Automated Test Platform
Model 4150

- **WATT–Net™ Software**
- **Site Analyzer Functions**
- **True Three–Phase**
- **Reference Standard**
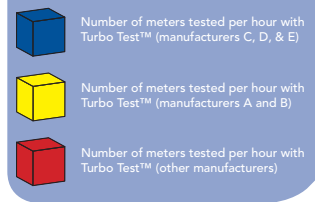- **Controlled Testing**

RADIAN

WECO

Introduction

Introducing the Model 4150 Automated Test Platform: The new benchmark in meter testing hardware. Building on our tradition of delivering testing solutions that provide a powerful mix of accuracy, convenience, and versatility, the Model 4150 adds next generation features and cutting-edge technology.

The foundations for this revolutionary test system are the features and innovations that have put WECO at the forefront of the industry for over thirty years. Low insertion force Smart Socket™ technology, fitted with high conduction gold connections, mechanically controls the insertion and removal of meters, providing an excellent connection and extended hardware lifespan. A laser based optics system employing high intensity light delivers highly accurate results from black marks or creep holes through even the dirtiest covers. Front mounted controls allow simple test selection and testboard control. An optional barcode scanner and printer cuts meter processing and data entry time. The optional OPTOCOM™ interface allows the meter to be tested and programmed without ever having to change the head.

This foundation of innovative hardware is bolstered by WECO's fully integrated Winboard™ and WATT-Net™ software. With Winboard you can build advanced Hyper Sequences™ that allow you to control every parameter of a test, use wizards to simplify even complex tasks, and generate results that are compatible with all major databases (MS SQL, Oracle, Sybase). The WATT-Net family of data management solutions gives you unparalleled test result organization, reporting, and exporting abilities.

Number of meters tested per hour with Turbo Test™ (manufacturers C, D, & E)

Number of meters tested per hour with Turbo Test™ (manufacturers A and B)

Number of meters tested per hour with Turbo Test™ (other manufacturers)

This combination of hardware and software allows you to utilize Turbo Test™ technology. Slash the amount of time it takes to test a supported meter to nearly one-fifth of regular testing time.

The Model 4150 builds on these hallmark features with a robust set of innovations designed to help utilities deal with today's real world problems.

Harmonic Generation

Thanks to the Model 4150's harmonic generation capabilities, you can now put various meter brands and meter technologies through a full harmonic and trend analysis. With generation to the 60th harmonic and independent harmonic control in each of the current and voltage circuits (6 channels), you can get the full picture of how a metering device is going to perform.

We've extended the analysis functionality of the Model 4150 to bring real world field conditions back to the shop. Captured harmonic and/or trend data from the WE-20 can be played back allowing various meters to be tested under actual field load conditions. The load condition can be automatically played back from the captured data, providing multiple accuracies per meter "revolution" and the average accuracy of the entire test.

Multiple VAR and VA Test Types

There is more than one way to run a VAR or VA test, and ANSI is constantly approving new calculation methods. Unlike other test systems, the Model 4150 allows you to select from any ANSI approved calculation method to test a meter. This gives your utility the ability to choose the method that best fits its structure and needs, rather than having to accept the single method that a particular system is capable of testing.

Voltage and Current Circuit Burden Testing

Little things can add up when you're talking about the thousands, or millions, of meters and attached modules that a utility might have out in the field. For instance, how much power does a particular brand of meter draw, or how much demand does running an AMR module pull? The Model 4150 can let you get those answers before a meter ever leaves the shop. Insert the VA burden load for each active circuit (element). Now you can make informed decisions about how much installing that meter or module is going to cost.

Analog Testing

The Model 4150 gives you the tools you need to test the analog devices that monitor your distribution system. Test devices, like transducers, with a maximum output of ±20mA using a current loop configuration of voltage, current, phase, power factor, Watt, Var, and VA. Analog testing supports internal loop power or external loop power transducers.

Meter Disconnect Testing

Before putting a meter out in the field, be sure to test the meter disconnect relay to save you time down the road. With the Model 4150 you can be sure that you can remotely turn off the meter, keeping you from having to make a site visit to turn the meter off manually.

Fuseless Hardware Protection

With this latest generation of test system we aimed to build the most reliable hardware on the market. One of the innovations we've developed to keep downtime to a minimum is fuseless circuit board protection. Now you can spend more time testing and less time performing maintenance.

Functionality

Features and specifications:

- **Test voltage:**
  - » *30 – 600V*
  - » *Independently programmable per phase in 0.01V steps, with four digits of resolution†*
  - » *True three-phase or single-phase*
  - » *Voltage phase-angle setting relative to VA, 0 – 359.99° in 0.01° increments*
- **Test current:**
  - » *0.001 – 150A*
  - » *Independently programmable per phase in 0.001A steps with four digits of resolution‡*
  - » *Phase Control: 0 – 359.99°, selectable in 0.01° increments per phase*
- **Test revolutions:** *Selectable from 1 – 65,534*
- **Test time:** *Selectable from 1 – 9999 seconds (minimum of at least one energy pulse)*
- **Demand (KW) testing:**
  - » *Standard revolutions (1 – 99999 revolutions)*
  - » *Time run (up to 99 HRS, 59 MIN, 59 SEC)*
- **VAR and VA testing:** *All ANSI defined VAR and VA calculation methods are supported.*
- **Contact device testing:** *Form "A" or "C" capability using front panel inputs, advanced I/O connection, or through the Smart Socket*
- **Voltage and current circuit burden:** *Displays per active circuit (element) the actual VA load per element*
- **Harmonic generation:**
  - » *Generation to the 60th harmonic with independent harmonic control in each of the current and voltage circuits (6 channels)*
  - » *Captured harmonic and/or trend data from the WE-20 can be played back allowing various meters to be tested under actual field load conditions. The load condition can be automatically played back from the captured data, providing multiple accuracies per meter "revolution" and the average accuracy of the entire test.*
- **Analog test:**
  - » *Analog testing using a current loop configuration of voltage, current, phase, power factor, Watt, Var, and VA*
  - » *All analog devices with a maximum output of ±20mA are supported*
  - » *Supports internal loop power or external loop power transducers*
- **Meter disconnect switch test:**
  - » *Provides the ability to test the operation of the remote disconnect in the meter under simulated load*
- **Input voltage:** *90-264VAC (3 wire), 50 or 60Hz single-phase, auto ranging*
- **Input power:** *1500W maximum*
- **System accuracy:** *For current ranges 0.2A – 150 A using RD-30*
  - » *Accuracy 400ppm (±0.04%)*
  - » *Higher accuracy standards available*
- **Voltage and current accuracy:**
  - *±0.1% of desired setting or ±1 LSD (least significant digit of the four digits, whichever is greater)*

Convenience

Save time and effort:

- Smart Socket™ with minimal insertion force
- Front panel controls allow fast and easy test initiation
- Automatic crossed stator wiring check during three-phase testing
- Modulated laser optics for through-hole and reflect-disk sensing
- Optics arm design maintains alignment
- Three optical pickups: *Top, bottom, and middle/center*
- Visual and audible (volume controlled) pulse indication for aid in aligning optical sensor
- LED bar graph indicates signal strength for laser reflect and laser through-hole
- No sensitivity adjustment for optics
- Removable reference standard allows upgrades to more functional and higher accuracy reference
- Windows® compatible Winboard™ software
- WATT-Net™ data acquisition system
- Hyper Sequence™: *Four quadrant automated meter testing*
- File/graph testing
- Low current (starting Watts) test begins at 0.001A
- Voltage and current electronically ramped between tests
- Automatic slew between tests to minimize test time
- PC Ethernet interface allows multiple units to connect to a single computer
- Testboard Interface: *Ethernet with virtual serial ports for optics coupler and barcode scanner. A single cable connects the Model 4150 to the computer.*
- Self identification for all circuit boards and standard information

(Functionality continued)

- **Phase angle accuracy:** *±0.01° of desired setting*
- **Test frequency:** *45-65Hz in 0.001Hz steps, accuracy 25ppm*
- **Voltage and current harmonic distortion:** *Less than 1.0% THD (pure sine selected)*
- **Voltage and current sources feature fuseless self protection technology**
- **Meter test forms:**
  - *» All current and future ANSI meter forms**
  - *» New meter forms can be added using the included testboard utility*
- **Dimensions:** *Approximately 21" W x 30" H x 21" D*
- **Weight:** *Approximately 150 pounds*
- **PC System:** *Dell™ standard business class Mini Tower PC • 17" flat screen monitor • Microsoft Windows® 7 Professional operating system.*
- **Warranty:** *One (1) year limited warranty (all parts and labor). Manufacturer warranty on computer.*
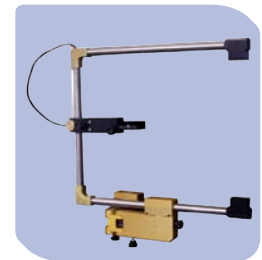
† i.e. 75.01, 120.1
‡ i.e. 1.051, 20.06, 125.1
* For forms without a common current return (i.e. Form 7)

Optional add-ons:

- **OPTOCOM™:** *Optics coupler allows pulse testing and meter programming through the optical port of many solid state meters without changing the optics coupler.*
- **Turbo Test™:** *Accelerated testing for some solid state meters (requires OPTOCOM™ option)*
- **Barcode printer with software**
- **Barcode reader with software**
- **Multi-function testing capability**
- **Higher accuracy reference standards available:**
  - *» RD-31 accuracy 200ppm (±0.02%)*
  - *» RD-33 typical accuracy 100ppm (±0.01%)*
- **Bottom connected single stator adapter**
- **Bottom connected multi stator adapter**
- **Custom adapter designs available**
- **Standards compare adapter for RM or RD standards, single-phase or three-phase**

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