



## AMETEK® mAcal Milliamp Loop Calibrator

- ☐ **Generates and Measures the Current in the Loop on 2-wire Transmitters**
- ☐ **internal Generation of Stabilized 24Vdc for the Loop**
- ☐ **Resolution of 0.001mA in Measurement Mode**
- ☐ **Change Display to Read % of Full Scale**
- ☐ **Special Fixed Steps stored for Linear and Flow Transmitters**
- ☐ **Choose between Manual and Automatic Steps with 10- or 30-seconds between Steps**
- ☐ **Available with NIST Certification**

### PRODUCT DESCRIPTION

The mAcal Milliamp Loop Calibrator is an economical, easy to use calibration device for generating and measuring mA signals. The instrument is especially designed for 2-wire transmitter loops with 4-20mA signals and it is available with NIST certification.

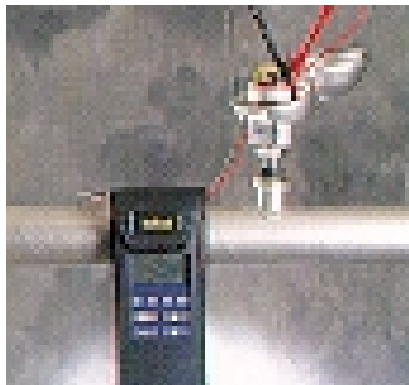
The unit's compact size and light weight is ideal for field use. Dedicated functions keys located on the front of the device allow for simple, single-hand operation. The keypad provides positive feedback to the user and each key is labeled for easy operation. A large, high-contrast, 5-digit LCD display indicates numeric values in mA, %, V or sec. Resolution is 0.001mA in measurement mode. The user can change the display to read in % of Full Scale. Flow readings are shown in % of Flow. The display also indicates error codes. Alarms may be displayed showing loop mismatch, reverse polarity and overrange. The unit will also display low battery notification message. Plus, the unit is equipped with an automatic shut-off features that prevents accidental battery discharge. A built-in, permanent

fuse eliminates the need to replace the fuse in the case of overloads.

The mAcal Loop Calibrator provides loop power control in the range of 0-45V and the instrument may be used to generate a stable 24Vdc supply for the loop.

The mAcal Loop Calibrator also reduces the time and complexity often associated with loop calibration. The instrument features special fixed steps for performing linear and flow transmitter or valve positioner calibrations. The instrument has seven different built-in current values, and the user may choose between manual and automatic steps with 10- or 30-seconds between steps. For example, you can perform an entire test by placing the mAcal Calibrator in the process loop and operating from the control room.

The unit comes complete with the mAcal Calibrator, carrying case, two test leads with alligator clips, four batteries (Type LR6, AA) and a User's Guide.



## FUNCTIONAL SPECIFICATIONS

### Current Generation

Range: ..... 0-24mA  
Resolution: ..... 0.01mA  
Accuracy (k=2): .....  $\pm 0.05\%$  of Full Scale  
Maximum Load: ..... 900 ohm  
Temperature Coefficient: ... 0.005% per °C (-10°C to +40°C)  
0.003% per °F (-14°F to 104°F)

### Current Measurement

Range: ..... 0-24mA  
Resolution: ..... 0.001mA  
Accuracy (k=2): .....  $\pm 0.05\%$  of Full Scale  
Input Impedance: ..... 10 ohm  
Temperature Coefficient: ... 0.003% per °C (-10°C to +40°C)  
0.002% per °F (-14°F to 104°F)

### Voltage Measurement

Range: ..... -45V to +45V  
Resolution: ..... 0.1V  
Accuracy: ..... 0.5V  
Input Impedance: ..... 10M ohm

### Standards Compliance

89/336/EEC  
EN50081-1  
EN50081-2  
EN50082-1  
EN50082-2  
(91/157/EEC)

## ORDERING INFORMATION

Part No.	Description
75-MACAL	mAcal Loop Calibrator (Complete)

## PHYSICAL SPECIFICATIONS

### Operating Temperature

-14°F to 104°F (-10°C to +40°C)

### Storage Temperature

-4°F to 122°F (-20°C to 50°C)

### Battery Life

200 hours with external loop power  
20 hours with 12mA output/internal loop power

### Battery Types

4 Type LR6, AA, 1.5V Alkaline

### 120Vac Mains Adapters

103964, 6Vdc/240ma US/Japan- 1.3mm DC female connector

### Weight

Calibrator with Batteries, Leads and Case 0.8 lbs (355g)

### Dimensions (H x W x D)

6.85 x 2.6 x 1.0-inches (174 x 66 x 26mm)

### Warranty

1-year Factory Warranty

Part No.	Description
013257	Printed Circuit Board (Complete)
103775	Keyboard
103922	Housing (Complete)
104202	Test Leads
103964	120Vac Adapter
103915	Battery Cover
103845	Carrying Case (Soft)
103887	User Manual



AMETEK is a leading global manufacturer of electrical and electromechanical products for niche markets. Listed on the New York Stock Exchange (AME) since 1930, AMETEK's annual sales are approaching \$1 billion. Operations are in North America, Europe and Asia, with about one-third of sales to markets outside the United States.

### AMETEK Test & Calibration Instruments

8600 Somerset Drive  
Largo, Florida 33773  
Tel +1 (727) 586-7831  
Tel +1 (800) 527-9999  
Fax +1 (727) 539-6882

### AMETEK Denmark A/S

Gydevang 32-34  
Post Office Box 30  
DK-3450  
Allerød Denmark  
Tel +45 4295 8800  
Fax +45 4816 8080

### AMETEK Precision Instruments Europe GmbH

Rudolf-Diesel-Strasse 16  
D-40670, Meerbusch  
Germany  
Tel +49 2159 9136 0  
Fax +49 2159 9136 39

### AMETEK Singapore Pvt. Ltd.

10 Ang Mo Kio Street  
#05-12 TECHPOINT  
Singapore 569059  
Tel +65 484 2388  
Fax +65 481 6588  
E-Mail aspl@ametech.com.sg

Internet Addresses: [www.ametek.com](http://www.ametek.com)  
[www.chatillon.com](http://www.chatillon.com)

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**ISO 9001  
Manufacturer**

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