

2 Outputs + Analog Output (Voltage/Current)

3-Screen Display High-Precision Digital Pressure Switch

ZSE20B(F)/ISE20B Series



RoHS

IP65

How to Order



For positive pressure

ISE20B - **X** - **M** - **M5** - [] [] []

For vacuum/
compound pressure

ZSE20B - **X** - **M** - **M5** - [] [] []

Rated pressure range

ISE20B -0.1 to 1 MPa

1 Rated pressure range

ZSE20B	0 to -101 kPa
ZSE20BF	-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

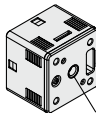
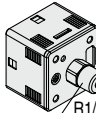
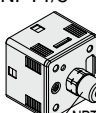
3 Unit specification

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

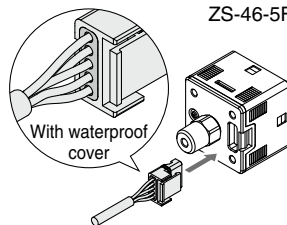
*1 Under the New Measurement Act, switches with the unit selection function are not permitted for use in Japan.

*2 Fixed unit: kPa, MPa

4 Piping specification

Symbol	Description
M5	M5 female thread 
01	R1/8 
N01	NPT1/8 

5 Option 1

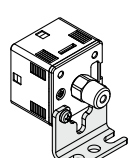
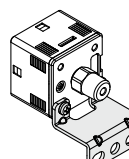
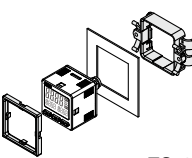
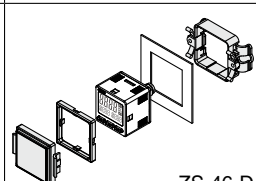
Symbol	Description
Nil	Without lead wire
W	Lead wire with connector (5-core, 2 m lead wire, With waterproof cover) 

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-46-5F	5-core, 2 m, Waterproof (With waterproof cover)
Front protection cover	ZS-27-01	—
R1/8 piping adapter	ZS-46-N1	
NPT1/8 piping adapter	ZS-46-N2	

3-Screen Display High-Precision Digital Pressure Switch **ZSE20B(F)/ISE20B Series**

For details on the specific product precautions, refer to the "Operation Manual" on the SMC website.

Specifications

Model		ZSE20B (Vacuum pressure)	ZSE20BF (Compound pressure)	ISE20B (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
	Minimum display unit/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 ±10%, Ripple (p-p) 10% or less		
	Current consumption	35 mA or less		
	Protection	Polarity protection		
Accuracy	Display accuracy	±2% F.S. ±1 digit (Ambient temperature of 25 ±3°C)		
	Repeatability	±0.2% F.S. ±1 digit		
	Analog output accuracy	±2.5% F.S. (Ambient temperature of 25 ±3°C)		
	Analog output linearity	±1% F.S.		
	Temperature characteristics	±2% F.S. (25°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	Hysteresis mode	Variable from 0*2	
		Window comparator mode		
Short circuit protection	Yes			
Analog output	Voltage output	Output type	Voltage output: 1 to 5 V	Voltage output: 0.6 to 5 V
		Output impedance	Approx. 1 kΩ	
	Current output	Output type	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	
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		
	Unit*3	MPa, kPa, kgf/cm², bar, psi, InHg, mmHg		MPa, kPa, kgf/cm², bar, psi
Display	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		
Environment	Enclosure	IP65		
	Withstand voltage	1000 VAC for 1 minute between terminals and housing		
	Insulation resistance	50 MΩ or more (500 VDC measured via megohmmeter) between terminals and housing		
	Operating temperature range	Operating: −5 to 50°C, Stored: −10 to 60°C (No condensation or freezing)		
	Operating humidity range	Operating/Stored: 35 to 85%RH (No condensation)		
Standards		UL/CSA (E216656), CE, RoHS		
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 more than the amount of fluctuation or chattering will occur.

*3 Setting is only possible for models with the unit 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, smears, 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
Port size		M5 x 0.8	R1/8	NPT1/8
Materials of parts in contact with fluid	Sensor pressure receiving area	Silicon		
	Piping port (Common)	PBT, CB156, Heat-resistant PPS, O-ring: HNBR		
	Piping port	— C3604 (Electroless nickel plating), Stainless steel 304, NBR		
Weight	Body	24 g	34 g	36 g
	Lead wire with connector	+39 g		

Cable Specifications

Conductor area		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" ➡ p. 13

"Internal Circuits and Wiring Examples" ➡ p. 14 "Dimensions" ➡ From p. 15