

SPMK51X Series Multi-function Process Calibrator

Whether for troubleshooting or normal maintenance or calibration, SPMK51X series of multifunction process calibrators will help you accomplish your tasks quickly and accurately.



Product Characteristics

- **Variety of functions**
Calibrate pressure, temperature, voltage, current, frequency, pulse, resistance. Both measurement and source functions.
- **Measurement and source functions**
Measures 13 types of thermocouples and 11 types of RTDs and provides analog output with cold end compensation.
- **Data storage functions**
No need to worry about data loss. Supports output methods such as step or program
- **Built-in HART function**
It can calibrate and maintain HART-type instruments, and realize functions such as management of instrument basic information, range migration, zero point and full scale calibration (only for 516 and 518)
- **Support external pressure modules**
SPMK SDP Pressure Module (only for 517 and 518) (Optional)
- **Task management function**
- **Analog transmitters**
Generate precise electrical, temperature or pressure signals.
- **Provides commonly used tools**
Thermal engineering treasure trove, user-built RTD library, temperature and pressure unit conversion.
- **Automatic cold-end compensation technology**
Built-in cold end insulation module for fast tracking of temperature changes.
- **3.5-inch high-resolution TFT display**
- **Chinese and English languages available**
- **RS232 interface and open communication protocol**
- **Provide a 24VDC loop power supply with measurement and output isolated from each other**
- **Warranty: 1 year**

Product Functions

Function		SPMK510	SPMK516	SPMK517	SPMK518
Measurement	Millivolts	★	★	★	★
	Voltage	★	★	★	★
	Current	★	★	★	★
	Frequency		★	★	★
	Pulse		★	★	★
	Resistance		★	★	★
	On-off	★	★	★	★
	11 RTDs		★	★	★
	13 thermocouples		★	★	★
Source	Millivolt current	★	★	★	★
	Voltage	★	★	★	★
	Current	★	★	★	★
	Frequency		★	★	★
	Resistance		★	★	★
	Simulate 11 RTDs		★	★	★
	Simulate 13 thermocouples		★	★	★
Other Functions	HART communication		★		★
	External pressure module ^①			★	★
	Thermal book		★	★	★
	Step programming output	★	★	★	★
	24V loop current	★	★	★	★
	Simulating transmitter		★	★	★
	RS232 communication	★	★	★	★
	Storage	★	★	★	★

Note: SPMK510 millivolt voltage measurement and output range is wider Measurement range (-200~200)mV, Output range (-10~200)mV, Loop integrity test range (0~2000)Ω

① External pressure module means SPMK SDP Module produced by our company.



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Technical Parameters

Electrical Signal Measurement Specifications (Ambient Temperature (20±5) °C, 1 year Accuracy)

Signal	Range	Accuracy	Resolution
Current	(-30-30)mA	±(0.01%RD+0.005%FS)	0.1 μA
Voltage	(-30-30)V	± (0.01%RD+0.005%FS)	0.1 mV
Millivolts	(-75-75)mV	± (0.01%RD+0.005%FS)	0.1 μV
Resistance	R-3W (0-400)Ω (0-4000)Ω	± (0.02% RD + 0.005% FS)	1mΩ 10mΩ
	R-4W (0-400)Ω (0-4000)Ω	± (0.01% RD + 0.005% FS)	1mΩ 10mΩ
Frequency	(1-50000)Hz	± (0.005% RD + 0.002% FS)	1Hz
Pulse	0-999999	1 pulse of earth	1
Switch (on/off)	If the switch is equipped with an inspection voltage, the voltage range is (3~24)V		
Thermocouples	k、E、J、T、N、R、S、B、C、D、G、L、U		
RTDs	Pt1000(385)、Pt500(385)、Pt100(385)、Pt100(3916)、Pt100(3926)、Pt10(385)、Cu10(427)、Cu50(428)、Cu100(428)、Ni120(672)、Ni100(618)		
Pressure range	Refer to the Pressure Range Selection Chart (SPMK518, SPMK517 only).		

Electrical Source Specifications (Ambient Temperature (20±5)°C, 1 year accuracy)

Signal	Range	Accuracy	Resolution
Current	(0-22)mA	±(0.02% RD + 0.005% FS)	0.1μA
Voltage	(0-12)V	±(0.02% RD + 0.005% FS)	0.1mV
Millivolts	(-10-100)mV	±(0.02% RD + 0.005% FS)	0.1μV
Resistance	(0-400)Ω (400-4000)Ω	±(0.02% RD + 0.005% FS) ±(0.03%RD+0.01%FS)	1mΩ 10mΩ
Frequency	(0-50000)Hz	±(0.005% RD + 0.002% FS)	0.1Hz
Pulse	0-999999	±1pcs	1
24VDC	(24±0.5)V Maximum belt load 50mA		
Simulating Thermocouple	k, E, J, T, N, R, S, B, C, D, G, L, U		
Simulating RTDs	Pt1000(385)、Pt500(385)、Pt100(385)、Pt100(3916)、Pt100(3926)、Pt10(385)、Cu10(427)、Cu50(428)、Cu100(428)、Ni120(672)、Ni100(618)		

Measuring and Simulating thermocouple source temperature specifications using thermocouples (ambient temperature (20±5) °C)

Thermocouple type	Reference	Temperature range (°C)	Tolerance temperature range (°C)	Maximum permissible error (°C)	
				Measurement	Output
Type K	IEC584	-270~1372	-200~-100	±0.4	±0.6
			-100~600	±0.3	±0.3
			600~1372	±0.4	±0.5
Type E	IEC584	-270~1000	-200~-100	±0.3	±0.4
			-100~600	±0.2	± 0.2
			600~1000	±0.2	±0.4
Type J	IEC584	-210~1200	-210~-100	±0.3	±0.4
			-100~1200	±0.3	±0.3
Type T	IEC584	-270~400	-200~0	P0.4	S0.5
			0~300	±0.2	±0.3
			300~400	±0.2	±0.2
Type N	IEC584	-270~1300	-200~-100	±0.5	±0.6
			-100~1300	±0.4	±0.5
Type R	IEC584	-50~1768	-50~100	±1.4	±1.5
			100~500	±0.6	±0.7
			500~1768	±0.7	±0.7
Type S	IEC584	-50~1768	-50~100	±1.1	±1.2
			100~400	±1.0	±1.1
			400~1768	± 0.7	±0.8
Type B	IEC584	0~1820	0~450	±3.8	±3.8
			450~800	± 0.9	±1.0
			800~1200	±0.6	± 0.7
			1200~1820	±0.6	±0.8
Type C	ASTM E988	0~2315	0~1000	±0.6	±0.7
			1000~1800	±0.8	±1.0
			1800~2315	±1.2	±1.5

Type D	ASTM E988	0~2315	0~100	±0.6	±0.6
			100~1100	±0.5	±0.6
			1100~2000	±0.8	±1.0
			2000~2315	±1.0	±1.4
Type G	ASTM E1751	0~2315	0~200	±2.4	±2.5
			200~400	±0.5	±0.6
			400~1400	±0.4	±0.6
			1400~2315	±0.8	±1.0
Type L	DIN43710	-200~900	-200~-100	±0.3	±0.5
			-100~400	±0.2	±0.3
			400~900	±0.5	±0.6
Type U	DIN43710	-200~600	-200~0	±0.5	±0.4
			0~600	±0.3	±0.5

Note: Thermocouple type C is WRe5-WRe26, Thermocouple type D is WRe3-WRe25.

Measuring and Simulating RTD source temperature specifications using RTDs (ambient temperature(20±5)°C)

Thermocouple type	Reference	Temperature range (°C)	Tolerance applicable temperature range (°C)	Maximum permissible error (°C)		
				Measurement		Output
				3W	4W	
Pt1000 (385)	IEC751	-200~850	-100~200	±0.13	±0.08	±0.29
			200~600	±0.24	±0.13	±0.45
			600~840	±0.32	±0.19	±0.56
Pt500 (385)	IEC751	-200~850	-100~200	±0.22	±0.16	±0.35
			200~600	±0.35	±0.22	±0.56
			600~850	±0.39	±0.28	±0.69
Pt100 (385)	IEC751	-200~850	-100~200	±0.18	±0.14	±0.18
			200~600	±0.27	±0.18	±0.27
			600~850	±0.36	±0.29	±0.36
Pt100 (3926)	Minco Application Aid #18	-200~850	-100~200	±0.18	±0.14	±0.18
			200~600	±0.27	±0.18	±0.27
			600~850	±0.36	±0.29	±0.33

Pt100 (3916)	JIS1604	-200~850	-100~200	±0.18	±0.14	±0.18
			200~600	±0.27	±0.18	±0.27
			600~850	±0.35	±0.29	±0.35
Pt10 (385)	IEC751	-200~850	-100~200	±0.68	±0.64	±0.68
			200~600	±0.85	±0.82	±0.85
			600~850	±0.98	±0.89	±0.98
Cu100 (428)	JB/T8623—1 997	-50~150	-50~150	±0.15	±0.10	±0.16
Cu50 (428)	JB/T8623—1 997	-50~150	-50~150	±0.19	±0.17	±0.20
Cu10 (427)	Minco Application Aid #18	-100~260	-100~260	±0.65	±0.58	±0.65
Ni120 (672)	Edison curve #7	-70~270	-70~270	±0.08	±0.06	±0.08
Ni100 (618)	DIN43760	-70~190	-70~190	±0.10	±0.07	±0.10

General Technical Indicators

Display	6-digit display
Usage environment	Ambient temperature (-10 ~ 50)°C; Relative humidity <90% non-condensing; Atmospheric pressure(86~106)kPa.a
Storage environment	Ambient temperature(-20~60)°C; Relative humidity <90% non-condensing
Power supply mode	AC and DC power supply (battery power is recommended for good measurement and output)
Dimensions	208mm(L)x101mm(W)x55mm(H)
Weight	0.7kg
Warranty	1 year

Ordering Information

SPMK510/ SPMK516/SPMK517/SPMK518 multifunction process calibrators.

Accessories(included)

Serial number	Description	QTY	Picture
1	Main product	1 pc	
2	Power Adapter	1 pc	
3	Chargeable Lithium battery	1 pc	
4	Test leads	3 set	
5	Pressure module connection cable (Only for SPMK517, SPMK518)	1 pc	
6	type compensation conductor (Only for SPMK516, SPMK517, SPMK518)	1 pc	
7	Dedicated short routes	1 pc	
8	User's manual	1 pc	
9	Calibration test reports	1 pc	

Optional Accessories

Serial number	Description	QTY	Picture
1	SDP Pressure module (Only for SPMK517, SPMK518)		
2	SDP Pressure module test report		
3	Cold End Compensation Assembly (Optional E, Person T, N, R, S, B, C, D, G, L, U)		