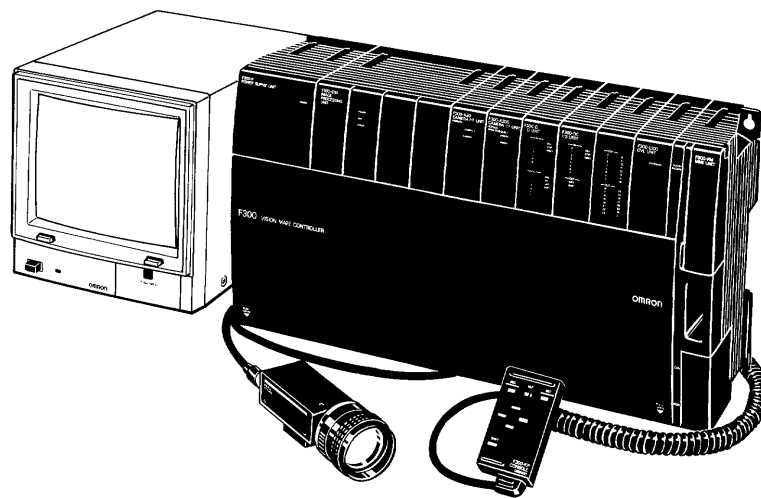


F300 Visual Inspection System

Specifications and Installation Manual

Revised March 1994



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 the product.

DANGER! Indicates information that, if not heeded, is likely to result in loss of life or serious injury.

WARNING Indicates information that, if not heeded, could possibly result in loss of life or serious injury.

Caution Indicates information that, if not heeded, could result in relative serious or minor injury, damage to the product, or faulty operation.

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 "PLC" means Programmable Controller (Programmable Logic Controller) and is not used as an abbreviation for anything else.

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.

© OMRON, 1992

All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form, or by any means, mechanical, electronic, photocopying, recording, or otherwise, without the prior written permission of OMRON.

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.

TABLE OF CONTENTS

SECTION 1

System Overview and Configuration 1

- 1-1 System Components 2
- 1-2 System Configuration 6

SECTION 2

Specifications and Features 9

- 2-1 Required Units 10
- 2-2 Expansion Units 22
- 2-3 F300 Camera Lenses 34

SECTION 3

Installation 39

- 3-1 Installation Environment 40
- 3-2 Base Unit Installation 41
- 3-3 Mounting the Units 42
- 3-4 Power Supply Unit Wiring and Ground 44
- 3-5 Power Supply Unit I/O Wiring 47

SECTION 4

Inspection, Maintenance, and Troubleshooting 55

- 4-1 Inspection 56
- 4-2 Maintenance 56
- 4-3 Troubleshooting 58

Index 59

Revision History 61

About this Manual:

This manual describes the basic installation and specifications of Units used in F300 Visual Inspection System and includes the sections described below.

Please read this manual completely and be sure you understand the information provided before attempting to install and operate an F300 Visual Inspection System.

Section 1 presents a brief introduction to the F300 Visual Inspection System, its required Units, and optional Units. This section also includes examples of system configurations.

Section 2 describes the basic components and operational specifications of each Unit in the F300 Visual Inspection System.

Section 3 describes operational, installation, and wiring requirements for the F300 Visual Inspection System.

Section 4 explains how to inspect and maintain the F300 Visual Inspection System and troubleshooting procedures to follow should problems occur.

<p>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.</p>

SECTION 1

System Overview and Configuration

This section presents a brief introduction to the F300 System, its required Units, and optional Units. It also includes examples of system configurations.

1-1	System Components	2
1-1-1	Required Units	2
1-1-2	Optional Expansion Units	4
1-2	System Configuration	6
1-2-1	Basic System	6
1-2-2	Expanded System	7

1-1 System Components

After receiving the F300 System, make sure that following Units are delivered as ordered.

1-1-1 Required Units

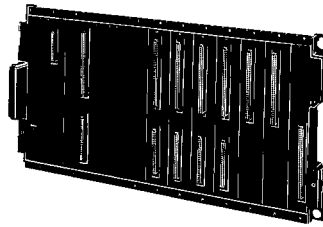
The following Units are essential in the configuration of the F300 System. You will need at least one of each type of Unit to construct an F300 System.

F300-B Base Unit

A Base Unit supplies power to other Units mounted on it, such as Camera I/F Units and I/O Units. Base Units are available with either 3 slots or 5 slots. Either can be used depending on System size.

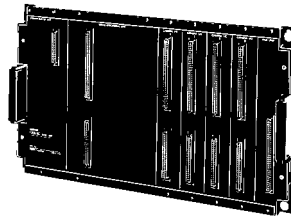
A Base Unit with various Units mounted to it to form a functional entity is called a Rack.

5-slot Base Unit (F300-B5)



Front Cover for 5-slot Base Unit

3-slot Base Unit (F300-B3)



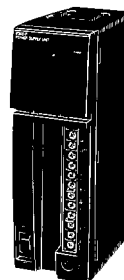
Front Cover for 3-slot Base Unit

F300-P/PE Power Supply Unit

The Power Supply Unit converts 100- to 240-VAC power to DC power for the Units mounted to the Base Unit.

The voltages set before shipping are as follows:

- F300-P: 100 to 120 VAC
- F300-PE: 200 to 240 VAC



F300-C10EV2/C11E IMP Unit

The IMP (Image Processing) Unit processes measurements.



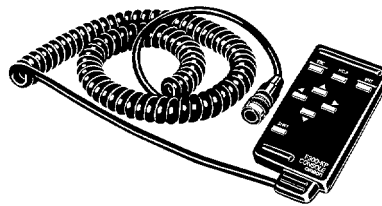
F300-FM MMI Unit

The MMI (Man-Machine Interface) Unit is used to connect the Console, the Video Monitor, and memory cards.



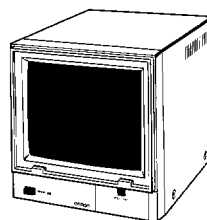
F300-KP Console

The Console is connected to the MMI Unit and is used to execute commands and input settings.



F300-M09 Video Monitor (100 VAC)

The Video Monitor is required to set F300 data and programs, check images, and display measurement results.

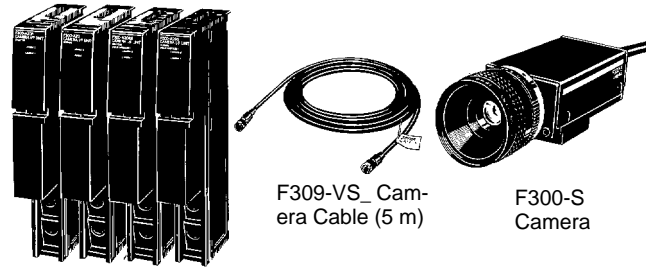


F309-VM Monitor Cable (2 m)

Note The F309-VM Monitor Cable incorporates a BNC connector, via which NTSC-standard video signals will be output to the Video Monitor.

F300-A20 Camera I/F Units

A Camera I/F Unit inputs video signals from a camera to the F300. Four types of Camera I/F Unit are available to suit different applications. Two cameras can be connected to each Camera I/F Unit. Order the lens separately.



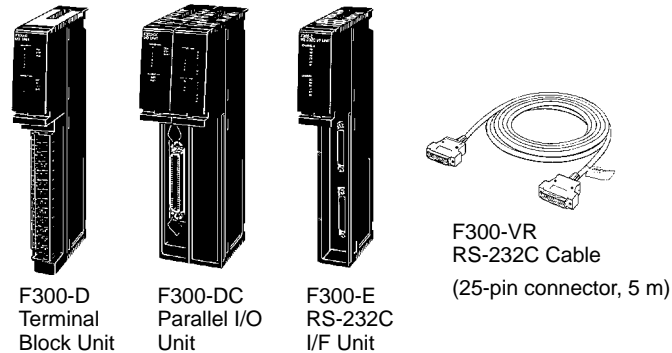
Unit	Input	Model	Camera	Camera Cable
Camera I/F Unit	Normal	F300-A20	F300-S CCD Video Camera	F309-VS (5 m)
	Normal, simultaneously	F300-A20S		
	Shutter	F300-A20R	PJLG-55-Z CCD Shutter Video Camera	F309-VSR (5 m)
	Shutter, simultaneously	F300-A20RS		

1-1-2 Optional Expansion Units

Expansion Units are optional and are available to further extend the capabilities of the F300 System.

I/O Units

I/O Units can be used to input measurement commands from external devices and to output results. Select the Unit to suit the application from the Terminal Block Unit, Parallel I/O Unit, or RS-232C I/F Unit.



Note Both the Terminal Block Unit and Parallel I/O Unit are identified as I/O Unit (F300-D) and I/O Unit (F300-DC) on the actual units.

Unit	No. of I/O	Cable	Application
F300-D Terminal Block Unit	Inputs: 8 Outputs: 8	None	Connect to a programmable controller or other device to input measurement commands and output measurement results.
F300-DC Parallel I/O Unit	Inputs: 8 Outputs: 32	50P L connector (included with Unit)	
F300-E RS-232C I/F Unit	RS-232C interface: 2 channels	F300-VR (25-pin connector, 5 m). If the connector is different. Refer to 2-2-5 F300-E RS-232C I/F Unit for cable connections in detail.	Connect to a computer or other device equipped with an RS-232C interface to input measurement commands and output measurement results.

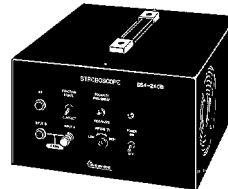
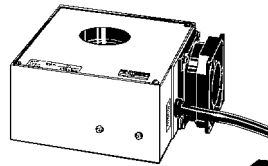
F300-FS Strobe I/F Unit

The Strobe Unit flashes the external strobe in synchronization with the image-in-put signal. Up to four Strobes can be connected to each Strobe Unit.



F309-FS
Strobe cable (2 m)

The following Strobes can be connected to the Strobe Unit.

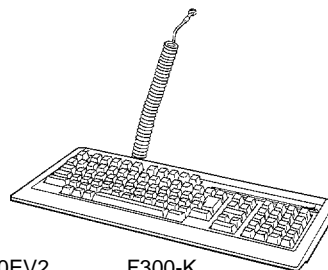


F300-L100EV2 OVL Unit

The F300 can be operated using the OMRON Visual Language (OVL). Commands and data are input from a special keyboard connected to an OVL Unit.



F300-L100EV2
OVL Unit



F300-K
Keyboard

F300-G Dummy Unit

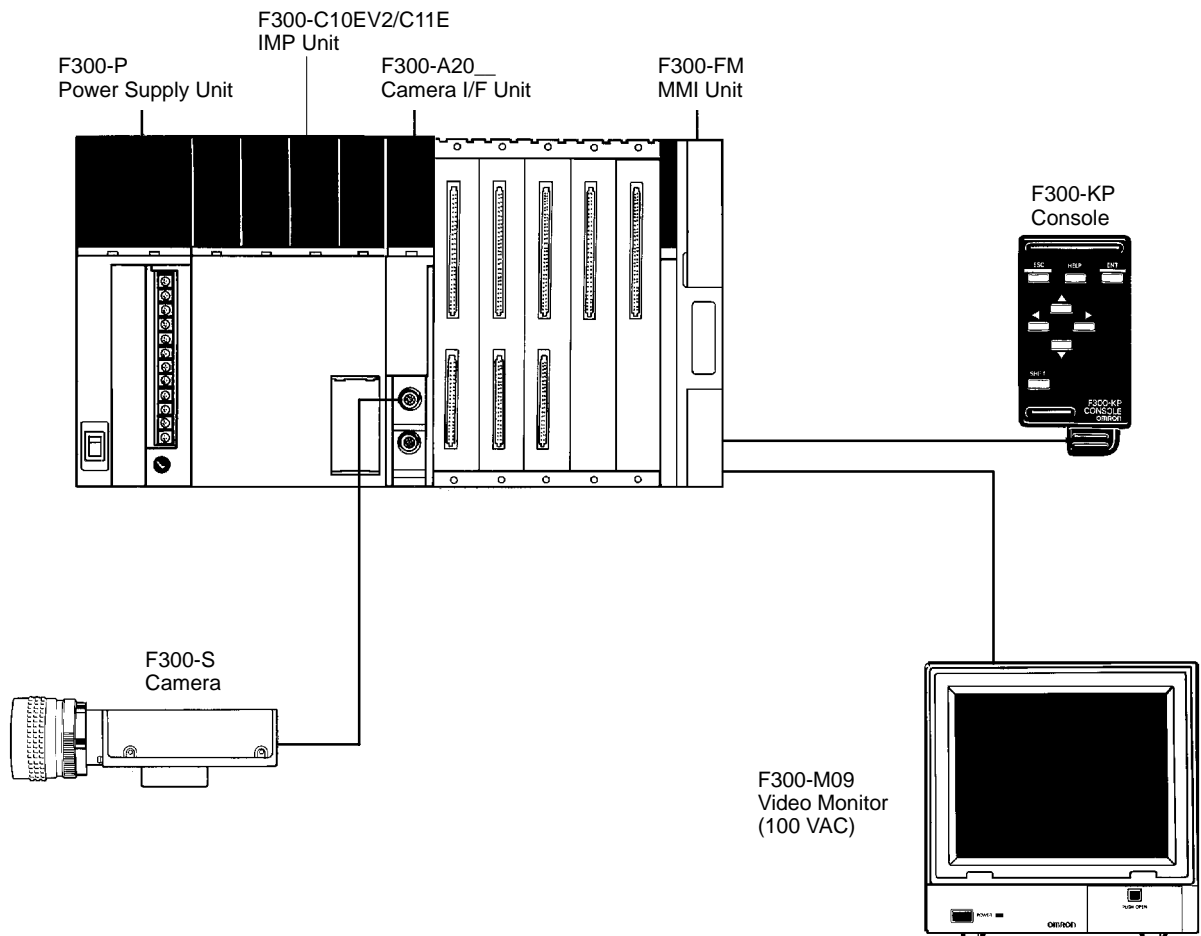
A Dummy Unit can be inserted into empty slots to improve external appearance, protect connectors, and maintain the strength of the Rack.



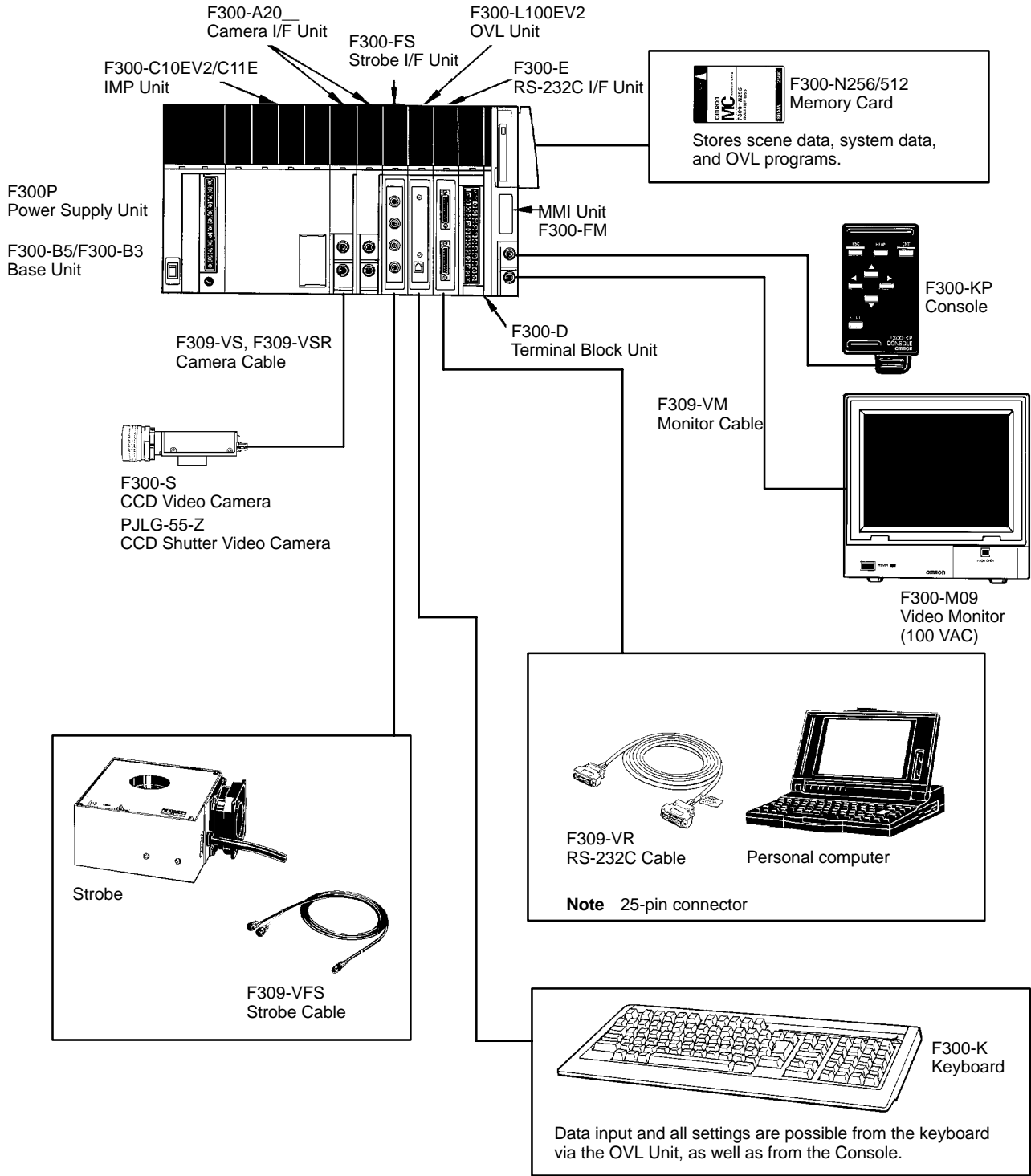
1-2 System Configuration

A basic F300 System is shown below.

1-2-1 Basic System



1-2-2 Expanded System



SECTION 2

Specifications and Features

This section describes the basic components and operational specifications of each Unit in a F300 System,

2-1	Required Units	10
2-1-1	F300-B5/-B3 Base Unit	10
2-1-2	F300-P/PE Power Supply Unit	12
2-1-3	F300-C10EV2/C11E IMP Unit	14
2-1-4	F300-FM MMI Unit	15
2-1-5	F300-KP Console	16
2-1-6	F300-M09 Video Monitor	17
2-1-7	F300-A20__ Camera I/F Units	18
2-1-8	F300-S Camera	20
2-2	Expansion Units	22
2-2-1	F300-FS Strobe I/F Unit	22
2-2-2	F300-L100EV2 OVL Unit	23
2-2-3	F300-D Terminal Block Unit	25
2-2-4	F300-DC Parallel I/O Unit	28
2-2-5	F300-E RS-232C I/F Unit	31
2-2-6	F300-G Dummy Unit	33
2-3	F300 Camera Lenses	34
2-3-1	Types of Lens	34
2-3-2	CCTV Lens, Field of Vision and Mounting Distance	35
2-3-3	Magnification Lens, Field of Vision and Working Distance	36
2-3-4	Extension Tubes	36
2-3-5	Teleconverter	36

2-1 Required Units

One or more of each of the following types of Unit is required in any F300 System.

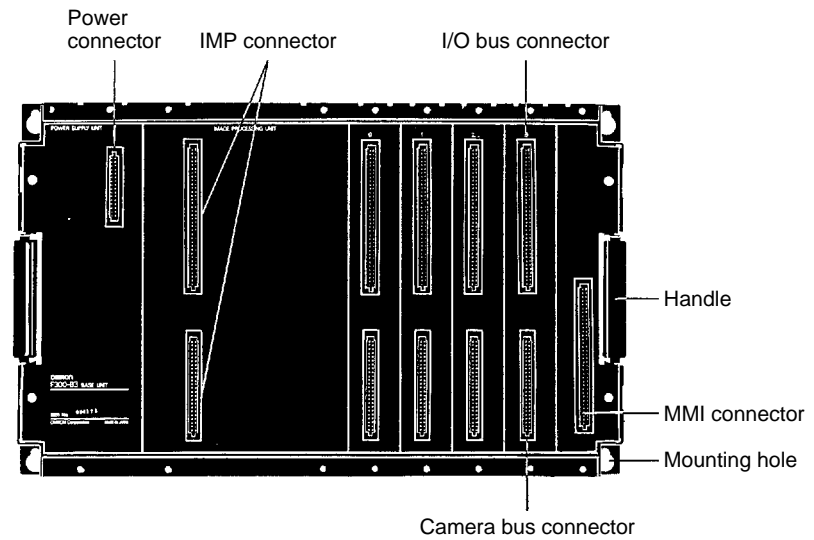
2-1-1 F300-B5/-B3 Base Unit

The F300-B3 and F300-B5 Base Unit provide hardware slots sharing a common bus line on which all Units are mounted and connected.

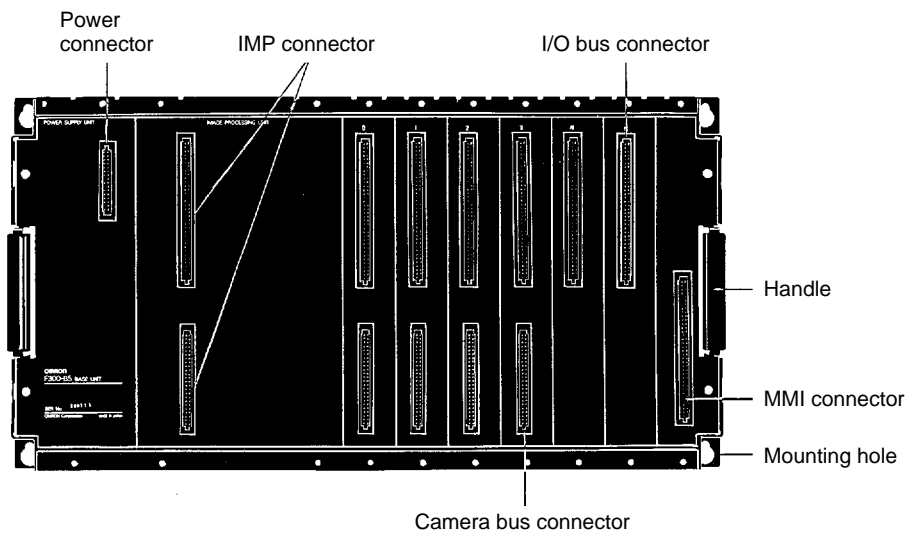
Components

The following illustrations show the essential components of the F300-B3 and F300-B5 Base Unit.

3-slot Base Unit (F300-B3)



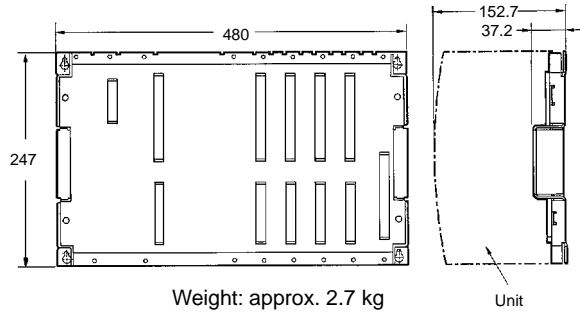
5-slot Base Unit (F300-B5)



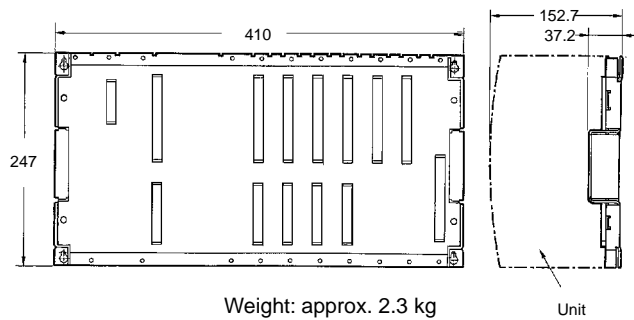
Dimensions and Weight

The following diagrams provide the weight, external dimensions, and mounting hole dimensions for the F300-B3 and -B5 Base Unit. Unless otherwise noted, all values are in millimeters (mm).

F300-B3 3-slot Base Unit

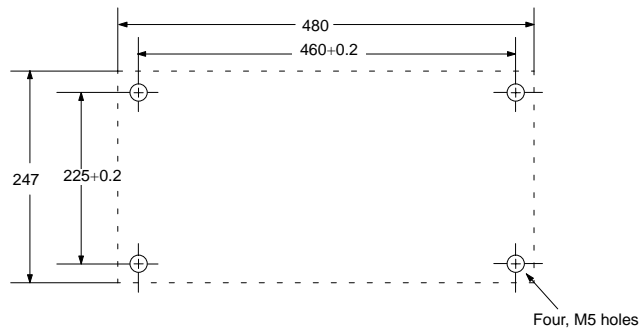


F300-B5 5-slot Base Unit

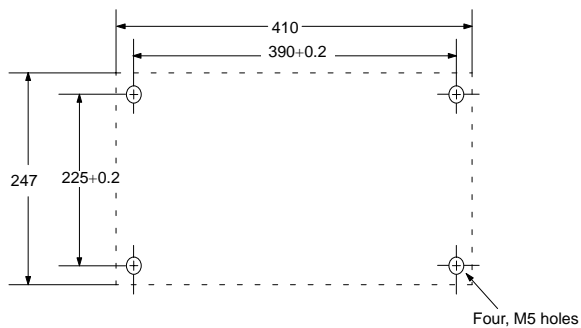


Mounting Hole Dimensions

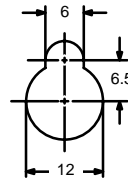
5-slot Base Unit (F300-B5)



3-slot Base Unit (F300-B3)



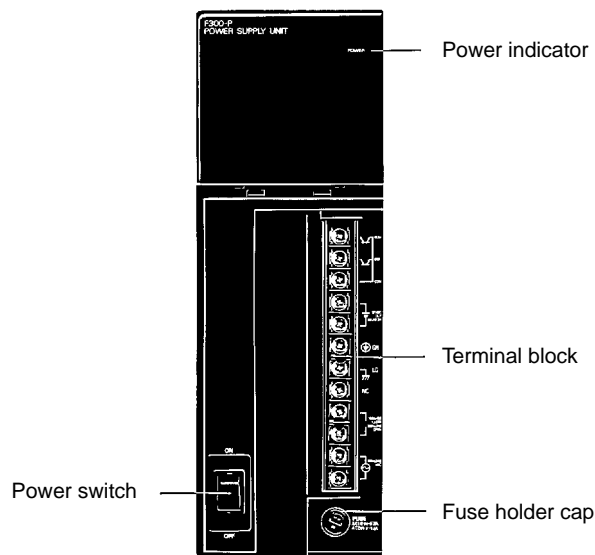
Base Unit Mounting Hole Shape



2-1-2 F300-P/PE Power Supply Unit

The Power Supply Unit takes in AC power supplied to the F300 and converts it to DC power for each unit. The following illustration shows the essential components of the F300-P/PE Power Supply Unit.

Components



Specifications

General Specifications (All F300 Units)

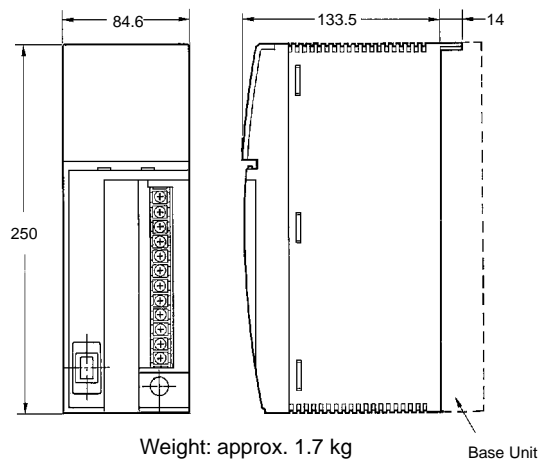
Item	F300-P	F300-PE
Factory-set voltage setting	100 to 120 VAC (85 to 132 VAC)	200 to 240 VAC (170 to 264 VAC)
Supply voltage	85 to 132 VAC or 170 to 264 VAC (selectable)	
Supply frequency	50/60 Hz	
Insulation	20 MW min. between all AC external terminals and GR terminal (at 500 VDC)	
Dielectric strength	1,500 VAC, 50/60 Hz for 1 minute between all AC external terminals and GR terminal; detected current: 10 mA max.	
Noise resistance	1500 Vp-p; pulse width: 1 ms; rising time: 1 ns (pulse)	
Vibration resistance	10 to 150 Hz with 0.15-mm single amplitude	
Shock resistance	20G (196 m/s ²)	
Ambient operating temperature	0°C to 50°C	
Operating humidity	35% to 85% RH (no condensation)	
Operating environment	No corrosive gases	
Storage temperature	-25°C to 65°C	
Ground	Ground resistance: 100 W max.	
Enclosure rating	IP20 (in-panel)	

Performance Specifications

Power supply	Supplied to Units	5 VDC +3%, 7 A 13 VDC +1%, 4.5 A -12 VDC +5%, 0.9 A
	Service supply	12 VDC +5%, 0.3 A
AC power interruption detection time		10 ms min.
Outputs (RUN, ERROR)	Output type	Photocoupler
	Output voltage	12 to 24 VDC +10%
	Load current	100 mA max.
	Residual voltage	2 V max.
Leak current		0.1 mA max.
Internal output circuits		

Dimensions and Weight

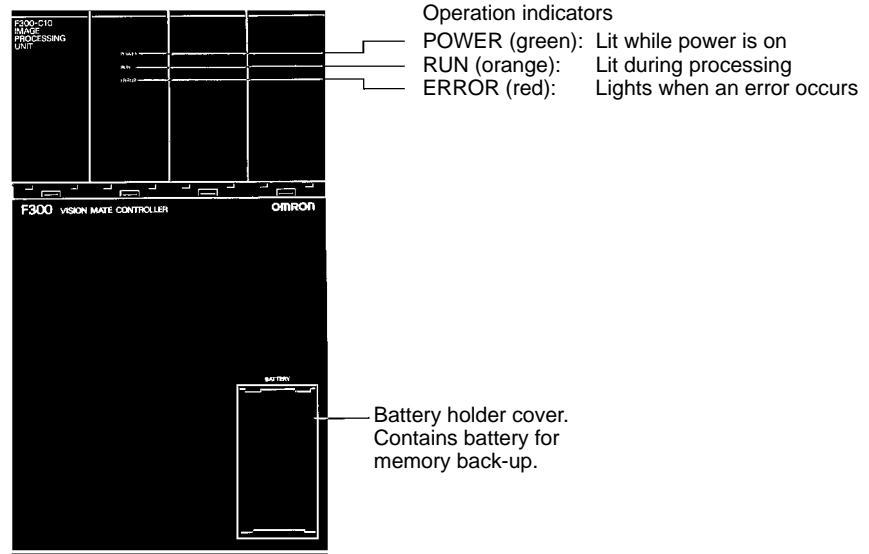
The following diagram provides the external dimensions and weight of the F300-P Power Supply Unit. Unless otherwise noted, values are in millimeters (mm).



2-1-3 F300-C10EV2/C11E IMP Unit

The IMP (Image Processing) Unit is required by the F300 to process measurements. The following illustration shows the essential components of the IMP Unit.

Components



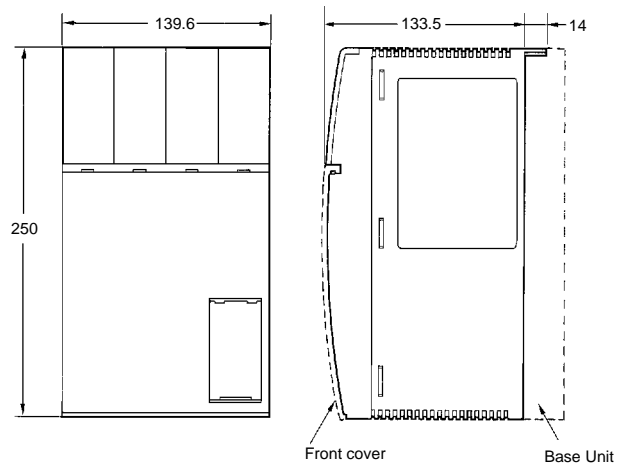
Specifications

General Specifications

Ambient operating temperature	0°C to 50°C
Operating humidity	35% to 85% RH (no condensation)
Operating environment	No corrosive gases
Storage temperature	-25°C to 65°C
Enclosure rating	IP20 (in-panel)

Dimensions and Weight

The following diagram provides the external dimensions and weight of the IMP Unit. Unless otherwise noted, values are in millimeters (mm).

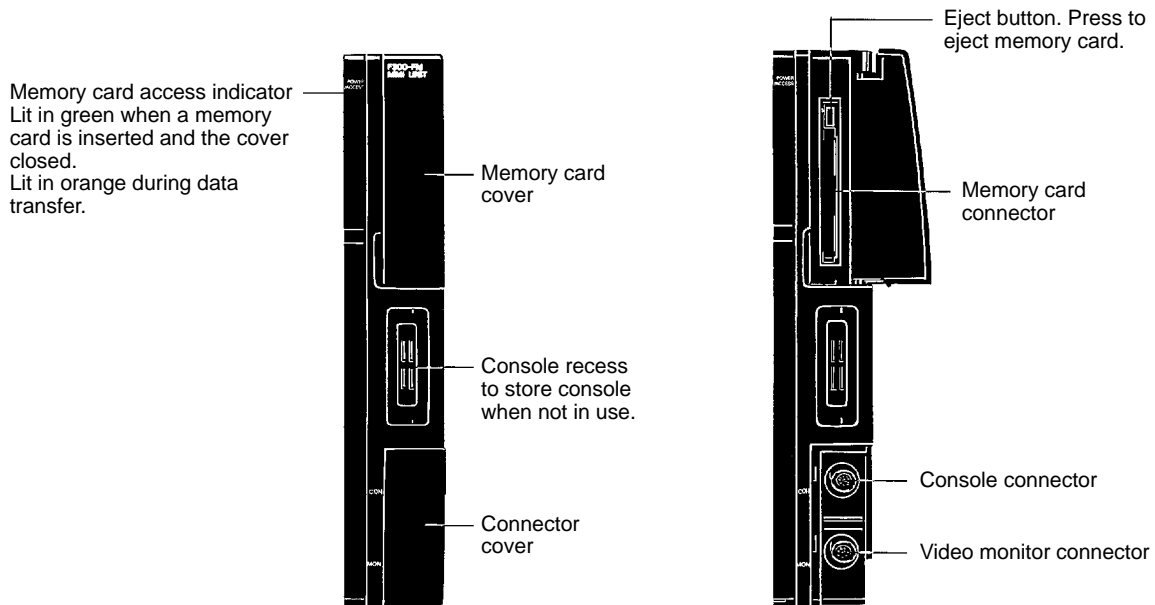


Weight: approx. 1.8 kg

2-1-4 F300-FM MMI Unit

The F300-FM MMI (Man-Machine Interface) Unit supports key inputs from the Console and image displays on the Video Monitor. The following illustrations shows the essential components of the F300-FM MMI Unit.

Components



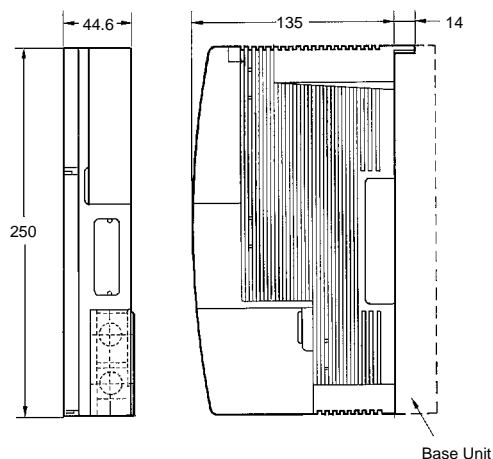
Specifications

General Specifications

Ambient operating temperature	0% C to 50% C
Operating humidity	35% to 85% RH (no condensation)
Operating environment	No corrosive gases
Storage temperature	-25% C to 65% C
Enclosure rating	IP20 (in-panel)

Dimensions and Weight

The following diagram provides the external dimensions and weight of the F300-FM MMI Unit. Unless otherwise noted, values are in millimeters (mm).

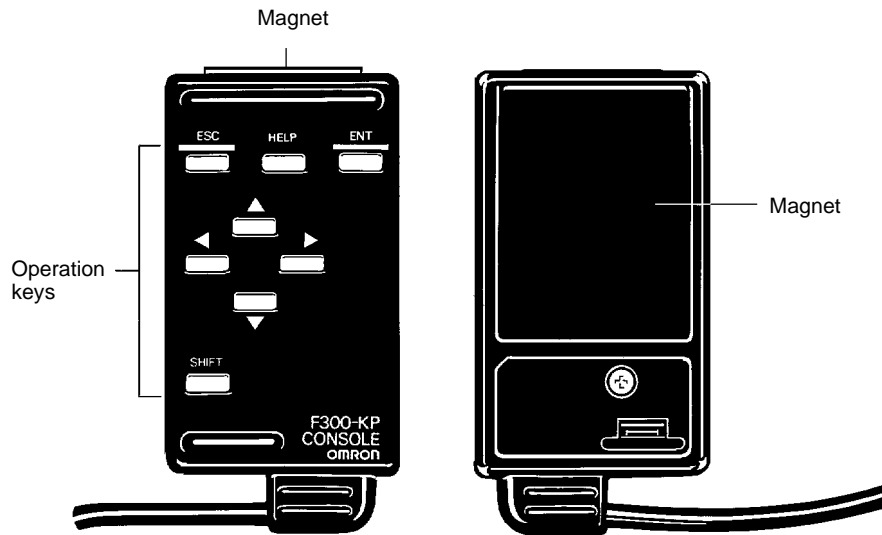


Weight: approx. 660 g

2-1-5 F300-KP Console

The F300-KP Console is the main F300 input device for menu operations and data input. Connect the Console to the MMI Unit. For information on Console operation, refer to the *F300 Visual Inspection System Menu Mode Operation Manual*. The following illustration shows the essential components of the F300-KP Console Unit.

Components



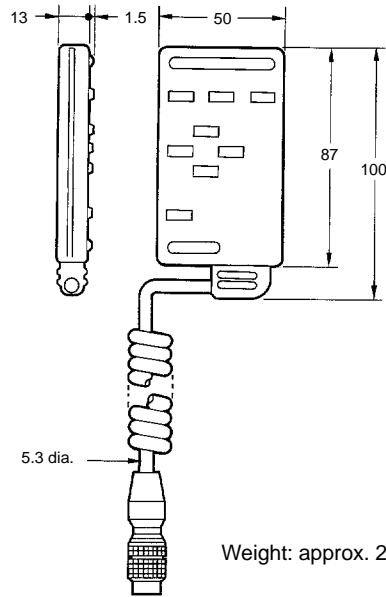
Specifications

General Specifications

Ambient operating temperature	0°C to 50°C
Operating humidity	35% to 85% RH (no condensation)
Operating environment	No corrosive gases
Storage temperature	-25°C to 65°C
Enclosure rating	IP20 (in-panel)

Dimensions and Weight

The following diagram provides the external dimensions and weight of the F300-FM MMI Unit. Unless otherwise noted, values are in millimeters (mm).

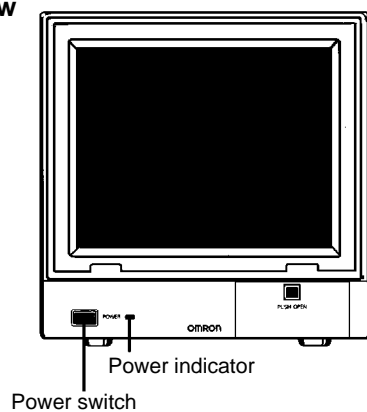


2-1-6 F300-M09 Video Monitor

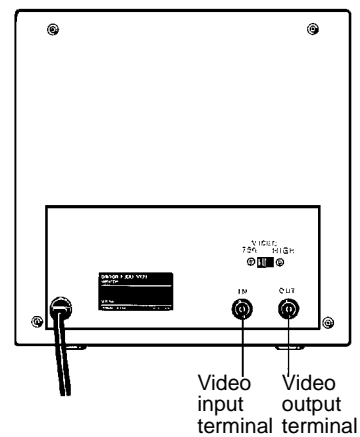
The F300-M09 Video Monitor is an output device of the F300 and used to display input images from the camera, data values that have been set, and measurement results.

Components

Front View



Rear View



Specifications

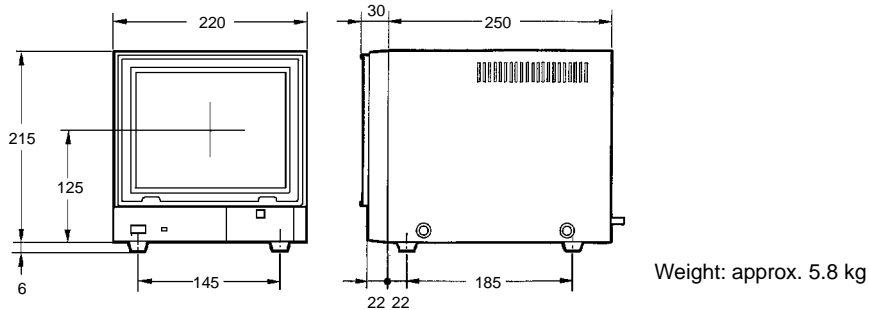
General Specifications

Ambient operating temperature	0% C to 40% C
Operating humidity	10% to 90% RH (no condensation)
Operating environment	No corrosive gases
Storage temperature	-25% C to 65% C

Detailed Specifications

Rating	System	Number of scanning lines: 525 Horizontal frequency: 15.75 kHz Field frequency: 60 Hz
	I/O impedance	75W, high impedance (selectable)
	I/O level and polarity	Image: 0.7 V (peak to peak), positive Cycle: 0.3 V (peak to peak), negative
	Screen size	164 x 123 mm (W x H)
Performance	Resolution	700 TV min. (at center)

Dimensions and Weight



2-1-7 F300-A20__ Camera I/F Units

Four types of Camera I/F Unit are available: Normal, Normal/simultaneously, Shutter, and Shutter/simultaneously.

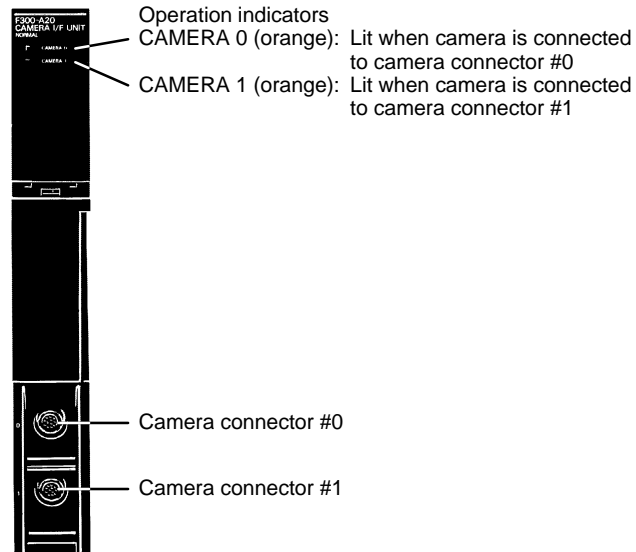
Camera I/F Unit Models

Unit	Input	Model	Connectable cameras	Number of cameras
Camera I/F Unit	Normal	F300-A20	F300-S CCD Video Camera	Up to two cameras per Camera I/F Unit.
	Normal, simultaneously	F300-A20S		
	Shutter	F300-A20R	CCD Shutter Video Camera PJLG-55-Z	
	Shutter, simultaneously	F300-A20RS		

Note Select the external synchronization and non-interlace scanning methods of the CCD Shutter Video Camera by referring to the instruction sheet provided with the CCD Shutter Video Camera.

Components

The following illustration shows the essential components of the F300-A20 Camera I/F Units.



Specifications

General Specifications

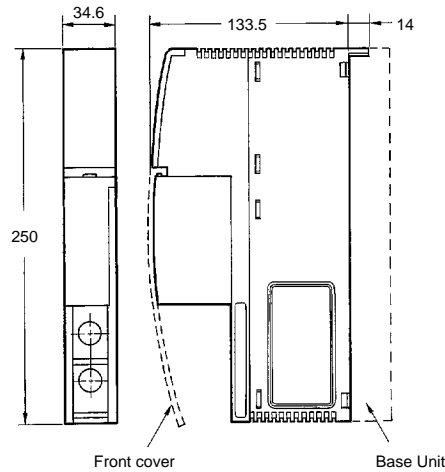
Ambient operating temperature	0% C to 50% C
Operating humidity	35% to 85% RH (no condensation)
Operating environment	No corrosive gases
Storage temperature	-25% C to 65% C
Enclosure rating	IP20 (in-panel)

Performance Specifications

Item	F300-A20	F300-A20S	F300-A20R	F300-A20RS
Input	Normal	Normal/simultaneously	Shutter	Shutter/simultaneously
No. of connectable cameras	2 max			
Connectable cameras	F300-S		PJLG-55-Z	
Sync signal output	Frequency	HD, VD both dependent on camera bus sync signal		HD: 15.734 kHz VD: 59.94 Hz
	Output amplitude	4 Vp-p, 1-kW negative pulse		4 Vp-p, 75-W negative pulse
	Output pulse width	HD, VD both dependent on camera bus synchronous signal.		HD: 6.27 ms VD: 9 H
Camera power output	12 V, 0.8 A (for 2 cameras)		12 V, 0.8 A (for 2 cameras) -12 V, 0.8 A (for 2 cameras)	
Cable length	5 m (standard)			
Weight	Approx. 400 g	Approx. 550 g	Approx. 400 g	Approx. 550 g

Dimensions and Weight

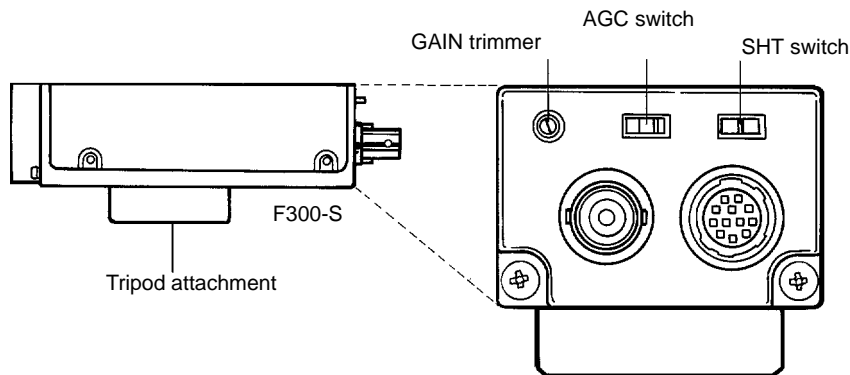
The following diagram provides the external dimensions and weight of the F300-A20__ Camera I/F Units. Unless otherwise noted, values are in millimeters (mm).



2-1-8 F300-S Camera

The following illustration shows the essential components of the F300-S Camera.

Components



GAIN trimmer	For the image amplifier. Do not adjust this trimmer.
AGC switch	Turns AGC on and off. Leave this switch off.
SHT switch	Turns the electronic shutter on and off. Leave this switch off.

Specifications

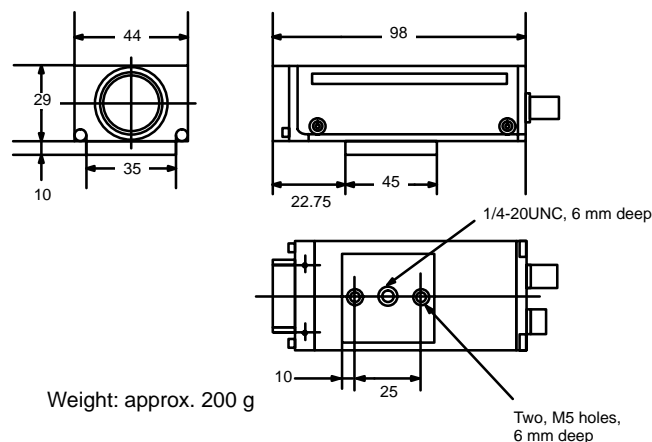
General Specifications

Power	12 VDC +10%
Ambient operating temperature	0°C to 50°C
Operating humidity	30% to 70%
TV system	Conforms to RS-170
Picture element	Interline CCD
Effective pixels	768 * 493 (H*V)
Scanned area	8.6 x 6.6 mm (equivalent to 2/3 inch)
Number of scan lines	525 lines
Scan method	2:1 interlace
Synchronization	Internal/external sync (automatically switchable)
Scan frequency	Horizontal: 15.734 kHz; Vertical: 59.94 Hz
Aspect ratio	4:3
Object illumination	Standard: 200 lux; F4 (3,200%K); AGC: ON; $\gamma = 1.0$ Minimum: 0.5 lux; F1.4; GAIN: MAX; $\gamma = 0.45$
Image output	VS: 1.0 V _{p-p} /75 W
Resolution	Horizontal: 570 lines; Vertical: 350 lines
S/N ratio	50 dB _{p-p} /rms (AGC: OFF $\gamma = 1.0$)
AGC	Output level within +2dB for rated level fluctuations of +12 dB. Switchable ON/OFF with selector on panel. OFF on delivery.
Electronic shutter	1/1,000 s fixed. Switchable ON/OFF with selector on panel. OFF on delivery.
Lens mounting	C mount

Note Use the F300-S Camera with the electronic shutter and AGC set to OFF.

Dimensions and Weight

The following diagram provides the external dimensions and weight of the F300-S Camera. Unless otherwise noted, values are in millimeters (mm).

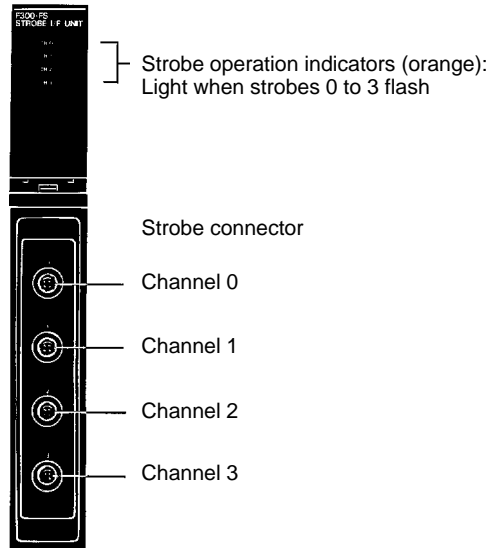


2-2 Expansion Units

2-2-1 F300-FS Strobe I/F Unit

The following illustration shows the essential components of the F300-FS Strobe I/F Unit.

Components



Specifications

General Specifications

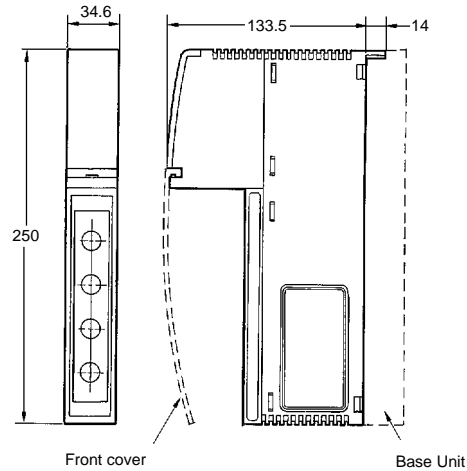
Ambient operating temperature	0°C to 50°C
Operating humidity	35% to 85% RH (no condensation)
Operating environment	No corrosive gases
Storage temperature	-25°C to 65°C
Enclosure rating	IP20 (in-panel)

Performance Specifications

Strobe connections	4 max.
Strobe trigger output	20 mA max. per Unit, photocoupler output
Strobe flash error input	Photocoupler input Input ON current: 3 mA min. Input OFF current: 1.5 mA max.

Dimensions and Weight

The following diagram provides the external dimensions and weight of the F300-FS Strobe I/F Unit. Unless otherwise noted, values are in millimeters (mm).

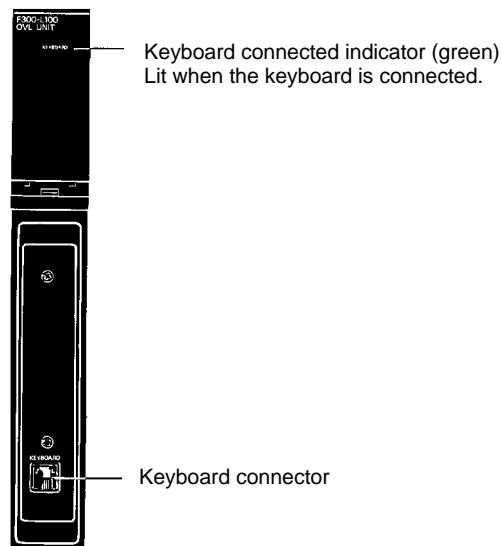


Weight: approx. 400 g

2-2-2 F300-L100EV2 OVL Unit

The OVL Unit extends the capabilities of the F300 to allow it to be operated using OVL (OMRON Vision Language). OVL was developed specifically for optical recognition and image measurement to permit more sophisticated measurements with a BASIC-like language. The OVL Unit's keyboard also allows data input and system operation from the Menu mode in the same fashion as is possible from the Console.

Component



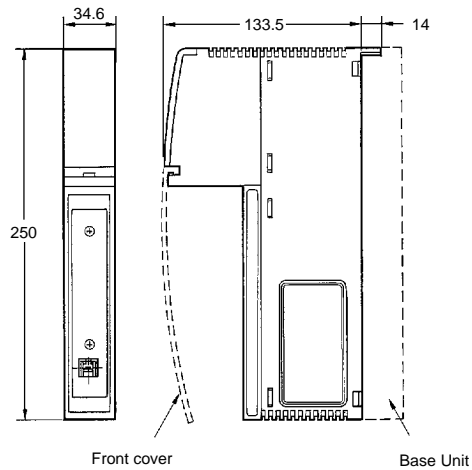
Specifications

General Specifications

Ambient operating temperature	0% C to 50% C
Operating humidity	35% to 85% (no condensation)
Operating environment	No corrosive gases
Storage temperature	-25% C to 65% C
Enclosure rating	IP20 (in-panel)

Dimensions and Weight

The following diagram provides the external dimensions and weight of the F300-L100E OVL Unit. Unless otherwise noted, values are in millimeters (mm).



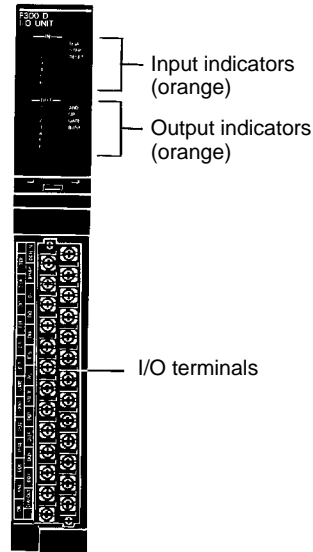
Weight: approx. 400 g

2-2-3 F300-D Terminal Block Unit

The F300-D Terminal Block Unit is connected to a programmable controller or other devices to input measurement commands and output measurement results.

The following illustration shows the essential components of the F300-D Terminal Block Unit.

Components

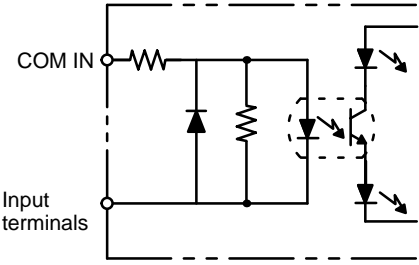


Specifications

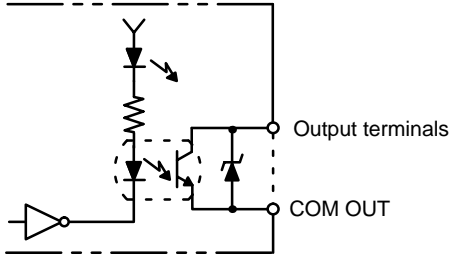
General Specifications

Ambient operating temperature	0% C to 50% C
Operating humidity	35% to 85% RH (no condensation)
Operating environment	No corrosive gases
Storage temperature	-25% C to 65% C
Enclosure rating	IP20 (in-panel)

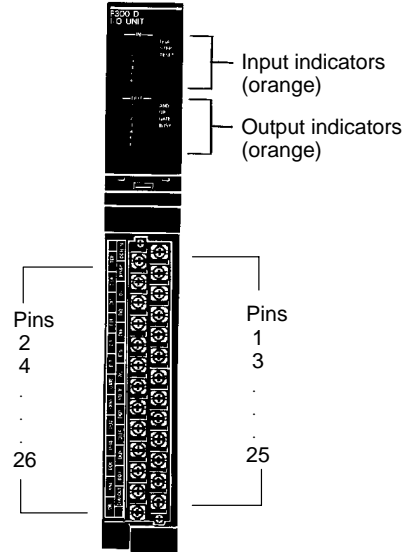
Input Specifications

Number of inputs	Data inputs: 8; control inputs: 4
Input voltage	12 to 24 VDC +10%
ON current	3 to 15 mA
ON voltage	8.8 V max.
OFF current	0.1 mA max.
Input OFF voltage	4.5 V min.
ON delay	RESET input: 10 ms max.; other inputs: 0.5 ms max.
OFF delay	RESET input: 15 ms max.; other inputs: 0.7 ms max.
DI 0 to 7	Parallel data inputs
RESET	Resets the F300
STEP	Runs one measurement
DSA	Requests data output with handshaking
Internal circuit	

Output Specifications

Number of outputs	Data outputs: 8 AND/OR outputs: 2
Output voltage	12 to 24 VDC +10%
Load current	100 mA max.
ON residual voltage	2 V max.
OFF leak current	0.1 mA max.
DO 0 to 7	Parallel data outputs
BUSY	Disables inputs during measurement
GATE	For data output timing
AND	AND output of evaluations on all windows
OR	OR output of evaluations on all windows
Internal circuit	

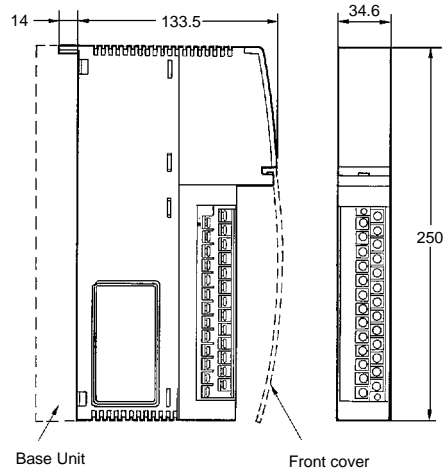
Terminal Allocations



Pin no.	Name	Pin no.	Name	
1	COM IN (for input)	14	GATE	
2	STEP	15	BUSY	
3	RESET	16	DO 0	Data output
4	DSA	17	DO 1	
5	DI 0	18	DO 2	
6	DI 1	19	DO 3	
7	DI 2	20	DO 4	
8	DI 3	21	DO 5	
9	DI 4	22	DO 6	
10	DI 5	23	DO 7	Data input
11	DI 6	24	AND	
12	DI 7	25	COM OUT (for output)	
13	NC	26	OR	

Dimensions and Weight

The following diagram provides the external dimensions and weight of the F300-D Terminal Block Unit. Unless otherwise noted, values are in millimeters (mm).

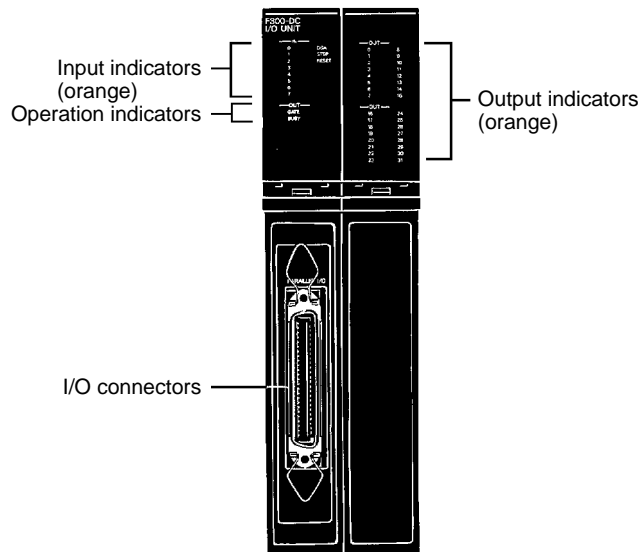


Weight: approx. 400 g

2-2-4 F300-DC Parallel I/O Unit

The F300-DC Parallel I/O Unit is connected to a programmable controller or other device to input measurement commands and output measurement results. The following illustration shows the essential components of the F300-DC Parallel I/O Unit.

Components



Specifications

General Specifications

Ambient operating temperature	0% C to 50% C
Operating humidity	35% to 85% RH (no condensation)
Operating environment	No corrosive gases
Storage temperature	-25% C to 65% C
Enclosure rating	IP20 (in-panel)

Input Specifications

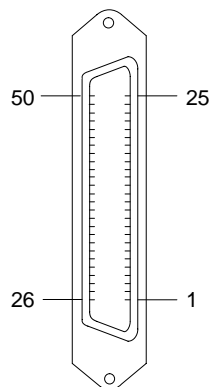
Number of inputs	Data inputs: 8
Input voltage	12 to 24 VDC +10%
ON current	3 to 15 mA
ON voltage	8.8 V max.
OFF current	0.1 mA max.
OFF voltage	4.5 V min
ON delay	RESET input: 10 ms max.; other inputs: 0.5 ms max.
OFF delay	RESET input: 15 ms max.; other inputs: 0.7 ms max.
Internal circuit	

Output Specifications

Number of outputs	Data outputs: 32
Output voltage	12 to 24 VDC +10%
Load current	100 mA max.
ON residual voltage	2 V max.
OFF leak current	0.1 mA max.
Internal circuit	

Terminal Allocation

No.	Signal name		No.	Signal name	
1	COM OUT (for output)		26	COM OUT (for output)	
2	DO 31	Data outputs	27	DO 30	Data outputs
3	DO 29		28	DO 28	
4	DO 27		29	DO 26	
5	DO 25		30	DO 24	
6	DO 23		31	DO 22	
7	DO 21		32	DO 20	
8	DO 19		33	DO 18	
9	DO 17		34	DO 16	
10	DO 15		35	DO 14	
11	DO 13		36	DO 12	
12	DO 11		37	DO 10	
13	DO 09		38	DO 08	
14	DO 07		39	DO 06	
15	DO 05		40	DO 04	
16	DO 03		41	DO 02	
17	DO 01		42	DO 00	
18	BUSY		43	GATE	
19	NC		44	DI 7	Data inputs
20	DI 6	Data inputs	45	DI 5	
21	DI 4		46	DI 3	
22	DI 2		47	DI 1	
23	DI 0		48	DSA	
24	RESET		49	STEP	
25	COM IN (for input)		50	COM IN (for input)	



Inputs

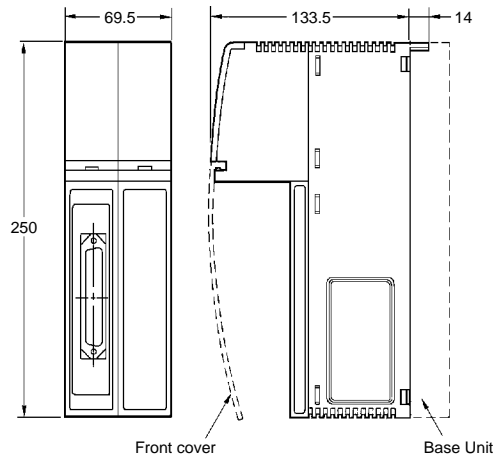
DI 0 to 7	Parallel data inputs
RESET	Resets the F300
STEP	Runs one measurement
DSA	Requests data output with handshaking

Outputs

DO 0 to 31	Parallel data outputs
BUSY	Disables inputs during measurement
GATE	For data output timing

Dimensions and Weight

The following diagram provides the external dimensions and weight of the F300-DC Parallel I/O Unit. Unless otherwise noted, values are in millimeters (mm).



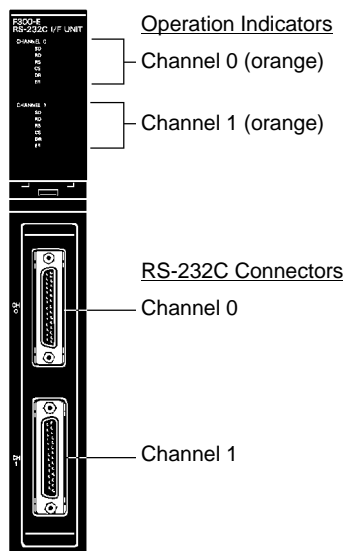
Weight: approx. 800 g

2-2-5 F300-E RS-232C I/F Unit

The RS-232C exchanges data with a personal computer or other device via the RS-232C interface. Menu operation and data settings are possible directly from the computer.

The following illustration shows the essential components of the F300-E RS-232C I/F Unit.

Components

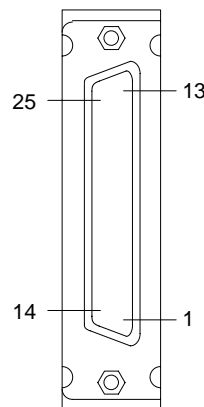


Specifications**General Specifications**

Ambient operating temperature	0°C to 50°C
Operating humidity	35% to 85% RH (no condensation)
Operating environment	No corrosive gases
Storage temperature	-25°C to 65°C
Enclosure rating	IP20 (in-panel)

Communications Specifications

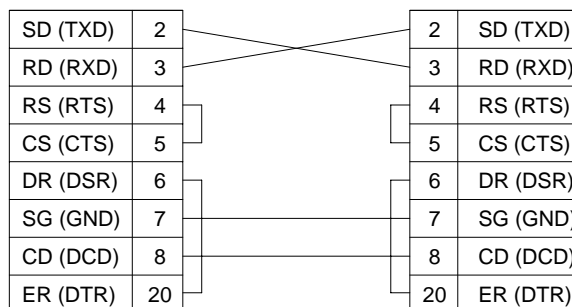
Number of channels	2 channels
Electrical ratings	Conform to EIA RS-232C
Synchronization	Non-synchronous
Transmission speed	19,200 bps max.

Connector Pin Allocation

Pin no.	Signal name	Name
1	FG (GND)	Frame ground
2	SD (TXD)	Send data
3	RD (RXD)	Receive data
4	RS (RTS)	Request to send
5	CS (CTS)	Clear to send
6	DR (DSR)	Data set ready
7	SG (GND)	Signal ground
20	ER (DTR)	Data terminal ready

Connecting a Computer with a RS-232C I/F Unit

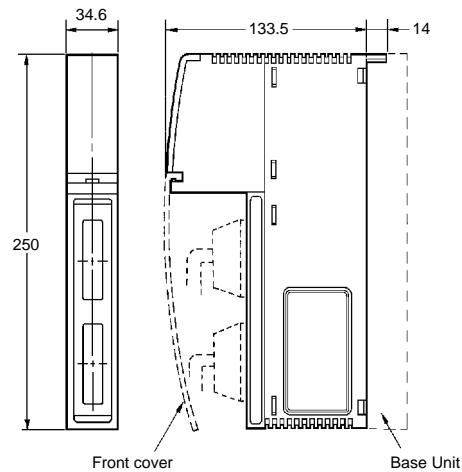
Connect the F300-VR as shown below.



Note The F300-VR uses a 25-pin connector. Be sure to check the pin arrangement of the computer before wiring.

Dimensions and Weight

The following diagram provides the external dimensions and weight of the F300-E RS-232C I/F Unit. Unless otherwise noted, values are in millimeters (mm).



Weight: approx. 400 g

2-2-6 F300-G Dummy Unit

The F300-G Dummy Unit is inserted into empty slots to improve external appearance, protect connectors, and maintain the strength of the Rack. The Dummy Unit plays no role in measurements and consumes no power.

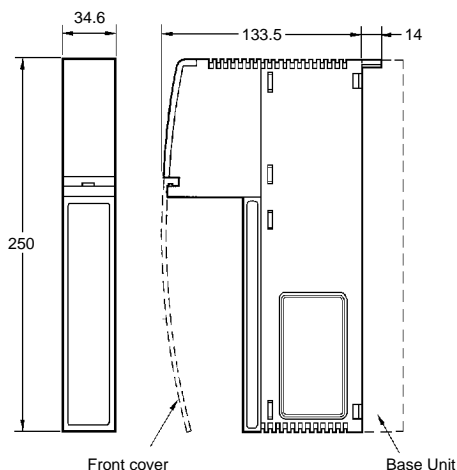
Specifications

General Specifications

Ambient operating temperature	0°C to 50°C
Operating humidity	35% to 85% RH (no condensation)
Operating environment	No corrosive gases
Storage temperature	-25°C to 65°C
Enclosure rating	IP20 (in-panel)

Dimensions and Weight

The following diagram provides the external dimensions and weight of the F300-G Dummy Unit. Unless otherwise noted, values are in millimeters (mm).



Weight: approx. 200 g

2-3 F300 Camera Lenses

2-3-1 Types of Lens

The camera used with the F300 System can use a 12.5 to 75 mm CCTV lens or a 2x to 6x magnification lens. The selection of the correct lens between wide-angle and macro from this range allows optimum camera field-of-view and mounting distance. The camera requires a C-mount lens.

C-mount lenses other than those listed below can also be used. When using C-mount lenses other than those recommended, determine the field-of-view and mounting distance by trial and error.

CCTV Lens

Model	Focal length (mm)	F number (F)	Max. external diameter	Overall length
3Z4S-LE B1214D-2	12.5	F 1.4	42 mm dia.	50 mm
3Z4S-LE C1614A	16		30 mm dia.	33 mm
3Z4S-LE B2514D	25		30 mm dia.	37.3 mm
3Z4S-LE B5014A	50		48 mm dia.	48 mm
3Z4S-LE B7514C	75		62 mm dia.	79 mm

Magnifying Lens

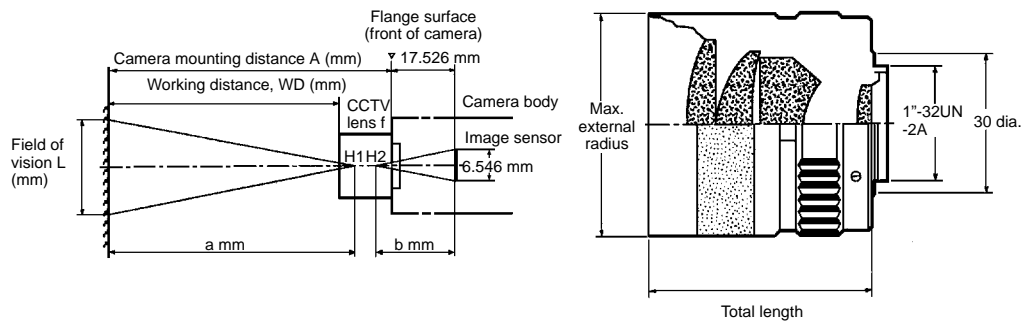
Model	Magnification	F number (F)	End diameter	Overall length
3Z4S-LE ELE-008-2.5	2.5	F12	14 mm dia.	48.6 mm
3Z4S-LE ELE-008-4	4	F17		67.0 mm
3Z4S-LE ELE-008-6	6	F24		91.5 mm
3Z4S-LE ELE-009-2	2	F12	22 mm dia.	67.4 mm
3Z4S-LE ELE-009-4	4	F20		103.3 mm
3Z4S-LE ELE-009-6	6	F27		139.3 mm

2-3-2 CCTV Lens, Field of Vision and Mounting Distance

In this table, A = camera distance, WD = working distance, and t = extension tube thickness. The figures are approximate, when the 2/3-inch CCD dimension I = 6.546 mm.

(Unit: mm)

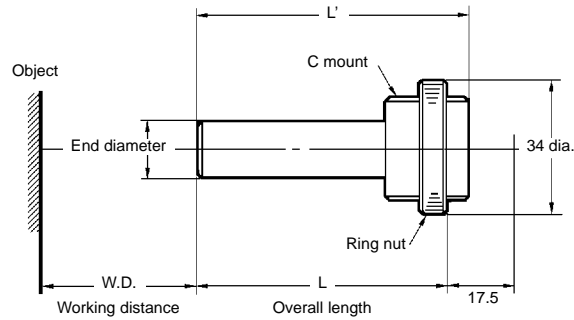
Field of vision		5	7	10	15	20	30	50	70	100	150	200	300	500	
CCTV lens	3Z4S-LE C815B	A								153.2	218.2	283.3	413.7	674.4	
		WD								112.6	177.8	243.0	373.5	634.3	
		t								---	---	---	---	---	
	3Z4S-LE B1214D-2	A									320.1	416.6	609.9	996.5	
		WD									269.5	366.2	559.6	946.4	
		t									---	---	---	---	
	3Z4S-LE B2514D	A				101.0	152.8			302.2	415.9	606.1	796.5	1,177.6	1,940.1
		WD				52.8	110.0			262.6	377.0	567.7	758.4	1,139.8	1,902.4
		t				10	5			---	---	---	---	---	---
	3Z4S-LE B5014A	A	183.3	179.9	188.7	216.0	248.7	319.5	467.7			1,226.2	1,607.1	2,369.3	3,894.6
		WD	69.9	85.2	108.0	146.2	184.3	260.6	413.2			1,176.0	1,557.4	2,320.2	3,845.9
		t	65	45	30	20	15	10	5			---	---	---	---
	3Z4S-LE B7514C	A			217.7	258.6	307.7	414.1	636.7	863.0	1,204.6	1,775.8	2,347.8	3,492.6	5,783.2
		WD			89.6	146.9	204.2	318.7	547.9	777.0	1,120.7	1,693.5	2,266.3	3,411.9	5,703.2
		t			45	30	20	15	5	5	---	---	---	---	---



The above figures are approximate standards. Allow for some fine adjustment at the time of installation.

2-3-3 Magnification Lens, Field of Vision and Working Distance

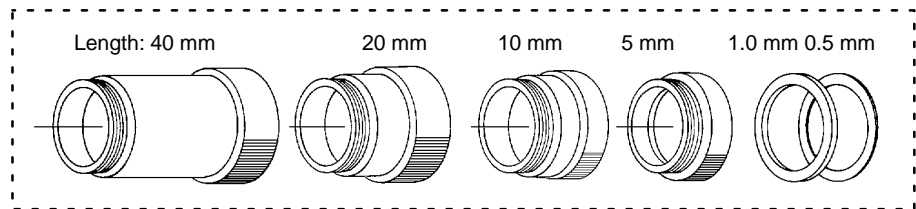
Model	Magnification			Field-of-view (mm)	Working distance (mm)	Overall length (mm)	L' (mm)	End diameter
	2/3-inch CCD	1/3-inch CCD	1/2-inch CCD					
3Z4S-LE ELE-008-2.5	2.5	1.5	1.9	2.6	45.8	48.6	54	14 mm dia.
3Z4S-LE ELE-008-4	4	0.9	1.2	1.6	43.9	67.0	70	
3Z4S-LE ELE-008-6	6	0.6	0.8	1.1	42.9	91.5	97	
3Z4S-LE ELE-009-2	2	1.8	2.4	3.3	73.7	67.4	72	22 mm dia.
3Z4S-LE ELE-009-4	4	0.9	1.2	1.6	69.2	103.3	108	
3Z4S-LE ELE-009-6	6	0.6	0.8	1.1	67.8	139.3	144	



2-3-4 Extension Tubes

Extension tubes are used to move the camera closer to the object, outside the focal adjustment range of the lens. The tubes are available as a set of six.

Model	Thickness	Comment
3Z4S-LE EX-C6	0.5 mm, 1 mm, 5 mm, 10 mm, 20 mm, 40 mm	Use a combination of tubes to give the required thickness.

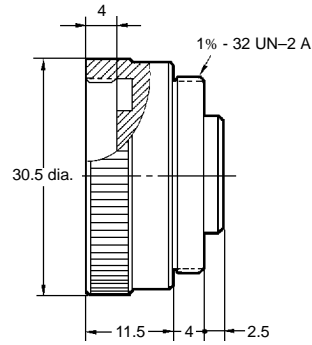


2-3-5 Teleconverter

Insert the Teleconverter between the lens and the camera to double the focal length.

Model	Max external diameter	Thickness
3Z4S-LE 2-EX	30.5 mm	11.5 mm

The following diagram provides the external dimensions for the 2-EX Teleconverter used with the F300 System. Unless otherwise noted, values are in millimeters (mm).



Note The focal length and brightness change in proportion to the teleconverter magnification. Note that the markings on the lens focus ring and aperture ring are not accurate when the teleconverter is used. These settings must be adjusted to compensate for the teleconverter magnification factor.

SECTION 3

Installation

This section describes the operational, installation, and wiring requirements of the F300 System.

3-1	Installation Environment	40
3-1-1	Location	40
3-1-2	Installation	40
3-1-3	Precautions	41
3-2	Base Unit Installation	41
3-3	Mounting the Units	42
3-3-1	Mounting Positions	42
3-3-2	Mounting Procedure	44
3-4	Power Supply Unit Wiring and Ground	44
3-4-1	Power Wiring	45
3-4-2	Ground Connections	46
3-5	Power Supply Unit I/O Wiring	47
3-5-1	Power Supply Unit I/O Wiring	47
3-5-2	Connecting Cables	49

3-1 Installation Environment

The F300 System is highly reliable and resistant to environmental factors. The following guidelines, however, must be followed to ensure reliability and to get full use of the System.

3-1-1 Location

Do not install an F300 System in locations subject the following conditions:

- Temperatures outside 0°C to 50°C
- Condensation due to rapid temperature fluctuations
- Relative humidity outside 35% to 85% RH
- Corrosive or flammable gas
- High concentrations of dust, salt, or iron particles
- Direct vibration or shock
- Direct sunlight
- Water, oil, or chemicals fumes or spray

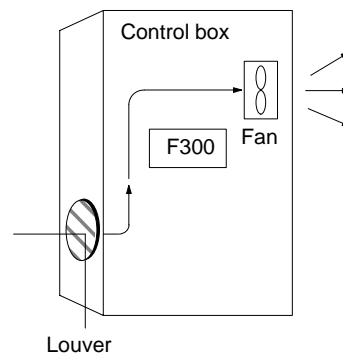
3-1-2 Installation

Consider environmental factors and ease of operation and maintenance when installing the F300 System in a control box.

Temperature Considerations

The operational temperature range of the F300 System is 0°C to 50°C. Take the following measures to maintain the F300 System in this range.

- Maintain a minimum of 50-mm clearance above and below the F300 System to improve air flow.
- Do not install the F300 System immediately above strong heat sources, such as heaters, transformers, or large-capacity resistors.
- Provide a forced-air fan or air conditioning if the ambient temperature exceeds 50°C.

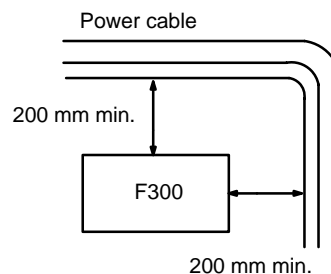


Operation and Maintenance Considerations

Keep the F300 System away from high-voltage equipment and motors to improve safety during operation and maintenance. The F300 System is easiest to work with if installed between 1.0 and 1.6 meters above the floor.

Noise Considerations

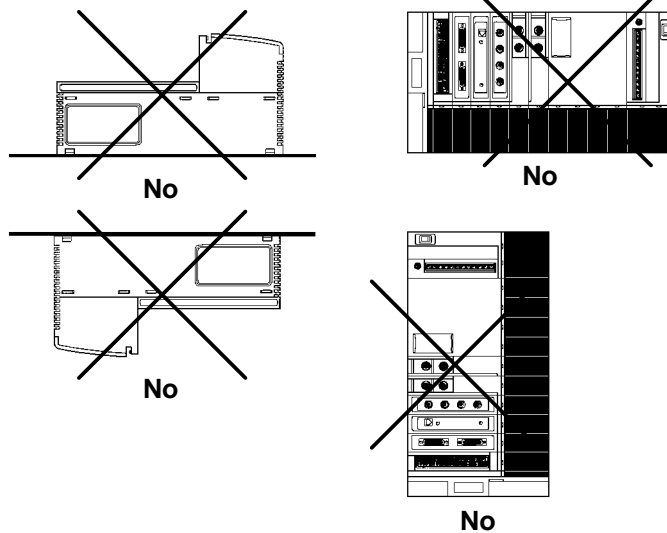
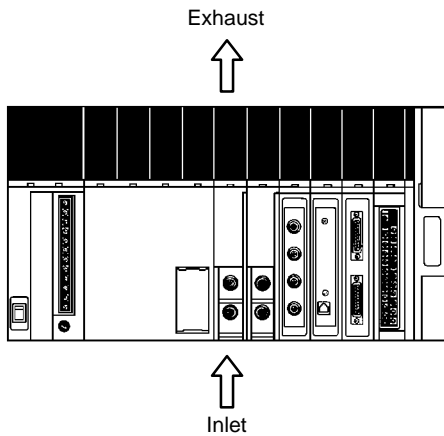
Do not install the F300 System in a cabinet containing high-voltage equipment or within 200 mm of power lines. Fully ground the mounting plate.



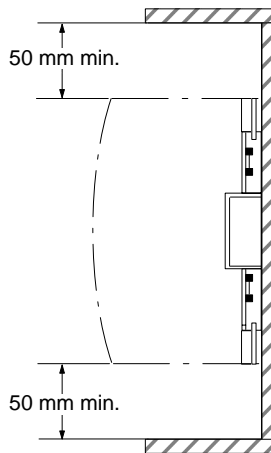
3-1-3 Precautions

Direction of Installation

Install the Unit vertically with the vents at the top and bottom to improve air circulation and heat dissipation. Do not install as shown in the right portion of the diagram below.



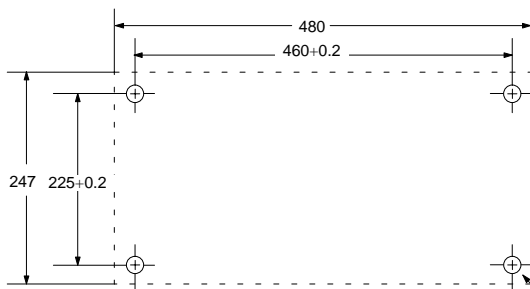
Clearance



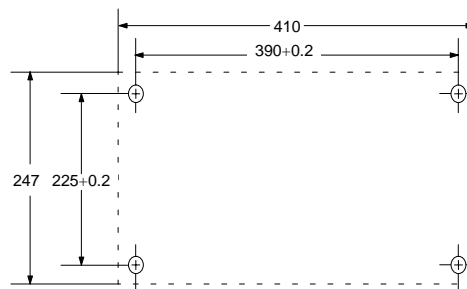
Maintain at least 50 mm clearance above and below the F300 System to improve air circulation.

3-2 Base Unit Installation

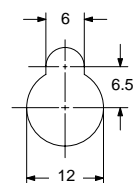
F300-B5 Base Unit Mounting Hole Dimensions



F300-B3 Base Unit Mounting Hole Dimensions



Finished Dimensions of Base Unit Mounting Holes



Four, M5 holes

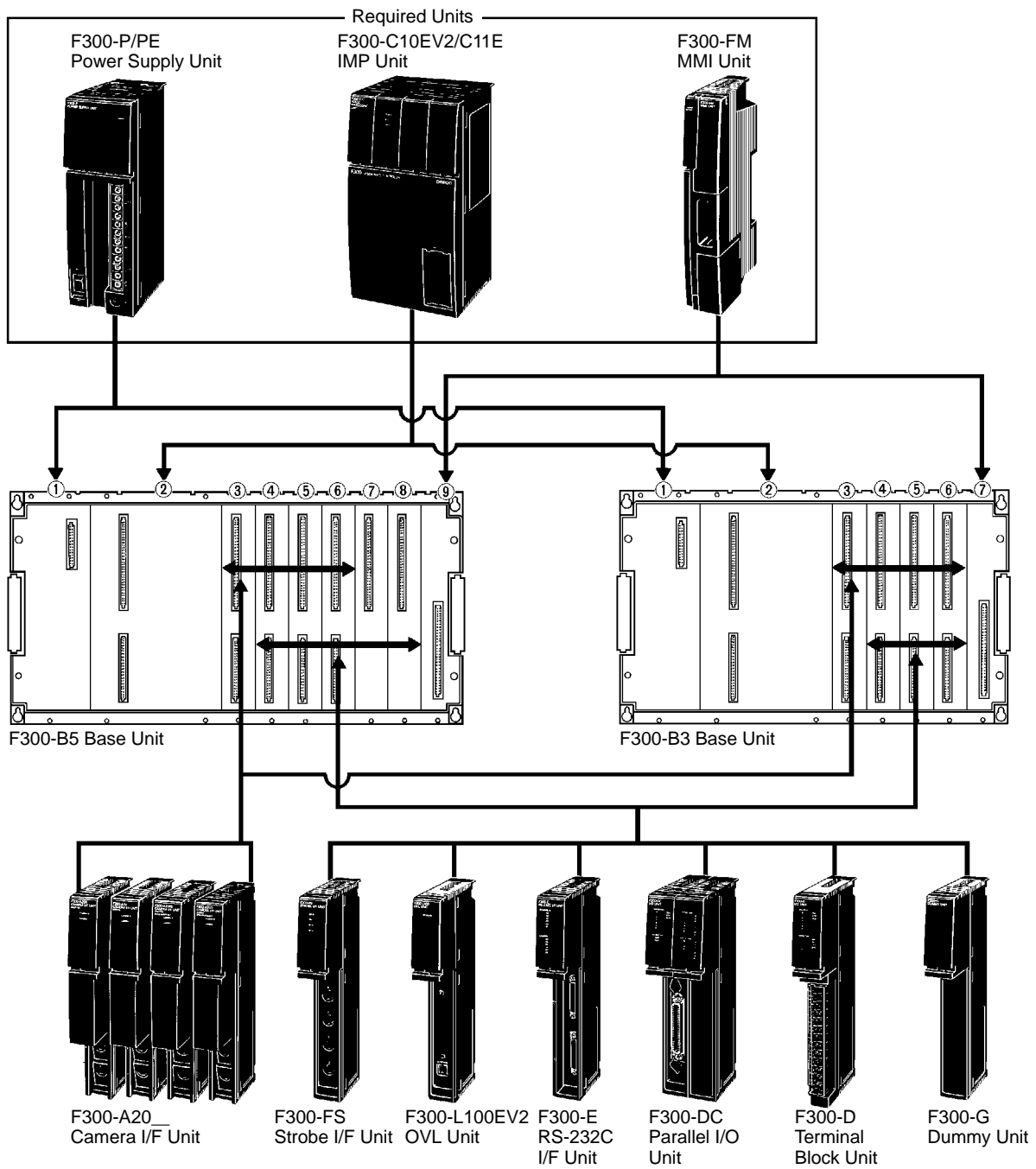
Four, M5 holes

3-3 Mounting the Units

3-3-1 Mounting Positions

The Camera I/F Units can be mounted of slots 3 to 6 of the 3-slot or 5-slot Base Unit.

Expansion Units can be mounted of slots 4 to 8 of the 5-slot Base Unit or of slots 4 to 6 in the 3-slot Base Unit.



Note When mounting multiple Units, move the Camera Units toward the IMP Unit.

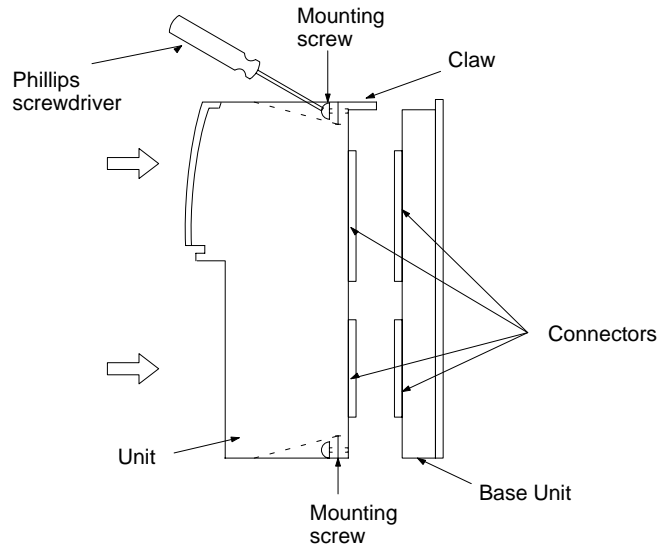
Number of Mountable Units

Type	Name	Model	5-slot Base Unit (F300-B5)		3-slot Base Unit (F300-B3)	
			Slot	Max. number	Slot	Max. number
Required units	Power Supply Unit	F300-P	1	1	1	1
		F300-PE				
	IMP Unit	F300-C10EV2/ C11E	2	1	2	1
	MMI Unit	F300-FM	9	1	7	1
Camera I/F Units (see note)	Normal	F300-A20	3 to 6	4 total	3 to 6	4 total
	Normal/Simultaneously	F300-A20S				
	Shutter	F300-A20R				
	Shutter/Simultaneously	F300-A20RS				
I/O Units	Terminal Block Unit	F300-D	4 to 8	5	4 to 6	3
	Parallel I/O Unit	F300-DC		2		1
	RS-232C I/F Unit	F300-E		1		1
	Expansion Units	OVL Unit		F300-L100EV2		1
	Strobe I/F Unit	F300-FS	2	2		
Dummy Unit		F300-G	5	3		

Note Always use identical Camera I/F Units. Do not use different Camera I/F Unit models together.

3-3-2 Mounting Procedure

- 1, 2, 3... 1. Turn off the power supply to the F300 System.
2. Align the claw on the top of the Unit with the recess in the Base Unit and correctly align the connectors.
3. Keeping the Unit and Base Unit parallel, push the Unit flush against the Base Unit.
4. Tighten the mounting screws at the top and bottom of the Unit with a Phillips screwdriver.



Note Always turn off the power supply before mounting or removing a Unit. The Unit may be damaged if attached or removed while the power is on.

3-4 Power Supply Unit Wiring and Ground

Connect F300 power cables and ground cables to the Power Supply Unit terminal block. The terminal block uses M4 screw connectors. Use the crimped connectors shown in the table below.

Crimped Connectors



Recommended Parts

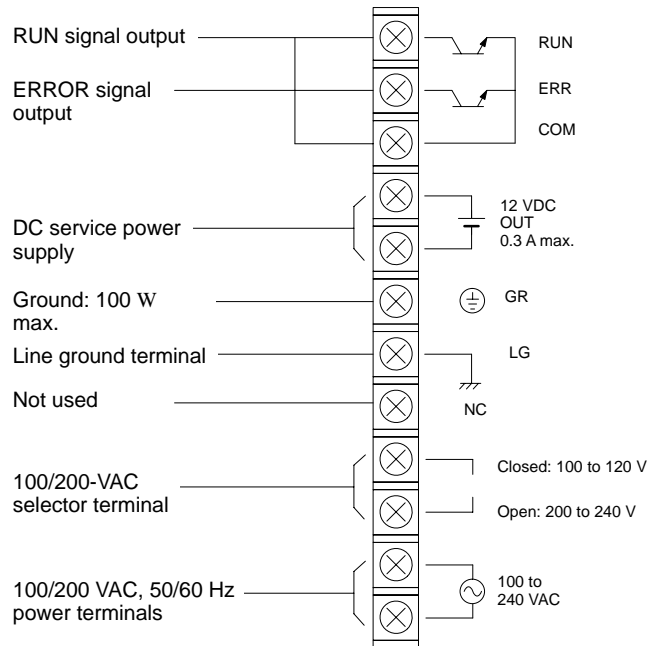
An applicable cable from 1.04 to 2.63 mm² should be used.

3-4-1 Power Wiring

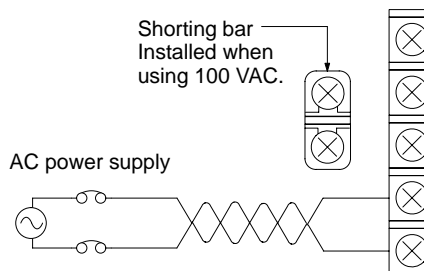
Connect the F300 to a 100-VAC 50/60-Hz or a 200-VAC 50/60-Hz power supply. Remove the terminal block shorting bar if the system is connected to a 200-V power supply.

Wiring Connections

100-VAC Power Supply



200-VAC Power Supply



Power Supply Voltage Range

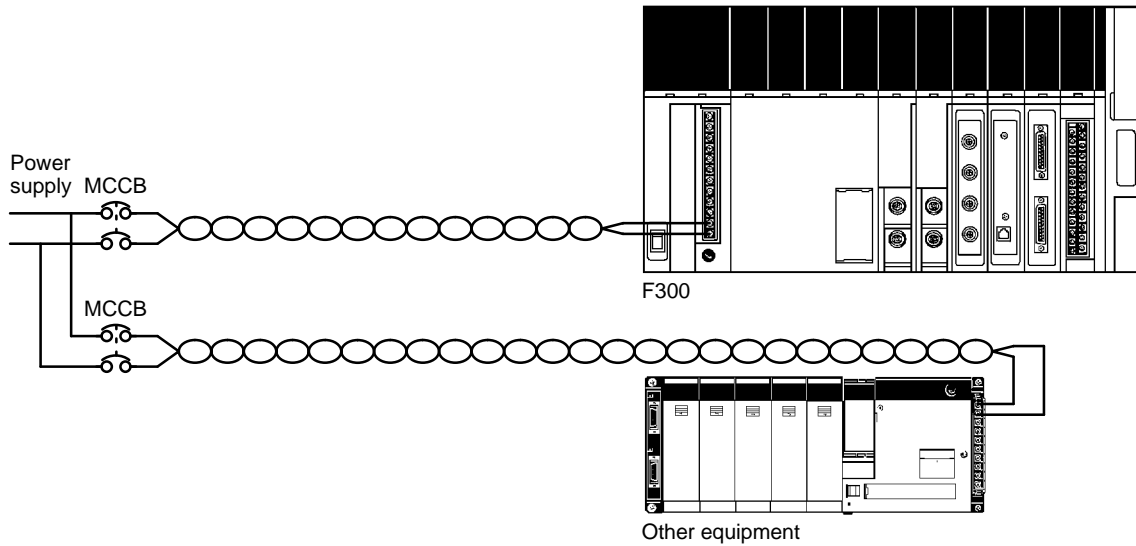
Use a power supply in the specified voltage range.

Power supply voltage	Allowable fluctuation range	Shorting bar
100 VAC	85 to 132 VAC	Shorting bar installed
200 VAC	170 to 264 VAC	Shorting bar removed

Note Insert a 250-V, 3.15-A fuse when using the system with a 200-V power supply. Refer to 4-2 Maintenance for the procedure to change the fuse.

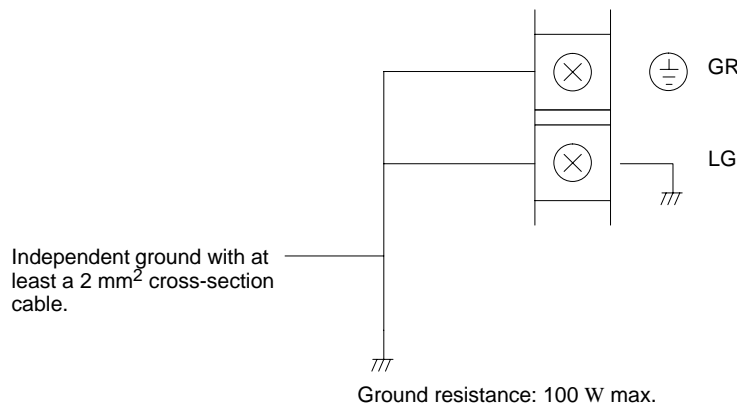
Power Supply Capacity and Cable Sizing

Although the current consumption should not exceed 2 A for 100 VAC operation, surge current flows when the power is turned on. The power supply, protective circuit breakers, and cables must have sufficient capacity to prevent a voltage drop at startup.



- 1, 2, 3...**
1. Use cables with at least a 2mm² cross-sectional area to prevent voltage drops.
 2. Use twisted-pair cables to prevent inductive noise interference.
 3. Do not connect the F300 System to power sources supplying other equipment. In particular, isolate the F300 System from inductive loads.

3-4-2 Ground Connections

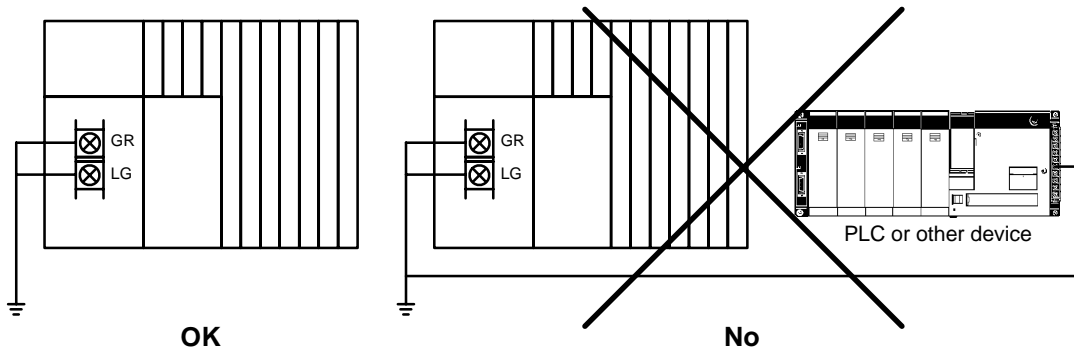


The GR terminal is connected to ground. To eliminate danger of electric shock, ground in to a ground resistance of 100 W max. using a cable with at least 2 mm² cross-sectional area.

The LG terminal is the noise filter neutral terminal. Ground the LG terminal to a Class III ground (100 W max.) by shorting it to the GR terminal with the shorting bar accessory if severe noise interferes with measurements.

The ground cable should not exceed 20 meters.

Performance may be adversely affected if the F300 System is grounded to other equipment or to a building structure. Use a separate ground cable for the F300 System.



3-5 Power Supply Unit I/O Wiring

3-5-1 Power Supply Unit I/O Wiring

The Power Supply Unit terminal block uses M4 screw connectors. Use crimped connectors as shown below.

Crimped Terminals

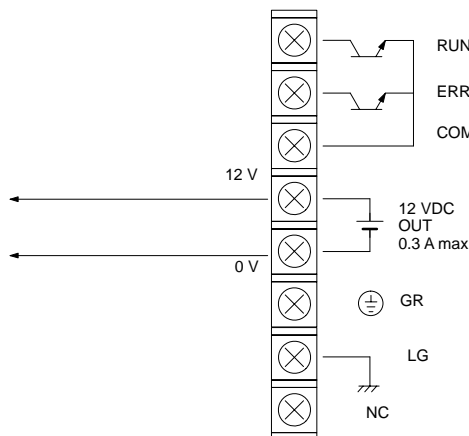


Recommended Parts

An applicable cable from 1.04 to 2.63 mm² should be used.

Connecting to External Power Supply

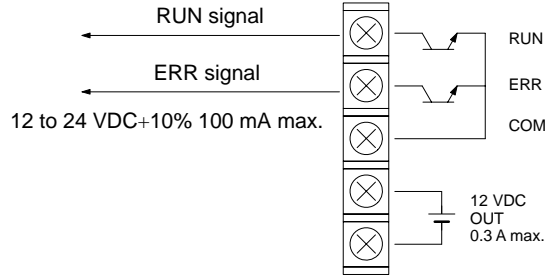
The Power Supply Unit provides a 12-VDC service power supply. Use this power supply within the ranges specified below.



Output voltage	12 VDC +5%
Output current	0.3 A max.

Connecting to External Outputs

The Power Supply Unit outputs RUN and ERROR signals.



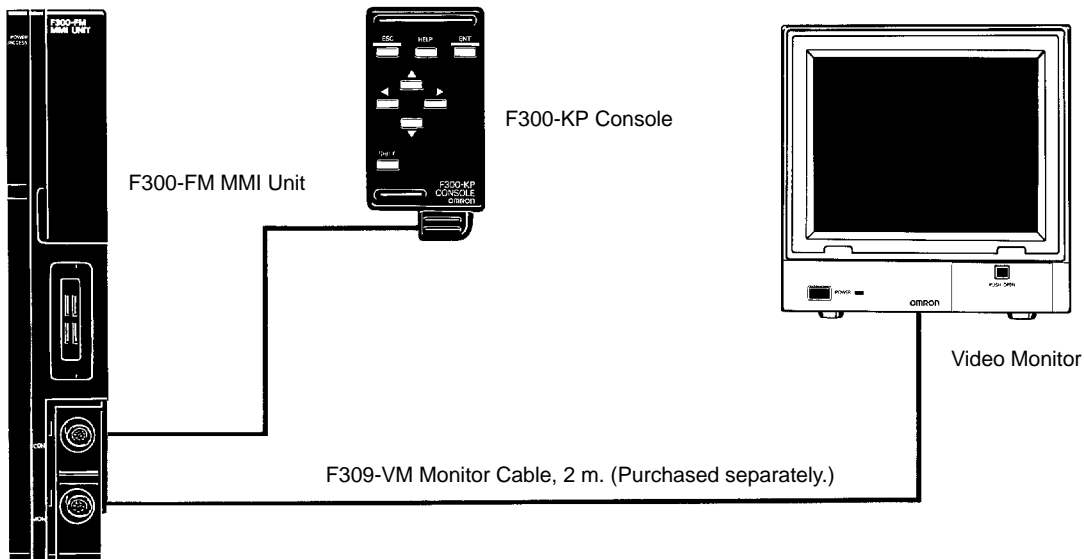
Signal	Name	Description
RUN	RUN signal	ON during measurement
ERR	ERROR signal	ON when an error occurs
COM	Common	Common to RUN and ERR signals.

The ERR signal is output on a camera error, missed strobe flash, measurement error, RS-232C I/F Unit communications error, Terminal Block Unit communications error, or memory card error. The error response can be set to enable or disable the ERR signal for various levels of errors.

3-5-2 Connecting Cables

Connect each Unit to external devices using the special-purpose cables (For example: F309-VM Monitor Cable). To prevent damage to the Units, turn off the power supply before connecting or disconnecting any cables.

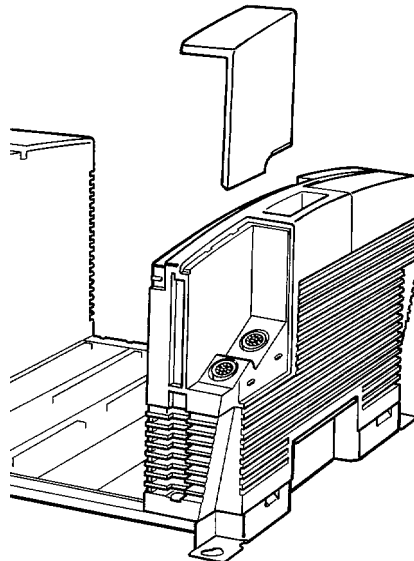
MMI Unit



Note The F309-VM Monitor Cable incorporates a BNC connector, via which NTSC-standard video signals will be output to the Video Monitor.

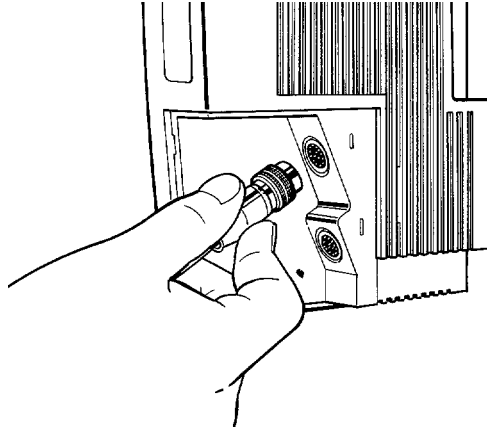
Connecting and Disconnecting Cables

Connect and disconnect Units using the following procedures.

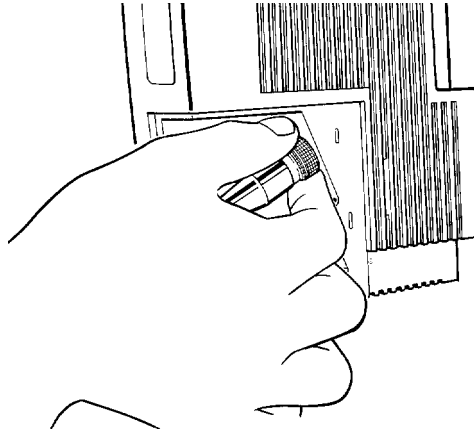


- 1, 2, 3... 1. The Console and Video Monitor connectors are located under the MMI Unit connector cover.

2. To connect a cable, hold the rubber-molded part of the connector, align the notches, and push the connector straight in until it locks.

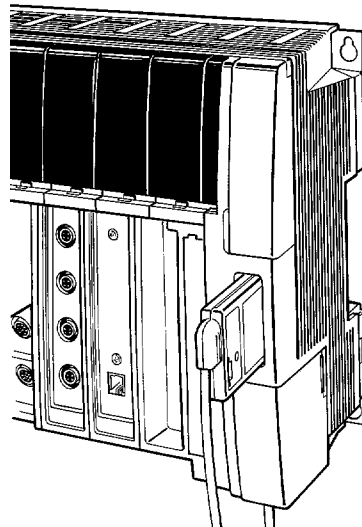


3. To disconnect the cable, lightly pull the lock ring to unlock the connector and pull the connector straight out. Do not apply undue force to the rubber molding or the cable.



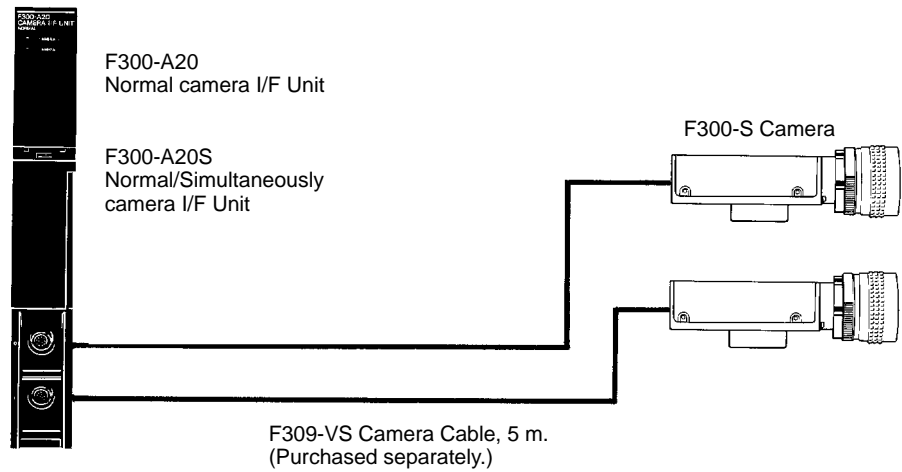
Storing the Console

Store the Console in the recess provided in the MMI Unit when not in use. The magnet on the top of the Console holds it in place. Push the Console into the recess until it is held by the magnet.

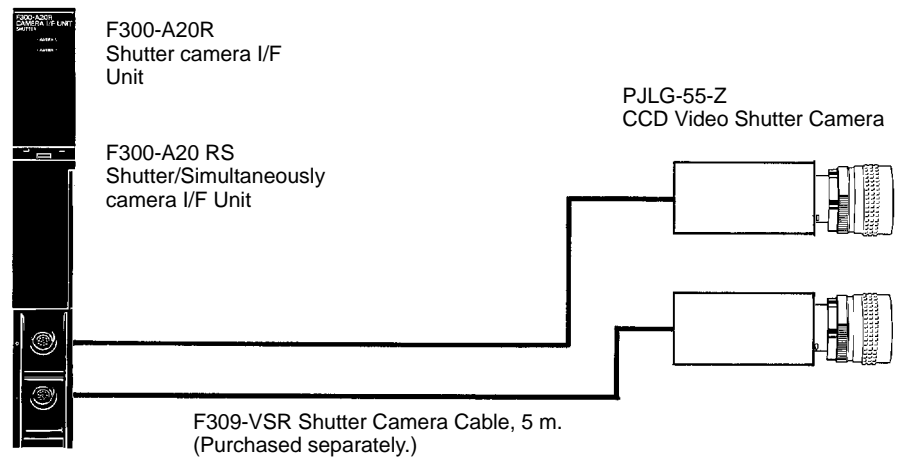


Camera I/F Units

Normal and Normal/Simultaneously Camera I/F Units



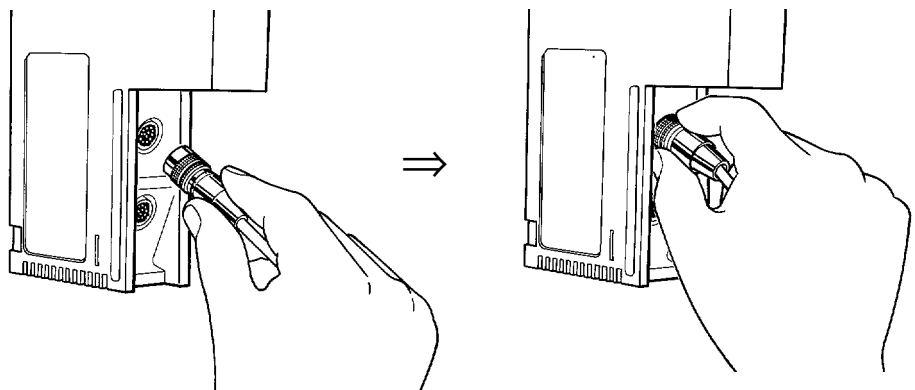
Shutter and Shutter/Simultaneously Camera I/F Units



Connecting and Disconnecting Cables

Use the following procedures to connect or disconnect a cable from the Unit.

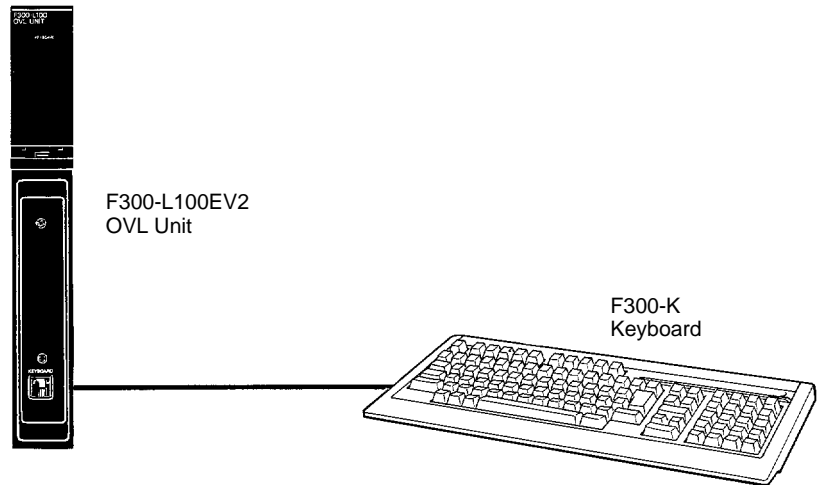
- 1, 2, 3... 1. Hold the rubber-molded part of the connector, align the notches, and push the connector straight in until it locks.



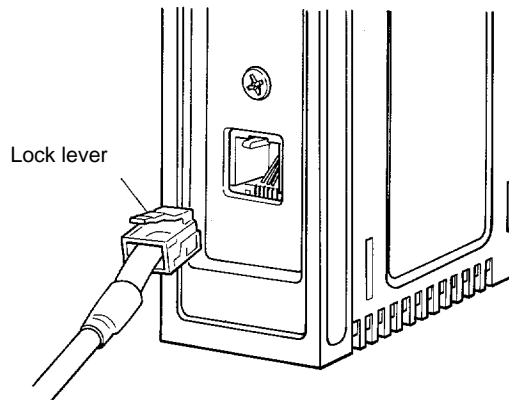
2. Lightly pull the lock ring to unlock the connector and pull the connector straight out. Do not apply undue force to the rubber molding or the cable.

OVL Unit

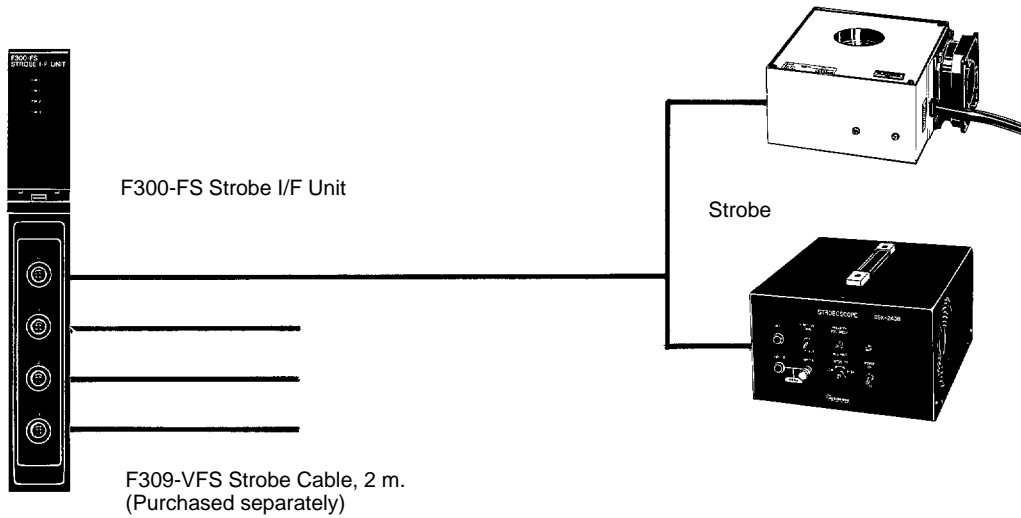
Follow the procedure below to connect and disconnect the F300-K Keyboard and the OVL Unit.



- 1, 2, 3...**
1. Holding the connector with the lock lever pointing up, push the connector straight in until it locks.
 2. Push down the lock lever to unlock the connector and pull the connector straight out.



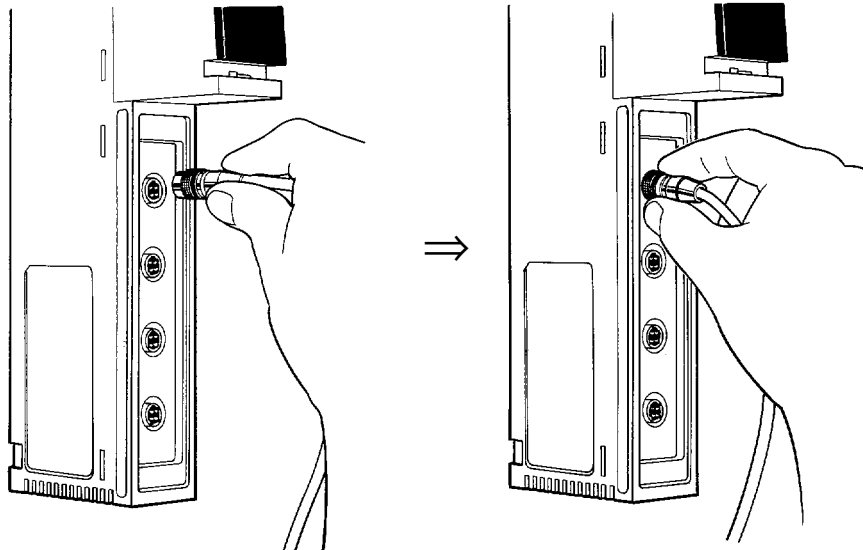
Strobe I/F Unit



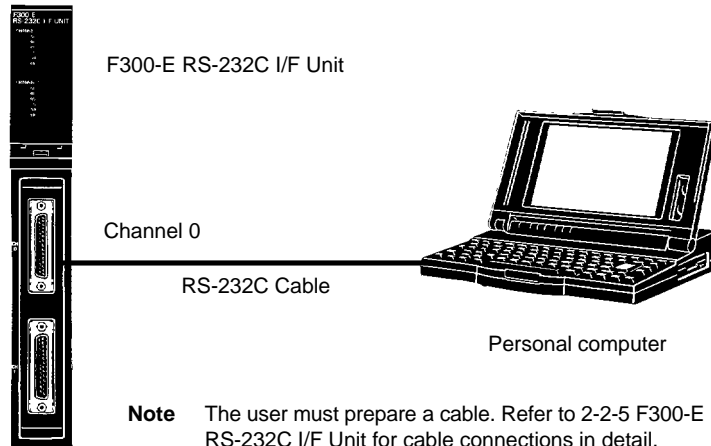
Connecting and Disconnecting the F300-FS Strobe I/F Unit

Use the following procedure to connect or disconnect the F300-FS Strobe I/F Unit and strobes.

- 1, 2, 3...** 1. Hold the rubber-molded part of the connector, align the notches, and push the connector straight in until it locks.
2. Lightly pull the lock ring to unlock the connector and pull the connector straight out. Do not apply undue force to the rubber molding or the cable.



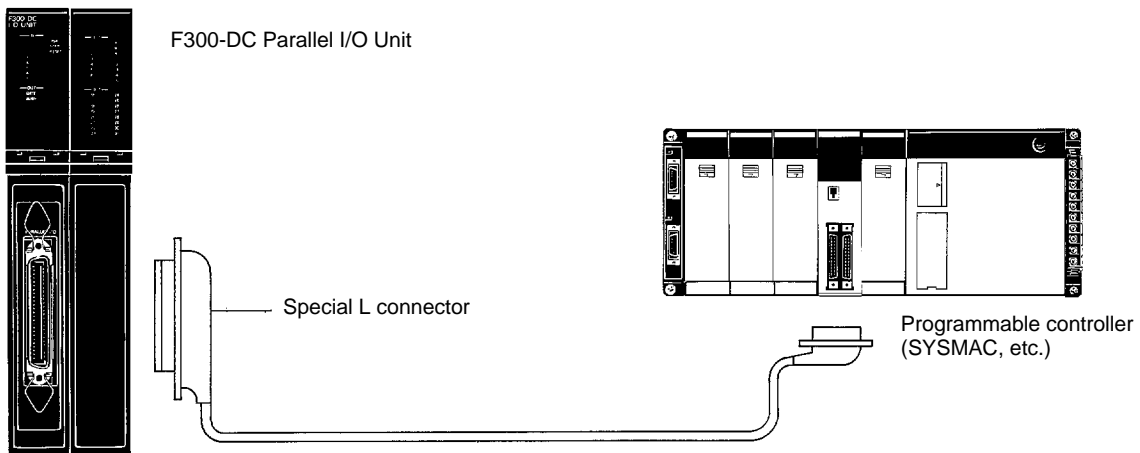
RS-232C I/F Unit



After inserting the connector, tighten the upper and lower screws.

Parallel I/O Unit

A special L-connector is supplied for the Parallel I/O Unit. Refer to the *Connector Pin Allocation* diagram on page 32 when wiring and assembling this connector.



Connector Specifications

Item	Model	Manufacturer
Connector type	57LE-40500-7300 (D34)	Daiichi Denshi Kogyo
Suitable connector (1 set provided)	57JE-B50H-L12	

Note Use a shielded cable where there is excessive noise.

SECTION 4

Inspection, Maintenance, and Troubleshooting

This section explains how to inspect and maintain the F300 System and provides troubleshooting procedures to follow should problems occur.

4-1	Inspection	56
4-2	Maintenance	56
4-2-1	Back-up Battery Replacement	57
4-2-2	Replacing the Fuse	58
4-3	Troubleshooting	58

4-1 Inspection

Inspect the F300 System on a daily or regular basis to maintain it in proper working condition.

Regular Inspections

The majority of components used in the F300 System are semiconductors, which under proper operational conditions require little or no maintenance. Regular inspections are important, however, to prevent problems such as terminal deterioration due to environmental factors.

Inspection Points

Inspections are normally carried out once or twice a year. Increase this frequency to suit the surrounding environmental conditions.

Inspection point	Details	Standard	Comments
Power supply	Voltage measured at terminal block within standard value?	Within rated voltage range (see Note 1)	Circuit tester
Environment	Ambient temperature inside cabinet within standard value?	0°C to 50°C	Thermometer
	Ambient humidity inside cabinet within standard value?	35% to 85%	Hygrometer
	Condensation within acceptable range?	No condensation	---
	No accumulated dust, soil, etc?	No accumulation	Visual inspection
Installation	Units firmly fixed?	No looseness	Flat-blade screwdriver
	Cable connectors correctly inserted and locked?	No looseness	---
Battery life	Memory back-up battery within rated life period?	Within 5 years (see Note 2)	---

Note 1. Permitted voltage fluctuation ranges

Operating voltage	Fluctuation range
100 VAC	100 to 120 VAC
200 VAC	200 to 240 VAC

2. Battery Life

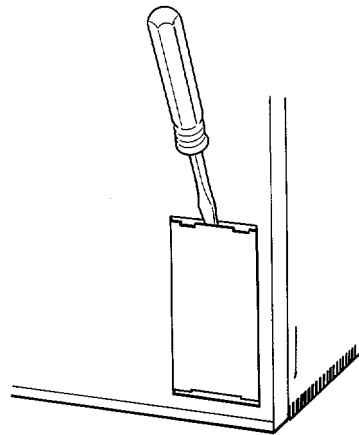
A lithium battery is built into the IMP Unit to backup the memory. The battery life is approximately 5 years at a temperature of 25°C. The life is reduced at higher and lower temperatures. Replace the battery before the end of the current battery's rated life.

4-2 Maintenance

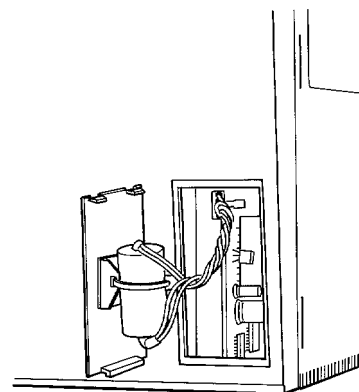
The F300 IMP Unit back-up battery and Power Supply Unit fuse require periodic replacement. Follow the procedures below to replace these items.

4-2-1 Back-up Battery Replacement

- 1, 2, 3...
1. Turn off the F300 System power. If the F300 System is already off, turn it on for 10 seconds then turn it off again.
 2. Insert a small flat-blade screwdriver into the cut-out at the top of the battery cover and gently remove the cover.



3. Detach the battery connector. Cut the battery retaining band with nippers and pull the battery from the connector.
4. Secure the new battery to the cover with the retaining band supplied and attach the battery connector.

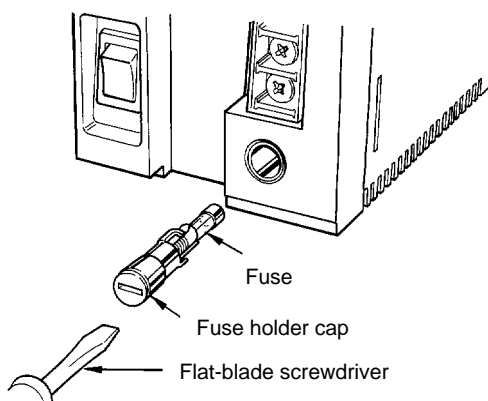


5. Return the battery cover to its original position.

- Note**
1. Replace the battery within 5 minutes to prevent loss of the memory contents. If replacement will take more than 5 minutes, transfer the scene, system, and shading master data to a memory card or a computer connected to the RS-232C port before replacing the battery.
 2. To prevent damage to or leakage from the battery, do not short, recharge, disassemble, or heat the battery.

4-2-2 Replacing the Fuse

- 1, 2, 3... 1. Turn off the F300 System.
 2. Loosen and remove the fuse holder cap with a flat-blade screwdriver. Pull out the cap and remove the fuse located inside.



3. Insert a new fuse and replace the cap in its original position.

Fuse Specifications

AC 100	125 V, 6.3 A, MF51NM, 5.2 dia. x 20 mm
AC 200	250 V, 3.15 A, MF51NM, 5.2 dia. x 20 mm

4-3 Troubleshooting

Troubleshooting Table

Symptom	Cause	Remedy
POWER indicator does not light	Broken power cable; circuit breaker tripped; loose terminal	Replace fuse.
	Blown fuse	Set correctly.
	Incorrect setting of voltage selector bar	Set bar correctly.
RUN indicator does not light	Measurement conditions not set	Correctly set measurement conditions.
ERROR indicator does not light	Defective IMP Unit	Contact Service Center
No image on screen	Incorrect connection of camera or video monitor	Check connector contact and cable conductivity.
	Incorrect camera number setting	Correctly set camera number.
No input from Console or keyboard	Defective connector contact; broken cable	Check connector contact and cable conductivity.

Index

B—C

back-up battery, replacement, 57

Base Unit, 41

Camera, specifications, 21

Camera I/F Units
models, 18
specifications, 19

camera lenses, types, 34
CCTV lens, 34
magnifying lens, 34

CCTV lens
field-of-vision, 35
mounting distance, 35

components

Expansion Units, 4
 Dummy Unit, 5
 I/O Unit, 4
 OVL Unit, 5
 Strobe I/F Unit, 5
required Units, 2
 Base Unit, 2
 Camera I/F Unit, 4
 Console, 3
 IMP Unit, 3
 MMI Unit, 3
 Power Supply Unit, 2
 Video Monitor, 3

connections

Camera I/F Units, 51
MMI Unit, 49
OVL Units, 52
Parallel I/O Unit, 54
RS-232C I/F Unit, 54
Strobe I/F Unit, 53

Console, specifications, 16

D—F

Dummy Unit, specifications, 33

Expansion Units, description and dimensions, 22

fuse, replacement, 58

I

IMP Unit, performance specifications, 14

inspection, 56

installation, 40
 Base Unit, 41
 location, 40
 mounting, 42
 See also mounting
 noise, 40
 precautions, 41
 temperature, 40

L

lenses

CCTV Lens
 field-of-vision, 35
 mounting distance, 35
Extension Tubes, 36
Magnification Lens
 field-of-vision, 36
 working distance, 36
Teleconverter, 36

M

Magnification Lens
 field-of-vision, 36
 working distance, 36

maintenance, 56

MMI Unit, specifications, 15

mounting

 positions, 42
 procedure, 44

O—P

OVL Unit, specifications, 24

Parallel I/O Unit, description and dimensions, 28, 29
 terminal allocations, 30

Power Supply Unit, 44, 47
 dimensions and weight, 13
 general specifications, 12
 grounding, 46
 I/O wiring, 47
 connecting cables, 49
 See also connections
 performance specifications, 13
 wiring, 45

precautions, 41

R–S

RS-232C I/F Unit
 pin allocations, 32
 specifications, 32

Strobe I/F Unit, specifications, 22

strobes, compatible units, 5

system
 basic configuration, 6
 components. *See* components
 expanded configuration, 7

T

Teleconverter, 36

Terminal Block Unit, specifications, 25, 26

troubleshooting, 58

U–V

Units
 description and dimensions, 10
 Base Unit, 10, 11
 mounting hole dimensions, 11
 Camera, 20, 21
 Camera I/F Unit, 18, 19, 20
 camera lenses, 34, 36
 Console, 16, 17
 Dummy Unit, 33, 34
 IMP Unit, 14
 MMI Unit, 15
 OVL Unit, 23, 24
 Parallel I/O Unit, 28, 31
 Power Supply Unit, 12
 RS-232C I/F Unit, 31, 33
 Strobe I/F Unit, 22, 23
 Terminal Block Unit, 25, 27, 28
 Video Monitor, 17, 18

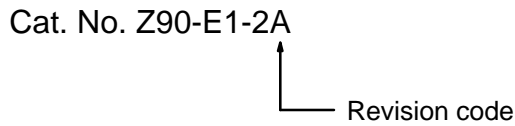
Expansion Units, 22

mounting, 42
 See also mounting

Video Monitor, specifications, 17

Revision History

A manual revision code appears as a suffix to the catalog number on the front cover of the manual.



The following table outlines the changes made to the manual during each revision. Page numbers refer to the previous version.

Revision code	Date	Revised content
1	September 1992	Original production
2	March 1993	<p>Pages 2, 12: F300-PE model number was added to the Power Supply Unit. Additional information was included with a corresponding voltage correction/addition.</p> <p>Pages 3, 6, and 7: Model number and voltage clarifications were made to the Video Monitor.</p> <p>Page 4: A model number clarification was made to the RS-232C I/F Unit illustration.</p> <p>Page 5: A minor model number clarification was made to the strobe cable.</p> <p>Page 12: Factory-set voltage setting has been added to the table.</p> <p>Page 17: 2-1-6 <i>F300-M09 Video Monitor</i> section was added. Changes to the connectable camera model numbers were made to the table.</p> <p>Page 18: Changes to the connectable camera model numbers were made to the table.</p> <p>Page 26: Pin number sequences in the illustration have been corrected.</p> <p>Page 30: The Unit dimension 69.5 was corrected to 69.6 in the illustration.</p> <p>Page 32: Connections were changed for the 25-pin cable connection illustration.</p> <p>Pages 42, 43: F300-PE model number was added to the Power Supply Unit.</p> <p>Page 47: "PC" changed to "PLC" in the top illustration.</p>
2A	March 1994	<p>Page v: The Programmable Controller abbreviation "PC" has been changed to "PLC."</p> <p>Pages 3, 14, 44, 45: IMP Unit model number changed.</p> <p>Page 4: Camera and cable model numbers have been changed or added, and the text has been changed accordingly.</p> <p>Pages 5 to 7: Model numbers changed or corrected.</p> <p>Page 18: Note added.</p> <p>Page 20: F300-S Camera illustration has been corrected.</p> <p>Page 21: TV system and synchronization information corrected. Note added. Dimensions of the F300-S Camera corrected.</p> <p>Pages 23, 45, 54: OVL Unit model number changed.</p> <p>Page 26: Minor corrections to the internal circuit illustration in input specifications.</p> <p>Page 29: Minor corrections to the internal circuit illustration in input and output specifications. ON residual voltage and OFF leak current information corrected.</p> <p>Page 31: Dimension of the F300-DC Parallel I/O Unit corrected.</p> <p>Page 32: Pin no. 8 in the table deleted.</p> <p>Page 33: Corrections were made to the connection diagrams. Note added.</p> <p>Page 34: Table at the bottom of the page corrected.</p> <p>Pages 35, 36: 2-3-2 <i>CCTV Lens</i> changed to 2-3-2 <i>CCTV Lens, Field of Vision and Mounting Distance</i> and its contents have been completely changed.</p> <p>Page 37: 2-3-3 <i>Magnification Lens</i> changed to 2-3-3 <i>Magnification Lens, Field of Vision and Mounting Distance</i> and the table has been changed.</p> <p>Page 38: 2-3-6 <i>Optional Light Sources</i> has been deleted.</p> <p>Page 45: Note added.</p> <p>Page 53: CCD Video Shutter Camera model numbers changed.</p> <p>Page 58: Fluctuation ranges in note 1 corrected.</p>