

# CZ-GP100 AE530



Flexible Stem Type Resin Pressure Sensor  
CZ-GP100



Resin Pressure Indicator  
with Sensor Power Supply  
AE530

## General Description

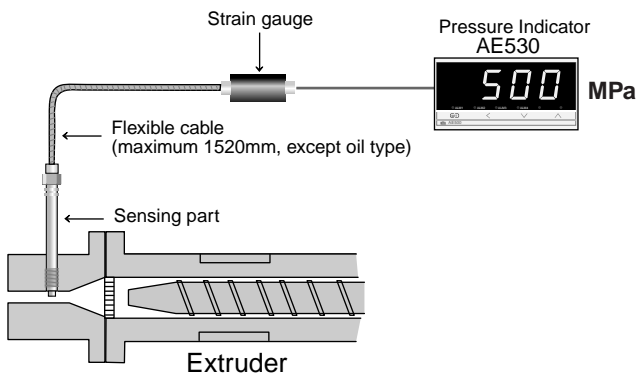
CZ-GP100 is a separate type melt pressure sensors for extrusion process applications. Because of its structure (sensing part is separated from a strain gauge part), pressure measurement with minimum temperature effect is possible.

A combination with an indicator with alarm (AE530) for melt pressure sensors or a digital controller (HA430/930) for strain gauge input will improve the quality of extruded products.

## Features

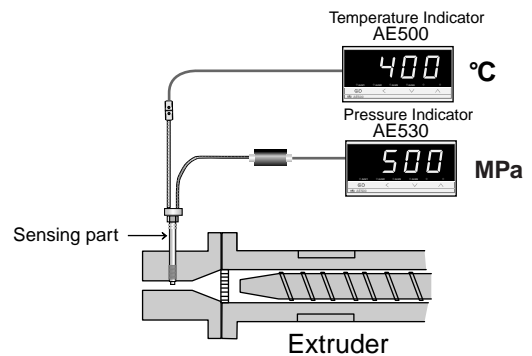
### Stable Pressure Measurement

Since the sensing part is installed separately from a strain gauge (main unit), pressure measurement with a minimum temperature effect can be achieved.



### Measures Pressure and Temperature Simultaneously

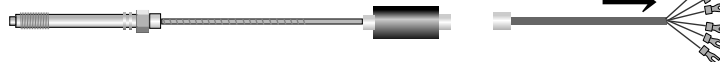
A built-in thermocouple is available as an option. Temperature and pressure can be measured in a single hole. Thermocouple type can be selected from type K or J.



### Easy connection to controllers/indicators

We can offer melt pressure sensors with 2-wire type 4 to 20mA input as well as sensors with 4-wire type 0 to 10V and 0 to 5V with an built-in amplifier.

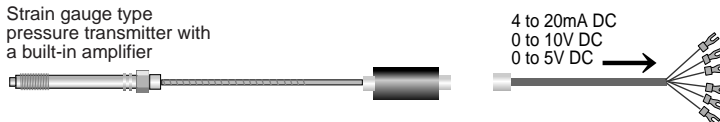
Strain gauge type  
pressure transducer



Digital controllers  
for strain gauge input  
HA930/430



Strain gauge type  
pressure transmitter with  
a built-in amplifier



Digital indicator  
with sensor power supply  
AE530



\* An external 24V DC power supply is required if the controller/indicator used does not have a sensor power supply.

# Resin Pressure Measuring System CZ-GP100

## Specifications

### Resin Pressure Sensor CZ-GP100 (mV/V output)

#### Measurement principle

Strain gauge Wheatstone bridge

#### Rated Pressure

0 to 3.5, 0 to 5, 0 to 7, 0 to 10, 0 to 20, 0 to 35, 0 to 50, 0 to 70MPa  
0 to 100, 0 to 200 MPa

**Rated Output :** 3.33mV/V

**Supply voltage :** 10V DC (12V DC max )

**Accuracy :** Within  $\pm 0.5\%$  of full scale

**Zero balance :**  $\pm 5\%$  of full scale

**Bridge resistance :** 350 $\Omega$  (10MPa or less : 550 $\Omega$ )

**Calibration signal :**  $\pm 80\%$  of full scale (1MPa, Min)

**Diaphragm maximum temperature :** 400°C

**Zero drift in compensated range Zero/Calibr./Sens :** 0.2MPa/100°C

**Strain gauge housing compensated temperature :** 0 to 100°C

**Thermal drift in compensated range :**  $\pm 0.02\%$  of full scale/°C

#### Wetted material

15-5PH with Amoloy coating (10MPa or less : 17-7PH with TiN coating)

**Waterproof and dustproof construction :** IP65

**Maximum over pressure :** 200% of full scale (100MPa or more : 150%)

#### Tightening torque

Minimum tightening torque : 20.0 N • m

Maximum tightening torque : 50.0 N • m

### Resin Pressure Sensor CZ-GP100 (Within amplifier)

#### Measurement principle

Strain gauge Wheatstone bridge (Within amplifier)

#### Rated Pressure

0 to 3.5, 0 to 5, 0 to 7, 0 to 10, 0 to 20, 0 to 35, 0 to 50, 0 to 70MPa  
0 to 100, 0 to 200 MPa

**Rated Output :** a) 4 to 20mA DC (2-wire)  
Load resistance : 600 $\Omega$  (at 24V DC)  
750 $\Omega$  (at 30V DC)

b) 0 to 5V DC (4-wire)  
Load resistance : 3k $\Omega$

c) 0 to 10V DC (4-wire)  
Load resistance : 3k $\Omega$

**Supply voltage :** 12 to 30V DC (Rating : 24V DC)

**Accuracy :** Within  $\pm 0.5\%$  of full scale

**Zero balance :** 4mA DC (4 to 20mA output type)  
0V DC (0 to 5V/0 to 10V DC output type)

**Calibration signal :**  $\pm 80\%$  of full scale (1MPa, Min)

**Diaphragm maximum temperature :** 400°C

**Zero drift in compensated range Zero/Calibr./Sens :** 0.2MPa/100°C

**Strain gauge housing compensated temperature :** 0 to 76°C

**Thermal drift in compensated range :**  $\pm 0.02\%$  of full scale/°C

#### Wetted material

15-5PH with Amoloy coating (10MPa or less : 17-7PH with TiN coating)

**Waterproof and dustproof construction :** IP65

**Maximum over pressure :** 200% of full scale (100MPa or more : 150%)

#### Tightening torque

Minimum tightening torque : 20.0 N • m

Maximum tightening torque : 50.0 N • m

### Resin Pressure Indicator AE530

#### Input

a) Voltage input : 0 to 5V DC, 1 to 5V DC, 0 to 10V DC

b) Current input : 0 to 20mA DC, 4 to 20mA DC

#### Display Range

-1999 to +9999

• Decimal point and scale range are programmable.

**Sampling Time :** 0.5 sec.

#### Input break action

Down-scale (Reading is around zero for 0 to TV, 0 to 10V, 0 to 20mA input)

**PV bias :** - input span to + input span

**PV digital filter :** 0 to 100sec (OFF when 0 is set)

**Sensor power supply :** 24V DC  $\pm 10\%$ , Allowable current : 25mA

#### Performance

Measuring accuracy :  $\pm (0.3\%$  of span + digit)

Insulation resistance : More than 20M $\Omega$  (500V DC) between measured terminals and ground

More than 20M $\Omega$  (500V DC) between power terminals and ground

Dielectric strength : 1000V AC for one minute between measured terminals and ground

1500V AC for one minute between power terminals and ground

#### < Standard function >

##### Alarm Output

Number of points : 2 points

Alarm action : High or low alarm

• Hold action can be programmed.

• Interlock can be programmed.

Output : Relay output, Form A contact, 250V AC, 30V DC 1A (resistive load)

#### < Optional function >

##### Analog Output

Number of point : 1 point (PV value)

Output signal : 4 to 20mA DC

Load resistance : Less than 600 $\Omega$

Output accuracy :  $\pm 0.3\%$  of span

#### < General Specifications >

##### Supply Voltage

a) 85 to 264V AC (Including supply voltage variation)

[Rating : 100 to 240V AC] (50/60Hz common use)

b) 21.6 to 26.4V DC (Ripple rate 10% p-p or less)

[Rating : 24V DC]

##### Power Consumption

Less than 10VA (100 to 240V AC)

Less than 160mA (24V DC)

##### Operating Environments

0 to 50°C [32 to 122°F] ,

5 to 95%RH (No dew condensation)

Absolute humidity : MAX. W.C 29g/m<sup>3</sup> dry air at 101.3kPa

##### Net Weight

Approx. 250g

##### External Dimensions (W x H x D)

96 x 48 x 100mm

## Model and Suffix Code

### ■ CZ-200P

Specifications	Model and Suffix Code												
Model	<b>CZ-GP100</b> - □ □ - □ □ 6 S - □ □ □ □ - □ □ □ □ - □												
Pressure transmission medium	Mercury	A											
	Oil	B											
Output signal	3.33mV/V												
	0 to 5V DC (With amplifier)												
	0 to 10V DC (With amplifier)												
	4 to 20mA DC (With amplifier)												
Temperature sensor	*1 Not supplied												
	K type thermocouple												
	J type thermocouple												
Connector	6 pin												
Accuracy	0.5%												
Pressure range	See Pressure Range Code Table												
Mounting screw type	Fixed nut type PF3/8(G3/8), Tip diameter : $\phi$ 10												
	Fixed nut type 1/2-20UNF, Tip diameter : $\phi$ 7.8												
Rigid stem length (mm/inches)	Under nut : L4=76mm (3inch)												
	Under nut : L4=153mm (6inch)												
	Under nut : L4=318mm (12.5inch)												
Flexible cable length (mm/inches)	L5=76mm (3inch)												
	L5=457mm (18inch)												
	L5=610mm (24inch)												
	L5=760mm (30inch)												
	L5=1520mm (60inch) *3												
Option	No option												
	Diaphragm surface treatment : TiAlN, Feature : Wear-proof												
	Diaphragm material : INCONEL718, Diaphragm surface treatment : TiAlN												
	Feature : Wear-proof (Wear-proof type more than option code "3".)												
	Diaphragm material : Hastelloy C276, Feature : Corrosion-proof												
	Diaphragm surface : Cr plating, Feature : Corrosion-proof *4												

- \*1 : Flexible cable length of thermocouple is fixed to 102mm.
- \*2 : Total length of rigid stem and flexible cable cannot exceed 914mm. for oil type.
- \*3 : Available mercury type only.
- \*4 : Available mercury and 1/2-20UNF screw only.

### Pressure Range Code Table

Range Code	Range	Range Code	Range	Range Code	Range	Range Code	Range	Range Code	Range
<b>D35P</b>	0 to 3.5MPa	<b>005P</b>	0 to 5MPa	<b>007P</b>	0 to 7MPa	<b>010P</b>	0 to 10MPa	<b>020P</b>	0 to 20MPa
<b>035P</b>	0 to 35MPa	<b>050P</b>	0 to 50MPa	<b>070P</b>	0 to 70MPa	<b>100P</b>	0 to 100MPa	<b>200P</b>	0 to 200MPa

### Copper Packing for the PF3/8 (G3/8) screw

Model Code	Specifications
KC110014	Outer diameter : $\phi$ 13.5, Inner diameter : $\phi$ 10.0, Thickness : 1mm

### Pressure Sensor Connection Cable

Specifications	Model and Suffix Code												
Model	<b>W-BT-N</b> □ □ - □ □ - □ □ □ □ □ □												
Pressure sensor corresponding to cable	Built-in amplifier (6-core cable)	1											
	No amplifier (7-core cable)	2											
Cable covering material	Heat resisting PVC												
	Heat resisting glass wool												
Cable terminal (Sensor side)	* Plug												
Cable terminal (Instrument side)	* Y-shaped terminal lugs for M3												
	Y-shaped terminal lugs for M4												
	Circular terminal lugs for M4												
	Receptacle												
	Jack												
Leadwire length (Unit:mm)	1,000 to 30,000mm												

\* Other cable terminal is available. Please contact RKC.

### Thermocouple Connection Cable

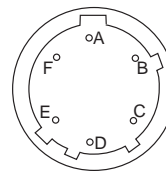
Specifications	Model and Suffix Code												
Model	<b>W-BU-</b> □ □ - □ □ - □ □ □ □ □ □												
Thermocouple Type	Type K												
	Type J												
Cable covering material	Stainless steel shielded												
	outside glass wool (For heat resistance)												
	* Glass wool (For heat resistance)												
	Silicon rubber (For heat resistance)												
Cable terminal (Sensor side)	* TC connector												
Cable terminal (Instrument side)	Y-shaped terminal lugs for M3												
	No terminal												
Leadwire length (Unit:mm)	1,000 to 100,000mm												

### Pressure unit conversion table

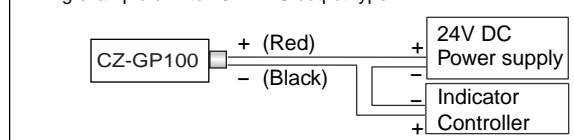
	MPa	bar	kgf/cm <sup>2</sup>	psi	mmHg (Torr)
1MPa	1	10	10.1972	145.038	7500.62
1bar	0.1	1	1.01972	14.5038	750.062
1kgf/cm <sup>2</sup>	0.0980665	0.980665	1	14.2233	735.559
1psi	0.0068948	0.068948	0.07031	1	51.71
1mmHg (Torr)	0.0001333	0.001333	0.00136	0.01934	1

### Connector diagram

Lead color	3.33mV/V output	4 to 20mA DC output	0 to 10V, 0 to 5V DC output
A (Red)	Output (+)	Power supply (+)	Output (+)
B (Black)	Output (-)	Signal (-)	Output (-)
C (White)	Supply voltage (+)	No use	Supply voltage (+)
D (Green)	Supply voltage (-)	No use	Supply voltage (-)
E (Blue)	Calibration	Calibration	Calibration
F (Orange)	Calibration	Calibration	Calibration



### Wiring example of 4 to 20mA DC output type



## Model and Suffix Code

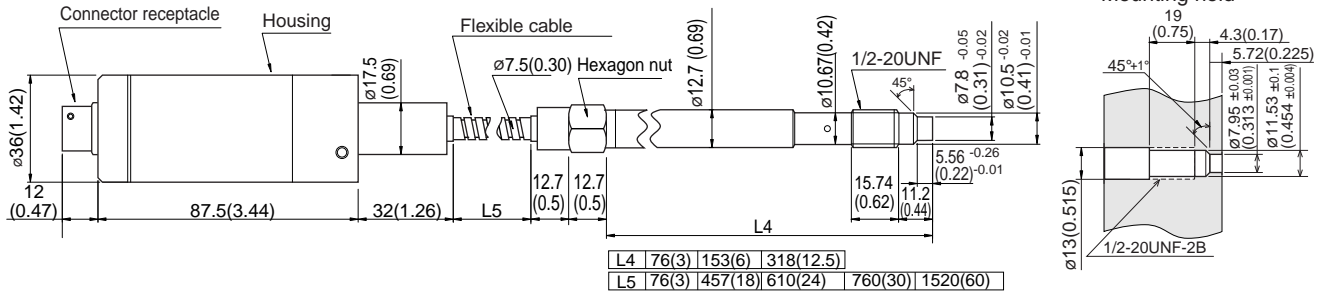
### ■ AE530

Specifications	Model and Suffix Code								
Model	<b>AE530</b>								
				*	S	D		/	
Input	0 to 5V DC	4							
	0 to 10V DC	5							
	1 to 5V DC	6							
	0 to 20mA DC	7							
	4 to 20mA DC	8							
Power supply	100 to 240V AC	4							
	24V DC	6							
Sensor power supply	With 24V DC				S				
Alarm	Two alarms					D			
Analog output	Not supplied							N	
	4 to 20mA DC							8	
Body color	White								N
	Black								A

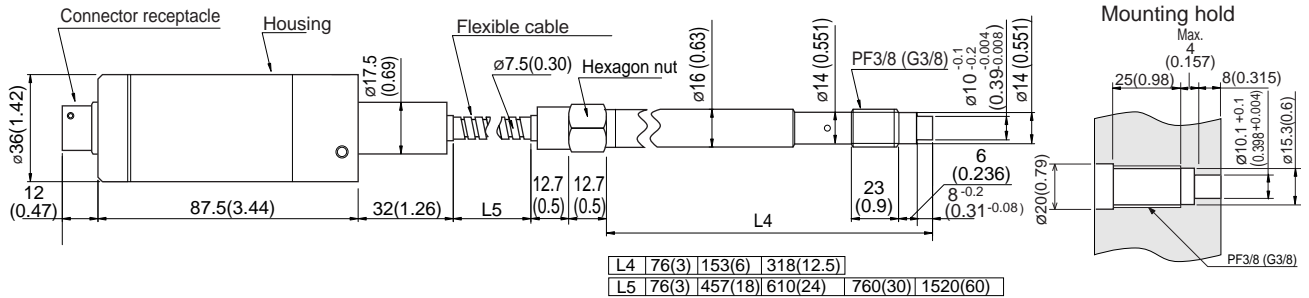
## External Dimensions

(Unit : mm)

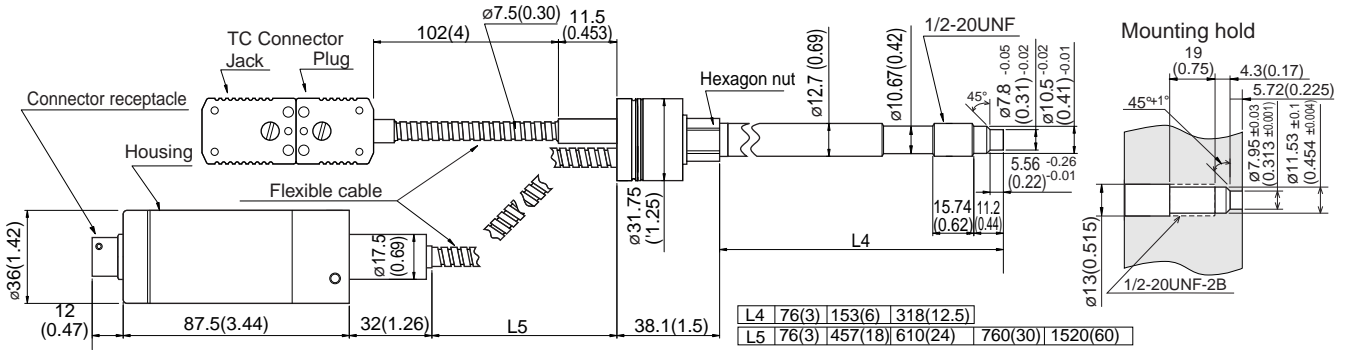
### 1/2-20UNF



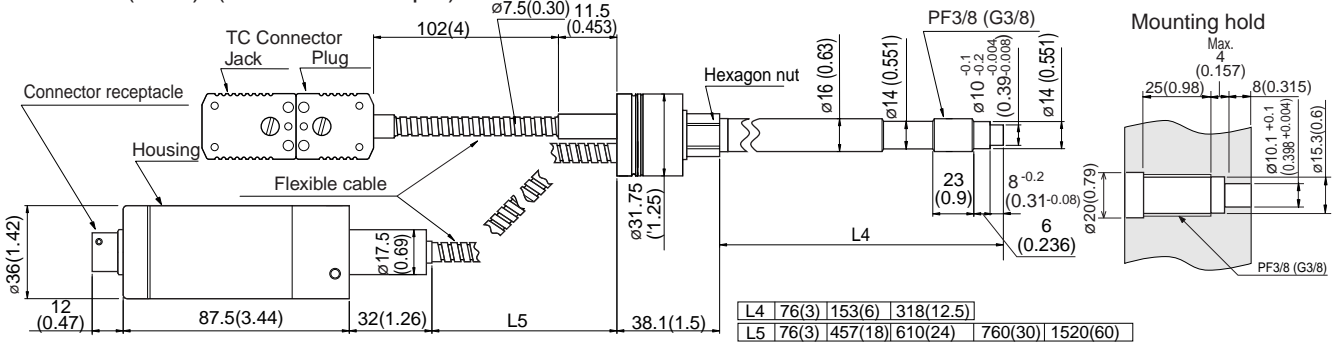
### PF3/8(G3/8)



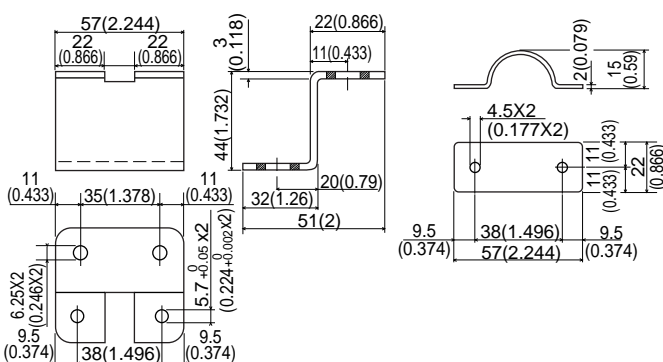
### 1/2-20UNF (With thermocouple)



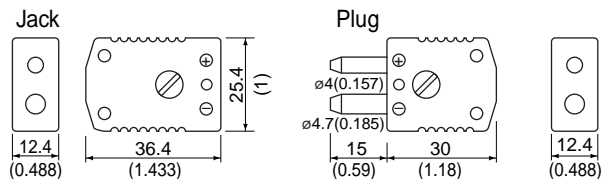
### PF3/8(G3/8) (With thermocouple)



### Housing mounting bracket (Standard accessory)



### Thermocouple connector



• A jack is supplied as standard.  
Compensating diameter: ø2.8 to 6 (ø0.11 to 0.236)

• Plug is connected to CZ-GP100.

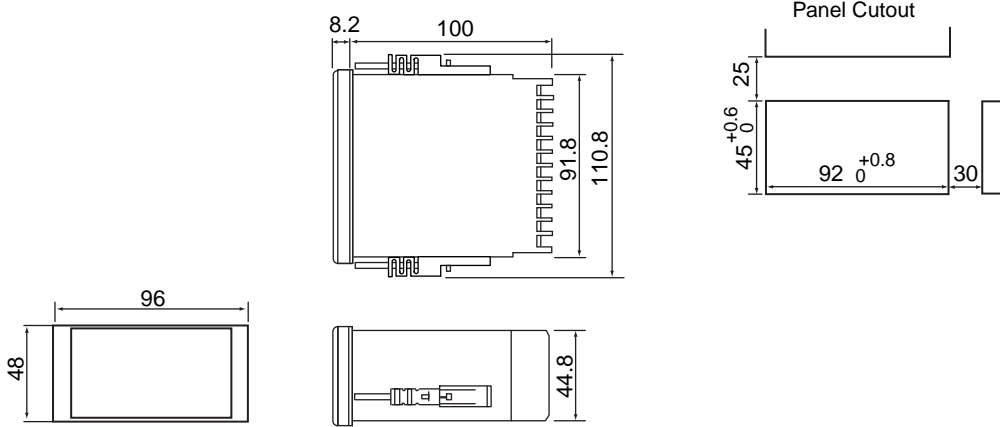
### The housing of pressure sensor should be located as follows :

- Where ambient temperature of housing (without amplifier) is less than 100°C (212°F).
- Where ambient temperature of housing (with amplifier) is less than 76°C (170°F).

## External Dimensions and Rear Terminals

■ AE530

Unit:mm



13	14	15	16	17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32	33	34	35	36
1	2	3	4	5	6	7	8	9	10	11	12

13	14	15	16	17	18	19	20	21	22	23	24
Vacant terminals						COM		+		+	
						+		+		+	
Power supply						+		+		+	
						+		+		+	
Analog output						+		+		+	
						+		+		+	
Alarm 1,2 output						+		+		+	
						+		+		+	
Sensor supply voltage						+		+		+	
						+		+		+	
Sensor input voltage						+		+		+	
						+		+		+	