

Preface

Thank you for purchasing our SGQ (Differential Transmitter) and SGZ (2-Input Math Function Transmitter). This manual contains instructions for the mounting, functions, operations and notes when operating the instruments. To prevent accidents arising from the misuse of these instruments, please ensure the operator receives this manual. For detailed usage, please refer to the Instruction Manual for each instrument. Please download detailed Instruction Manual as well as Communication Instruction Manual from Shinko website. <http://www.shinko-technos.co.jp/e/> → Products → Signal Conditioners

Notes

- This instrument should be used in accordance with the specifications described in the manual. If it is not used according to the specifications, it may malfunction or cause a fire.
- Be sure to follow the warnings, cautions and notices. If they are not observed, serious injury or malfunction may occur.
- The contents of this instruction manual are subject to change without notice.
- Care has been taken to ensure that the contents of this instruction manual are correct, but if there are any doubts, mistakes or questions, please inform our sales department.
- This instrument is designed to be installed on a DIN rail within a control panel. If it is not, measures must be taken to ensure that the operator cannot touch power terminals or other high voltage sections.
- Any unauthorized transfer or copying of this document, in part or in whole, is prohibited.
- Shinko Technos Co., Ltd. is not liable for any damage or secondary damage(s) incurred as a result of using this product, including any indirect damage.

Safety Precautions (Be sure to read before using our products)

The safety precautions are classified into categories: "Warning" and "Caution". Depending on circumstances, procedures indicated by ⚠ Caution may result in serious consequences, so be sure to follow the directions for usage.

Warning Procedures which may lead to dangerous conditions and cause death or serious injury, if not carried out properly.

Caution Procedures which may lead to dangerous conditions and cause superficial to medium injury or physical damage or may degrade or damage the product, if not carried out properly.

Warning

- To prevent an electrical shock or fire, only Shinko or other qualified service personnel may handle the inner assembly.
- To prevent an electrical shock, fire or damage to the instrument, parts replacement may only be undertaken by Shinko or other qualified service personnel.

Safety Precautions

- To ensure safe and correct use, thoroughly read and understand this manual before using this instrument.
- This instrument is intended to be used for industrial machinery, machine tools and measuring equipment. Verify correct usage after purpose-of-use consultation with our agency or main office. (Never use this instrument for medical purposes with which human lives are involved.)
- External protection devices must be installed, as malfunction of this product could result in serious damage to the system or injury to personnel. Proper periodic maintenance is also required.
- This instrument must be used under the conditions and environment described in this manual. Shinko Technos Co., Ltd. does not accept liability for any injury, loss of life or damage occurring due to the instrument being used under conditions not otherwise stated in this manual.

Caution with Respect to Export Trade Control Ordinance

To avoid this instrument from being used as a component in, or as being utilized in the manufacture of weapons of mass destruction (i.e. military applications, military equipment, etc.), please investigate the end users and the final use of this instrument. In the case of resale, ensure that this instrument is not illegally exported.

Installation Precautions

Caution

This instrument is intended to be used under the following environmental conditions (IEC61010-1): Overvoltage category II, Pollution degree 2. Ensure the mounting location corresponds to the following conditions:

- A minimum of dust, and an absence of corrosive gases
- No flammable, explosive gases
- No mechanical vibrations or shocks
- No exposure to direct sunlight, an ambient temperature of -10 to 55°C (14 to 131°F) that does not change rapidly, and no icing
- An ambient non-condensing humidity of 35 to 85 %RH
- No large capacity electromagnetic switches or cables through which large current is flowing
- No water, oil, chemicals or the vapors of these substances can come into direct contact with the unit
- Please note that the ambient temperature of this unit – not the ambient temperature of the control panel – must not exceed 55°C (131°F) if mounted through the face of a control panel, otherwise the life of electronic components (especially electrolytic capacitors) may be shortened.

Note: Avoid setting this instrument directly on or near flammable material even though the case of this instrument is made of flame-resistant resin.

Wiring Precautions

Caution

- Do not leave wire remnants in the instrument, because they could cause a fire or malfunction.
- When wiring, use a crimping pliers and a solderless terminal with an insulation sleeve in which an M3 screw fits.
- Tighten the terminal screw using the specified torque.
- This instrument does not have a power switch, circuit breaker and fuse. Therefore, it is necessary to install a power switch, circuit breaker and fuse externally near the instrument. (Recommended fuse: Time-lag fuse, rated voltage 250 V AC, rated current 2 A)
- Connect the AC power to the designated terminal as is written in this instruction manual. Otherwise, it may burn and damage the instrument.
- Do not apply a commercial power source to the sensor which is connected to the input terminal nor allow the power source to come into contact with the sensor.
- Use a thermocouple and compensating lead wire according to the sensor input specifications of this instrument.
- Use the 3-wire RTD according to the sensor input specifications of this instrument.
- When using direct current or DC voltage input, ensure polarity is correct.
- When wiring, keep Input/Output wires away from AC power sources.

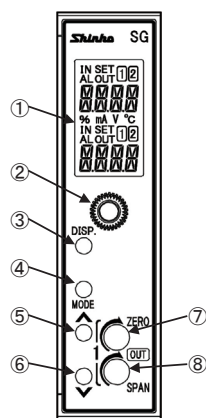
Operation and Maintenance Precautions

Caution

- Do not touch live terminals. This may cause an electrical shock or problems in operation.
- Turn the power supply to the instrument OFF before retightening the terminal or cleaning. Working on or touching the terminal with the power switched ON may result in severe injury or death due to electrical shock.
- Use a soft, dry cloth when cleaning the instrument. (Alcohol based substances may tarnish or deface the unit.)
- As the display section is vulnerable, be careful not to put pressure on, scratch or strike it with a hard object.

1. Name and Functions

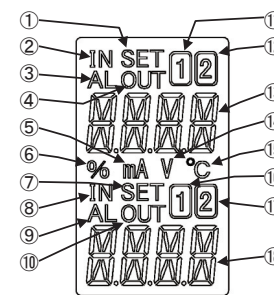
1.1 Front Panel



(Fig. 1.1-1)

① Display section	Indicates setting contents, input value and output value.
② Mounting screw	Used for fixing the instrument to the socket or removal from it.
③ DISP key	Switches the displays, and moves to the next setting item. Releases the lock status of the DISP key by pressing and holding for 3 seconds.
④ MODE key	Selects either a setting mode or a display mode. Shifts the digit on the Custom display. Enters the setting mode by pressing and holding for 5 seconds.
⑤ UP key	Increases the numerical value. Contents of Multi-Display A and B can be changed alternately when Default Display is RUN display mode 1, 2, 3, 4, 5, 6 and 7.
⑥ DOWN key	Decreases the numerical value. Enters Manual mode by pressing and holding for 3 seconds.
⑦ Output Zero	Adjusts the value of Output Zero.
⑧ Output Span	Adjusts the value of Output Span.

1.2 Display Section



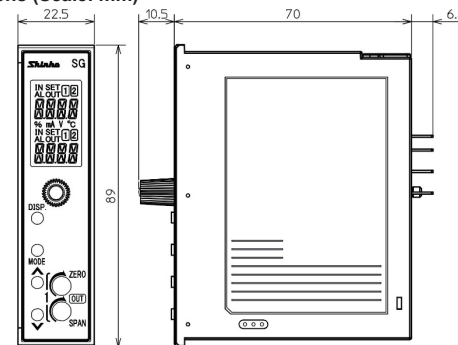
(Fig. 1.2-1)

① Setting display indicator A	Lights up in Manual mode.
② Input indicator A	Lights up when Multi-Display A indicates an input value or Input math function value.
③ Alarm indicator A	Lights up if an input error or input disconnection occurs while Multi-Display A indicates an input value. Lights up if an input error or input disconnection occurs in the following modes: Custom display modes 1, 2, 3, 4 and 5, Unit display mode, Model display mode
④ Output indicator A	Lights up when Multi-Display A indicates an output value.
⑤ mA indicator	Lights up when mA is selected in [Indication unit].
⑥ % indicator	Lights up in Manual mode, or when % is selected in [Indication unit].
⑦ Setting display indicator B	Lights up while in a setting display.
⑧ Input indicator B	Lights up when Multi-Display B indicates an input value.
⑨ Alarm indicator B	Lights up if an input error or input disconnection occurs while Multi-Display B indicates an input value.
⑩ Output indicator B	Lights up when Multi-Display B indicates an output value.
⑪ 1 indicator A	Lights up in Manual mode, or when Multi-Display A indicates Input 1 value, output value or input math function value.
⑫ 2 indicator A	Lights up when Multi-Display A indicates Input 2 value or input math function value.
⑬ Multi-Display A	Indicates the following in accordance with the display indication: Input value, output value, custom characters, setting item
⑭ V indicator	Lights up when V is selected in [Indication unit].
⑮ °C indicator	Lights up when °C is selected in [Indication unit].
⑯ 1 indicator B	Lights up when Multi-Display B indicates Input 1 value or output value.
⑰ 2 indicator B	Lights up when Multi-Display B indicates Input 2 value.
⑱ Multi-Display B	Indicates the following in accordance with the display indication: Input value, output value, custom characters, setting value

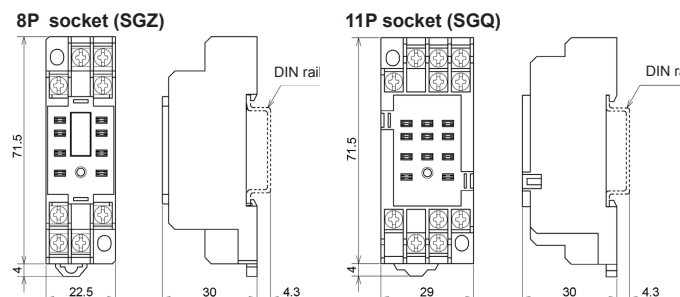
Output indicators A and B, Alarm indicators A and B: Red, Other indicators: White

2. Mounting

2.1 Dimensions (Scale: mm)



(Fig. 2.1-1)

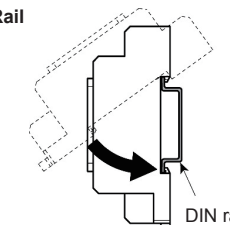


(Fig. 2.1-2)

2.2 Mounting to, and Removal from the DIN Rail

Mounting to the DIN Rail (Fig. 2.2-1)

- Separate the instrument from the socket by loosening the mounting screw on the front panel.
- Make sure the lock lever of the socket is located in the lower part of the socket. Hook the upper side of the socket on the DIN rail, and fit the lower part of the socket to the DIN rail. (A clicking sound should be heard when done properly.)



(Fig. 2.2-1)

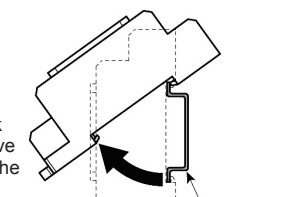
Caution

- Before inserting the instrument into the socket, wire the cable. (Refer to "3. Wiring".)
- When inserting or removing the socket, make sure the socket is oriented vertically. If force is applied in any other direction than vertically, a malfunction may occur.
- If the mounting screw is fastened too tightly, a malfunction may occur.

- Insert the unit into the socket.
- Fasten the mounting screw by turning it clockwise, to secure the unit onto the socket. Tighten the screw lightly.

Removal from the DIN Rail (Fig. 2.2-2)

- Turn the power to the instrument OFF.
- Separate the instrument from the socket by loosening the mounting screw on the front panel.
- Insert a flat blade screwdriver into the lock lever (lower part of the socket), and remove the socket from the DIN rail while pulling the lever down.



(Fig. 2.2-2)

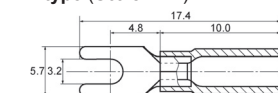
3. Wiring

Lead Wire Solderless Terminal

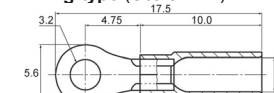
Use a solderless terminal with an insulation sleeve in which an M3 screw fits as shown below. The torque should be 0.63 N·m.

Solderless Terminal	Manufacturer	Model
Y-type	Nichifu Terminal Industries Co., Ltd.	TMEV1.25Y-3
	Japan Solderless Terminal MFG Co., Ltd.	VD1.25-B3A
Ring-type	Nichifu Terminal Industries Co., Ltd.	TMEV1.25-3
	Japan Solderless Terminal MFG Co., Ltd.	V1.25-3

Y-type (Scale: mm)



Ring-type (Scale: mm)



(Fig. 3-1)

For the terminal arrangement, refer to the Instruction Manual (Detailed version) or Specification Sheet for each unit.

4. Adjustment

The output of this unit has been already adjusted before shipping. Therefore, it is not required to adjust the unit in the case users use it with the ordered Input/Output specification. However, in the case of fine adjustment or calibration between connected units, adjust the value following the procedure described below. Connect an mV generator or Dial resistor to the input terminals of this unit. Connect a digital multimeter to the output terminals.

Adjust Output

- Enter the value corresponding to 0% output, then adjust the value with the Output Zero trimmer while viewing the output value (on the digital multimeter).
- Enter the value corresponding to 100% output, then adjust the value with the Output Span trimmer while viewing the output value (on the digital multimeter).
- Enter the value corresponding to 0% output again, and confirm the output value (on the digital multimeter).
- If the value corresponding to 0% output is not at 0%, repeat steps (1) to (3) again.

Inquiries

For any inquiries about this unit, please contact our agency or the vendor where you purchased the unit after checking the following.

- (e.g.)
- Model ----- SGQ-K01-0-0
 - Serial number ----- 154F05000

In addition to the above, please let us know the details of the malfunction, or discrepancy, and the operating conditions.

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