

2 Outputs + Analog Output (Voltage/Current)



RoHS

IP40

3-Screen Display High-Precision
Digital Pressure Switch**ZSE20A(F)/ISE20A Series****How to Order**

For Positive Pressure

ISE20A - **X** - **M** - **M5** - **J** [] []For Vacuum/
Compound Pressure**ZSE20A** - **X** - **M** - **M5** - **J** [] []

• Rated pressure range

ISE20A -0.1 to 1 MPaMade to Order
(pp. 42 to 48)**1 Rated pressure range**

ZSE20A	0 to -101 kPa
ZSE20AF	-100 to 100 kPa

2 Output specification

Symbol	Description
R	NPN open collector 2 outputs + Analog voltage output *1
S	NPN open collector 2 outputs + Analog current output *1
T	PNP open collector 2 outputs + Analog voltage output *1
V	PNP open collector 2 outputs + Analog current output *1
X	NPN open collector 2 outputs + Copy function
Y	PNP open collector 2 outputs + Copy function

*1 Can be switched to auto-shift or copy function

3 Unit specification

Symbol	Description
Nil	Units selection function*1
M	SI units only*2
P	Units selection function (Initial value psi)*1

*1 Under the New Measurement Act, switches with the units selection function are no longer allowed for use in Japan.

*2 Fixed units: kPa, MPa

4 Piping specification

Symbol	Description	Symbol	Description	
M5	M5 female thread	C4H	One-touch fitting ø4 mm	Straight type
		C6H	One-touch fitting ø6 mm	
		N7H	One-touch fitting ø1/4 inch	
01	R1/8	C4L	One-touch fitting ø4 mm	Elbow type
		C6L	One-touch fitting ø6 mm	
		N7L	One-touch fitting ø1/4 inch	
N01	NPT1/8			

* One-touch fitting is shipped together with the product.

5 Option 1

Symbol	Description
Nil	Without lead wire
J	Lead wire with connector (5-core, 2 m lead wire)

* For the lead wire with M12 connector, refer to page 43.

7 Option 3

Symbol	Operation manual*1	Calibration certificate*1
Nil	○	—
Y	—	—
K	○	○
T	—	○

*1 All texts are in both English and Japanese.

6 Option 2

Symbol	Description
Nil	None
A1	Bracket A (Vertical mounting)
A2	Bracket B (Horizontal mounting)
B	Panel mount adapter
D	Panel mount adapter + Front protection cover

Options/Part Nos.

When only optional parts are required, order with the part numbers listed below.

Description	Part no.	Note
Bracket A	ZS-46-A1	Tapping screw: Nominal size 3 x 8 L (2 pcs.)
Bracket B	ZS-46-A2	Tapping screw: Nominal size 3 x 8 L (2 pcs.)
Panel mount adapter	ZS-46-B	—
Panel mount adapter + Front protection cover	ZS-46-D	—
Lead wire with connector	ZS-46-5L	5-core, 2 m, Non-waterproof (Without waterproof cover)
Lead wire with M12 connector	ZS-46-5LM12	
Front protection cover	ZS-27-01	Made to order (Refer to page 43.)
R1/8 Piping adapter	ZS-46-N1	
NPT1/8 Piping adapter	ZS-46-N2	
One-touch fitting ø4 mm straight	ZS-46-C4H	—
One-touch fitting ø6 mm straight	ZS-46-C6H	—
One-touch fitting ø1/4 inch straight	ZS-46-N7H	—
One-touch fitting ø4 mm elbow	ZS-46-C4L	—
One-touch fitting ø6 mm elbow	ZS-46-C6L	—
One-touch fitting ø1/4 inch elbow	ZS-46-N7L	—
Spacer for fitting extension	ZS-46-M5A	Made to order (Refer to page 44.)

3-Screen Display High-Precision Digital Pressure Switch **ZSE20A(F)/ISE20A Series**

For pressure switch precautions and specific product precautions, refer to the "Operation Manual" on the SMC website.



Specifications

Model		ZSE20A (Vacuum pressure)	ZSE20AF (Compound pressure)	ISE20A (Positive pressure)
Applicable fluid		Air, Non-corrosive gas, Non-flammable gas		
Pressure	Rated pressure range	0.0 to -101.0 kPa	-100.0 to 100.0 kPa	-0.100 to 1.000 MPa
	Display/Set pressure range	10.0 to -105.0 kPa	-105.0 to 105.0 kPa	-0.105 to 1.050 MPa
	Display/Smallest settable increment	0.1 kPa		0.001 MPa
	Withstand pressure	500 kPa		1.5 MPa
Power supply	Power supply voltage	12 to 24 VDC $\pm 10\%$, Ripple (p-p) 10% or less		
	Current consumption	35 mA or less		
	Protection	Polarity protection		
Accuracy	Display accuracy	$\pm 2\%$ F.S. ± 1 digit (Ambient temperature of 25 $\pm 3^\circ\text{C}$)		
	Repeatability	$\pm 0.2\%$ F.S. ± 1 digit		
	Analog output accuracy	$\pm 2.5\%$ F.S. (Ambient temperature of 25 $\pm 3^\circ\text{C}$)		
	Analog output linearity	$\pm 1\%$ F.S.		
	Temperature characteristics	$\pm 2\%$ F.S. (25 $^\circ\text{C}$ standard)		
Switch output	Output type	NPN or PNP open collector 2 outputs		
	Output mode	Hysteresis mode, Window comparator mode, Error output, Output OFF		
	Switch operation	Normal output, Reversed output		
	Max. load current	80 mA		
	Max. applied voltage (NPN only)	28 V		
	Internal voltage drop (Residual voltage)	1 V or less (at load current of 80 mA)		
	Delay time*1	1.5 ms or less (with anti-chattering function: 20, 100, 500, 1000, 2000, 5000 ms)		
	Hysteresis	Variable from 0*2		
	Window comparator mode			
	Short circuit protection	Yes		
Analog output	Voltage output	Voltage output: 1 to 5 V		Voltage output: 0.6 to 5 V
	Output impedance	Approx. 1 k Ω		
	Current output	Current output: 4 to 20 mA		Current output: 2.4 to 20 mA
	Load impedance	Maximum load impedance at power supply voltage of 12 V: 300 Ω at power supply voltage of 24 V: 600 Ω Minimum load impedance: 50 Ω		
Auto-shift input	Input type	Non-voltage input: 0.4 V or less		
	Input mode	Select from Auto-shift or Auto-shift zero.		
	Input time	5 ms or more		
Display	Unit*3	MPa, kPa, kgf/cm 2 , bar, psi, inHg, mmHg		MPa, kPa, kgf/cm 2 , bar, psi
	Display type	LCD		
	Number of screens	3-screen display (Main screen, Sub screen x 2)		
	Display color	1) Main screen: Red/Green 2) Sub screen: Orange		
	Number of display digits	1) Main screen: 4 digits (7 segments) 2) Sub screen: 4 digits (Upper 1 digit 11 segments, 7 segments for other)		
	Indicator light	Lights up when switch output is turned ON. OUT1, OUT2: Orange		
Digital filter*4		0, 10, 50, 100, 500, 1000, 5000 ms		
Environmental resistance	Enclosure	IP40		
	Withstand voltage	1000 VAC for 1 minute between terminals and housing		
	Insulation resistance	50 M Ω or more (500 VDC measured via megohmmeter) between terminals and housing		
	Operating temperature range	Operating: -5 to 50 $^\circ\text{C}$, Stored: -10 to 60 $^\circ\text{C}$ (No condensation or freezing)		
	Operating humidity range	Operating/Stored: 35 to 85% RH (No condensation)		
Standards		UL/CSA (E216656), CE/UKCA marking		
Length of lead wire with connector		2 m		

*1 Value without digital filter (at 0 ms)

*2 If the applied pressure fluctuates around the set value, the hysteresis must be set to a value greater than the amount of fluctuation, or chattering will occur.

*3 Setting is only possible for models with the units selection function. Only MPa or kPa is available for models without this function.

*4 The response time indicates when the set value is 90% in relation to the step input.

* Products with tiny scratches, marks, or display color or brightness variations which do not affect the performance of the product are verified as conforming products.

Piping Specifications and Weights

Model		M5	01	N01	C4H	C6H	N7H	C4L	C6L	N7L
Port size	Port size	M5 x 0.8	R1/8	NPT1/8	—	—	—	—	—	—
	One-touch fitting Straight type	—	—	—	$\phi 4$ mm $\phi 5/32$ inch	$\phi 6$ mm	$\phi 1/4$ inch	—	—	—
	One-touch fitting Elbow type	—	—	—	—	—	—	$\phi 4$ mm $\phi 5/32$ inch	$\phi 6$ mm	$\phi 1/4$ inch
	Materials of parts in contact with fluid	Silicon								
Weight	Piping port (Common)	PBT, CB156, Heat-resistant PPS, O-ring: HNBR								
	Piping port	—	C3604 (Electroless nickel plating), Stainless steel 304, NBR	POM, Stainless steel 304, NBR, C3604						
Weight	Body	24 g	34 g	36 g	27 g	28 g	29 g	30 g	30 g	36 g
	Lead wire with connector	+39 g								

Cable Specifications

Conductor cross section	0.15 mm 2 (AWG26)
Insulator O.D.	1.0 mm
Color	Brown, Blue, Black, White, Gray (5-core)
Sheath Finished O.D.	$\phi 3.5$

"Set Pressure Range and Rated Pressure Range," "Functions" \Rightarrow p. 17

"Internal Circuits and Wiring Examples" \Rightarrow From p. 18 "Dimensions" \Rightarrow From p. 20