ONO SOKKI

DG-4140 Digital Gauge Counter

Instruction Manual

PREFACE

Thank you for selecting the DG-4140 Digital Gauge Counter. This manual describes the procedures for handling and operating the equipment, procedures for connecting peripheral devices, and specifications so that you, even if you are a beginner of the DG-4140 Digital Gauge Counter, can understand basic operations for a short period and perform measurement according to your purpose and application.
If you use the DG-4140 Digital Gauge Counter for the first time, please read this manual.
In particular, the precautions described in this manual include "dangers that may lead to damage to property." Be sure to follow the instructions and operating procedures described in this manual when operating the equipment.
After reading this manual, store it in a safe place.

NOTICE
1. This product has been tested under strict inspections for normal operation before shipment.
2. When unpacking the unit, make sure that none of the parts have been damaged during transportation and that the product operates normally referencing this manual.
3. If any part is damaged or the product does not operate as described in this manual, contact your dealer or Ono Sokki sales office nearby.

FOR SAFE OPERATION OF THIS PRODUCT

WARNING

• Do not operate this product in a location where there is gas or steam.
Using this product where there is steam or combustible or explosive gas may result in an explosion.

• Avoid using in locations of high temperature as there is a risk of fire.
Avoid using in locations of extremely high temperature. Using this product in a location having a temperature exceeding the operational temperature range (0 to 40°C) may cause the product to catch on fire.

• Do not remove the casing or take apart this product.
Use of this product without its casing or while taken apart may result in damage to equipment or electric shock. When internal adjustment, inspection or repairs are required, contact your dealer or Ono Sokki sales office nearby.

• Do not splash or spill water on the product as there is a risk of fire or electric shock due to short or increased heat.
If water does happen to get inside the product, unplug the power cord immediately and call your dealer or Ono Sokki sales office nearby as soon as possible.

• Never cut the internal or external ground wire of a product or disconnect the wire connected to the protective ground terminal of the instrument because doing so may cause electric shock or damage to the instrument.

• Before connecting the instrument to external control circuit, make sure that protective earth is securely made and that the power is OFF. Connecting to external equipment without protective earth or while the power is still ON may cause electric shock.

• Be sure the power always meets specified voltage(100 to 240VAC) and frequency (50/60Hz).
Use of power other than that specified may result in electric shock, fire, or damage to the product.

• If you hear thunder, do not touch any metal parts of the product or the plug as there is a risk of electric shock from conducted lighting. Do not use this product outdoors if you hear thunder.

• Unplug the product immediately if any metal, water, or foreign object should fall inside.

Continued use after metal, water, or foreign object has fallen inside may result in fire or electric shock. After unplugging the product immediately, contact your dealer or Ono Sokki sales office nearby as soon as possible.

• Unplug the product if you sense smoke, strange noise or strange smell coming from the product or if you accidentally drop it or damage it. Continued used may result in fire or electric shock. After immediately unplugging the product, contact your dealer or Ono Sokki sales office nearby as soon as possible.

• The ⏚ symbol is used to indicate protective earth.

Before turning the power ON, be sure to provide protective earth to the terminal with this symbol with the following procedure.

Failure to provide protective earth may cause electric shock.

• Connect securely the protective earth terminal of the equipment to the protective earth terminal of the power supply.

For safety and noise elimination, be sure to connect the earth terminal (No.3) on the rear panel to a good ground.

Grounding type: Type 3 grounding or higher (100Ω or less)

Grounding wire: Annealed copper wire with 2mm^2 or more (AWG14)

Grounding extension: Up to 20m

• Provide protective earth using the earth terminal at one point, without traverse wiring.

• If protective earth is not provided or if it may not be secure, do not turn the power ON.

CAUTION

- Do not place large or heavy objects on top of the product. If an object on top of the product should fall it may result in injury or damage to equipment.
- Do not install the product in a location where there is oily smoke or steam or where there is high humidity or lots of dust.

Electricity could conduct through the oil, water vapor, or dust resulting in fire or electric shock.

- Do not install the product in locations subject to extremely high temperature or direct sunlight as there is a risk of fire.
- Keep the power cord away from space heaters or appliances which generate high temperature as the cord casing may melt resulting in fire or electric shock.

T A B L E

PRECAUTIONS (Read Before Using This Equipment)

Installation Environment

• The operating temperature range of the DG-4140 is 0 to 40 ℃.
Do not expose the DG-4140 to sudden temperature change even if it is within this temperature range.
• For rack mounting of the DG-4140, pay attention to provide good ventilation. Do not install the DG-4140 near a heat-generating device.
• When using the DG-4140 in an area subjected to metallic dust, properly shield the DG-4140 and take appropriate antidust measures.

Noise Prevention

• In order to prevent noise interference, keep the input and output cables such as gauge sensor signal lines and BCD output lines separated from the power lines as far as possible while minimizing the cable length.
Use shielded cables for this purpose.

Power Input Terminal Strip

• The terminal strip for the power supply terminals on the rear panel is provided with a protective cover. To ensure safety operation, do not remove this protective cover when the DG-4140 is in use.

Maintenance

• To remove dirt from the main unit, gently wipe with a soft cloth moistened with water or neutral detergent.
Do not use volatile organic solvent such as thinner.
• Periodically tighten the screws on the rear panel terminal strip.

Measurement Error (Display Value Blinking)

If a measurement error occurs, the display value blinks and the error output (OC) of BCD OUT turns ON. This is not an error of the DG-4140. However, if the display value overflows, no error output is made.

	Cause of Measurement Error	Cause of Measurement Error
①	The speed of the sensor spindle has exceeded the maximum response speed specified for each sensor. The maximum response speed may be exceeded due to impact generated at the moment of spindle contact to the object under measurement.	Reduce the speed of the measured object or sensor so that the speed of the sensor spindle will be reduced.
②	Sensor input signal is influenced by external noise.	a. Change the wiring route if the sensor signal cable is near a noise source such as a motor. b. Minimize the length of the sensor signal cable. c. Be sure to connect the DG-4140 to a good ground (using an annealed copper wire with 2mm^2 or more, with a wire length of 20m or less).
③	"90-degree phase difference" of the sensor output signal has deviated from normal.	Replace the sensor with a new one.

Upon completion of taking proper measures to remove the cause of error, reset the DG-4140.

* If the DG-4140 remains in the error state after taking the above measures, contact Ono Sokki.

1. OVERVIEW

1. Overview

The DG-4140 Digital Gauge Counter converts the sensor output to linear measure by multiplying the 2-phase signal of the linear gauge sensor by 4 in the counter and displays it in digital form.
It outputs data in accordance with the display value through the parallel BCD and performs comparator output corresponding to settings.

2. Features

- LCD (polarity + 5 digits)
- Multiplier setting function (x0.001 to 9.999)
- Peak hold function
- DIN 72x72
- Worldwide power supply (100 to 240VAC)
- Dual-color display (interlocked with comparator)

3. Applicable Gauge Sensors

The DG-4140 can be used in combination with the following gauge sensors.

Model	Measurement Range	Resolution	Model	Measurement Range	Resolution
AS-1012	10mm	1µm	GS-1513A	13mm	10µm
AS-2012	10mm	1µm	GS-1530A	30mm	10µm
BS-102/102W	10mm	10µm	GS-1613A	13mm	1µm
BS-112/112W	10mm	1µm	GS-1530A	30mm	1µm
GS-1000	100mm	10µm	GS-4513	13mm	10µm

GS-102	10mm	10μm	GS-4530	30mm	10μm
GS-251/251W	25mm	10μm	GS-4613	13mm	1μm
GS-503	50mm	10μm	GS-4630	30mm	1μm
GS-5011	50mm	1μm			

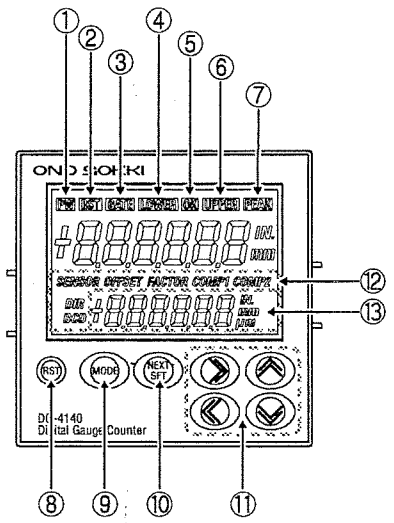
4. Checking Accessories

When unpacking the unit, make sure that you have all the following accessories.

Name	Qty.
Panel mount fitting	1 set
Instruction manual	1 copy

2. NAMES AND FUNCTIONS OF EACH SECTION

1. Front Panel



① PW

Lights up when the power is supplied.

② RST

Lights up when the reset signal is input.

③ GATE

Lights up when the comparator gate is input.

④ LOWER

Lights up when the count value has underrun the lower limit value of the comparator setting. The entire LCD (backlight) lights up in red.

⑤ OK

Lights up when the count value is within the range of the comparator setting.

⑥ UPPER
Lights up when the count value has exceeded the upper limit value of the comparator setting. The entire LCD (backlight) lights up in red.

⑦ PEAK
Lights up when the start signal of peak hold is input and goes off when the stop signal is input.

⑧ RST key
Press this key for 3 seconds to reset the DG-4140 and clear the display value to zero.
While the offset value is set, the display value does not become zero even if you press the RST key. Lights up until the offset value is canceled.

⑨ MODE Key
Press this key for 3 seconds to activate the setting mode allowing settings to be changed.

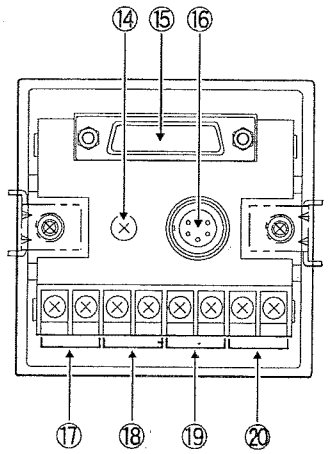
⑩ NEXT SET Key
Set numeric values in each function setting mode.

⑪ Setting Change Key

⑫ Function Display Key
Indicates the function mode at the time of each function setting.

⑬ Setting Display Key
Displays the setting in each function mode.

2. Rear Panel



⑭ Protective Earth Terminal
Be sure to connect to a good ground for safety and noise elimination.

⑮ BCD OUT Connector
Used for BCD output, Pass/Fail test output, and external command signal input.

⑯ SIG IN Connector
Inputs a signal from the gauge sensor. Connect the signal cable of the gauge sensor.

⑰ Power Supply Input Terminal
Input the power of 100 to 240VAC.

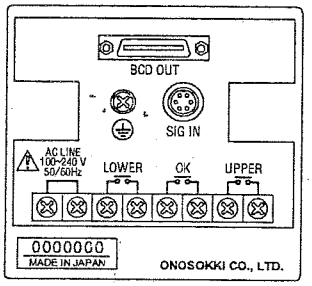
⑱ LOWER Output Terminal
1-make contact output. Turns ON when the count value has underrun the lower limit value of the comparator setting.

⑲ OK Output Terminal
1-make contact output. Turns ON when the count value is larger than the

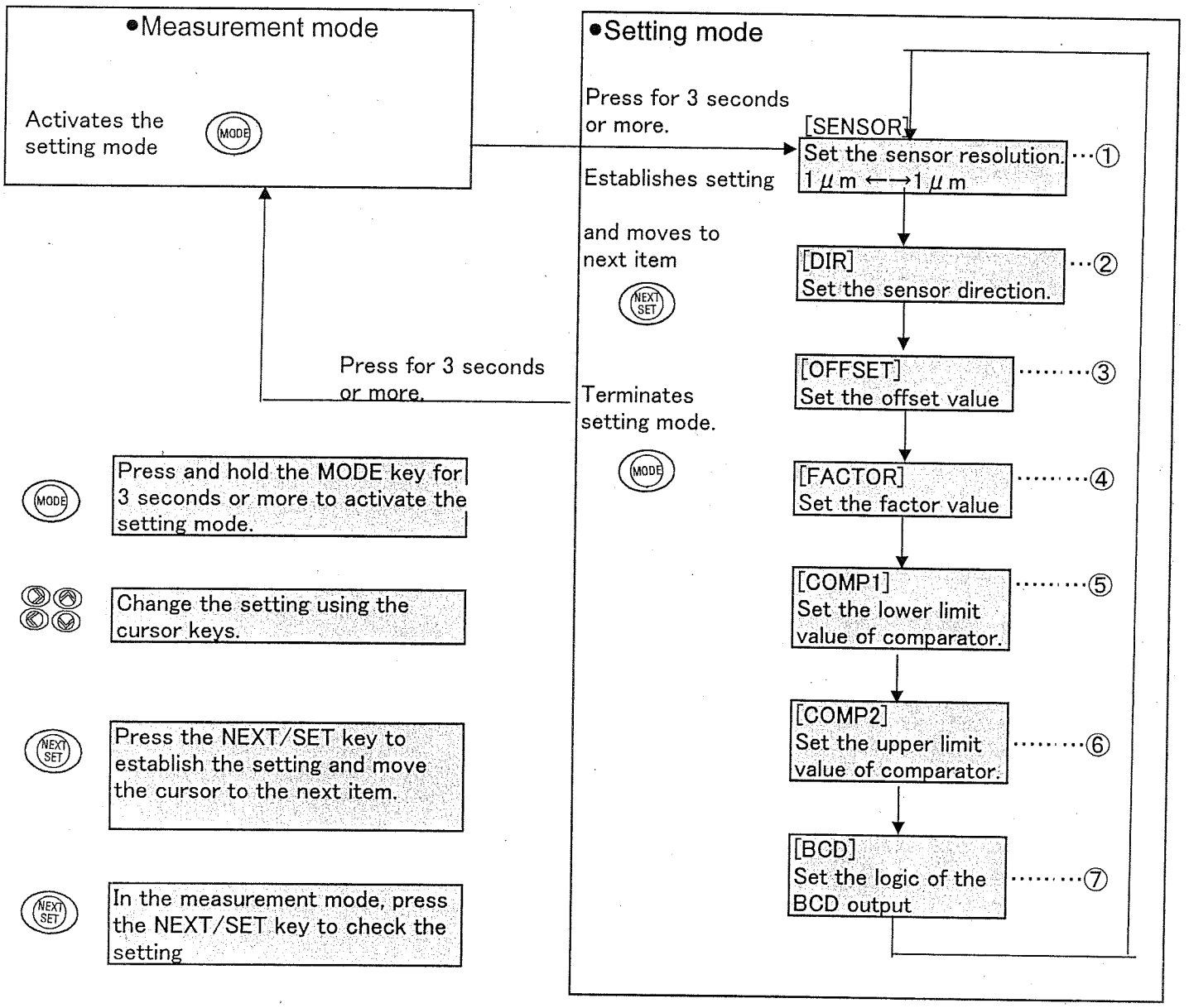
LOWER setting and smaller than the UPPER setting.

⑳ UPPER Output Terminal
1-make contact output. Turns ON when the count value has exceeded the upper limit value of the comparator setting.

3. Side Panel


BCD OUT
SIG IN
AC LINE
100-240 V
50/60Hz
LOWER
OK
UPPER
0000000
MADE IN JAPAN
ONOSOKKI CO., LTD.

3. OPERATIONS



• Notes

The display color changes in accordance with the comparator.

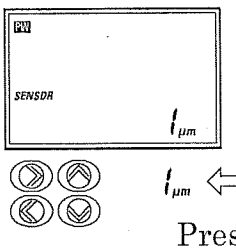
If not necessary, set the lower limit value as COMP1 and the upper limit value as COMP2.

4. INSTALLTION

1. Setting Procedure

① Setting Sensor Resolution
② Setting Sensor Direction
③ Setting Offset Value
④ Setting Factor Value
⑤ Setting Lower Limit Value of Comparator
⑥ Setting Upper Limit Value of Comparator
⑦ Setting Logic of BCD Output

① Setting Sensor Resolution

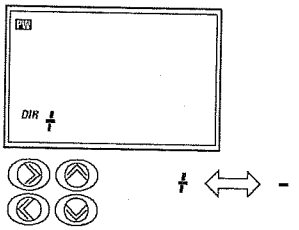


Select a value according to the resolution of the sensor.

1μm ⟺ 10μm

Press any key to change the setting.

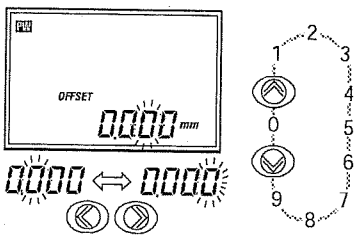
② Setting Sensor Direction



+: Increments when the spindle of the gauge sensor is pushed in.
-: Decrements when the spindle of the gauge sensor is pushed in.

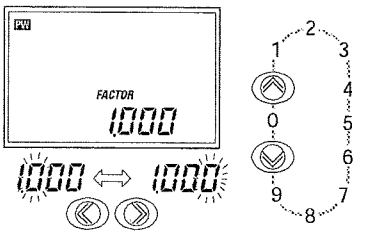
Press any key to change the setting.

③ Setting Offset Value



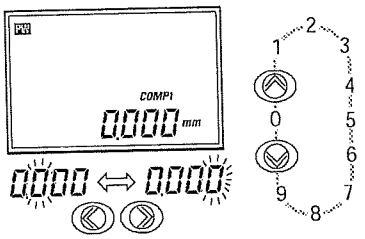
When you select a digit position using the << and >> keys, the selected digit blinks. Set a numeric value using the ∧ and ∨ keys.
The setting range is 0.000 to ±99.999 (1µm sensor) or 0.00 to ±999.99 (10µm sensor).
When the setting mode is exited, the offset value is automatically displayed at the measurement value.

④ Setting Factor Value



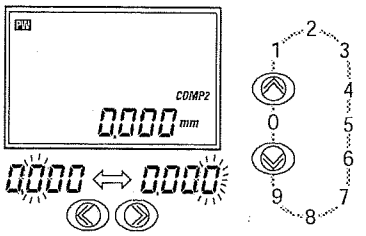
When you select a digit position using the << and >> keys, the selected digit blinks.
Set a numeric value using the ∧ and ∨ keys.
The setting range is 0.001 to 9.999.
Displays the measurement value by multiplying the measured value by 1 to 9.

⑤ Setting Lower Limit Value of Comparator



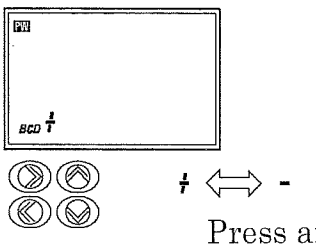
When you select a digit position using the << and >> keys, the selected digit blinks.
Set a numeric value using the ∧ and ∨ keys.
The setting range is 0.000 to ±99.999 (1µm sensor) or 0.00 to ±999.99 (10µm sensor).
When LOWER setting ≥ measurement value, the photoMOS relay of the LOWER output turns ON.

⑥ Setting Upper Limit Value of Comparator



When you select a digit position using the << and >> keys, the selected digit blinks. Set a numeric value using the ∧ and ∨ keys.
The setting range is 0.000 to ±99.999 (1μm sensor) or 0.00 to ±999.99 (10μm sensor).
When UPPER setting ≤ measurement value, the photoMOS relay of the UPPER output turns ON.

⑦ Setting Logic of BCD Output



Select the output logic of the parallel BCD.

Press any key to change the setting.

2. Mounting to Panel

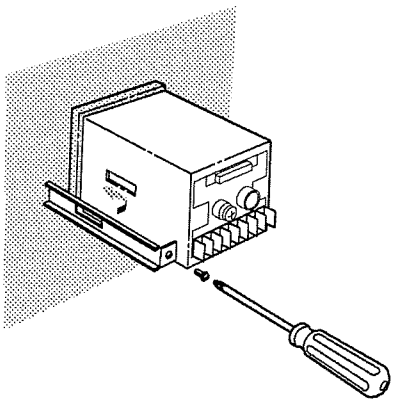
The DG-4140 unit can be mounted to a panel having an opening of $68^{+0.7}_{0}$ x $68^{+0.7}_{0}$ mm. Follow the steps below to mount the unit to the panel.

① Remove the panel mount fittings by loosening the mounting screws of the fittings.

② Insert the DG-4140 unit from the front side into the panel hole.

③ Reinstall the panel mount fittings from the rear side into the holes on both sides of the unit.

④ Tighten the screws of the panel mount fittings to secure the DG-4140 unit to the panel.



3. Connecting Cables

① Remove the rear panel terminal strip, connect the 100 to 240VAC to the power input terminal, and reinstall the terminal strip cover (terminal screw M3.0).

② Connect the earth terminal on the rear panel to a good ground.

③ Connect the signal connector of the gauge sensor to the SIG IN connector on the rear panel.

④ Connect the BCD cable to the BCD OUT connector on the rear panel.

4. Measurement

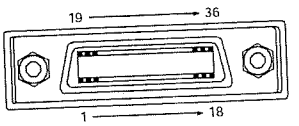
① Make sure that the display value changes by moving the spindle of the gauge sensor. Then, press the RESET switch on the front panel for 3 seconds or more, or input one pulse of the voltage signal with the Lo level for 20μs or more to pin 32 of the BCD OUT connector to reset the counter and then start measurement.

② If miscount occurs in the counter circuit, the display section blinks indicating an error. In this case, press the RESET switch on the front panel for 3 seconds or more, or input one pulse of the voltage signal with the Lo level for 20μs or more to pin 32 of the BCD OUT connector to reset the counter and then restart measurement.
If peak hold has started, the reset operation is not effective. Once stop peak hold and then reset the counter.

③ To hold the display value, BCD output, and comparator output, input the voltage signal with the Lo level to pin 31.
The display value, BCD output, and comparator output are put in the hold state.

5. BCD OUT

1. Pin Arrangement



To the BCD OUT connector on the rear panel, the BCD output, polarity output, decimal point output, error output, hold input, reset input, busy input, and print command output are connected. Pin arrangement of each signal is shown below.

Pin No.	Signal Name	Pin No.	Signal Name
1	1 x 10^0 BCD output	19	4 x 10^4 BCD output
2	2 x 10^0 BCD output	20	8 x 10^4 BCD output
3	4 x 10^0 BCD output	21	Peak hold start input
4	8 x 10^0 BCD output	22	- Peak hold stop input
5	1 x 10^1 BCD output	23	- N.C
6	2 x 10^1 BCD output	24	- N.C
7	4 x 10^1 BCD output	25	- Polarity output +
8	8 x 10^1 BCD output	26	- Polarity output -
9	1 x 10^2 BCD output	27	- D.P3 decimal point output
10	2 x 10^2 BCD output		[10μms, 0.00]
11	4 x 10^2 BCD output	28	- D.P4 decimal point output
12	8 x 10^2 BCD output		[1μm, 0.000]
13	1 x 10^3 BCD output	29	- N.C
14	2 x 10^3 BCD output	30	- Error output
15	4 x 10^3 BCD output	31	- Hold input
16	8 x 10^3 BCD output	32	- Reset input
17	1 x 10^4 BCD output	33	- Busy input
18	2 x 10^4 BCD output	34	- Comparator gate input
		35	- Print command output
		36	- Common

Receptacle: DX10A-36S (Made by Hirose Electric)
Applicable plug: DX40-36P (Made by Hirose Electric)
Plug cover: DX36-CV1 (Made by Hirose Electric)
Applicable cable:
Conductor size: AWG#30
Conductor configuration: 7/0.1
Insulator outer diameter: φ0.5
Cable UL style: UL20276 and UL2789

2. Description of Each Signal

① BCD output

- Pins 1-20
- Positive/negative logic, 5-digit parallel output
- Open-collector output

② Peak hold start input

- Pin 21
- When the voltage signal with the Lo level is input, peak hold starts and then the display value indicates the peak hold value which is output to the BCD output. This continues until the peak hold stop signal is input.

③ Peak hold stop input

- Pin 22
- When the voltage signal with the Lo level is input, peak hold is canceled and the display value and BCD output return to usual measurement.

④ Polarity output

- Pin 25 (+ output)
- Pin 26 (- output)
- Open-collector output
- When the BCD output logic is negative logic, ON/OFF states are as shown below.
  When the BCD output logic is positive logic, all ON/OFF states of the output are inverted.

	25 (+ output)	26 (- output)
When measurement value is positive (+)	ON	OFF

When measurement value is negative (-)	OFF	ON
Reset	ON	OFF

⑤ Decimal point output

- Pin 27

(D.P3[0.00] When sensor resolution 10μm for the setting mode is selected)

- Pin 28

(D.P4[0.000] When sensor resolution 1μm for the setting mode is selected)

- Open-collector output
- When the BCD output negative logic for the setting mode is selected, ON/OFF states are as shown below.

When the positive logic is selected, all ON/OFF states of the output are inverted.

	27(D.P3)	28(D.P4)
1μm	OFF	ON
10μm	ON	OFF

⑥ Error output

- Pin 30
- Open-collector output
- If miscount occurs in the counter circuit of the DG-4140, the ON signal is output which continues until reset. However, if the display value overflows, the ON signal is not output.

⑦ Hold input

- Pin 31
- If the voltage signal with the Lo level is input, the display value

and BCD output are put in the hold state and then the print command signal is output. While the signal with the Lo level is input, the hold state continues.
During the hold state, however, the counter circuit internally performs counting operation according to the input signal from the gauge sensor. Therefore, when the hold state is canceled, the display value and BCD output change to the measurement value at the timing.

⑧ Reset input

- Pin 32
- When the voltage signal with the Lo level is input, the display value, BCD output, and error indication and error output are reset. While the signal with the Lo level is input, the reset state continues. However, if the display value overflows in the peak hold start state, they are not reset. In this case, once input the peak hold stop signal before resetting.

⑨ Busy input

- Pin 33
- Same as (5) Hold input.

⑩ Comparator gate input

- Pin 34
- When the voltage signal with the Lo level is input, the Pass/Fail test is stopped forcibly and then all Pass/Fail test outputs turn OFF.

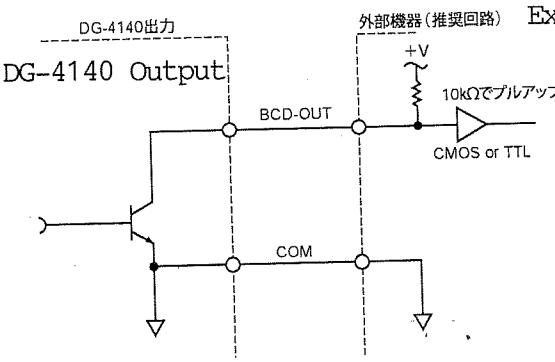
⑪ Print command output

- Pin 35
- Open-collector output
- When the hold signal or busy signal is input and the display value and BCD output are put in the hold state, the print command signal with negative pulse is output.

3. Recommended Interface

Make sure that the following interface circuit is installed in the external device connected to the BCD OUT connector on the rear panel.

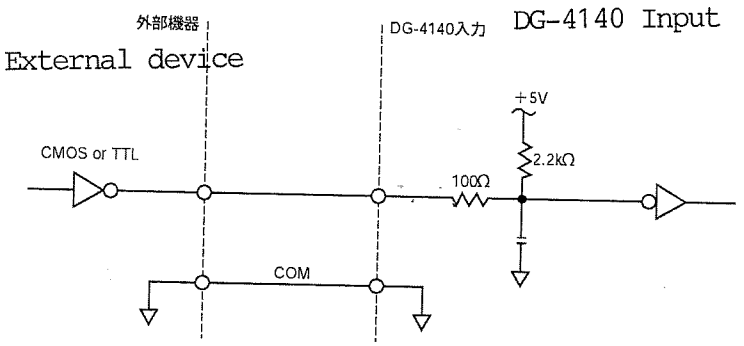
■ Interface circuit for output signals
(BCD output, polarity output, decimal point output, error output, print command output)



Output format	Open-collector output
Output IC	74LS07
Withstand voltage *	Max. 30V
Max. sink current	Max. 32mA
Residual voltage	Max. 0.5V

* To improve the reliability, operation with a power supply of +24V or less is recommended.

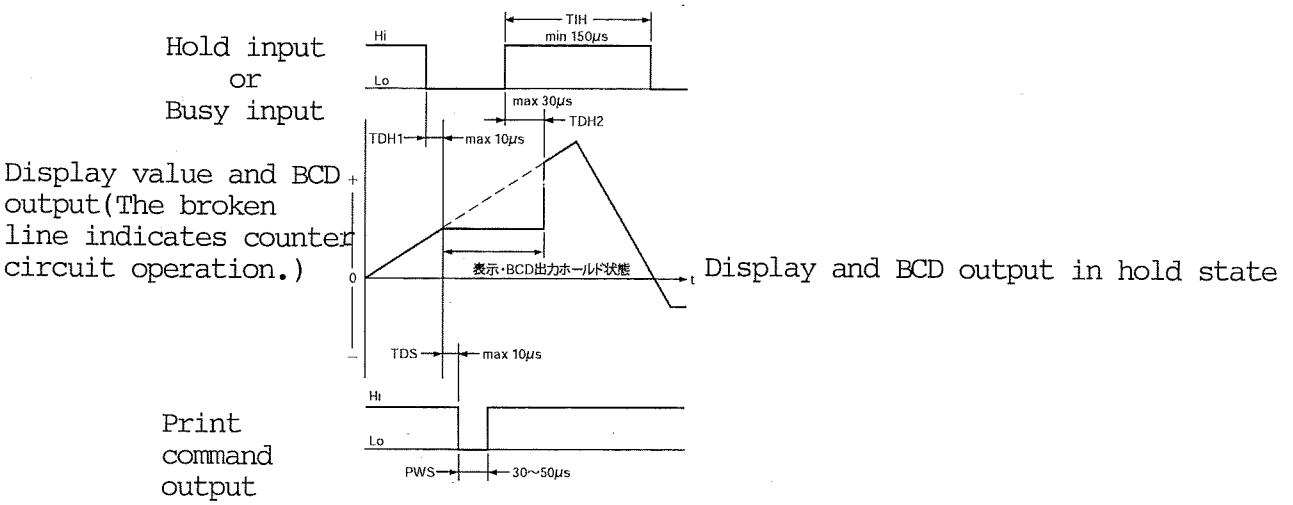
■ Interface circuit for input signals
(Peak hold start input, peak hold stop input, hold input, reset input, busy input, and comparator gate input)



Input Lo level voltage	0 to 1.4V
Input Hi level voltage	3 to 5.25V
Input impedance	3 to 5.25V

4. Timing Chart

■ Timing chart of hold input, busy input, and print command output (BCD OUT connector)



TDH1

Time interval since the hold signal is input until the display value and BCD output are put in the hold state. 10μs maximum.

TDH2

Time interval since the hold signal is canceled until the hold state is canceled. 30μs maximum.

TDS

Time interval since the display value and BCD output data are put in the hold state until the print command signal is output. 10μs maximum.

PWS

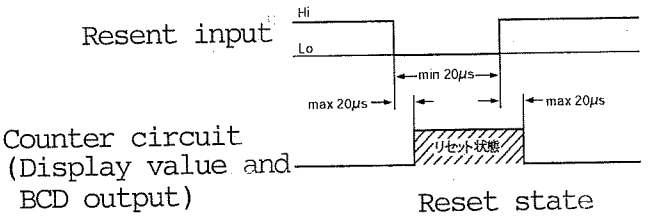
Pulse width of the print command signal. 30 to 50μs.

TIH

Time interval since the hold signal is canceled until it is input again. 150μs minimum. If the hold signal is input at an interval shorter than this, the print command signal may not be output.

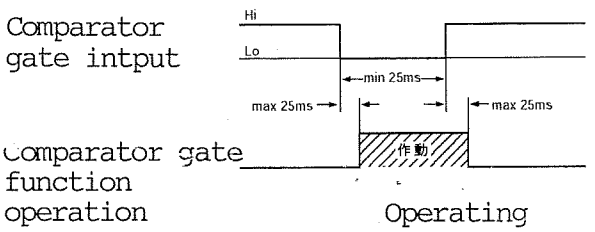
■ Timing chart of reset input (BCD OUT connector)

The minimum pulse width of the reset signal is 20μs.
Both the time interval since the reset signal is input until the reset state results and the time interval since the reset signal is canceled until the reset state is canceled are 20μs maximum.



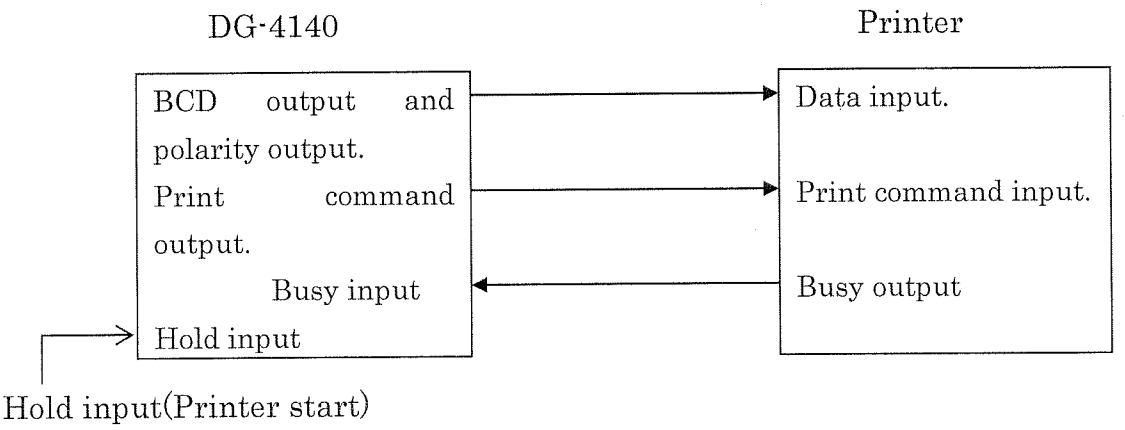
■ Timing chart of comparator gate input (BCD OUT connector)

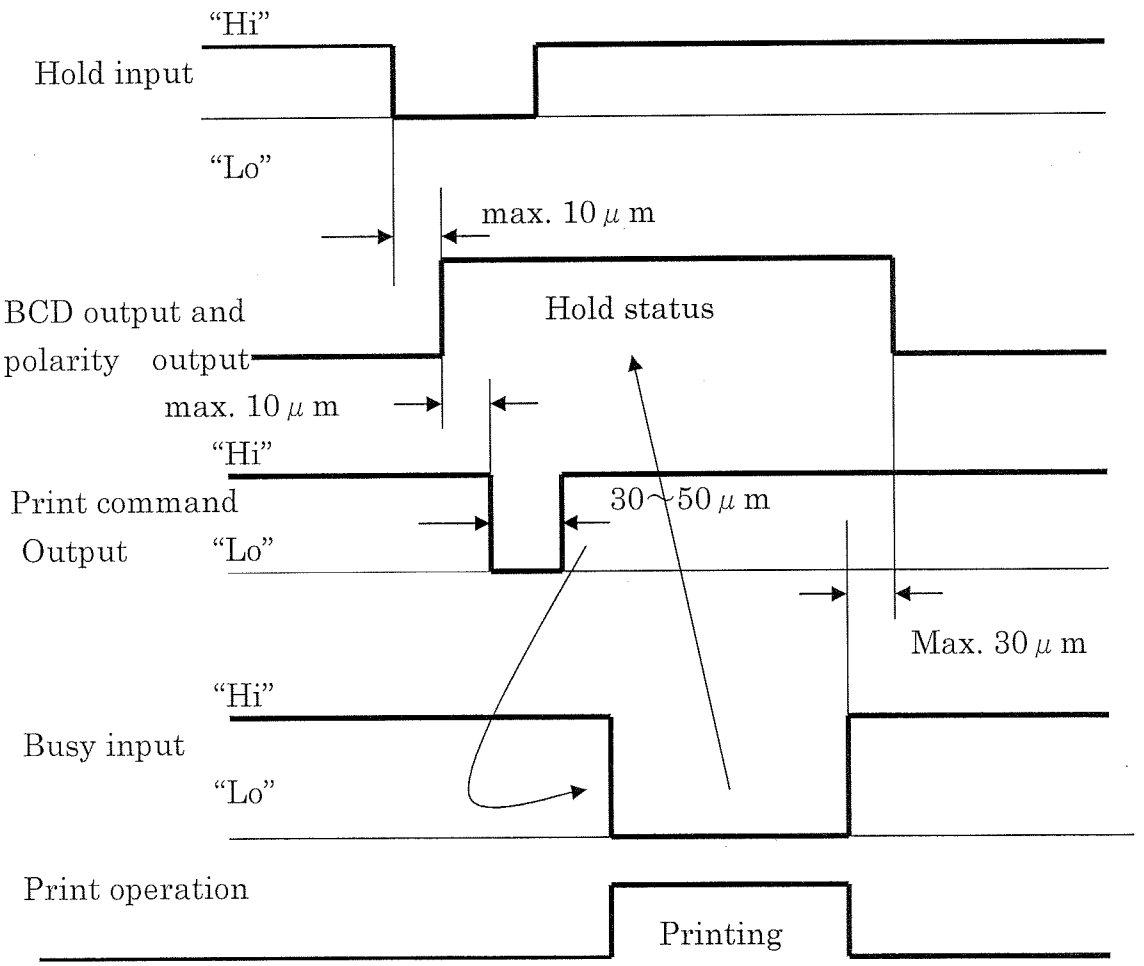
The minimum pulse width of the comparator gate signal is 25ms. Both the time interval since the comparator gate signal is input until the function operates and the time interval since the comparator gate signal is canceled until the function is canceled are 25ms maximum.



■ Timing chart of print command output (BCD OUT connector)

The following timing chart is for the case when the printer is started at the rising edge of the print command signal. Retain the hold input to the Lo level until the busy input is set to the Lo level.





6. TROUBLESHOOTING

1. Measurement Error (Display Blinking)

If a measurement error occurs, the display value blinks and the error output (OC) of BCD OUT turns ON. This is not an error of the DG-4140. However, if the display value overflows, no error output is made.

■ Causes of measurement error

① The speed of the spindle of the sensor has exceeded the maximum response speed specification of each sensor.
When the tip of the spindle hits the object under measurement, the speed of the spindle may exceed the maximum response speed.

② The sensor input signal is influenced by external noise.

③ "90-degree phase difference" of the sensor output signal has deviated from normal.

④ The display value has exceeded ±99.999 or ±999.99.

■ Measures

① Reduce the speed of the object under measurement or the sensor so that the spindle speed of the sensor decreases.

②
a. Change the wiring route if the sensor signal cable is near a noise source such as a motor.
b. Minimize the length of the sensor signal cable.
c. Be sure to connect the DG-4140 to a good ground (using an annealed

copper wire with 2mm^2 or more, with a wire length of 20m or less).

③ Replace the sensor with a new one.

④ Check the offset and factor settings. Change the settings so that the display value may not overflow.

■ Recovery from measurement error

Upon completion of taking proper measures to remove the cause of error, reset the DG-4140.

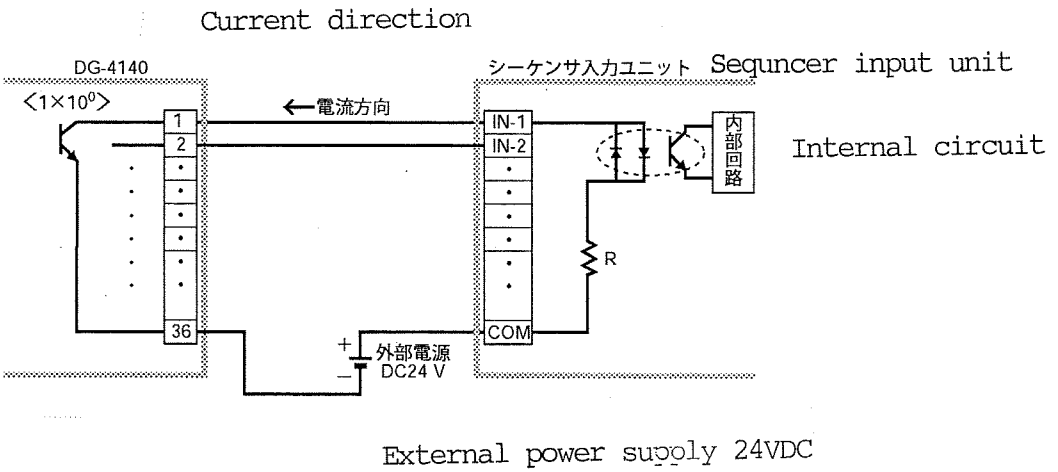
* If the DG-4140 remains in the error state after taking the above measures, contact Ono Sokki.

7. SEQUENCER CONNECTION

1. BCD Data Connection

Since the BCD output of the DG-4140 is open-collector output, use a 12-24VDC input unit as an input unit of the sequencer.

<Example connection>

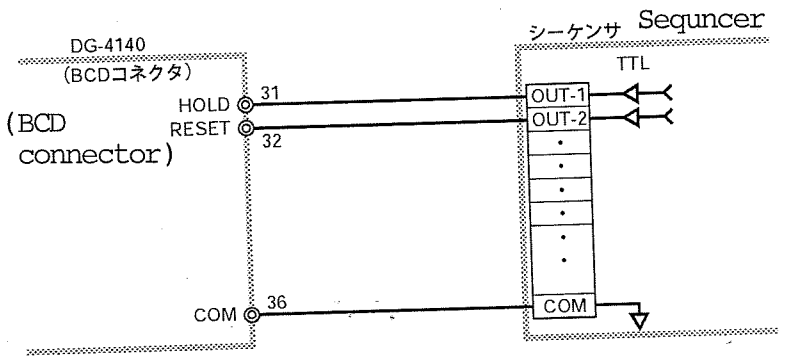


⚠ Be careful of polarity connection of the external power supply. Note that inverted polarity connection may cause damage to the BCD output circuit.

2. Control Signal Connection

When connecting the HOLD/RESET signal, input the TTL signal to each pin of the BCD connector.

<Example connection>



The HOLD/RESET signal is in the BCD connector. Note that it is voltage signal input.

8. SPECIFICATIONS

■ Counting signal input section

Amplification type: 2-channel waveform shaping
Signal waveform: Square wave with 90-degree phase difference
Input impedance: 47kΩ or higher
Lo level: 0 to 1.4V
Hi level: 3 to 5.25V
Frequency range: DC to 300kHz (when an Ono Sokki sensor is used)
Input plug receptacle: R03-R6F (Made by Tajimi Electronics)
Connections are as shown below.

Pin No.	A	B	C	D	E	F
Signal	SIG 1	SIG 2	+5V	...	COM	...

■ Count display section
Counting system: Reversible counting system
Counting digits: 5-digit decimal number
Display digits: 5-digit number and 1-digit sign
Display range: 0.000 to ±99.999, 0.00 to ±999.99 (For polarity, only the minus "-" sign is displayed.)
Minimum measurement unit: 1μm/10μms
Zero suppression: Provided (digit 1mm or more).
Display: 7-segment LCD
Backlight color: Associated with the comparator (OK: green, UPPER/LOWER: red).
Character height: 10mm
Error display: Blinking

■ BCD input/output section

Input plug receptacle: DX10-36S (Made by Hirose Electric)

① BCD output: Positive/negative logic, 5-digit parallel, open-collector output
② Polarity output: Positive/negative logic, open-collector output
③ Decimal point output: Positive/negative logic, open-collector output
④ Error output: If miscount occurs in the counter circuit of the DG-4140, the ON signal is output through open collector.
⑤ Print command output: When the hold signal or busy signal is input and the display value and BCD output are put in the hold state, the print command signal with negative pulse is output through open collector.

Common to ① to ⑤

Output format	Open-collector output	Max. sink current	32mA max.
Output IC	74LS07	Residual voltage	0.5V max.
Withstand voltage *	30V max.	-	-

* To improve the reliability, operation with a power supply of +24V or less is recommended.

⑥ Peak hold start input:
When the voltage signal with the Lo level is input, peak hold starts and the peak hold value is output to the display value and BCD output.
⑦ Peak hold stop input:
When the voltage signal with the Lo level is input, peak hold is canceled and the display value and BCD output return to usual measurement.
⑧ Hold input:
When the voltage signal with the Lo level is input, the display value and BCD output are put in the hold state. The hold state continues while this signal is at the Lo level.
⑨ Reset input:
When the voltage signal with the Lo level is input, the display value, BCD output, error display, and error output are reset. The reset state continues while this signal is at the Lo level.
⑩ Busy input:
When the voltage signal with the Lo level is input, the display value and BCD output are put in the hold state. The hold state continues while this signal is at the Lo level.
⑪ Comparator gate input:
When the voltage signal with the Lo level is input, the Pass/Fail test is stopped forcibly and then all Pass/Fail test outputs turn OFF.

Common to ⑥ to ⑪

Input Lo level voltage	0 to 1.4V
Input Hi level voltage	3 to 5.25V
Input impedance	1kΩ or higher

■ Comparator output section

Setting digits: 5-digit number and 1-digit sign (The decimal point position is the same as the count display section.)
Number of row: 2 rows
Output conditions:

LOWER: Turns ON when setting ≥ count value.

OK: Turns ON when LOWER setting < count value < UPPER setting.

UPPER: Turns ON when UPPER setting ≤ count value.

* However, when the comparator gate signal is input, the Pass/Fail test and Pass/Fail test output are forcibly turned OFF.
Output format: Semiconductor relay (1 make contact each)
Maximum contact capacity: 30VDC and 0.1A
Contact ON resistance: 50Ω or less

■ Power supply section

Power voltage: 100 to 240VAC, 50Hz/60Hz
Power consumption: About 7VA (100VAC or 50Hz)
Withstand voltage: 1500VAC for 1 minute
Insulation resistance: 10MΩ or higher with a 500VDC megger

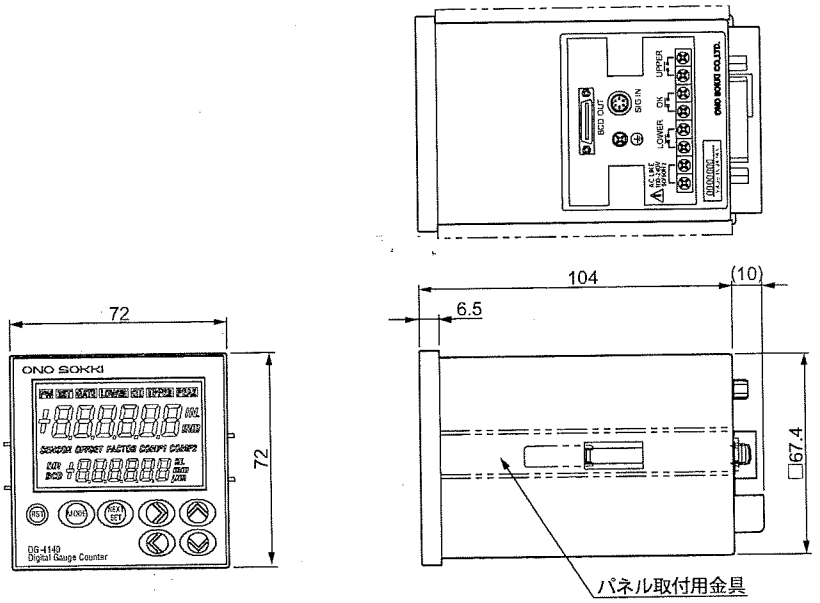
■ Other specifications

Operating temperature range: 0 to +40℃
Storage temperature range: -10 to +55℃
Dimensions: 72(W) x 72(H) x 114(D) mm
Weight: About 300g

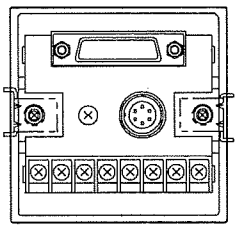
■ Accessories

Panel mount fitting 1 set
Instruction manual x1 copy

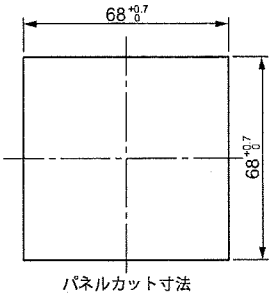
DIMENSIONAL OUTLINE DRAWINGS



Panel mount fixture



（注）取付パネルの板厚は1～3.2mm程度が適当です.



Panel Cutout dimensions

Note: For the mount panel plate, a thickness of about 1 to 3.2mm is recommended