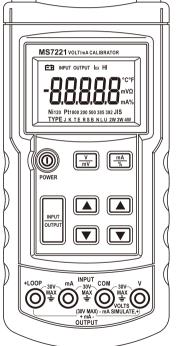
# SISCO

# **VOLT/MA CALIBRATOR OPERATION MANUAL**



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### Safety Information

To avoid possible electric shock or personal injury:

- Never apply more than 30V between any two jacks. or between any jack and earth ground.
- Make sure the battery door is closed and latched before you operate the calibrator.
- Remove test leads from the calibrator before you open the battery door.
- Do not operate calibrator if it is damaged
- Do not operate the calibrator around explosive gas. vapor, or dust.

To avoid possible damage the calibrator:

MS7221 Volt/mA Calibrator is a source and

- Make sure choose the right jack and rang, before use the calibrator to measurement or calibrator.
- Take away the calibrator from the used circumstance. before operate the calibrator or after close the calibrator.

#### Introduction

measurement tool. This Calibrator is use to measure or output 0 to 24 mA DC current loop, and 0 to 10 V DC voltage. But the calibrator cannot be used to measurement and source simultaneously. MS7221 Volt/mA Calibrator include this accessories: Holster, a pair of Test Leads, 9V battery, and this manual. If the calibrator is broken or short of some accessories. please contact the supplier. Please contact the MASTECH distrobutor about other accessory's information.

The following table has showed the technical parameter and function of the Calibrator.

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### Measurement and output voltage parameter

unction	Range	Resolution	
OC V mV Input	0 ~ 100 mV	0.01 mV	
o v m v mput	0 ~ 10 V	0.001 V	
C V mV Output	0 ~ 100 mV	0.01 mV	
o v m v Output	0 ~ 10 V	0.001 V	
oop Power Output	24V DC	N/A	

### Measurement and output mA parameter

Function	Range	Resolution
DC mA Input	0 ~ 24 mA	0.001 mA
DC mA Output	0 ~ 24 mA	0.001 mA

# Specification

Specification are based on a one year calibration cycle and apply from +18°C to +28°C unless stated otherwise. "Counts" means number of increments or decrements of the least significant digit.

### DC V Input and Output

Range	Resolution	Accuracy ±(% of reading+Counts)
100mV	0.01mV	0.02 % + 2
10V	0.001V	0.02 % + 2

Input impedance:  $2M\Omega$  (nominal), <100pF Over voltage protection: 30 V

Voltage driver capability: 1 mA

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# DC mA Input and Output Range 24mA

Range	Resolution	Accuracy ±(% of reading+Counts)	Symbol	Meaning
24mA	0.001mA	0.015 % + 4		Earth ground
Percent	display: 0%=4r	25 mA, 250V fast acting fuse nA,100%=20mA	<u>-</u>	Conforms to European Union dir
		ice 1000Ω at 20mA for battery t 20mA for battery voltage	$\triangle$	Refer to this instruction sheet fo information about this feature.

Simulate mode: External loop voltage requirement: 24V nominal, 30V maximum, 12V minimum,

# LOOP POWER

24 V ± 10%

5.8 to 6.8V)

### **General Specifications:**

Maximum voltage applied between any jack and earth

ground or between any tow jack: 30V Storage temperature: -40°C~60°C Operating temperature: -10°C~55°C Operating altitude: 3000 meters maximum

Temperature coefficient: ±0.005% of range per °C for the temperature range -10 °C to 18 °C and 28 °C to 55 °C Relative humidity:95% up to 30°C,75% up to 40°C,45% up to 50°C.35% up to 55°C

Shock: Random 2g . 5Hz to 500Hz

Safety: 1 meter drop test

Power requirements: 9VDC, 006P or 1604A

Size: 190mm L × 89mm W × 42mm H Weight: 350g (include battery)

Auto Power Off function: 6min

Cancel the function of Auto Power Off: Hold Input / Output key, then press Power button. The full screen appears and the Auto Power Off is canceled. On the contrary, the Auto Power Off could be recovered after reboot the calibrator.

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# International Symbols

Symbol	Meaning
<b>-</b>	Earth ground
:€	Conforms to European Union directives
$\triangle$	Refer to this instruction sheet for information about this feature.

MS7221 VOLTIMA CALIBRATOR

-t-OOP 3M- SA INPUT CON 3M- V

-8.8.8.8

# **Explanation On Front Panel**

The front panel is show as in right figure

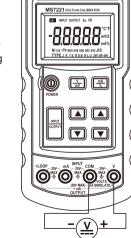
- 1. Loop power 24V to ground 2. mA measurement input jack
- 3. Input or output negative (ground) jack
- 4.  $\stackrel{\smile}{V}_{\times}$  mV input or output lack
- 5. Power switch
- 6. V mV conversion key
- 7. mA mA% conversion key
- 8. Input/output conversion key
- 9. Increase more value key
- 10. Reduce more value kev 11. Increase less value key
- 12. Reduce less value key
- 13. Low power indication
- 14. Input state indication
- 15. Output state indication
- 16. Result value
- 17. Voltage V mV indication
- 18. Current mA mA% indication

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# **Operation Instructions**

### DC V Measurement

- ① Press the power switch 5, turn on the Calibrator. 2 Press the input/output conversion key8, when the
- state of no input indicator 14. Make it under the state of measurement.
- (3) Press the V mV conversion key[6], make it indicate VDC or mV DC 17, at the range of measure you need.
- 4 Put the red test lead in V jack 4 black one to the COM iack3
- (5) Connect the red test lead with the positive of voltage which is waiting for measurement, black one to the negative(ground).
- 6 The value of result show 16.
- \* The number in the □.referring to the Explanation on Front Panel



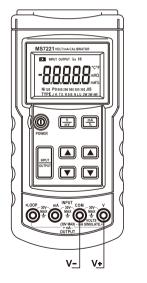
01 02 03 04 05

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### DC V Output

- 1) Press the power switch 5 turn on the Calibrator.
- 2) Press the input/output conversion key 8, when the state of no output indicator 15. Make it under the state of output.
- (3) Press the V mV conversion key 6, make it indicate VDC or mVDC 17, at the range of output you need.

  4) Press the value adjust key 9 10 11 2, make the value
- vou want.
- (5) Put the red test lead in V iack[4].black one to the COM iack3.
- 6 Connect the red test lead with the positive of voltage which is waiting for measurement, black one to the negative(ground).
- (7) If you want to change the output value or range, then press the value adjust key 9101112 or the V mV conversion key 6.

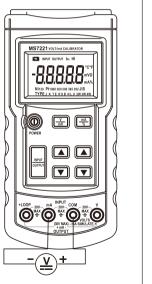


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### DC mA Measurement

Outside supply power measurement

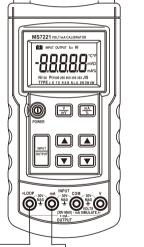
- 1) Press the power switch 5, turn on the Calibrator.
- 2 Press the input/output conversion key 8, when the state of no input indicator 14. Make it under the state of measurement.
- 3 Press the mA mA% conversion key 7, make it indicate mA or mA% 18 at the state of measure you need.
- 4) Put the red test lead in mA jack 2, black one to the COM jack 3.
- (5) Connect the red test lead with the positive of current which is waiting for measurement, black one to the negative (ground).
- (6) The value of result show 176.



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Calibrator supply Loop power measurement

- 1) Press the power switch 5, turn on the Calibrator. 2 Press the input/output conversion key 8, when the
- state of no input indicator 14. Make it under the state of measurement
- (3) Press the mA mA% conversion key[7], make it indicate mA or mA% 18, at the state of measure you need.
- (4) Put the red test lead in LOOP jack 1.black one to the mA jack 2
- (5) Connect the red test lead with the in of current which is waiting for measurement, black one to the out of current.
- 6 The value of result show 16



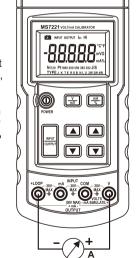
+ circuit under test

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## DC mA Output

Sourcing mA

- 1 Press the power switch l.turn on the Calibrator.
- 2 Press the input/output conversion key[8], when the state of no output indicator 15. Make it under the state of output
- 3 Press the mA mA% conversion key[7], make it indicate mA or mA% 18, at the state of output you need.
- 4 Press the value adjust key 9101112, make the value on you want.
- (5) Put the red test lead in LOOP jack 1. black one to the V jack 4.
- (6) Connect the red test lead with the positive of current which is waiting for output. black one to the negative.
- (7) If you want to change the output value or state, then press the value adjust key 9|10|11|12| or the mA mA% conversion key[7].



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### Simulating a Transmitter

- 1 Press the power switch 5 turn on the Calibrator.
- ② Press the input/output conversion key圆,when the state of no output indicator 15. Make it under the state
- (3) Press the mA mA% conversion key [7], make it indicate mA or mA% [18], at the state of output you need.
- 4) Press the value adjust key 9 10 11 12, make the value vou want.

MS7221 VOLTIMA CALIBRATOR

FR INPUT OUTPUT lex HI

-8.8.8.8.8<sub>mv0</sub>

Ni120 Pt1000 200 500 385 392 JIS TYPE J K TE RSB NLU 2W3W4W

V MA

Power Supply

- (5) Put the red test lead in V iack 4.black one to the COM jack[3].
- 6 Connect the red test lead with the positive of power which is outside, black one to the positive of current which is waiting test.
- (7) If you want to change the output value or state. then press the value adjust key 9 10 11 12 or the mA mA% conversion kev[7].



### Maintenance

### Cleaning

Periodically wipe the case with a damp cloth and detergent: do not use abrasives or solvents.

# Calibration

Calibrate your calibrator once a year to ensure that it performs according to its specifications.

### Replacing the Battery

Please change the battery when the LCD indicates [#] Turn off the power of the Calibrator. When you change the battery, and screw off the breechblock on the battery cabinet cover, then take off it and instead the fresh battery.

Replacing a Fuse

# **↑** Warning

To avoid personal injury or damage to the calibrator. use only a 0.125A 250V fast fuse.

Fuse 1 is probably blown if:

In the V output mode, with the test leads removed from the calibrator, the display flashes OL.

Fuse 2 is probably blown if:

In the mA input mode, the calibrator always reads 0.000, even with a signal applied.



06 00-05-2683 07 08 09 10 11