

# GC51 Pressure Transmitter

Fluids and gases measurement  
(Featuring stainless diaphragm)

## Overview

This pressure transmitter is for gases and liquids measurements with 2-wire system. Compact and lightweight design suitable for outdoor use for a wide range of industries including HVAC, Factory automation, Process and Water treatment contributing for easy installation on site.



Direct connection type

## Features

- Adjustable indication and output scaling are available.
- Breakthrough readability with LED-backlit LCD
- Small and lightweight design with 4-way pressure port directions: upper, lower, left and right (Lower, left and right for absolute model).



Terminal box type



Compatible with a wide range of pressure ranges from low, medium to high pressure including absolute pressure!

## Features of sensor

### Absolute pressure and low pressure range

Stainless steel seal diaphragm sensor



This pressure transmitter utilizes sealed-type pressure sensor made of SUS316L for all its wetted parts. MEMS sensor element built in the sensing part can measure absolute and low pressure with SUS316L diaphragm sensing part enclosing silicone oil for intermediary liquid. Suitable for high stable and accurate pressure measurement for gases and liquids measurements requiring high corrosion resistance.

### Medium pressure to High pressure

Semiconductor evaporated type (SS) Sensor



The semiconductor evaporated type (SS) sensor is proven in various industries that has the integral structure the semiconductor strain gauge, sensing part and connection are all welded without using glue or corrosive material. This makes it suitable for various process media measurements including liquids and gases with high durability and stability.

### Absolute pressure

0 to 120kPa abs.

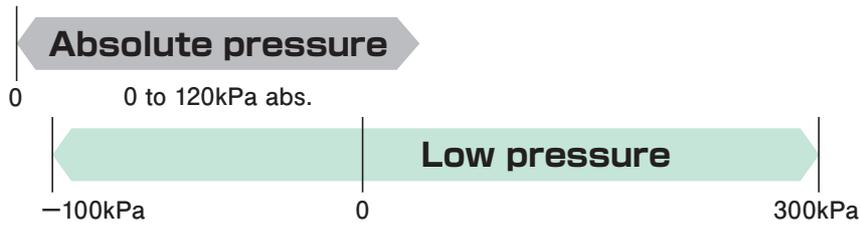


### Medium pressure to High pressure

0.1MPa

120MPa

### Absolute pressure•Low pressure (Stainless-sealed diaphragm)



### Specifications

Item	Description
Media	Gases or Fluids (not corrosive to the wetted material)
Mounting	Direct mounting Pressure inlet: Lower, Left, Right Panel mounting Pressure inlet: Lower (with mounting bracket, mounting screw) Terminal box type Panel mounting (Pressure inlet: Lower Terminal box at right with mounting bracket, mounting screw)
Pressure connection	Rc1/4 G1/4 female screw
Wetted parts	Diaphragm: SUS316L Fitting : SUS316L
Filled liquid	Silicone oil
Pressure range	0 to 35kPa      -20 to 20kPa      -50 to 50kPa      -100 to 100kPa      -100 to 300kPa      0 to 120kPa abs. 0 to 50kPa      0 to 50kPa      -100 to 0kPa      -100 to 200kPa      0 to 300kPa      0 to 200kPa
Output accuracy*1, *2	±0.35%F.S. at 23°C      ±0.25%F.S. at 23°C
Indication accuracy*1, *2	±(0.35%F.S.+1 digit) at 23°C      ±(0.25%F.S.+1 digit) at 23°C
Allowable maximum pressure	100kPa      200kPa      400kPa      1000kPa      200kPa abs.
Allowable vacuum pressure	130Pa abs. and above
Position effect*1	30Pa and below / 90°
Enclosure rating	Case material: Aluminum die cast Protection: P65
Installation location	Outdoor installation (Avoid direct sunlight)
CE marking	Applicable Standard EN61326-1:2006, EN61326-2:3:2006
Weight	Direct mounting: Approx. 450g, Panel mounting : Approx. 550g, Terminal box type: Approx. 630g
Power source	24V DC±10%
Output	4 to 20mA DC (2 wire system, Output range: 3.2 to 20.8mA DC) Response time: 30ms (with no filter setting) Resolution: 0.1%F.S.      Load resistance: 500Ω max.
Guaranteed accuracy*1	Operating temperature range (-20 to +70°C) ±2.0%F.S. (Output), ±(2.0%+1 digit) (Display)
Insulation resistance	50V DC 100MΩ or more
Outlet for electric wire	Direct mounting: SKINTOP® MS-SC13.5 Terminal box type: Cable gland FBA21-13 G1/2
Operating temperature and humidity	-20 to 70°C, 10 to 85%RH (No freezing or condensation)
Storage temperature and humidity	-25 to 75°C, 10 to 85%RH (No freezing or condensation)
Vibration resistance	10 to 150Hz, multi-amplitude 0.7mm (Lower than 60Hz) Acceleration: 50m / s <sup>2</sup> (60Hz or more) Vibrating direction: x, y, z (2.5 hours for each)
Shock resistance	Impact acceleration: 100m / s <sup>2</sup> Impact direction: x, y, z (3 times into forward and backward directions for each)
Output adjustment range	Zero point : -10 to +110% of the full span (To pressure range) Span point: -10 to +110% of the full span (To pressure range)
Numeric display	Six-digit LCD (Character height: 10mm, with LED backlight) Pressure display, Linear display: Four LCD digits max., Display cycle 500ms
Unit display	LCD bar display (with LED backlight) Pressure unit: kPa, Linear unit: Arbitrary set
Setting	With internal key switches (Mode, ▲, ▼) Scaling function: Linear display / output Holding function: Both the max value (Peak) and the minimum value Filter function: Moving average time, Select from 0, 2, 4, 8, and 16 Loop check function: Arbitrary setting output (4 to 20mA DC) Zero adjustment function: Pressure sensor zero adjustment
Others	Set value and hold value can be saved in EEPROM (Nonvolatile memory) semi-permanently.

\*1 Based on specification that electrical wire outlet is located at lower.

\*2 It includes the effect of Linearity, Hysteresis and Repeatability at 23°C environment temperature.

### Medium to high pressure range (Semiconductor evaporated type (SS) Sensor)

#### Medium pressure to High pressure

0.1MPa

120MPa

#### Specifications

Item	Others
Media	Gases or Fluids (not corrosive to the wetted material)
Mounting	Direct mounting Pressure inlet: Lower (Standard), right upper and left Direct mounting Pressure inlet: Lower (with mounting bracket, mounting screw) Terminal box type (Pressure inlet: Lower Terminal box at right with mounting bracket, mounting screw)
Pressure connection	Rc1/4 (50MPa and below, standard) Rc1/2 (Rc1/4+FJ10-973 Conversion joint, optional for 50MPa and below) G3/8B (Rc1/4+FJ12-373 Conversion joint, optional for 50MPa and below) G1/2B (Rc1/4+FJ12-473 Conversion joint, optional for 50MPa and below) G1/4(Rc1/4+FJ12-373 Conversion joint, optional for 50MPa and below)
Wetted parts	Diaphragm: SUS630 (17-4PH) High corrosion-resistant material (Co-Ni alloy)*1 Fitting : SUS316
Pressure range	-0.1 to 0.1, 0.2, 0.3, 0.5, 1.0MPa 0 to 0.3, 0.5, 1, 2, 3.5, 5, 10, 20, 35, 50, 70, 100, 120MPa
Output accuracy	±0.25%F.S. or ±0.5%F.S. at 23°C (0.5 to 50MPa) ±0.5%F.S. at 23°C (70, 100, 120MPa) ±0.5%F.S. or ±1.0%F.S. at 23°C (0.3MPa and below)
Indication accuracy	±(0.25%F.S.+1 digit), ±(0.5%F.S.+1 digit) or ±(1.0%F.S.+1 digit) at 23°C (Same as output accuracy)
Allowable maximum pressure	200% of pressure range (150% for 35 and 50MPa. 120% for 70, 100, 120MPa range)
Enclosure rating	Case material: Aluminum die cast Protection: IP65
Installation location	Outdoor installation (Avoid direct sunlight)
CE marking	Applicable Standard EN61326-1:2006, EN61326-2-3:2006
Weight	Direct mounting: Approx. 450g, Direct mounting: Approx. 550g, Terminal box type: Approx. 630g
Power source	24V DC±10%
Output	4 to 20mA DC (two wires, Output range: 3.2 to 20.8mA DC) Response time: 30ms (with no filter setting) Resolution: 0.1%F.S. Load resistance: 500Ω max.
Guaranteed accuracy	Operating temperature range (-20 to +70°C) ±1.0%F.S. (0.5MPa and above), ±2.0%F.S. (0.3MPa and below)
Insulation resistance	50V DC 100MΩ or more
Outlet for electric wire	Direct mounting, Direct mounting: SKINTOP® MS-SC13.5 Terminal box type: Cable gland FBA21-13 G1/2
Operating temperature and humidity	-20 to 70°C, 10 to 85%RH (No freezing or condensation)
Storage temperature and humidity	-25 to 75°C, 10 to 85%RH (No freezing or condensation)
Vibration resistance	10 to 150Hz, multi-amplitude 0.7mm (Lower than 60Hz) Acceleration: 50m / s <sup>2</sup> (60Hz or more) Vibrating direction: x, y, z (2.5 hours for each)
Shock resistance	Impact acceleration: 100m / s <sup>2</sup> Impact direction: x, y, z (3 times into forward and backward directions for each)
Output adjustment range	Zero point : -10 to +110% of the full span (To pressure range) Span point: -10 to +110% of the full span (To pressure range)
Numeric display	Six-digit LCD (Character height: 10mm, with LED backlight) Pressure display, Linear display: Four LCD digits max., Display cycle 500ms
Unit display	LCD bar display (with LED backlight) Pressure unit: kPa, Linear unit: Arbitrary set
Setting	With internal key switches (Mode, ▲, ▼) Scaling function: Linear display / output Hold function: Holds measured maximum and minimum values Filter function: Moving average time, Select from 1, 2, 4, 8, and 16 Loop check function: Arbitrary setting output (4 to 20mA DC) Zero adjustment function: Pressure sensor zero adjustment
Others	Set value and hold value can be saved in EEPROM (Nonvolatile memory) semi-permanently.

\*1 Consult us for high corrosion resistant material (Co-Ni alloy).

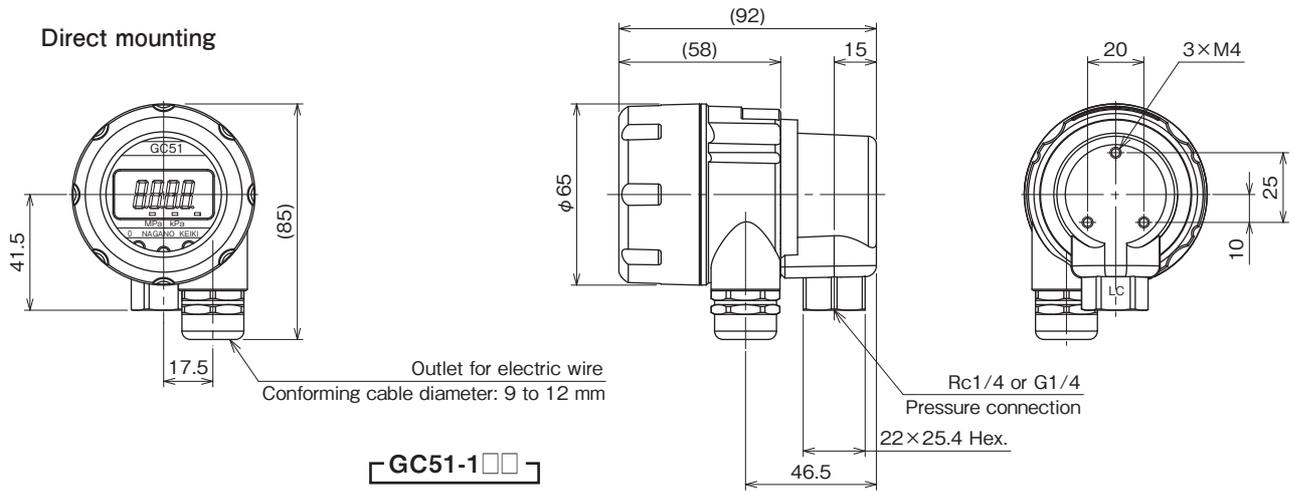
# GC51

## Pressure Transmitter

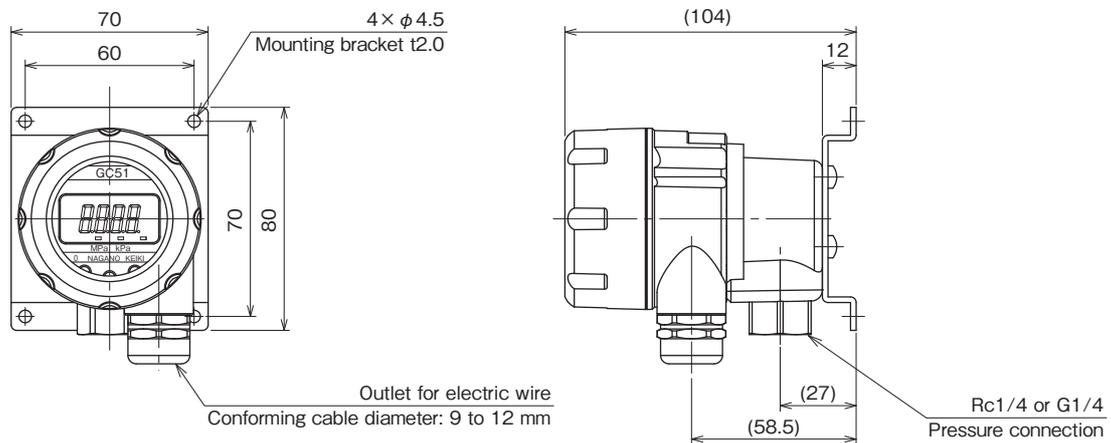
### Dimensions

Unit: mm

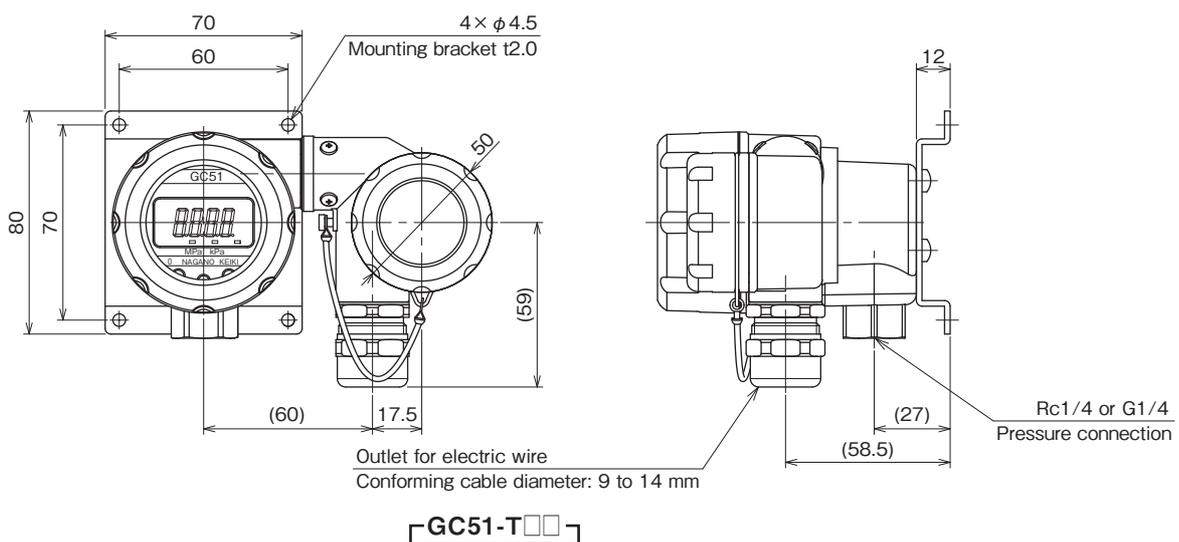
#### Direct mounting



#### Panel mounting type



#### Terminal box type



# GC51

## Pressure Transmitter

### Mounting

Direct connection type is available in several installation directions (Specify when ordering)

#### Absolute pressure and low pressure range (Direct connection type available in three installation directions)



Pressure inlet: **Right**

GC51-A□□



Pressure inlet: **Left**

GC51-C□□



Pressure inlet: **Lower  
(standard)**

GC51-I□□

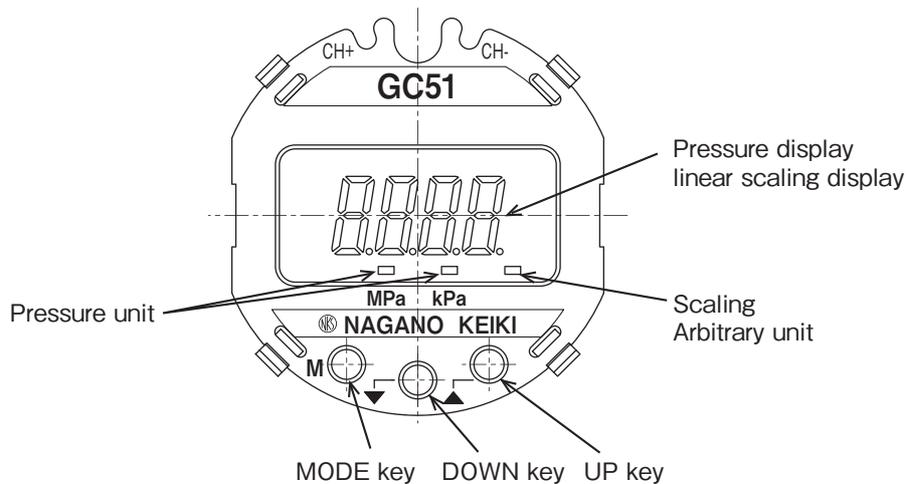


Pressure inlet: **Upper**

GC51-B□□

#### Range between medium and high pressures (Direct connection type available in four installation directions)

### Function (Panel display)



#### ① LCD display

Breakthrough readability with LED-backlit LCD

#### ② Scaling function

The linear scaling function allows the user for display/analog output of the scaling value where the pressure is linearly converted to an arbitrary physical quantity.

#### ③ Zero adjustment function

Zero point adjustment of 4 to 20mA DC output is available by easy key operation.

#### ④ Loop check

The user can output and verify 4 to 20mA easily without applying pressure.

#### ⑤ Filter Function

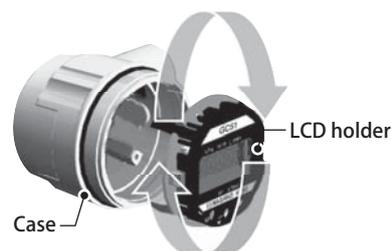
Pulsation and other differential pressure change can be eased by moving average function where the pressure value can be fluctuated.

#### ⑥ Hold display

The maximum and minimum values of the measured value are displayed.

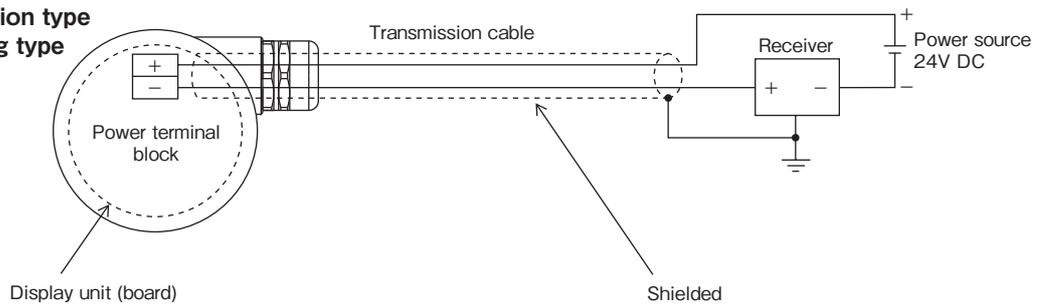
#### ● Structure of display panel

The user can adjust the display in 90 degree increments by removing front cover.

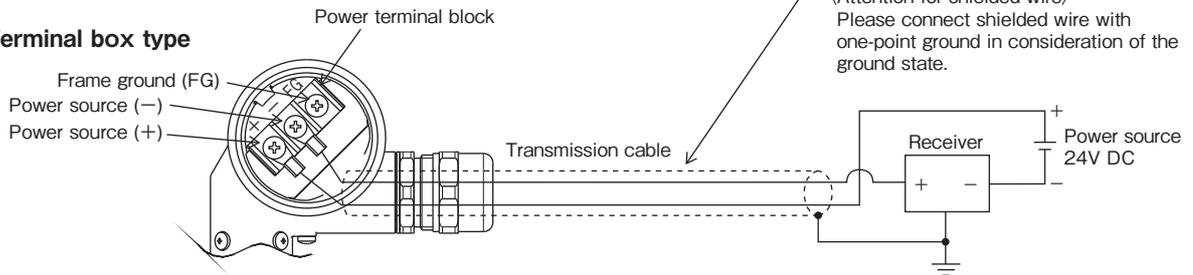


### Wiring

#### Direct connection type Panel mounting type



#### Terminal box type



### CAUTION

- Please use the transmission cable after routing it independently away from the high current electrical line and confirm that there is no malfunction due to noise.
- If the cable outer diameter does not conform to specification, water and dust will penetrate because no sealing effect is obtained. Please be sure to use a cable with suitable outer diameter.
- Transmission cable installed into the cable gland must be slacked at the position lower than the cable gland connection in order to prevent the infiltration of water into the unit inside.

### Transmission cable

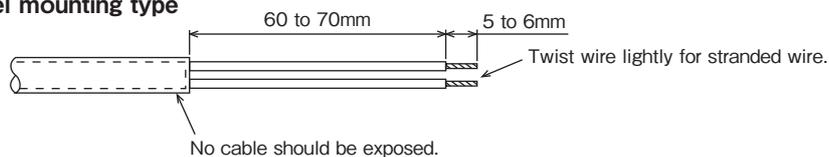
Ensure to use an adapted cable for the power supply terminal level and a cable gland.

	Terminal box Model number / Manufacture	Adaptable transmission cable
Direct connection type Panel mounting type	SMKDSP1.5/2-5.08 Phoenix contact	<ul style="list-style-type: none"> <li>• 2 core shield cables*1</li> <li>• Cable outer diameter: 9 to 12mm</li> <li>• Core Line cross-section area: 0.3 to 2mm<sup>2</sup> (Standard or a Single line)</li> </ul>
Terminal box type	OTB-760-B-3P-M4 OSADA Co., Ltd.	<ul style="list-style-type: none"> <li>• 2 core shield cables*1</li> <li>• Cable outer diameter: 9 to 14mm</li> <li>• Core Line cross-section area: 0.25 to 1.65mm<sup>2</sup> (Standard or a Single line)</li> </ul>

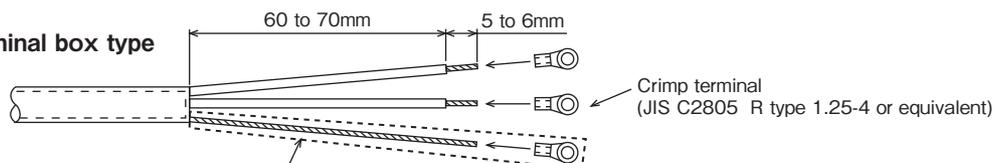
\*1 With a twist and a shield, noise-resistant level is improved.

\*2 Depending types of used crimp terminal

#### Direct connection type Panel mounting type



#### Terminal box type

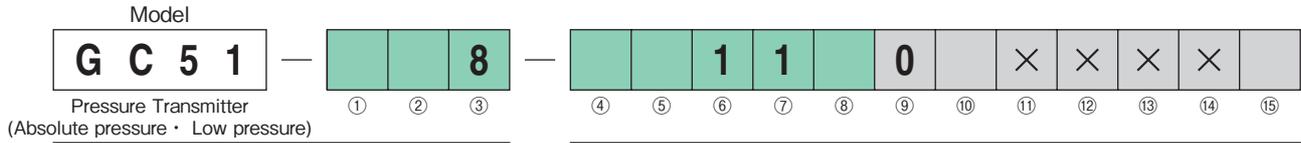


Attention) Make sure not to expose shielded wire if the ground connection using "Frame ground (FG)" is unnecessary. Crimp a terminal connector twisting shielded wires only when pressure transmitter itself needs ground-connected.

### Absolute pressure • Low pressure (Stainless-sealed diaphragm)

#### Model number configuration 1

Please specify the model number, each specs and the range for ordering.



Model number		Product specifications		Additional specifications (Optional)	
① Mounting type	1	Direct connection type	Pressure inlet: Lower side	(Internal terminal connection)	
	2	Panel mounting type	Pressure inlet: Lower side (with mounting bracket, mounting screw)	(Internal terminal connection)	
	A	Direct connection type	Pressure inlet: Right side	(Internal terminal connection)	
	C	Direct connection type	Pressure inlet: Left side	(Internal terminal connection)	
	T	Terminal box type (Panel mounting type) (Pressure inlet: Lower side Terminal box at right with mounting bracket, mounting screw)			
② Connection *1	7	Rc1/4			
	P	G1/4 Female screw			
③ Wetted parts	8	Diaphragm: SUS316L Fitting: SUS316L			
④ Pressure range		Range	Digits	Available accuracy	
				±0.25%F.S.	±0.35%F.S.
	7	-20 to 20kPa	-20.00	—	○
	8	-50 to 50kPa	-50.00	○	—
	P	-100 to 0kPa	-100.00	○	—
	1	-100 to 100kPa	100.0	○	—
	2	-100 to 200kPa	200.0	○	—
	3	-100 to 300kPa	300.0	○	—
	X	0 to 35kPa	35.00	—	○
	W	0 to 50kPa	50.00	—	○
	A	0 to 100kPa	100.00	○	—
	B	0 to 200kPa	200.0	○	—
	C	0 to 300kPa	300.0	○	—
Z	0 to 120kPa abs.	120.00	○	—	
⑤ Accuracy (Depending on pressure range)	4	±0.25%F.S. at 23°C			
	T	±0.35%F.S. at 23°C			
⑥ Power source	1	24V DC ±10%			
⑦ Output	1	4 to 20mA DC (2 wire system)			
⑧ Outlet for electric wire		Direct connection type, Panel mounting type			
	1	SKINTOP® MS-SC13.5			
	A	Terminal box type (Panel mounting type) Cable gland FBA21-13 G1/2			
⑨ Additional spec.	0	Not required			
⑩ Treatment	0	Not required			
	1	Use no oil			
	2	Use no water			
	3	Use no oil & water			
⑮ Documents	0	Not required			
	1	Required (Documents available upon request) Datasheet (Drawing / Specifications) Instruction manual Calibration test report (One-part one sheet) Inspection / Traceability certificate			

Please specify pressure range and unit of measure along with corresponding ordering code.

\* 1 If conversion joint is the requirement, specify the connection size and material

#### Treatment against wetted parts

- **Use no oil**  
Oil used in manufacturing the gauges had been flushed out & no oil residue remained inside its wetted parts.
- **Use no water**  
Water used in manufacturing the gauges had been flushed out & no water residue remained inside its wetted parts.
- **Use no oil & water**  
Oil/Water used in manufacturing the gauges had been flushed out & no oil/water residue remained inside its wetted parts.

\* Specify code "X" to refer N/A

### Medium to high pressure range (Semiconductor strain gauge pressure sensor)

#### Model number configuration 2

Please specify the model number, each specs and the range for ordering.

Model: **GC51** — [ ] [ ] [ ] — [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Pressure Transmitter (1-3) Product specifications (4-8) Additional specifications (Optional) (9-15)

Model number	Product specifications	Additional specifications (Optional)				
① Mounting type	1*1	Direct connection type Pressure inlet: Lower side (Standard) (Internal terminal connection)				
	2	Panel mounting type Pressure inlet: Lower side (with mounting bracket, mounting screw) (Internal terminal connection)				
	A	Direct connection type Pressure inlet: Right side (Special) (Internal terminal connection)				
	B	Direct connection type Pressure inlet: Upper side (Special) (Internal terminal connection)				
	C	Direct connection type Pressure inlet: Left side (Special) (Internal terminal connection)				
	T	Terminal box type (Pressure inlet: Lower side Terminal box at right with mounting bracket, mounting screw)				
	② Connection	7	Rc1/4 (Standard)			
3		G3/8 (with Rc1/4+FJ12-373, Option) *2				
4		G1/2 (with Rc1/4+FJ12-473, Option) *2				
9		Rc1/2 (with Rc1/4+FJ10-973, Option) *2				
P		G1/4 Female screw				
③ Wetted parts	3	Diaphragm: SUS630 (17-4PH) Fitting: SUS316				
	6	High corrosion resistant material (Co-Ni alloy) *3				
④ Pressure range	1	-0.1 to 0.1MPa	0.100	±0.25%F.S.	±0.5%F.S.	±1.0%F.S.
	2	-0.1 to 0.2MPa	0.200	—	○	○
	3	-0.1 to 0.3MPa	0.300	—	○	○
	5	-0.1 to 0.5MPa	0.500	○	○	○
	6	-0.1 to 1.0MPa	1.000	○	○	—
	C	0 to 0.3MPa	0.300	—	○	○
	E	0 to 0.5MPa	0.500	○	○	—
	G	0 to 1MPa	1.000	○	○	—
	J	0 to 2MPa	2.000	○	○	—
	K	0 to 3.5MPa	3.500	○	○	—
	L	0 to 5MPa	5.000	○	○	—
	N	0 to 10MPa	10.000	○	○	—
	Q	0 to 20MPa	20.000	○	○	—
	R	0 to 35MPa	35.000	○	○	—
	S	0 to 50MPa	50.000	○	○	—
T	0 to 70MPa	70.000	—	○	—	
U	0 to 100MPa	100.000	—	○	—	
V	0 to 120MPa	120.000	—	○	—	
⑤ Accuracy	4	±0.25%F.S. at 23°C				
	5	±0.5%F.S. at 23°C				
	7	±1.0%F.S. at 23°C				
⑥ Power source	1	24V DC ±10%				
⑦ Output	1	4 to 20mA DC (2 wire system)				
⑧ Outlet for electric wire	Direct connection type, Panel mounting type					
	1	Standard: SKINTOP® MS-SC13.5				
⑨ Additional spec.	Terminal box type					
	A	Standard: Cable gland FBA21-13 G1/2				
⑩ Treatment	0	Not required				
	1	Specify when Diaphragm-Seal type is requirement (Please consult us).				
	2	Use no oil				
	3	Use no water				
⑪ Documents	0	Not required				
	1	Required (Documents available upon request) Datasheet (Drawing / Specifications) Instruction manual Calibration test report (One-part one sheet) Inspection / Traceability certificate				

Please specify pressure range and unit of measure along with corresponding ordering code.

\*1 Standard comes with "Outlet for electric wire: Lower, Pressure Connection: Lower."  
 \*2 Conversion joint is included.  
 \*3 Consult for high corrosion resistant material.

#### Treatment against wetted parts

- Use no oil**  
Oil used in manufacturing the gauges had been flushed out & no oil residue remained inside its wetted parts.
- Use no water**  
Water used in manufacturing the gauges had been flushed out & no water residue remained inside its wetted parts.
- Use no oil & water**  
Oil/Water used in manufacturing the gauges had been flushed out & no oil/water residue remained inside its wetted parts.

\* Specify code "X" to refer N/A