PC20・25
Programmable Pressure Controller

Overview

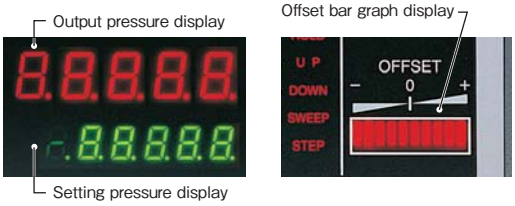
Stable pressure control with rapid and precise operation. This product can support for improving performance of inspection and calibration process. Automatic labor-saving for inspection device is possible with its pressure control ability.
Through automatic control of pressure generation and increasing/decreasing speed, the equipment enables a test process regardless of operator's skill, improving the test accuracy and remarkably reducing the test time (Takt time).

Automated and labor-saved test equipment for various DUTs.

- Testing on instruments and converters
  - ＊Regulating valve, I/P positioner
  - ＊Pressure measurement and conversion instruments
- Testing and calibration on medical instrumentation
  - ＊Sphygmomanometer
  - ＊Inhaler, gas insufflator
- Testing on pressure vessels and safety parts
  - ＊Automobile parts
  - ＊Gas treatment equipment
  - ＊Pneumatic devices

Dual display and offset bar chart display

Two large LED indicators improve legibility and operability.
＊The large output pressure LED indicator (Red) and pressure setup LED indicator (Green) allow grasp of the pressure setting and status at a glance.
＊Operability in manual pressure regulation has been improved contributing for efficiency data sampling application.
＊Display scaling enables data conversion to non Pa unit systems.



Easy manual setup mode and diverse setting program memory functions

<Manual procedure>
●Since any desired pressure with the pressure range can be set for each digit, fine pressure regulation can easily be performed on a digit basis.

Simplified leakage test function (Sealed pressure variation measurement method)

If leakage occurs in pressure application test, the reliability of test data is lost, remarkably reducing the test efficiency. To eliminate the risk, the sealed pressure measurement function is featured to perform simplified leakage in accordance with the change on pressure variation.

●The test can be performed at the touch of the LEAK button on the operation panel.
Complex operations are no required.
Automatic inspection based on the set condition.
In leakage test, the output pressure indicator displays the current pressure, the pressure setup indicator displays pressure variation from the start of test, and the program setup indicator displays the remaining test time.

PC20 Micro pressure, Low pressure (Air)／PC25 High pressure (Water)

PC20

Compressed air (Driving source)

PC25

Compressed air (Driving source)

PC28

Water

Return (Drain)

Analog output

Remote contact input

RS-232C or GP-IB Communication

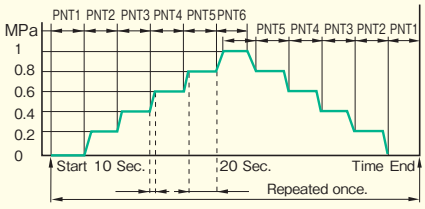
10 program patters can be set with 20 division as maximum.

A. Equal division setting (Set as "divid")

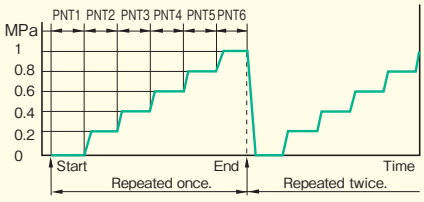
Sample program pattern

Pressure unit	MPa
Number of repetitions	3 (Max. 99)
Minimum pressure	0.000
Maximum pressure	1.000
Number of divisions	5 (Max. 20)
Sweep time (s)	10
Retaining time (s)	20

In addition to the necessary settings above, there is an item for selecting the repeating mode of program patterns. The operation is represented by the following two charts.



●Reverse mode (Set as "rEvrS")
When output pressure reaches the maximum point number, it is performed for decreasing point number down to the minimum one.

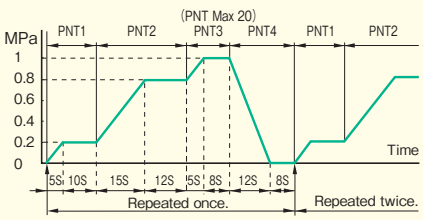


●Round mode (Set as "roUnd")
When output pressure reaches the maximum point number, it is repeated from the minimum point number.

B. User setting (Set as "FrEE")

When a user setup is used, the pressure values above and increasing and decreasing speeds can be changed.

	Pressure point			
Point number	1	2	3	4
Pressure (MPa)	0.2	0.8	1.0	0.0
Sweep time (s)	5	15	5	12
Retaining time (s)	10	12	8	8
Repeat time	3 (Max. 99)			



It is possible to select reverse mode and round mode in the case of equal division setting.

(Maximum 10 pattern is available in A or B)

PC20 For air pressure

This equipment performs automatic pressure control ranging from micro pressure (±1kPa) to intermediate pressure (1MPa).
When negative pressure range is selected, it enables automatic continuous pressure control ranging from negative pressure to positive pressure.

PC25 For water pressure

This photo shows example of combination PC25 and pressure source unit (PC28)

PC25 can automatically control pressure by using environmentally friendly water (Distilled water, deionized water) instead of gases for safety purpose.

Pressure range (For air pressure)

Range			Minimum setting resolution		Accuracy	
Positive pressure range	Bidirectional and compound ranges		Positive pressure range	Bidirectional and compound ranges	0.2%	※ 0.1%
0 to 1	±1	kPa	0.0001	0.0001	○	
0 to 2	±2	kPa	0.0001	0.001	○	
0 to 5	±5	kPa	0.001	0.001	○	○
0 to 10	±10	kPa	0.001	0.001	○	○
0 to 20	±20	kPa	0.001	0.01	○	○
0 to 50	±50	kPa	0.01	0.01	○	○
——	-0.1 to 0.1	MPa	——	0.0001	○	○
0 to 0.2	-0.1 to 0.2	MPa	0.0001	0.0001	○	○
0 to 0.5	-0.1 to 0.5	MPa	0.0001	0.0001	○	○
0 to 1	——	MPa	0.0001	——	○	○

Pressure range (For water pressure)

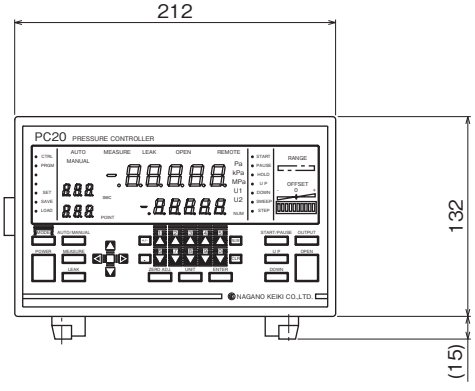
Range			Minimum setting resolution	Accuracy	
Range	Controllable range			0.2%	0.1%
0 to 2	0.5 to 2	MPa	0.0001	○	○
0 to 5	0.5 to 5	MPa	0.001	○	○
0 to 10	0.5 to 10	MPa	0.001	○	○
0 to 20	0.5 to 15	MPa	0.001	○	○

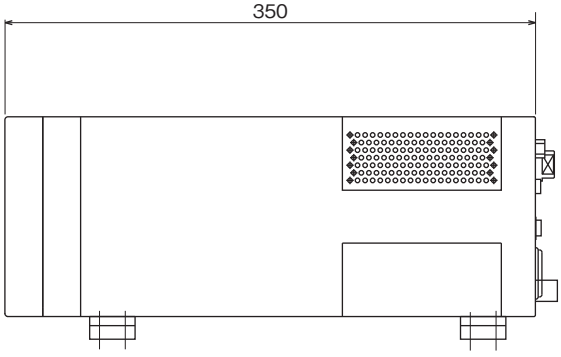
When pressure range is 20MPa, maximum controllable pressure is 15MPa.

With negative pressure range, controllable minimum pressure is -0.08MPa on negative side.

*When the accuracy ±0.1% is required, accuracy at negative pressure side will be ±0.2%.

Dimensions





※PC25 dimension is identical to PC20.

Specifications 1

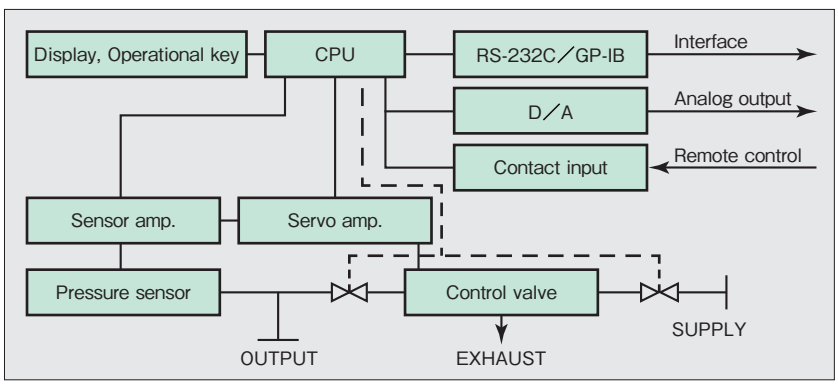
PC20 Pressure controller (For air pressure)

Accuracy (23±3℃)		±0.2%F.S. (Standard)
		±0.1%F.S. (Depending on pressure range. Accuracy at negative pressure side also varies).
Pressure stability		Within ±0.05%F.S.
Response time		Within 3 Sec. From the start to change up to ±0.2%F.S. (With no load) From any pressure value up to ±25%F.S.
Temperature coefficient	Zero	±0.01%F.S./℃ (±0.1%F.S. Spec.) ±0.02%F.S./℃ (±0.2%F.S. Spec.)
	Span	±0.01%F.S./℃ (±0.1%F.S. Spec.) ±0.02%F.S./℃ (±0.2%F.S. Spec.)
Position effect (Zero)		±0.1%F.S. In all directions (Pressure range 50kPa or lower, ±50kPa or lower) ±0.01%F.S. In all directions (Pressure range ±0.1MPa or higher)
Functions	Pressure unit	Pa, kPa, MPa, U1 (Scaling 1), U2 (Scaling 2)
	Setting points	1 to 20 divisions between upper and lower limits or any 21 arbitrary points within pressure range
	Sweep time	1 to 600 sec. with 1 sec. step
	Step time	1 to 600 sec. with 1 sec. step
	Repeat times	1 to 99 times or infinite times
Memory		10 numbers
Operation mode		Programmable auto sweep Operation in accordance with programmed pattern
		Programmable manual sweep The manual operation of the setting program
		Manual pressure output Arbitrary pressure setting
		Pressure measurement function As a digital pressure gauge (Accuracy: Pressure generation accuracy ±1digit)
		Simplified leak test Inspection pressure / Setting time, Pressure descent indication
Display	LED	Controlled pressure values 5 digits (Character height approx. 14mm)
		Setting pressure values 5 digits (Character height approx. 10mm)
		Setting item values 3 digits (Character height approx. 8mm)
		Operation, status, unit, and offset monitors

Error message display		[ErrXX] Codes indicate errors
Approx. warm up time		5 minutes or longer (Recommended 30 minutes)
Media		Clean dry air only. Also nitrogen gas applicable. Care must be taken when handling the exhaust nitrogen gas.
Supply pressure (Maximum 1.2MPa)	Range 20kPa or lower	0.05MPa or higher
	Range 50kPa or higher	Pressure range + 0.1MPa or higher
	Range with negative pressure	0.5MPa or higher (±5kPa or lower of continuous range is 0.1MPa or higher)
Pressure connection		Rc1/4 Exhaust port: Rc1/4
Media consumption		Approx. 30L/min or lower (Flow rate converted by 20℃ at a pressure range of 1MPa)
Analog output		1 to 5V DC/F.S. (Accuracy ±0.05%F.S.)
Interface		RS-232C (Dsub 9 pins) 9600 / 19200 / 38400bps Synchronous Option GP-IB (Base on IEEE488)
Remote control terminal		UP / DOWN / OPEN operation Dead front contact input (Terminal block M3)
Operating / storage position		Horizontal position for use and storage
Operating / storage temperature / humidity		5 to 40℃ 20 to 80%RH or lower No condensation
Storage temperature		-10 to 50℃
Calibration interval		6 Months
Power source voltage		100 to 240V AC (Allowable fluctuation range 85 to 264V AC) Frequency: 47 to 63Hz
Power consumption		Maximum 40VA
Withstand voltage		1000V AC between power source and casing, 1 minute
Insulation resistance		100MΩ or higher, 500V DC between power source and casing
Dimension		Approx. 212 (W) × 132 (H) × 350 (D) (Excluding convex parts)
Weight		Approx. 8kg

Operating principle

Controls the compressed air entering from the pressure supply slot (SUPPLY) using the control valve, transfers a control command to the servo circuit based on the value of the pressure then outputs it from the pressure output (OUTPUT).
The value of the pressure sensor is processed by the CPU displayed as the current pressure value in real time.



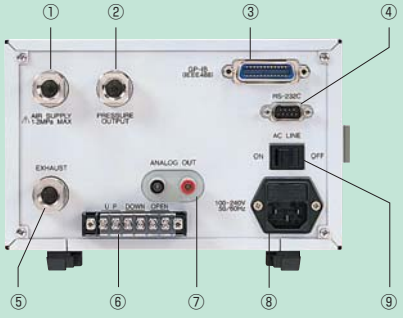
Specifications2

PC25 Pressure controller (For water pressure)

Accuracy (23±3℃)		±0.2%F.S. (Standard)
		±0.1%F.S. (High accuracy)
Pressure stability		Within ±0.07%F.S.
Response time		Within 10 Sec. From the start to change up to ±0.2%F.S. (With no load) From any pressure value up to ±25%F.S. (With a step)
Temperature coefficient	Zero	±0.01%F.S./℃ (±0.1%F.S. Spec.) ±0.02%F.S./℃ (±0.2%F.S. Spec.)
	Span	±0.01%F.S./℃ (±0.1%F.S. Spec.) ±0.02%F.S./℃ (±0.2%F.S. Spec.)
Position effect (Zero)		±0.01%F.S. In all directions
Functions	Pressure unit	kPa, MPa, U1 (Scaling 1), U2 (Scaling 2)
	Setting points	1 to 20 divisions between upper and lower limits or any 21 arbitrary points within pressure range
	Sweep time	1 to 600 sec. with 1 sec. step
	Step time	1 to 600 sec. with 1 sec. step
	Repeat times	1 to 99 times or infinite times
Memory		10 numbers
Operation mode		Programmable auto sweep Operation in accordance with programmed pattern
		Programmable manual sweep The manual operation of the setting program
		Manual pressure output Output of arbitrary pressure within controllable pressure range
Display	LED	Controlled pressure values 5 digits (Character height approx. 14mm)
		Setting pressure values 5 digits (Character height approx. 10mm)
		Setting item values 3 digits (Character height approx. 8mm)
		Operation, status, unit, and offset monitors

Error message display	[ErrXX] Codes indicate errors
Approx. warm up time	5 minutes or longer (Recommended 30 minutes)
Media	Deionized water or distilled water
Supply pressure (Maximum 18MPa)	Control pressure + 1MPa or higher
Pressure connection	Rc1/4 Exhaust port: Rc1/4
Analog output	1 to 5V DC/F.S. (Accuracy ±0.05%F.S.)
Interface	RS-232C (Dsub 9 pins) 9600 / 19200 / 38400bps Synchronous Option GP-IB (Base on IEEE488)
Remote control terminal	UP / DOWN / OPEN operation Dead front contact input (Terminal block M3)
Operating / storage position	Horizontal position for use and storage
Operating / storage temperature / humidity	5 to 40℃ 20 to 80%RH or lower No condensation
Storage temperature	-10 to 50℃ It should be drained of internal water
Calibration interval	6 Months
Power source voltage	100 to 240V AC (Allowable fluctuation range 85 to 264V AC) Frequency: 47 to 63Hz
Power consumption	Maximum 60VA
Withstand voltage	1000V AC between power source and casing, 1 minute
Insulation resistance	100MΩ or higher, 500V DC between power source and casing
Dimension	Approx. 212 (W) × 132 (H) × 350 (D) (Excluding convex parts)
Weight	Approx. 9kg

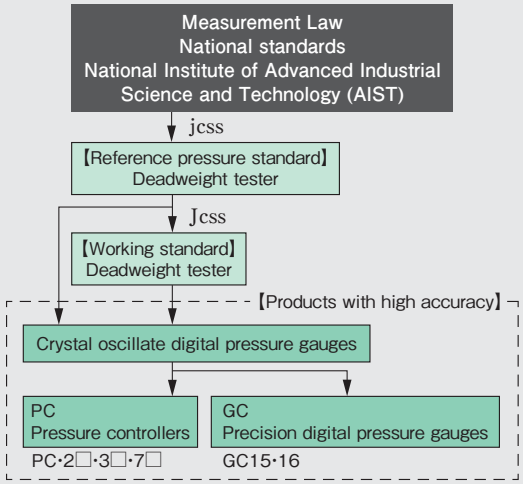
Rear panel interface block



①Pressure supply port
②Pressure output port
③GP-IB interface port (Option)
④RS-232C interface port
⑤Exhaust port
⑥Remote control terminal
⑦Analog output terminal
⑧Power input socket
⑨Main power switch

*Shown photo: PC20

Pressure Traceability System



Specifications3

PC28 Pressure source unit (Option)

Supply pressure (Air)	Maximum 0.7MPa (Compressed air)
Output pressure	Maximum 18MPa (Deionized water, distilled water) Ratio 1:34
Media	Deionized water or distilled water (Built in tank for 2 liters)
Air consumption rate for pump output operation	Minimum operation Approx. 0.040Nm^3/min. (Supply pressure 0.55MPa) When PC25 controls the pressure in the vicinity of 0MPa. Maximum operation Approx. 0.096Nm^3/min. (Supply pressure 0.55MPa) When PC25 controls the pressure in the vicinity of 8MPa.
Air consumption rate for pump drain operation	Approx. 0.080Nm^3/min. Drain pump pressure -50kPa
Pressure connection	Air supply port Rc1/4 Pressure output port Rc1/4 Exhaust port Rc1/4
Safety device	Release valve Consumption pressure Approx. 18MPa

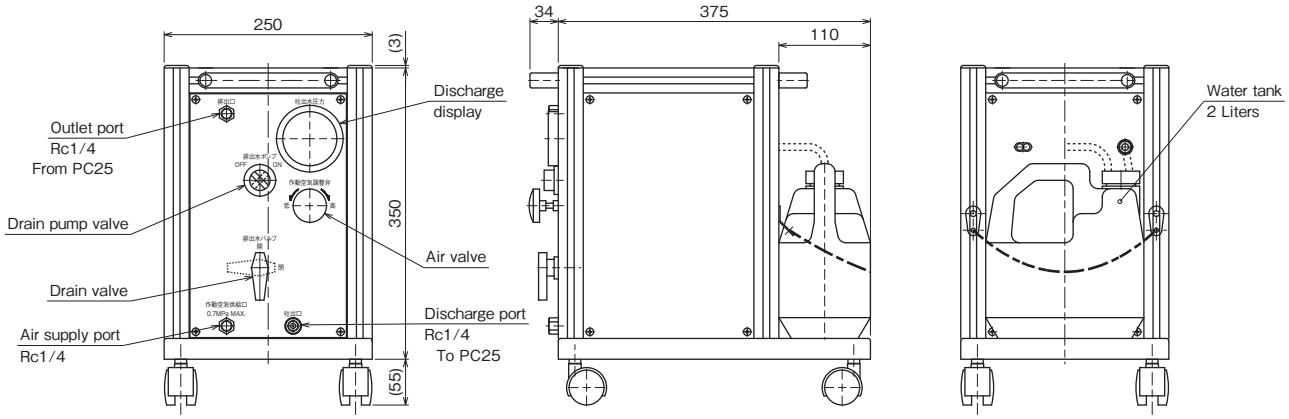
Operating / storage temperature / humidity	5 to 40℃ 20 to 80%RH or lower No condensation
Storage temperature	5 to 50℃ For temperature less than 5℃ draining work should be performed
Dimension	Approx. 250(W) × 350(H) × 375(D) (With no projection)
Weight	Approx. 20kg
Accessories Instruction manual	1 Copy
Option Flexible pipe	1 Pipe 2m length Output port and pressure supply port of PC25 connection line Maximum operating pressure 20MPa (25℃) or lower With R1/4 joint

Option

Panel mounting clamp (Optional specs for PC20, 25): Clamp for mounting the panel
Rack mounting set (Optional specs for PC20, 25): Fittings for rack mounting (JIS) (Including panel mounting clamps)
Dedicated pressure source unit PC28 (For PC25 only): Water pressure supply unit driven by air pressure

PC28 Pressure source unit

Pressure source unit (PC28) Dimensions



Model number configuration

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

Model

P C 2 0	—		7		—		×	×	×		×	×	×	×	×	×	
Programmable Pressure Controller Air Pressure Type		①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮

Model number		Product specifications	Additional specifications (Optional)
① Accuracy	1	±0.2%F.S. (Standard)	
	2	±0.1%F.S. (High precision spec.)※ Not available for the range 5kPa and below	
② Pressure connection	7	Rc1/4	
③ External interface	0	RS-232C (Standard)	
	1	RS-232C + GP-IB (IEEE488)	
④ Pressure range	1	0 to 1, 2, 5kPa, ±1, 2, 5kPa	
	2	0 to 10, 20, 50kPa, ±10, 20, 50kPa	
	3	0 to 0.2, 0.5MPa	
	4	-0.1 to 0.1, 0.2, 0.5MPa	
	5	0 to 1MPa	
⑧ Other additional spec.	0	Not required	
	2	Panel mounting clamp	
	3	Rack mounting set	
⑮ Documents	0	Not required	
	1	Required (Documents available upon request) Datasheet (Drawing / Specifications) Instruction manual Inspection procedure Calibration test report (One-part one sheet) Inspection / Traceability certificate Calibration test report for pressure standard Attending inspection	

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

*When the accuracy ±0.1% is required, accuracy at negative pressure side will be ±0.2%.

Accessories

Power cable (3 Terminal) 1 piece
Instruction manual 1 piece

*Specify code "X" to refer N/A

Model number configuration

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

Model

P C 2 5	—		7		—		×	×	×		×	×	×	×	×	×	
Programmable Pressure Controller Water Pressure Type		①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮

Model number		Product specifications	Additional specifications (Optional)
① Accuracy	1	±0.2%F.S.	
	2	±0.1%F.S. (High precision spec.)	
② Pressure connection	7	Rc1/4	
③ External interface	0	RS-232C (Standard)	
	1	RS-232C + GP-IB	
④ Pressure range		Range	Controllable range
	1	0 to 2MPa	0.5 to 2MPa
	2	0 to 5MPa	0.5 to 5MPa
	3	0 to 10MPa	0.5 to 10MPa
	4	0 to 20MPa	0.5 to 15MPa
⑧ Other additional spec.			0 Not required
			2 Panel mounting clamp
			3 Rack mounting set
⑮ Documents			0 Not required
			1 Required (Documents available upon request) Datasheet (Drawing / Specifications) Instruction manual Inspection procedure Calibration test report (One-part one sheet) Inspection / Traceability certificate Calibration test report for pressure standard Attending inspection

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

Accessories
Power cable (3 Terminal) 1 piece
Instruction manual 1 piece

＊Specify code "X" to refer N/A

Model

P C 2 8	—	×	×	×	—	×	×	×	×		×	×	×	×	×	×	
Dedicated Pressure Source Unit for PC25		①	②	③		④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	⑭	⑮

Model number	Product specifications	Additional specifications (Optional)
⑧ Other additional spec.	0	Not required
	1	Flexible pipe
⑮ Documents	0	Not required
	1	Required (Documents available upon request) Datasheet (Drawing / Specifications) Instruction manual

＊Specify code "X" to refer N/A