



### ***World's most accommodating meter test system!***

- Fully Automatic Closed-Link meter testing***
- True Three Phase & Series-Parallel testing***
- Variable Frequency 40 to 70 Hz***
- Easy to use Windows™ SysLink Software***
- Automatic Data Collection***
- Compatible with all Data Systems***
- Tests Wh, Varh, Qh and KVAh***
- Tests received and delivered energy***
- Tests Single Phase and Polyphase Meters***
- Test voltage: 0.5 to 600 volts***
- Test current: 0.01 to 100 amps***
- Phase angle: 0 to 360 degrees***
- Motorized Test Socket with Autoclose Feature***
- Over 800 systems in service today***
- Accuracy Class  $\pm 0.05\%$ , N.I.S.T. traceable***

## **OVERVIEW**

The Model 5800 test system puts automation, accuracy, efficiency and computerization within the economic reach of many more meter shops than ever before. Building on the firm foundation of the RFL 5800, a wealth of features and capabilities have been added by UTEC, many of which are not available in other test systems or are only available as options.

The 5800 provides voltage and current routing for automatic closed-link testing of both solid state and induction meters. Meters can be tested in Series-Parallel (A.N.S.I.) or True Three Phase (I.E.C.) connection. Socket base meters are effortlessly mounted in the motorized test socket. Bottom connected and K-base meters are tested using optional external adapters.

The 5800 Calibrator is controlled via an external computer running SysLink software. Because of the intuitive design of SysLink, you can be up and

testing meters almost immediately. SysLink runs under Windows™ and brings meter testing to a whole new dimension.

With just a click of your mouse, the 5800 can be configured to automatically test all the energy functions of today's high performance multi-function meters, including lead and lag power factor as well as received and delivered power. Test data is automatically collected and can be output in the format that is compatible with most databases. With over 800 systems in service, the 5800 Calibrator is, without a doubt, the ultimate in accuracy and flexibility and has set the standard for electricity meter testing.

# Technical Specifications

## **Meters Tested**

Performs all ANSI C12 tests on both socket base and bottom connected types of forms 1, 2, 3, 4, 5, 6, 7\*, 8, 9, 10, 12, 13, 14, 15, 16, 19-2, 19-3, 20-2, 20-3, 21-2, 21-3, 24\*, 25, 26, 35, 36, 45, 46, 56, 66. In addition, "A-Base and K-Base" meters with optional adapters. \* Requires rewiring of meter

## **System Control**

Operation of the 5800 Calibrator is accomplished via an external PC running UTEC's SysLink Software. For more information on the function and capabilities of the control software request document SysLink. A full function demonstration disk is also available.

## **Interface**

The 5800 is controlled via an external computer through a standard 9 pin RS-232, serial communication port.

## **System Accuracy**

Total system accuracy for the 5800 Calibrator is derived from the internal reference standard. Because the reference standard is in direct connection with the meter under test, the full rated accuracy of the reference standard can be used for the overall system accuracy. Therefore, the system accuracy is traceable to N.I.S.T. through the standard. The 5800 calibrator accuracy class is  $\pm 0.05\%$ .

Unity power factor:	+/- 0.05% or better
50% power factor:	+/- 0.10% or better
Other power factors:	+/- 0.05%/PF or better

Unlike its competitors, the 5800 uses electronically compensated transformers to ensure balanced output currents regardless of their load impedance's. This is an often overlooked source of errors when testing meters that have an element balance mismatch with the reference standard.

Software is provided to enable the calibrator to be automatically checked against external reference standards, such as the Radian RM-10 and RM-11. The 5800 can automatically store any differences or the user may enter corrections manually. The 5800 does not require the use of these calibration factors to achieve stated accuracy.

## **Input Power**

The 5800 Calibrator is designed to operate from a conventional 120 volt, single phase service. Other voltage inputs are available in 50 and 60Hz. The power required by the 5800 is dependent on the power the sources are supplying to the load. Under no load conditions the quiescent

power required is about 150 watts and under fully loaded conditions the power requirement will not exceed 1000 watts.

## **Meter Socket**

The 5800 is equipped with a motor driven test socket for the quick and easy mounting of all ANSI C12 socket base meters. An auto close feature can be selected so the socket jaws will engage when the meter is fully inserted. Designed for 200 amps continuous current, the meter socket will provide many years of reliable, maintenance free service. Loss of power does not cause the meter to fall out of the socket.

## **Universal Input**

The universal input is designed to be used exclusively with UTEC pick-up accessories. UTEC supplies a variety of pick-up accessories for sensing meter pulses including disk edge, infrared light, visible light, and even the time honored hand switch.

## **Optics**

The 5800 can be supplied with a mechanical disk-edge, a Laser thru hole sensor and an IR Sensor for Electronic meters. The optical system does not generally require removal of the meter cover for triggering, nor is it affected by ambient lighting conditions. A Jog function is provided in the software for aligning the optics system. Audible and visual indications of triggering is provided.

## **Test Voltage**

The 5800 meter test voltage is under the control of the computer and is capable of supplying the meter under test from 0.5 to 600 volts in increments of 0.1 volts with less than 0.5% harmonic distortion. The accuracy of the voltage source is  $\pm 0.5\%$  or better. Voltage at the meter socket is  $\pm 0.2\%$  for a 10% change in power line voltage. To eliminate residual magnetizing in the meter under test, the test voltage is ramped up at the start of the test and ramped down at the end of the test.

The 600 volt dynamic range of the voltage source is accomplished in four output ranges: 0.5 to 75, 75.1 to 150, 150.1 to 300 and 300.1 to 600 volts. The voltage source can not be damaged by any accidental short circuit conditions.

The amplitude of each voltage phase is equal except for tests requiring 240/208 or 120/240 volts. Both series-

parallel and true three phase testing can be performed. The frequency of the voltage waveform can be selected from 40 to 70 Hz in 1 Hz increments and any interger multiplier from 1 to 10.

### **Test Current**

The 5800 meter test current is under the control of the computer and is capable of supplying the meter under test from 0.01 to 100 amps per phase with a resolution of 0.01 amps with less than 0.5% harmonic distortion. The accuracy of the three current sources is 0.5% or better. Current at the meter socket is +/-0.2% for a 10% change in power line voltage. To eliminate residual magnetizing in the meter under test, the test current is ramped up at the start of the test and ramped down at the end of the test.

The 100 amp dynamic range of the current source is accomplished in nine output ranges: 0.01 to 0.5, 0.51 to 1.00, 1.01 to 2.00, 2.01 to 5.00, 5.01 to 10.00, 10.01 to 20.00, 20.01 to 25.00, 25.01 to 50.00 and 50.01 to 100.00 amperes. The voltage source is both current and thermally limited as well as fused. The current source can not be damaged by any accidental open circuit conditions.

The amplitude of each current phase is equal. Both series-parallel and true three phase testing can be performed. The frequency of the voltage waveform can be selected from 40 to 70 Hz in 1 Hz increments and any interger multiplier from 1 to 10. Software is provided for performing a minimum of 10 tests points to run a load curve analysis. The results is displayed as a graph on the color monitor. Graphs may be printed and tables of test data can be stored to disk if desired.

### **Synthesizer**

The synthesizer provides the sinusoidal waveforms to the voltage and current amplifiers. The waveforms are synthesized asynchronous from the service voltage. The phase angle between the the voltage and current waveforms is controlled by the synthesizer and can be set from 0 to 360 degrees. Because the test voltage and current are computer generated, the 5800 Calibrator may be powered from an inverter or generator without degrading the test accuracy.

### **KYZ Pulse Inputs**

The 5800 is equipped with five KYZ input channels. The Y and Z inputs on each of the five channels has an internal voltage source. Also provided are 3 binding post for

meters having flying leads. Meters with pulse initiators wired to the base plate, are automatically connected through the meter test socket. Each channel may be configured for quantity measured (Wh, VARh, KVAh or Qh), pulse constant and forward or reverse power.

### **Digital Input**

Three BNC connectors are provided to accept high frequency pulse rates up to 4MHz. The high frequency input is mainly used for testing modern reference standards and other high frequency devices and for checking the internal standard of the 5800 Calibrator.

### **Safety**

Two warning indicators are provided to indicate when voltage and current are present on the test socket. All voltage and current are removed automatically when the test socket is opened, thereby making the test socket dead front.

### **Environment**

The 5800 system requires good ventilation. Place it where air can circulate freely around it and avoid locations in direct sunlight or near heaters or lamps. Never block the cooling fan openings. Operating temperature should be limited to between +60 and +90 degrees F with relative humidity of 20% to 85% non-condensing.

### **Enclosure**

The 5800 Calibrator is enclosed in an attractive and durable enclosure measuring approximately 22 inches wide, 24 inches deep and 34.5 inches high. The overall weight is approximately 265 pounds.

### **120 Volt Outputs**

3 -120 Volt outlets are provided. A single outlet is located on the front panel and a duplex outlet is located on the back. The outlets are powered from the 120 V fused connection on the back panel.

### **RS 232 Ports**

2 - standard 9 pin RS-232 Ports are available for a bar code scanner, meter programming attachments or other accessories.

### **Warranty**

Two year limited warranty covering parts and labor on the test system. Items not manufactured by UTEC such as computer, printer, bar code reader, etc., carry same warranty as their manufacture issues. Extended warranty and service contracts available.

## 5800 UTEC Calibrator

Radian manufactures a wide variety of accessories for use with the 5800 Calibrator. Among the accessories are various test cables, pulse sensing pickups, and specialty cables. We are constantly adding new accessories as new applications develop. If you have a unique application, contact the Radian sales team to see if we can help.

### **204A A-Base Adapter**

Universal ANSI A-Base Adapter

### **A5800009 K-Base Adapter**

Shop Test Adapter for Polyphase K Base Meters.

### **D58000010 K-Base Adapter**

Shop Test Adapter for Single phase K Base Meters.

### **D5800009 Standard Adapter**

Standard Adapter for providing voltage & current to external Reference Standard.

### **A0620010 Bar Code Scanner**

Bar Code Scanner - Corded (Includes Scanner, Cords and Programming)

### **A0620012 Bar Code Scanner**

Bar Code Scanner - Cordless (Includes Scanner, Cords and Programming)

### **440-21 KYZ Breakout**

The KYZ breakout adapter and cable converts the DB-25 KYZ interface on the calibrator to individual screw type terminals.

### **Computer**

SysLink is designed to run on an IBM™ compatible computer in a 32 bit Windows™ environment. Minimum requirements are as follows

- PC with a Pentium III or equal class processor
- 500MB of free hard disk space
- 128MB RAM
- One 1.44MB high density 3.5 inch floppy drive
- One 24X CD ROM
- Two free RS-232 serial communications port
- One Mouse and mouse port
- One parallel port
- Keyboard
- Windows™ - 32 Bit

If additional units (up to 7 per computer) will operate from a single computer, please contact the factory for minimum computer requirements.

For additional information, request the SysLink demo CD.