VICTOR 79A+ Process Multi-meter cum Calibrtaor

Full-featured on-site process maintenance tool, Combining digital multimeter and process signal source into one.

Basic characteristics of Measure Mode

▶Measuring and displaying readings of 55,000 digits, the basic accuracy is 0.05%.
▶Measurement rate: fast 20 times/s, slow 5 times/s.
▶ AC true RMS measurement, measurement bandwidth: 20Hz~1000Hz
▶ Manual or automatic range can be selected, and the measured value display is maintained.
▶Relative value measurement (REL_%)
▶The low-pass filter function (VFC) can accurately measure the voltage of the inverter or the voltage of other noise equipment.

Basic characteristics of Source Mode

▶The output basic accuracy is 0.05%, and the output display is 5 digits.
▶Output function: DC voltage, DC current, ohm, frequency, thermocouple, thermal resistance, SIMULATE function analog transmitter
▶When outputting DC current, mA and % values can be displayed at the same time; 25% and 100% manual step, automatic step and automatic ramp currentoutput function
▶ Internally provide 24V loop power supply.6. Loop detection function
▶ Simultaneously conduct 24V loop power supply to measure current.The built-in optional 2502 HART loop resistor facilitates the use of HART communication devices without carrying a load resistor separately.

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VC79A+ Process Multi-meter Product Outline Design

I. Basic characteristics of the product

1. An industrial level on-site process maintenance tool combining a digital multi-meter with a process signal source.

2. The product is used in harsh environments for the dual color plastic mold shell design and compliance with IP65 dust and waterproof grade.

3. The product meets the safety standards of 600V CAT.IV and 1000V CAT.III.

4. Basic characteristics of input measurement

- Measurement functions: AC voltage, DC voltage, ohms, capacitance, DC current, AC current, Continuity, diode, frequency, thermocouple, and thermal resistance.
- The measurement display reading is 55000 reading with a basic accuracy of 0.05%.
- Measurement rate: fast 20 times/second, slow 5 times/second.
- True AC RMS measurement, measurement bandwidth: 20Hz~1000Hz.
- Manual or automatic range can be selected, and the measurement value display remains unchanged.
- Relative value measurement (REL_ %)
- Low pass filtering function (VFC) can accurately measure the voltage of frequency converters or other noise devices.

5. Basic characteristics of analog output

- The basic output accuracy is 0.05%, and the output display is 5 bits.
- Output function: DC voltage, DC current, ohms, frequency, thermocouple, thermal resistance, SIMULATE function analog transmitter
- When DC current outputs, both mA and % values can be displayed simultaneously. 25% and 100% manual stepping, automatic stepping, and automatic ramp current output functions
- 24V loop power supply is provided internally.

6. Loop detection function

- Simultaneously supply 24V circuit power and measure current.
- Built-in optional 250Ω HART loop resistor facilitates the use of HART communication devices without the need to carry load resistors separately.

7. Built in temperature sensor, automatic cold-end compensation, and temperature display of ℃ or ℉.

8. Manually set temperature cold-end compensation.

9. Large screen LCD’s dual display with white LED backlight.

10. Panel calibration technology is adopted for the instrument, which is connected to the standard instrument. The instrument panel calibration operation is carried out according to regulations. Moreover, corresponding calibration data is stored to complete the periodic calibration work of the instrument and ensure that it reaches the required accuracy and performance.

11. Easy replacement of batteries and fuses is allowed for the battery compartment door.

12. The instrument can be powered by four AA alkaline batteries or nickel hydrogen batteries in the battery compartment, or through a power adapter.

13. Other functions: automatic power off, automatic backlight off, low battery detection, temperature unit setting, etc.

II. Basic functions and performance of the product (technical index)

Input measurement function [Used within one year after calibration, 23℃± 5℃, 20-70% RH, accuracy=± (% set value+ reading)]

Measurement function	Range	Measuring range	Resolution	Accuracy	Description
DC Voltage	50mV	-55.000mV～55.000mV	0.001mV	0.1%+10	Input resistance: 100MΩ
	500mV	-550.00mV～550.00mV	0.01mV	0.05%+5	
	5V	-5.5000V～5.5000V	0.0001V	0.05%+5	Input resistance: 10MΩ
	50V	-55.000V～55.000V	0.001V	0.05%+5	
	500V	-550.00V～550.00V	0.01V	0.1%+5	
	1000V	-1000.0V～1000.0V	0.1V	0.1%+5	
AC voltage	5V	0～5.5000V	0.0001V	0.5%+4(<400Hz） 5%+4(>400Hz）	Input resistance: 10MΩ <100pF 20Hz～1kHz 10%～110% range
	50V	0～55.000V	0.001V	0.5%+4	
	500V	0～550.00V	0.01V	0.5%+4	
	1000V	0～760.0V	0.1V	0.5%+4	
AC voltage VFC	500V	0～550.00V	0.01V	4%+60	20Hz～200Hz
Ohm	500Ω	0～550.00Ω	0.01Ω	0.05%+10	Testing current: ＜0.8mA Open circuit voltage: ＜2.5V
	5kΩ	0～5.5000kΩ	0.0001kΩ	0.05%+5	
	50kΩ	0～55.000kΩ	0.001kΩ	0.05%+5	
	500kΩ	0～550.00kΩ	0.01kΩ	0.05%+5	
	5MΩ	0～5.5000MΩ	0.0001MΩ	0.2%+5	
	50MΩ	0～55.000MΩ	0.001MΩ	1%+10	
DC current	50mA	-55.000mA～55.000mA	0.001mA	0.1%+5	Voltage Drop ＜1.8 mV/mA Response time: ≤1S
	500mA	-500.00mA～500.00mA	0.01mA	0.1%+5	
AC current	50mA	0.000mA～55.000mA	0.001mA	0.15%+20	Voltage Drop ＜1.8 mV/mA Response time: ≤3S
	500mA	0.00mA～500.00mA	0.01mA	0.15%+10	
Frequency	10Hz	0～9.9999Hz	0.0001Hz	0.02%+4	
	100Hz	0～99.999Hz	0.001Hz	0.02%+4	
	1000Hz	0～999.99Hz	0.01Hz	0.02%+4	
	10kHz	0～5.0000kHz	0.0001kHz	0.02%+4	
Duty cycle		1%～99%	0.1%	1%	
Diode	2V		0.0001V	0.5%+10	

CONT.	500Ω	0～550.0Ω	0.1Ω	≤100ΩBB	
Thermocouple	R	0°C～1760°C	1°C	0.1%+3°C(≤100）°C 0.1%+2°C(＞100）°C	The ITS-90 temperature scale is adopted The accuracy does not include the error of cold end compensation The influence of thermoelectric potential is not included in the accuracy
	S	0°C～1760°C			
	B	600°C～1800°C		0.1%+3°C(≤800）°C 0.1%+2°C(＞800）°C	
	K	-200°C～1350°C	0.1°C	0.1%+2°C(≤-100）°C 0.1%+1°C(＞-100）°C	
	E	-200°C～700°C			
	J	-200°C～950°C			
	T	-200°C～400°C			
	N	-200°C～1300°C			
Thermal resistance	Cu50	-50°C～150°C	0.1°C	0.1%+1°C	The Pt-385 temperature scale is adopted Measuring current: approximately 0.8mA/0.08mA Open circuit voltage: approximately 2 V The accuracy does not include the lead resistance
	Pt100	-200°C～850°C			
	Pt1000	-200.0°C～630.0°C			
Capacitance	10nF	0～11.00nF	0.01nF	5%+50	
	100nF	0～110.0nF	0.1nF	5%+5	
	1000nF	0～1100nF	1nF	5%+5	
	10μF	0～11.00μF	0.01uF	5%+5	
	100μF	0～110.0μF	0.1uF	5%+5	
	1000μF	0～1100μF	1uF	5%+50	

Other characteristics:

- Uncertainty includes standard uncertainty, hysteresis, nonlinearity, repeatability, and typical long-term stability over the period mentioned (K=2).
- Maximum applied voltage at the input end: 1000V AC.
- Current input protection: 500mA fuse/250V Fast FUSE.
- Input common mode rejection: 50Hz/60 Hz>80 decibels.
- Input serial mode rejection: 50Hz/60 Hz>40 dB.
- ACV and ACI measurement

  AC coupling, RMS measurement, sine wave input

  Frequency response: 20Hz~1kHzCommon mode suppression CMRR: 50Hz/60Hz (Rs=1k Ω unbalanced resistance) ≥ 60 decibels

  RMS detection peak factor: 3.0.

- OHM measurement

Measurement accuracy of resistance with relative humidity ≥ 70%: 1% (Above 1 MΩ), 3% (Above 10 MΩ)

- FREQ measurement

Input reading of 0 for ≤ 3Hz

- Internal temperature compensation sensor, temperature measurement range: -10~50 ℃, compensation error ≤ ± 2℃. Compensation time is once every 10 seconds.

Analog output function [Used within one year after calibration, 23℃± 5℃, 20-70% RH, accuracy=± (% set value +reading)]

Function	Range	Output range set	Resolution	Accuracy		Remarks
DC Voltage	100mV	-10.00～110.00mV	10μV	0.05%+3		Maximum output current 0.5mA
	1V	-0.1000～1.1000V	100μV	0.05%+3		Maximum output current 2mA
	10V	-1.000～11.000V	1mV	0.05%+2		Maximum output current 5mA
DC current	30mA	0.000～33.000mA	1uA	0.05%+4		20mA maximum load 1k Ω 30mA maximum load 600 Ω
Analog transmitter SIMULATE	-30mA	0.000～-33.000mA	1uA			
Loop power	24V			±10%		Maximum output current 35mA
OHM	400Ω	0~400.0Ω	0.1Ω	0.05%+2		Excitation current is ± 0.1-5mA When the excitation current is ± 0.1-0.5A, an additional error of 0.1 Ω is added Lead resistance is not included in the accuracy
	4kΩ	0~4.000kΩ	1Ω	0.05%+2		
Thermocouple	R	0℃～1767℃	1℃	0～100℃ 100～1767℃	1.5℃ 1.2℃	ITS-90 temperature scale is adopted The accuracy does not include the error of cold end compensation
	S	0℃～1767℃				
	B	600℃～1820℃		600～800℃ 800～1820℃	1.5℃ 1.1℃	
	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℃	
	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℃	

Thermal resistance	PT100	-0200.0～0850.0	0.1°C	-200.0～0.0℃ 0.0～400.0℃ 400.0～800.0℃	0.3℃ 0.5℃ 0.8℃	Pt (385) temperature scale is adopted The excitation current is ± 0.1~± 5mA Maximum output voltage 2V When the excitation current is ± 0.1-0.5A, an additional error of 0.1 Ω is added Accuracy does not include lead resistance The influence of thermoelectric potential is not included in the accuracy Pulse transmitters and PLCS with pulse times as short as 10ms are supported
	Pt1000	-200.0°C～630.0°C		-200.0～100.0℃ 100.0～300.0℃ 300.0～630.0℃	0.2℃ 0.5℃ 0.7℃	
	Cu50	-050.0～150.0		0.6℃		
Frequency	100Hz	1.0Hz～110.0Hz	0.1Hz	0.05%+2		50% duty cycle of rectangular wave 1～11Vp-p
	1kHz	0.100kHz～1.100kHz	1Hz			
	5kHz	1.00kHz～6.00kHz	10Hz			
	10kHz	6.0kHz～11.0kHz	100Hz			

Other characteristics:

- Uncertainty includes standard uncertainty, hysteresis, nonlinearity, repeatability, and typical long-term stability over the period mentioned (K = 2).
- Maximum applied voltage at output end: about 30Vpk; Maximum applied current at output end: about 25mA
- Output protection: 500mA/250V Fast FUSE.
- Load characteristics: capacitive load ≥0.01uF
- Temperature coefficient: 0.1 × basic accuracy/℃ (temperature range < 18℃ or > 28℃)

III. General characteristics of the product

- Operating temperature and humidity: 0 to 50 ℃ ≤ 80% RH without condensation; 40 to 50℃ ≤70%RH。
- Operating altitude: 0-2000 m.
- Storage temperature and humidity: -25 to 60℃ ≤90%RH without condensation.
- Storage altitude: 0-10000m.
- Electrical safety: EN61010-1, EN61010-031

Measurement: CAT.III (Maximum voltage: AC/DC 1000V)

CAT. IV (Maximum voltage: AC/DC 600V)

Pollution level 2 for indoor use

Output: 30V max CAT.I

Withstand voltage: AC6880V (50/60Hz)/5 seconds between the terminal and the housing.

Insulation impedance: DC1000V/100M Ω or more between the terminal and the housing.

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

  Performance criterion 2 is met, i.e. the function and performance are temporarily reduced or lost, but can be recovered by themselves.
- Vibration and fall: IEC 60068-2-64:2008, IEC 60068-2-32:2008

  Random, 2g, 5-500Hz; 1 m drop test.
- Protection level IP65: dustproof and anti-water spray.
- CE certification.
- Quality standard: Developed, designed, and manufactured in accordance with CQC ISO 9001.
- Calibration period and preheating time:

  To ensure the accuracy of the Table, its calibration period is one year

  The startup preheating time is more than 10 minutes.
- Instrument display and key

  Segment code LCD display: 48.0 × 65.0mm

  Rubber key is adopted
- Instrument power supply:

  3 ×1.5V AA alkaline battery for power supply

  Power adapter power supply
- Dimensions and weight

  206 (L)× 97(W)× 60(D) m, about 500g

- Standard configuration

Testing pens (CF-733720-EU):	1 set
Crocodile clip (CF-732170):	1 pair
Fuse (500mA/250V quick-acting fuses):	1 piece
LR6 (AA) alkaline batteries:	4pcs
Soft carrying bag:	1 unit
User manual of product:	1 manual

- Optional elements

Linear power adapter (DC5V)	1 item

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