

VC26 Multifunction Process Calibrator

(Multifunction Process Calibrator)

VC26H Calibrator (Pxxxxxx)

FB1—Pxxxxxx/ VER. (x. x) / NUM. (1/1)

Generalization of Design

一、 Basic feature

1. A multifunctional on-spot process calibrator with high accuracy and high stability, which can provide powerful measurable functions, output and calibrates all parameters for all kinds of process.

2. Basic feature of input measurement

The max accuracy of measurement can reach 0.01%, and displays as 5 digits.

Measurement functions include: DC voltage, DC current, resistance, RTD, TC, frequency, pulse counting, switch volume, pressure, and pressure leakage ect.

Undertake two-wired, three-wired and four-wired resistance and RTD measurement.

Switch test of fast response allows capturing the process parameters for switching actions.

Data settle function: data-holding, zero, proportion, mean, Max/min value ect.

Built-in 24V loop circuit and loop current measurement

3. Basic feature of analog output

Max accuracy of output can reach 0.01%, and output displays as 6 digits.

Output functions include: DC voltage, DC current, analog resistance, RTD, TC, analog transmitter output, frequency, pulse counting, switch volume, and pressure output ect.

Output augment and decrease setting, and can connect or disconnect output, which is easy for operation.

DCI output manual-step, auto-step and auto-ramping output functions.

Built-in 24V loop circuit.

4. Two independent channels for measurement and input, allowing in-time measurement and outputs of process signals simultaneously; multiple data display to display input measurement value and output settings.
5. Facilitate pressure calibration by external a series of VPM-S digital pressure module through serial RS-232 injection (LEMO plug). There are abundant varieties and range specification of pressure modules to meet any pressure measurement needs. And the basic accuracy can reach 0.05%, and a variety of pressure units are available for pressure calibration.

6. Provide varieties of selectable temperature graduation. Built-in accurate temperature transmitter, with high accurate TC cold-compensation function, and RTD cold compensation can be selected both for connection or disconnection.
7. PC on-line communication function
 - The meter provides two ways to communicate with the user's upper PC and can communicate by the infrared isolated serial commutation module of the compatible USB interface.
 - Supports SCPI commands of industrial standard, and can realize remote control of the meter by equipment driving software.

Note: the PC communication function is not available when the meter is communicating with the pressure module in HART communication function.
8. The meter is equipped with data storage with large capacity, to store as many as 1000(groups) data of field calibration. The data can be read from the meter or uploaded to the user's PC.
9. The meter employs panel calibration technique, connects to standard device, undertakes panel calibration operation according to set range, and saves relevant calibrated data, fulfills the periodic calibration work stipulated by the meter to ensure the accuracy and performance.
10. The meter employs the navigation key to make increment or decrement of the setting value, which makes operation convenient and easy.
11. 3.2 inches TFT display screen, supporting multiple data display and intuitive interface.
12. Other functions: auto power-off, VF, auto turn- off for backlight, setting of backlight, data and time display and setting, ambient temperature detection, power frequency setting ect.
13. two ways of power supply

The instrument can supply power through the four 5th alkaline batteries in the battery case, or use the adaptor to supply.

二、 Basic functions and performance (technical index)

Input Measurement Function [adapt to one year after calibration 23℃±5℃、20~70% RH、accuracy=± (% readings + % range)]

measurement function	range	measurement range	resolution	accuracy	remark
DC voltage DCV	50mV	-5.000mV~ 55.000mV	1μV	0.01+0.01	Input resistance: about 100MΩ
	500mV	-50.00mV~ 550.00mV	10μV	0.01+0.01	
	5V	-0.5000V~ 5.5000V	0.1mV	0.01+0.01	Input resistance: about 1MΩ
	30V	-5.000V~ 35.000V	1mV	0.01+0.01	
DC current DCI	50mA	-5.000mA~ 55.000mA	1μA	0.01+0.01	shunt resistance: about 10Ω
Ohms OHM (4W)	500Ω	0.00Ω~550.00Ω	0.01Ω	0.01+0.01	500Ω about 1mA simulation 5KΩ about 0.1mA simulation open-loop voltage: about 2.5V wire resistance is excluded in the accuracy
	5KΩ	0.0000 KΩ~ 5.5000KΩ	0.1Ω	0.01+0.01	
frequency FREQ	50KHz	3Hz~50.00000KHz	0.01Hz	0.01+0.00004	input resistance: more than 100 kΩ frequency sensitivity: square wave is 3V Vp-p at least 50% duty ratio
	CPM	180~3000000 CPM	1CPM	±2 个字	
Thermal couple TC	R*	0℃~1767℃	1℃	0~500℃ : 1.8℃ 500~1767℃ : 1.5℃	Employ ITS-90 temperature standard Errors for cold-end compensation is excluded in the accuracy
	S*	0℃~1767℃			
	K	-100.0°~1372.0℃	0.1℃	-100.0~0.0℃ : 1.2℃ 0.0~1372.0℃ : 0.8℃	
	E	-50.0℃~1000.0℃		-50.0℃~0.0℃ : 0.9℃ 0.0~1000.0℃ : 1.5℃	

	J	-60.0°C~1200.0°C		-60.0~0.0°C : 1.0°C 0.0~1200.0°C : 0.7°C	
	T	-100.0°C~400.0°C		-100.0~0.0°C : 1.0°C 0.0~400.0°C : 0.7°C	
	N	-200.0~1300.0°C		-200.0~0.0°C : 1.5°C 0.0~1300.0°C : 0.9°C	
	B*	600°C~1820°C	1°C	600~800°C : 2.2°C 800~1000°C : 1.8°C 1000~1820°C : 1.4°C	
	L	-60.0°C~900.0°C	0.1°C	-60.0~0.0°C : 0.7°C 0.0~900.0°C : 0.5°C	
	U	-100.0°C~600.0°C	0.1°C	-100.0~0.0°C : 0.7°C 0.0~600.0°C : 0.5°C	
Resistance temperature RTD	Pt100 385	-200.0°C~800.0°C	0.1°C	-200.0~0.0°C : 0.5°C 0.0~400.0°C : 0.7°C 400.0~800.0°C : 0.8°C	Employ ITS-90 temperature standard Errors due to the mismatch of lead resistance for lead resistance, 3-wired or 4-wired measurements are excluded in the accuracy
	Pt1000 385	-200.0°C~630.0°C		-200.0~100.0°C : 0.3°C 100.0~300.0°C : 0.5°C 300.0~630.0°C : 0.7°C	
	Pt200 385	-200.0°C~630.0°C		-200.0~100.0°C : 0.8°C 100.0~300.0°C : 0.9°C 300.0~630.0°C : 1.0°C	
	Pt500 385	-200.0°C~630.0°C		-200.0~100.0°C : 0.4°C 100.0~300.0°C : 0.5°C 300.0~630.0°C : 0.7°C	
	Cu10	-100.0°C~260.0°C		1.8°C	
	Cu50	-50.0°C~150.0°C		0.7°C	

Pulse counting PULSE	100000 cycles	1~100000cycles	1cycle	±2 个字	see the related indexes for frequency
switch volume measurement SWITCH		CLOSE / OPEN			about 1mA simulation short circuit displays CLOSE open circuit displays OPEN the threshold value is about 200~300Ω
Continuity test CONNECT	500Ω	≤ 50Ω vocalize	0.01Ω		500Ω about 1mA simulation
Loop supply LOOP	24 V			10%	short circuit protection Max circuit : 22 mA Max input voltage: 30 V DC output resistance: 250Ω nominal value

Other features:

- The valid temperatures of TC R, S, B range from 0 to 50°C when make manual compensation.
- measurement speed ratio: twice / second
- common mode rejection: 50Hz / 60Hz > 120 dB , series mode rejection: 50Hz / 60Hz > 60 dB
- temperature coefficient: 0.1 x basic accuracy / °C (temperature range <18°C or >28°C)
- built-in temperature compensation transistor RJC, measuring range -10~50°C, the accuracy of measured temperature between 18 to 28°C is ±0.5°C , the accuracy of other measured temperature is ±1°C. Time for cold temperature is 10S/every time.
- the Max voltage applied between V、Ω、Hz input terminals and COM terminals : 30V_{pk}
- The maximum current of mA terminals: 100mA . mA input protection of mA terminals: 100mA/250V fast-melt.

Simulation Output Function [adapt to one year after calibration 23℃±5℃, 20~70%RH ,accuracy=± (% settings + range %)]

Output function	range	Output range	resolution	accuracy		remark
DC voltage DCV	100mV	-10.000～110.000mV	1μV	0.01+0.01		Max output current 0.5mA
	1V	-0.10000～1.10000V	10μV	0.01+0.01		Max output current 2mA
	10V	-1.0000～11.0000V	0.1mV	0.01+0.01		Max output current 5mA
Dc current DCmA	30mA	0.000～33.000mA	1μA	0.01+0.01		In 33mA, the Max load is 1KΩ resistance in simulate transmitter,external power supply 5～28V
Ohmn OHM	400Ω	0.00～400.00Ω	0.01Ω	0.01+0.01		simulate current is ±0.05~0.3mA simulate current is ±0.1~0.5mA , plus 0.1Ω additional error wire resistance is excluded in the accuracy
	4KΩ	0.0000～4.0000 KΩ	0.1Ω	0.01+0.01		±0.05~0.3mA simulate current wire resistance is excluded in the accuracy
Thermal couple TC	R [*]	0℃～1767℃	1℃	0～100℃ 10～1767℃	1.5℃ 1.2℃	Employ ITS-90 temperature standard
	S [*]	0℃～1767℃		0～100℃ 100～1767℃	1.5℃ 1.2℃	
	K	-200.0℃～1372.0℃	0.1℃	-200.0～-100.0℃ -100.0～400.0℃ 400.0～1200.0℃ 1200.0～1372.0℃	0.6℃ 0.5℃ 0.7℃ 0.9℃	Errors for cold-end compensation is excluded in the accuracy
	E	-200.0℃～1000.0℃		-200.0～-100.0℃ -100.0～600.0℃ 600.0～1000.0℃	0.6℃ 0.5℃ 0.4℃	

	J	-200.0℃~1200.0℃		-200.0~-100.0℃ -100.0~800.0℃ 800.0~1200.0℃	0.6℃ 0.5℃ 0.7℃	
	T	-250.0℃~400.0℃		-250.0~400.0℃	0.6℃	
	N	-200.0℃~1300.0℃		-200.0~-100.0℃ -100.0~900.0℃ 900.0~1300.0℃	1.0℃ 0.7℃ 0.8℃	
	B*	600℃~1820℃	1℃	600~800℃ 800~1820℃	1.5℃ 1.1℃	
	L	-200.0℃~900.0℃	0.1℃	-200.0~0.0℃ 0.0~900.0℃	0.7℃ 0.5℃	
	U	-200.0℃~600.0℃	0.1℃	-200.0~0.0℃ 0.0~600.0℃	0.7℃ 0.5℃	
resistance temperature RTD	Pt100 385	-200.0℃~800.0℃	0.1℃	-200.0~0.0℃ 0.0~400.0℃ 400.0~800.0℃	0.3℃ 0.5℃ 0.8℃	Employ ITS-90 temperature standard Pt100、Cu50、Cu10 simulate current is: ±0.5~3mA when the simulate current is : ±0.1~0.5mA, add additional 0.5℃ error. Pt200 、 Pt500 、 Pt1000 simulate current is ±0.05~0.3mA wire resistance is excluded in the accuracy
	Pt200 385	-200.0℃~630.0℃		-200.0~100.0℃ 100.0~300.0℃ 300.0~630.0℃	0.8℃ 0.9℃ 1.0℃	
	Pt500 385	-200.0℃~630.0℃		-200.0~100.0℃ 100.0~300.0℃ 300.0~630.0℃	0.4℃ 0.5℃ 0.7℃	
	Pt1000 385	-200.0℃~630.0℃		-200.0~100.0℃ 100.0~300.0℃ 300.0~630.0℃	0.2℃ 0.5℃ 0.7℃	
	Cu10	-10.0℃~250.0℃		1.8℃		
	Cu50	-50.0℃~150.0℃		0.6℃		
frequency FREQ	100Hz	1.00 Hz ~110.00Hz	0.01Hz	±2 bytes		1~11 Vp-p accuracy of square wave level ±5%reading +0.5V 50% duty ratio load >100KΩ
	1KHz	0.100 KHz ~1.100KHz	1Hz	±2 bytes		

	10KHz	1.0KHz~11.0KHz	0. 1KHz	±2 bytes	
	50KHz	10KHz~50KHz	2KHz	±5 bytes	
	CPM	60~1200 CPM	1CPM	±2CPM	
Pulse counting PULSE	100Hz	1~100000cycles	1cyc	±2 bytes	see related index in frequency
	1KHz				
	10KHz				
Switch volume SWITCH	100Hz	1.00Hz~110.00Hz	0.01Hz	±2 bytes	see related index in frequency FET switch Max switch DC voltage/current: +28 V/50mA
	1KHz	0.100KHz~1.100KHz	1Hz		
	10KHz	1.0KHz~11.0KHz	0.1KHz		
	50KHz	10KHz~50KHz	2KHz		

Other features:

- temperature coefficient: 0.1 x basic accuracy / °C (temperature range <18°C or >28°C)
- built-in temperature compensation transistor RJC, measuring range -10~50°C, compensation error ≤±0. 5°C
- Max voltage employed between output terminals and earth terminals : 30Vpk
- Maximum output current : about 25mA

- The valid temperatures of TC's R, S, B graduation range from 0 to 50°C when make manual compensation.

Output measurement and analog output pressure function

Pressure PRESS	range and accuracy	resolution	Adapt to VPM series pressure module, provide for pressure, vacuum pressure, absolute pressure and high voltage module; see relate pressure module technical files for detailed technical indicators.
	decided by the pressure module	5-digit display	

三、 **general feature**

- working temperature and humidity: 0 to 50°C ≤80%RH without condensation; 40 to 50°C ≤ 70% RH
- storage temperature and humidity: -25 to 60°C ≤90 %RH without condensation
- Electrical safety: EN61010-1: 2001

Proof voltage: AC350V/1 minutes between measurement terminals and output terminals.

Insulation impedance: DC500V /50MΩ or more between measurement terminals and output terminals.

- Electromagnetic compatibility (EMC): EN61326-1: 2006

Comply with performance criterion 2, namely function and performance are reduced or lost, but can be restored automatically.

- Protection grade IP65: dust-proof and water spray-proof
- Vibration and fall: IEC 60068-2-64: 2008, IEC 60068-2-32: 2008

Random, 2g, 5-500Hz ; 1 meter drop test.

- CE certificate and China CMC certificate
- Quality criterion: develop, design and manufacture according to DIN ISO 9001.
- calibration period and preheating time:

To guarantee the accuracy, the calibration period is one year.

Preheating time is more than 10 minutes

- display:

3.2 inch TFT colorful screen display

- power:

4×1.5V AAA Alkaline batteries

Powered by power adaptor

- measurement and weight

206 × 97 × 60 mm

About 600g

Peripheral configuration

➤ Standard configuration

testing probes (H000000-00)	1 pair
industrial testing lead (H000001-00)	1 pair
industrial testing lead (H000002-00)	1 pair
hook type testing probe (H000004-00)	1 pair
Alligator clip (H010000-00)	1 pair
Alligator clip (H010007-00)	1 pair
TC conversion connector (H200000-00)	1 piece
Users' Manual	1 copy
Quality certification	1 copy
fuse tube (10mA/250V)	2 piece
fuse tube (10mA/250V)	2 piece
5th Alkaline batteries	4 piece
Cloth bag	1

➤ optional items

PC infrared communication pack	1 suite
Wire power adaptor (DC5V)	1 set
VPM-S pressure module and accessories pressure module (hand pump and pressure connector)	