Practical Instrument Electronics

Model 535
4-20/10-50 Milliamp/Voltage Dual Range Loop Calibrator

Features

4 to 20 mA Loop Functions

Source and Read 0.000-24.000 mA

Simulate 2-Wire Transmitters

Power 2-Wire Transmitters and Read 0.000-24.000 mA

Display current in mA or -25.00 - 125.00 % of 4-20 mA

10 to 50 mA Loop Functions

Source and Read 0.000-50.000 mA

Simulate 2-Wire Transmitters

Power 2-Wire Transmitters and Read 0.000-50.000 mA

Display current in mA or -25.00 - 105.00 % of 10-50 mA

Read Voltage Function

Read 0.00 to ± 30.00 VDC with 4X over range ability

Source Voltage Function

Source 0.000 to 24.000 VDC

High Accuracy

±0.025% of reading

Full 5 Digit Display

Bar graph for quick reference of input and output levels

High contrast graphic display viewable in all lighting conditions and angles

EZ-Dialä Knob

Change the speed of dialing your test point by just pushing down on the knob

Easily adjust output by 0.001 mA (0.01 %) or 0.100 mA (1.00 %)

EZ-Checkä Switch with EZ-Stepä Button

3-position tactile switch with push button for true one-handed calibrations

Push button for stepping through calibration points

16 different step sizes

Hands-free auto step and auto ramp modes

Selectable soak and step time for working with valves

Industry Standard Input/Output Connections

Conveniently located banana jacks on top panel

Optional Analog Output

Model 535A includes a 10 mV/mA proportional output provided on bottom panel banana jacks for connection to chart recorders and data loggers

Uses 4 AA Alkaline Batteries

Superior battery life of 10 hours in source mode

>40 hours battery life in read mode

Easy access to battery compartment

240 VAC Tolerant

Fuse-less protection from accidental misuse

Lightweight and rugged with a solid feel

Convenient Velcro® hand strap allows for a firm confident grip or attachment to pipes and ladders.

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Model 535 Datasheet

Description

The Practical Instrument Electronics Model 535 Dual Range Loop Calibrator makes testing, troubleshooting, and calibrating your 4-20 and 10-50 milliamp process loops easy as pie. Change ranges in seconds - the Model 535 is two calibrators in one convenient package. Easily recall min/max readings with the EZ-Checkä feature. Powerful manual and automatic stepping and ramping features are found on the dual-action EZ-Stepä Switch providing one-handed or hands-free operation. Independent step size, step time, and soak time parameters offer the most step and ramp flexibility of any calibrator in its class.

Specifications

General Specifications:

(Unless otherwise indicated all specifications are rated from a nominal 23 °C, 70 % RH *for 1 year from calibration*)

Operating Temperature Range	-20 to 60 °C (-5 to 140 °F)
Storage Temperature Range	-30 to 60 °C (-22 to 140 °F)
Relative Humidity Range	10 % ≤RH ≤90 % (0 to 35 °C), Non-condensing
	10 % ≤RH≤ 70 % (35 to 60 °C), Non-condensing
Size	7.00 X 3.30 X 2.21 inches (177.8 x 83.8 x 56.1mm)
Weight	14.0 oz (397 grams)
Battery	4 AA Alkaline, 120 VAC 50/60 Hz AC adaptor included
Miscellaneous	Low battery indication with nominal 1 hour of operation left
	Over-voltage protection to 120 Vrms (rated for 30 seconds) or 240 Vrms (rated for 15 seconds)
	Bar graph display with 1% resolution of 4-20/10-50 mA signal scale
	High contrast graphic liquid crystal display with *0.45" (11.4 mm)* high digits
Model 535A Analog Output	10 mV/mA ±(0.1% + 0.04mV), 5 ppm/°C

Common Specifications for all Current Modes:

Ranges	0.000 to 24.000 mA, -25.00 to 125.00% of 4-20 mA
	0.000 to 52.000 mA, -25.00 to 105.00% of 10-50 mA
Accuracy	≤ ± (0.025 % of reading + 0.004 mA)
Temperature Effect	≤ ± 50 ppm/°C of range
Resolution	0.001 mA and 0.01 %
Step/Ramp Timebase Accuracy	0.01% of 4.9152 MHz

Source/Power and Measure 2-Wire Transmitter Specifications:

Loop Compliance Voltage	≥ 43 Volts
Loop Drive Capability	1200 Ω at 20 mA/800 Ω at 50 mA for entire battery life
Miscellaneous	Open loop or out of compliance conditions are indicated by appropriate error display
	Battery life in:
	Source mode ≥ 18 hrs at 12 mA/≥ 9 hrs at 30 mA nominal (100 W load)
	Power measure ≥ 10 hrs at 12 mA/≥ 5 hrs at 30 mA nominal (100 W load)
	Selectable EZ-Step(s) for Source Mode/2-Wire Transmitter Simulation:
	2 to 16 selectable step settings
	Step size is determined by the selected high & low ranges
	Selectable time settings for stepping and soak:
	STEP: 5 to 900 seconds SOAK: 0 to 900 seconds

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Read mA Specifications:

Voltage Burden	≤ 2V
Overload/Current Limit Protection	≤ 24 mA (4-20 range)/ ≤ 52.5 mA (10-50 range) nominal
Battery Life	≥ 40 hours typical

2-Wire Transmitter Simulation Specifications:

Overload/Current Limit Protection	≤ 24 mA (4-20 range)/ ≤ 52.5 mA (10-50 range) nominal
Loop Voltage Limits	2-90 VDC
Miscellaneous	Open loop or out of compliance conditions are indicated by appropriate error display
	Battery life ≥ 40 hour typical
	Selectable EZ-Step(s) for Source Mode/2-Wire Transmitter Simulation:
	2 to 16 selectable step settings
	Step size is determined by the selected high & low ranges
	Selectable time settings for stepping and soak:
	STEP: 5 to 900 seconds SOAK: 0 to 900 seconds

Read Voltage Specifications:

Range:	0.00 to 30.00 VDC (with 4X over range)
Resolutions	0.01 VDC
Temperature Effect	≤ ± 200 ppm/°C of range
Input Resistance	≥ 1 MΩ
Accuracy	0.00 to 30.00 VDC ≤ ± (0.1 % of reading ±0.1 V)

Source Voltage Specifications:

Source Range:	0.000 to 24.000 VDC
Output Resistance	≤0.3 Ω
Source Current	≥20.000 mA
Accuracy	≤±(0.025%RDG + 0.004 V) ±50ppm/°C of range

Ordering Information:

4-20/10-50 Milliamp Dual Range Loop Calibrator	Model 535
Includes:	
Calibration Test Data	
NIST Traceable Certificate	
Carrying Case	020-0200 (included)
60 Hz AC adapter	020-0100 (included)
50 Hz AC adapter	020-0101 (available upon request)
Option:	
10 mV/mA analog output	Model 535A

Warranty

Our equipment is guaranteed against defective material and workmanship (excluding batteries) for a period of three years from the date of shipment. Claims under guarantee can be made by returning the equipment prepaid to our factory. The equipment will be repaired, replaced or adjusted at our option. The liability of Practical Instrument Electronics (PIE) is restricted to that given under our guarantee. No responsibility is accepted for damage, loss or other expense incurred through sale or use of our equipment. Under no condition shall Practical Instrument Electronics, Inc. be liable for any special, incidental or consequential damage.

Your Local PIE Representative

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