

ONO SOKKI

# DG-1270

DIGITAL GAUGE COUNTER

Instruction Manual

ONO SOKKI CO., LTD.

## Warranty

1. This product is covered by a warranty for a period of one year from the date of purchase.
  2. This warranty covers free-of-charge repair for defects judged to be the responsibility of the manufacturer, i.e., defects occurred while the product is used under normal operating conditions according to descriptions in this manual and notices on the unit label.
  3. For free-of-charge repair, contact either your sales representative or our sales office nearby.
  4. The following failures will be handled on a fee basis even during the warranty period.
    - (a) Failures occurring through misuse, mis-operation, or modification
    - (b) Failures occurring through mishandling (dropping) or transportation
    - (c) Failures occurring through natural calamities (fires, earthquakes, flooding, and lightning), environmental disruption, or abnormal voltage.
- \* For repairs after the warranty period expired, contact your sales representative or our sales office nearby.

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2. The contents of this document are subject to change without notice.
3. This document has been produced based on a series of strict verifications and inspections. Should a failure occur nonetheless, please inform our sales representative or sales office.
4. Ono Sokki shall have no liability for any effect resulting from any operation, whether or not the effect is attributable to a defect in the documentation.

# Foreword

This manual describes specifications, component names, functions, and handling precautions of the Digital Gauge Counter DG-1270. Be sure to read this instruction manual to ensure the safe and proper use of the DG-1270.

This manual also contains a warranty. Please keep this manual in a safe place.

## ■ Overview

The Digital Gauge Counter DG-1270 is connected to the Ono Sokki linear gauge sensor (e.g., GS-1500A/1600A series) to convert a signal input from the linear gauge sensor to a displacement and display it digitally as a measured value. This unit is also provided with calculation processing functions for the input signal.

## ■ Features

- Easy-to-view large-size LED display
- Calculation functions (including Peak Hold, Sum/Difference Calculation, Comparator, Preset)
- RS-232C communication function

# For Your Safety

This section describes notes to be observed for the safe and proper use of the Digital Gauge Counter DG-1270. Be sure to read the warnings and cautions described in this section before use of the DG-1270.

Ono Sokki, Ltd. bears no responsibility for nor makes any warrantee regarding damages or injury resulting from failure to follow directions given within this document during operation.

## MEANING OF SYMBOLS

### ●Warnings and Cautions

In this section, precautions are classified into two categories: WARNING and CAUTION. These depend on the degree of danger or damage possible if the precaution is ignored and the product is used incorrectly.



**WARNING**

This symbol is used to indicate precautions where there is a risk of death or serious personal injury to the operator if the product is handled incorrectly.



**CAUTION**

This symbol is used to indicate precautions where there is a risk of some personal injury to the operator or only material damage to the product if the product is handled incorrectly.



**WARNING**

## BEFORE USING



- **Do not operate this product in a location where there is gas or steam.** Using the product where there is steam or combustible or explosive gas may result in an explosion.
- **Avoid using this product in locations of high temperature or subject to direct sunlight.** Using this product in a location of extremely high temperature may cause the product to catch on fire. Always use within the specified operating temperature range (0 to 40 deg.C).
- **Never disassemble this product.** Using the disassembled product may cause damage to the product or electric shock. For internal adjustment, inspection, and repair of the product, contact your sales representative or our sales office.
- **Do not splash or spill water on this product as doing so may cause fire or electric shock due to short or generated heat.** If water does happen to get inside the product, immediately unplug the AC adaptor and contact your sales representative or our sales office.
- **Only use the cables and AC adaptor included with this product or those specified by Ono Sokki.** Use of other than those specified may result in electric shock or fire.
- **Do not install this product in a location where there is oily smoke or steam or where there is high humidity or much dust as there is a risk of electric shock or fire.**



WARNING

**ABOUT THE POWER SUPPLY AND AC ADAPTOR**

- **Check that the power to this product is off before touching circuits connected to parts where voltage/current is output.** Touching such parts without turning power off may result in electric shock. Be sure to sufficiently insulate circuits from output voltage and current.
- **If you hear thunder, do not touch any metal parts of this product or the plug as there is a risk of electric shock from conducted lightning.**
- **Be sure the power always meets specified voltage, current, and frequency requirements.** Use of power other than that specified may result in electric shock, fire, or damage to the product.
- **If any metal, water, or foreign object should fall inside this product, immediately turn off the power and unplug the AC adaptor.** Continued use of the product may result in fire or electric shock. After unplugging the product, immediately contact your sales representative or our sales office to request repair service.
- **If you sense smoke, any unusual noise or smell coming from this product or if you accidentally drop or damage the product, turn off the power to the product, unplug the AC adaptor, and contact your sales representative or our sales office to request repair service.**
- **Keep the AC adaptor or AC adaptor cable away from any equipment which generates high temperature as there is a risk fire or electric shock.**



CAUTION

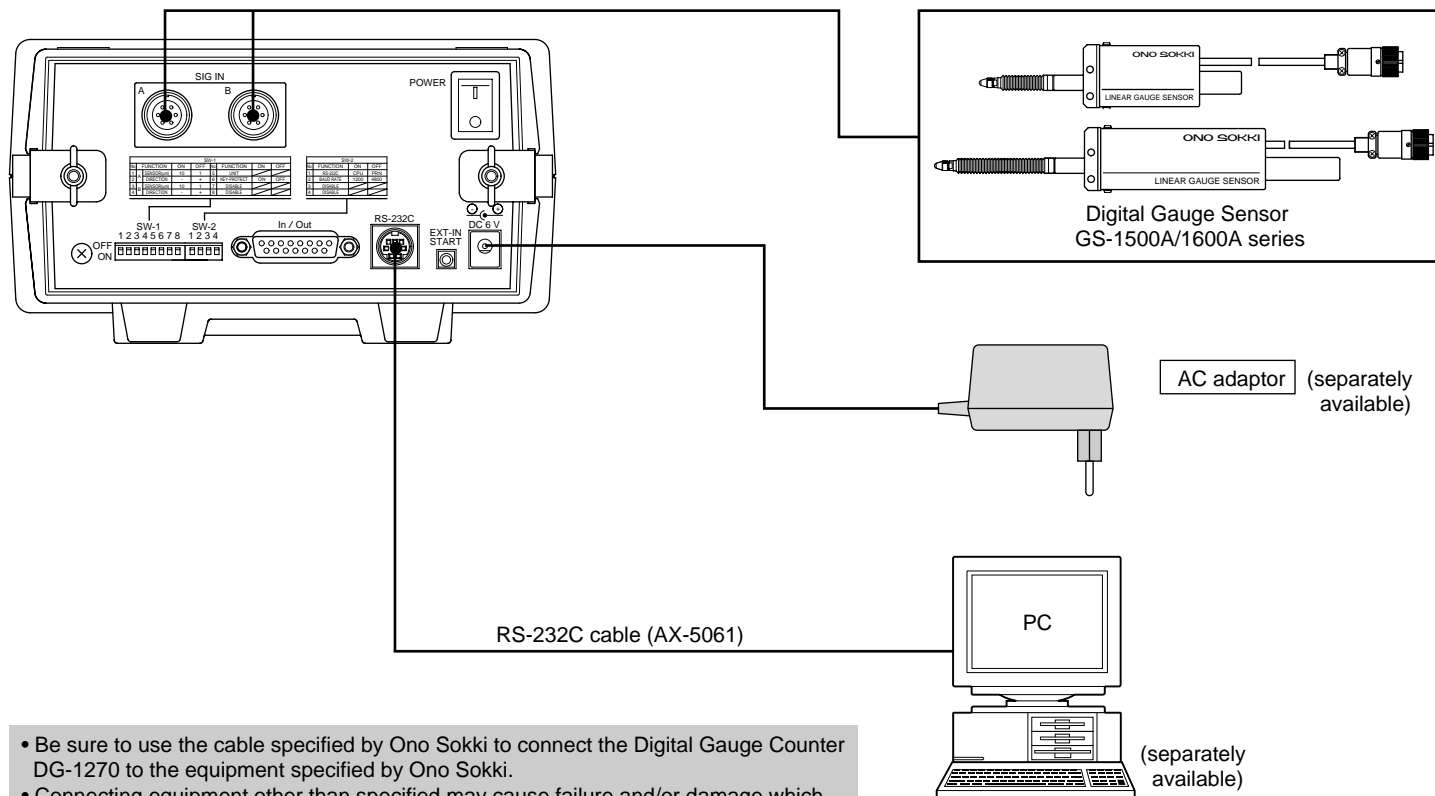
**ABOUT INSTALLATION AND HANDLING**

- **Do not place any large or heavy object on top of this product.** If an object on top of the product should fall it may result in personal injury or damage to the product.
- **Do not install this product in a location where there is oily smoke or steam or where there is high humidity or much dust as there is a risk of fire or electric shock.**
- **Keep the AC adaptor or AC adaptor cable away from any equipment which generates high temperature.**
- **Do not install this product near a heavy duty appliance such as a motor or any equipment generating strong RF noise as doing so can cause a malfunction of the product.**
- **Do not use this product in locations with mechanical vibration or any excessive vibration as doing so can cause malfunction or damage to the product.**
- **Install the signal cable from the gauge sensor, D-sub connector cable, and AC adaptor cable at a distance from any power cable which can generate RF noise as there is a risk of causing a malfunction.**
- **To clean the main unit of this product, gently wipe using a dry soft cloth moistened with water or neutral detergent.** Do not use volatile organic solvent including thinner as doing so may cause deformation or discoloration of the case.

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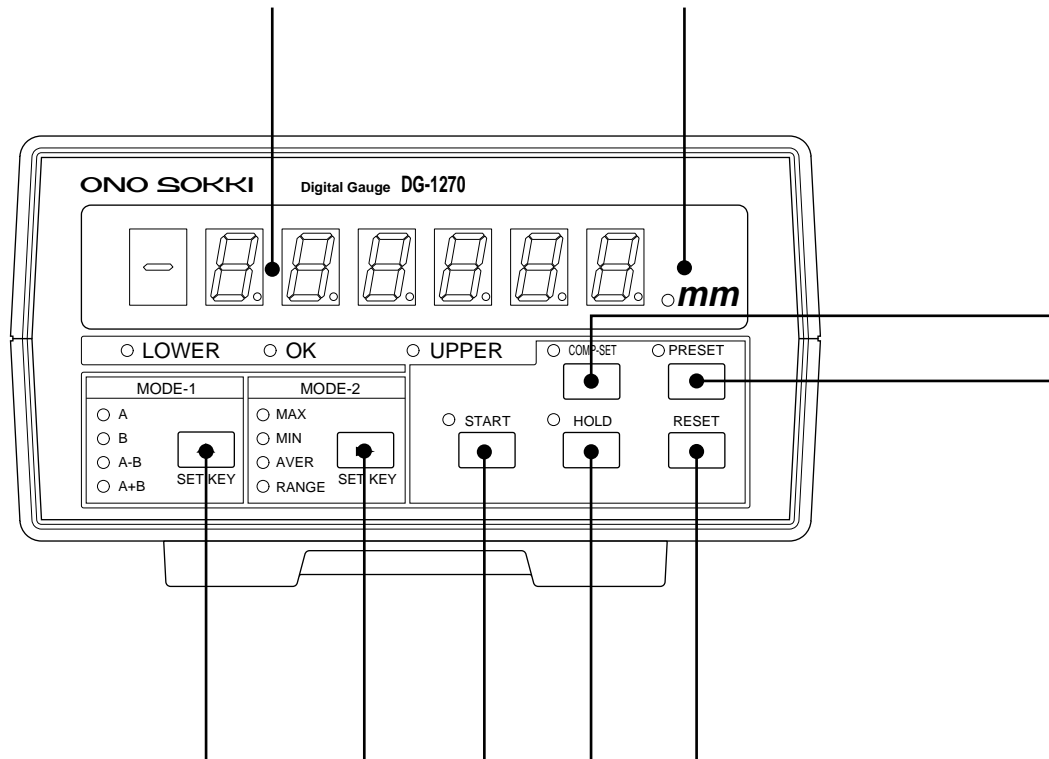
# 1. Connecting External Equipment



- Be sure to use the cable specified by Ono Sokki to connect the Digital Gauge Counter DG-1270 to the equipment specified by Ono Sokki.
- Connecting equipment other than specified may cause failure and/or damage which disables the normal operation of the DG-1270. For details, contact your sales representative or our sales office.

## 2. Component Names and Functions

### 2.1 Front Panel





## 1 **Numeric display LED**

Displays a measured value or set value in the given mode. Displays an error message code when an error occurs.

## 2 **Unit display LED**

The display unit.

## 3 **MODE-1 (Sum/Difference Calculation Function Switch)**

Press to set the Sum/Difference Calculation function mode (A, B, A-B, or A+B). Each time the MODE-1 switch is pressed, the function mode is changed. For more information, see "4.2 Sum/Difference Calculation Function (MODE-1)."

## 4 **MODE-2 (Peak Hold Function Switch)**

Press to set the Peak Hold function mode (NORMAL, MAX, MIN, AVER, or RANGE). Each time the MODE-2 switch is pressed, the function mode is changed. For more information, see "4.3 Peak Hold Function (MODE-2)."

## 5 **START**

Press to restart the peak hold measurement.

## 6 **HOLD (Hold Function Switch)**

Press to fix the measured value displayed by the numeric display LED. Press again to cancel.

## 7 **RESET (Reset Function Switch)**

Functions as follows depending on the current status:

- During measurement : Resets the measured value.
- During set value change : Resets the set value.
- During error occurrence : Returns from the error state.

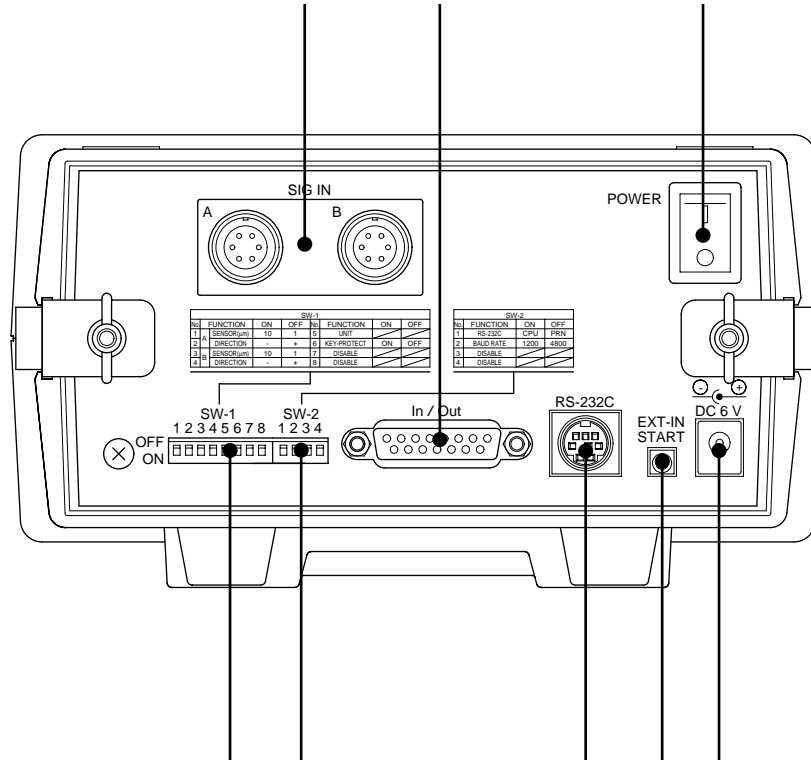
## 8 **COMP-SET (Comparator Function Switch)**

Each time the COMP-SET switch is pressed, the comparator set value is changed. For more information, see "4.4 Comparator Function."

## 9 **PRESET (Preset Function Switch)**

Each time the PRESET switch is pressed, the preset value is changed.

## 2.2 Rear Panel



## A SIG IN

Connect to the digital gauge sensor (GS-1500A/1600A series). Allows to input signals of two systems A and B.

## B In/Out

Connect to output the relay contact for the Comparator function or input an external command.

Pin No.	Signal Name
1	LOWER RELAY OUT (closed contact)
2	LOWER RELAY OUT (COM)
3	OK RELAY OUT (closed contact)
4	OK RELAY OUT (COM)
5	UPPER RELAY OUT (closed contact)
6	UPPER RELAY OUT (COM)
7	NOT USED
8	NOT USED
9	NOT USED
10	NOT USED
11	NOT USED
12	START COMMAND INPUT
13	HOLD COMMAND INPUT
14	ZERO-SET COMMAND INPUT
15	COMMAND COM

Receptacle connector: D-sub 15-pin (17LE-13150-27)

· Relay output for the Comparator function

Outputs the LOWER, OK, or UPPER status using the 1 make contact signal.

Output port : D-sub 15-pin connector

Max. contact capacity : 30 VDC, 1 A (with resistance load connected)

Contact output delay time : Max. 30 ms

· External command input

A command such as START, HOLD, and RESET can be started by inputting the make contact signal of, for example, the Foot Switch.

## C POWER (Power Switch)

Turns ON/OFF the power to the DG-1270.

## D SW-1 (8-bit Switch)

Set the eight bit switches to ON or OFF according to the application and/or purpose.

Switch	Function
No.1	Changes the display mode of the A-Ch sensor resolution (10 $\mu$ m/1 $\mu$ m).
No.2	Changes the DIRECTION of the A-Ch sensor (-/+).
No.3	Changes the display mode of the B-Ch sensor resolution (10 $\mu$ m/1 $\mu$ m).
No.4	Changes the DIRECTION of the B-Ch sensor (-/+).
No.5	NOT USE - OFF
No.6	KEY PROTECT (ON/OFF)
No.7	NOT USE - OFF
No.8	NOT USE - OFF

## E **SW-2 (4-bit Switch)**

Set the four bit switches to ON or OFF according to the application and/or purpose.

Switch	Function
No.1	Changes the RS-232C unit to be connected (CPU/Printer).
No.2	Changes the baud rate (1200/4800).
No.3	NOT USE - OFF
No.4	NOT USE - OFF

**NOTE!** • Be sure to set "NOT USED" switch to "OFF"

## F **RS-232C**

Connect to a personal computer or a printer. Be sure to change the 4-bit switch (No. 1) according to the unit to be connected.

## G **EXT-IN START**

Connect to the separately available Foot Switch. The Foot Switch functions in the same way as the START switch on the front panel.

Receptacle Connector : M32-348BO (Jack)

Cable Connector : MP-025MH (Plug)

## H **DC 6V**

Connect to the separately available AC Adaptor dedicated to the DG-1270. Connect only the AC Adaptor specified by Ono Sokki.

# 3. Measurement Procedure

- NOTE!**
- First connect the peripheral equipment such as a printer and a sensor, then turn on the power to the DG-1270.
  - The DG-1270 is an increment type gauge counter; the measurement data (including peak hold memory values) is reset to zero when the power is turned off.
  - After turning on the power to the DG-1270, always set the origin point or Preset value before starting measurement.

- Set the functions such as MODE-1/2, Comparator, and Preset functions according to the application and/or purpose. For more information, see "4. Settings and Functions."

## 3 Start measurement.

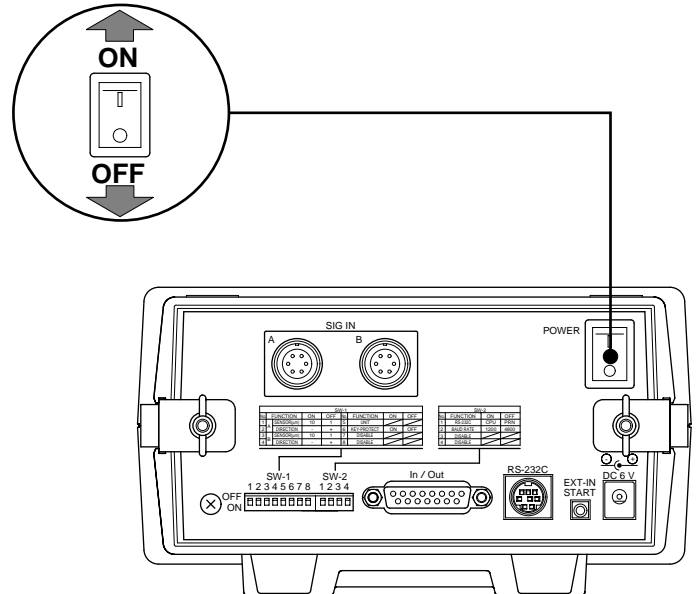
### 3.1 Measurement Procedure

#### 1 Prepare for measurement.

- Set the Power Switch on the rear panel of the DG-1270 to OFF.
- Connect the peripheral equipment such as the printer and the sensor specified by Ono Sokki.
- Set the bit switches (SW-1/SW-2) on the rear panel according to the application and/or purpose. For more information, see "4.9 Bit Switch Setting."

#### 2 Set the measurement conditions.

- Turn on the power to the DG-1270.



## 3.2 Error Message and Troubleshooting

When an error occurs, the corresponding error message is displayed in the numeric display section. Refer to the table shown below, for proper action to remove the error. When the RESET switch is pressed, the numeric display section returns from the error message display to the normal display state.

Display	Meaning	Cause and Troubleshooting
ERR3	Excess count value	This error occurs due to an excessive PRESET value. Set the PRESET value again within the proper range.
ERR0A/ERR0B	A-Ch/B-Ch sensor error	This error occurs when the sensor spindle is operated at a speed exceeding the specification or an impact is given to the sensor spindle. Check the sensor condition and operation.
ERR1	RS-232C communication error	This error occurs when there is a communication problem in the RS-232C interface. Check the RS-232C interface communication state and conditions.
ERR2	RS-232C command error	This error occurs when a command, not registered to the unit, is sent.
ERR4	Key Protect error	<ul style="list-style-type: none"><li>• When the comparator function is ON, MODE-1, MODE-2, and PRESET functions are disabled. The key switch is protected and "ERR4" message is sent via RS-232C.</li><li>• When *6 of "SW-1" switch is ON and the key protect function is activated, MODE-1, MODE-2, PRESET, and COMPARATOR functions are disabled. The key switch is protected and "ERR4" message is sent via RS-232C.</li></ul>

## 4. Settings and Functions

### 4.1 LED Lamps for Functions and Settings

The functions and settings can be verified by the status of the data (numeric) display LED and the status indication LED (ON/Blink/OFF) on the front panel.

#### ● Blink of data display LED

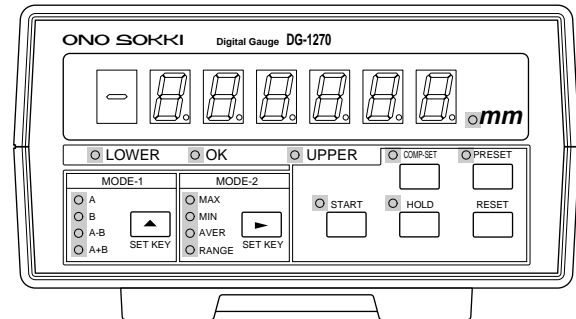
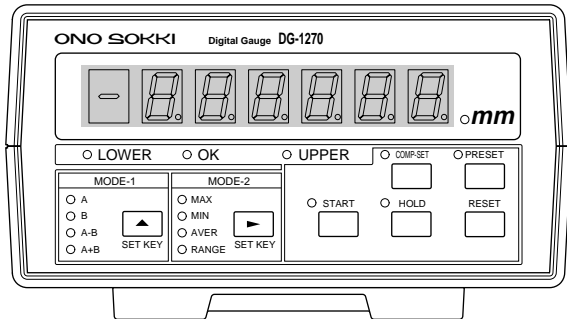
The data (numeric) display LED blinks during function or set value write. The shaded portion in the diagram below indicates the data (numeric) display LED lamps.

#### ● ON/OFF/Blink of the status indication LED

The status indication LED turns ON/OFF or blinks in the following cases:

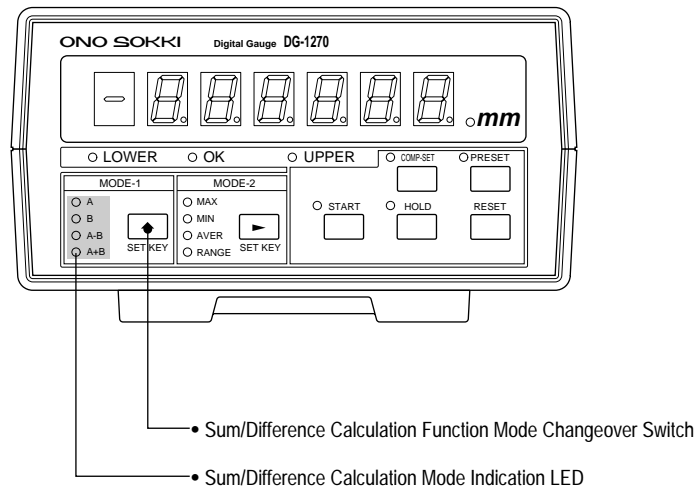
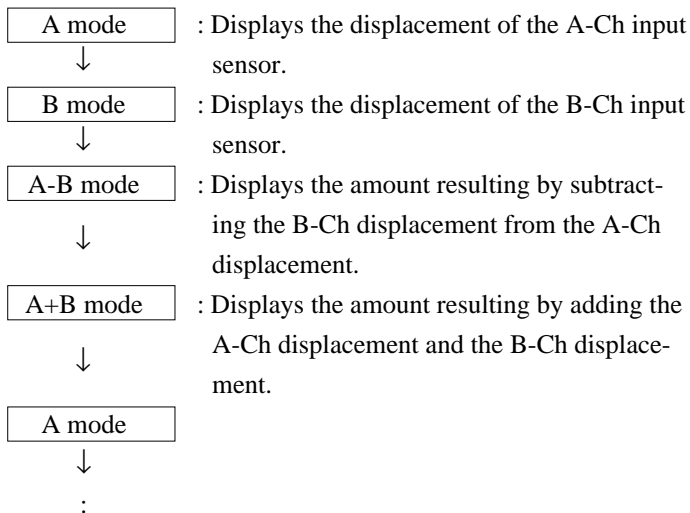
- ON : The corresponding function is being activated.
- OFF : The corresponding function is being deactivated.
- Blink : The set value of the corresponding item is being displayed.

The shaded portion in the diagram below indicates the status indication LED lamps.



## 4.2 Sum/Difference Calculation Function (MODE-1)

The Sum/Difference Calculation Function displays the displacement (A or B) of the digital gauge sensor connected to the A or B channel, the difference (A-B) between the A-Ch displacement and the B-Ch displacement, and the sum (A+B) of the A-Ch displacement and the B-Ch displacement. Each time the MODE-1 switch is pressed, these function modes are changed in the sequence shown below. The set mode can be checked by the status of the mode status indication LED (3 mm diam. green LED).





## 4.3 Peak Hold Function (MODE-2)

The Peak Hold function displays the stored maximum measured value (MAX), the minimum measured value (MIN), the average value (AVER) or difference (RANGE) of the maximum and minimum measured values. Normally, the status indicating the current displacement (NORMAL) is set.

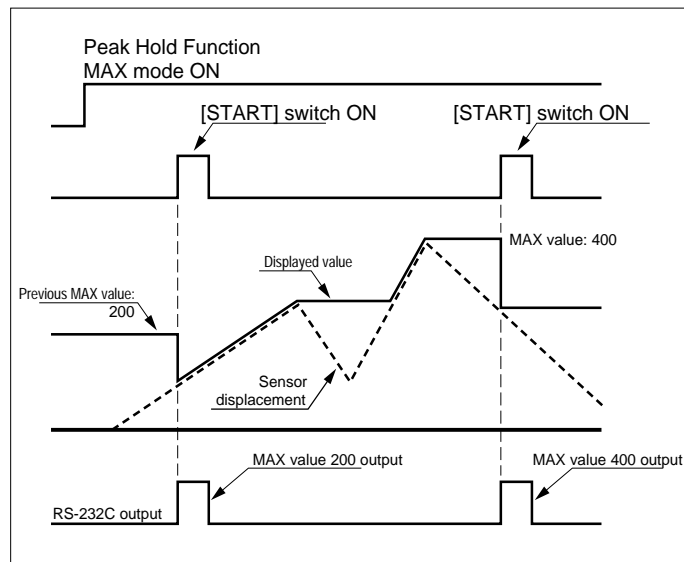
### ■ Overview

The diagram shows an example of the MAX mode in which the maximum measured value is stored and displayed.

When the START switch on the front panel is pressed or the Switch connected to the external command input connector (EXT-IN START) on the rear panel is set to ON (to input the START signal), the measurement is restarted.

When the START signal is input, the stored peak hold value is automatically reset and the measurement is started from the current value. Prior to the measurement start, the previously displayed data is output from the RS-232C connector.

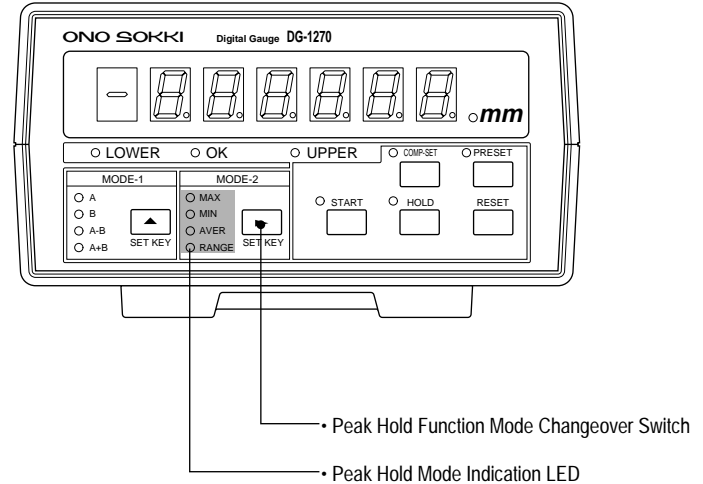
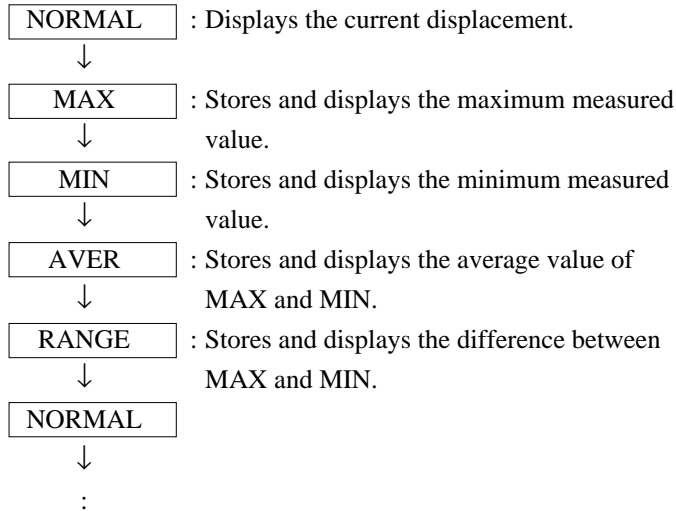
**NOTE!** • The measurement with the Peak Hold function is available only in the mode (A, B, A-B, or A+B) set by the MODE-1 switch.



## ■ Setting or Changing the Peak Hold Function Mode

Each time the MODE-2 switch is pressed, the Peak Hold mode is changed in the sequence shown below.

The set mode can be checked by the status of the mode status indication LED (3 mm diam. green LED).



## 4.4 Comparator Function

This section describes the Comparator function and the comparator value setting procedure.

### ■ Overview

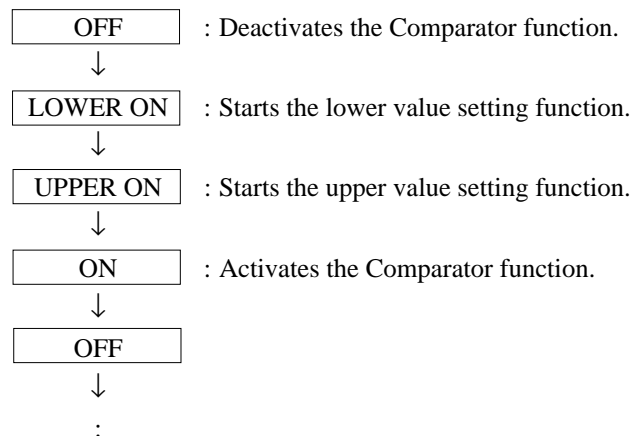
The Comparator function compares the criteria (LOWER/UPPER) set in advance and the currently displayed value, and makes a determination. There are three types of determination conditions as shown below.

- LOWER LED ON condition : Lower set value  $\geq$  Displayed value
- OK LED ON condition : Lower set value  $<$  Displayed value  $<$  Upper set value
- UPPER LED ON condition : Upper set value  $\leq$  Displayed value

The determination result is indicated by the status of the determination condition indication LED (LOWER, OK, or UPPER) on the front panel as well as 1 make contact signal is output from the In/Out connector on the rear panel. The set value is common to all modes (A, B, A-B, and A+B) of the Sum/Difference Calculation function.

### ■ Comparator Value Setting Switch

The comparator value is set with the Comparator function start switch (COMP-SET) and the comparator value setting switch (digit/numeric) by visually checking the determination condition indication LED and comparator setting status indication LED. Each time the COMP-SET switch is pressed, it operates as follows:



**NOTE!** • When the comparator function is activated, MODE-1, MODE-2, AND PRESET function become disabled. Turn the comparator function OFF when measurement mode change is required.

## ■ Comparator Value Setting Procedure

### 1 Press the Comparator function start switch

#### COMP-SET.

- When the COMP-SET switch is pressed once, the Comparator function is deactivated and the comparator setting status indication LED turns off.

### 2 Set the lower value.

- When the COMP-SET switch is pressed again, the lower value setting function is started, the determination condition indication LED (LOWER) turns on, and the comparator setting status indication LED starts blinking.
- When the lower value setting function is started, the MODE-1 and MODE-2 switches function as the SET KEY switches (▲) and (▶), respectively. Select the digit position using the MODE-2 switch and set a numeric value using the MODE-1 switch.

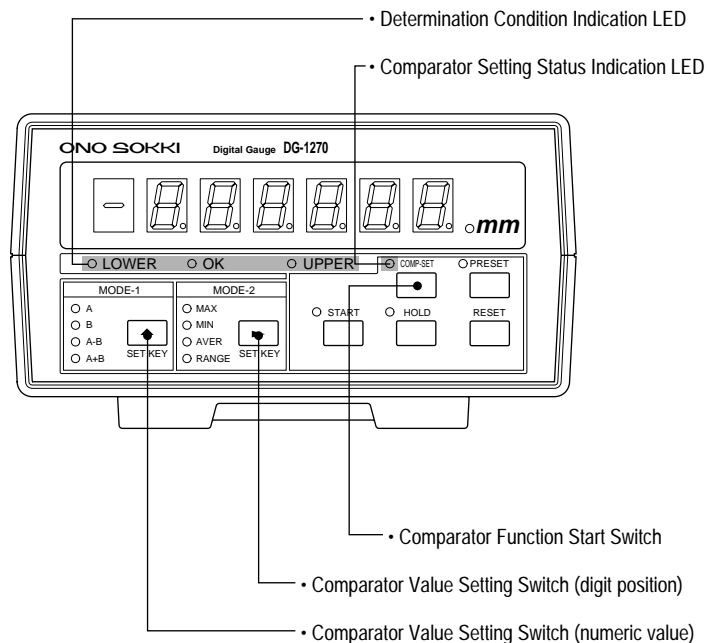
### 3 Set the upper value.

- When the COMP-SET switch is pressed again, the upper value setting function is started, the determination condition indication LED UPPER turns on, and the comparator setting status indication LED starts blinking.
- When the upper value setting function is started, the MODE-1 and MODE-2 switches function as the SET KEY switches (▲) and (▶), respectively. Select the digit position using the MODE-2 switch and set a numeric value using the MODE-1 switch.

### 4 Set the comparator value.

- When the COMP-SET switch is pressed again, the Comparator function is reactivated and the comparator setting status indication LED turns on.

Now, the comparator value setting is complete.



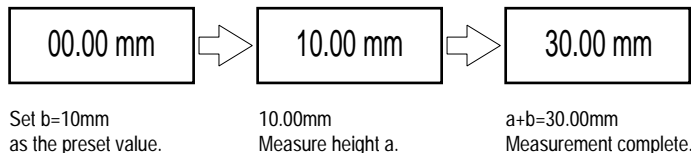
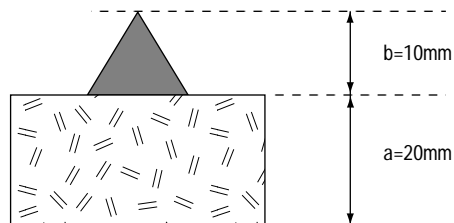
## 4.5 Preset Function

This section describes the Preset function and the preset value setting procedure.

- NOTE!**
- When the Preset function is effective, the displayed value is also effective for the Peak Hold value and the Hold value.
  - When the Preset function is started, the counter data is forcibly reset to zero (0), then the preset value is set again.
  - When the Sum/Difference Calculation function is in the A+B or A-B mode, one-half of the preset value is added to A and B, respectively. However, if one-half of the preset value is odd, A is additionally incremented by 1.
  - When the total of the preset value + the displacement exceeds the display digits, the error code ERR3 is displayed by the numeric display LED.

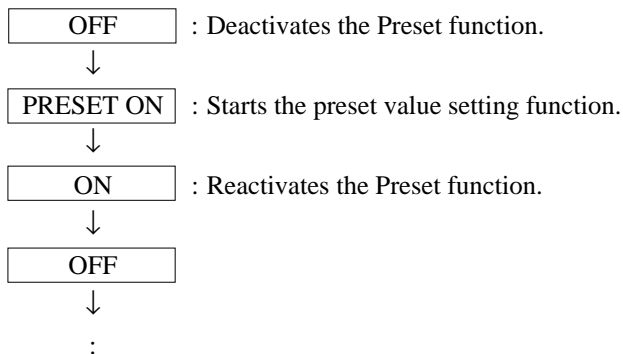
### ■ Overview

The Preset function displays the value resulting from adding an optionally set value (preset value) to the actual displayed value. For example, when the height ( $a + b$ ) of a target object shown below is calculated, value  $b$  is set as the preset value if it is known. Then, height  $a$  is measured. Consequently, the entire height ( $a + b$ ) can be obtained.



## ■ Preset Value Setting Switch

The preset value is set with the Preset function start switch (PRESET) by visually checking the preset value setting status indication LED. Each time the PRESET switch is pressed, it functions as follows:



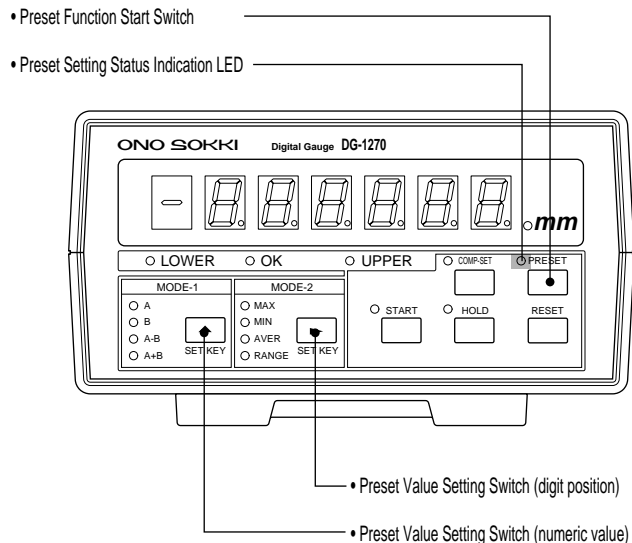
## ■ Preset Value Setting Procedure

### 1 Press the Preset function start switch.

- When the PRESET switch is pressed once, the Preset function is deactivated and the preset value setting status indication LED turns off.

### 2 Set the preset value.

- When the PRESET switch is pressed again, the preset value setting function is started, and the preset value setting status indication LED starts blinking.



- When the preset value setting function is started, the MODE-1 and MODE-2 switches function as the SET KEY switches (▲) and (▶), respectively. Select the digit position using the MODE-2 switch and set a numeric value using the MODE-1 switch.

### 3 Reactivate the Preset function.

- When the PRESET switch is pressed again, the Preset function is reactivated and the preset value setting status indication LED turns on.  
Now, the preset value setting is complete.

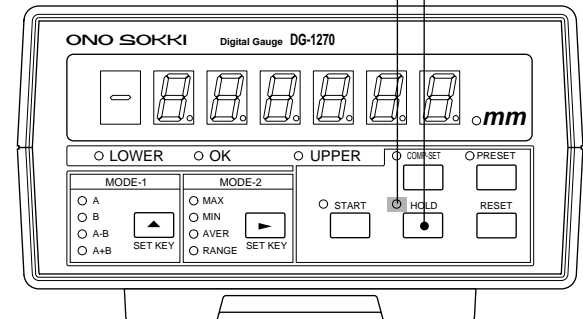
## 4.6 Hold Function

When the HOLD switch is pressed on the front panel or a signal is input to Pin No. 13 of the In/Out connector on the rear panel (shorting Pin No. 15 and COM by the contact input), the Hold function is started and holds the value displayed by the numeric display LED. While the Hold function is activated, the Hold setting status indication LED is lit.

When the HOLD switch is pressed again or the signal is input to Pin No. 13 of the In/Out connector (shorting Pin No. 15 and COM again by the contact input), the Hold function is deactivated and the Hold setting status indication LED turns off.

• Hold Function Start Switch

• Hold Setting Status Indication LED

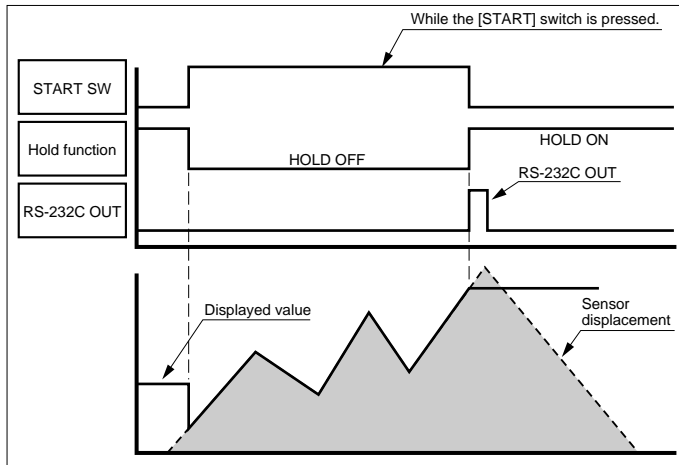


## ■ Overview

As shown in the diagram below, when the START switch is held pressed while the Hold function is activated, the Hold function is temporarily canceled.

When the START switch is released, the Hold function is reactivated. At that time, the displayed data (single data) item is output from the RS-232C connector on the rear panel.

When the RESET or PRESET switch is pressed and the corresponding function is started while the Hold function is activated, the Hold value is cleared or changed to the zero or preset value.



## 4.7 Reset Function

When the RESET switch is pressed on the front panel or a signal is input to Pin No. 14 of the In/Out connector on the rear panel (shorting Pin No. 15 and COM by the contact input), the Reset function is started.

The Reset function works as follows depending on the DG-1270 status:

- Set value change function in progress:  
Immediately resets the set value.
- Other than above:  
Immediately resets the value calculated by the Sum/Difference Calculation function. Resets all Peak Hold values. Resets the value in the Hold state.
- At error occurrence:  
Returns the system from the error state.  
The value is set to the preset value if the Preset function is activated, otherwise, it is zero-set. The measured value zero-clear is effective for the input channel from the sensor set by the Sum/Difference Calculation function as shown below.

Example:

- B mode : Clears only the B-Ch displacement to zero.
- A-B mode : Clears the A-Ch displacement and the B-Ch displacement to zero.



## 4.8 Start Function

When the START switch is pressed on the front panel or a signal is input to Pin No. 12 of the In/Out connector on the rear panel (shorting Pin No. 15 and COM by the contact input), the Start function is started.

The Start function works as follows depending on the DG-1270 status:

- Peak Hold function selected:

Measurement is restarted (START function LED ON for 1 sec.). Single data item is output via RS-232C.

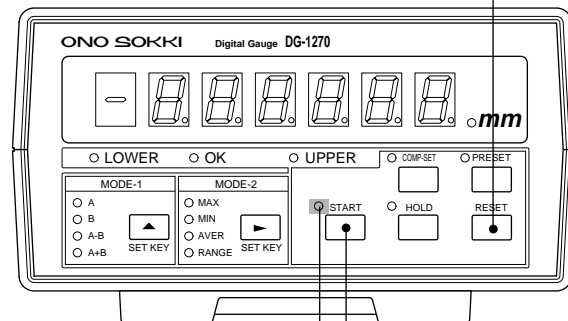
- NORMAL mode selected:

Each time the START switch is pressed, data is output via RS-232C (START function LED ON for 1 sec.).

- Hold in operation:

While the START switch is pressed, the Hold state is temporarily canceled. When the START switch is released, the Hold state is returned (data is output via RS-232C when the Hold state is returned).

- Reset Function Start Switch

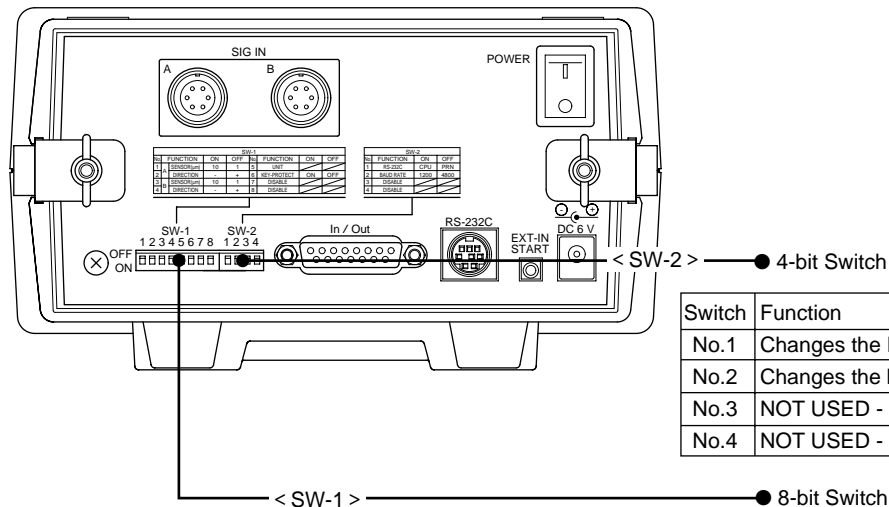


- Start Function Status Indication LED

- Start Function Start Switch

## 4.9 Bit Switch Setting

The bit switches SW-1 and SW-2 on the rear panel are optionally set according to the measurement target and/or operation purpose.



Switch	Function
No.1	Changes the RS-232C unit to be connected (CPU/Printer).
No.2	Changes the baud rate (1200/4800).
No.3	NOT USED - OFF
No.4	NOT USED - OFF

Switch	Function
No.1	Changes the display mode of the A-Ch sensor resolution (10 $\mu\text{m}$ /1 $\mu\text{m}$ ).
No.2	Changes the DIRECTION of the A-Ch sensor (-/+).
No.3	Changes the display mode of the B-Ch sensor resolution (10 $\mu\text{m}$ /1 $\mu\text{m}$ ).
No.4	Changes the DIRECTION of the B-Ch sensor (-/+).
No.5	NOT USED - OFF
No.6	KEY PROTECT (ON/OFF)
No.7	NOT USED - OFF
No.8	NOT USED - OFF

## ■ SW-1 (8-bit Switch) Setting

- **No. 1 switch (ON: 10  $\mu\text{m}$ , OFF: 1  $\mu\text{m}$ )**

Changes the display unit according to the resolution of the sensor connected to the A channel. Both resolutions of 10  $\mu\text{m}$  and 1  $\mu\text{m}$  have a fixed decimal point (0.0000 mm). When 1  $\mu\text{m}$  is set, the least significant digit is zero on the display.

- **No. 2 switch (ON: -, OFF: +)**

Changes the DIRECTION (+: positive/-: negative) of the sensor connected to the A channel.

(+) setting : Increments the count when the sensor spindle is pushed in from the zero point position.

(-) setting : Decrements the count when the sensor spindle is pushed in from the zero point position.

- **No. 3 switch (ON: 10  $\mu\text{m}$ , OFF: 1  $\mu\text{m}$ )**

Changes the display unit according to the resolution of the sensor connected to the B channel. Both resolutions of 10  $\mu\text{m}$  and 1  $\mu\text{m}$  have a fixed decimal point (0.0000 mm). When 1  $\mu\text{m}$  is set, the least significant digit is zero on the display.

- **No. 4 switch (ON: -, OFF: +)**

Changes the DIRECTION (+: positive, -: negative) of the sensor connected to the B channel.

(+) setting : Increments the count when the sensor spindle is pushed in from the zero point position.

(-) setting : Decrements the count when the sensor spindle is pushed in from the zero point position.

- **No. 5 switch (NOT USED-OFF)**

- **No. 6 switch (ON: On, OFF: Off)**

Changes the switch protection except for the HOLD, START, and RESET switches to ON or OFF.

- **No. 7 switch (NOT USED-OFF)**

- **No. 8 switch (NOT USED-OFF)**

NOTE! • Set the measurement resolution is accordance with the resolution (1 $\mu\text{m}$  or 10 $\mu\text{m}$ ) of the Gauge Sensor connected. When the resolution of 10 $\mu\text{m}$  is selected, the third decimal point or zero is fixed.

## ■ SW-2 (4-bit Switch) Setting

- **No. 1 switch (ON: CPU, OFF: Printer)**

Sets ON (PC/AT-compatible computer) or OFF (printer) according to the unit connected to the RS-232C interface.

- **No. 2 switch (ON: 1200 bps, OFF: 4800 bps)**

Sets the baud rate to 1200 bps or 4800 bps.

- **No. 3 switch (NOT USED - OFF)**

- **No. 4 switch (NOT USED - OFF)**

NOTE! • Be sure to set "NOT USED" switch to "OFF"

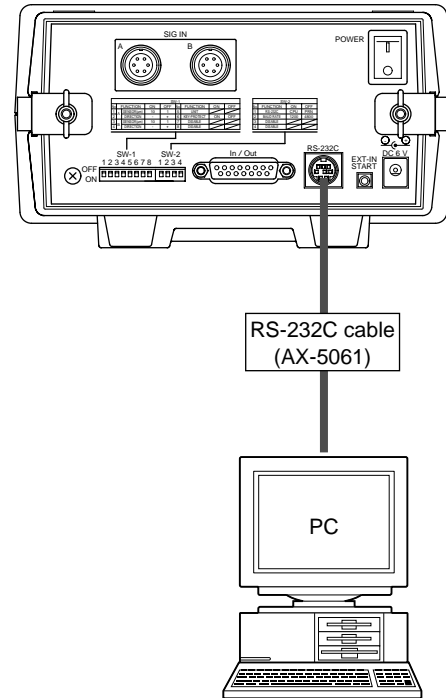
## 5. RS-232C Interface Function

### 5.1 Overview of RS-232C

The DG-1270 is equipped with the RS-232C interface board.

#### ■ Connection to External Equipment

When a personal computer (PC/AT-compatible) or a printer is connected to the RS-232C connector, it is possible to execute data transfer and processing between connected equipment. Connecting a personal computer AX-5061 requires the separately available dedicated connection cable. Contact your sales representative or our sales office.



## 5.2 RS-232C Specifications

Standard	Conformance with EIA-RS-232C		
Communication method	Asynchronous		
Character length	7 bits		
Parity	Even		
Stop bit	1 bit		
Baud rate	1200/4800 bps		
Connector model	Mini DIN 8-pin		
Pin assignment	No.1 pin	-	NC
	No.2 pin	-	TXD
	No.3 pin	-	RXD
	No.4 pin	-	V+
	No.5 pin	-	GND
	No.6 pin	-	NC
	No.7 pin	-	V-
	No.8 pin	-	NC
	No.9 pin	-	Shielded
Output circuit type	Photocoupler		

**NOTE!** • Before to set "TDR" to ON and "RTS" to OFF, otherwise no data is output from TXD.

## 5.3 RS-232C Commands

### ■ Condition Command

The condition commands correspond to the Front Panel keys.

- **Command format**

[command] [CR] [LF]

- **Command list**

Activate MODE-1 switch

[A] [B] [A+B] [A-B]

Activate MODE-2 switch

[NOR] [MAX] [MIN] [AVE] [RAN]

Activate COMP-SET switch

[CON] [COF]

Activate HOLD switch

[HON] [HOF]

Activate PRESET switch

[PON] [POF]

Activate RESET switch

[R]

Activate START/STOP switch

[STA] [STP]

\*[STP] is valid only when the HOLD function is ON.

## ■ Data Transfer Command

The data transfer commands is used to transfer measurement data. Upon reception of the transfer command, the DG-1270 immediately transfers the corresponding data.

- **Transfer command format**

[command] [?] [CR] [LF]

- **Command list**

C? : Reads measured values in NORMAL mode (Peak Hold not used)

X? : Reads measured values in MAX mode

A? : Reads measured values in MIN mode

G? : Reads difference between MAX and MIN

P? : Reads offset value

L? : Reads lower limit

U? : Reads upper limit

? : Reads displayed data

(The above data are based on the mode selected by MODE-1)

- **Transfer data format**

[sign] [10e5] [.] [10e4] [10e3] [10e2] [10e1] [10e0] [CR] [LF]

## ■ Status Transfer Command

The status transfer commands is used to transfer the current setting status. Upon reception of the transfer command, the DG-1270 immediately transfers the corresponding data.

- **Transfer command format**

[command] [?] [CR] [LF]

- **Command list and reply data**

a) M2? : Reads MODE-2 set conditions

Reply data : NORMAL/MAX/MIN/AVE/RANGE

B) M1? : Reads MODE-1 set conditions

Reply data : A/B/A-B/A+B

c) Q? : Reads Comparator conditions

Reply data : UPPER/OK/LOWER/NOCOM/UP&LO

NOCOM ; Comparator function OFF

UP&LO ; Upper and lower limits both ON

- **Transfer data format**

[C1] ... [Cn] [CR] [LF]

## ■ Data Set Command

The data set commands is used to set preset values and comparison limits.

- **Transfer command format**

[command] [sign] [10e5] [10e4] [10e3] [10e2] [10e1] [10e0]  
[CR] [LF]

- **Command list and reply data**

S : Sets preset value

L : Sets lower limit

H : Sets upper limit

## ■ Error Related

	Transmit data	Display data
Count over	ERR3	ERR0A
CH-A error	ERR0	ERR0B
CH-B error	ERR0	
Transmit error (parity error)	ERR1	
Command error (non-registered)	ERR2	
Key protect error	ERR4	

- NOTE!
- When ERR1 & ERR2 occur, error data is transmitted only, the unit stays in measurement mode.
  - When a set command is received without any error, "G" is returned.



## 6. Specifications

### ■ Applicable Gauge Sensor

MODEL	RANGE	RESOLUTION
AS-1012	10 mm	1 $\mu$ m
BS-102(W)	10 mm	10 $\mu$ m
BS-112(W)	10 mm	1 $\mu$ m
GS-102	10 mm	10 $\mu$ m
GS-251(W)	25 mm	10 $\mu$ m
GS-503	50 mm	10 $\mu$ m
GS-5011	50 mm	1 $\mu$ m
GS-1000	100 mm	10 $\mu$ m
GS-1513A	13 mm	10 $\mu$ m
GS-1613A	13 mm	1 $\mu$ m
GS-1530A	30 mm	10 $\mu$ m
GS-1630A	30 mm	1 $\mu$ m
GS-4513	13 mm	10 $\mu$ m
GS-4613	13 mm	1 $\mu$ m
GS-4530	30 mm	10 $\mu$ m
GS-4630	30 mm	1 $\mu$ m

### ■ Counting Signal Input Section

Sensor inputs	2 channels
Amplification type	2-phase waveform rectification
Signal waveform	Square wave with 90-deg. phase difference
Input impedance	47 kohms or more
Input level	LO level 0 to 1.4 V HI level 3 to 5.25 V
Input frequency	DC to 75 kHz
Input connector	R03-R6F (Tajimi Musen)
Pin assignment	A(SIG1)/B(SIG2)/C(+5V)/D(N.C)/ E(COM)/F(N.C)

### ■ Count Display Section

Counting method	Reversible counting method
Display digits	1 digit for polarity + 6 digits for numeric (displaying only minus polarity)
Zero suppress	Digits to the left side of the decimal point
Indicator	7-segment red LED

Character height	14mm
Display range	Decimal point fixed for both 10 $\mu$ m and 1 $\mu$ m. 0.0000 to 99.9999 mm 0.0000 to -99.9999 mm

### Peak Hold Function

MAX, MIN, AVERAGE, (RANGE)/2

### Sum/Difference Calculation Function

Ach, Bch, + Bch, A – Bch

### Comparator Function

Set digits	1 digit for polarity + 6 digits for numeric
Set stages	2 stages (LOWER/UPPER)
Output conditions	Comparison with the displayed value
Determination result 1	1-make contact output of each status Output port: D-sub 15-pin connector Max. contact capacity: 30 VDC, 1 A (resistance load connected) Contact output delay time: Max. 30 ms

Determination result 2	Status indication lamp (3 mm diam. LED) turns on. LOWER:RED/OK:GREEN/UPPER:RED
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### ■ Preset Function

Set digits 1 digit for polarity + 6 digits for numeric

### ■ Front Panel and External Command Input

[HOLD]/[START]/[RESET]

### ■ Measurement Condition Setting Bit Switch (SW-1, SW-2)

Sensor resolution changeover	10 $\mu$ m/ 1 $\mu$ m
DIRECTION changeover	+/-
Key Protect	ON/OFF
RS-232C	Printer/CPU
Baud rate changeover	1200/4800

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## ■ General Specifications

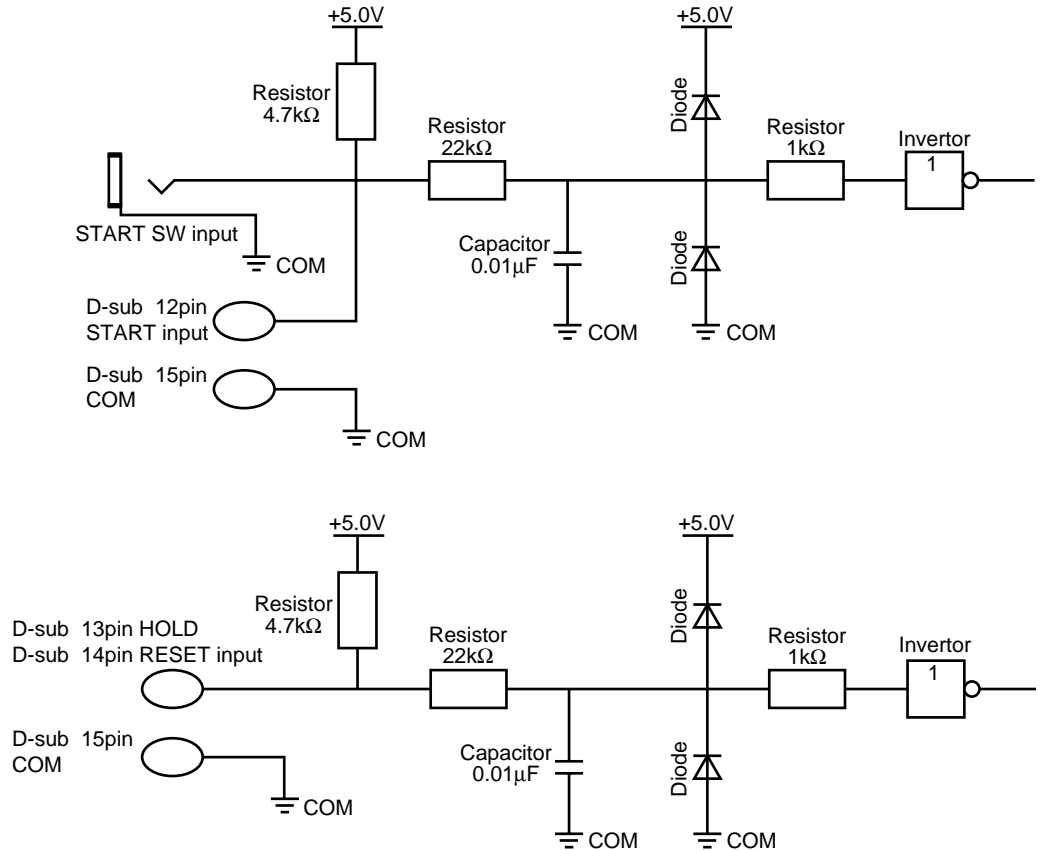
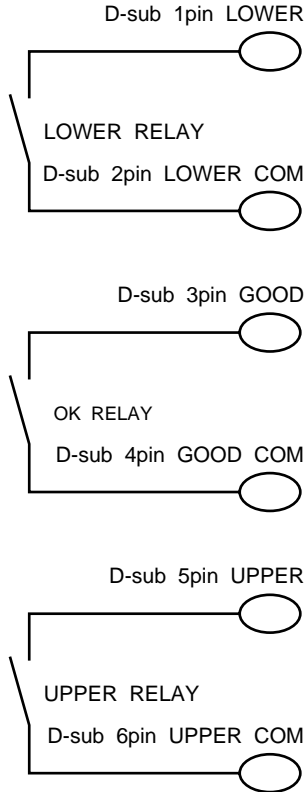
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Power supply	6 VDC via AC adaptor
Current consumption	Max. 700 mA (at 6 VDC)
Mass	Approx. 1.5 kg
Dimensions	170 (W) x 85 (L) x 230 (H) mm
Operating temperature range	0 to 40 deg.C
Storage temperature range	-10 to +55
Operating humidity range	Max. 95%RH
Storage humidity range	Max. 95%RH
Accessory	Manual, AC adaptor
Option	RS-232C cable (AX-5061)

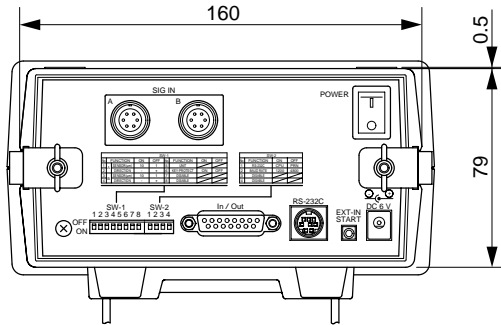
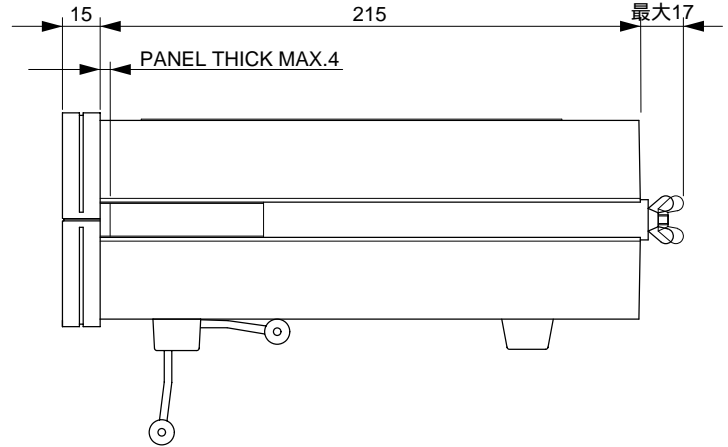
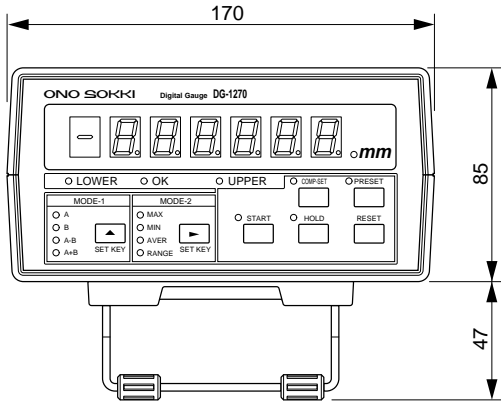
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# 7. Circuit Diagram

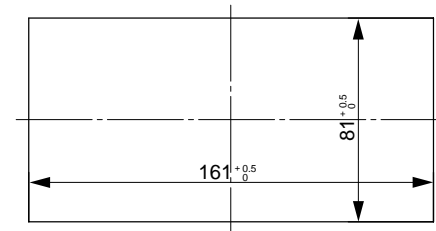
## ■ Output Circuit Diagram: Relay Output ■ Input Circuit



# 8. Dimensional Outline Drawing



REAR VIEW



PANEL-CUT DIMENSIONS



# ONO SOKKI

\*Outer appearance and specifications are subject to change without prior notice.

**HOME PAGE:** <http://www.onosokki.co.jp/English/english.htm>

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