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# **SYSMAC CS/CJ Series**

**CS1W-V600C11**

**CS1W-V600C12**

**CJ1W-V600C11**

**CJ1W-V600C12**

# **ID Sensor Units**

# **OPERATION MANUAL**

**OMRON**

# **SYSMAC CS/CJ Series ID Sensor Units**

## **Operation Manual**

*Revised December 2004*



## **READ AND UNDERSTAND THIS DOCUMENT**

Please read and understand this document before using the products. Please consult your OMRON representative if you have any questions or comments.

## **WARRANTY**

OMRON's exclusive warranty is that the products are free from defects in materials and workmanship for a period of one year (or other period if specified) from date of sale by OMRON.

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THE PRODUCTS CONTAINED IN THIS DOCUMENT ARE NOT SAFETY RATED. THEY ARE NOT DESIGNED OR RATED FOR ENSURING SAFETY OF PERSONS, AND SHOULD NOT BE RELIED UPON AS A SAFETY COMPONENT OR PROTECTIVE DEVICE FOR SUCH PURPOSES. Please refer to separate catalogs for OMRON's safety rated products.

OMRON shall not be responsible for conformity with any standards, codes, or regulations that apply to the combination of products in the customer's application or use of the product.

At the customer's request, OMRON will provide applicable third party certification documents identifying ratings and limitations of use that apply to the products. This information by itself is not sufficient for a complete determination of the suitability of the products in combination with the end product, machine, system, or other application or use.

The following are some examples of applications for which particular attention must be given. This is not intended to be an exhaustive list of all possible uses of the products, nor is it intended to imply that the uses listed may be suitable for the products:

- Outdoor use, uses involving potential chemical contamination or electrical interference, or conditions or uses not described in this document.
- Nuclear energy control systems, combustion systems, railroad systems, aviation systems, medical equipment, amusement machines, vehicles, safety equipment, and installations subject to separate industry or government regulations.
- Systems, machines, and equipment that could present a risk to life or property.

Please know and observe all prohibitions of use applicable to the products.

NEVER USE THE PRODUCTS FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

### **PERFORMANCE DATA**

Performance data given in this document is provided as a guide for the user in determining suitability and does not constitute a warranty. It may represent the result of OMRON's test conditions, and the users must correlate it to actual application requirements. Actual performance is subject to the OMRON Warranty and Limitations of Liability.

### **CHANGE IN SPECIFICATIONS**

Product specifications and accessories may be changed at any time based on improvements and other reasons.

It is our practice to change model numbers when published ratings or features are changed, or when significant construction changes are made. However, some specifications of the product may be changed without any notice. When in doubt, special model numbers may be assigned to fix or establish key specifications for your application on your request. Please consult with your OMRON representative at any time to confirm actual specifications of purchased products.

### **DIMENSIONS AND WEIGHTS**

Dimensions and weights are nominal and are not to be used for manufacturing purposes, even when tolerances are shown.

### **ERRORS AND OMISSIONS**

The information in this document has been carefully checked and is believed to be accurate; however, no responsibility is assumed for clerical, typographical, or proofreading errors, or omissions.

### **PROGRAMMABLE PRODUCTS**

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## Meanings of Signal Words

The following signal words are used in this manual.

### **WARNING**

Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.

### **CAUTION**

Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury or in property damage.

## Meanings of Alert Symbols

The following alert symbols are used in this manual.



Indicates the possibility of explosion under specific conditions.

## Alert Statements in this Manual

The following alert statements apply to the products in this manual. Each alert statement also appears at the locations needed in this manual to attract your attention.

### **WARNING**

The SRAM-type Data Carrier has a built-in lithium battery which can combust or explode if mishandled. Do not disassemble the Data Carrier, or subject it to high pressure or high temperatures (of 1005C or more), or dispose of it by incineration.



## **Notice:**

OMRON products are manufactured for use according to proper procedures by a qualified operator and only for the purposes described in this manual.

The following conventions are used to indicate and classify precautions in this manual. Always heed the information provided with them. Failure to heed precautions can result in injury to people or damage to property.

## **OMRON Product References**

All OMRON products are capitalized in this manual. The word "Unit" is also capitalized when it refers to an OMRON product, regardless of whether or not it appears in the proper name of the product.

The abbreviation "Ch," which appears in some displays and on some OMRON products, often means "word" and is abbreviated "Wd" in documentation in this sense.

The abbreviation "PLC" means Programmable Controller. "PC" is used, however, in some Programming Device displays to mean Programmable Controller.

## **Visual Aids**

The following headings appear in the left column of the manual to help you locate different types of information.

**Note** Indicates information of particular interest for efficient and convenient operation of the product.

**1,2,3...** 1. Indicates lists of one sort or another, such as procedures, checklists, etc.

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No patent liability is assumed with respect to the use of the information contained herein. Moreover, because OMRON is constantly striving to improve its high-quality products, the information contained in this manual is subject to change without notice. Every precaution has been taken in the preparation of this manual. Nevertheless, OMRON assumes no responsibility for errors or omissions. Neither is any liability assumed for damages resulting from the use of the information contained in this publication.



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## ***About this Manual:***

This manual describes the installation and operation of the CS1W-V600C11 and CS1W-V600C12 CS-series ID Sensor Units and the CJ1W-V600C11 and CJ1W-V600C12 CJ-series ID Sensor Units, and it includes the sections described below.

Please read this manual carefully and be sure you understand the information provided before attempting to install or operate a ID Sensor Unit. Be sure to read the precautions provided in the following section.

**Precautions** provides general precautions for using the ID Sensor Units, Programmable Controller, and related devices.

**Section 1** describes the features and system configuration of an ID Sensor Unit.

**Section 2** describes the specifications, operation, and installation of ID Sensor Units for CS-series PLCs.

**Section 3** describes the specifications, operation, and installation of ID Sensor Units for CJ-series PLCs.

**Section 4** describes the methods used to exchange data with the CPU Unit and the data that is exchanged.

**Section 5** describes the operation of the ID Sensor Units.

**Section 6** describes how to control an ID Sensor Unit using commands from the PLC's CPU Unit.

**Section 7** describes troubleshooting errors that can occur during ID Sensor Unit operation.

The **Appendices** provide dimensions, sample programming, and data coding tables.

### **WARNING**

Failure to read and understand the information provided in this manual may result in personal injury or death, damage to the product, or product failure. Please read each section in its entirety and be sure you understand the information provided in the section and related sections before attempting any of the procedures or operations given.



# PRECAUTIONS

This section provides general precautions for using the ID Sensor Unit, Programmable Controller, and related devices.

**The information contained in this section is important for the safe and reliable application of the ID Sensor Unit. You must read this section and understand the information contained before attempting to set up or operate a ID Sensor Unit and PLC system.**

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## 1 Intended Audience

This manual is intended for the following personnel, who must also have knowledge of electrical systems (an electrical engineer or the equivalent).

- Personnel in charge of installing FA systems.
- Personnel in charge of designing FA systems.
- Personnel in charge of managing FA systems and facilities.

## 2 General Precautions

The user must operate the product according to the performance specifications described in the operation manuals.

Before using the product under conditions which are not described in the manual or applying the product to nuclear control systems, railroad systems, aviation systems, vehicles, combustion systems, medical equipment, amusement machines, safety equipment, and other systems, machines, and equipment that may have a serious influence on lives and property if used improperly, consult your OMRON representative.

Make sure that the ratings and performance characteristics of the product are sufficient for the systems, machines, and equipment, and be sure to provide the systems, machines, and equipment with double safety mechanisms.

This manual provides information for installing and operating OMRON ID Sensor Units. Be sure to read this manual before operation and keep this manual close at hand for reference during operation.

### WARNING

It is extremely important that a PLC and all PLC Units be used for the specified purpose and under the specified conditions, especially in applications that can directly or indirectly affect human life. You must consult with your OMRON representative before applying a PLC system to the above mentioned applications.

## 3 Safety Precautions

### WARNING

Never attempt to disassemble any Units while power is being supplied. Doing so may result in serious electrical shock or electrocution.

### WARNING

Never touch any of the terminals while power is being supplied. Doing so may result in serious electrical shock or electrocution.

### WARNING

The SRAM-type Data Carrier has a built-in lithium battery which can combust or explode if mishandled. Do not disassemble the Data Carrier, or subject it to high pressure or high temperatures (of 100 °C or more), or dispose of it by incineration.



**⚠ WARNING**

Provide safety measures in external circuits, i.e., not in the PLC (CPU Unit including associated Units), in order to ensure safety in the system if an abnormality occurs due to malfunction of the PLC or another external factor affecting the PLC operation. Not doing so may result in serious accidents.

- Emergency stop circuits, interlock circuits, limit circuits, and similar safety measures must be provided in external control circuits.
- The PLC will turn OFF all outputs when its self-diagnosis function detects any error or when a severe failure alarm (FALS) instruction is executed. As a countermeasure for such errors, external safety measures must be provided to ensure safety in the system.
- The PLC outputs may remain ON or OFF due to deposition or burning of the output relays or destruction of the output transistors. As a countermeasure for such problems, external safety measures must be provided to ensure safety in the system.

**⚠ CAUTION**

Execute online edit only after confirming that no adverse effects will be caused by extending the cycle time. Otherwise, the input signals may not be readable.

## 4 Operating Environment Precautions

Do not operate the control system in the following places.

- Where the PLC is exposed to direct sunlight.
- Where the ambient temperature or humidity is outside the ranges given in the Unit specifications.
- Where the PLC may be affected by condensation due to radical temperature changes.
- Where there is any corrosive or inflammable gas.
- Where there is excessive dust, saline air, or metal powder.
- Where the PLC is affected by vibration or shock.
- Where any water, oil or chemical may splash on the PLC.

Provide proper shielding when installing in the following locations:

- Locations subject to static electricity or other sources of noise.
- Locations subject to strong electromagnetic fields.
- Locations subject to possible exposure to radiation.
- Locations near to power supply lines.

**⚠ CAUTION**

The operating environment of the PLC System can have a large effect on the longevity and reliability of the system. Improper operating environments can lead to malfunction, failure, and other unforeseeable problems with the PLC System. Be sure that the operating environment is within the specified conditions at installation and remains within the specified conditions during the life of the system.

## 5 Application Precautions

Observe the following precautions when using the ID Sensor Unit or the PLC.

### WARNING

Failure to abide by the following precautions could lead to serious or possibly fatal injury. Always heed these precautions.

- Always turn OFF the power supply to the PLC before attempting any of the following. Performing any of the following with the power supply turned ON may lead to electrical shock:
  - Mounting or removing any Units (e.g., Power Supply Unit, I/O Units, CPU Unit, etc.) or Memory Cassettes.
  - Assembling any devices or racks.
  - Setting DIP switches or rotary switches.
  - Connecting or disconnecting any cables or wiring.

### CAUTION

Failure to abide by the following precautions could lead to faulty operation of the PLC or the system or could damage the PLC or PLC Units. Always heed these precautions.

- Fail-safe measures must be taken by the customer to ensure safety in the event that outputs from Output Units remain ON as a result of internal circuit failures, which can occur in relays, transistors, and other elements.
- Always use the power supply voltages specified in the operation manuals. An incorrect voltage may result in malfunction or burning.
- Take appropriate measures to ensure that the specified power with the rated voltage and frequency is supplied in places where the power supply is unstable. An incorrect power supply may result in malfunction.
- Install external breakers and take other safety measures against short-circuiting in external wiring. Insufficient safety measures against short-circuiting may result in burning.
- Do not apply voltages to the Input Units in excess of the rated input voltage. Excess voltages may result in burning.
- Do not apply voltages or connect loads to the Output Units in excess of the maximum switching capacity. Excess voltage or loads may result in burning.
- Install the Units properly as specified in the operation manuals. Improper installation of the Units may result in malfunction.
- Be sure that all the mounting screws, terminal screws, and cable connector screws are tightened to the torque specified in the relevant manuals. Incorrect tightening torque may result in malfunction.
- Do not attempt to take any Units apart, to repair any Units, or to modify any Units in any way.
- Check switch settings, the contents of the DM Area, and other preparations before starting operation. Starting operation without the proper settings or data may result in an unexpected operation.
- Leave the label attached to the Unit when wiring. Removing the label may result in malfunction if foreign matter enters the Unit.
- Remove the label after the completion of wiring to ensure proper heat dissipation. Leaving the label attached may result in malfunction.



- Use crimp terminals for wiring. Do not connect bare stranded wires directly to terminals.
- Observe the following precautions when wiring cables.
  - Do not bend the cables past their natural bending radius.
  - Do not pull on the cables.
  - Do not place heavy objects on top of the cables.
- Check terminal blocks sufficiently before mounting them.
- Be sure that the terminal blocks, Memory Units, expansion cables, and other items with locking devices are properly locked into place. Improper locking may result in malfunction.
- Check the user program for proper execution before actually running it on the Unit. Not checking the program may result in an unexpected operation.
- Check all wiring carefully before turning ON the power supply.
- Confirm that no adverse effect will occur in the system before attempting any of the following. Not doing so may result in an unexpected operation.
  - Changing the operating mode of the PLC.
  - Force-setting/force-resetting any bit in memory.
  - Changing the present value of any word or any set value in memory.
- Before touching a Unit, be sure to first touch a grounded metallic object in order to discharge any static build-up. Not doing so may result in malfunction or damage.
- Stop operation and turn OFF the power supply immediately if you smell any unusual odors, if the surface of the Unit become abnormally hot, if smoke appears, or if the Unit seems unusual in any other way.

## 6 Precautions for Users of the C200H-IDS01(-V1)

The CS1W-V600C11, CS1W-V600C12, CJ1W-V600C11, and CJ1W-V600C12 (CS/CJ-series) ID Sensor Units **cannot** be controlled with programming written for the C200H-IDS01 or C200H-IDS01-V1 ID Sensor Unit. Refer to *SECTION 4 Data Exchange with the CPU Unit* for details. This section describes the main differences between these Units.

### Command Settings

The CS/CJ-series ID Sensor Units allow the Data Carrier processing command and Data Carrier communications method (i.e., the communications specification) to be set separately. Commands written for the C200H ID Sensor Units cannot be used without modification. Refer to *SECTION 4 Data Exchange with the CPU Unit* for details on designating commands and communications methods.

## New Commands

New commands have been added that allow individual bits to be written and that allow data to be copied from one Data Carrier to another.

Command name	Function
Bit Set	Sets the specified bits of the specified area in the Data Carrier.
Bit Clear	Clears the specified bits of the specified area in the Data Carrier.
Mask Bit Write	Masks the specified bits in the specified area of the Data Carrier and writes data to the bits that are not masked.
Copy	Writes the data read from a Data Carrier by one R/W Head to the Data Carrier in the communications area of the other R/W Head. This command is supported by Double-head ID Sensor Units only.

## New Communications Operations

The Repeat Auto communications specification, which repeats the operation of an Auto specification, has been added. The Repeat Auto specification can be used with CS/CJ-series ID Sensor Units to place the ID Sensor Unit on standby waiting for the next Data Carrier after communications with the previous Data Carrier have been finished. Operation is ended when the Abort Bit is turned ON (refer to *5-2 Communications Specifications*).

## Changes in Monitoring Function

A switch on the front panel is used to switch between controlling the ID Sensor Unit with the user program in the CS/CJ-series CPU Unit and performing communications tests. In Test Mode, one byte is read and then written repeatedly. The results of the communications test are confirmed on the status indicators and the Processing Results Monitor (refer to *5-1 Operating Modes*).

# 7 Conformance to EC Directives

## 7-1 Applicable Directives

- EMC Directives
- Low Voltage Directive

## 7-2 Concepts

### EMC Directives

OMRON devices that comply with EC Directives also conform to the related EMC standards so that they can be more easily built into other devices or the overall machine. The actual products have been checked for conformity to EMC standards (see the following note). Whether the products conform to the standards in the system used by the customer, however, must be checked by the customer.

EMC-related performance of the OMRON devices that comply with EC Directives will vary depending on the configuration, wiring, and other conditions of the equipment or control panel on which the OMRON devices are installed. The customer must, therefore, perform the final check to confirm that devices and the overall machine conform to EMC standards.

**Note** Applicable EMC (Electromagnetic Compatibility) standards are as follows:

EMS (Electromagnetic Susceptibility): EN61000-6-2  
EMI (Electromagnetic Interference): EN50081-2  
(Radiated emission: 10-m regulations)

**Low Voltage Directive**

Always ensure that devices operating at voltages of 50 to 1,000 V AC and 75 to 1,500 V DC meet the required safety standards for the PLC (EN61131-2).

## 7-3 Conformance to EC Directives

The CS/CJ-series PLCs comply with EC Directives. To ensure that the machine or device in which the CS/CJ-series PLC is used complies with EC Directives, the PLC must be installed as follows:

- 1,2,3...**
1. The CS/CJ-series PLC must be installed within a control panel.
  2. You must use reinforced insulation or double insulation for the DC power supplies used for the communications power supply and I/O power supplies.
  3. CS/CJ-series PLCs complying with EC Directives also conform to the Common Emission Standard (EN50081-2). Radiated emission characteristics (10-m regulations) may vary depending on the configuration of the control panel used, other devices connected to the control panel, wiring, and other conditions. You must therefore confirm that the overall machine or equipment complies with EC Directives.

## 7-4 Relay Output Noise Reduction Methods

The CS/CJ-series PLCs conforms to the Common Emission Standards (EN50081-2) of the EMC Directives. However, noise generated by relay output switching may not satisfy these Standards. In such a case, a noise filter must be connected to the load side or other appropriate countermeasures must be provided external to the PLC.

Countermeasures taken to satisfy the standards vary depending on the devices on the load side, wiring, configuration of machines, etc. Following are examples of countermeasures for reducing the generated noise.

### **Countermeasures**

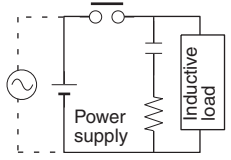
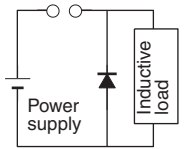
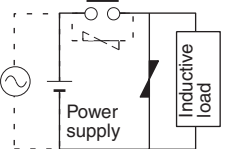
(Refer to EN50081-2 for more details.)

Countermeasures are not required if the frequency of load switching for the whole system with the PLC included is less than 5 times per minute.

Countermeasures are required if the frequency of load switching for the whole system with the PLC included is more than 5 times per minute.

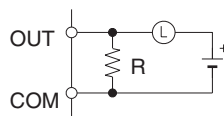
### Countermeasure Examples

When switching an inductive load, connect an surge protector, diodes, etc., in parallel with the load or contact as shown below.

Circuit	Current		Characteristic	Required element
	AC	DC		
<p>CR method</p> 	Yes	Yes	<p>If the load is a relay or solenoid, there is a time lag between the moment the circuit is opened and the moment the load is reset.</p> <p>If the supply voltage is 24 or 48 V, insert the surge protector in parallel with the load. If the supply voltage is 100 to 200 V, insert the surge protector between the contacts.</p>	<p>The capacitance of the capacitor must be 1 to 0.5 <math>\mu\text{F}</math> per contact current of 1 A and resistance of the resistor must be 0.5 to 1 <math>\Omega</math> per contact voltage of 1 V. These values, however, vary with the load and the characteristics of the relay. Decide these values from experiments, and take into consideration that the capacitance suppresses spark discharge when the contacts are separated and the resistance limits the current that flows into the load when the circuit is closed again.</p> <p>The dielectric strength of the capacitor must be 200 to 300 V. If the circuit is an AC circuit, use a capacitor with no polarity.</p>
<p>Diode method</p> 	No	Yes	<p>The diode connected in parallel with the load changes energy accumulated by the coil into a current, which then flows into the coil so that the current will be converted into Joule heat by the resistance of the inductive load.</p> <p>This time lag, between the moment the circuit is opened and the moment the load is reset, caused by this method is longer than that caused by the CR method.</p>	<p>The reversed dielectric strength value of the diode must be at least 10 times as large as the circuit voltage value. The forward current of the diode must be the same as or larger than the load current.</p> <p>The reversed dielectric strength value of the diode may be two to three times larger than the supply voltage if the surge protector is applied to electronic circuits with low circuit voltages.</p>
<p>Varistor method</p> 	Yes	Yes	<p>The varistor method prevents the imposition of high voltage between the contacts by using the constant voltage characteristic of the varistor. There is time lag between the moment the circuit is opened and the moment the load is reset.</p> <p>If the supply voltage is 24 or 48 V, insert the varistor in parallel with the load. If the supply voltage is 100 to 200 V, insert the varistor between the contacts.</p>	---

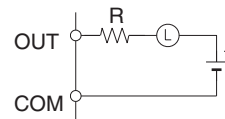
When switching a load with a high inrush current such as an incandescent lamp, suppress the inrush current as shown below.

Countermeasure 1



Providing a dark current of approx. one-third of the rated value through an incandescent lamp

Countermeasure 2



Providing a limiting resistor

# SECTION 1

## Features and System Configuration

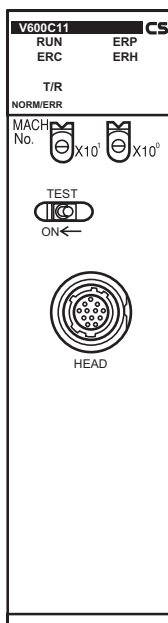
This section describes the features and system configuration of an ID Sensor Unit.

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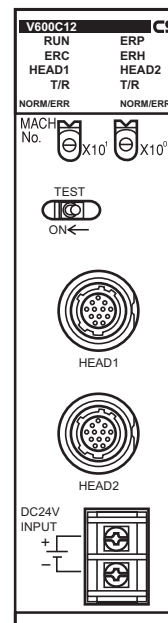
# 1-1 Outline of Features and Functions

## SYSMAC CS-series ID Sensor Units

Single-head ID Sensor Unit  
(CS1W-V600C11)



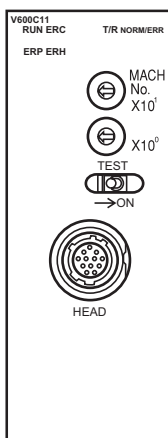
Double-head ID Sensor Unit  
(CS1W-V600C12)



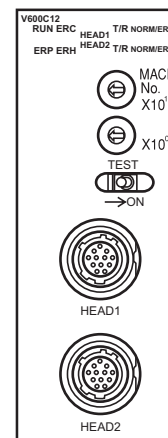
These ID Sensor Units read and write data for V600-series Data Carriers for SYSMAC CS-series PLCs. There are two models: a Single-head ID Sensor Unit (CS1W-V600C11) and a Double-head ID Sensor Unit (CS1W-V600C12). CS-series Units can be mounted to a CS-series CPU Rack or CS-series Expansion Rack.

## SYSMAC CJ-series ID Sensor Units

Single-head ID Sensor Unit  
(CJ1W-V600C11)



Double-head ID Sensor Unit  
(CJ1W-V600C12)



These ID Sensor Units read and write data for V600-series Data Carriers for SYSMAC CJ-series PLCs. There are two models: a Single-head ID Sensor Unit (CJ1W-V600C11) and a Double-head ID Sensor Unit (CJ1W-V600C12). CJ-series Units can be connected in a CJ-series CPU Rack or CJ-series Expansion Rack.

**Applicable Products and Commands**

	CS1W-V600C11	CS1W-V600C12	CJ1W-V600C11	CJ1W-V600C12
R/W Head	V600-series (V600-H□□)			
Maximum number of connected Heads	1	2	1	2
Applicable Data Carriers	V600-series Data Carriers (V600-D□□R□□ or V600-D□□P□□)			
Commands	Read Write Bit Set Bit Clear Mask Bit Write Calculation Write Data Fill Data Check Number of Writes Control	Read Write Bit Set Bit Clear Mask Bit Write Calculation Write Data Fill Data Check Number of Writes Control Copy	Read Write Bit Set Bit Clear Mask Bit Write Calculation Write Data Fill Data Check Number of Writes Control	Read Write Bit Set Bit Clear Mask Bit Write Calculation Write Data Fill Data Check Number of Writes Control Copy

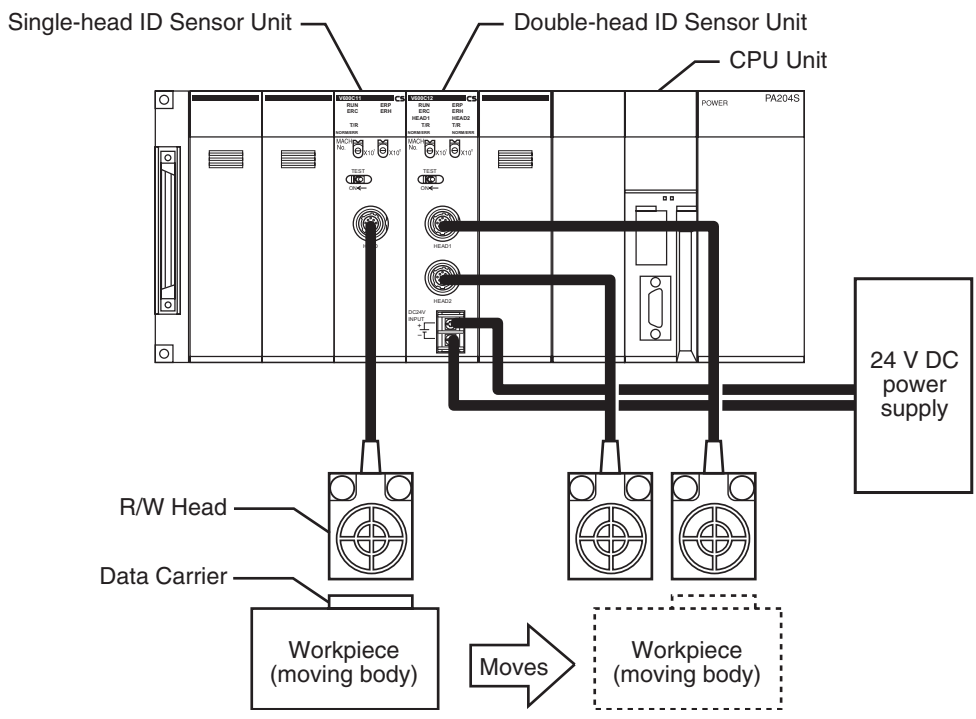
An RFID system consists of an ID Sensor Unit in a CS-series/CJ-series CPU Rack or CS-series/CJ-series Expansion Rack, a R/W Head(s) connected to the ID Sensor Unit, and Data Carriers connected to moving bodies.

The ID Sensor Unit operates through the R/W Head(s) to write data from the CS/CJ-series CPU Unit to the Data Carriers and read data from the Data Carriers to the CS/CJ-series CPU Unit.

# 1-2 System Configuration

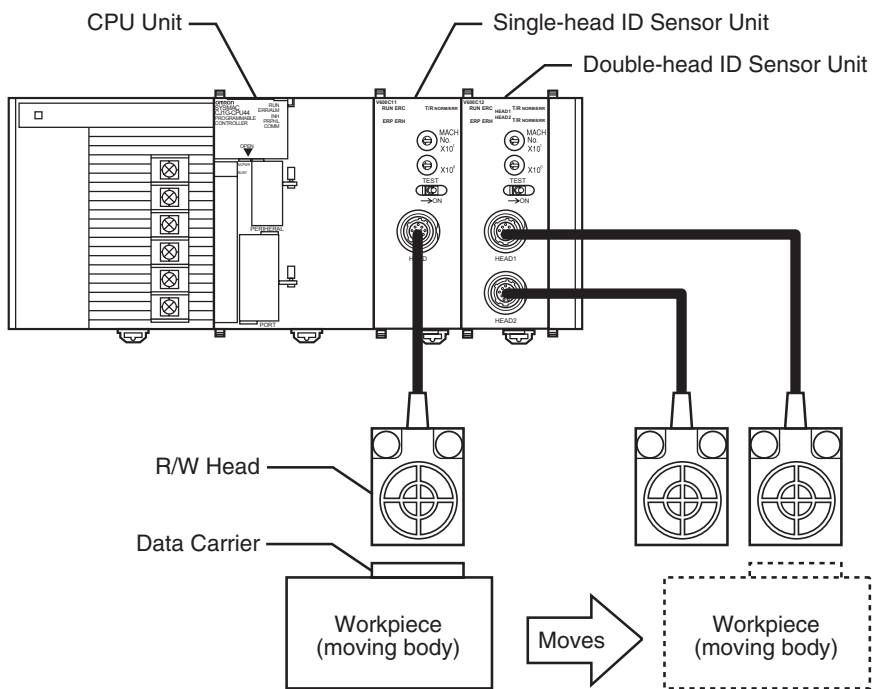
## 1-2-1 Basic System Configuration

### CS-series PLCs



**Note** The above example uses one Single-head ID Sensor Unit (CS1W-V600C11) and one Double-head ID Sensor Unit (CS1W-V600C12).

### CJ-series PLCs





**Note** The above example uses one Single-head ID Sensor Unit (CJ1W-V600C11) and one Double-head ID Sensor Unit (CJ1W-V600C12).

## 1-2-2 Mounting Restrictions

### CS-series PLCs

CS-series ID Sensor Units are classified as CS-series Special I/O Units.

- These Units can be mounted to a CS-series CPU Rack or CS-series Expansion Rack.
- The number of Units per CPU Rack or Expansion Rack depends on the maximum supply current of the Power Supply Unit and current consumption of other Units on the Rack.

The following table lists the maximum number of Units per Rack when only ID Sensor Units are mounted.

Power Supply Unit	CS1W-V600C11	CS1W-V600C12
C200HW-PA204 C200HW-PA204S C200HW-PA204R C200HW-PD204 C200HW-PA209R	5	10

### CJ-series PLCs

CJ-series ID Sensor Units are classified as CJ-series Special I/O Units.

- These Units can be mounted to a CJ-series CPU Rack or CJ-series Expansion Rack.
- The number of Units per CPU Rack or Expansion Rack depends on the maximum supply current of the Power Supply Unit and current consumption of other Units on the Rack.

The following table lists the maximum number of Units per Rack when only ID Sensor Units are mounted.

Power Supply Unit	CJ1W-V600C11	CJ1W-V600C12
CJ1W-PA205R	4	2
CJ1W-PA202	2	1

**Note** The I/O words allocated to Special I/O Units are determined by the setting of the unit number switches on the front of the Unit. They are not affected by the slots (positions) in which the Units are mounted.

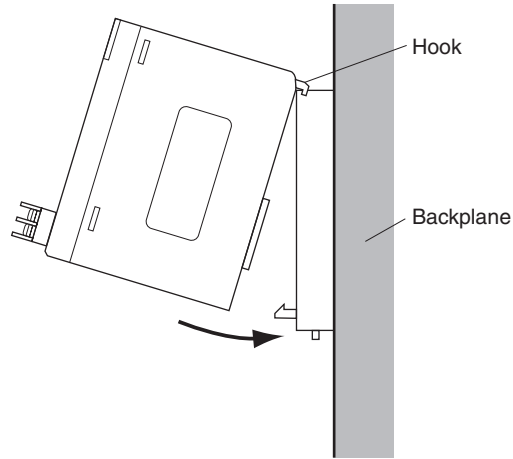
### 1-2-3 Mounting Units

**CS-series PLCs**

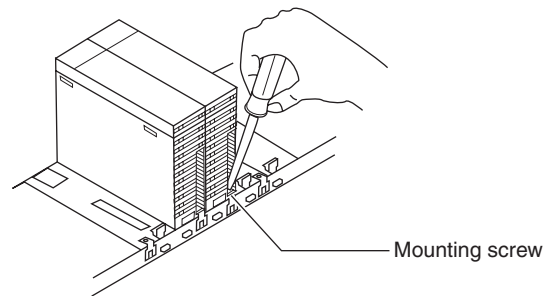
Use the following procedure to mount an ID Sensor Unit to the Backplane.

1,2,3...

1. Lock the top of the ID Sensor Unit into the slot on the Backplane and rotate the Unit downwards as shown in the following diagram.



2. While making sure to align the Unit properly with the connectors, tighten the mounting screws securely to a tightening torque of 0.4 N·m.
3. To remove the Unit, first loosen the mounting screws using a Phillips screwdriver.



**Note** Leave enough space below each Rack, as shown in the following diagram, for mounting and removing the Units.

