WE-30

WECO’s next generation Portable Tester/Analyzer delivers three-phase field-testing using a Radian Research RD-30 series internal standard complemented by a sophisticated, lightweight package. The WE-30 allows you to execute a multitude of tests at the customer’s site. You can test the meter with the customer’s load, perform CT burden and ratio tests, and verify system wiring to give you the peace of mind that the entire metering installation is correct. Harmonic Analysis, CT Testing, Vectors, and Trends can all be tested without pulling the meter from its socket.

The convenient touch screen interface allows you to easily access the WE-30’s feature-rich software. User-friendly screens lead you through installation, wiring checks, testing, and record keeping. Results are fully compatible with WECO’s industry specific WATT-Net Plus™ data management software using an Ethernet connection. USB keyboard and mouse connections or an external computer make interfacing with the WE-30 even easier.

The WE-30 runs on the Microsoft™ Windows® 7, 64 bit operating system that comes embedded within the unit. With the internal storage system, numerous test and test setup programs can be saved.

The WE-30’s embedded user interface software, Winboard Embedded™, is designed for ease of use with a high degree of functionality. Each menu driven function is accessible through large touch screen buttons with test parameters entered by barcode scanner, keyboard, or through the touch screen itself. The unit may be run with the optional keyboard, mouse, or external computer. Various test profiles may be created and saved, and then will appear as a selection list for the operator. These test profiles can be updated on multiple units using a global update over an Ethernet based network or the Internet. Data can be exported to Microsoft™ Excel files, user-defined files, and PDF files. WE-30 test data is compatible with WECO’s WATT-Net™ software, allowing the user to edit data and generate reports.

For more information on the WE-30, contact us at 601.933.0900 or visit our website at www.watthour.com.

Specifications:

- **Current Sources:**
  - Current output: 0.01-30A per phase with 1mA resolution, 50VA per phase, 2.5V max compliance
  - Current accuracy: +/- 0.2%, +/- 1 mA true RMS
  - Current harmonic distortion: Less than 1% THD worst case (pure sine wave selection)
  - Harmonics sourcing: Through the 60th order THD user-defined per phase
- **Phase Control:**
  - 0°-359.95° in 0.05° steps
- **Phase Accuracy:**
  - +/- 0.10°
- **Test Frequency:**
  - 45-65Hz in 0.001Hz steps
- **Test Frequency Accuracy:**
  - 0.005%
- **Auxiliary Power Input Range:**
  - 90-300V AC auto-ranging
- **Input Frequency Range:**
  - 45-65Hz (fundamental)
- **Case Dimensions and Base Weight:**
  - 24"W x 12"D x 24.7"L, 42.5 LBS
- **Temperature:**
  - 0°C to 55°C (32°F to 131°F) operation
  - -20°C to 70°C (-4°F to 158°F) storage
- **Humidity:**
  - 0%-95% non-condensing
- **Warranty:**
  - Two (2) year domestic limited warranty (all parts and labor)
- **Service:**
  - All required service on the Model WE-30 will be completed from the office of Watthour Engineering Company, Inc., a Radian Research Company, located in Pearl, MS. WECO maintains a stock of all components and should a part fail, would in most cases be able to provide a replacement part within 48 hours.
Site analysis is performed by auto-sequence testing, test profiles, and operation “Wizards.” User-defined test profiles allow the automation of an entire site test with the option to save the profile. Wiring is automatically checked to determine correct installation connections. If improper wiring is detected, the operator is prompted to correct the wiring before the test starts. To simplify the learning curve, the WE-30 operation wizard guides the operator through installation and removal of the test kit with preinstalled or customer supplied digital images. The WE-30 can analyze harmonics through the 60th harmonic order providing total harmonic distortion along with the amplitude and phase of each harmonic. For further analysis, the display shows waveform diagrams of each phase along with a chart or graph illustrating the amplitude of each harmonic. The WE-30 will also illustrate vectors of each phase to confirm proper phase rotation. The Current Transformers at the meter site can be tested for ratio and burden to confirm proper operation.

The WE-30 ships with a powerful reference standard, the RD-30, that boasts a 0.04% accuracy margin of error. However, if your utility demands higher levels of accuracy, then you may upgrade to a Radian Research RD-31 (0.02%) or RD-33 (0.01%) three-phase standard. Accuracy verification of the Radian Research standard can automatically be performed using the WE-30’s Standards Compare routine that allows easy comparison to an external master standard.

 Clamp-on current probes and flexible current probes are optionally available to perform a three-phase test of the meter using customer load. The Radian Research standard assures that a true meter accuracy test is being performed. All of the necessary meter pulse sensors and pickups are also optionally available.

The WE-30 comes with an electronic current source and an electronic voltage source for a controlled parameter test of the meter. In addition, the WE-30 allows the user to create harmonic waveforms independently, per phase, per source on the voltage and current, thus allowing for a pure sinusoidal waveform test and a distorted waveform test. Whether sinusoidal or distorted, both types of tests are solely under the user’s control, and the test parameters can be repeated in the field or back at the meter shop. With the WE-30, the meter can be completely tested and analyzed for a wide range of repeatable test conditions.

Features:
- Fuse protection on all voltage inputs (1 auxiliary power, and 3 potential source/measurement)
- 2 USB ports
- 1 VGA port
- 1 Ethernet 10/100 port
- 1 COM port
- 1 simple three wire KYZ input
- Advanced I/O port:
  - 4 KYZ inputs
  - 2 KZ inputs
  - 1 KYZ output
  - 2 KZ outputs
- Optical communications port
- 5 pin LEMO® connector for meter optical probes
- BNC connector for pulse out (standard pulses or test pulse), click switch input, and external standard compare pulse input
- Pulse LED
- Audio pulse volume control
- 3 voltage status LEDs (1 per phase)
- 3 current status LEDs (1 per phase)
- 3 current transformer clamp-on inputs (1 per phase)
- Safety ground post
- Per phase potential color-coded safety jacks for potential and current inputs/outputs
- 4 quadrant, 3 phase, simultaneous measurements for active, reactive and apparent energy and power.

Functions include:
- Watthours, volts, amps, phase angle, power factor, VAR hours, Q hours, watts, VA hours, VA, VARS, frequency, forward and reverse energy flow.
- Optionally test average responding Vahrs, VA, Volts, Vhrs, amps, Ahrs.

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Meter Testing with the WE-30 allows you to really put a meter through its paces. Test any combination of elements, phases and test types with the selection of a predefined test sequence. Results are clearly displayed in an easy to read table. The user is alerted to tests that fall outside of a specified accuracy range by results that are clearly labeled in red.

The WE-30 is capable of testing transducers with outputs between +/-20mA.

Wiring Check allows you to verify the service at a site and get valuable information about the service type, voltages, currents and phase angles. Wiring Check will also alert you to potential problems with the service.

Retrieve data on the measured electrical quantities for transformer secondaries of the meter installation with the WE-30’s Secondary Check. Everything from Volts to VARS is measured, in real time, across all three phases. Results are clearly displayed in a color-coded table and can be changed from real time to a snap-shot with the click of the stylus.

Get information on the calculated electrical quantities for the transformer primaries of the meter installation with the WE-30’s Primary Check. Everything from Volts to VARS is calculated, in real time, across all three phase. Results are clearly displayed in a color-coded table and can be changed from real-time to a snap-shot with the click of the stylus.

The system’s powerful Harmonic Analysis feature displays harmonic data (both RMS and percent of fundamental) for all three phases up to the 60th harmonic as well as view harmonic data as a bar graph or raw numbers.

Waveform analysis gives you the ability to view voltage and current waveform graphs for all three phases. You can view a real time waveform graph for any combination of phases. The interactive graph allows you to zoom in and out as well as retrieve exact numerical measurements by clicking on any point.

Site Information allows you to set up and recall specific information on the devices at a test site such as meters, current transformers and potential transformers. This method of data management keeps you from having to enter information while out in the field. If data is changed in the field the WE-30 updates the site information database so it’s saved for the next time you test the site.

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Standard and Optional Accessories

Standard Accessories Include:
(A) Nylon Carry Bag • (B) Current Cable Set with Alligator Clips • (C) Current Cable Set with Safe-T-Plugs • (D) Field Power Cord • (E) Field Safety Ground Cable • (F) Potential Cable Assembly • (G) Shop Power Cord • (H) Ethernet Cross-Over Cable • (I) Current Isolators

In addition to the numerous accessories that come standard with the WE-30 Portable Three-Phase Meter/Analyzer, WECO offers several product-enhancing accessories. Be prepared for any field testing situation by rounding out the standard accessories of your WE-30 with these advanced features.

Optional Accessories Include:
(J) OPTOCOM™ Optics • (K) Reflect and Solid State Optics with Meter Band Clamp • (L) Magnetic Mount Optics • (M) Hard Case • (N) Solid State Optics Probe Assembly, Suction Cup, IR Detector • (O) Solid State Optics Probe Assembly, Suction Cup, Visible Detector • (P) Click Switch Adapter • (Q) Standards Compare Kits • (R) KYZ Cable Set • (S) 150A Clamp On Probe • (T) AmpFlex® Current Probe Kit • (U) High Potential Current Probe Kit (2000A, 150kv) • (V) High Potential Probe Kit (40kv) • (W) 800A Clamp On Probe • (X) 600V PT Probe • (Y) 25’ Current Probe Extension Cable • (Z) Advanced I/O Breakout Cable • (AA) RM/RD/uJoule Interchange Standard • (BB) Barcode Option • (CC) Alternate Termination Voltage and Current Cable Sets • (DD) Radian RM-DS Meter Disk Sensor Power Cable • (EE) 3000 Amp Square Jaw Probe Kit • (FF) 10 Amp .83” Jaw Transformer Rated Probe Kit • (GG) Adapter Kit For Sensor Link Probe • (HH) Voltage And Current Leads Extension Kit • (II) Alternate A, B, C, Phase Current Cable Clips

Details on these options are included on the following pages.
Portable Three-Phase Meter Tester/Analyzer

WE-30

Standard Accessories

Ny whole

Current Cable Set with Alligator Clips: The current cable set with alligator clips allows you to connect the WE-30 to the current switches on a meter switch. Once connected the WE-30 can control the current applied to any meter. Set includes three color-coded (red, yellow, blue) 8’ cables. (B)

Current Cable Set with Safe-T-Plugs: The current cable set with Safe-T-Plugs uses “Duckbill” current leads to connect the WE-30 to the current switches on a meter test switch providing for improved accuracy measurements over any clamp-on probes. Set includes three color-coded (red, yellow, blue) 8’ cables. (C)

Field Power Cord: Each WE-30 ships with a field power cord that allows you to conveniently and safely power the unit at the site. (D)

Field Safety Ground Cable: The field safety ground cable allows you to test with the confidence that both you and your equipment are protected. (E)

Potential Cable Assembly: Plug your WE-30 right into the meter’s voltage switches and take control of the amount of potential applied to the meter. Our standard potential leads are 8’ long with heavy-duty plugs on each end for safety and durability. (F)

Shop Power Cord: Back at the shop, the AC shop power cable provides a convenient way to power your WE-30 right from a standard 120VAC power outlet. (G)

Ethernet Cross-Over Cable: Connecting the WE-30 to a network allows you to control the unit with any other PC also connected to the network. With the supplied Ethernet cross-over cable it’s a cinch to directly connect the WE-30 to an external laptop for control of the unit without having to connect it to a network. (H)

Current Isolators: Don’t waste time hunting around the shop for something to use to isolate currents in the test switch. The WE-30 ships with a set of six current isolators that are portable, durable, perfectly shaped, and provide great current isolation between test switches. (I)

Optional Accessories

OPTOCOM™ Optics: Increase the versatility of your field testing with WECO’s OPTOCOM™ option. Attach the optic coupler head to properly equipped solid state meter and forget about alignment. When the test is complete you can program the meter right at the site without having to change out optic heads. (J)

Reflect and Solid State Optics with Meter Band Clamp: This optics solution combines both reflect optics for mechanical meters and pulse detecting optics for solid state meters in one convenient package. Lock down optics, easy mode selection, LED indicators, and a secure grip band clamp make this a valuable addition to any field test kit. (K)

Magnetic Mount Optics: With just the flip of a switch you can easily attach the Magnetic Mount Optics to any can-mounted meter. It’s ideal for substation situations. Increase the number of meters you can test using either reflect or pulse modes by cutting down on optics attachment time. The powerful magnet holds to the meter under any circumstances. A six foot cable comes standard with the optional Magnetic Mount Optics and provides the link between the optional optics and the WE-30. (L)

Hard Case: This ultra durable Pelican hard case provides protection and convenience. Clamp tight latches, a lockable lid, no-flat wheels, and ample foam cushioning ensure the unit is protected from the rigors of field testing. A collapsible pull handle, removable shoulder strap, lead storage space, and built-in organizational pockets help you keep everything in its place while getting the unit from site to site. (M)

Solid State Optics Probe Assembly, Suction Cup, IR Detector: When you’re faced with a meter enclosure that doesn’t accommodate magnetic or clamp based optics you can turn to WECO’s solid state IR optics probe assembly with suction cup attachment to detect the meter’s IR emitter. (N)

Solid State Optics Probe Assembly, Suction Cup, Visible Detector: Don’t let enclosures that prevent magnetic or clamp based optics attachment keep you from getting quick test results. WECO offers the visible detector solid state optics with suction cup attachment to make sure you can test meters equipped with visible LEDs for the Ke. (O)

Click Switch Adapter: Sometimes optics just are not an option, and that’s when you turn to WECO’s click switch adapter. Visually observe the disk’s rotation and manually register revolutions with the click of a button. (P)

Standards Compare Kit: With an external standard and WECO’s standards compare kit you can make sure your WE-30’s internal standard is delivering the high accuracy results you need. All of the necessary cables are included and the WE-30’s user-friendly, on-board software makes the standards compare test a snap. Available kits include RD-2x, RD-3x and RM compatible. RD-3x Kit pictured. (Q)

KYZ Cable Set: All you need is a KYZ cable set to conduct a KYZ test with your WE-30 in either demand mode or performing an energy test using the meter’s KYZ output. A single plug connects right to the WE-30 while standard yellow, black, and red plugs connect to the meter. (R)

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Optional Accessories Continued

150A Clamp On Probe: The “clothespin” style current probe is most often used for secondary current measurements from 0.05 to 150A, 250V maximum. (S)

AmpFlex® Current Probe Kit: The AmpFlex® current probe kit includes a flexible current sensor for measurements on conductors where standard clamp-on probes cannot be used. The 36” sensor with electronic module and a calibration adapter can measure up to 3000 amps. (T)

High Potential Current Probe Kit (2000A, 150kv): The high potential current probe kit (2000A, 150kv) includes a fiber optic isolated current probe with 3.85” wide jaw for current measurements over 600V. Detachable line hanger, adapter and probe with hot stick mounting capability all come in a convenient carry case. (U)

High Potential Probe Kit (40kv): The high potential probe kit (40kv) is a power quality tool for 120V to 40kv applications. Determine volts, amps, frequency, sags, and swells from primary conductors. A fiber optic link provides the isolation. Kit comes complete with carrying case, hot stick mounting capability, and adapters. (V)

800A Clamp On Probe: The circular clamp-on probe is used for primary and some secondary current measurements with a range of 0.05A to 800A for conductors up to 2.25” maximum. (W)

600V PT Probe: The 600V PT Probe allows you to check the voltage on systems that are 600 volts and less, allowing you to verify the potential transformer is working correctly. (X)

25’ Current Probe Extension Cable: With the 25’ current probe extension cable you can extend the distance between the WE-30 and the test location. Daisy-chain up to four to increase the overall distance to 100’. This option works with AC 150 and 800 amp clamp-on probes, high voltage current probe, high voltage probe, and AmpFlex® current probe kits. (Y)

Advanced I/O Breakout Cable: The 8’ advanced I/O breakout cable is used to connect KYZ outputs from meters into the WE-30’s advanced I/O connector. The advance I/O connector has two Form C input channels, two Form C input channels that can be independently configured as two Form A input channels and two Form A input channels. The advanced I/O connector also has two Form A output channels and one Form C output channel. (Z)

WE-30 Cable Set for RM/RD/uJoule Interchange Standard: This cable set allows for an external Radian standard or uJoule to be put in a series with the WE-30 during a meter test for tie line testing. (AA)

Barcode Option: The WE-30’s on-board software has been built from the ground up to take full advantage of barcode scanning to save you valuable time when meter testing in the field. With just one scan of a barcode you can automatically enter the meter’s faceplate information, load the appropriate test sequence, and recall the last saved results for that particular meter. (BB)

Alternate Termination Voltage and Current Cable Sets: Not all meter shops have the same needs, so WECO offers two optional voltage and current cable sets. The first comes fitted with test paddle terminations for use with switchboard meters. The second set comes unterminated, allowing you to terminate the cables. (CC)

Radian RM-DS Meter Disk Sensor Power Cable: This adapter cable allows the use of Radian’s RM-DS meter disk sensor with the WE-30. (DD)

3000 Amp Square Jaw Probe Kit: This square clamp is great for higher currents, up to 3000A. The square jaw permits multiple conductors or bus bar positioning. (EE)

10 Amp .83” Jaw Transformer Rated Probe Kit, 5’ Leads: This small, compact probe with a .78” jaw opening is used to measure currents from 100mA to 240A. (FF)

Adapter Kit For Customer Supplied Sensor Link Probe: For customers who already own compatible sensor link voltage or current probes, this low cost adapter kit makes it possible to use with your WE-30. (GG)

Voltage And Current Leads Extension Kit, 12’: This extension kit increases the distance from the WE-30 to your test switch by 12’. It supports up to 600V and 15A per phase. (HH)

Alternate A, B, C, Phase Current Cable Clips With Alligator Clips, Right Angle Plugs, and Alternate Alligator Clips: Not all meter test switches are made exactly the same. WECO provides options to meet all your connection needs. These alternate alligator clips are another method of connecting the current leads to your meter test switch. (II)