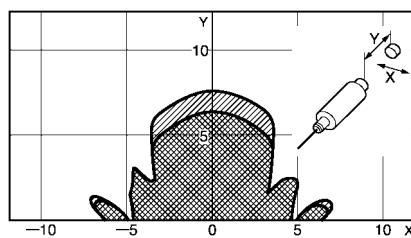
V600-D23P53 & V600-HS51



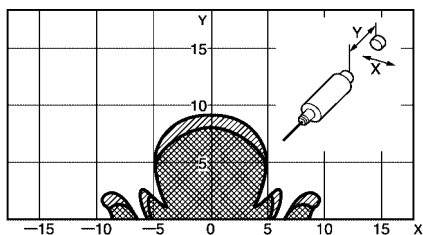
V600-D23P53 & V600-HS61



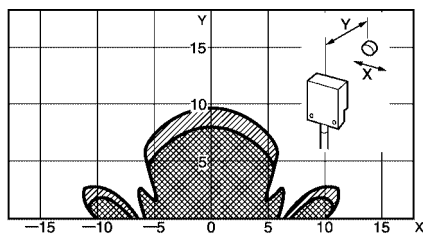
V600-D23P53 & V600-H52



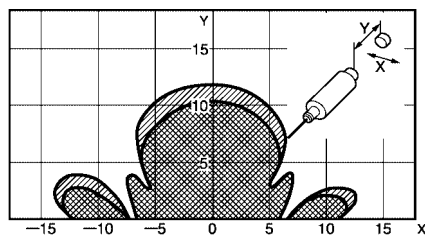
V600-D23P54 & V600-HS51



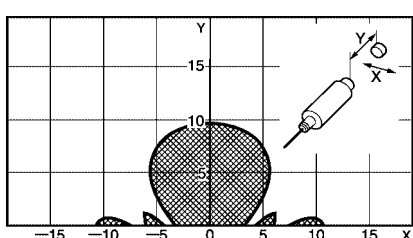
V600-D23P54 & V600-HS61



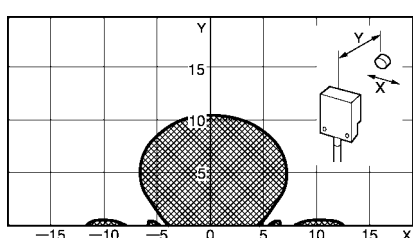
V600-D23P54 & V600-H52



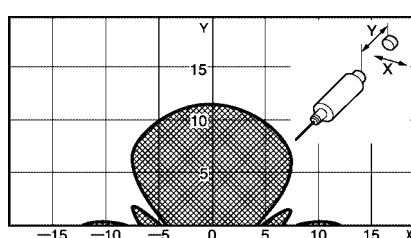
V600-D23P55 & V600-HS51




V600-D23P55 & V600-HS61



V600-D23P55 & V600-H52

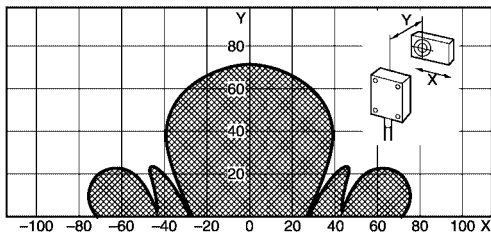


 Read range (in transmission distance priority mode)

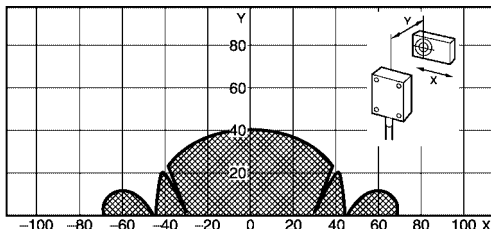
 Write range (in transmission distance or transmission time priority mode)
Read range (in transmission time priority mode)

Built-in Battery DCs

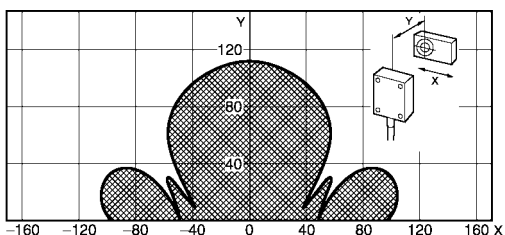
V600-D8KR12 & V600-H07



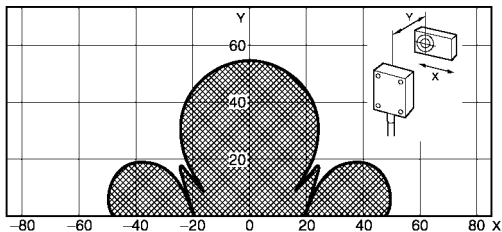
V600-D8KR13 & V600-H07



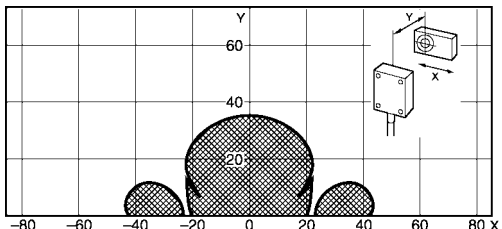
V600-D8KR04 & V600-H07



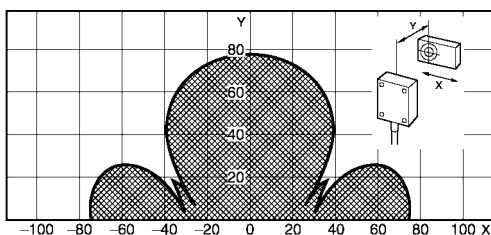
V600-D8KR12 & V600-H11



V600-D8KR13 & V600-H11

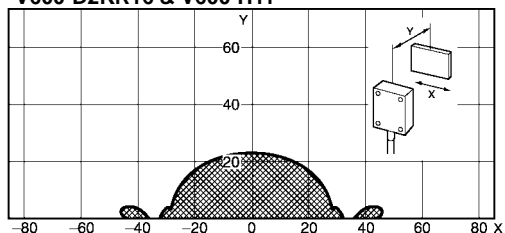


V600-D8KR04 & V600-H11



Battery-replaceable DCs

V600-D2KR16 & V600-H11



Note: Changing the direction of the DC will change the transmission range.

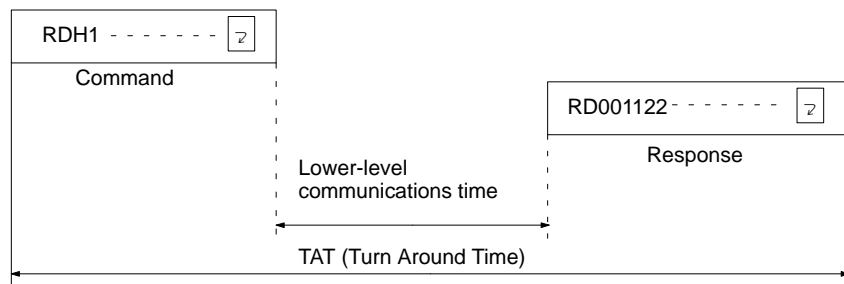
■ Transmission Time Specifications

The transmission time does not depend on the model of R/W Head or Data Carrier, although transmission times differ between Data Carriers with and without batteries.

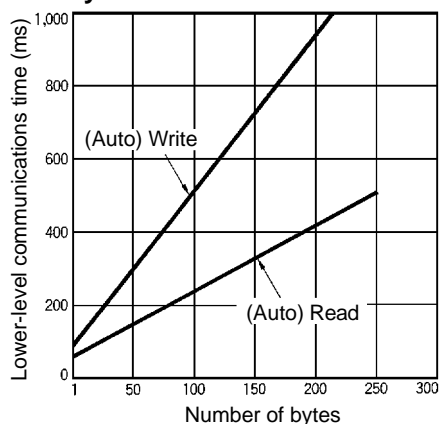
The turn around time (TAT) is the total time required from the issuance of a command from the host device (for example, a host computer) until the reception of a response.

The lower-level communications time does not include the host communications; it is the time required for communications between the R/W Head and Data Carrier. The lower-level communications time is used in the equation for the DC speed.

$$\text{DC Speed} = (\text{Distance travelled in the transmission range}) / (\text{Lower-level communications time})$$

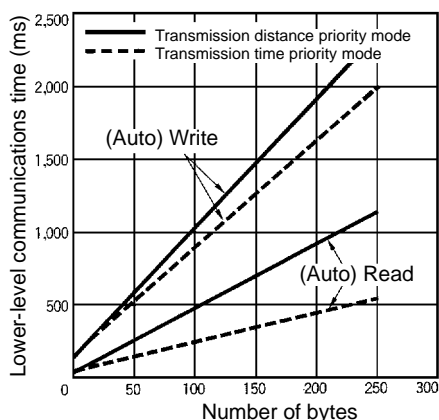


Built-in-battery Data Carriers



Note: The Parallel-interface Controllers and ID Sensor Units will change according to the host software.

Battery-less Data Carriers



Calculation

Controller/Item	R/W	Lower-level communications time	TAT
Serial-interface used	READ	$T = 1.8N + 48.4$	$T = 3.0N + 55.9$
	WRITE	$T = 4.2N + 86.5$	$T = 4.2N + 94.1$

Note: 1. The TAT figures are for a V600-CA1A ID Controller and host communications set for 9600 bps, 8 data bits, 1 stop bit, and odd parity. Transmission is continuous without spaces between characters.
2. N is the number of bytes when the code is set to ASCII code. (Refer to the Controller's *Operation Manual* for details.)

Calculation (Reference)

Controller	R/W	Lower-level communications time	TAT
Distance priority mode	READ	$T = 4.3N + 64.6$	$T = 5.6N + 72.2$
	WRITE	$T = 8.7N + 167.1$	$T = 8.7N + 174.6$
Time priority mode	READ	$T = 1.8N + 79.0$	$T = 3.1N + 86.6$
	WRITE	$T = 7.1N + 180.4$	$T = 7.1N + 187.8$

Note: Except for the TAT data constants, the built-in-battery DCs are the same.

■ Lower-level Communications Mode Setting (Distance/Time Priority)

These settings are valid only with Battery-less DCs. The lower-level communications mode setting is made on a DIP Switch on the Serial-interface Controller (V600-CA1A/CA2A/CF1A, or V600-CD1D-V2) or ID Sensor Unit. (Refer to the Controller's *Operation Manual* for more details on this setting.)

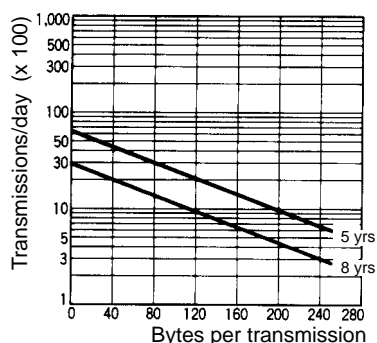
With Parallel-interface Controllers (V600-CA8A/CA9A) the mode is fixed to transmission distance priority. With built-in-battery DCs, there is no mode distinction, so either setting can be made.

■ Battery Life

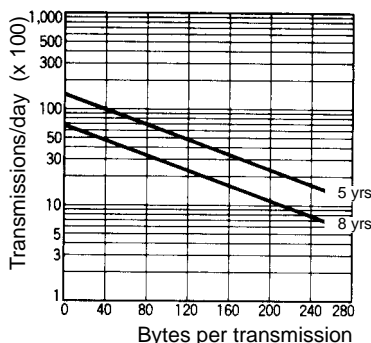
(Minimum life in the -10°C to 55°C temperature range)

The following graphs show the relationship between the number of bytes read/written and the battery life.

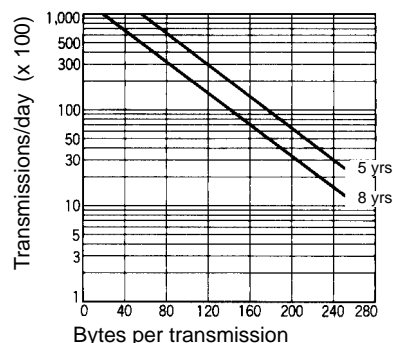
V600-D8KR12 (Reference)



V600-D8KR13 (Reference)



V600-D8KR04 (Reference)

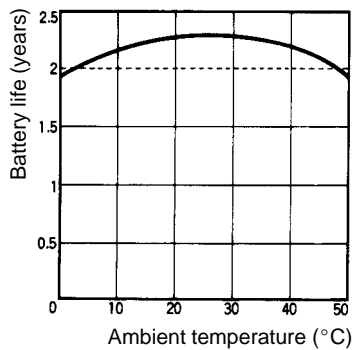


■ Temperature and Battery Life

V600-D2KR16

The battery life is two years at 25°C regardless of the relationship between the number of bytes read/written and the number of transmissions.

Examples Showing Relationship between Battery Life and Temperature



The following table shows the standard values.

The values in the above graph are based on the battery being installed (i.e., the insulation sheet is removed). If the battery is not installed, the values shown in the above table will apply.

Temperature	Battery consumption rate in one year
20°C	1%
30°C	2%
40°C	4%
50°C	8%
60°C	16%
70°C	32%

Example

If the battery is stored at 70°C and is not installed, the battery life is calculated as follows:

$$2 \text{ (years)} \times (1 - 0.32) = 1.36 \text{ years}$$

If the battery is stored at 25°C after one year's storage, the battery life will be approximately 1 year and 4 months. (The battery life will be shortened if the battery is used at temperatures close to 0°C or 50°C.)

■ Mutual Interference

Mutual Interference between R/W Heads

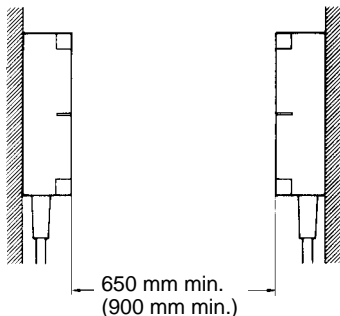
When more than one set of R/W Heads are used, mutual interference between the Heads can be avoided by mounting the Heads at the specified distance as shown below.

V600-H07

Facing

RD/WT command: 650 mm min.

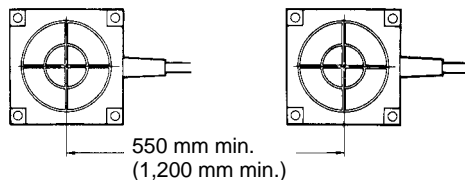
Auto command: 900 mm min.



Side-by-side

RD/WT command: 550 mm min.

Auto command: 1,200 mm min.

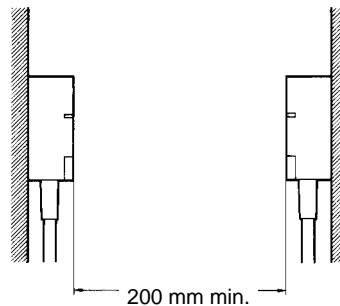


V600-H11

Facing

RD/WT command: 200 mm min.

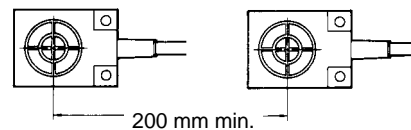
Auto command: 200 mm min.



Side-by-side

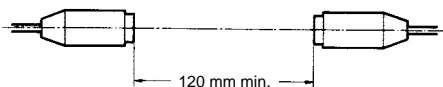
RD/WT command: 200 mm min.

Auto command: 200 mm min.

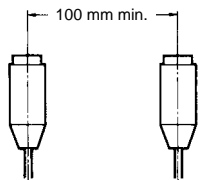


V600-H51

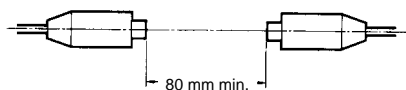
Facing: 120 mm min.



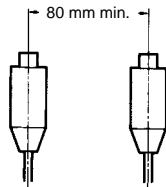
Side-by-side: 100 mm min.

**V600-H52**

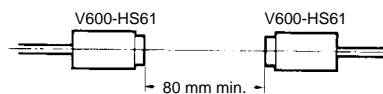
Facing: 80 mm min.



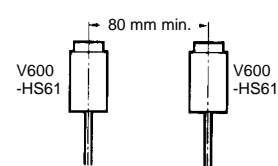
Side-by-side: 80 mm min.

**V600-HS51**

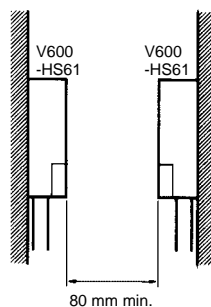
Facing: 80 mm min.



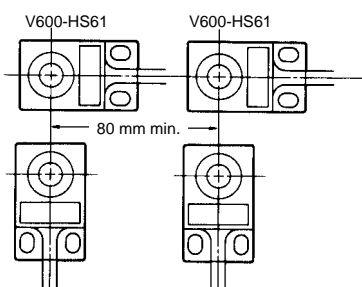
Side-by-side: 80 mm min.

**V600-HS61**

Facing: 80 mm min.



Side-by-side: 80 mm min.



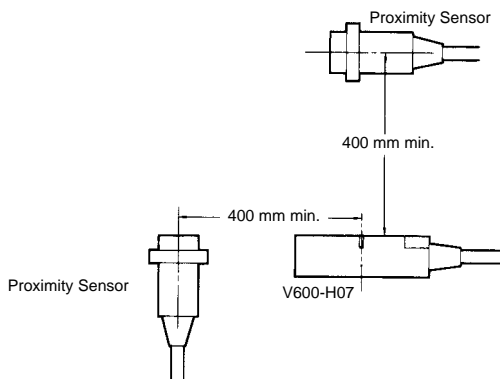
Note: If the two R/W Heads are not transmitting simultaneously (i.e., independent read/write), mutual interference will not occur. Therefore, the restriction on the distance between the Heads will not be applicable.
The commands will be received by the R/W Heads and transmission will oscillate between them.

Mutual Interference between Proximity Sensors

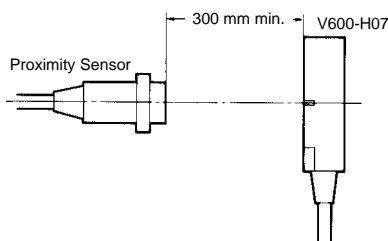
The V600-series Units use electromagnetic coupling (frequency: 530 kHz). When a V600 Unit is wired close to R/W Heads, Proximity Switches, and Sensors that have an oscillating frequency between 400 and 600 kHz, the Proximity Sensor may malfunction, so be sure to install the Units according to the distance restrictions specified in the following diagrams. Make sure to thoroughly test that the mounting positions and the fixed positions of the Sensors are correct before putting them into actual operation.

V600-H07

Horizontal or Side-by-side: 400 mm min.

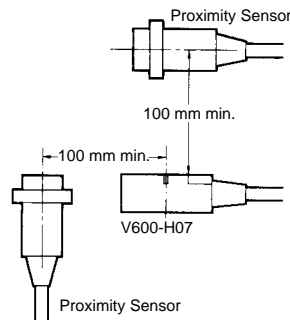


Facing: 300 mm min.

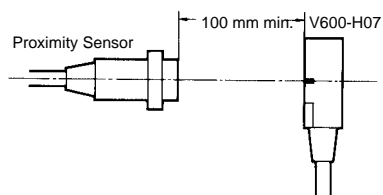


V600-H11

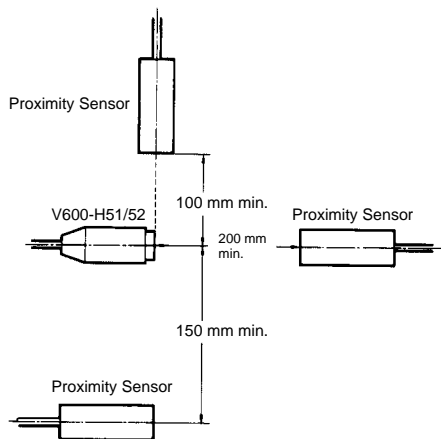
Horizontal or Side-by-side: 100 mm min.



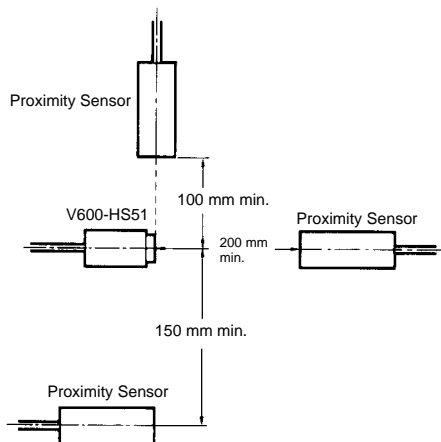
Facing: 100 mm min.



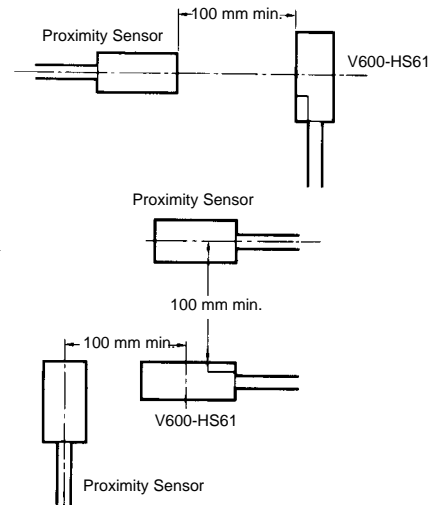
V600-H51/H52



V600-HS51



V600-HS61



Precautions

Built-in-battery Data Carriers

Do not disassemble, deform by applying pressure, heat at temperatures exceeding 100°C, or burn. Doing so may cause the built-in lithium batteries to combust or explode.

Battery-less Data Carriers

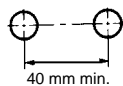
Never short-circuit the positive and negative terminals of the batteries, charge the batteries, disassemble them, deform them, or throw them into a fire. Doing so may cause the batteries to explode, combust, or leak liquid.

Mutual Interference between Data Carriers

When more than one Data Carrier is used, mutual interference between the DCs can be avoided by making sure that they are mounted apart at the distances specified below.

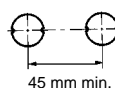
V600-D23P53

R/W Head: V600-H52/HS51/HS61



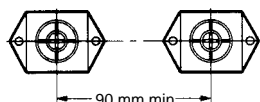
V600-D23P54

R/W Head: V600-H52/HS51/HS61



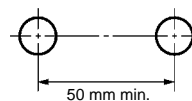
V600-D23P61

R/W Head: V600-H11/H51



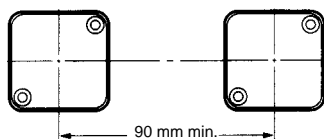
V600-D23P55

R/W Head: V600-H52/HS51+HA51/HS61+HA51

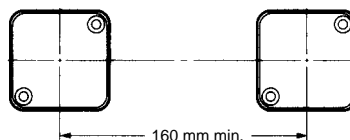


V600-D23P66N

R/W Head: V600-H11

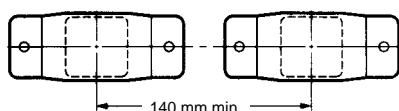


R/W Head: V600-H07

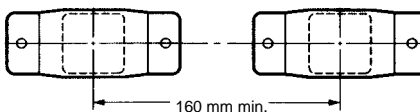


V600-D23P66SP

R/W Head: V600-H11

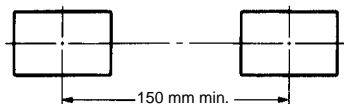


R/W Head: V600-H07

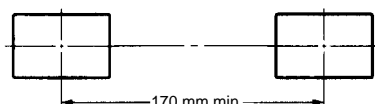


V600-D23P72

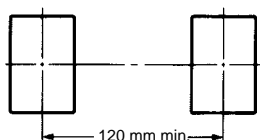
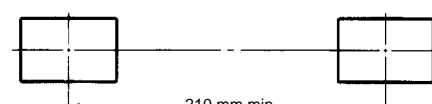
R/W Head: V600-H51



R/W Head: V600-H11



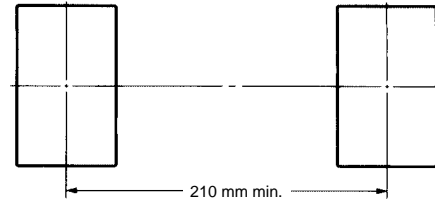
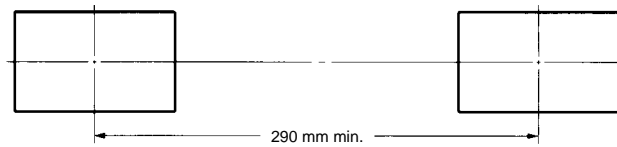
R/W Head: V600-H07



V600

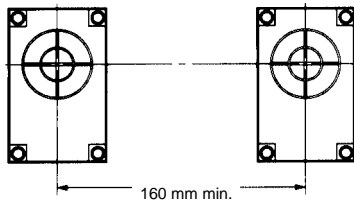
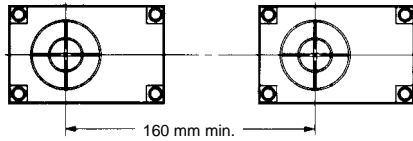
V600-D23P71

R/W Head: V600-H07

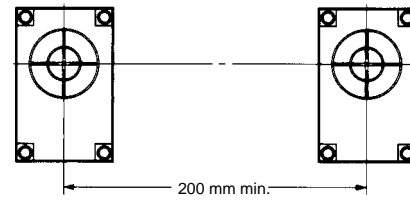
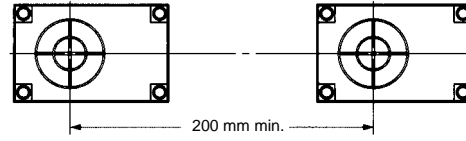


V600-D8KR11

R/W Head: V600-H11/H12

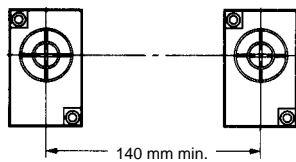
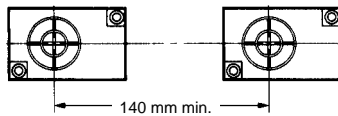


R/W Head: V600-H07

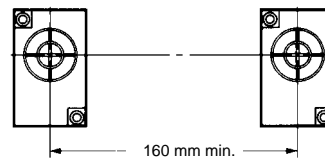
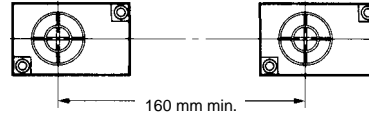


V600-D8KR12

R/W Head: V600-H11/H12

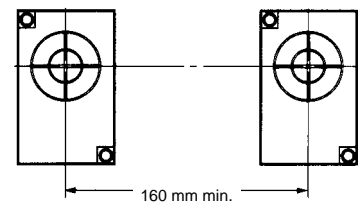
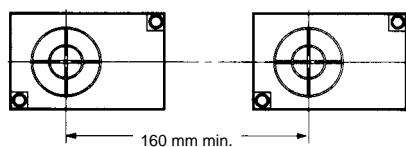


R/W Head: V600-H07

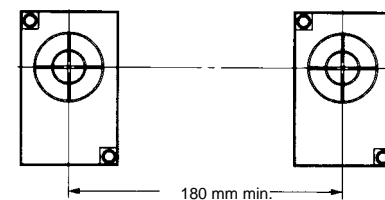
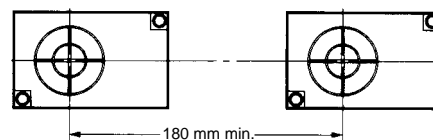


V600-D8KR13

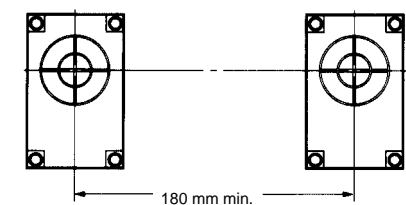
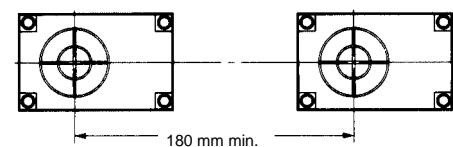
R/W Head: V600-H11/H12



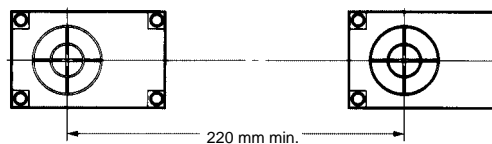
R/W Head: V600-H07

**V600-D8KR04**

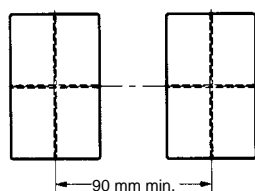
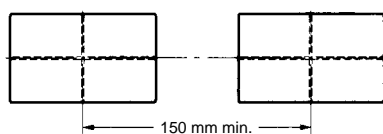
R/W Head: V600-H11



R/W Head: V600-H07

**V600-D2KR16**

R/W Head: V600-H11



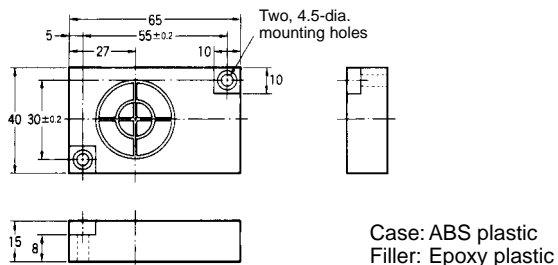
Dimensions

Note: All units are in millimeters unless otherwise indicated.

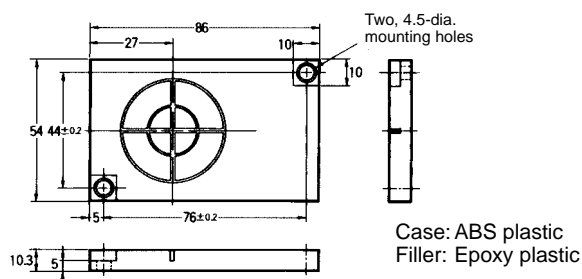
Data Carriers

Built-in-battery DCs

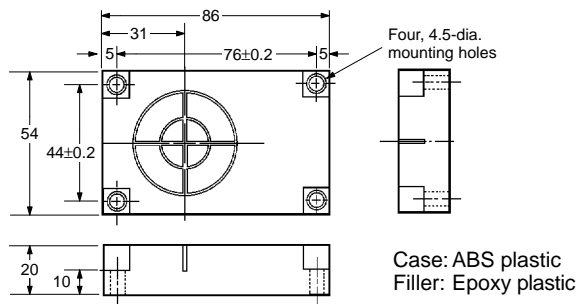
V600-D8KR12



V600-D8KR13

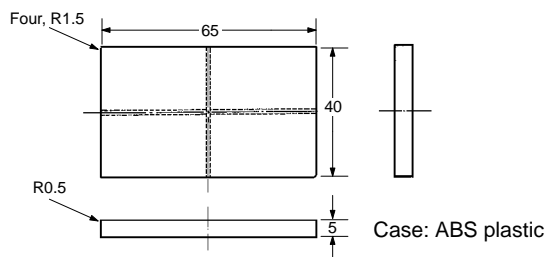


V600-D8KR04



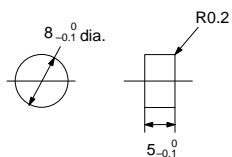
Replaceable-battery DCs

V600-D2KR16

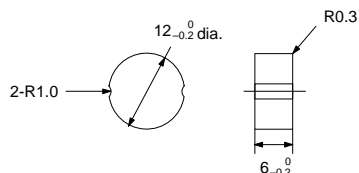


Battery-less DCs

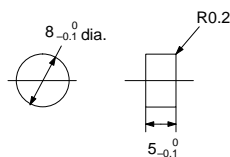
V600-D23P53



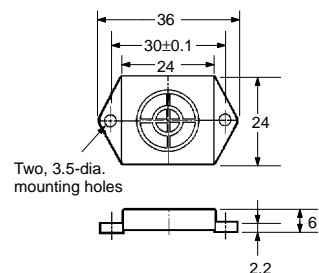
V600-D23P54

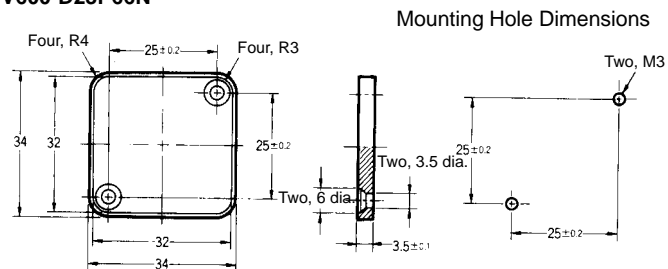
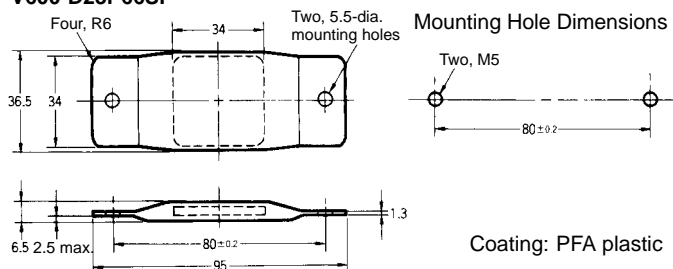
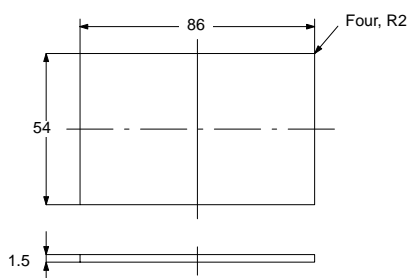
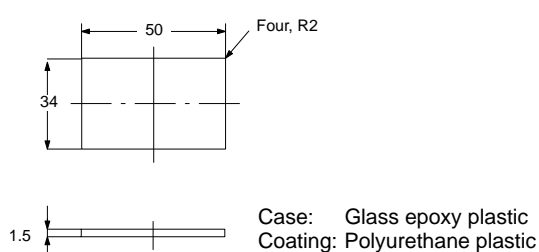
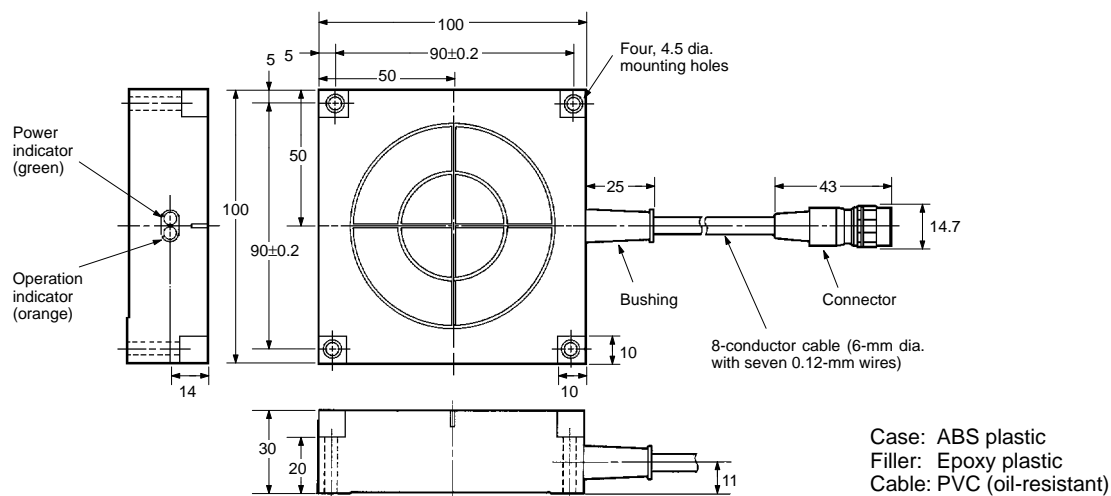


V600-D23P55



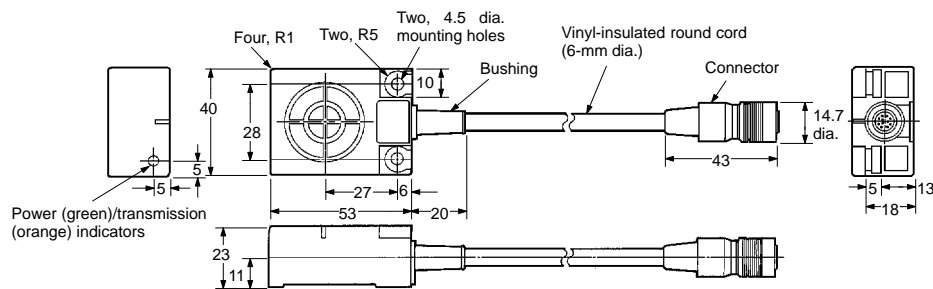
V600-D23P61



V600-D23P66N**V600-D23P66SP****V600-D23P71****V600-D23P72****R/W Heads****V600-H07**

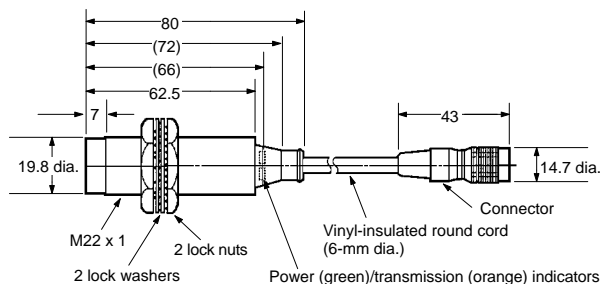
V600

V600-H11



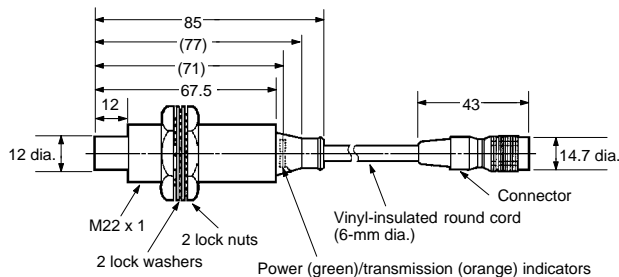
Case: ABS plastic
 Filler: Epoxy plastic
 Cable: PVC (oil-resistant)

V600-H51



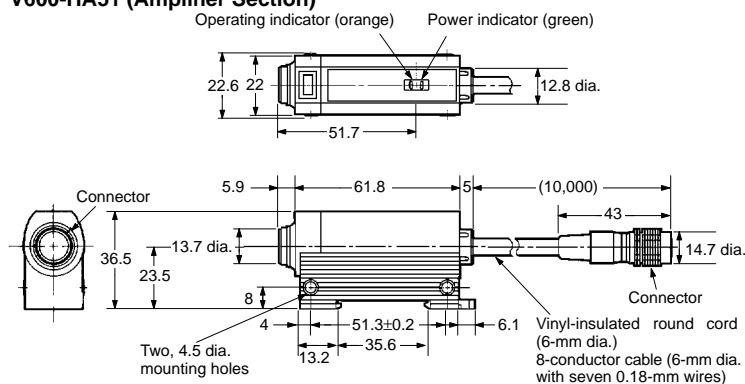
Case: Brass
 Transmission window: ABS plastic
 Filler: Epoxy plastic
 Cable: PVC (oil-resistant)

V600-H52



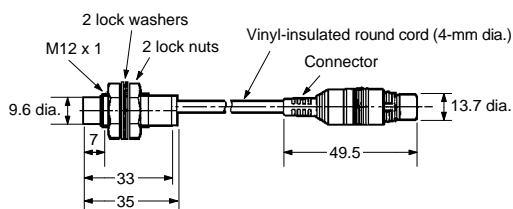
Case: Brass
 Transmission window: ABS plastic
 Filler: Epoxy plastic
 Cable: PVC (oil-resistant)

V600-HA51 (Amplifier Section)



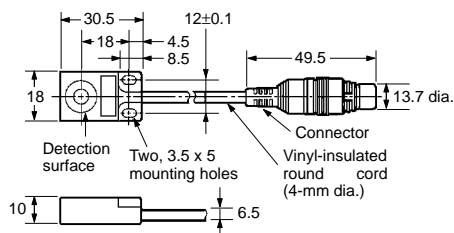
Case: ABS plastic
 Filler: Epoxy plastic
 Cable: PVC (oil-resistant)

V600-HS51 (Sensor Section)



Case: Brass
 Transmission window: ABS plastic
 Filler: Epoxy plastic
 Cable: PVC (oil-resistant)

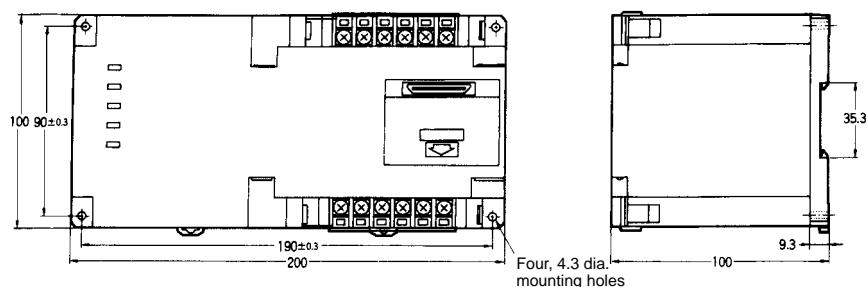
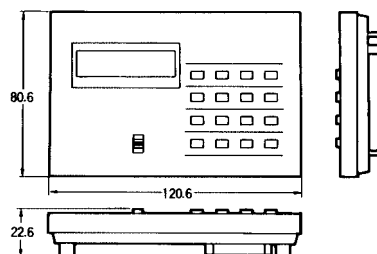
V600-HS61 (Sensor Section)



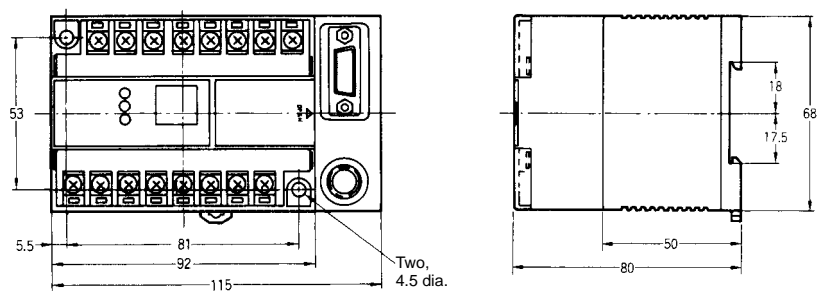
Case: ABS plastic
 Filler: Epoxy plastic
 Cable: PVC (oil-resistant)

ID Controllers

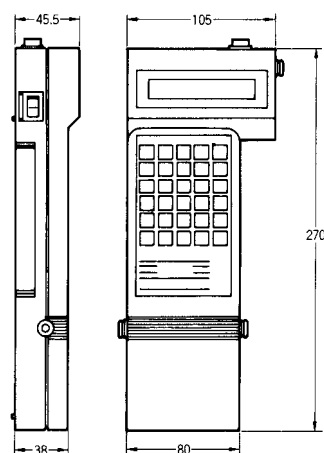
V600-CA□A-□ (Multipurpose)

V600-P01 Monitor Unit
(For use with V600-CA□A-□ and V620-CA□A Controllers)

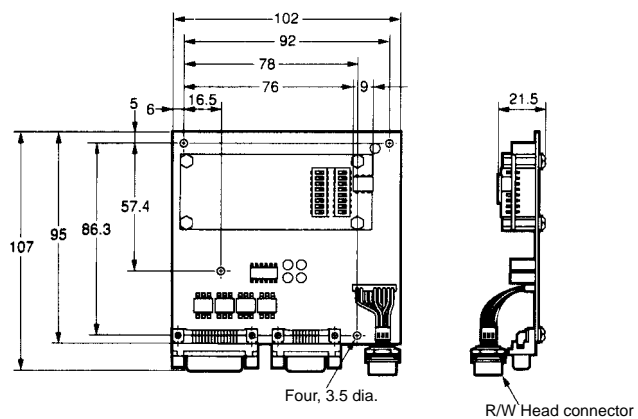
V600-CD1D-V3 (Compact)



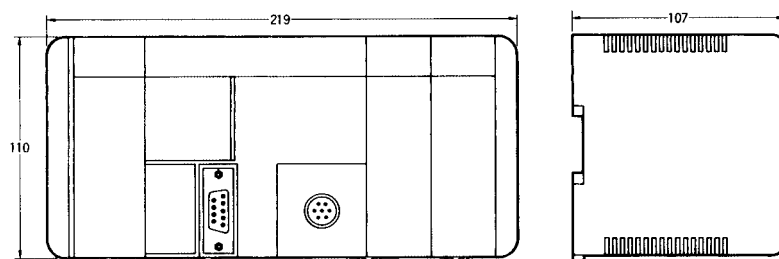
V600-CB-US Hand-held ID Controller



V600-CM1D (Board-mounted)

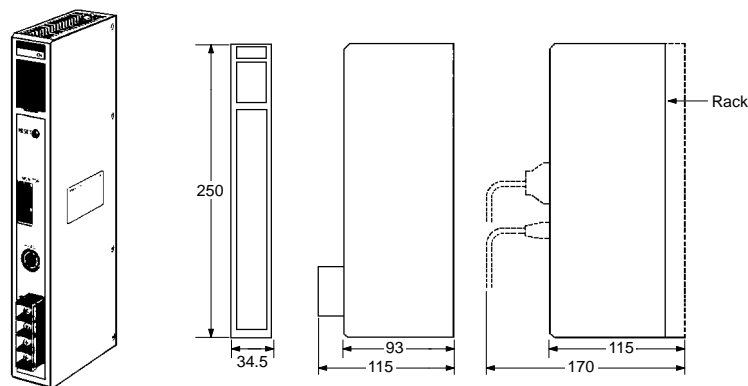


IDSC-C1D□-A (Stand-alone)

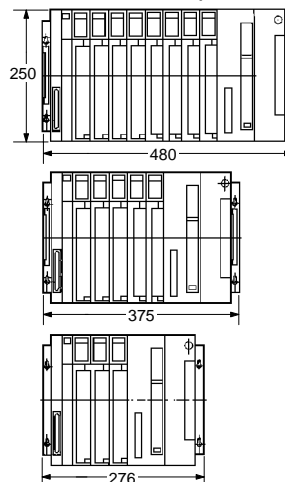


ID Sensor Units and Adapters

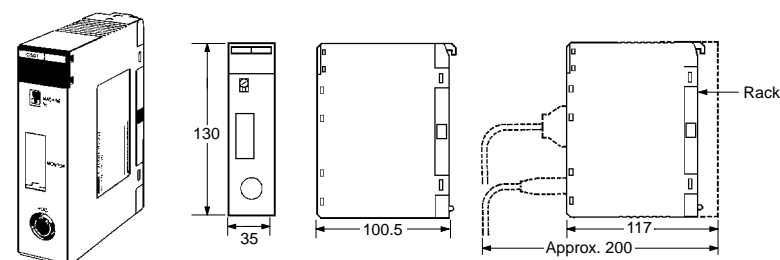
C500-IDS01-V2
C500-IDS02-V1
C500-IDA02



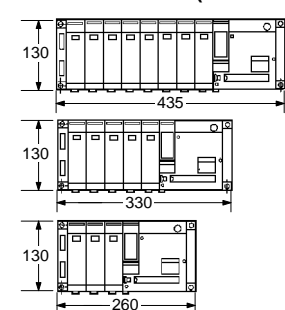
Rack Dimensions (Reference)



C200H-IDS01-V1



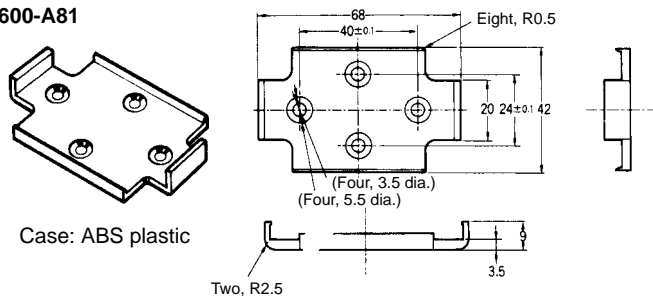
Rack Dimensions (Reference)



Accessories

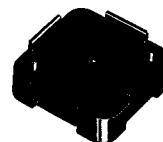
Data Carrier Mounting Brackets

V600-A81

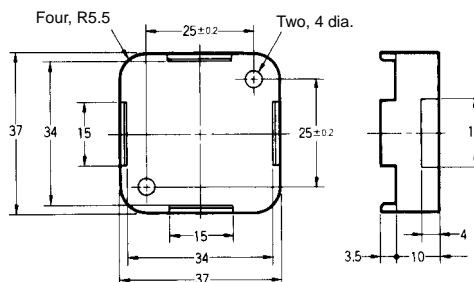


Attachment

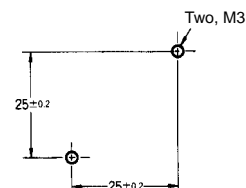
V600-A86



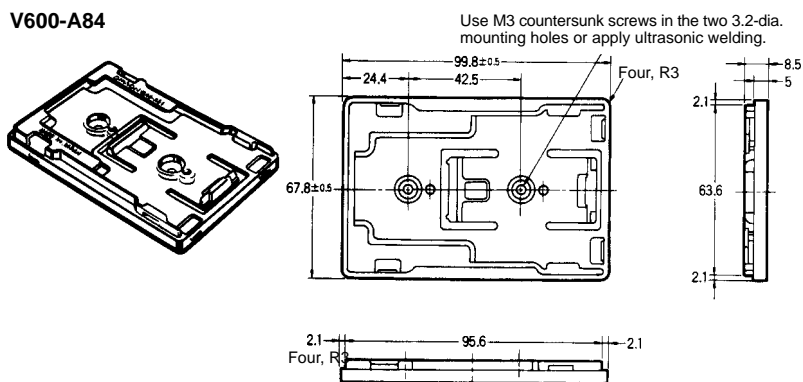
Material: PPS plastic



Mounting Hole Dimensions



V600-A84

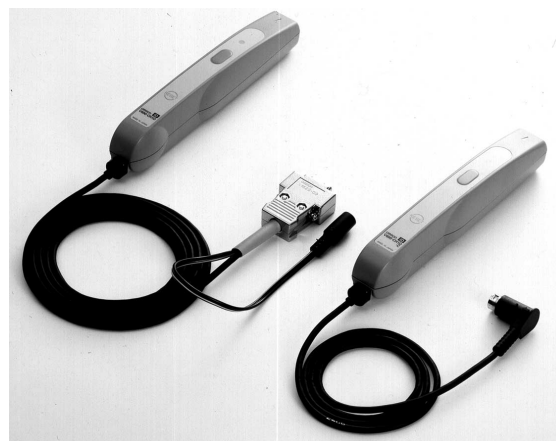


Handheld Reader Writer

V600-CH1D/
CH1D-C

Combines the R/W (Read/Write) Head and ID Controller in a Single Lightweight Reader Writer

- High-function Reader Writer (V600-CH1D-C) with excellent operability and portability in combination with the DT-9000-series Handheld Terminal (Casio). Greater portability is possible by mounting to the V600-A21 Mounting Bracket.
- The V600-CH1D can be connected to a personal computer and the RS-232C interface of Programmable Controllers.
- The protection rating conforms to IEC 60529 IP63 and JIS IPX3 (rain-proof) standards enabling outdoor use.
- Can access V600-series Data Carrier enabling installation into previously existing systems.



Specifications

■ Ratings

Item	Model	
	V600-CH1D	V600-CH1D-C
Power supply voltage	5 VDC, supplied by V600-A20 AC Adapter	5 VDC, supplied by DT-9000-series Unit
Acceptable power supply voltage	5 VDC \pm 5%	
Power consumption	200 mA max. (See note 1.)	
Allowable continued use	---	Approx. 6 hrs (See note 2.)
Insulation resistance	50 M Ω min. (at 500 VDC) between power terminals and case, between I/O terminals and case, or between the power supply terminals and I/O terminals	
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between the points listed above; Leakage current: 1 mA max.	
Noise immunity	Power line: 1,200 V (p-p) I/O line: 800 V (p-p)	I/O line: 800 V (p-p)
Vibration resistance	10 to 150 Hz, 0.3-mm double amplitude for 8 min each in X, Y, and Z directions	
Shock resistance	294 m/s ² 3 times each in X, Y, and Z directions	
Ambient temperature	Operating: -10° to 55°C (during transmission) Storage: -25° to 65°C	
Ambient humidity	Operating: 35% to 85% (with no condensation)	
Operating conditions	No corrosive gases	
Protection rating	IEC 60529 IP63, IPX3 (rain-proof) (See note 3.)	
Materials	Case: ABS plastic, nameplate: PET plastic	
Cable length	2.5 m	0.8 m
Weight	Approx. 180 g (includes cables and connectors)	Approx. 100 g (includes cables and connectors)

- Note:**
1. The power consumption of 200 mA is applicable at standby. When the Data Carrier is transmitting and when the power is turned ON, the power consumption is 250 mA max.
 2. The period of 6 hours is applicable for normal use when the DT-9000-series backlight is ON and the Handheld Reader Writer is set to be used at 10% of the time that the DT-9000-series Unit is being used.
 3. The protection rating does not apply to the connectors. The Data Carrier is not chemical- or oil-resistant.

■ Characteristics

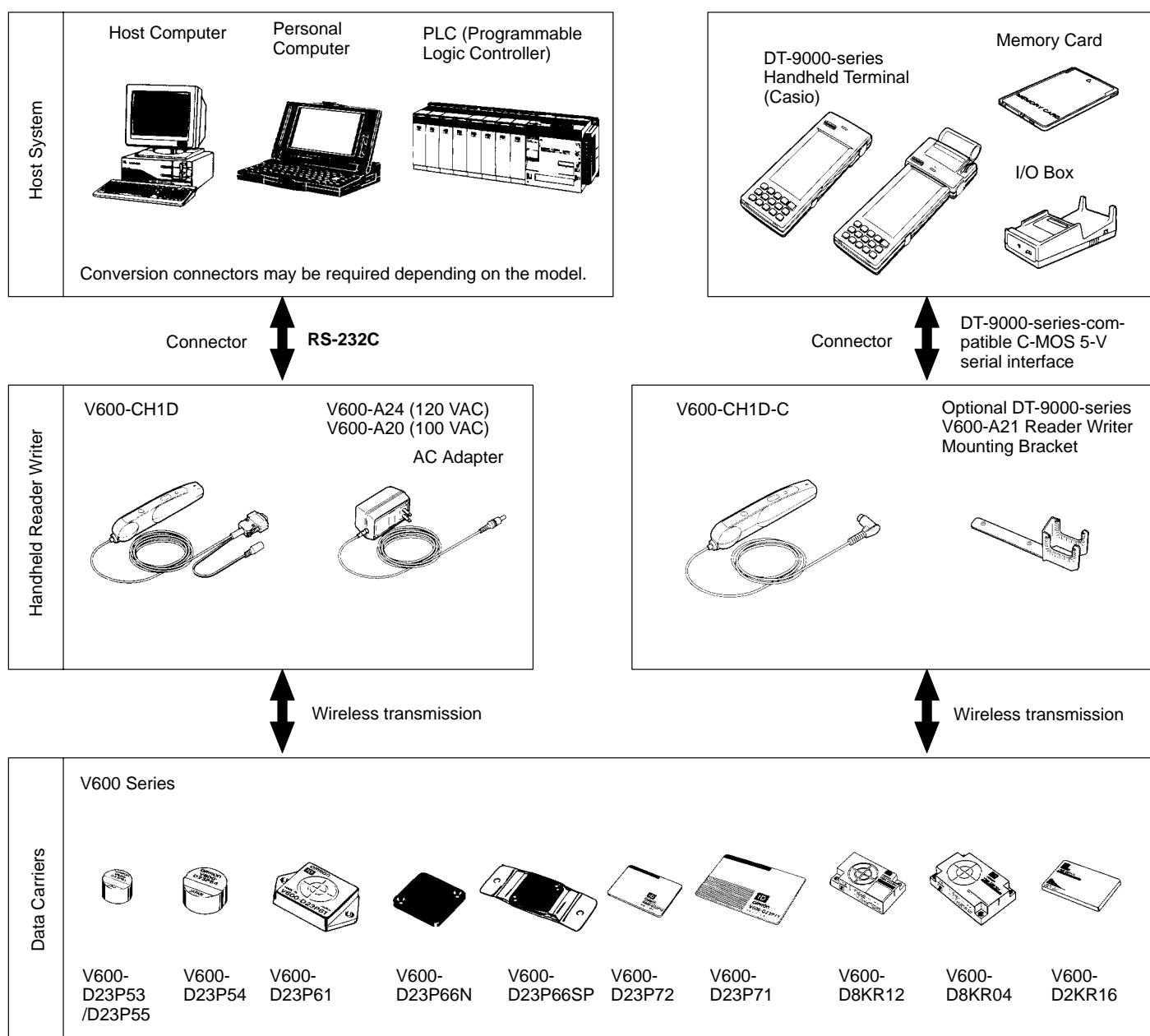
Item	Specification
Diagnostic functions	Checks for CPU errors, memory errors, and transmission errors

■ Host Communications Interface Specifications

Item	Model	
	V600-CH1D	V600-CH1D-C
Interface connectors	9-pin D-sub connector (for DOS)	DT-9000-series Connector (Casio)
Standard conformed	RS-232C interface	5-V C-MOS serial interface
Transmission connection	1:1	
Communications method	Two-wire, half duplex	
Synchronization method	Start-stop (stop bits: 1 or 2) (See note.)	
Baud rate	2,400/4,800/9,600/19,200 bps (See note.)	
Transmission code	ASCII code (7-bit) or JIS 8-bit code	
Communications control protocol	1:1	
Error detection	Vertical parity (odd/even/none) (See note.)	

Note: Set using the setting command from the host unit.

System Configuration



Note: Refer to page 29 for details on specifications and functions for Data Carriers.
AUDIN - 7 bis rue de Tinquex - 51100 Reims - France - Tel : 03.26.04.20.21 - Fax : 03.26.04.28.20 - Web : <http://www.audin.fr> - Email : info@audin.fr

Features

Reads and writes Data Carrier data.

Special commands allow the Reader Writer to read and write data within the Data Carrier across several regions at once.

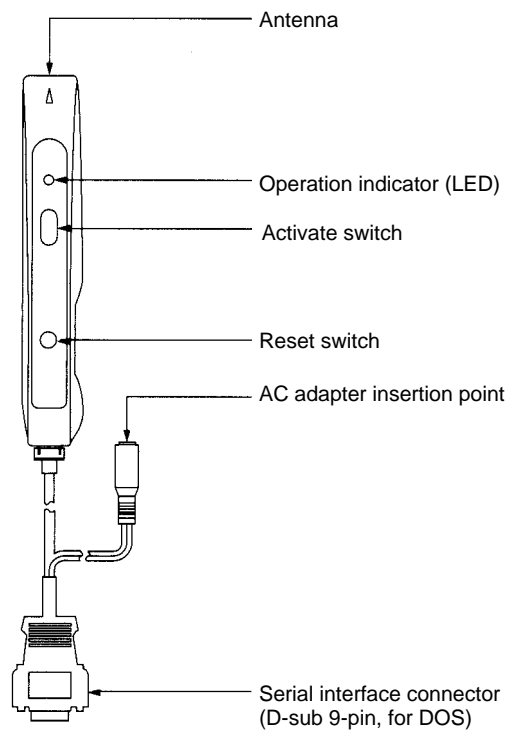
Data transmission is activated using a command from the main unit or by using a switch on the Handheld Reader Writer.

If the Data Carrier is used in combination with a DT-9000-series Unit, the data read on-site can be stored in the DT-9000-series Unit, and then transmitted to the host computer via a Memory Card (conforming to JEIDA Ver. 4.1) or an I/O Box.

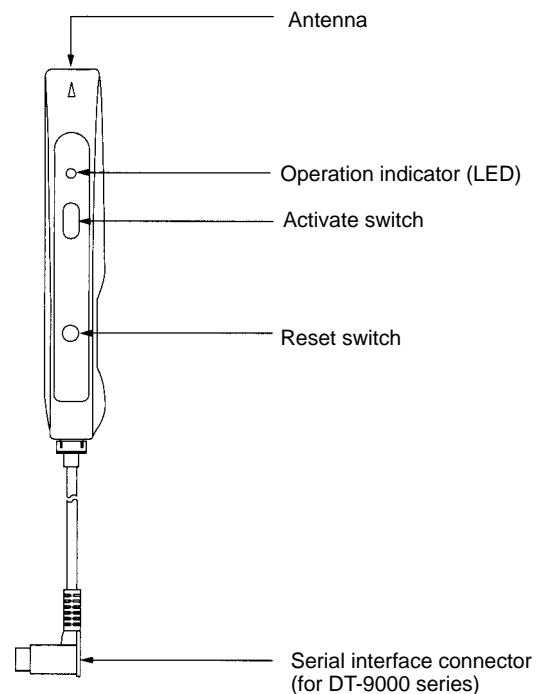
If the DT-9000-series model with a printer is used, a docket or receipt based on the information from the Data Carrier can be printed on-site.

Nomenclature

V600-CH1D



V600-CH1D-C



Transmission Distance Specifications

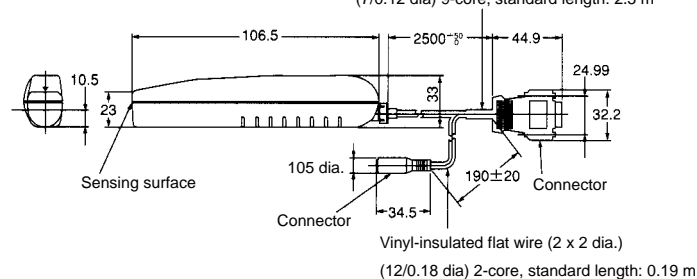
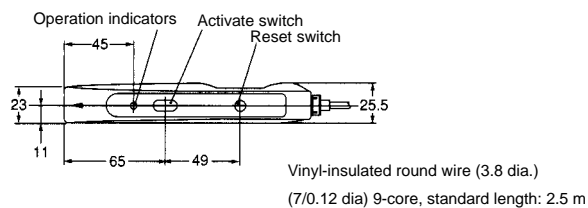
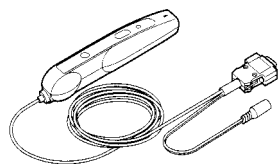
Data transmission with the currently available V600-series Data Carrier is possible.

Data Carrier (dimensions: mm)		Handheld Reader Writer
EEP-ROM	V600-D23P53 (Dia. 8 × 5)	0 to 2.5 mm
	V600-D23P54 (Dia. 12 × 6)	0 to 4 mm
	V600-D23P55 (Dia. 8 × 5)	0 to 10 mm
	V600-D23P61 (36 × 24 × 6)	0 to 11 mm
	V600-D23P66N (34 × 34 × 3.5)	0 to 17 mm
	V600-D23P66SP (95 × 36.5 × 6.5)	0 to 12 mm
	V600-D23P71 (86 × 54 × 1.5)	0 to 25 mm
	V600-D23P72 (50 × 34 × 1.5)	0 to 23 mm
S-RAM	V600-D8KR12 (65 × 40 × 15)	0 to 25 mm
	V600-D2KR16 (65 × 40 × 5)	0 to 10 mm
	V600-D8KR04 (86 × 54 × 20)	0 to 35 mm

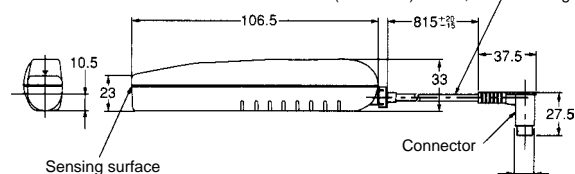
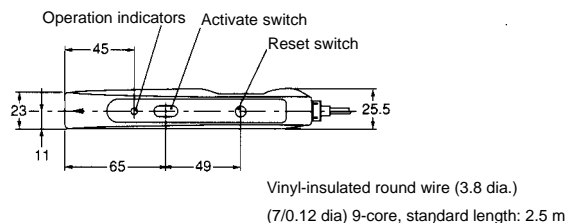
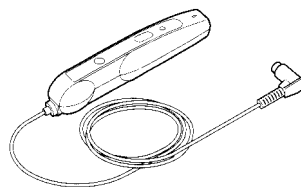
- Note:**
- The Data Carrier mounting conditions are as follows:
 V600-D23P53/P54: Flush-mounted in metal
 V600-D23P61: Back surface of Data Carrier mounted to metal
 V600-D23P66/P66SP/P71/P72: Data Carrier not mounted to metal
 V600-D8KR12/R04: Data Carrier mounted to metal
 V600-D2KR16: Mounted to V600-A81 Data Carrier Mounting Bracket mounted to aluminum.
 - If there is no metal near or on the back surface of the Data Carrier, the transmission distance specifications will still be valid.
 - If the V600-D23P66 is to be used at a temperature of less than -10°C , transmission at short distance may not be possible, so use the Handheld Reader Writer slightly further away from the Data Carrier.

Dimensions

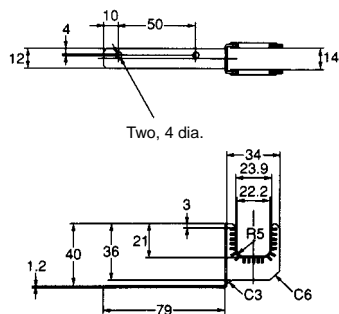
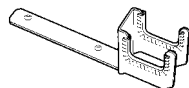
V600-CH1D



V600-CH1D-C



V600-A21



Notes

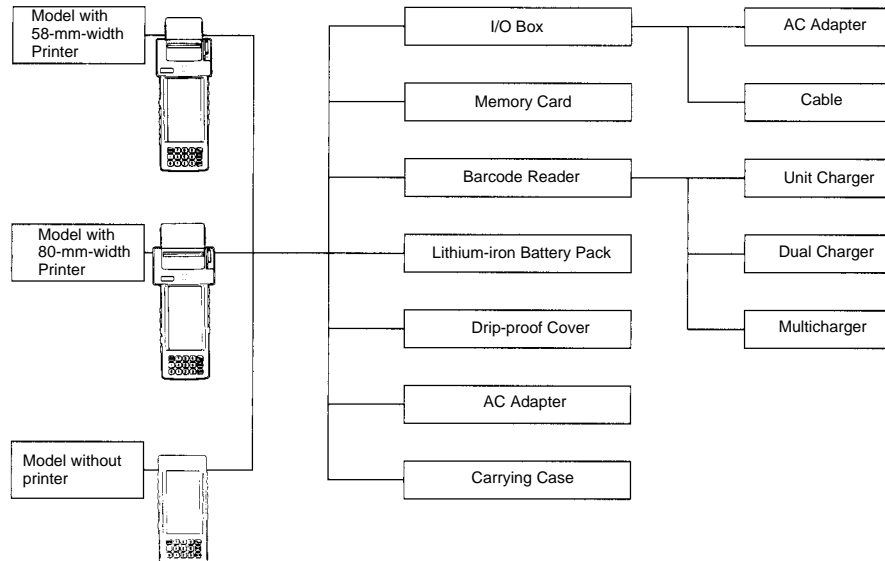
A communications program must be written at the host computer in order to use the Handheld Reader Writer.

DT-9000 Series Overview

Features

Compact, lightweight, and with excellent portability.
 Large liquid-crystal display (LCD) with backlight.
 Improved operability with liquid-crystal touch-keys.
 Models with a high-speed printer are also available.
 Conforms to JIS IPX2 (drip-proof) standards providing water-resistance.
 Large-capacity memory of 5M bytes provided.
 Compatible with the JEIDA Ver. 4.1 Memory Card.
 Communications with the host computer enabled using an I/O Box.
 Applications use BASIC (BASIC compiler) and C languages.

System Configuration



Intelligent Flag

V600-HA

Intelligent Flag (8-bit, Electronic) with Sensor Capability Using ID Control Provides a Revolutionary Improvement over Mechanical Flags

- Does not require programming and uses sensors.
- Small investment enables a rich product manufacturing line.
- Space-saving design
- Can be installed in tough environmental conditions. (Communications distance of up to 65 mm)
- Verification function is provided.



Ordering Information

Amplifier

V600-HAR91 (20-pin connector)
V600-HAM91 (26-pin connector)

Interface Cable

Cable length	Model
2 m	V600-A60R
5 m	V600-A61R
10 m	V600-A62R
2 m	V600-A60M
5 m	V600-A61M
10 m	V600-A62M

Note: Connectors on extension cables are not water-resistant. If the connector may be subjected to water, keep the connectors in a control box. The maximum cable extension length is 10 m.

Functions

V600-HAR91 (Read-only)

Reads 8-bit (1-byte) data from the set address and outputs to the 8 data output lines.

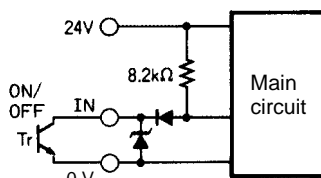
V600-HAM91 (Multi-function)

The multi-function model has three basic functions as follows:

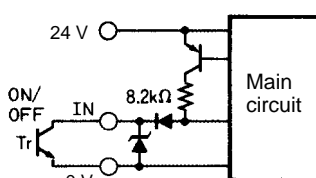
1. Reading
Reads 8-bit (1-byte) data from the set address and outputs to the 8 data output lines.
2. Writing
Writes the designated 8-bit (1-byte) data via the 8 data input lines to specified addresses.
3. Verifying
Reads 8-bit (1-byte) data of the set address, compares to the 8-bit (1-byte) verification input data, and outputs the verification result.

Circuit Configuration

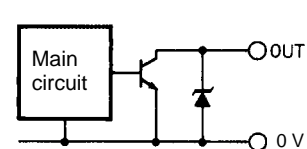
Input Circuit (V600-HAR91)



Input Circuit (V600-HAM91)



Output Circuit (Common)







Specifications

■ Amplifier Section

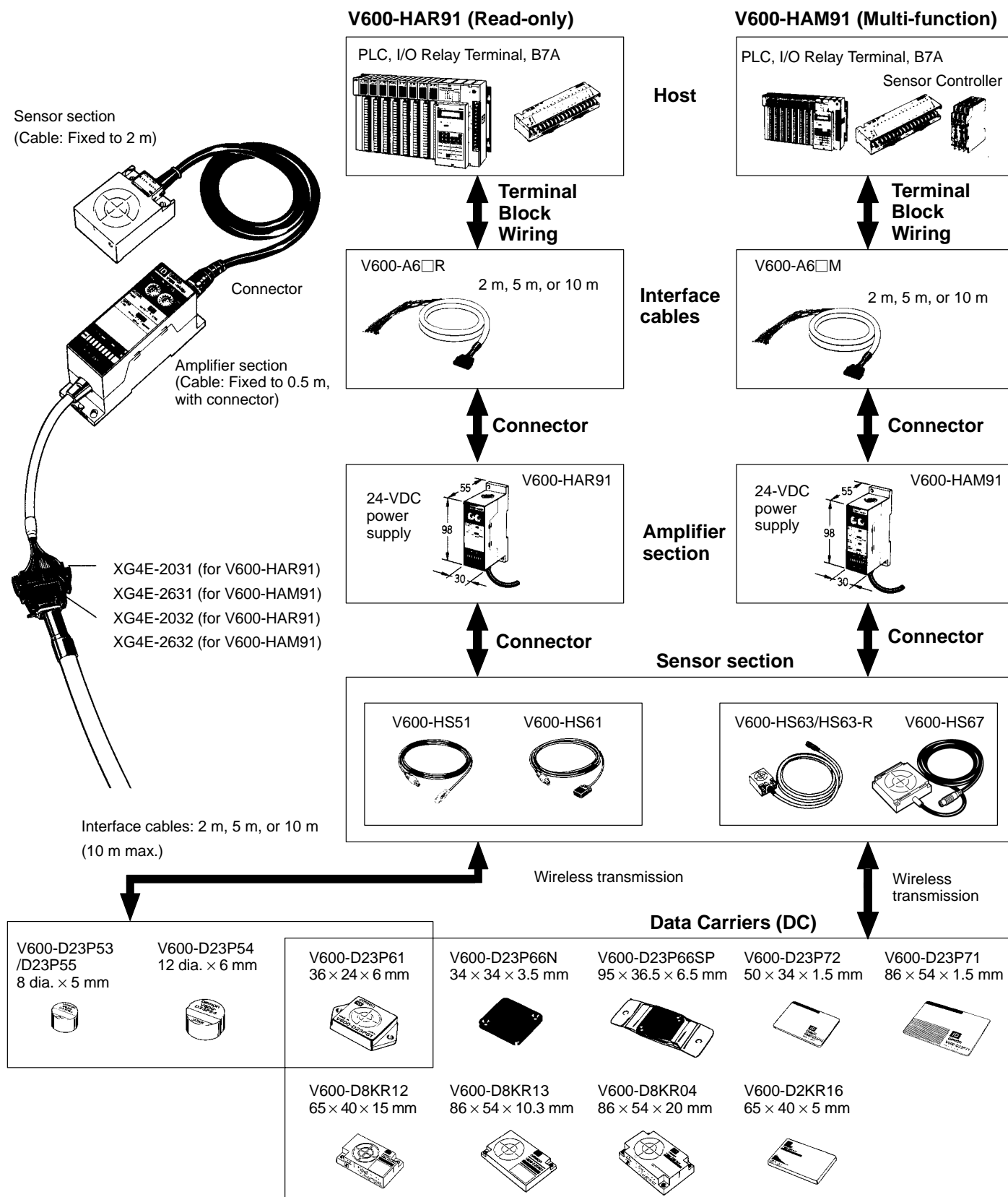
Item	Read-only Model	Multi-function Model
	V600-HAR91	V600-HAM91
Functions	Reading	Reading, writing, and verifying
Power supply voltage	24 VDC \pm 10% (including ripple)	
Power consumption	130 mA max.	
Input specification	Transistor output or contact output OFF voltage: 15 to 30 VDC ON voltage: 0 to 5 VDC Applied voltage: 30 VDC max. Input impedance: 8.2 k Ω Short-circuit current: 3 mA (IN terminal and 0-V short-circuit)	
Output	NPN open collector output: 20 mA max. at 30 VDC, residual voltage: 2 V max.	
Diagnostic functions	Checks for CPU errors and transmission errors	
Insulation resistance	50 M Ω min. (at 500 VDC) between power terminals and case, between I/O terminals and case, or between the power supply terminals and I/O terminals	
Dielectric strength	500 VAC, 50/60 Hz for 1 min between the points listed above	
Vibration resistance	10 to 150 Hz, 0.3-mm double amplitude for 8 min each in X, Y, and Z directions	
Shock resistance	294 m/s ² 3 times each in X, Y, and Z directions (18 times total)	
Ambient temperature	Operating: -10° to 55°C (with no icing) Storage: -25° to 65°C	
Ambient humidity	Operating: 35% to 85% (with no condensation)	
Protection rating	IP40 IEC 60529	
Ground	Ground to 100 Ω or less.	
Cable length	Standard, 0.5 m with connector attached	
Material	ABS resin (case)	
Weight	Approx. 170 g	

Note: The connector is not water-resistant. If the connector may be subjected to water, keep the connectors in a control box. Always use with Interface Cables (sold separately).

■ Sensor Section

Item	V600-HS51	V600-HS61	V600-HS63/HS63-R	V600-HS67
				
Transmission frequency	530 kHz			
Ambient temperature	Operating: -10° to 60°C Storage: -25° to 75°C		Operating: -10° to 70°C Storage: -25° to 75°C	
Ambient humidity	Operating: 35% to 95%			
Insulation resistance	50 MΩ min. (at 500 VDC) between cable terminal and case			
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between cable terminal and case			
Protection rating	IEC60529: IP67			
Vibration resistance	Destruction: 10 to 500 Hz, 2-mm double amplitude, with 3 sweeps of 11 min each in 3 directions		Destruction: 10 to 2,000 Hz, 3-mm double amplitude, with 2 sweeps of 15 min each in 3 directions	
Shock resistance	Destruction: 981 m/s ² , 3 times each in 3 directions (18 times total)		Destruction: 490 m/s ² , 3 times each in 3 directions (18 times total)	
Cable length	2 m (fixed)			
Wireless transmission error detection	16-bit CRC (Cyclic Redundancy Check) in both directions			
Indicators	---		Power: green	
Weight	Approx. 70 g		Approx. 190 g	Approx. 540 g

System Configuration



Intelligent Flag II

V600-HA

Intelligent Flag II (16-bit) with Kanban Applications Provides an Improvement over Mechanical Flags

- 16-bit flag data is ideal for 4-digit alphanumeric Kanban applications.
- Performs more versatile processing and product management in consideration of product liability.
- Saves wiring and remote control by a single 16-point Input Unit and allows the reading and writing of flag data and other data. Operations are possible with just a single 16-point Unit connected to a wire-saving device such as B7A.
- Highly reliable communications with the addition of the 16-bit data parity-check output function.



Ordering Information

Amplifier

V600-HAR92 (26-pin connector)

Interface Cable

Cable length	Model
2 m	V600-A60M
5 m	V600-A61M
10 m	V600-A62M

Note: Connectors on extension cables are not water-resistant. If the connector may be subjected to water, keep the connectors in a control box. The maximum cable extension length is 10 m.

Functions

Reads 16-bit (2-byte) data from the set address and outputs to the 16 data output lines.

Specifications





■ Amplifier Section

Item	Read-only Model
	V600-HAR92
Power supply voltage	24 VDC $\pm 10\%$ (including ripple)
Power consumption	130 mA max.
Input specification	Transistor output or contact output OFF voltage: 15 to 30 VDC ON voltage: 0 to 5 VDC Applied voltage: 30 VDC max. Input impedance: 8.2 k Ω Short-circuit current: 3 mA (TYP) (INHIBIT?TRG terminal and 0-V short-circuit)
Output	NPN open collector output: 20 mA max. at 30 VDC, residual voltage: 2 V max.
Diagnostic functions	Checks for CPU errors and transmission errors
Insulation resistance	50 M Ω min. (at 500 VDC) between power terminals and case, between I/O terminals and case, or between the power supply terminals and I/O terminals
Dielectric strength	500 VAC, 50/60 Hz for 1 min between the points listed above
Vibration resistance	10 to 150 Hz, 1.5-mm double amplitude for 8 min each in X, Y, and Z directions
Shock resistance	294 m/s ² 3 times each in X, Y, and Z directions (18 times total)
Ambient temperature	Operating: -10° to 55° C (with no icing) Storage: -25° to 65° C
Ambient humidity	Operating: 35% to 85% (with no condensation)
Protection rating (IEC 60529)	IP40
Ground	Ground to 100 Ω or less.
Material	ABS resin (case)
Cable length	Standard, 0.5 m with connector attached (See note.)
Weight	Approx. 180 g

V600-HA

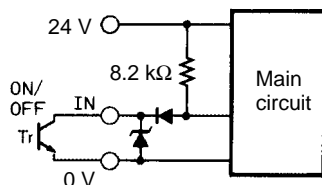
Note: Connectors on extension cables are not water-resistant. If the connector may be subject to water, put the connectors in a control box. Always use with interface cables (sold separately).

■ Sensor Section

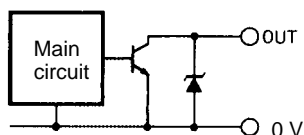
Item	V600-HS51	V600-HS61	V600-HS63/HS63-R	V600-HS67
				
Transmission frequency	530 kHz			
Ambient temperature	Operating: −10° to 60°C Storage: −25° to 75°C		Operating: −10° to 70°C Storage: −25° to 75°C	
Ambient humidity	Operating: 35% to 95%			
Insulation resistance	50 MΩ min. (at 500 VDC) between cable terminal and case			
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between cable terminal and case			
Protection rating	IEC60529: IP67			
Vibration resistance	Destruction: 10 to 500 Hz, 2-mm double amplitude, with 3 sweeps of 11 min each in 3 directions		Destruction: 10 to 2,000 Hz, 3-mm double amplitude, with 2 sweeps of 15 min each in 3 directions	
Shock resistance	Destruction: 981 m/s ² , 3 times each in 3 directions (18 times total)		Destruction: 490 m/s ² , 3 times each in 3 directions (18 times total)	
Cable length	2 m (fixed)			
Wireless transmission error detection	16-bit CRC (Cyclic Redundancy Check) in both directions			
Indicators	---		Power: green	
Weight	Approx. 70 g		Approx. 190 g	Approx. 540 g

Circuit Configuration

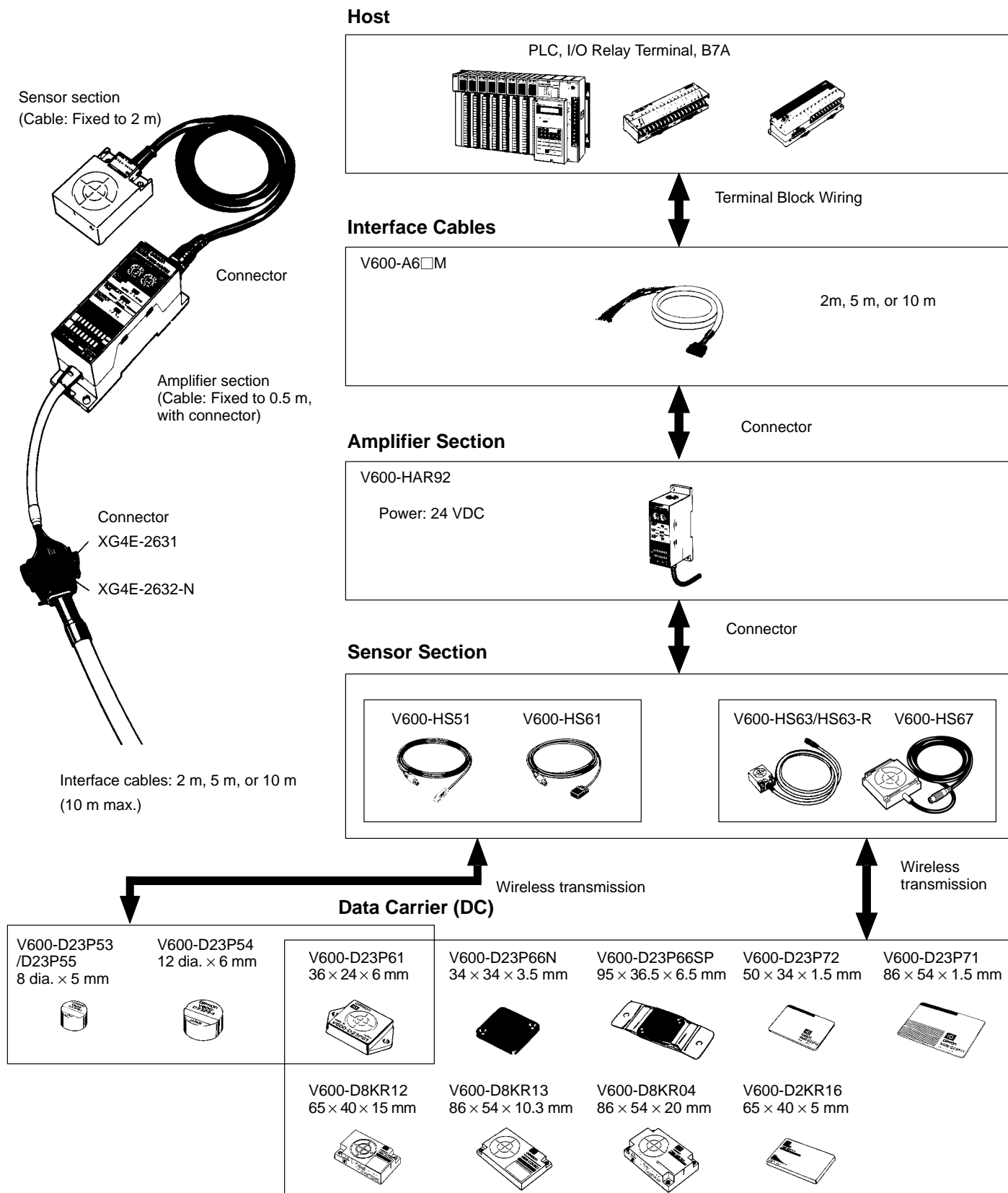
Input Circuit



Output Circuit



System Configuration

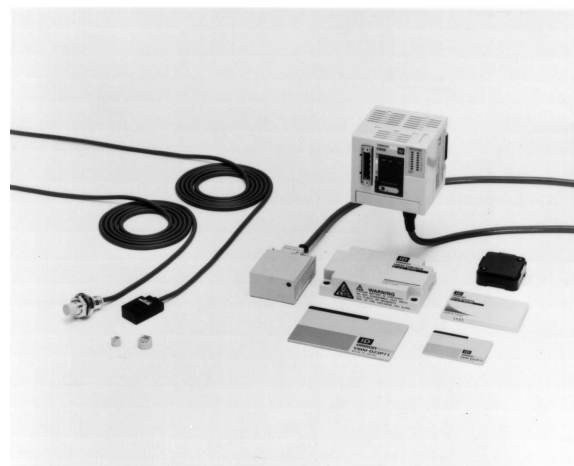


Intelligent Flag III

V600-HA

The V600-HAM42-DRT Intelligent Flag III provides more effective production process control and quality control through its conformity to Devicenet, one of the global standard buses.

- The main functions are same as those of the existing "Intelligent Flag." (Read, Write, Bit Set, Bit Clear, etc.)
- More flexible for a wide variety of applications. It can read data at a maximum of 24 bits.
- Employs a Data Write Function and it can write data at a maximum of 16 bits.
- The address to be accessed in Data Carrier can be set from the master side (00 to FF_H).
- Conforms to the EN standards (EMC Directives EN50081-2, EN50082-2).



Ordering Information

Amplifier

V600-HAM42-DRT

Note: Connectors on extension cables are not water-resistant. If the connector may be subjected to water, keep the connectors in a control box. The maximum cable extension length is 10 m.

Functions





1. Reads 24-bit data from the set address.
2. Writes 16-bit or 8-bit data.
3. Bit Set and Bit Clear

Specifications

■ Amplifier Section

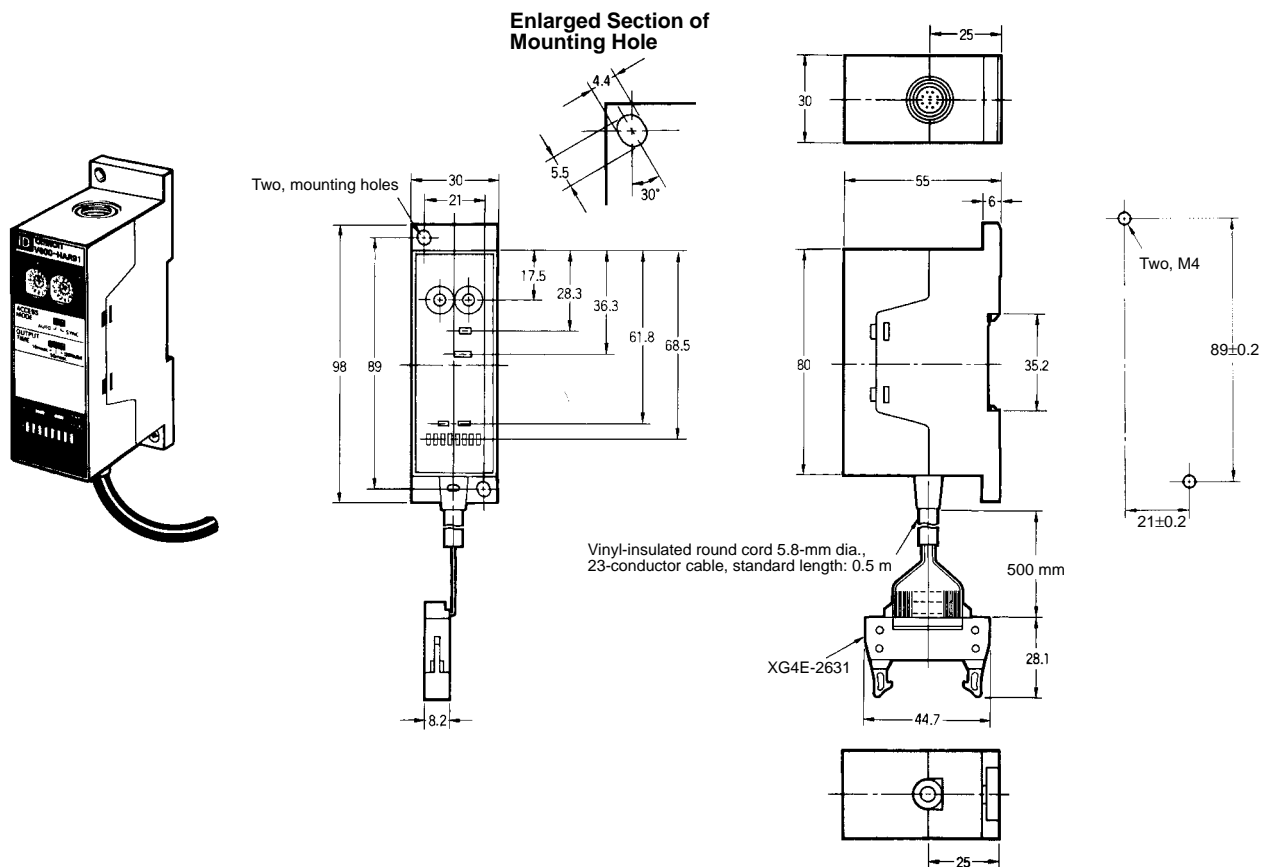
Item	Specifications
Number of Master words	Input: 2; output: 2 (total: 4 words)
Number of Sensor connections	1 channel
Communications power supply voltage	11 to 25 VDC (provided from communications connector)
Internal circuit power supply voltage	18 to 26.4 VDC
Internal current consumption	Communications power supply: 40 mA max. Internal circuit power supply: 150 mA max.
Noise immunity	Internal circuit power supply normal ± 600 V Internal circuit power supply common: $\pm 1,500$ V
Dielectric strength	50/60 Hz at 500 VAC for 1 minute; leakage current 10 mA max.
Vibration resistance	10 to 55 Hz, 1.5-mm amplitude, with 4 sweeps of 8 min each in 3 directions
Shock resistance	294 m/s ² , 6 times each in 3 directions
Ambient temperature	Operating: 0°C to 55°C (with no icing) Storage: -25°C to 65°C
Ambient humidity	Operating: 35% to 85% (with no condensation)
Degree of protection	IEC60529 IP20 (built-in structure)
Mounting method	DIN track or direct mounting using accessory fittings (M4 screws)
External dimensions	65×65×60 (mm)
Weight	Approx. 150 g

■ Sensor Section

Item	V600-HS51	V600-HS61	V600-HS63/HS63-R	V600-HS67
				
Transmission frequency	530 kHz			
Ambient temperature	Operating: −10° to 60°C Storage: −25° to 75°C		Operating: −10° to 70°C Storage: −25° to 75°C	
Ambient humidity	Operating: 35% to 95%			
Insulation resistance	50 MΩ min. (at 500 VDC) between cable terminal and case			
Dielectric strength	1,000 VAC, 50/60 Hz for 1 min between cable terminal and case			
Protection rating	IEC60529: IP67			
Vibration resistance	Destruction: 10 to 500 Hz, 2-mm double amplitude, with 3 sweeps of 11 min each in 3 directions		Destruction: 10 to 2,000 Hz, 3-mm double amplitude, with 2 sweeps of 15 min each in 3 directions	
Shock resistance	Destruction: 981 m/s ² , 3 times each in 3 directions (18 times total)		Destruction: 490 m/s ² , 3 times each in 3 directions (18 times total)	
Cable length	2 m (fixed)			
Wireless transmission error detection	16-bit CRC (Cyclic Redundancy Check) in both directions			
Indicators	---		Power: green	
Weight	Approx. 70 g		Approx. 190 g	Approx. 540 g

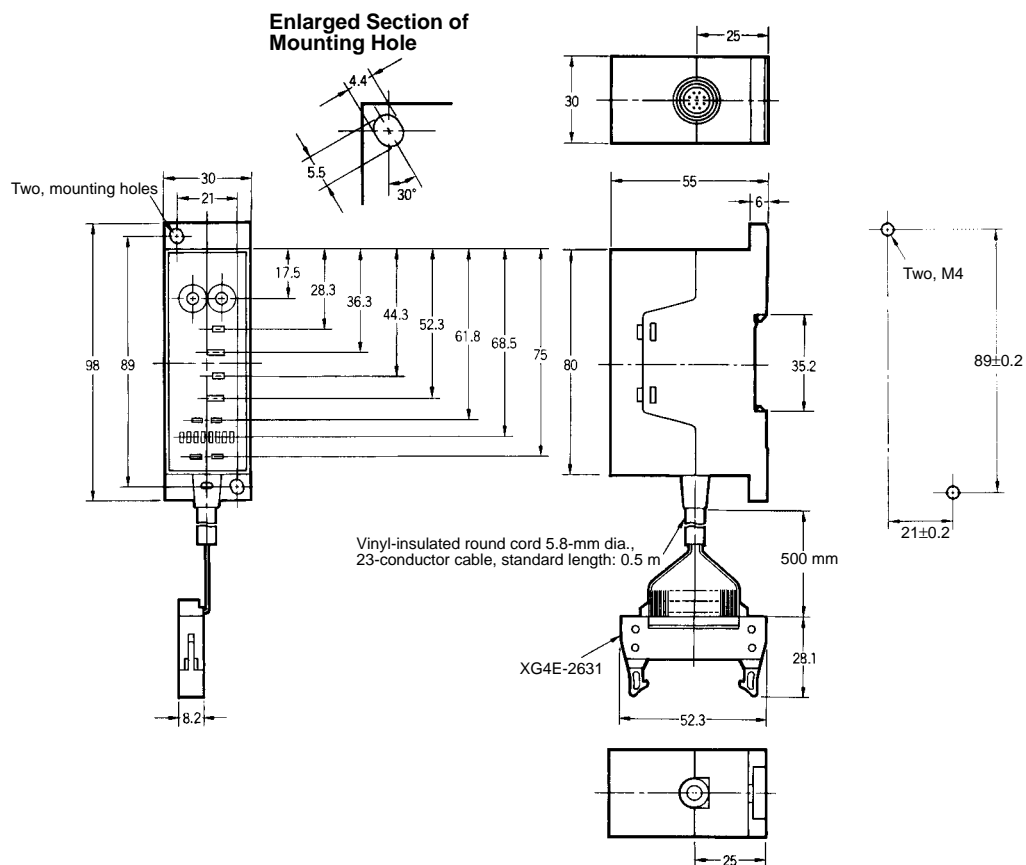
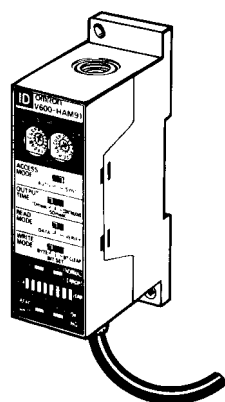
Dimensions

V600-HAR91/HAR81

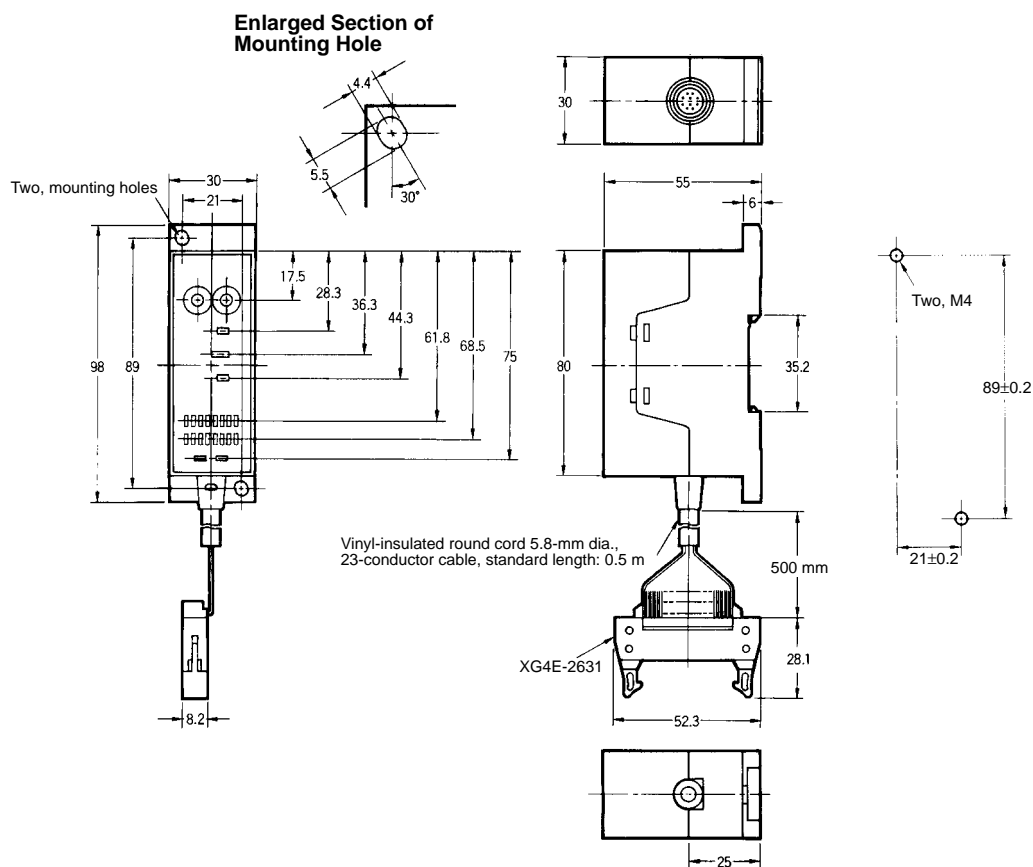
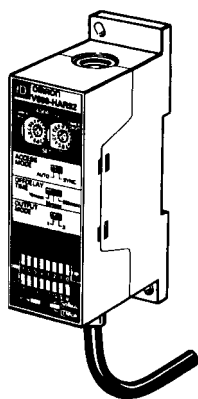


V600-HA

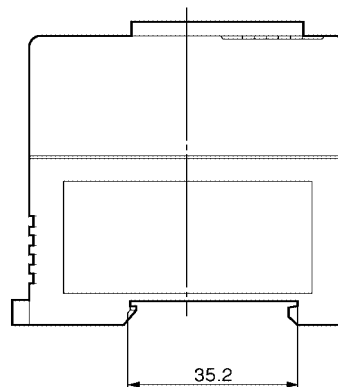
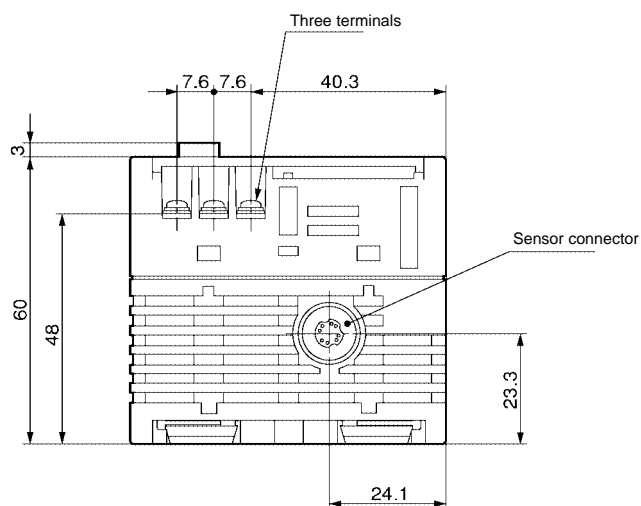
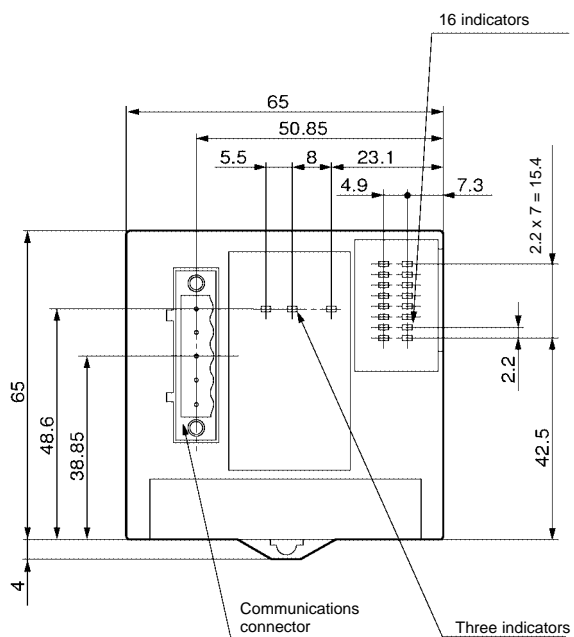
V600-HAM91/-HAM81



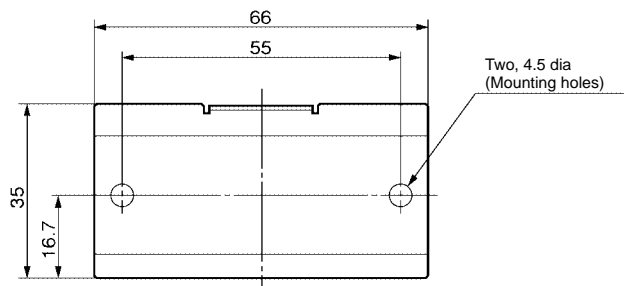
V600-HAR92



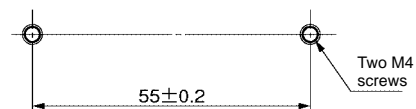
V600-HAM42-DRT



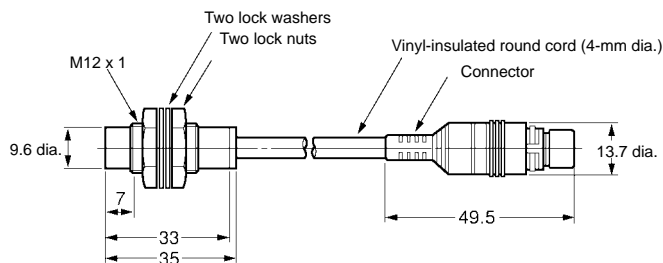
Metal Fitting



Mounting Hole Dimensions

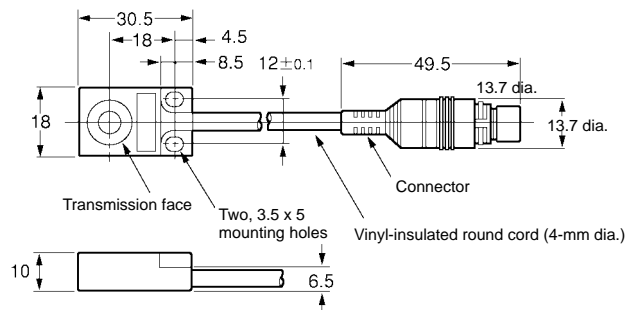


V600-HS51



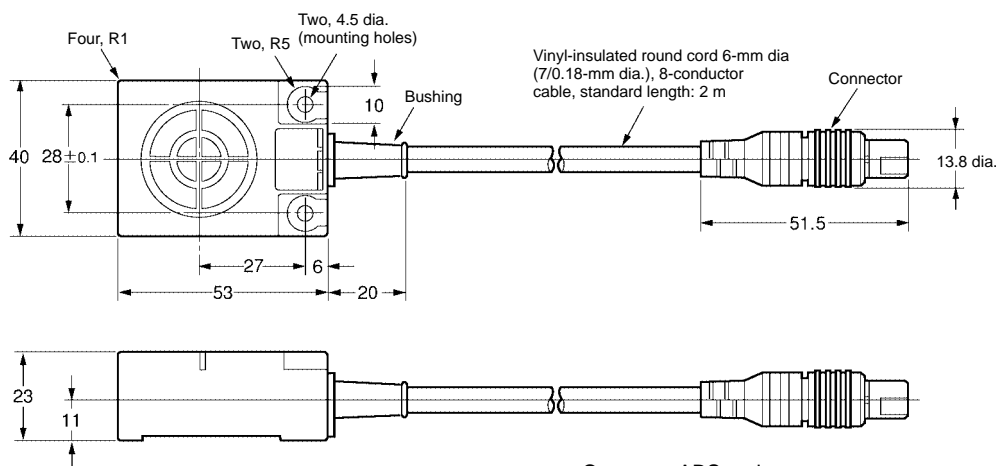
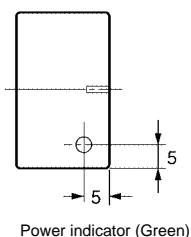
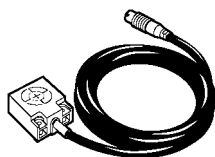
Case: Brass
Transmission face: ABS resin
Filter: Epoxy resin
Cable: PVC (oil-resistant)

V600-HS61



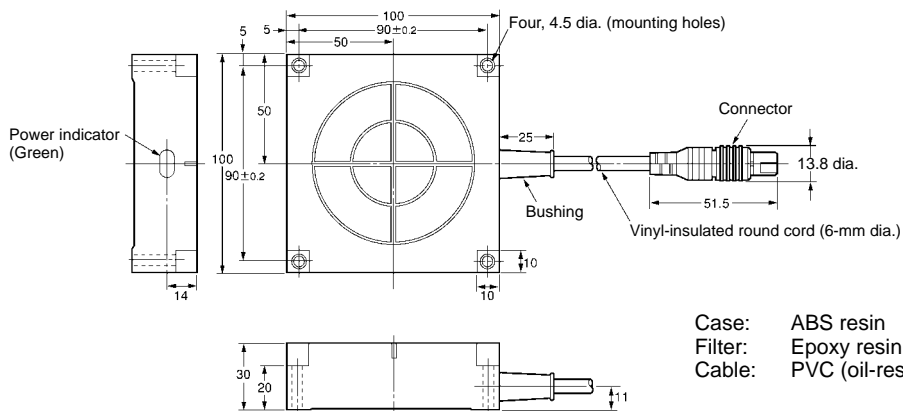
Case: ABS resin
Filter: Epoxy resin
Cable: PVC (oil-resistant)

V600-HS63



Case: ABS resin
Filter: Epoxy resin
Cable: PVC (oil-resistant)

V600-HS67



Case: ABS resin
Filter: Epoxy resin
Cable: PVC (oil-resistant)

Model Changes

■ Models Not in Production

500-kHz models are no longer in production.

R/W Head: V600-H06(-R)

Data Carriers: V600-D2KR01, V600-D8KR01, V600-D2KR02, V600-D8KR02, V600-D2KR03, V600-D8KR03

2K-byte, 530-kHz models are no longer in production. 8K-byte, 530-kHz models are being produced instead.

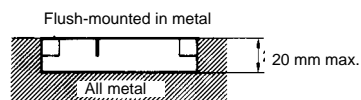
■ Substitute Models

The following substitute models are available.

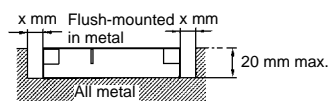
500-kHz models not in production	530-kHz substitute models
V600-H06	V600-H11 or V600-H12 (See note 1.)
V600-D \square KR01	V600-D8KR11 or V600-D8KR04 (See note 2.)
V600-D8KR02	V600-D8KR12
V600-D8KR03	V600-D8KR13

- Note:**
1. There is no difference in specification between the V600-H12 and V600-H11 except for their frequencies and transmission distances.
 2. The V600-D8KR11 can be flush-mounted to metal. The V600-D8KR04 can be also flush-mounted to metal, although subject to the following restrictions.

V600-D8KR11

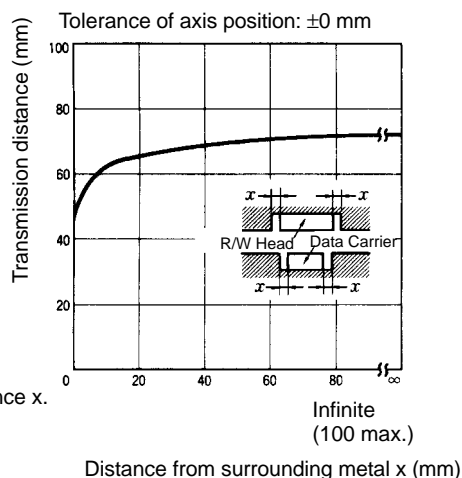


V600-D8KR04

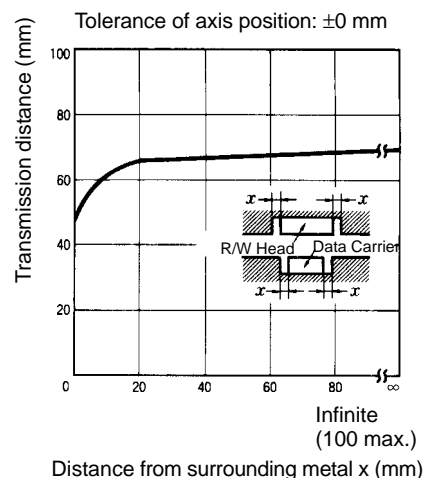


The transmission distance varies with distance x.

V600-H11/V600-D8KR04 Influence of Surrounding Metal



V600-H12/V600-D8KR04 Influence of Surrounding Metal



Specifications/Performance

530-kHz Models




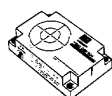
■ Data Carriers

V600-D8KR11

V600-D8KR12

V600-D8KR13

V600-D8KR04

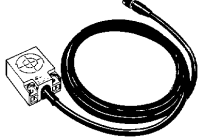
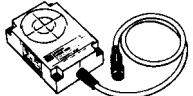
Item	Rectangular standard V600-D8KR11	Rectangular compact V600-D8KR12	Rectangular thin V600-D8KR13	Rectangular intermediate range V600-D8KR04
				
Memory capacity	8 K-byte			
Memory type	SRAM (volatile memory)			
Transmission distance	Refer to <i>Transmission Distance Specifications</i> .			
Battery life (See note.)	8 years	5 years	8 years	
Number of reads/writes	Unlimited (as long as battery is charged)			
Transmission error detection	16-bit CRC in both directions			
Ambient temperature	Operating: -25° to 70°C Storage: -40° to 70°C			
Ambient humidity	Operating: 35% to 95% Storage: 35% to 95%			
Protection rating	IEC 60529 IP67			
Vibration resistance	Destruction: 150 m/s ² , 10 to 500 Hz, 1.0-mm single amplitude, with 3 sweeps of 11 min each in X, Y, and Z directions			
Shock resistance	Destruction: 1.000 m/s ² (approx. 100G) 3 times each in X, Y, and Z directions			
Dimensions	86 × 54 × 20 (mm)	65 × 40 × 15 (mm)	86 × 54 × 10.3 (mm)	86 × 54 × 20 (mm)
Weight	Approx. 170 g	Approx. 70 g	Approx. 160 g	

Note: The battery life is under an ambient temperature of 55°C and 1,000 operations per day and 100 bytes per operation.

■ Read/Write (R/W) Heads

V600-H11

V600-H12

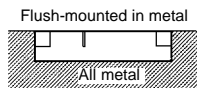
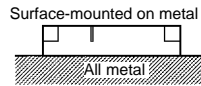
Item	V600-H11 	V600-H12 
Transmission frequency	530 kHz	
Ambient temperature	Operating: -10° to 60°C Storage: -25° to 75°C	Operating: -25° to 70°C Storage: -40° to 85°C
Ambient humidity	Operating: 35% to 95% Storage: 35% to 95%	
Protection rating	IEC 60529 IP67	
Vibration resistance	Destruction: 10 to 500 Hz, 1.0-mm single amplitude, 150 m/s ² acceleration for 30 min each in X, Y, and Z directions	
Shock resistance	Destruction: 500 m/s ² 3 times each in X, Y, and Z directions	
Dimensions	53 × 40 × 23 (mm)	100 × 70 × 30 (mm)
Weight	Approx. 650 g (with 10-m cable)	Approx. 1 kg (with 10-m cable)

■ Transmission Distance Specifications (Recommended Operating Range)

Combination with V600-H11

Item			V600-D8KR11	V600-D8KR12	V600-D8KR13	V600-D8KR04
Communications distance	Stationary	Flush-mounted in metal	10 to 50 mm	5 to 40 mm	10 to 30 mm	Refer to graph (a) and <i>Transmission Range (Examples)</i> .
		Surface-mounted on metal	10 to 55 mm	5 to 45 mm	10 to 30 mm	
	Moving	Flush-mounted in metal	30 to 50 mm	25 to 40 mm	15 to 30 mm	
		Surface-mounted on metal	30 to 55 mm	25 to 45 mm	15 to 30 mm	

Axial deviation: ± 10 mm



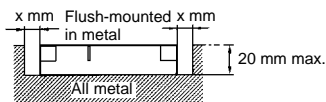
The specified transmission distance is ensured regardless of the type of surface.

Combination with V600-H12

Item			V600-D8KR11	V600-D8KR12	V600-D8KR13	V600-D8KR04
Communications distance	Stationary	Flush-mounted in metal	10 to 40 mm	5 to 25 mm	10 to 35 mm	Refer to graph (b) and <i>Transmission Range (Examples)</i> .
		Surface-mounted on metal	15 to 45 mm	10 to 30 mm	15 to 40 mm	
	Moving	Flush-mounted in metal	20 to 40 mm	15 to 25 mm	20 to 35 mm	
		Surface-mounted on metal	25 to 45 mm	20 to 30 mm	25 to 40 mm	

Axial deviation: ± 10 mm

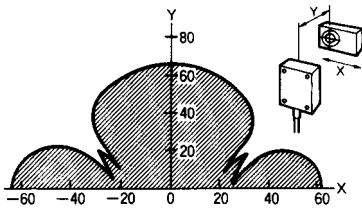
The V600-D8KR04 can be also flush-mounted to metal, subject to the following restrictions.



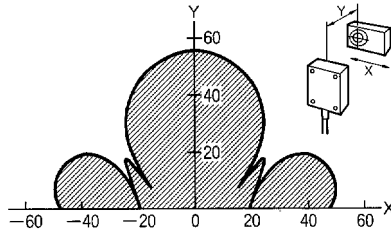
Model Changes

■ Transmission Range (Examples)

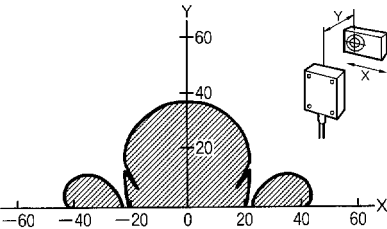
V600-D8KR11 & V600-H11



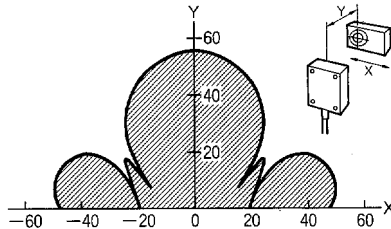
V600-D8KR12 & V600-H11



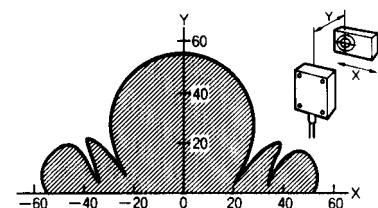
V600-D8KR13 & V600-H11



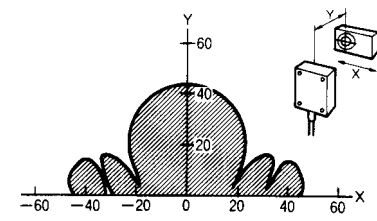
V600-D8KR04 & V600-H11



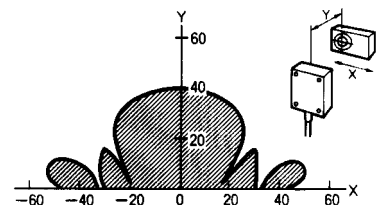
V600-D8KR11 & V600-H12



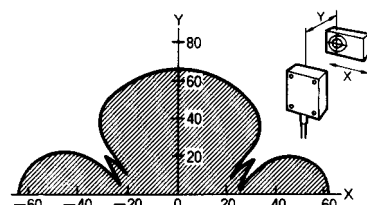
V600-D8KR12 & V600-H12



V600-D8KR13 & V600-H12

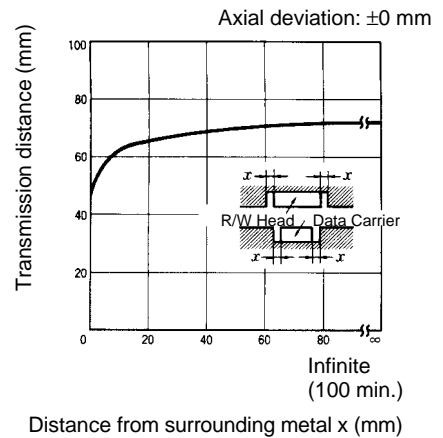


V600-D8KR04 & V600-H12

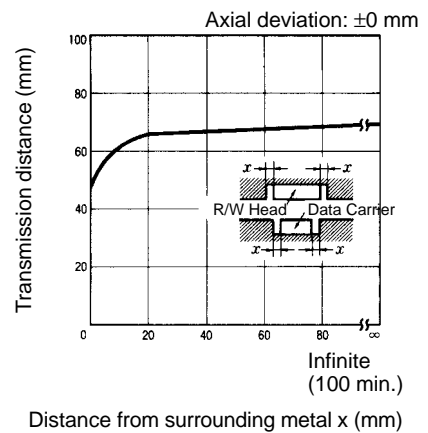


Note: The examples are for DCs surface-mounted on metal.

Graph (a)
Influence of Surrounding Metal
on V600-H06/V600-D8KR04



Graph (b)
Influence of Surrounding Metal
on V600-H12/V600-D8KR04






500-kHz Models

■ Data Carriers

V600-D2KR01, V600-D8KR01

V600-D2KR02, V600-D8KR02

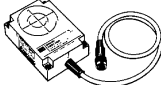
V600-D2KR03, V600-D8KR03

Item	Rectangular standard V600-D2KR01 V600-D8KR01 	Rectangular compact V600-D2KR02 V600-D8KR02 	Rectangular thin V600-D2KR03 V600-D8KR03 
Memory capacity	2K-byte/8K-byte		
Memory type	SRAM (volatile memory)		
Transmission distance	Refer to <i>Transmission Distance Specifications</i> .		
Battery life (See note.)	8 years	5 years	8 years
Number of reads/writes	Unlimited (as long as battery is charged)		
Transmission error detection	16-bit CRC in both directions		
Ambient temperature	Operating: -25° to 70°C Storage: -40° to 70°C		
Ambient humidity	Operating: 35% to 95% Storage: 35% to 95%		
Protection rating	IEC 60529 IP67		
Vibration resistance	Destruction: 150 m/s ² , 10 to 500 Hz, 1.0-mm single amplitude, with 3 sweeps of 11 min each in X, Y, and Z directions		
Shock resistance	Destruction: 1.000 m/s ² 3 times each in X, Y, and Z directions		
Dimensions	86 × 54 × 20 (mm)	65 × 40 × 15 (mm)	86 × 45 × 10.3 (mm)
Weight	Approx. 170 g	Approx. 70 g	

Note: The battery life is under an ambient temperature of 55°C and 1,000 operations per day and 100 bytes per operation.

■ Read/Write (R/W) Heads

V600-H06

Item	V600-H06 
Transmission frequency	500 kHz
Ambient temperature	Operating: -25° to 70°C Storage: -40° to 85°C
Ambient humidity	Operating: 35% to 95% Storage: 35% to 95%
Protection rating	IEC 60529 IP67
Vibration resistance	Destruction: 10 to 500 Hz, 1.0-mm single amplitude, 150 m/s ² acceleration for 30 min each in X, Y, and Z directions
Shock resistance	Destruction: 500 m/s ² 3 times each in X, Y, and Z directions
Dimensions	100 × 70 × 30 (mm)
Weight	Approx. 1 kg (with 10-m cable)

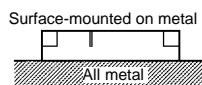
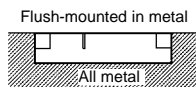
Model Changes

■ Transmission Distance Specifications (Recommended Operating Range)

Combination with V600-H06

Item			V600-D2KR01 V600-D8KR01	V600-D2KR02 V600-D8KR02	V600-D2KR03 V600-D8KR03
Communications distance	Stationary	Flush-mounted in metal	10 to 35 mm	5 to 25 mm	10 to 35 mm
		Surface-mounted on metal	15 to 40 mm	10 to 30 mm	15 to 40 mm
	Moving	Flush-mounted in metal	20 to 35 mm	15 to 25 mm	20 to 35 mm
		Surface-mounted on metal	25 to 40 mm	20 to 30 mm	25 to 40 mm

Axial deviation: ± 10 mm

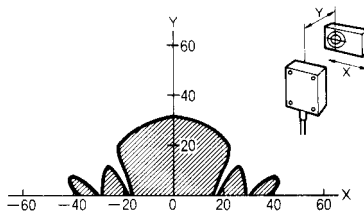
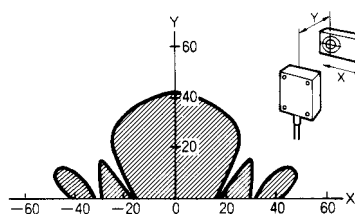


The specified transmission distance is ensured regardless of the type of surface.

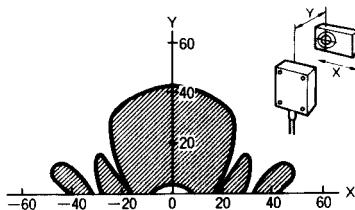
■ Transmission Range (Examples)

V600-D□KR01 & V600-H06

V600-D□KR02 & V600-H06



V600-D□KR03 & V600-H06



Note: The examples are for DCs surface-mounted on metal.

Combinations of 500- and 530-kHz Models

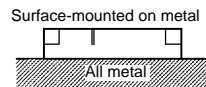
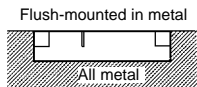
■ Transmission Distance Specifications (Recommended Operating Range)

The 500- and 530-kHz models can be used in combination, in which case, however, the specified communications range will vary.

Combinations of 500-kHz R/W Heads and 530-kHz Data Carrier Combination with V600-H06

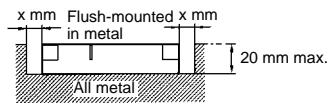
Item			V600-D8KR11	V600-D8KR12	V600-D8KR13	V600-D8KR04
Communications distance	Stationary	Flush-mounted in metal	10 to 35 mm	5 to 25 mm	10 to 30 mm	Refer to graph (a) and <i>Transmission Range (Examples)</i> .
		Surface-mounted on metal	15 to 40 mm	10 to 30 mm	15 to 35 mm	
	Moving	Flush-mounted in metal	20 to 35 mm	15 to 25 mm	20 to 30 mm	
		Surface-mounted on metal	25 to 40 mm	20 to 30 mm	25 to 35 mm	

Axial deviation: ± 10 mm

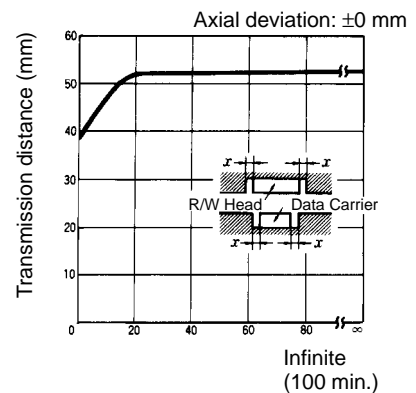


The specified transmission distance is ensured regardless of the type of surface.

The V600-D8KR04 can be also flush-mounted to metal, subject to the following restrictions.



Graph (a) Influence of Surrounding Metal on V600-H06/V600-D8KR04



Distance from surrounding metal x (mm)

Combinations of 530-kHz R/W Heads and 500-kHz Data Carriers

Combination with V600-H12

Item			V600-D2KR01 V600-D8KR01	V600-D2KR02 V600-D8KR02	V600-D2KR03 V600-D8KR03
Communications distance	Stationary	Flush-mounted in metal	10 to 30 mm	5 to 20 mm	10 to 30 mm
		Surface-mounted on metal	15 to 35 mm	10 to 25 mm	15 to 35 mm
	Moving	Flush-mounted in metal	20 to 30 mm	15 to 20 mm	20 to 30 mm
		Surface-mounted on metal	25 to 35 mm	20 to 25 mm	25 to 35 mm

Axial deviation: ± 10 mm

Combination with V600-H11

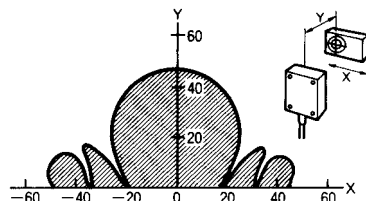
Item			V600-D2KR01 V600-D8KR01	V600-D2KR02 V600-D8KR02	V600-D2KR03 V600-D8KR03
Communications distance	Stationary	Flush-mounted in metal	5 to 25 mm	5 to 20 mm	5 to 20 mm
		Surface-mounted on metal	5 to 30 mm	5 to 20 mm	5 to 25 mm
	Moving	Flush-mounted in metal	15 to 25 mm	15 to 20 mm	15 to 20 mm
		Surface-mounted on metal	15 to 30 mm	15 to 25 mm	15 to 25 mm

Axial deviation: ± 10 mm

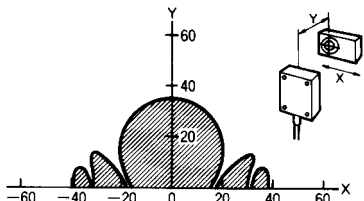
Model Changes

■ Transmission Range (Examples)

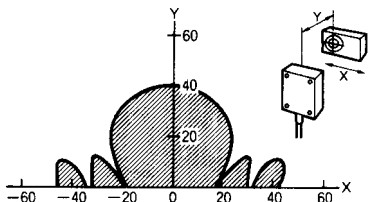
V600-D8KR11 & V600-H06



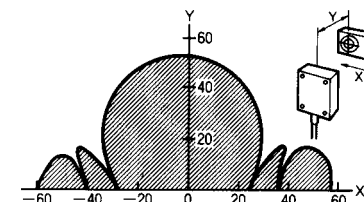
V600-D8KR12 & V600-H06



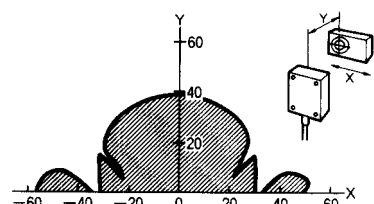
V600-D8KR13 & V600-H06



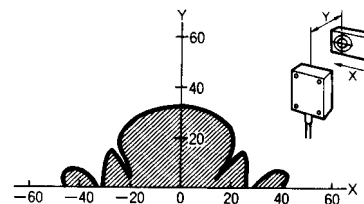
V600-D8KR04 & V600-H06



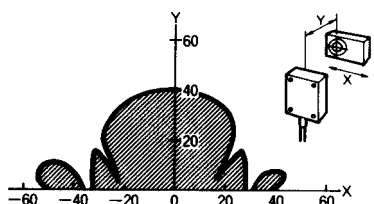
V600-D□KR01 & V600-H12



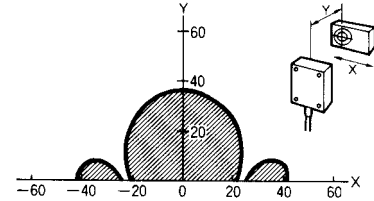
V600-D□KR02 & V600-H11



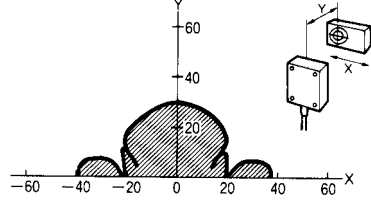
V600-D□KR02 & V600-H12



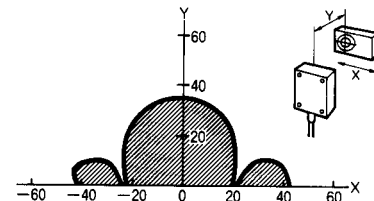
V600-D□KR03 & V600-H12



V600-D□KR03 & V600-H11



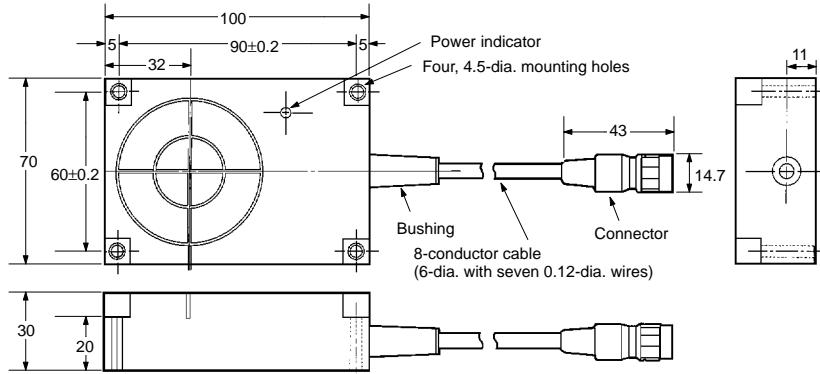
V600-D□KR01 & V600-H11



Note: The examples are for DCs surface-mounted on metal.

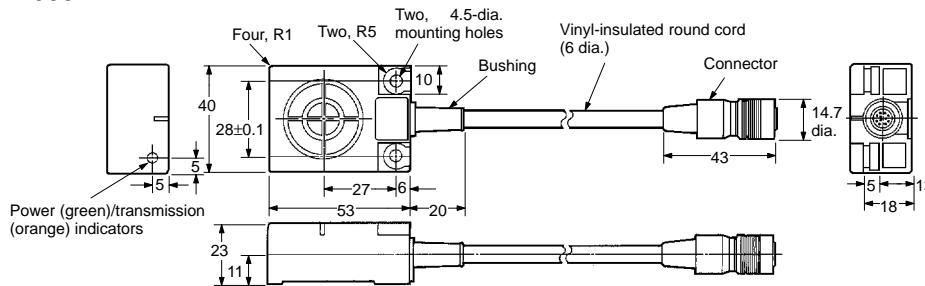
■ Dimensions

V600-H06/12



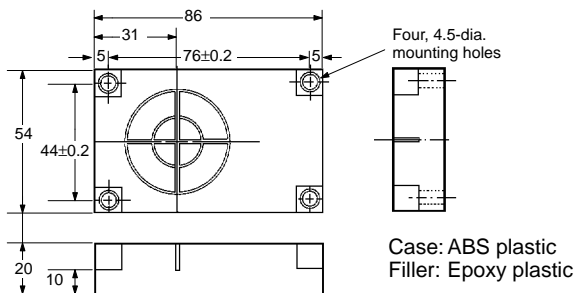
Case: ABS plastic
Filler: Epoxy plastic
Cable: PVC (oil-resistant)

V600-H11



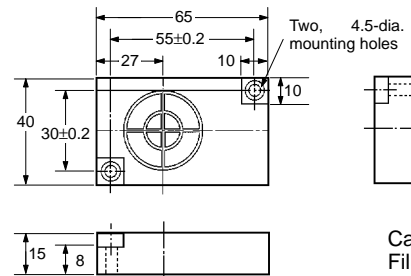
Case: ABS plastic
Filler: Epoxy plastic
Cable: PVC (oil-resistant)

V600-D□KR01 V600-D8KR11



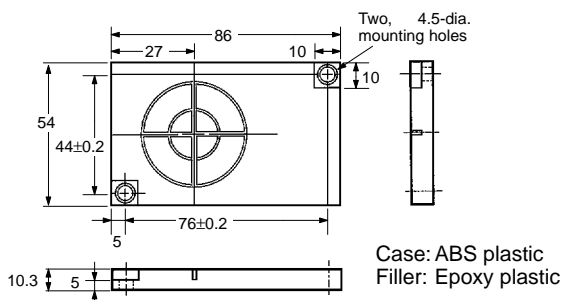
Case: ABS plastic
Filler: Epoxy plastic

V600-D□KR02 V600-D8KR12



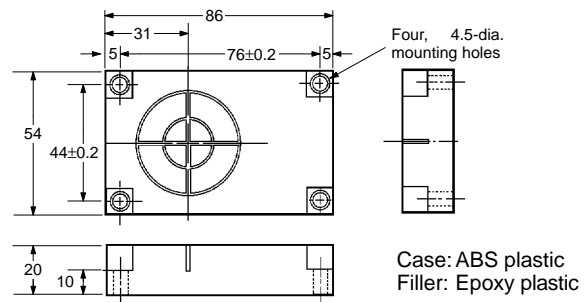
Case: ABS plastic
Filler: Epoxy plastic

V600-D□KR03 V600-D8KR13



Case: ABS plastic
Filler: Epoxy plastic

V600-D8KR04



Case: ABS plastic
Filler: Epoxy plastic

UL

(Underwriters Laboratories Inc.)



UL is a leading third-party certification organization established by the fire insurance underwriters' associations in the United States. As a non-profit product safety testing and certification organization, UL has been evaluating products in the interest of public safety since 1894. In many states, the sale of electric appliances is subject to UL approval by law or regulations which are applicable to the appliances and their main built-in components.

There are two types of UL approval, listing approval and recognition.

RFID Systems

UL508 Approval

Model	File No.	Rating
V600-CA1A* V600-CA2A* V600-CA8A* V600-CA9A*	E41515	Input: 100 to 240 V at 50/60 Hz Reset input: 10 mA at 24 VDC Output: Transistor output 100 mA at 24 VDC with parallel or serial interface
V600-A14 (V600-CB-US-S Battery Charger)	E131841	Input: 120 V at 60 Hz Output: 7.8 VDC at 0.3 A

Note: Asterisked models are listing approval products.

UL508 Approval

Model	File No.	Rating
V600-HAR91 V600-HAM91 V600-HAM92 V600-HAR81 V600-HAM81 V600-HS51 V600-HS61 V600-HS63 V600-HS67	E104818	Use only in class-2 circuit

CSA

(Canadian Standard Association)



CSA is an independent, non-profit, non-governmental organization that was established in 1919 and is a leader in the field of standards development. CSA's purpose is to make standards work for people and business. Presently CSA's services include safety tests of electric appliances.

Compared with UL, CSA has a close relationship with governmental agencies. Products cannot be sold in Canada without CSA certification, otherwise an order of product withdrawal may be issued.

Products and parts with CSA certification are called certified equipment. A certification record is issued to certified equipment.

RFID Systems

CSA22.1 Certification/CB46463-49 Certification

Model	File No.	Rating
V600-CA1A V600-CA2A V600-CA8A V600-CA9A	LR46463	Input: 100 to 240 V at 50/60 Hz Reset input: 10 mA at 24 VDC Output: Transistor output 100 mA at 24 VDC with parallel or serial interface
V600-A14 (V600-CB-US-S Battery Charger)	LR92770	Input: 120 V at 60 Hz Output: 7.8 VDC at 0.3 A

EN/IEC

(European Norm/International Electrotechnical Commission)

In connection with EC unification, 18 European countries will integrate their conventional safety standards into EN standards. When EN standards come into effect, they will apply as the unified European standards in place of the conventional safety standards.

EN standards are based on IEC standards. Therefore, machines that are exported to Europe from Japan, Asia, or North America must satisfy EN standards. Otherwise the machines must satisfy IEC standards if the machines do not fall under EN standards.



The CE marking is provided by EC Directives. A product bearing a CE marking meets the safety standards specified by all relative EC Directives. If the product is a machine, it must satisfy the EC Machinery Directive, Low-voltage Directive (LVD), and EMC requirements of EC Directives. The product must satisfy the EMC and LVD requirements of EC Directives, if the product is a home electronics appliance or office machine. Machines bearing CE markings can be freely exported to European countries. Therefore, CE markings are the "passports" of exports to Europe.

EC Directives are provided for the purpose of the unification of European countries. Approximately 300 EC Directives have been promulgated. EC Directives for machines are called Machine Directives. According to the Machine Directives (EC Directive Document number 89/392/EEC), machines exported to Europe must bear CE markings on and after January 1, 1995.

Machine directives require that the machines ensure machinery safety, electrical safety, and workers' safety.

EMC standards for electro-magnetic compatibility. A machine must satisfy the EMC requirements of EC Directives by taking countermeasures against EMI (electro-magnetic interference) and EMC (electro-magnetic susceptibility).

Low-voltage Directive (LVD) requires that electric devices operating at 50 to 1,000 VAC or 75 to 1,500 VDC ensure safety, which apply to almost all electric appliances including home electronics appliances, office machines, and industrial electric machines.

RFID Systems

The RFID System as a combined system of the ID Controller(s), ID Tag(s), and Antenna(e) satisfies EC Directive requirements. The following is a list of applicable products and corresponding standards.

Model			Machine directive/LVD	EMC directive	Remarks
Controller	R/W Head	Data Carrier			
V600-CA1A-V2-□ V600-CA2A-V2-□	V600-H07-□ V600-H11-□ V600-H12-□ V600-H51-□ V600-H52-□	V600-D23P□□-□ V600-D2KR□□-□ V600-D8KR□□-□	EN61010-1 IEC1010-1	EMI: EN50081-2 EMS: EN50082-2	---
V600-CA8A-V2-□ V600-CA9A-V2-□					Apply a TDE- or TÜV-approved filter to each AC power line. The recommendable filter is Tokin's GT-20601
V600-CA1D-V3-□			---		---

Note: Refer to the relevant ID Controller Operation Manual for details.

FCC

(Federal Communications Commission)

RFID Systems

Model	ID No.
V600-H07	E4E6CYSIDV6000190
V600-H11	
V600-H12	
V600-HS67 (Sensor section)	
V600-HS63 (Sensor section)	
V600-HAR91 (Amplifier section)	
V600-HAM42-DRT (Amplifier section)	

Model	ID No.
V600-H51	E4E6CYSIDV6000292
V600-H52	
V600-HS51 (Sensor section)	
V600-HA51 (Amplifier section)	
V600-HS61 (Sensor section)	
V600-HA51 (Amplifier section)	

Note: Contents of the FCC Authorization Display

The following contents are indicated with the Case Label.

This device complies with Part 15 of the FCC Rules.

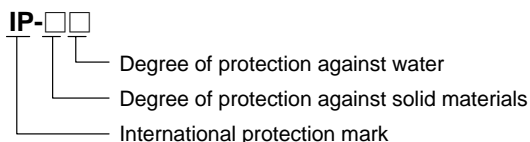
Operation is subject to the following two conditions:

- 1) This device may not cause harmful interference, and
- 2) This device must accept any interference received, including interference that may cause undesired operation.


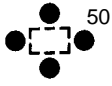

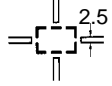



Protection Ratings

Note: International protection degrees are determined by the following tests. Be sure to check the sealing capability under the actual operating environment and conditions before actual use.


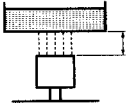

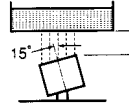





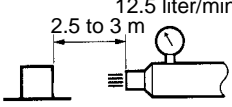

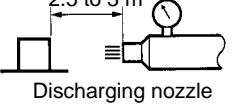



■ IEC (International Electrotechnical Commission) Standards (IEC 60529 January 1997)



Degree of Protection from Solid Materials

Degree	Protection
0	 No protection
1	 50 mm dia. Protects against penetration of any solid object such as a hand that is 50 mm or more in diameter.
2	 12.5 mm dia. Protects against penetration of any solid object such as a finger that is 12.5 mm or more in diameter.
3	 2.5 mm Protects against penetration of any solid object such as a wire that is 2.5 mm or more in diameter.
4	 1 mm Protects against penetration of any solid object such as a wire that is 1 mm or more in diameter.
5	 Protects against penetration of dust of a quantity that may malfunction the protect or obstruct the safety operation of the product.
6	 Protects against penetration of all dust.

Degree of Protection Against Water

Degree	Protection		Test method (with fresh water)	
0	No protection	Not protected against water.	No test	
1	Protection against water drops 	Protects against vertical drops of water towards the product.	Water is dropped vertically towards the product from the test machine for 10 min.	 200 mm
2	Protection against water drops 	Protects against drops of water approaching at a maximum angle of 15° to the left, right, back, and front of vertical towards the product.	Water is dropped for 2.5 min each (i.e., 10 min in total) towards the product inclined 15° to the left, right, back, and front from the test machine.	 15° 200 mm
3	Protection against sprinkled water 	Protects against sprinkled water approaching at a maximum angle of 60° from vertical towards the product.	Water is sprinkled at a maximum angle of 60° to the left and right from vertical for 10 min from the test machine	Water rate is 0.07 liter/min per hole. 
4	Protection against water spray 	Protects against water spray approaching at any angle towards the product.	Water is sprayed at any angle towards the product for 10 min from the test machine.	Water rate is 0.07 liter/min per hole. 
5	Protection against water jet spray 	Protects against water jet spray approaching at any angle towards the product.	Water is jet sprayed at any angle towards the product for 1 min per square meter for at least 3 min in total from the test machine.	12.5 liter/min 2.5 to 3 m  Discharging nozzle
6	Protection against high-pressure water jet spray 	Protects against high-pressure water jet spray approaching at any angle towards the product.	Water is jet sprayed at any angle towards the product for 1 min per square meter for at least 3 min in total from the test machine.	100 liter/min 2.5 to 3 m  Discharging nozzle
7	Protection underwater (See note 1.) 	Resists the penetration of water when the product is placed underwater at specified pressure for a specified time.	The product is placed 1 m deep in water (if the product is 850 mm max. in height) for 30 min.	 1 m
8	Protection underwater (See note 2.) 	Can be used continuously underwater.	The test method is determined by the manufacturer and user.	

Testing Method

- Note:**
- In addition to the test methods described above, the IP67 conformity of the Proximity Sensor was confirmed by immersion in water cooled to 0°C for 1 hour and heated to 70°C for 1 hour alternately. After this heat-shock cycle was repeated 5 times, the sensing distance and the insulation resistance were checked.
 - Ambient Conditions for the E2F Proximity Sensor: A depth of less than 10 m underwater under natural conditions.
 - The Sensor was immersed in water at 2 atmospheres for 1 hour, and it was confirmed that no water had entered the Sensor.
 - The heat-shock cycle described in note 1 above was repeated 20 times, and the sensing distance and the insulation resistance were checked.