GC51 *Pressure Transmitter*

This transmitter is 2-wire type and it is one of the product series for which SS sensors are used to the pressure sensing part. Consideration against the environment are taken into and the indicating part has become small in size, therefore, the applications such as airconditioning systems in the buildings, the controlling facilities for the energy savings and the control units for the plant facilities, are considered. You can apply the various industries with this model.

GC52 *Differential Pressure Transmitter*

This product is the differential pressure transmitter for gas, liquid measurement, it can be used in the outdoor and product contributes to the reduce labor of the establishment construction in that it is light-weight and the compactness of it. This product corresponds to the wide industry use of the building air-conditioner process, the factory facilities, the environment process and so on.

[GC52-112]

Intrinsic Safety Explosion-Proof Construction Type

KJ91
GC51 Intrinsic Safety Explosion-Proof Construction Type

KJ91•92
Pressure & Differential Pressure Transmitter

Conforming to the IEC specification of Intrinsic safety explosion-proof construction, they can be Used in "ZONE 0" places where explosive gas always exists. (Explosion class:Exia II CT4) Combining these products with GC51 and GC52 of non-explosion proof specification, you can measure a wide range of pressure and differential pressure, from micro pressure to high pressure, in Industrial process. Please refer to individual catalogs.

KJ92
GC52 Intrinsic Safety Explosion-Proof Construction Type

GC15•16 *Precision Digital Pressure Gage*

GC15 For gas measurement

(0 to 100Pa → 0 to 50kPa, Compound is available)
Silicon capacitance pressure sensor is used, and GC15 is adequate to measure the low differential pressure precisely. And it offers the various applications because it is high pressure-resistant.

Pressure unit and display

	Pressure range	Pa	kPa		Pressure range	Pa	kPa
Differential pressure	0 to 100Pa	100.0	0.1000	Compound	±100Pa	100.0	0.1000
	0 to 200Pa	200.0	0.2000		±200Pa	200.0	0.2000
	0 to 500Pa	500.0	0.5000		±500Pa	500.0	0.5000
	0 to 1kPa	1000.0	1.0000		±1kPa	1000.0	1.0000
	0 to 2kPa	2000.0	2.0000		±2kPa	2000	2.000
	0 to 5kPa	5000	5.000		±5kPa	5000	5.000
	0 to 10kPa	10000	10.000		±10kPa	10000	10.000
	0 to 20kPa	20000	20.000		±20kPa	20000	20.00
	0 to 50kPa	50000	50.00		±50kPa	50000	50.00

GC16 For gas and liquid measurement
(High-precision ±0.07% F.S. on request.)

(0 to 200kPa, 0 to 35MPa, -100kPa to +100kPa → -100kPa to 2MPa)
This model is available for measuring gases and liquid, because using semiconductor pressure sensor of stainless steel diaphragm. And it is high pressure-resistant type.

Pressure unit and display

		Pressure range		kPa	MPa
Differential pressure	Compound	—	-100 to 100kPa	100.0	0.1000
		0 to 200kPa	-100 to 200kPa	200.0	0.2000
		0 to 0.5MPa	-0.1 to 0.5MPa	500.0	0.5000
		0 to 1MPa	-0.1 to 1MPa	1000.0	1.0000
		0 to 2MPa	-0.1 to 2MPa	2000.0	2.0000
		0 to 5MPa		5000	5.000
		0 to 10MPa		10000	10.000
		0 to 20MPa		20000	20.000
		0 to 35MPa		35000	35.00

GC15•16 *Common spec.*

● Pressure measurement and Voltage/Current measurement.　● Pressure measurement and Voltage/Current signal output function.
● Pressure measurement and switch operation check and electrical resistance measurement.　● 2-way power source: Build-in battery and AC100 to 200V.
● Interface: RS-232C (Standard) or GP-IB (Option).　● Average function.　● Measurement data memory function.　● Compact and light weight.

NAGANO KEIKI

Digital Pressure Gauge

Digital Pressure Gauge
GC Series Line UP

OUT 1　OUT 2

10.00

ADJ.　SET　MPa

MODE

NAGANO KEIKI CO., LTD.

HEAD OFFICE / 1-30-4,HIGASHIMAGOME,OHTA-KU,
TOKYO JAPAN 143-8544

GC Series - line up

		Digital Pressure Gauge				Digital Differential Pressure Gauge				
Model		**GC35** Waterproof Type Digital Pressure Gauge	**GC31** Digital Pressure Gauge	**GC61** Digital Pressure Gauge	**GC64** Digital Pressure Gauge	**GC62** Digital Differential Pressure Gauge	**GC30** Digital Differential Pressure Gauge	**GC63** Digital Differential Pressure Gauge	**GC50** Multifunction Digital Differential Pressure Gauge	**GC55** Digital Differential Pressure Gauge
Externals										
Application		Hydraulic Industry (Press, Extruder, Molding machine), FA, General industry (Feed pump etc.)			• Indicating instrument for pressure reducing valve • Gas line indicating instrument for analysis	Control for HVAC (Clean room, Filter etc.), Measurement for wafer yield ratio			Level measurement of sealed tank Measurement of flow / flow velocity	For plant facility, recording obligation application under energy-saving laws, level measurement of tank
Fluid / (Contacting fluid, Gas, Material)		Air · water · Oil (630st.st.)		Gas · Liquid (630st.st.)		Dry Air · N$_2$ Gas (Silicone)			Gas · Liquid (316Lst.st.)	Gas · Liquid (630st.st.)
Feature		High withstanding pressure, peripheral LED is lit with ring-shape Selectable shape according to layout	Indication and output functions are contained in compact body (□30 mm)	Available with wider range of media to be measured. High reliable – Sensor is welded in the Joint	Case size is the same as that of ø50 pressure gauge	Corresponding from fine pressure 50Pa High resolution, multifunction, high withstanding pressure	Corresponding with wide range from of fine pressure 50Pa, high withstanding pressure (50kPa)	Corresponding from fine pressure 50Pa Battery-operated, low cost	Combined with flow / flow velocity detector. Directly digital indication of flow / flow velocity	Detectable big differential pressure of gas or liquid
Pressure Range		-0.1 to 0.5MPa → 2MPa 0 to 0.5MPa → 50MPa	-100 to 100kPa → 2MPa 0 to 500kPa → 50MPa	-0.1 to 0.5MPa → 2MPa 0 to 0.5MPa → 50MPa	-0.1 to 0.5MPa → 2MPa 0 to 0.5MPa → 20MPa	0 to 50Pa → 20kPa ±50Pa → ±10kPa	0 to 50Pa → 0 to 5kPa ±50Pa → ±5kPa	0 to 50Pa → 5kPa ±50Pa → ±500Pa	0 to 1kPa → 100kPa ±1kPa → ±50kPa	Range of differential pressure: -1 to 1MPa (Operating pressure: 0 to 1MPa)
Pressure Sensor		SS Sensor				SC Sensor			SC Sensor	SS Sensor
Indication		4 digit LED (digit size: 8mm)	3 1/2 digit LED (digit size: 10mm)	4 digit LED (digit size: 8mm)	3 digit LCD (digit size: 8.5mm)	4 digit LED (digit size: 10mm)	3 1/2 digit LED (digit size: 10mm)	3 1/2 digit LCD, Analog bar glafph display (digit size: 17mm)	3 1/2 digit LCD (digit size: 18mm)	3 1/2 digit LED (digit size: 10mm)
Indication Accuracy		±(1.0% F.S. +1digit)	±(1.0% F.S. + 1digit)	±(1.0% F.S. + 1digit)	±(1.0% F.S. + 1digit)	±(1 to 1.5% F.S. + 1digit)	±(1.0% F.S. + 1digit)	±(1 to 2% F.S. + 1digit)	±(1.0% F.S. + 1digit)	±(1.0% F.S. + 1digit)
Power Source (Recommendation)		24V DC ±10%	24V DC ±10%	24V DC ±10%	Lithium battery (CR2032) (3 V, 1 pc.)	24V DC ±10%	24V DC ±10%	Battery-operated (AA alkaline batteries x2) Support with 24 V DC using dedicated cable	External power supply-operated (24 V DC ±10%) Battery-operated (AA alkaline batteries (LR6) x2)	18 to 24V DC
Output	**Comparator Output**	User selectable open collector *1 output NPN or PNP x 2	NPN open collector output x 2 (PNP can be ordered)	NPN open collector output x 2 (PNP can be ordered)	—	Relay outputs x 2	NPN open collector output x 2 (PNP can be ordered)	N-channel open drain x 1 (With external power cable)	NPN open collector output x 2 (When alarm output type)	Photo relay output x 2
	Analog Output	4 to 20mA DC	1 to 5V (±3% F.S.)	4 to 20mA DC or 1 to 5V DC	—	4 to 20mA DC or 1 to 5V DC	1 to 5V DC	—	4 to 20mA DC (When selected)	4 to 20mA DC or 1 to 5V DC
Function	**Loop Checking**	●	●	●	—	●	●	—	●	—
	Scaling	●	●	●	—	●	●	—	●	●
	Filtering	●	●	●	●	●	●	●	●	●
	Peak & Bottom Holding	●	●	●	—	●	●	●	—	●
	Other Function	Zero adjustment, Key locking, Lights-out mode, etc.	Zero adjustment, Key locking, etc.	One touch zero adjustment, Key locking, etc.	One touch zero adjustment, Auto power OFF	One touch zero adjustment, Key locking, etc.	Zero adjustment, Key locking, etc.	Zero adjustment, Key locking, etc.	One touch zero adjustment, Auto power OFF	Tree types of data can be gethered: high, low, and differential pressures
Operating Temperature		-20 to 70℃	-10 to 50℃	-10 to 50℃	-10 to 50℃	-10 to 50℃	-10 to 50℃	0 to 40℃	-10 to 70℃ *2	-10 to 50℃
Construction		IP67 (1MPa or less : IP65)	Indoor specification (IP40)	IP65	Indoor specification	Indoor specification (IP40)	Indoor specification (IP40)	Indoor specification (IP40)	IP65	Indoor specification (IP64)
For Semiconductor Use *3		—	ZT67	ZT60	ZT64	—	—	—	—	—

*1: GC35; The comparator output is assigned to "1" output. when analog output is selected.   *2; Operating fluid temperature   *3; Please refer to individual catalogs about for semiconductor models.
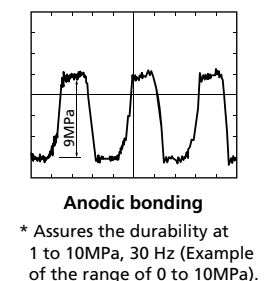
Pressure sensing elements

SC Sensor
Silicon Capacitance Sensor

range :
0 to 50Pa → 0 to 50kPa, ±50Pa → ±50kPa

The SC sensing element is a differential fine pressure sensor to detect the pressure by the change in capacitance between the diaphragm and the electrode. The silicon diaphragm is processed to the order of microns utilizing the state of the art micro-machining technology.

Anodic bonding

Glass
Glass
500V
500V
400℃
At operating temperature

The tension applied on diaphragm
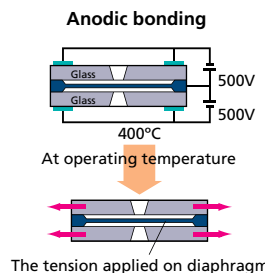
SS Sensor
Semiconductor Strain Gauge Sensor

range :
-0.1 to 0.3MPa → 0 to 200MPa

In this semiconductor strain gauge sensor, a strain gauge is deposited by plasma CVD on a metallic diaphragm and on insulator film. This pressure sensor detects the change in resistance is produced by displacement of diaphragm due to pressure of fluid.

9MPa

Anodic bonding

* Assures the durability at 1 to 10MPa, 30 Hz (Example of the range of 0 to 10MPa).

Seven points of GC Series *Exclude GC63/64, GC50: partially-covered

Point 1 : Scaling function
Free range application is possible by the highly display and output scaling.

•Display scaling function
LED display can be set as arbitrary values Within the limit of a 4 figure display. (* Maximum display depends on model)

(+) Display maximum   9.9.9.9   Positive pressure display maximum value

0.0.0.0   0   Various kinds of pressure sensor range

(–) Display minimum   -1.9.9.9   Negative pressure display maximum value

•Analog output scaling function
Scaling of the analog output can be arbitrarily carried out to a full-scale display with the limit of a maximum display.

Impression pressure range (%)
100
75
50
25
0
Before scaling
After scaling
25 50 75 100%
Analog output 4 to 20mA, 1 to 5V

Point 2 : Loop checking function
By the roop checking, display and outputs can be manual tested with up and down keys operation regardless of impression pressure. It is suitable for the simulation operation of a wiring check etc.

4 to 20mA, 1 to 5V
Analog output
PLC Regulator
OK!!
Comparator output can also be tested of operation.
Indicator Recorder
FIELD
Intensive management system

Example of roop checking: Without pressurizing a sensor, output signal can be manual outputted.

Point 3 : Comparator function
About the comparator output, two relay points of contact are carried. According to use, two kinds of operation modes can be chosen freely.

[Hysteresis mode]
When OUT1 is set as maximum and OUT2 is set as minimum.
Pressure
max. OUT1
Dead band (Positive)
Dead band (Negative)
min. OUT2
max. on OUT 1 off
min. on OUT 2 off
The Upper limit of OUT1 and OUT2 (positive the dead band) and lower limit (negative the dead band) can be set at any value.

Either one of two

[Wind mode]
When OUT1 is set as maximum and OUT2 is set as minimum.
Pressure
Setting value (b)
max. OUT1
Setting value (A)
Setting value (A)
min. OUT2
Setting value (b)
max. on OUT 1 off
min. on OUT 2 off
The setting of maximum (A<b) and minimum (A>b) of OUT1 and OUT2 can be chosen freely.

on off   ON Delay   OFF Delay
ON Delay and OFF Delay can be set to the above-mentioned, set value.

Point 4 : Filtering function
The digital filter is built in. It is useful, when pressure change is hard and a display is hard to see. Select (OFF, 25ms, 250ms, 2.5s, 5s, 10s)

Point 5 : Zero-adjustment function
Zero can be easily set by using ADJ. key when the pressure port is released to the atmosphere.

Point 6 : Holding function
The peak and bottom value of measured are memorized. It displays, while pushing up and down keys.

Point 7 : Key-locking error message function
An error message is displayed when outside of the zero adjustment, excessive pressure is applied, key lock function for avoiding incorrect operation.