

Laboratory Instruments

585676 (438-00)

FESTO

LabVolt Series

Datasheet



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General Description

The Laboratory Instruments module provides a compact combination of equipment which is invaluable for troubleshooting, experimentation, education and training. Utilizing semiconductor circuitry, it is highly reliable and accurate. The module's design protects the instruments from inadvertent short circuits and overloads, a feature which is essential in school laboratory situations.

The Laboratory Instruments module consists of the following devices:

- DC meter
- Electronic volt-ohm-millimeter (VOM)
- Sine/square wave generator
- AC/DC power supply

These instruments are housed in an enclosure that complements the Electricity and Electronics Training Systems, Series 556. The module may be permanently attached to a bench. An optional Locking Cover, Model 1204, is available for added security. A lead set and an instruction manual are provided with the module.

The dc meter provides quick and accurate measurements of dc voltages (three ranges) and currents (four ranges). A switch is used to select either voltage or current measurements. The dc meter movement has a 100 μ A, high-torque, taut-band suspension.

The electronic VOM is essential for use in any electronics laboratory. The Laboratory Instruments module can operate as a dc voltmeter, ac voltmeter, ohmmeter, dc ammeter, and ac ammeter covering many ranges. The electronic VOM can also be used as a galvanometer when set to zero center.

Both the electronic VOM and dc meters have easy-to-read scales and provide simultaneous voltage and current measurements. Each instrument is fully protected against improper voltage and current connections. All minus and common jacks are isolated from the chassis.

The sine- and square-wave generator has separate outputs to supply both wave shapes simultaneously. The frequency is selectable in four ranges from 50 Hz to 500 kHz. The sine wave output is continuously adjustable from 0 V p-p to 6 V p-p. A fixed, 1 kHz signal is switch-selectable for 50% internal modulation of the sine wave.

The ac/dc power supply is a fully protected source for four switchable ac voltages and two continuously adjustable dc ranges. An illuminated switch controls power to the entire instrument module.

Features & Benefits

- Practical and versatile
 - Two meters for concurrent voltage and current measurements
 - Several voltage and current ranges can be measured
 - All test jacks are color-coded for easy identification

- Convenient carrying handles make permanent attachment possible and protect the instrumentation on the front panel
- Safe and durable
 - All components, switches and terminals are mounted to resist tampering
 - Protection mechanisms, such as internal semiconductor devices, are included against overvoltage and improper current connections

Manual

Description

Manual number

Laboratory Instrument System (Instruction Manual) _____ 583834 (16982-00)

Table of Contents of the Manual(s)

Laboratory Instrument System (Instruction Manual) (583834 (16982-00))

- 1 General Description
- 2 Safety
- 3 Specifications
- 4 Operating Instructions

Optional Equipment

Qty Description

Model number

1 Locking Cover, 305 x 330 mm (12 x 13 in) _____ 585698 (1204-00)

Specifications

Parameter	Value
Power Requirements	
Current	2 A
Service Installation	Standard single-phase outlet
DC Meter	
Meter Movement	100 μ A, high-torque, taut-band suspension; completely shielded
DC Voltmeter Ranges	2 V, 20 V, and 200 V
DC Voltmeter Accuracy	\pm 5% of full scale
DC Ammeter Ranges	2 mA, 20 mA, 200 mA, and 2A
DC Ammeter Accuracy	\pm 3% of full scale
Protection	All input terminals are fully protected against improper connections to circuit voltages and currents under normal laboratory conditions
Electronic VOM	
Operation	2 rotary switches are used to select electronic VOM functions and ranges
Meter Movement	1 mA, high-torque, taut-band suspension, fully shielded
AC/DC Voltmeter Ranges	0 to 0.2, 2, 20, 200 V, 2 kV (500 Vdc/300 Vac max. input on 2 kV range)
AC/DC Voltmeter Input Resistance	1 M Ω on all ranges
AC/DC Voltmeter Frequency Response	Less than \pm 1 dB from 40 Hz to 50 kHz
AC/DC Voltmeter Accuracy	\pm 3% of full scale
AC/DC Millimeter Ranges	0 mA to 0.2 mA, 2 mA, 20 mA, 200 mA, and 2 A
Ohmmeter Ranges	1 Ω , 100 Ω , 10 k Ω , 1 M Ω
Ohmmeter Power Source	1.2 V dc at 130 mA on W x 1 range into a short circuit
Ohmmeter Accuracy	\pm 3% of full scale
Protection	All input terminals are fully protected against improper connections to circuit voltages and currents under normal laboratory conditions
Sine-Wave Generator	
Frequency Range	50 Hz to 500 kHz in four ranges
Dial Accuracy	Within \pm 5% of max. dial setting for each range
Distortion	Less than 3% over entire range
Output Level	6 V p-p min. into an open circuit (continuously adjustable)

Parameter	Value
Output Flatness	Less than ± 1 dB from 50 Hz to 200 kHz, less than ± 5 dB from 200 kHz to 500 kHz
Output Impedance	600 Ω
Modulation	50% at 1000 Hz typical
Square-Wave Generator	
Frequency Range	50 Hz to 500 kHz in four ranges
Output Level	0 to ± 5 V dc, fixed, into an open circuit (will directly drive TTL circuits)
Rise and Fall Time	100 ns typical
Asymmetry	Typically less than 6%
AC/DC Power Supply	
AC Output Voltages	6.3 V, 20 V, 30 V, and 40 V in fixed steps, $\pm 15\%$ at 120/240 V ac line input
AC Output Current	1 A max.
AC Load Regulation	20% at 120/240 V ac line input
AC Overload Protection	Resettable circuit breaker
AC Isolation	Floating-isolated from line and panel ground; 1 terminal may be grounded externally
DC Output Voltages	2-10 V, 10-20 V, continuously variable within ranges
DC Output Current	1 A max.
DC Regulation	Line: 0.02% at full load; Load: 1.0% \pm 60 mV, no load to full load
DC Ripple	Less than 10 mV rms
DC Overload Protection	Automatic power supply shut down
AC Voltages	
Output Voltages	6.3 V, 20 V, 30 V, and 40 V in fixed steps, $\pm 15\%$ at 120/240 V ac line input
Output Current	1 A max
Load Regulation	20% at 120/240 V ac line input
Overload Protection	Resettable circuit breaker
Isolation	Floating-isolated from line and panel ground; 1 terminal may be grounded externally
DC Voltages	
Output Voltages	2-10 V, 10-20 V, continuously variable within ranges
Output Current	1 A max
Regulation	Line: 0.02% at full load; Load: 1.0% \pm 60 mV, no load to full load
Ripple	Less than 10 mV rms
Overload Protection	Automatic power supply shut down
Physical Characteristics	
Dimensions (H x W x D)	310 x 330 x 300 mm (12 x 13 x 11.75 in)
Net Weight	10.5 kg (23 lb)

Module Options Description

Locking Cover, 305 x 330 mm (12 x 13 in) 585698 (1204-00)

The Locking Cover consists of a 305 x 330 mm (12 x 13 in) cover that can be affixed to certain training modules. It completely covers the module front panel, making it inaccessible to students, and prevents damage to the module components during storage periods. The Locking Cover can be locked in place using a lock-and-key mechanism.

Specifications

Parameter	Value
Physical Characteristics	
Intended Location	Affixed to the front panel of a training module
Dimensions (H x W)	305 x 330 mm (12 x 13 in)
Net Weight	TBE

Reflecting the commitment of Festo Didactic to high quality standards in product, design, development, production, installation, and service, our manufacturing and distribution facility has received the ISO 9001 certification.

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