
User's
Manual

EXA SS

SS350G
Wiper-Washing Controller

IM 12E6E1-01E

vigilantplant.[®]

Introduction

When conducting continuous MLSS measurement, staining caused by constituent materials adhering to the MLSS detector can seriously affect measurement results; therefore, cleaning of the MLSS detector is essential maintenance. One of the cleaning methods is wiper washing. This method directly removes stains from the measuring surface of the MLSS detector.


The SS350G wiper-washing controller operates a wiper-washing device that is incorporated in the MLSS detector.

This equipment should be installed in a location that is not exposed to inflammable or explosive gases.

To realize the full capability of this product, read through the instruction manual before use. Throughout the instruction manual, important items with respect to handling are indicated by a Warning or Caution, depending upon the relative degree of importance. For safety reasons and to prevent the possibility of damaging the product it is advisable that the user strictly observe these items. The alert symbol below is used in this manual in association with a Warning advisory.

Example



Note: A  mark is also used when the indicated item is related to safety.

Items that should be performed before using this controller and things you must know when reading this manual are explained below.

Verifying specifications

Upon taking receipt of the product, unpack carefully, checking that no damage has occurred during transport. SS350G wiper-washing controller is manufactured to user specifications. Check to ensure that the received product was manufactured to specification. Verification can be made by checking the model code indicated on the name plate. For details of the model codes used, see Section 1.2 (page 1-2).

Contents of This Instruction Manual

This instruction manual describes how to handle the product for installation, operation, inspection and maintenance. For a better understanding of the product, other important information is also included.

For details of the operation of a SS400G MLSS Converter or SS300G MLSS Detector used in combination with this device, refer to their respective instruction manuals.

Instruction manuals provided with related devices of the EXA ss series SS400 MLSS metering system are as follows.

Manuals for associated equipment used with the EXA ss series SS400 MLSS metering system

Model	Title of Manual	Manual no.
SS400G	Converter	IM 12E6B1-01E
SS300G	Detector	IM 12E6C1-01E
SS350G	Wiper Cleaning Controller	IM 12E6E1-01E
SS380G	Calibration Kit	IM 12E6D1-01E
PH8HG	Guide Holder	IM 12B7M2-01E
HH350G	Well Bucket Type Holder	IM 19H1B1-01E
DOX8HG	Submersion Type Holder	IM 19H1D2-01E
PB350G	Float Type Holder	IM 19H1E1-01E
PB360G	Vertical Float Type Holder	IM 19H1E2-01E
WTB10-SS□	Relay Terminal Box (for MLSS and wiper cleaning)	IM 12E06W03-01E

After-Sales Warranty

- Do not modify the product.
- During the warranty period, for repair under warranty carry or send the product to the local sales representative or service office. Yokogawa will replace or repair any damaged parts and return the product to you.
- Before returning a product for repair under warranty, provide us with the model name and serial number and a description of the problem. Any diagrams or data explaining the problem would also be appreciated.
- If we replace the product with a new one, we won't provide you with a repair report.
- Yokogawa warrants the product for the period stated in the pre-purchase quotation. Yokogawa shall conduct defined warranty service based on its standard. When the customer site is located outside of the service area, a fee for dispatching the maintenance engineer will be charged to the customer.
- In the following cases, customer will be charged repair fee regardless of warranty period.
 - Failure of components which are out of scope of warranty stated in instruction manual.
 - Failure caused by usage of software, hardware or auxiliary equipment, which Yokogawa did not supply.
 - Failure due to improper or insufficient maintenance by user.
 - Failure due to misoperation, misuse or modification which Yokogawa does not authorize.
 - Failure due to power supply (voltage, frequency) being outside specifications or abnormal.
 - Failure caused by any usage out of scope of recommended usage.
 - Any damage from fire, earthquake, a storm and flood, lightning, disturbance, riot, warfare, radiation, and other natural changes.
- Yokogawa does not warrant conformance with the specific application at the user site. Yokogawa will not bear direct/indirect responsibility for damage due to a specific application.
- Yokogawa will not bear responsibility when the user configures the product into systems or resells the product.
- Maintenance service and supplying repair parts will be covered for five years after the production ends. For repair this product, please contact the nearest sales office described in this instruction manual.

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Customer Maintenance Parts List CMPL 12E06E01-01E

Revision Record i

1. Overview

When combined with a wiper-washing device incorporated into the MLSS detector and MLSS converter, the SS350G wiper-washing controller can be used to control an automatic wiper-washing system. The SS350G receives signals from the MLSS converter through a cable and supplies operating power to the wiper-washing device.

This chapter describes the specifications of the SS350G wiper-washing controller.

1.1 Standard Specifications

Combined devices:	EXAss series MLSS converter and wiper-washing device
Drive voltage:	12 V DC
Cleaning contact input:	No-voltage contact for cleaning start
	ON input resistance: 200 Ω or less
	OFF input resistance: 100 k Ω or more
Ambient temperature:	-10° to 55 °C
Relative humidity:	10 to 90% RH (non-condensing)
Construction:	Complies with JIS C0920 watertight, IEC IP65 and NEMA TYPE 4X standards
Material:	Casing = Molded aluminum alloy
	Cover = Polycarbonate
Hood for sun protection (optional):	Carbon steel or Stainless steel
Mounting brackets (optional):	Stainless steel
Finish:	Baked polyurethane coating
Color:	Casing = Frosty white (equivalent to Munsell 2.5Y8.4/1.2)
	Cover = Deep sea moss green (equivalent to Munsell 0.6GY3.1/2.0)
Installation:	JIS 50A (50-mm nominal diameter) pipe-mounted, wall-mounted or panel-mounted
Supply voltage:	100-240 V AC, 50/60 Hz
	24 V DC
Power consumption:	18 VA maximum (AC power)
	5 W maximum (DC power)
Weight:	Approximately 2.5 kg
Dimensions:	144 (W) \times 144 (H) \times 135 (D) (mm)
Cable inlet:	Six ports, including sensor cable inlet; equipped with plastic watertight plugs equivalent to DIN PG13.5 (outer diameter of cable: 6-12 mm)
Cable terminal:	0.13 to 4 mm ² in size (connectable to pin terminals only)
Conduit adapter (optional):	G1/2 female thread or 1/2NPT thread

1.2 Model and Codes

Model	Suffix Code	Option Code	Description
SS350G			Controller for Wiper Cleaning
—	-NN		Always “NN”
Supply voltage	-1 -4		100-240 V AC, 50/60 Hz 24 V DC *1
Options: Bracket Hood Tang plate Adapter for conduit installation		/U /PM /H3 /H4 /SCT /AFTG /ANSI	Pipe or wall mounting (stainless steel) Panel mounting (stainless steel) Hood for sun protection (carbon steel) Hood for sun protection (stainless steel) With stainless-steel tag plate G1/2 (female thread) 1/2NPT thread

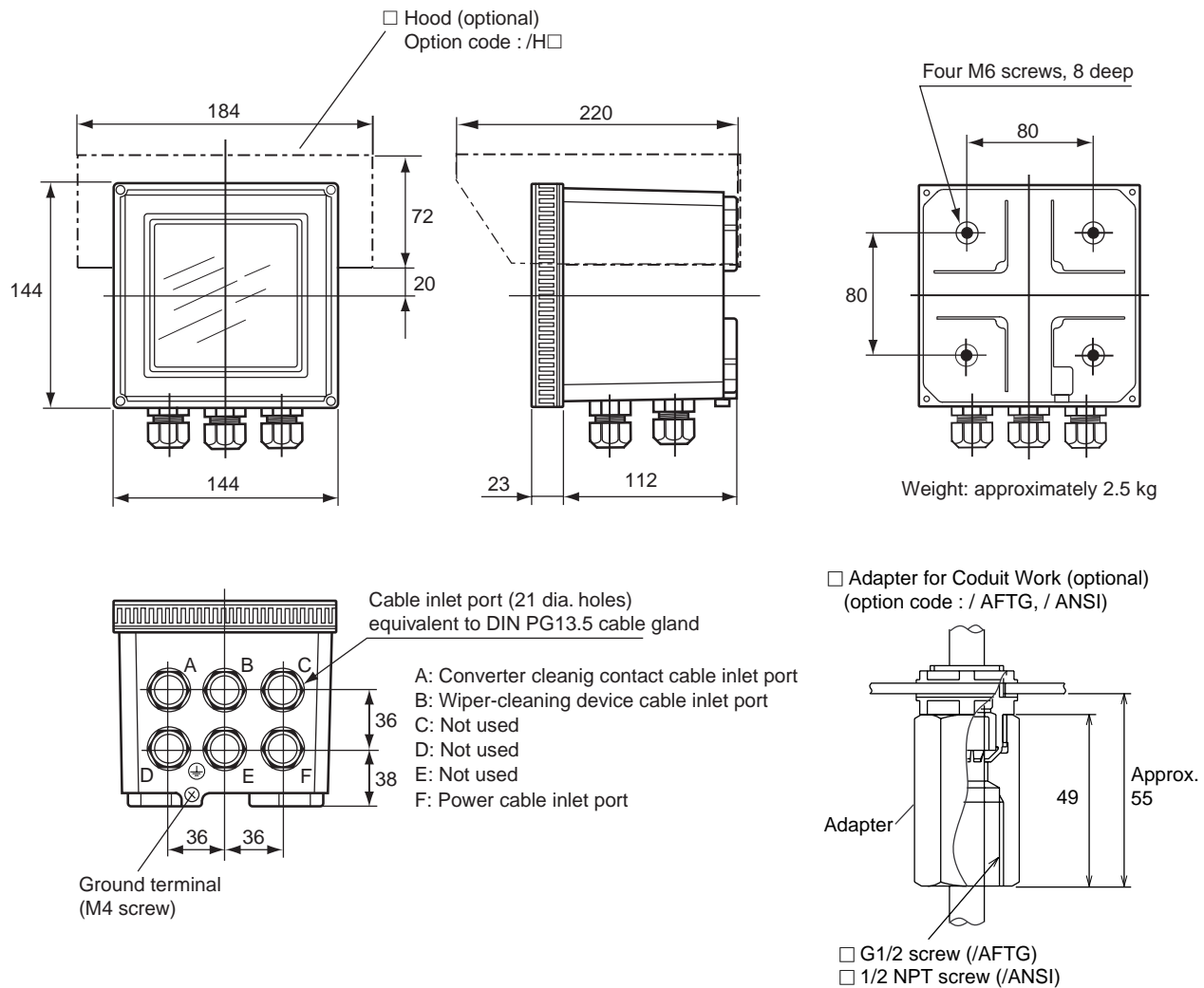
*1 NOT 2-wire system

Accessories

Item	Part number	Description
Spare fuse		
Pipe mounting bracket	K9171SS	Attached when option code “/U” is specified.
Panel mounting bracket	K9171ST	Attached when option code “/PM” is specified.
Shading hood	K9663CA	Attached when option code “/H3” is specified.
	K9663CC	Attached when option code “/H4” is specified.
Stainless tag plate	Y9412NP	Attached when option code “/SCT” is specified.
Conduit connection adapter	K9171SU	Attached when option code “/AFTG” is specified.
	K9316AF	Attached when option code “/ANSI” is specified.

1.3 External View

Unit : mm



Note: This part (2 set) are used when the power supply cable and contact input cable are protected by a conduit. Attach it to the cable gland of the controller.
Note that the controller adapter is supplied with a JIS A15 cable gland. Use this gland to replace the cable gland on the converter (DIN PG13.5).

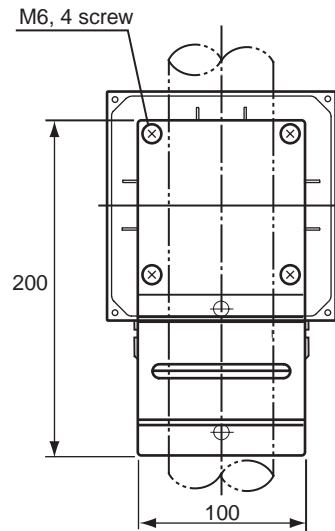
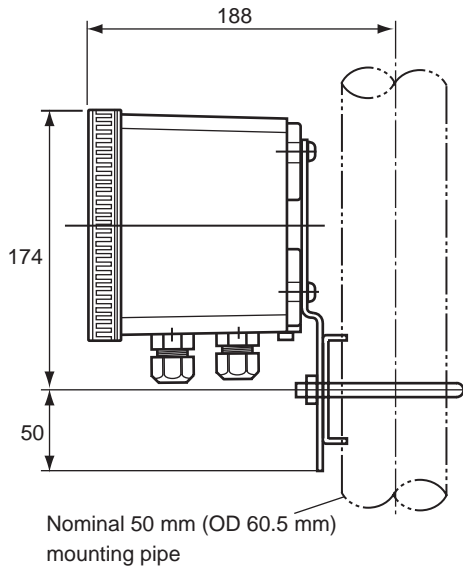
Figure 1.1 Wiper-Washing Controller (1)

□ **Pipe/Wall Mounting Brackets (Option Code: /U)**

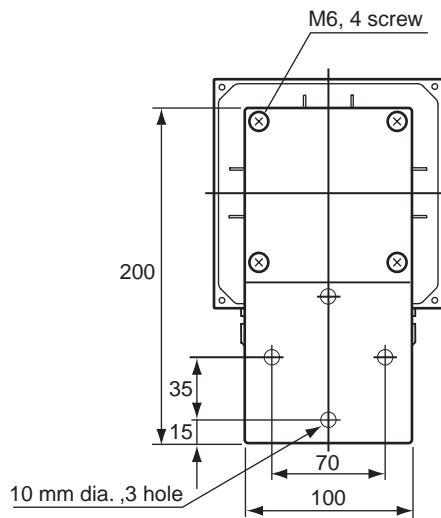
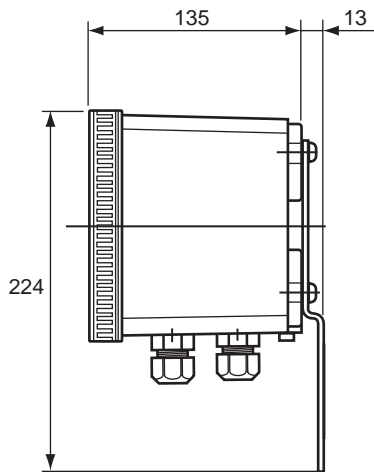
● Example of bracket used for pipe mounting

Weight : Approx. 0.7 kg

Unit : mm

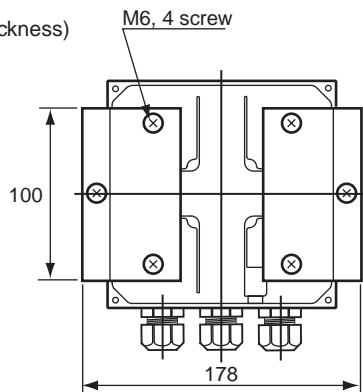
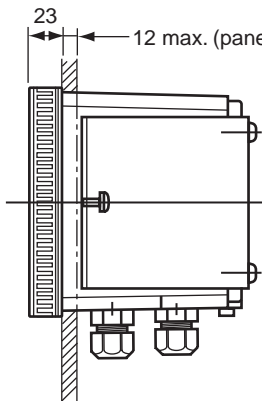


● Example of bracket used for wall mounting



Weight : Approx. 0.4kg

□ **Panel Mounting Brackets (Option Code: /PM)**



Panel cutout dimensions

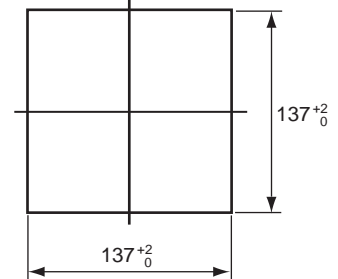


Figure 1.2 Wiper-Washing Controller (2)

2. Installation and Wiring

The SS350G wiper-washing controller should be installed in a location where the operator can easily access the controller ON/OFF switch.

This chapter describes selection of an installation location and the mounting and wiring procedures.

2.1 Installation

2.1.1 Selection of Location

Install the SS350G wiper-washing controller in a location where the following conditions are met.

- Near the wiper-washing device
Consider the cable length of the wiper-washing device that it is to be combined with (including the dedicated extension cable).
- No presence of corrosive gases
Corrosive gases are not desirable because they may damage the electrical components in the controller.
- Little mechanical vibration
Vibration may loosen the external wiring connections.
- Normal temperatures with very little fluctuation
It is necessary for the temperature not to exceed the range of -10 to 55 °C.
- Humidity maintained between 10 and 90% RH
Avoid choosing a location likely to be exposed to abnormally high or low humidity over a prolonged period. It is recommended that the converter be used at a humidity between 25% and 85% RH.
- No exposure to direct sunlight
Direct sunlight may abnormally raise the temperature in the converter. If direct sunlight cannot be avoided, use a hood for shading (option).

2.1.2 Preparation for Installation

[Incorporation of Separate Attachments]

Optional parts specified with the option codes (hood, mounting bracket, adapter for conduit connection, etc.) are delivered as separate attachments. To avoid misplacing these parts, it is recommended that you attach them before installation. (For details of incorporation, refer to Section 1.3 and Subsection 2.1.3.)

[Installation Provisions]

Make provisions to secure the SS350G wiper-washing controller so that it is installed in a position suitable for easy operation.

(1) Pipe Mounting

The SS350G wiper-washing controller is secured to a stanchion (pipe) with a U-bolt.

Provide a rigid vertical pipe with an OD of 60.5 mm (a horizontal pipe is also acceptable).

(2) Wall Mounting

Secure the SS350G wiper-washing controller with three M8 bolts (not supplied). Carry out drilling on the mounting surface as shown in Figure 2.1.

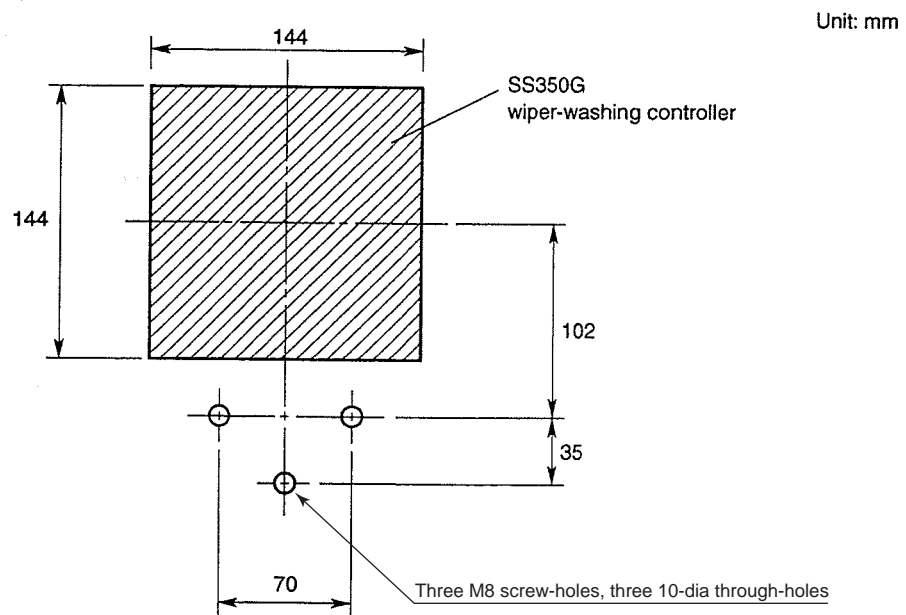


Figure 2.1 Drilling for Wall Mounting

(3) Panel Mounting

As shown in Figure 2.2, make a panel cutout in the mounting position.

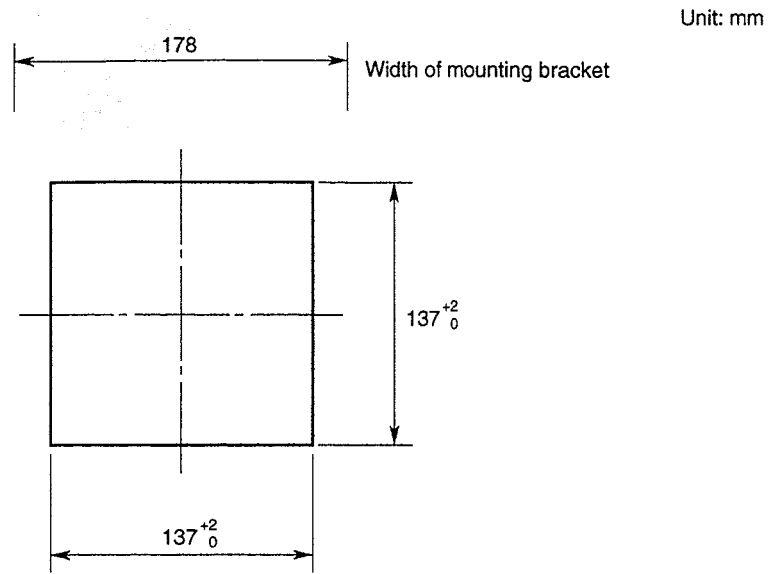


Figure 2.2 Cutout for Panel Mounting

2.1.3 Controller Mounting

(1) Pipe Mounting

Figure 2.3 shows the pipe mounting bracket and mounting procedure.

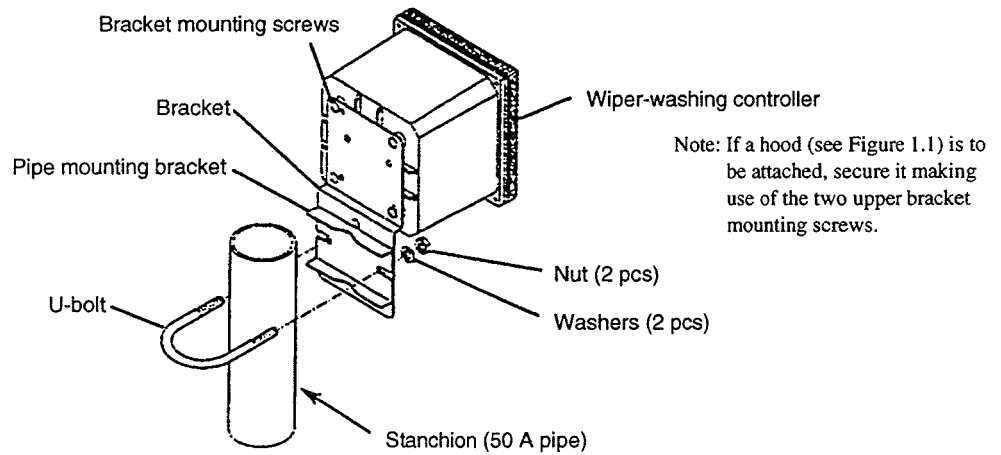


Figure 2.3 Pipe Mounting Procedure

(2) Wall Mounting

Figure 2.4 illustrates the wall mounting procedure.

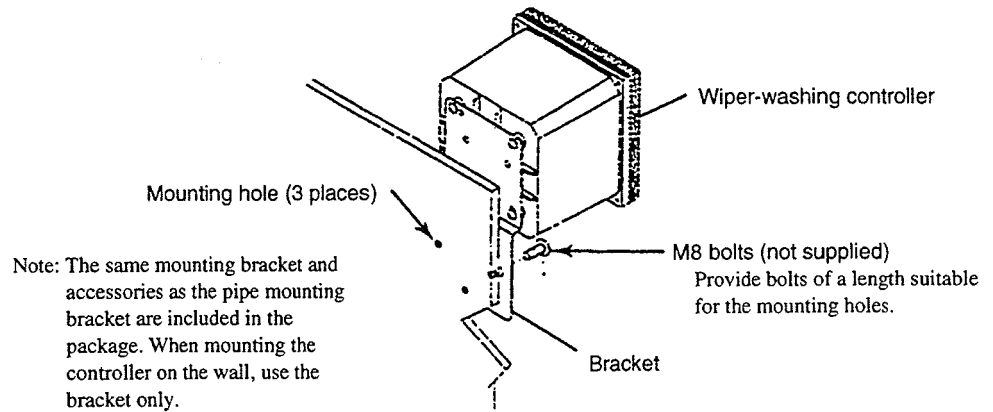


Figure 2.4 Wall Mounting Procedure

(3) Panel Mounting

Figure 2.5 illustrates the panel mounting procedure.

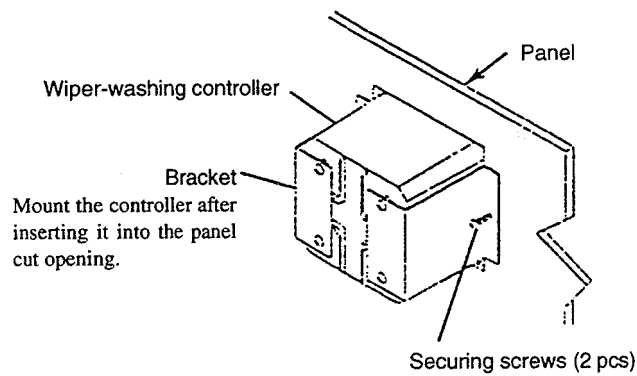


Figure 2.5 Panel Mounting Procedure

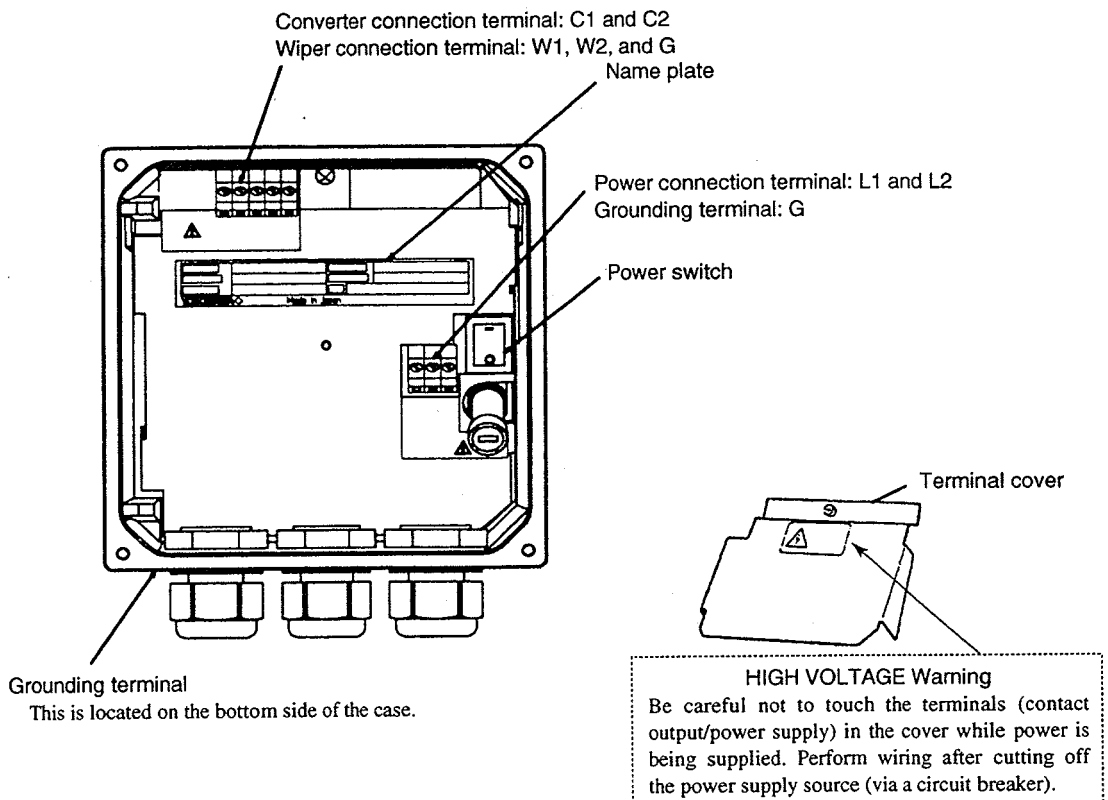
2.2 Wiring

2.2.1 Types of Wiring for Converter

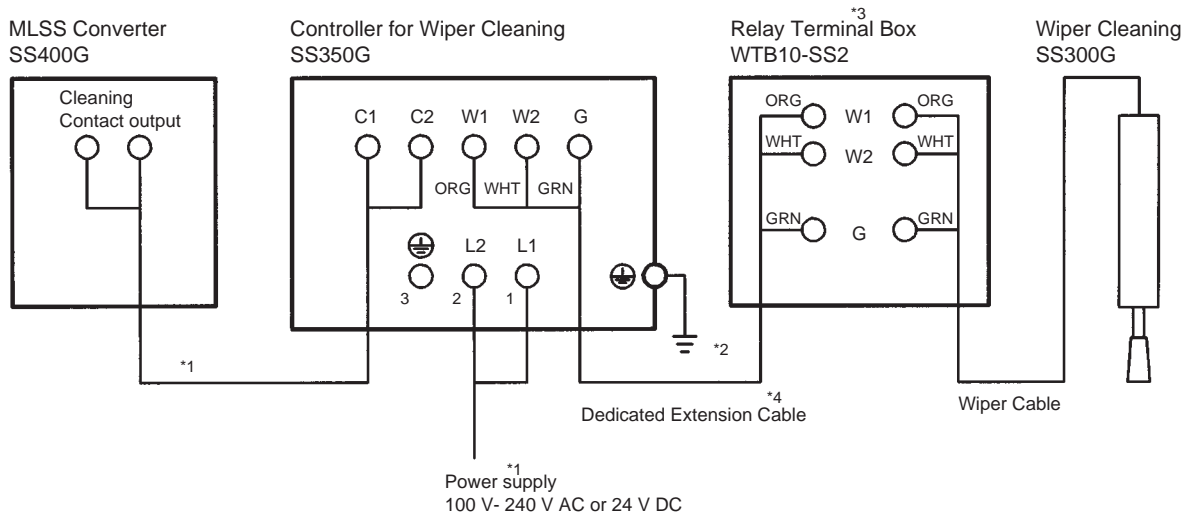
Perform the following types of wiring with the SS350G wiper-washing controller.

- (1) Wiring for power supply (refer to Subsection 2.2.3)
- (2) Wiring for wiper-washing device cable (refer to Subsection 2.2.4)
- (3) Wiring for converter cleaning contact output cable (refer to Subsection 2.2.5)
- (4) Ground wiring (refer to Subsection 2.2.6)

Provide the electrical wiring system with a switch to cut supply of power to the wiper-washing controller. Providing the switch makes it safe to remove the connection from the controller for repair, etc. To start or stop the controller during normal operation, use the power switch inside the converter.



[External Wiring Cable Connection Terminal Diagram]



- *1: ALWAYS use a 6 to 12 mm thick shielded cable.
- *2: ALWAYS ground (grounding resistance 100 Ω or less) the grounding terminal of the casing of the Controller. (Ground the power cord instead only if the above grounding is not feasible. Do NOT use two-point grounding).
- *3: ALWAYS use a 6 to 12 mm thick cable.
- *4: Use the relay terminal box only if the Controller is installed separately from the MLSS wiper cleaning. (Normally, the terminal box is unnecessary.)
- *5: Specify this cable using the suffix code for a relay terminal box.

Figure 2.6 SS350G Wiper-Washing Controller Connection Wiring

Remove the front cover and check that the power switch is set to OFF.

Also, set the switch (double-pole type) provided in the power wiring for the wiper-washing controller to OFF to cut off the power.

Remove the terminal cover and perform the following.

- (1) Wiring for power supply

Attach the terminal cover and perform the following.

- (2) Wiring for wiper-washing device cable (or the extension cable)
- (3) Wiring for converter cleaning contact output cable

Attach the front cover and, in the last step, ground the unit.

2.2.2 Cable Inlet Port

The SS350G wiper-washing controller includes six cable inlet ports. These ports are provided with cable glands conforming to cables with an OD of 6 to 12 mm.

Introduce each cable gland through each port as specified in Figure 2.7. If there is a cable inlet port that is not used, seal the opening to keep dust from getting in.

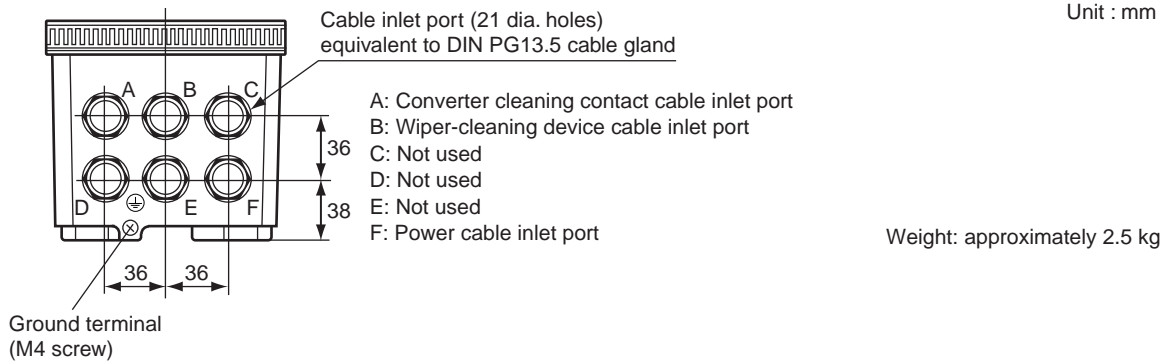


Figure 2.7 Specified Application of Cable Inlet Ports

If a cable is protected with a conduit, use an adapter (attached when option code: /AFTG is specified). Remove the cable glands from the A and F ports and attach the adapters and adapter cable glands (provided as accessories) in place of the above cable glands as shown in Figure 2.8.

No conduit work is required with detector cable inlet port B of the wiper-washing controller and C, D, and E, for which wiring is not done. In this case, use the attached cable gland as is.

 **CAUTION**

Be sure to use the WTB10-SS2 terminal box if it is necessary to protect all the wiring cables to the wiper-washing controller with conduits.

The cable (dedicated extension cable) between the relay terminal box and wiper-washing controller can be protected with a conduit. In this case, the adapter is attached to the relay terminal box (specification is required).

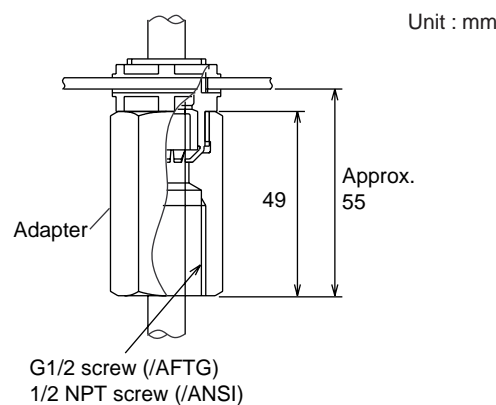


Figure 2.8 Conduit Connecting Adapter

2.2.3 Wiring for Power Supply

Supply AC power of 85 to 264 VAC, 50/160 Hz or DC power of 24 VDC \pm 10%. Use the power supply that exceeds the usable range but that does not experience voltage fluctuations.



CAUTION

For safe maintenance work:

To avoid electric shock or equipment damage, be sure to provide a switch (double-pole type) in the power supply wiring to interrupt the supply of power to the wiper-washing device.

[Cable to be Used]

Use a cable with a finished OD of 6 to 12 mm.

[Connecting Procedure]

- (1) End-treat the cable.
Strip off about 40 mm of the cable insulation covering from the cable end and attach crimping terminal lugs conforming to terminal size 0.13 to 4 mm² to the end of each conductor.
- (2) Connect each cable conductor to terminals 1 and 2.
When the cable is introduced into the converter, remove the assembled parts from the cable gland body located at cable inlet port F and pass the cable through these parts in the proper order.
- (3) Secure the cable.
Adjust the cable length required in the converter and secure the cable by mounting the parts through which the cable passes to the cable gland body.

When connection to the power wiring terminals is completed, attach the terminal cover.

2.2.4 Connecting the Wiper-Washing Device Cable (or dedicated extension cable)

Ordinarily, the wiper-washing cable is connected directly to the wiper-washing controller. If the WTB10-SS2 terminal box is used, do the wiring by connecting the wiper-washing device cable to this relay terminal box and using the dedicated extension cable (attached to the WTB10-SS2 terminal box) between the relay terminal box and the wiper-washing controller. The ends of the wiper-washing device cable and dedicated extension cable are already finished.

Note: If a dedicated extension cable is to be used, connect it after examining both ends because the end treatment may differ at the cable end on the relay terminal box side and on the wiper-washing controller side.

[Connection Procedure]

- (1) Connect each conductor of the cable to the predetermined terminals for W1, W2, and G. When the cable is introduced into the converter, remove the assembled parts from the cable gland body at the cable inlet port B and pass the cable through these parts in the proper order.
- (2) Secure the cable. Adjust the cable length required in the converter and secure the cable by mounting the parts through which the cable passes to the cable gland body.

2.2.5 Wiring for Converter Cleaning Contact Cable

This wiring directs the cleaning contact output of the converter into the wiper-washing controller. The ON/OFF contact input can be identified with input resistance (ON: 200 Ω or less; OFF: 100 k Ω or more). For the cleaning contact, contact outputs S1, S2, or S3 at the SS400G MLSS converter are used. The cleaning contact at the SS400G MLSS converter is set to S3 upon shipment from the factory.

[Cable to be Used]

Use a shielded cable with a finished OD of 6 to 12 mm. Select 2 conductors.

[Connection Procedure]

- (1) End-treat the cable.
Strip off about 40 mm of the cable insulation covering from the cable end.
Next, attach crimping terminal lugs conforming to terminal size 0.13 to 4 mm² to the end of the lead wire and each conductor.
- (2) Connect each cable conductor to terminals C1 and C2.
When the cable is introduced into the converter, remove the assembled parts from the cable gland body at cable inlet port A and pass the cable through these parts in the proper order.
- (3) Secure the cable.
Adjust the cable length required in the converter and secure the cable by mounting the parts through which the cable passes to the cable gland body. Refer to the SS400G MLSS Converter Instruction Manual for connection at the SS400G MLSS converter side. The cleaning contact at the SS400G MLSS converter is set to S3 upon shipment from the factory.

2.2.6 Grounding Wiring

The grounding terminal is located on the rear side of the case bottom, as shown in Figure 2.9.

Ground the terminal using a wire having a nominal cross section of 2 mm² or more, complying with JIS class 3 grounding (the ground resistance must be 100 Ω or less). The terminal screw size is M4. Attach a crimping terminal lug matching the M4 screw to the end of the wire.

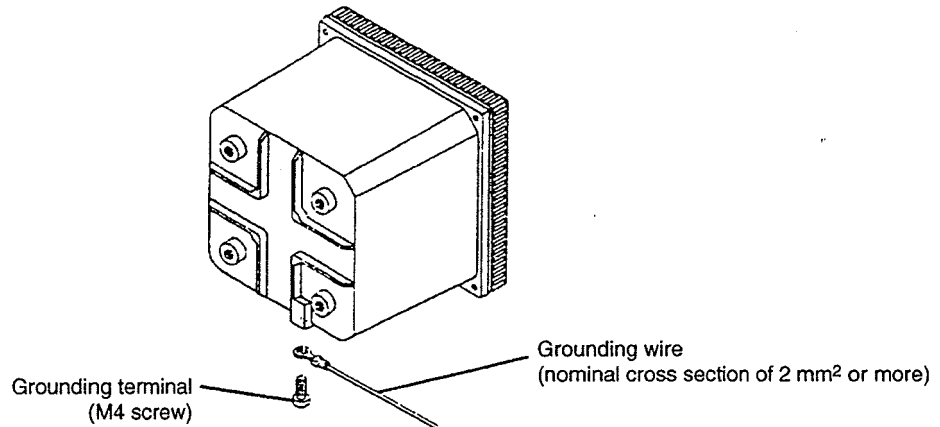


Figure 2.9 Grounding Terminal



CAUTION

If grounding cannot be done from the case, do it on the power supply side using the power cable wiring. In this case, use a three-conductor cable or a two-conductor shielded cable for the power cord and connect the grounding wire to terminal 3 (for grounding) in the converter.

3. Operation

The operation of the SS350G wiper-washing controller is matched to the operation of the MLSS metering system.

3.1 Components and Functions

Removing the front cover reveals the power switch and fuse.

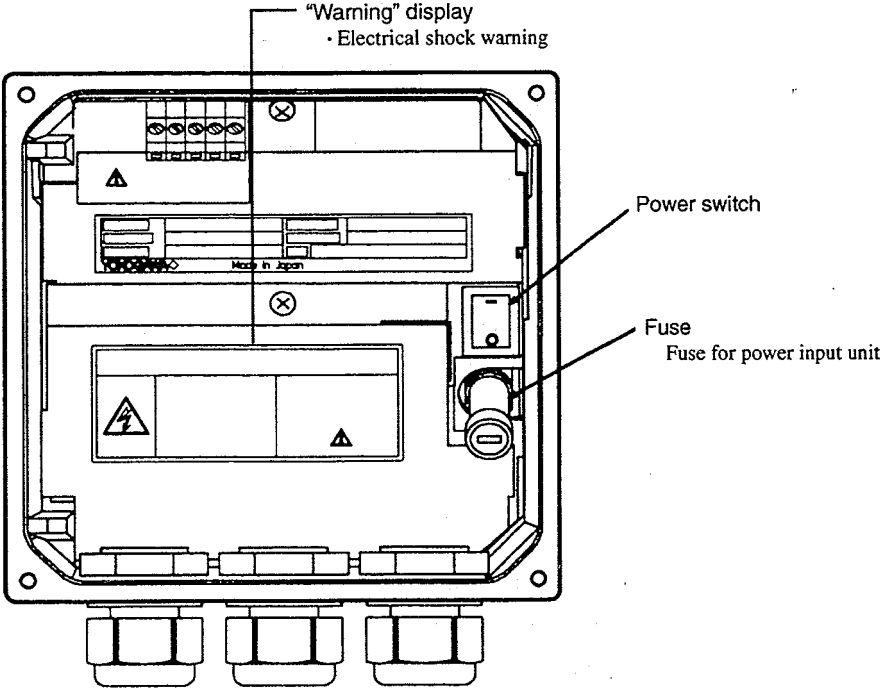


Figure 3.1 Components and Function of SS350G Wiper-Washing Controller

3.2 Preparation for Operation

Before beginning steady operation of the SS350G wiper-washing controller, check the wiring installation state.

3.2.1 Inspecting Wiring Installation

Check that wiring installation has been completed correctly:

- Check that the wiper-washing device cable is correctly connected to the wiper-washing controller terminals (W1, W2, and G).
- Check that the converter cleaning contact output cable is correctly connected to the wiper-washing controller terminals (C1 and C2).
- Check that the power to be supplied to wiper-washing controller terminals-L1 and L2 is of the specified voltage and that voltage fluctuation is within the allowable range. For safety's sake, check that the fuse is attached correctly and that it is not loose.
- Check that the wiper-washing controller is properly grounded (JIS class 3 grounding, grounding resistance 100 Ω or less).

3.2.2 Checking Cleaning Operation

Before installing the wiper-washing device, operate the SS400G MLSS converter to set the automatic cleaning parameters, then execute manual cleaning in the manual cleaning execution mode to check that the wiper-washing device operates correctly.

[Converter Operation Procedure]

- **Setting automatic cleaning parameters**
Refer to Subsection 5.3.2 of the SS400G MLSS Converter Instruction Manual to enter the parameter setting mode for the automatic cleaning and set the parameters with respect to automatic cleaning.
- **Executing manual cleaning**
Refer to Subsection 5.3.1 of the SS400G MLSS converter instruction manual to enter the manual cleaning execution mode and execute manual cleaning.

3.3 Steady Operation

Once operation of the SS350G wiper-washing controller is initiated, it is not necessary to operate the wiper-washing controller during continuous operation; however, turn the power of the wiper washing controller OFF when performing maintenance and inspection of the MLSS metering system.

3.3.1 Operation Stopping and Restarting

Before performing maintenance (calibration, cleaning, etc.) on the MLSS metering system, set the power switch of the wiper-washing controller to OFF. To resume measurement, set the power switch of the wiper-washing controller to ON.

4. Inspection and Maintenance

This chapter describes daily inspection and maintenance required to obtain satisfactory performance of the SS350G wiper-washing controller.

To improve facilities that present obstacles to satisfactory cleaning and for measures to take when failure occurs on the device, refer to Chapter 5, “Troubleshooting”.

4.1 Inspecting the Wiper Washing State

If wiper-washing cleaning is ineffective, maintaining of correct MLSS measurement over a long period of time cannot be achieved. When performing maintenance on the MLSS metering system, check that the wiper-washing controller operates correctly as well.

4.1.1 Inspecting the Cleaning Effect

When performing maintenance (calibration) on the MLSS metering system, visually check the effect of cleaning on the MLSS detector. Wiper cleaning can be considered to be effective if staining on the measuring window section of the MLSS detector is approximately the same as in other locations.

If contaminants in the solution to be measured adhere to the wiper section of the wiper-washing device, remove them. Also, replace the wiper if it has visibly deteriorated. See the instruction manual of the SS300G MLSS detector for details of wiper replacement.

4.2 Inspecting the SS350G Wiper-Washing Controller

4.2.1 Replacing the Fuse

It is recommended that the fuse in the wiper-washing controller be replaced every 1 to 2 years.

Electrical shock warning

It is dangerous to touch the terminal (for power) inside the cover while the unit is energized. Be sure to replace the fuse only after turning the power OFF.

Check that the source of the power and the power switch are OFF. Use a standard screwdriver to remove the 1A fuse from the fuse holder inside the wiper-washing controller (see Figure 4.1). If it is blown, attach the 1A fuse included in the package and then turn the power ON to operate the wiper.

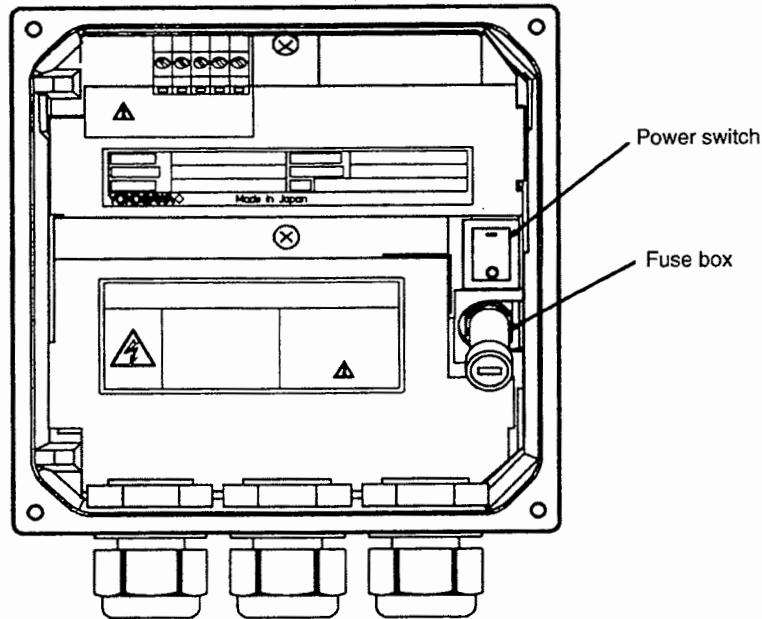


Figure 4.1 Converter Fuse

Note: With respect to the attached fuses, if the power supply specification is 85 - 264 V AC, use a 1A fuse; if the power supply specification is 24 V DC, use a 2A fuse.

5. Troubleshooting

If wiper-washing does not operate satisfactorily, perform inspection as described in Chapter 4.

This chapter describes measures to take when the wiper-washing controller operation is in fault.

5.1 Measures to Take When a Failure Occurs

If some error is found, promptly locate the cause and take appropriate corrective measures.

5.1.1 Failure Phenomenon and Cause

Failure phenomenon and causes are shown in Table 5.1.

Table 5.1 Failure Phenomenon and Causes

Failure phenomenon	Cause
Weak cleaning	Wiper deterioration (see Section 5.2.1) Wiper-washing device error
Wiper-washing device does not work	Wiper-washing device failure (see Section 5.2.1) Wiper-washing controller failure (see Section 5.2.3)
Fuse blows frequently	Error in device (request inspection and repair by Yokogawa)

5.2 Guide to Parts Replacement

If a part is defective, replace it with a new one.

This section contains descriptions of wiper replacement and wiper-washing device inspection (replacement).

5.2.1 Inspecting / Replacing the Wiper

For details on how to replace the wiper used in the wiper-washing device, SS300G MLSS Detector Instruction Manual.

5.2.2 Inspecting and Repairing the Wiper-Washing Device

Operate the SS400G MLSS converter to execute manual cleaning and visually check the operation of the wiper-washing device. For details of how to inspect operation of the MLSS converter, refer to Subsection 5.3.1 of the MLSS Converter Instruction Manual. If it does not operate correctly, contact Yokogawa and request inspection and repair.

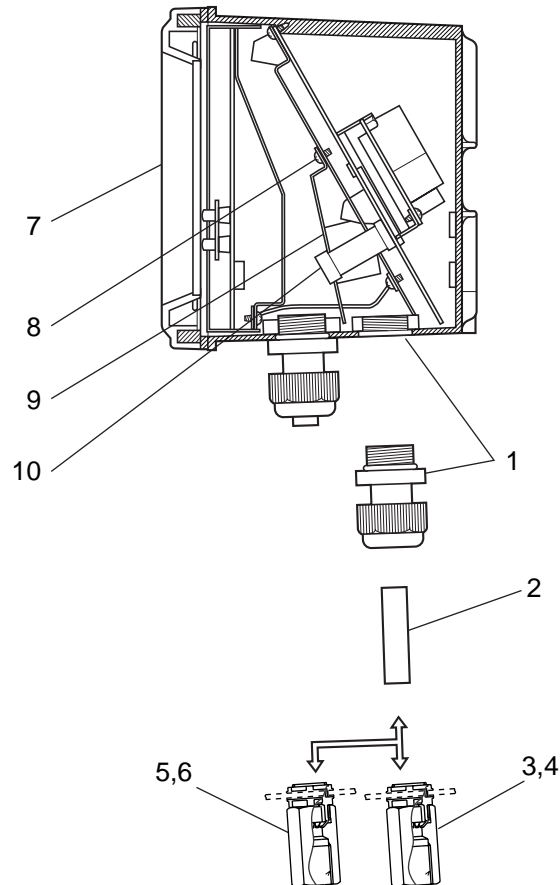
5.2.3 Inspecting and Repairing the Wiper-Washing Controller

Technical knowledge of electrical circuits and technical repair skills is required to inspect operation of the wiper-washing controller and repair it following a failure. If the controller does not operate correctly, contact Yokogawa and request inspection and repair.

Customer Maintenance Parts List

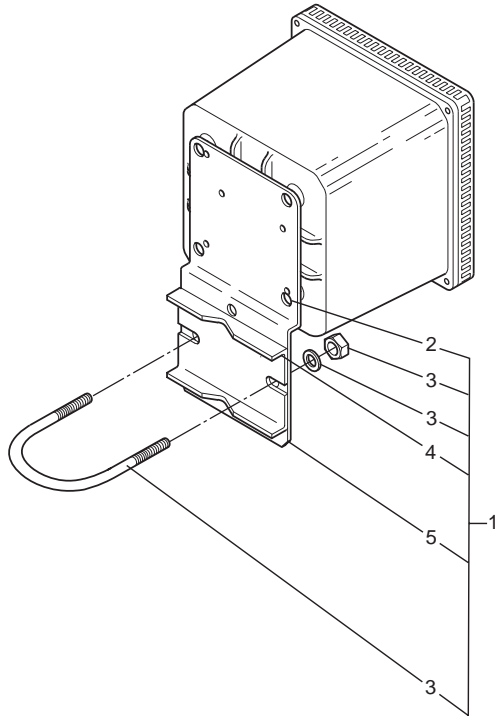
Model SS350G
Controller of Wiper Cleaning
for MLSS Detector

EXA 55

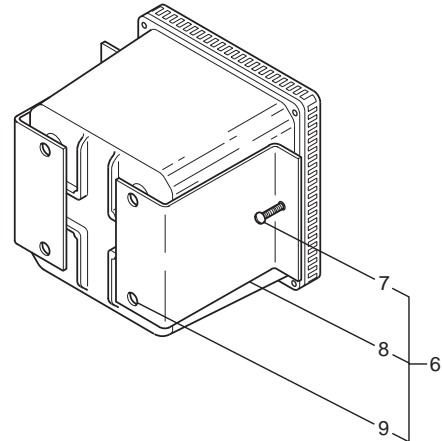


Item	Part No.	Qty	Description
1	L9811FV	6	Cable Gland
2	K9334CN	6	Insert
3	B1002JZ	2	Gland (for Option Code: /ANSI)
4	K9311KQ	2	Adapter (for Option Code: /ANSI)
5	B1002JZ	2	Gland (for Option Code: /AFTG)
6	K9141TX	2	Adapter (for Option Code: /AFTG)
7	K9313DW	1	Cover Assembly
8		1	Screw
9	K9215CG	1	Cover
10	A1109EF	1	Fuse (for 85-264V AC 50/60Hz)
	A1111EF	1	Fuse (for 24V DC)

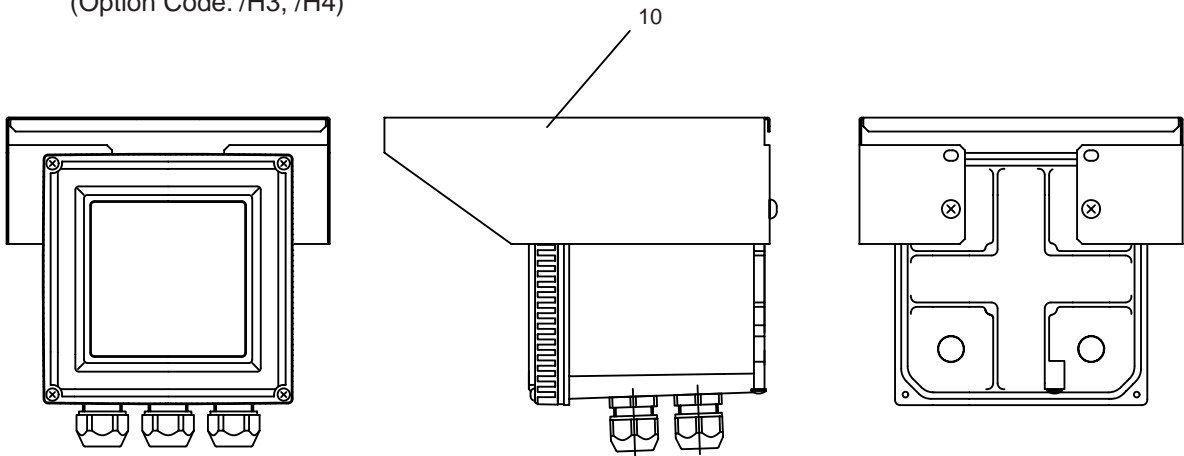
Pipe/Wall Mounting Hardware
(Option Code : /U)



Panel Mounting Hardware
(Option Code : /PM)



Sun Protection Cover
(Option Code: /H3, /H4)



Item	Part No.	Qty	Description
1	K9171SS	1	Mounting Set (/U)
2	Y9608KU	4	Screw
3	D0117XL-A	1	U-Bolt Assembly
4	K9171SY	1	Plate
5	K9171SX	1	Bracket
6	K9171ST	1	Mounting Set (/PM)
7	Y9520LU	2	Screw
8	K9171SW	2	Bracket
9	Y9608KU	4	Screw
10	—		Sun Protection Cover
	K9664CA	1	Carbon steel (/H3)
	K9664CC	1	Stainless steel (/H4)

Revision Record

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Edition	Date	Remark (s)
1st	Apr. 1998	Newly published
2nd	Jul. 2007	All over revised
