

# PowerMaster® Training System

Includes Specifications for Products:

- 10-130-8813 Metering Site Training Bench - Self Contained
- 10-130-8833 Metering Site Training Bench - Transformer Rated
- 10-130-8843 TAS Training Administrator Station (TAS)



Specifications April 8, 2020\*

## Functionality & Features

\*All information subject to change

### Training and Testing on Electricity Meters

- Compatible with Socket Based Meter Types 1S, 2S, 12S, 16S on single bench
- Compatible with Socket Based Meter Types 3S, 5S/45S, 6S/36, 9S/8S on single bench
- Phantom Load Meter Testing
- Customer Load Meter Testing

### Training and Testing on Instrument Current Transformers

- 210A RMS Max Current Provided by Simulator to Primary of Current Transformers
- (3) Current Transformers Powered Simultaneously
- CT Burden + Ratio and Burden Measurement Testing

### Training and Testing on Instrument Potential Transformers

- 240V RMS Max Voltage Provided by Simulator to Primary of Potential Transformers
- (3) Potential Transformers Powered Simultaneously
- PT Ratio Testing

### Training on Field Metering Site Test Equipment

- PowerMaster® 3302 Functionality with Applicable Current and Voltage Probes
- Probewell MT-1/NT4 Functionality on Dedicated Meter Socket for 1S & 2S Meters

### Training on Meter Site Wiring

- Vector Diagram Analysis
- Waveform Analysis
- Customized Wire Color Designated by Customer
- Customized Test Switch Configuration by Customer (on 10-130-8833)

### Training Modes

- Technician Led Training on Test Bench with Integrated User Interface
- Admin Led Training with Remote Control of All Test Benches (with TAS)
- Each Trainee's Login, Performance, And Usage Logged for Reporting

### Communication

- With the TAS, Up to 4 Training Benches Connected Simultaneously
- TAS and Each Training Bench Connected via Closed Network using WIFI

### Service Type Simulations

- Form 1S - Single Phase, 2-Wire
- Form 2S - Single Phase, 3-Wire
- Form 3S - Single Phase, 3-Wire
- Form 5S/45S - Both 3 Phase, 3W Delta and Single Phase, 3-Wire
- Form 6S/36S - 3 Phase, 4W Wye Zcoil
- Form 9S/8S - 3 Phase, 4W Wye
- Form 12S - Both 3W Network and 3W Delta
- Form 16S - Both 4W Wye and 4W Delta

## Automated Simulation of (74) Common Field Metering Errors via Software and Hardware

- 1S - 3 Error Simulations
  - Wiring Error (Phase Ia)
  - Install Error (Meter Upside Down)
  - Shorted Voltage Stator
- 2S - 5 Error Simulations
  - Wiring Error, Reverse Polarity (Selectable from Phase Ia or Ib)
  - Install Error (Meter Upside Down)
  - Shorted Voltage Stator
  - No Phase-Phase Voltage - Both 120V Sources In Phase
  - Install Error, 120V source vs. 240V source
- 3S - 2 Error Simulations
  - Phase Fault (No Ia primary)
  - Wiring Error (Reverse Polarity for CTa)
- 12S - 3 Error Simulations for 3W Network
  - Wiring Error, Reverse Polarity (Selectable from Phase Ia or Ib)
  - Installation Error, Missing Neutral (12S in 1S Socket)
  - Shorted Voltage Stator (Selectable from Phase Va or Vb)
- 12S - 3 Error Simulations for 3W Delta
  - Wiring Error, Reverse Polarity (Selectable from Phase Ia or Ib)
  - Installation Error, Missing Neutral (12S in 1S Socket)
  - Shorted Voltage Stator (Selectable from Phase Va or Vb)
- 16S - 2 Error Simulations for 4W Wye
  - Damaged Voltage Stator (Selectable from Phase Vb or Vc)
  - Shorted Voltage Stator (Selectable from Phase Va, Vb, Vc)
- 16S - 2 Error Simulations for 4W Delta
  - Damaged Voltage Stator (Selectable from Phase Vb or Vc)
  - Shorted Voltage Stator (Selectable from Phase Va, Vb, Vc)
- 5S/45S - 6 Error Simulations for 3W Delta
  - Phase Fault (No Ia Primary)
  - Wiring Error, Reverse Primary Polarity (Selectable from CTa or CTc)
  - Wiring Error, Reverse Primary Polarity (Selectable from PTa or PTc)
  - Wiring Error, Reverse Secondary Polarity (Selectable from CTa or CTc)
  - Wiring Error, Reverse Secondary Polarity (Both CTa and CTc)
  - Wiring Error, Cross Phase (Ia and Ic Secondary Swapped)
- 5S/45S - 6 Error Simulations for Single Phase, 3-Wire
  - Phase Fault (No Ia Primary)
  - Wiring Error, Reverse Primary Polarity (CTa)
  - Wiring Error, Reverse Primary Polarity (PTa)
  - Wiring Error, Reverse Secondary Polarity (Selectable from CTa or CTc)
  - Wiring Error, Reverse Secondary Polarity (Both CTa and CTc)
  - Wiring Error, Cross Phase (Ia and Ic Secondary Swapped)
- 6S/36S - 12 Error Simulations
  - Phase Fault, No Primary Current (Selectable from Ia, Ib, Ic)
  - Wiring Error, Reverse Primary Polarity (Selectable from CTa, CTb, CTc)
  - Wiring Error, Reverse Primary Polarity (Selectable from PTa or PTc)
  - Wiring Error, Reverse Secondary Polarity (Selectable from CTa, CTb, CTc)

- Wiring Error, Reverse Secondary Polarity (Both CTa and CTb)
- Wiring Error, Reverse Secondary Polarity (Both CTa and CTc)
- Wiring Error, Reverse Secondary Polarity (All CTs)
- Wiring Error, Cross Phase (Ia and Ib Secondary Swapped)
- Wiring Error, Cross Phase (Ia and Ic Secondary Swapped)
- Wiring Error (Clockwise Rotation Error on Currents)
- Wiring Error (Counter Clockwise Rotation Error on Currents)
- Install Error, Mislabeled/Incorrect CT Installed (Selectable from CTa, CTb, CTc)
- 9S/8S - 15 Error Simulations for 4W Wye
  - Phase Fault, No Primary Current (Selectable from Ia, Ib, Ic)
  - Phase Fault, No Primary Voltage (Selectable from Vb or Vc)
  - Wiring Error, Reverse Primary Polarity (Selectable from CTa, CTb, CTc)
  - Wiring Error, Reverse Primary Polarity (Selectable from PTa, PTb, PTc)
  - Wiring Error, Reverse Secondary Polarity (Selectable from CTa, CTb, CTc)
  - Wiring Error, Reverse Secondary Polarity (Both CTa and CTb)
  - Wiring Error, Reverse Secondary Polarity (Both CTa and CTc)
  - Wiring Error, Reverse Secondary Polarity (Both CTb and CTc)
  - Wiring Error, Reverse Secondary Polarity (All CTs)
  - Wiring Error, Cross Phase (Ia and Ib Secondary Swapped)
  - Wiring Error, Cross Phase (Ia and Ic Secondary Swapped)
  - Wiring Error (Clockwise Rotation Error on Currents)
  - Wiring Error (Counter Clockwise Rotation Error on Currents)
  - Install Error, Mislabeled/Incorrect CT Installed (Selectable from CTa, CTb, CTc)
  - Install Error (9S Meter Installed in 6S Socket)
- 9S/8S - 15 Error Simulations for 4W Delta
  - Phase Fault, No Primary Current (Selectable from Ia, Ib, Ic)
  - Phase Fault, No Primary Voltage (Selectable from Vb or Vc)
  - Wiring Error, Reverse Primary Polarity (Selectable from CTa, CTb, CTc)
  - Wiring Error, Reverse Primary Polarity (Selectable from PTa, PTb, PTc)
  - Wiring Error, Reverse Secondary Polarity (Selectable from CTa, CTb, CTc)
  - Wiring Error, Reverse Secondary Polarity (Both CTa and CTb)
  - Wiring Error, Reverse Secondary Polarity (Both CTa and CTc)
  - Wiring Error, Reverse Secondary Polarity (Both CTb and CTc)
  - Wiring Error, Reverse Secondary Polarity (All CTs)
  - Wiring Error, Cross Phase (Ia and Ib Secondary Swapped)
  - Wiring Error, Cross Phase (Ia and Ic Secondary Swapped)
  - Wiring Error (Clockwise Rotation Error on Currents)
  - Wiring Error (Counter Clockwise Rotation Error on Currents)
  - Install Error, Mislabeled/Incorrect CT Installed (Selectable from CTa, CTb, CTc)
  - Install Error (9S Meter Installed in 6S Socket)

### **Visual Indication of CT & VT Errors When Using Error Simulation**

- Feature can be overridden with Training Administrator Station (TAS)

### **Safety Features**

- Visual Safety Indication of Active Voltage and Current Source
- Visual Safety Indication of Meter Socket Under Test
- GFI Breaker In Line With Meter Socket for Safe Shutdown
- Safety Stop Switch on Training Bench

- Remote Stop Switch on Training Administrator Station (TAS)
- PPE Instruction on User Interface on Training Bench

## Included Components

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Quantity	Description
1	<p><b>Training Administrator Station (TAS)</b>  with Interface on Windows Tablet In Rugged Case  with Full Control Up to 4 Training Benches In One Display  with WIFI Communication to Each Training Bench  with Display of Bench Status, Scenarios, and Trainee's Performance</p>
1 Each	<p><b>Training Bench (10-130-8813 &amp; 10-130-8833)</b>  with Locking Casters  with Locking Drawers  with Storage Shelf  with Brackets for Wall Mounting  with WIFI Communication to TAS</p>
1 Each	<p><b>Three Phase Voltage and Current Source (10-130-8813 &amp; 10-130-8833)</b>  19" Rack mounted design integrated in bench  Ability to remove from bench for maintenance and/or calibration  30-480V (277 phase-Neutral; 480V phase-phase) RMS max per phase  voltage source at 1% accuracy  Voltage output consists of 4-wire Kelvin drive and measurement  100mA-30A RMS max per phase current source at 1% accuracy  Phase angle adjustment from 0° to 360° in 0.1° steps each phase  Resolution of 0.01A &amp; 0.01V  Total Harmonic Distortion (THD) less than 1%, fundamental only,  unloaded  Frequency generation at 60Hz  Manually resettable GFI breaker  Individually controlled current, voltage, and phase  Computer Controlled Via Ethernet</p>
	<p><b>Meter Sockets (integrated in 10-130-8813)</b></p>
1	1S/2S Meter Socket
1	12S Meter Socket
1	16S Meter Socket
1	1S/2S Meter Socket for Probewell testing
	<p><b>Meter Sockets (integrated in 10-130-8833)</b></p>
1	3S Meter Socket
1	5S/45S Meter Socket
1	6S/36S & 9S/8S Meter Socket

**3**      **Current Transformers** (integrated in 10-130-8833)  
200:5 Window Type Instrument CTs

**3**      **Potential Transformers** (integrated in 10-130-8833)  
2.5:1 (300:120) Instrument PTs  
with Protective Enclosure to connections

**1 Each**      **Touchscreen (21.5") Custom Control System (10-130-8813 & 10-130-8833)**  
with custom software for voltage and current control  
with Ethernet connection  
with keyboard  
with mouse  
with articulating mounting arm

### **Physical Description (10-130-8813 & 10-130-8833)**

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Bench Dimensions (1.85m width x 2m height x 0.91m depth)

Weight 340kg (750 lbs)

### **Power Requirements (10-130-8813 & 10-130-8833)**

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Auxiliary Power Input: 3x Single Phase 120V Outlet with Ground, 15A

Bench Power Consumption: 700VA max

PC Power Consumption: 200W

### **Operating Environment**

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25°C ± 5°C

30% to 80% Relative Humidity, Non Condensing

### **Warranty**

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2 Year Parts and Workmanship

Extended Warranties Available