DP-100 Pressure Sensors

Dual Display, Digital Pressure Sensor

An industry first dual, three-color digital display enhances ease of use of pressure sensors. The user can concurrently view the real-time pressure reading and threshold value for quick changes during routine machine maintenance. The highly readable display offers the setting of two colors to indicate the output state (red and green) as well as a third (orange) to indicate the menu settings. Also, both displays feature 12 segment characters, which allow for the display of letters in addition to numbers. This enables easy on screen labeling of sensors in large arrays, for instantaneous identification. Furthermore, sensor programming time has been drastically reduced with the advent of an integrated copy function to facilitate the programming of your entire array of DP-100 sensors in a fraction of the time for conventional sensors.

The DP-100 series contains the same functionality of units 3 times its price, all with the superior SUNX quality that is recognized worldwide. Two distinct pressure ranges are available, one for high pressure and one for low pressure. Both feature compound pressure sensing (positive and vacuum pressures) for maximum compatibility with your applications. The series offers the option of either dual discrete outputs or one discrete output and one analog output. The discrete outputs in either type are available in either NPN or PNP.

Three built-in output modes give the user enhanced control to tailor the sensor to the specific needs of their application.

- **EASY Mode**

  This default mode is used for a simple comparative, ON/OFF output. Output hysteresis can be selected from 8 predetermined levels.
- **Hysteresis Mode**

  Similar to EASY mode, but with free-range hystersis control for optimal hysteresis setting.
- **Window Comparator Mode**

  This output mode provides a user determined pressure window in which the output is either ON or OFF. This is perfect for applications in which there are high and low pressure limits.

Another unique feature of the DP-100 series is the ability to use the analog output on the multi-function type as an external input. This input can be set to act as either an auto-reference function or a zero-adjustment function. In applications where the reference pressure is constantly fluctuating, this is enormously useful. The auto-reference function monitors the reference pressure and adjusts the threshold value to compensate for the reference shift. Alternatively, the zero-adjustment function forces the reference pressure to zero prior to taking a pressure reading. The result of either method is an incredibly stable reading in the midst of a highly fluctuating reference pressure environment.

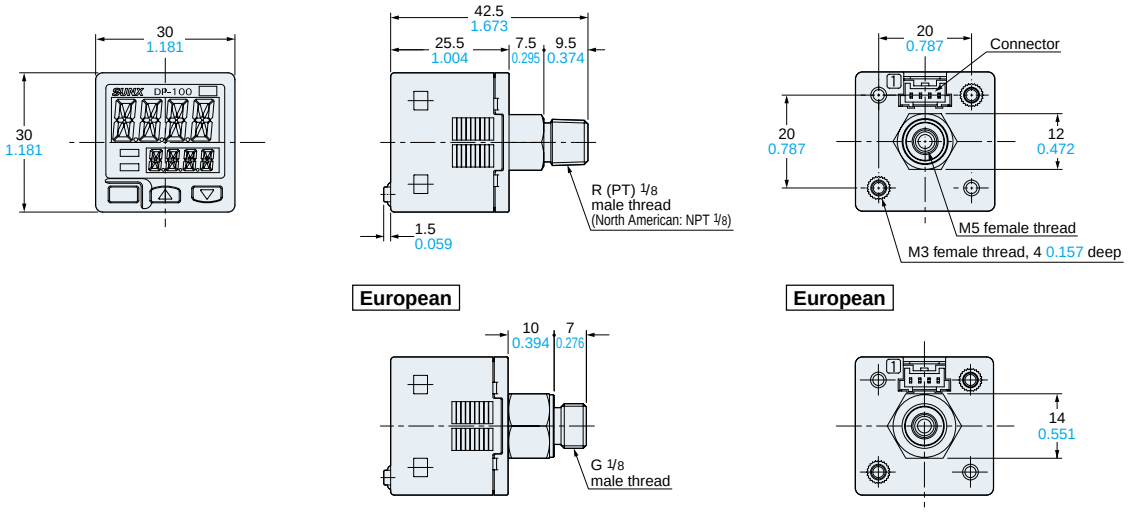
Lastly, SUNX has incorporated a chatter prevention feature in the form of a selectable response time from 2.5ms up to 5000 ms. This feature allows user to eliminate false positives due to instantaneous spikes in the pressure reading.

The features listed above, coupled with quick disconnect wiring, easy bracket or panel mounting, and simple display based troubleshooting come together to form one of the most versatile and user friendly pressure sensors on the market today.

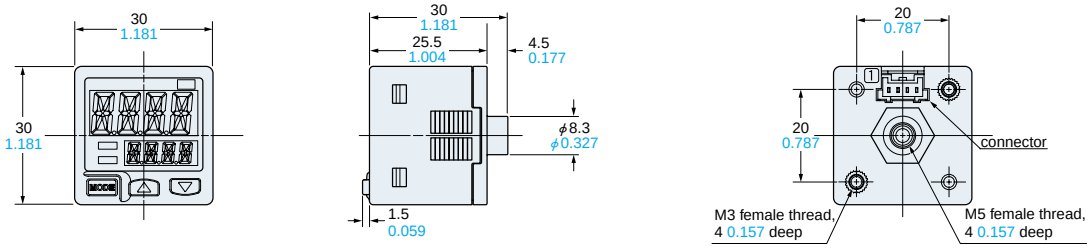
Model Name	Type	Rated Pressure Range Min (psi)	Rated Pressure Range Max (psi)	Pressure Port	Output Configuration	Type Of Pressure	Number Of Outputs	Analog Output Range	Pressure Medium
DP-101A-N	Compound Low Pressure Analog Version	-14.5	14.5	NPT 1/8 Male + M5 Female Thread	NPN	Gauge	1	1-5V	Non-Corrosive Gas
DP-101-N	Compound Low Pressure Standard Version	-14.5	14.5	NPT 1/8 Male + M5 Female Thread	NPN	Gauge	2	N/A	Non-Corrosive Gas
DP-102A-N	Compound High Pressure Analog Version	-14.5	145	NPT 1/8 Male + M5 Female Thread	NPN	Gauge	1	1-5V	Non-Corrosive Gas
DP-102-N	**Compound High Pressure Standard Version**	**-14.5**	**145**	**NPT 1/8 Male + M5 Female Thread**	**NPN**	**Gauge**	**2**	**N/A**	**Non-Corrosive Gas**

DIMENSIONS (Unit: mm in)

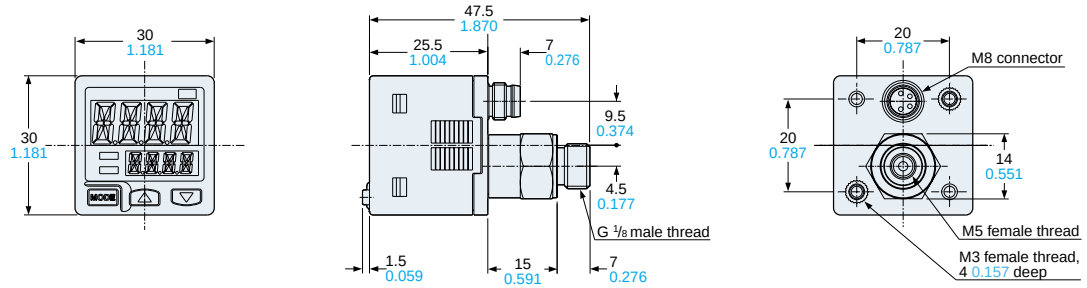
DP-10□ Sensor



DP-10□-M Sensor



DP-11□-E-P-J Sensor



DP-100

SPECIFICATIONS

Item \ Type		Standard		Multi-function	
		For low pressure	For high pressure	For low pressure	For high pressure
Model No.	Asian (Note 2)	**DP-101(-M)**	**DP-102(-M)**	**DP-101A(-M)**	**DP-102A(-M)**
	European	**DP-101-E-P**	**DP-102-E-P**	**DP-101A-E-P**	**DP-102A-E-P**
	M8 plug-in connector type	**DP-111-E-P-J**	**DP-112-E-P-J**	**DP-111A-E-P-J**	**DP-112A-E-P-J**
	North American (Note 2)	**DP-101-N(-P)**	**DP-102-N(-P)**	**DP-101A-N(-P)**	**DP-102A-N(-P)**
Type of pressure		Gauge pressure			
Rated pressure range		−100.0 to +100.0 kPa	−0.100 to +1.000 MPa	−100.0 to +100.0 kPa	−0.100 to +1.000 MPa
Set pressure range		−100.0 to +100.0 kPa (−1.020 to +1.020 kgf/cm² −1.000 to +1.000 bar −14.50 to +14.50 psi −750 to +750 mmHg −29.5 to 29.5 inHg)	−0.100 to +1.000 MPa (−100 to +1,000 kPa −1.02 to +10.20 kgf/cm² −1.00 to +10.00 bar −14.6 to +145.0 psi)	−100.0 to +100.0 kPa (−1.020 to +1.020 kgf/cm² −1.000 to +1.000 bar −14.50 to +14.50 psi −750 to +750 mmHg −29.5 to 29.5 inHg)	−0.100 to +1.000 MPa (−100 to +1,000 kPa −1.02 to +10.20 kgf/cm² −1.00 to +10.00 bar −14.6 to +145.0 psi)
Pressure withstandability		500 kPa	1.5 MPa	500 kPa	1.5 MPa
Applicable fluid		Non-corrosive gas			
Selectable unit		For low pressure: kPa, kgf/cm², bar, psi, mmHg, inHg, For high pressure: MPa, kPa, kgf/cm², bar, psi			
Supply voltage		12 to 24 V DC ±10 % Ripple P-P 10 % or less			
Power consumption		Normal operation: 840 mW or less (Current consumption 35 mA or less at 24 V supply voltage) ECO mode: 600 mW or less at STD (Current consumption 25 mA or less at 24 V supply voltage) 480 mW or less at FULL (Current consumption 20 mA or less at 24 V supply voltage)			
Comparative output		<Asian, North American (NPN output)> NPN open-collector transistor • Maximum sink current: 100 mA • Applied voltage: 30 V DC or less (between comparative output and 0 V) • Residual voltage: 2 V or less (at 100 mA sink current)		<European, North American (PNP output)> PNP open-collector transistor • Maximum source current: 100 mA • Applied voltage: 30 V DC or less (between comparative output and +V) • Residual voltage: 2 V or less (at 100 mA source current)	
	Output operation / Output modes	NO / NC (selectable by key operation) / EASY mode / Hysteresis mode / Window comparator mode			
	Hysteresis	Minimum 1 digit (variable) (however, 2 digits when using psi unit)			
	Repeatability	±0.1 % F.S. (within ±2 digits)	±0.2 % F.S. (within ±2 digits)	±0.1 % F.S. (within ±2 digits)	±0.2 % F.S. (within ±2 digits)
	Response time	2.5 ms, 5 ms, 10 ms, 25 ms, 50 ms, 100 ms, 250 ms, 500 ms, 1,000 ms, 5,000 ms, selectable by key operation			
	Short-circuit protection	Incorporated			
External input [Auto-reference function / Remote zero-adjustment function]		———		<Asian, North American (NPN output)> ON voltage: 0.4 V DC or less OFF voltage: 5 to 30 V DC, or open Input impedance: 10 kΩ approx. Input time: 1 ms or more	<European, North American (PNP output)> ON voltage: 5 V to +V DC OFF voltage: 0.6 V DC or less, or open Input impedance: 10 kΩ approx. Input time: 1 ms or more
Analog voltage output		———		Output voltage: 1 to 5 V DC Zero point: within 3 V ±5 % F.S. Span: within 4 V ± 5 % F.S. Linearity: within ± 1 % F.S. Output impedance: 1 kΩ approx.	Output voltage: 0.6 to 5 V Zero point: within 1 V±5 % F.S. Span: within 4.4 V±5 % F.S. Linearity: within ± 1 % F.S. Output impedance: 1 kΩ approx.
Display		4 digits + 4 digits 3-color LCD display (Display refresh rate: 250 ms, 500 ms, 1,000 ms, selectable by key operation)			
	Displayable pressure range	−100.0 to +100.0 kPa (−1.020 to +1.020 kgf/cm² −1.000 to +1.000 bar −14.50 to +14.50 psi −750 to +750 mmHg −29.5 to 29.5 inHg)	−0.100 to +1.000 MPa (−100 to +1,000 kPa −1.02 to +10.20 kgf/cm² −1.00 to +10.00 bar −14.6 to +145.0 psi)	−100.0 to +100.0 kPa (−1.020 to +1.020 kgf/cm² −1.000 to +1.000 bar −14.50 to +14.50 psi −750 to +750 mmHg −29.5 to 29.5 inHg)	−0.100 to +1.000 MPa (−100 to +1,000 kPa −1.02 to +10.20 kgf/cm² −1.00 to +10.00 bar −14.6 to +145.0 psi)
Indicator		Orange LED (Comparative output 1 operation indicator, comparative output 2 operation indicator: Lights up when each comparative output is ON)		Orange LED (Comparative output 1 operation indicator: Lights up when comparative output is ON, Analog voltage output operation indicator: Lights up when setting)	
Environmental resistance	Degree of protection	IP40 (IEC)			
	Ambient temperature	−10 to +50 °C +14 to +122 °F, Storage: −10 to +60 °C +14 to +140 °F			
	Ambient humidity	35 to 85 % RH (No dew condensation or icing allowed), Storage: 35 to 85 % RH			
	Voltage withstandability	1,000 V AC for one min. between all supply terminals connected together and enclosure			
	Insulation resistance	50 MΩ, or more, with 500 V DC megger between all supply terminals connected together and enclosure			
	Vibration resistance	10 to 500 Hz frequency, 3 mm 0.118 in amplitude, in X, Y and Z directions for two hours each (when panel is mounted: 10 to 150 Hz frequency, 0.75 mm 0.030 in amplitude, in X, Y and Z directions for two hours each)			
	Shock resistance	100 m/s² acceleration (10 G approx.) in X, Y and Z directions for three times each			
Temperature characteristics		Within ±0.5 % F.S. (at +20 °C +68 °F)	Within ±1 % F.S. (at +20 °C +68 °F)	Within ±0.5 % F.S. (at +20 °C +68 °F)	Within ±1 % F.S. (at +20 °C +68 °F)
Pressure port		Asian: M5 female thread + R (PT) 1/8 male thread (excluding **DP-□-M**), European: M5 female thread + G 1/8 male thread, North American: M5 female thread + NPT 1/8 male thread			
Material		Enclosure: PBT (glass fiber reinforced), LCD display: Acrylic, Pressure port: Brass (nickel plated)[**DP-□-M**, **DP-□-J**: Stainless steel (SUS303)] , Mounting threaded part: Brass (nickel plated), Switch part: Silicone rubber			
Connecting method / Cable extension		Connector / Extension up to total 100 m 328.084 ft (less than 10 m 32.808 ft when conforming to CE marking) is possible with 0.3 mm², or more, cable			
Weight		Net weight: 40 g approx., Gross weight: 135 g approx.			
Accessories		**CN-14A-C2** (Connector attached cable 2 m 6.562 ft): 1pc. (excluding M8 plug-in connector type)			