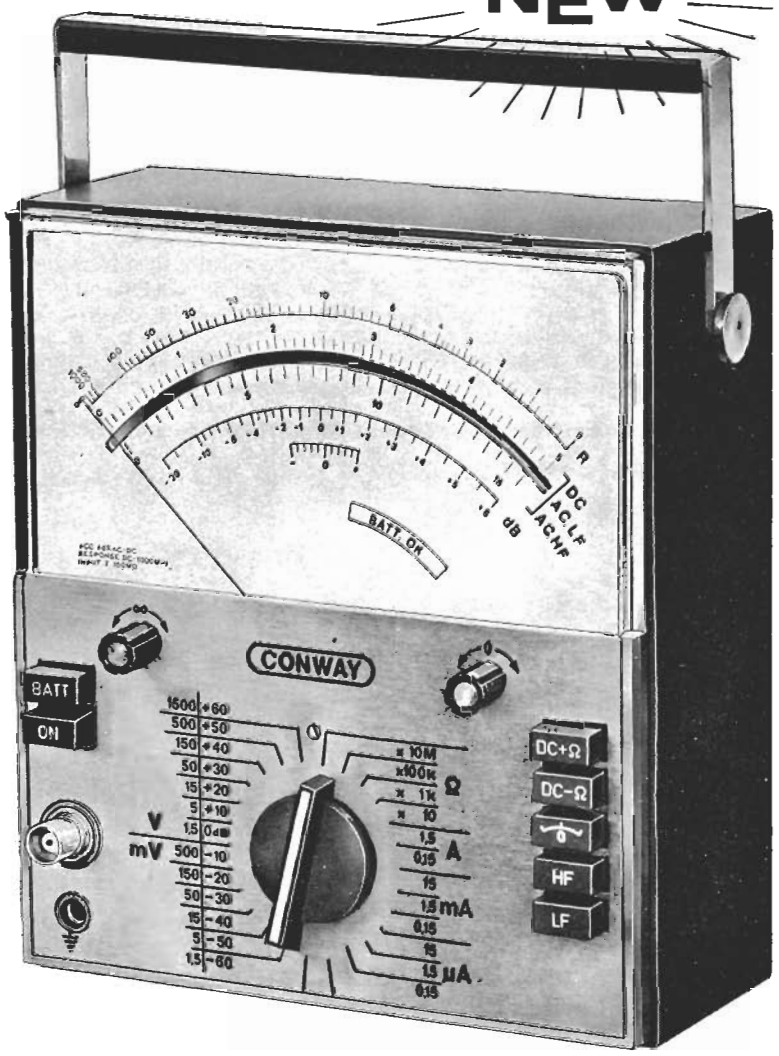
# CONWAY

## "MASTERANGER" SILICON SOLIDSTATE F.E.T. PROFESSIONAL MULTITEST SET

**MODEL 639**

NEW




- INPUT RESISTANCE 100MΩ
- ACCURACY 1.5% AC/DC
- FLOATING INPUT OBVIATES USER HAZARD
- 90dB COMMON MODE REJECTION FACTOR
- 1.5mV TO 1500V FSD. AC/DC
- BATTERY or POWER LINE OPERATION
- 150mm (6″) MIRROR SCALE TAUTBAND SUSPENSION RING CORE METER MOVEMENT
- 72 RANGES
- 0.15µA to 150A AC/DC FSD (WITH SHUNTBOX)
- SUPPLIED IN BRIDLE LEATHER CARRY CASE WITH SHOULDER AND NECK STRAP
- RESISTANCE RANGES TO 10,000MΩ
- FULLY OVERLOAD PROTECTED

## THE NEW STANDARD INSTRUMENT FOR PROFESSIONAL ELECTRONICS

## IDEAL FOR

## DESIGN · DEVELOPMENT · RESEARCH · TECHNICAL EDUCATION · SERVICE · BROADCASTING · COMPUTERY · BIOMEDICAL · AEROSPACE · GEOPHYSICS · DESIGNED FOR FIELD, LABORATORY OR WORKSHOP USE

*FROM THE COMPREHENSIVE RANGE OF INSTRUMENTS AND EQUIPMENT*

CONWAY

# CONWAY "MASTERANGER" MULTITESTSET
# MODEL 639

Conway "Masteranger" Model 639 is the most comprehensively ranged solid state Multitestset available in the world.

The instrument employs 100% silicon solid state technique and is designed to encompass any measurement application common to solid state or earlier technologies.

Design concept of this instrument imparts total measurement capability regardless of expected development in Electronic science over the next decade.

The "Masteranger" is the result of five years intensive study to determine most required measurement parameters and ranges. Many circuital problems were resolved in order to secure implicit stability with constant longterm accuracy.

Model 639 can be absolutely relied upon to offer accuracy, stability and robustness (indicating instrument and circuitry) even under severe operational conditions of shock and vibration plus operational capability over wide environmentals.

Input resistance on most voltage ranges is 100MΩ. This, coupled with outstanding sensitivity of 1.5mV AC or DC (full scale) and with Current measuring capability from 0.15μA (150 nA) up to 1.5A AC or DC places this instrument into a class of its own.

A really valuable, unique and important feature of the Model 639 is its floating input circuit. This obviates hazard factor in that the case of the instrument is not connected to circuit to be measured (which could be considerably above ground potential on its low side). This results in additional measuring versatility in that sections of a Voltage Divider network for instance, can be accurately measured. The floating input possesses high common mode rejection. A factor of 90dB is standard in this instrument.

1.5% accuracy is given for all AC and DC voltage and current ranges. This accuracy will be retained long term due to the implicit stability of the unique circuitry employed.

Inexpensive accessories are available (see below) to considerably increase these ranges.

A feature summary and full technical specification follows.

## OUTSTANDING FEATURES

| | | | |
|---|---|---|---|
| **Input Resistance:** | 100MΩ | **Ohmmeter:** | To 10,000MΩ |
| **DC Voltage:** | 1.5mV (Full Scale) to 30kV with Industrial Quality HV Probe | **Decibel Ranges:** | 13 ranges from −80 to +66dBm in 10dB steps. 0dB=0.775V. 1mW across 600Ω |
| **AC Voltage:** | 1.5mV to 1500V (Full Scale Values) | **Accuracy:** | ±1.5% |
| **RF Voltage:** | To 1000MHz. | **Overload Protection:** | To ±1200V on all mV and V ranges. Current ranges and ohms ranges similarly protected. |
| **DC and AC Current:** | 150nA (0.15μA) to 1.5A self-contained. Up to 150A with external Shunt Box (Full Scale Deflection) | | |

- Large 6″ (150mm) mirror scale for DC/AC and Ohms.
- Centre Zero Facility.
- Can be employed as Null Detector with high sensitivity of 20μV per division or 1 nanoamp thus enabling use as Null Detector for any Bridge application or for FM discriminator alignment.
- 72 ranges selected by single rotary switch and push-buttons.
- Internal Battery *or* Power Line operated from 115/230V, 50/400Hz. Suited for international power line requirement.
- Taut band suspension ring core movement employing Platinum/Berillium spring loaded elements for top and bottom suspension assuring outstanding and exclusive shock absorption characteristics.
- The movement is mechanically shock protected in both vertical and horizontal planes to military ruggedness standards. Horizontal mechanical protection of ligament is provided by exclusive oil bead method. Incorporation of the above system absolutely guarantees long term stick-free operation.

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***FROM THE COMPREHENSIVE RANGE OF INSTRUMENTS AND EQUIPMENT***

Conway Solid State FET Multimeter Model 639 is a professional, universal measuring instrument for the rapid testing of AC or DC Voltages, Current, Decibel, Resistance and Voltage Levels. The instrument employs a unique front end consisting of several Field Effect Transistor elements which, apart from imparting high input resistance essential in today's electronics, ensures absolute overload protection. Symmetrical FET input stages, coupled with over 60dB negative feedback, impart outstanding linearity (reflected in the scaling of the instrument), ultrahigh sensitivity with outstanding longterm stability.

The large 6″ mirror scale Meter allows exceptional reading discrimination and resolution. Colour scales for all measurements including dB ranges. A centre zero facility is incorporated allowing the instrument to be used as a critically sensitive, high input impedance Galvanometer (for discriminator or any other applications requiring centre zero capabilty).

Input Resistance is ultrahigh, 100MΩ on all DC and AC voltage ranges (see specification). Symmetrical Field Effect Transistor input circuits, protected against overload. Pulse overloads to 1200V or continuous overloads to high level is permissible even on the most sensitive AC/DC millivolt ranges. (See specification).

The instrument may be energized from self-contained easily procurable batteries or from 115/230V ±15%, 50/400Hz ±10% power line. Power Line operation is accomplished by the quick insertion of a modularized line power cassette into the rear of the instrument in lieu of battery cassette.

Many optional accessories are available, consisting of an RF Probe with flat frequency response to 1000MHz, High Voltage Probe to 50,000V and an external AC/DC Current Shunt extending AC and DC current ranges from inbuilt 1.5A range giving extension ranges of 5/15/50/150A AC/DC full scale deflection.

The unique technical specification of this instrument, incorporating the widest ranges available of any instrument in the world market, plus outstanding accuracy of 1.5% for all voltage and current ranges, guarantees outstanding market reception, particularly for Laboratory and general servicing applications. The instrument is ideal for Technical Education where accuracy, versatility and portability, coupled with modest cost, are mandatory in professional class instruments.

Model 639 is supplied as standard with a heavy duty bridle leather carrying case complete with both shoulder strap and neck strap allowing hands-free operation with instrument suspended from the neck. This feature is particularly valuable in field applications such as in Geophysics or Computer servicing.

## SPECIFICATION

**DC and AC Voltage:** 1.5/5/15/50/150/500mV. 1.5/5/15/50/150/500/1500V Full Scale Deflection values.

**DC Voltage with High Voltage Accessory Probe:** 5/15/50kV Full Scale Deflection (Maximum input should be limited to 30kV).

**AC Voltage with RF Probe:** To 1000MHz. 1.5/5/15V Full Scale Deflection.

**DC and AC Current:** 0.15μA/1.5μA/15μA/150μA/ 1.5mA/15mA/150mA/1.5A Full Scale Deflection values.

**DC and AC Current with External Accessory Shunt Box:** 5/15/50/150A f.s.d. (150A range for intermittent use)

**Ohms Ranges:** 0-10kΩ, 0-1MΩ, 0-100MΩ, 0-10,000MΩ

**dB Ranges:** 13 ranges from −80dB to +66dBm in 10dB steps.

**Accuracy:**

| | |
|---|---|
| DC Voltage | ±1.5% |
| DC Current | ±1.5% |
| AC Voltage | 1.5% |
| AC Current | 1.5% and as under: |
| 30Hz-3KHz | 1.5% |
| 10Hz-30Hz | ±3% |
| 3KHz-10KHz | ±3% |

AC Current with External Shunt Box: 30Hz-500Hz ±1.5%
DC Voltage with High Voltage Probe: ±3%

**Specification - Accuracy**

AC Voltage with RF Probe:

| | |
|---|---|
| 1KHz-300MHz: | ±5% |
| 300MHz-700MHz | ±1dB |
| 700MHz-1000MHz | ±3dB |

**Input Impedance:** Input resistance for DC voltage 100MΩ. Input resistance for DC voltage employing High Voltage Probe: 1000MΩ. Input impedance for AC voltage mV ranges 10MΩ and 50pF. Volt ranges 100MΩ, 20pF.

**Voltage Drop for DC and AC Current Ranges:** 150mV.

**Voltage Drop on External Shunt:** 5 and 150mV.

**Ohmmeter Open Circuit Voltage:** Approximately 1.2V.

***FROM THE COMPREHENSIVE RANGE OF INSTRUMENTS AND EQUIPMENT***

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## GENERAL FEATURES

**Instrument Scales** Linear 150mm (6″) long mirror scale for both DC and AC. Colour scaling for ohm and dB. Additional centre zero scaling when employed as high input resistance Galvanometer.

**Function and Range Selection:** Single rotary switch with push-buttons. Polarity reversing for DC and ohms.

**Zero Stability:** Zero drift <40$\mu$V/8 hours in constant temperature. <15$\mu$V/°C <30$\mu$V on source to 100K$\Omega$

**AC Noise:** <30$\mu$V on source to 100K$\Omega$

**Overload Protection:** All parts except HF Probe and high current Shunts are protected against overload.
Maximum Input:

**Specification - Overload Protection**
Pulse. << 1 Sec. 1200V on all AC and DC voltage ranges.
Continuous. 100V on mV and 1V ranges. 1200V on remaining voltage ranges.

**Ambient Temperature Range:** 0 . . . 50°C. Will operate with stated accuracy from +5°C to +40°C.

**General Features - Power**
Self-contained battery or line power cassette inserted into rear of instrument case. Requires Qty. 13 Zinc Carbon Penlite Cells or Mercury, alkaline or manganese equivalents Type AA, Mallory Type MN-1500 or Mallory ZM-9. Line power supply cassette 115/230V ±15%, 50/400Hz ±10%, 5VA suitable for international use.

**Case:** Molded grey high impact material internally shielded with rigid handle which can be employed as prop stand.

**Dimensions:** 184 x 164 x 90mm
7¼″ x 6½″ x 3½″

**Weight:** Net. ca 2.5 kg (5.5 lbs)

## ACCESSORIES FURNISHED

Instrument is supplied in grey high impact type cabinet *plus* bridle leather carrying case including shoulder strap and neck strap, including batteries plus following:

(1) Coaxial cable 1.5m/60″ long. Two banana plugs and clips.
(2) Instruction Manual.

## ADDITIONAL ACCESSORIES AVAILABLE

Additional accessories can be supplied for instrument (extra).

(1) High Voltage Probe 50kV.
(2) RF Probe 1000MHz.
(3) External High Current Shunt 5/15/50/150A AC & DC.
(4) Capacitive High Frequency Voltage Divider.
Division Ratio 100:1
Max. Input Voltage: 300V
Max. Frequency: 1000MHz.
(5) Coaxial T Connector
Standard N50
SWR 1, 2 to 1000MHz.
(6) Line Power Supply
(7) *Genuine* Peak to Peak Measuring Probe allowing factual quantitative P.P. measurement.

## ADDITIONAL DETAIL

Scale colour to international standard.
Scale marking:
ACC 1.5% AC-DC
Response DC - 1000MHz.
Input Z 100M$\Omega$



**CONWAY ELECTRONIC ENTERPRISES LIMITED**
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Printed in Canada by Contronix Press
Division of Conway Electronic Enterprises Limited

October 18, 1972

# PRICE LIST
## MODEL 639
## MASTERANGER

ALL PRICES AS SHOWN BELOW ARE TO BE CONSIDERED IN TERMS OF U.S. FUNDS, F.O.B. CUSTOMER ADDRESS. U.S. CUSTOMS DUTY PAID. ALL BROKERAGE AND TRANSPORTATION CHARGES PAID.

| | |
|---|---|
| Masteranger 639 without accessories-complete with leather carrying case, shoulder and neck strap | $ 180.00 |
| Industrial High Voltage Probe | 18.00 |
| 1000MHz RF Probe | 16.00 |
| Quadrange Current Shuntbox | 14.50 |
| Line Power Unit | 24.00 |
| Peak-to-Peak Probe | 33.60 |
| Capacitive R.F. Voltage Divider 100:1 | 30.00 |
| Coaxial "T" Connector (For use with RF Probe) | 32.00 |
| Masteranger 639 complete with all accessories | 330.00 |