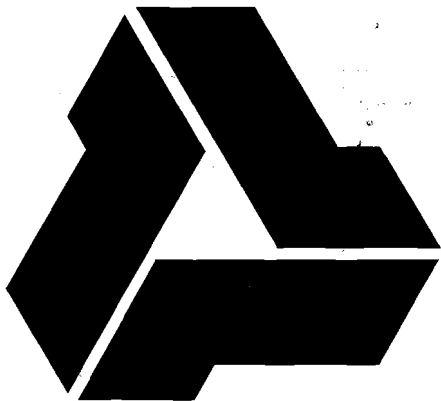


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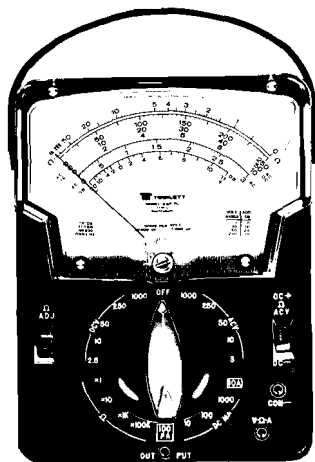
**TEST EQUIPMENT
INSTRUCTION
MANUAL**



TRIPLETT CORPORATION
Quality and Technology for Tomorrow

MODEL 630-PL & PLK

VOLT-OHM-MILLIAMMETER



**TRIPLETT
CORPORATION**

One Triplet Drive
Bluffton, Ohio 45817

SAFETY RULES

Warning

This tester has been designed with your safety in mind. However, no design can completely protect against incorrect use. Electrical circuits can be dangerous and/or lethal when lack of caution or poor safety practices are used.

Read The Manual

Read this Instruction Manual carefully and completely.

Voltages and currents within the capability of this test equipment can be hazardous. Follow the instructions in this manual for every measurement. Read and understand the general instructions before attempting to use this tester. Do not exceed the limits of the tester.

Safety Check

Double check the switch setting and lead connections before making measurements. Are you following all of the instructions?

Disconnect the tester or turn off the power before changing switch positions.

Do not connect to circuits with voltage present when switch is in any ohms or current position.

When replacing fuses use only specified type fuses and insert in correct fuse holder.

Don't Touch

Don't touch exposed wiring, connections or other "live" parts of an electrical circuit. If in doubt, check the circuit first for voltage before touching it.

Turn off the power to a circuit before connecting test probes to it. Be sure there is no voltage present before you touch the circuit.

Do not use cracked or broken test leads.

High Voltage Is Dangerous

Always start with the power off. Be sure there is no voltage present before making connections to the circuit.

Don't touch the tester, its test leads, or any part of the circuit while it is on.

Before disconnecting the tester, turn the circuit off and wait for the meter to return to "zero."

Distribution Circuits Pack A Punch

In high energy circuits such as distribution transformers and bus bars, dangerous arcs of explosive nature can occur if the circuit is shorted. If the tester is connected across a high energy circuit when set to a low resistance range, a current range, or any other low impedance range, the circuit is virtually shorted.

Special equipment designed for use with these circuits is available. Contact a qualified person for assistance before attempting to make measurements on any high energy circuit.

Safety Is No Accident

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SPECIFICATIONS

DC Volts				
Ranges	0-250 Millivolt, 0 - 2.5, 10, 50, 250, 1000			
Accuracy	± 1 1/2% of Full Scale Reading (Calibrated at 77°F (25°C))			
Sensitivity	20,000 Ohms per Volt, 10,000 Ohms per Volt on 0-250 Millivolt			
Maximum Input Voltage	1000 Volts			
AC Volts				
Ranges	0 - 3, 10, 50, 250, 1000			
Accuracy	3% of Full Scale Reading (Calibrated at 77°F (25°C))			
Sensitivity	5000 Ohms per Volt			
Maximum Input Voltage	1000 Volts RMS			
DC Current				
Ranges	0-100 Microamperes at 250 mV 0 - 10, 100, 1000 Milliamperes at 250 mV 0-10 Amperes at approx. 1 Volt (at end of test leads)			
Ohms				
Ranges	0 - 1000, 10,000 . . . 0 - 1M, 100M (4.4 - 44, 4400 - 440,000 at Center Scale)			
Accuracy	± 1 1/2% of Full Scale Length			
	X1	X10	X1K	X100K
Maximum Voltage - Volts	1.6	1.6	1.6	34
Maximum Current - mA	364	36.4	.364	.0773
Maximum Power Transfer to Load - mW	150	75.0	.150	.655

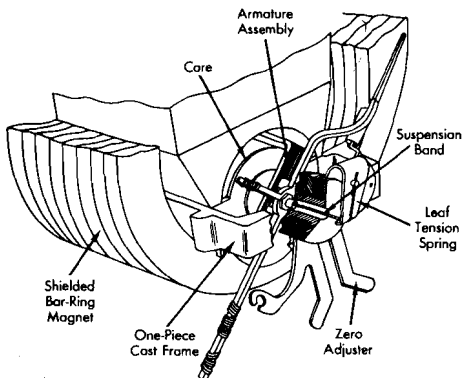
Output Volts	0 - 3, 10, 50, 250 at 5000 Ohms per Volt
Decibels	-20 to + 11, 21, 35, 49 on 600 Ohm Line
Scale	4.5 Inches Long (max.) Mirror Scale
Batteries	One 1.5 volt and one 30 volt battery. Batteries are packed separately.
Test Leads	One red and one black lead supplied, each 48 inches long. Two insulator type alligator clips included.
Rubber Feet	Four rubber feet are supplied to fit into four holes in the rear of VOM case.
Size	3 11/32" x 5 1/2" x 7 1/2"
Weight	Approximately 4 pounds
Temperature Influence	The meter movement has a temperature coefficient of less than +0.1%/°C without any special compensation devices. Resistors have a temperature coefficient of less than ±150 PPM/°C. This allows a temperature influence of less than ±0.025%/°C on the resistance ranges and all DC voltage ranges except the 250 Millivolt range.

INTRODUCTION

Your VOM is a compact, rugged, portable volt-ohm-milliammeter. It has been designed to make fast, accurate measurements on all types of electrical and electronic equipment and is backed by a company which has been making quality instruments and test equipment for over half a century.

The indicating portion of the VOM is actuated by the latest concept in instrumentation, namely, a taut band suspension meter (shown below) having a sensitivity of 50 microampere full scale. This meter, by omitting conventional pivots, bearings and hairsprings provides the following advantages.

1. Increased repeatability by elimination of friction between pivots and bearings.



2. Greater ruggedness and durability as no moving parts are in contact and the elimination of the hairspring prevents snagging and tangling. The tension spring acts as a built-in shock absorber.
3. Temperature variations can not cause sticky operation of the pointer.

Reference to the illustration will assist in understanding the principle of operation. The moving coil floats in the magnet by virtue of the suspension bands which are held in tension by a spring. These bands, which are fabricated of a precious metal alloy, provide torque and carry the current to the moving coil. The moving coil assembly is held by a rigid one piece die cast frame in a large self-shielded "Bar Ring" magnet.

CARE OF YOUR VOM

- Although this instrument is portable and rugged it should be treated with care. Do not drop or handle it roughly.
- Avoid placing it on a bench where machine tools are used or severe vibration is encountered.
- When possible keep it in a place of moderate temperature. Avoid subjecting it to extreme temperatures and severe temperature changes.
- If the VOM has not been used for a long period of time, rotate the selector switch in both directions several times to wipe the switch contacts for good contact.
- Turn the selector switch to OFF when the VOM is to be carried. The meter is damped in the OFF position to prevent wild swinging of the pointer.

MODEL 630-PLK

PROTECTION FEATURES

Your VOM is equipped with an overload protection circuit to protect against overloads which normally would damage or destroy circuit components and/or the meter. The protection circuit uses a transistorized amplifier which controls a manually reset latching type relay. The amplifier senses the voltage across the meter terminals. When this voltage reaches four to six times the rated full scale meter voltage, the amplifier "fires" and energizes the relay. Smaller overloads not sufficient to make the amplifier "fire" will not cause damage to the instrument. The relay contacts, located in the VOM input circuit, latch open and remain open until the manual reset button (located to the right of the selector switch on the front panel) is depressed.

In the normal operating condition (reset button in), the transistorized protection amplifier draws negligible stand-by current (less than 1 microampere—the approximate shelf life drain on the 30 volt battery).

The overload protection feature is intended to guard against occasional human error, not to encourage careless instrument use. Particular care should be exercised to prevent the application of voltages exceeding 100 volts to the current and low ohms ranges as the low impedance of these circuits may cause momentary surges of current beyond the capacity of the overload relay contacts. The fuse in the input circuit provides added protection for the relay contacts; under some conditions the fuse may blow in addition to the overload relay contacts opening.

All ranges are provided with protection to prevent damage as follows:

1. The 1 and 10 ampere ranges are protected by 1 and 10 ampere fuses respectively.
2. The inherent high resistance of the 100K ohm, 1000 Volt AC and DC range circuits limits current to a level which will not damage the instrument.
3. All other ranges are protected by the transistorized overload protection circuit previously described.

As an added protection to the meter, a silicon diode network prevents damage to the meter pointer by by-passing instantaneous transient voltages that might bend the meter pointer before the relay contacts open.

PRECAUTIONS

The 30 volt ohmmeter battery must be installed and tested before the VOM is placed in service since this battery is used in the overload protection circuit. After installing the batteries, they should be tested as follows:

1. Turn the selector switch to the X100K position.
2. Short the test leads together.
3. Adjust the meter pointer to zero ohms with the ohms adjust control. If the pointer cannot be set at zero the 30 volt battery should be replaced at once. DO NOT operate the VOM if the 100K ohms range will not zero since the overload protector will not operate properly.

This procedure should be repeated periodically to insure proper operation of the overload protection circuits.

GENERAL INSTRUCTIONS

The following section should be read carefully; it contains instructions and precautions to be observed in making measurements with the VOM.

- Measurements are made with the test leads plugged into the COM - and V- Ω -A jacks, except when measuring output volts (dB). For these ranges the V- Ω -A test lead is plugged into the appropriate jack (one test lead is in the COM - jack for all measurements).
- The insulated alligator clips provided with the VOM fit over the end of the test probes. When measuring high voltages, the use of these alligator clips will allow measurement without handling the test probes. As a safety measure, always shut off power source before attempting to connect alligator clips.

Caution: If the VOM has been overloaded—disconnect the test probes from the power source before depressing the “reset” button.

- When the approximate value of the quantity being measured is not known, always start on the highest range. For greatest accuracy, choose the range which will allow readings to be taken in the upper (right hand) portion of the scale.
- Readings are taken on the scale having the appropriate significant figures (both 2.5 and 250 volts are read on the 0-250 scale) by multiplying or dividing by a factor of 10 or 100 as indicated by the range scale ratio (i.e.; on the 2.5 volt range divide the scale readings by 100).
- The polarity reversing switch reverses the polarity of the entire VOM at the input jacks. This allows fast switching in case of wrong polarity; and also provides a convenient polarity reversal for ohms ranges, a very useful tool in semiconductor checking. The V- Ω -A jack is positive when the polarity switch is in the DC+ - Ω -ACV position.
- Whenever possible, the test probes should be disconnected from the voltage source (or the source shut off) before the range switch or polarity switch positions are changed. This practice will result in an increased life and reliability for the VOM.

- The Meter Zero Adjust Screw is located on the lower center of the meter cover. It should be periodically adjusted so the meter pointer is on zero with no input into the VOM.
- Readings on the sensitive voltage, current and resistance ranges may sometimes be different than calculated values. Thermo-electric or electro-chemical reaction can sometimes generate voltage (or current) in a circuit due to elevated temperatures from soldering, contact of dissimilar metals, chemical fumes or moisture. Also, the fingers should never touch the metal parts of the test probes since body resistance can cause erroneous readings—particularly on the high ohmmeter ranges.
- Check the test leads periodically. Leads that are worn, have damaged insulation, damaged plugs, damaged probes or loose parts should be replaced.

CAUTION: Always observe the following rules and procedures when making measurements in high voltage circuits:

1. Turn off equipment or other source of voltage, before connecting test probes. Make sure no capacitors in the circuit being tested remain charged to a high voltage.
2. Install alligator clips on test probes. While holding the insulated section of the test probe, check circuit to see if any voltage (or current) is present. If no voltage is present, connect the alligator clips to the circuit to be measured.
3. Turn on equipment, or voltage source, and take required readings. **DO NOT** handle or touch the VOM, test leads or test probes with power source turned on.

Observing the above rules and precautions will result in continued accurate measurements with your VOM or increased safety to equipment and personnel.

MEASURING DC VOLTS

0-250 DC Millivolts:

1. Insert test leads in V- Ω -A and COM - jacks.
2. Place selector switch in 100 μ A position.
3. Connect the test probes across the voltage to be measured as shown in Fig. 1.
4. Read DC millivolts on black "AC-DC" scale.

0-2.5 thru 0-1000 DC Volts:

1. Insert test leads in V- Ω -A and COM - jacks.
2. Place selector switch in appropriate DCV position.
3. Connect the test probes across the voltage to be measured as shown in Fig. 1.
4. Read voltage on black "AC-DC" scale.

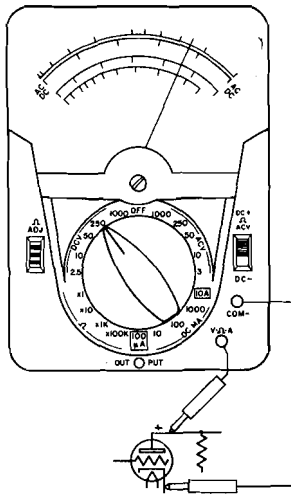


Fig. 1 Measuring DC Volts

MEASURING AC VOLTS

0-3 AC Volts:

1. Insert test leads in V- Ω -A and COM - jacks.
2. Place selector switch in 3 VAC position.
3. Connect the test probes across the voltage to be measured as shown in Fig. 2.
4. Read voltage on lower red 0-3 "AC" scale.

0-10 thru 0-1000 AC Volts:

1. Insert test leads in V- Ω -A and COM - jacks.
2. Place selector switch in appropriate ACV position.
3. Connect the test probes across the voltage to be measured as shown in Fig. 2.
4. Read voltage on black "AC-DC" scale.

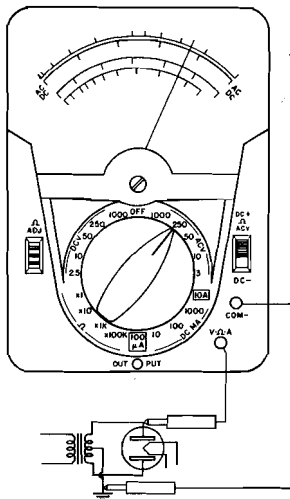


Fig. 2 Measuring AC Volts

