



OPERATIONS MANUAL



DESKTOP METER STATION CATALOG NO. 2100

DESKTOP METER STATION OPERATIONS MANUAL CATALOG NO. 2100



TESCO METERING

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LIMITED WARRANTY & LIMITATION OF LIABILITY

TESCO warrants to the original purchaser that it will correct all defects in material and/or workmanship in the Instrument, test equipment or software covered by this warranty (herein called "**PRODUCT**"), provided that TESCO is notified of such defect within the warranty period (set forth below) in accordance with paragraph four of this warranty.

WARRANTY PERIOD. The warranty period shall begin on the date of shipment of the **PRODUCT** or the date of the issuance of this warranty certificate, whichever is later. If no warranty period is specified below and signed by an authorized **DISTRIBUTOR** of TESCO, the warranty period shall be one (1) year. In no event shall this warranty remain in effect for more than the stated warranty period plus two (2) months after the date of shipment. TESCO's sole obligation and the purchaser's sole remedy under this warranty is limited to repair or replacement, at TESCO's option, free of charge, F.O.B. TESCO's factory at Bristol, PA of any workmanship and/or part which in TESCO's sole judgment displays evidence of defect. On-site warranty repairs will be made when in TESCO's judgment the **PRODUCT** cannot practically be shipped to TESCO's factory. Any modifications, additions or upgrades made to the **PRODUCT** or control software after this warranty becomes effective shall not extend the term of this warranty.

COVERAGE. The warranty set forth above shall be applicable only if the **PRODUCT**:

1. Is used for the specific purpose for which it was intended;
2. Is operated in accordance with instructions, if any, supplied by TESCO;
3. Has not been modified, neglected, altered, tampered with, vandalized, abused or misused, or subjected to accident, fire, flood or other casualties;
4. Has not been repaired by unauthorized persons;
5. Has not had its serial number altered, defaced or removed;
6. Has not been connected, installed or adjusted other than in accordance with the instructions, if any, furnished by TESCO.

The warranty set forth herein DOES NOT APPLY to defects resulting from ordinary wear, tear and usage, or any cause, similar or dissimilar, not resulting solely from defective material and/or workmanship.

The warranty set forth herein shall NOT be effective unless:

1. Notice of defect is given to TESCO by phone, fax, email, or mail as soon as the defect is discovered.
2. Notice of defect contains the following information: PRODUCT serial number, PRODUCT model number, date of original installation, and an accurate and complete description of the defect including the exact circumstances leading to the defect.
3. The defective PRODUCT or part is returned only upon authorization from TESCO as evidenced by the issuing of a Return Merchandise Authorization (RMA) number, and that the transportation charges are prepaid (except that TESCO may, at its option, appoint a qualified DISTRIBUTOR to make field inspections of the PRODUCT for which purpose the purchaser shall permit such DISTRIBUTOR to enter upon its premises and examine the PRODUCT).
4. The Return Merchandise Authorization (RMA) number is written on the shipping label and all paperwork defective PRODUCT or part.
5. The defective PRODUCT or part is returned in the original packing or packing approved by TESCO

TESCO is not responsible for drayage charges, damages, or labor costs incurred in conjunction with failure, removal, or reinstallation of any PRODUCT, all of which shall be at the purchaser's expense. TESCO is not responsible for special, incidental, or consequential damages, whether resulting from breach of warranty, negligence, or any other reason.

TESCO manufactured parts will be available for a minimum period of at least two years after the manufacture of a PRODUCT has been discontinued.

TESCO will provide original purchaser during the warranty period, unlimited telephone consulting time for the purpose of PRODUCT trouble shooting/servicing and for the first thirty (30) days of the warranty period, unlimited telephone consulting time for the purpose of PRODUCT/software application.

THE WARRANTY CONTAINED HEREIN IS IN LIEU OF ALL OTHER WARRANTIES AND TESCO MAKES NO OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, WARRANTIES OR CONDITION, DESIGN, MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE, OR ANY OTHER MATTER.

No other warranty, express or implied, is authorized by TESCO, and no DISTRIBUTOR of TESCO or any other person has any authority to amend, extend, modify, enlarge, or otherwise alter the foregoing warranty and disclaimers in any way whatsoever, except as provided for in an Extended Limited PRODUCT warranty agreement.

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1.1 Introduction

The 2100 Desktop Meter Station is designed to support functional testing and verification of electric meters in office and shop environments. The Instrument provides a controlled platform for applying meter potential voltage and load current to a wide range of meter forms.

The 2100 supports qualification testing of solid-state meters and mechanical meters when the tilt option is specified. It may also be used to verify meter operation and perform program updates, depending on meter design and configuration.

This manual provides the information necessary to operate the 2100 Desktop Meter Station safely and effectively. Users should become familiar with the Instrument's controls, configuration options, and operating procedures before performing meter testing.

1.2 Contacting TESCO

For Technical Support or Calibration/Repair, please call 215.228.0500.

You can also send an email to support@tescometering.com with any questions.

To view, print, or download the latest manual supplement, visit www.tescometering.com.

1.3 General Safety Summary

This manual contains information and warning that must be observed to ensure safe operation of the 2100 Desktop Meter Station and to maintain the Instrument in a safe operating condition. Operating or servicing the Instrument in a manner not specified in this manual may compromise safety and proper function

For correct and safe use of the Instrument, both operating and service personnel must follow accepted electrical safety procedures in addition to the safety precautions described in this manual.

In this manual, a **WARNING** identifies conditions and actions that may pose a hazard to the user. A **CAUTION** identifies conditions and actions that may result in damage to the Instrument or the equipment under test.



To avoid electrical shock, personal injury, or equipment damage:

- **Do not operate the Instrument if it is damaged or suspected to be faulty.**

- Do not operate the Instrument in wet, condensing, dusty, or explosive environments
- Use the instrument only as described in this manual. Improper use may impair protective features
- If safe operation is suspected to be impaired, remove the Instrument from service and prevent unintended operation
- Safety protection may be compromised if the Instrument shows visible damage or does not operate as expected.

1.4 Description of Safety-related Icons

ICONS	DESCRIPTION
	Risk of danger. Important information. See manual.
	Hazardous voltage. Risk of electrical shock.

1.5 Product Features

The 2100 Desktop Meter Station is designed to provide controlled meter testing functionality in office and shop environments. The Instrument includes an internal load controlled by a front panel LOAD switch labeled 30 / OFF / 5. The internal load provides either 30 amperes or 5 amperes depending on switch position. Meter forms 3, 4, 5, 6, 8, and 9 are restricted to 5 amperes maximum load.

Optional configurations expand functionality to include external load connections, TWACS testing, and disconnect verification. Integrated interlocks and indicators support consistent and repeatable operation during testing.

1.5.1 Key Features

- Multi-form meter testing capability
- Selectable meter potential voltage settings
- Internal load application to the meter A phase stator
- Optional external load connection capability
- Zero-insertion-force socket with meter interlock
- Reverse function for phase shifting of load current
- Automatic disconnect indication for applicable meter forms
- Optional TWACS and PRTU testing capability

1.5.2 Standard Features

- Desktop-style meter test station with compact footprint
- Single-phase input power operation
- Parallel wiring of potential voltage to all meter coils
- Front-panel controls for power, voltage selection, and load selection
- Internal circuit breaker protection
- Visual indicators for power and disconnect status
- Zero insertion force meter socket with release lever mechanism

1.6 General Specifications

The following specifications apply to the 2100 Desktop Meter Station and are based on the verified operating information provided for the Instrument.

1.6.1 Input Power Requirements

PARAMETERS	DATA
Power Source	Single-phase
Input Voltage	120 VAC
Input Current	5A

1.6.2 Meter Potential Voltage Settings

PARAMETERS	DATA
Voltage Selector Settings	120 V, 208 V, 240 V, 277 V
Optional Setting	480 V
Voltage Wiring	Parallel to all meter coils

1.7 About This Operations Manual

This operations manual provides information required for the operation of the 2100 Desktop Meter Station. It is intended for personnel responsible for meter testing, verification, and functional evaluation in office or shop environments

The manual describes operating features, voltage selection, load options, external load connections, TWACS testing configuration, and disconnect testing functionality. All information in this manual applies only the Instrument and its available configuration options

Users should read and understand this manual before operating the Instrument to ensure proper use and reliable testing results.

2.0 INSTALLATION

2.1 Introduction

2.2 Intended Use and Environment

2.3 Meter Compatibility

2.4 Configuration Considerations

2.1 Introduction

This section describes the setup and preparation required before operating the 2100 Desktop Meter Station. The procedures in this section cover meter installation, voltage selection, and initial configuration prior to applying power.

The Instrument is designed for use in office and shop environments and does not require complex installation. Users should read and understand this section before operating the Instrument.

2.2 Intended Use and Environment

The 2100 Desktop Meter Station is intended for meter testing activities performed in controlled office or shop environments. The Instrument is designed for bench top use and does not require permanent installation or mounting.

The Instrument is not intended for outdoor use or for environments where moisture, excessive dust, or mechanical vibration may affect operation.

2.3 Meter Compatibility

The Instrument supports testing of multiple meter forms. Proper operation depends on correct meter form selection and compatibility with the selected meter potential voltage and load configuration.

Some meters are designed with auto-ranging voltage capability and may operate across a wide range of voltages. Other meters require operation at a specific voltage. Users must verify meter documentation before testing.

2.4 Configuration Considerations

Meter potential voltage is distributed in parallel to all meter coils. The Instrument must not be operated without a meter installed. The POWER push button will not apply potential unless a meter is properly installed and the socket interlock is engaged.

Load current generated by the Instrument is applied to the meter A phase stator. Certain meter forms are restricted to lower load levels to prevent overcurrent conditions and must be tested accordingly.

When using disconnect 2100 models with a 1000VA transformer for disconnect testing, the 2S and 12S form selections use a three-wire circuit with a virtual neutral that is hardwired. The voltage selector switch is disconnected.

3.0 FUNCTIONALITY

3.1 Introduction

3.2 Functional Overview

3.3 Meter Socket and Interlock

3.4 Voltage and Load Functions

3.5 Disconnect and Reverse Functions

3.6 Optional TWACS Functionality

3.1 Introduction

This section describes the functional capabilities of the 2100 Desktop Meter Station. The information provided explains how the Instrument applies meter potential voltage, load current, and optional test functions during operation.

Understanding the functionality described in this section allows users to interpret Instrument behavior during testing and to recognize how configuration selections affect meter operation. Operating procedures and step-by-step instructions are provided separately in Section 4.0.

3.2 Functional Overview

The Instrument provides controlled application of meter potential voltage and load current to support meter verification, qualification testing, and functional evaluation.

Depending on configuration, the Instrument supports internal and external load options, reverse current operation, disconnect indication, and optional TWACS testing functionality.

3.3 Meter Socket and Interlock

The Instrument is equipped with a zero-insertion-force meter socket. An internal interlock switch prevents meter potential voltage from being applied unless a meter is properly installed and fully seated.

This interlock ensures safe operation and prevents unintended energization of the socket.

3.4 Voltage and Load Options

Voltage Options: Meter potential voltage is selected using the front panel voltage selector switch. Available voltage settings are 120V, 208V, 240V, and 277V. When equipped, an optional 480V setting may also be provided. The selected voltage is applied in parallel to all meter coils.

Loading Options:

Internal 30amp / 5amp Load:

Load current is applied to the meter A phase stator. The Instrument includes an internal LOAD switch labeled 30 / OFF / 5. In the 30 Amp position, approximately 30 amperes are applied. In the 5 position, approximately 5 amperes are applied. In the OFF position, no internal load is applied.

Meter forms 3, 4, 5, 6, 8, and 9 are restricted to 5 amperes maximum load.

Internal ½ amp load / External load binding posts:

The Internal / External switch selects between the ½ amp internal load and external bindings posts. When equipped with front panel binding posts, BP1 connects to the meter A line stab and BP2 connects to the meter A load stab. Each binding post is rated for a maximum of 50 amperes.

Load Receptacle / Internal ½ amp load:

A 120VAC, 15amp NEMA 5-15 receptacle is mounted in the front of the unit. Line voltage is connected to the receptacle through the meter “A” leg. Once the meter is installed and Power button is depressed the load connected to the receptacle will be powered.

When this option is specified, an additional fuse is added to the 2100 front panel. It is labeled “F2”. This fuse protects the unit and will open should any device that is faulty or greater than 15amps is plugged into the receptacle.

3.5 Disconnect and Reverse Functions

For applicable meter forms, the disconnect function provides visual indication of disconnect status. An amber indicator illuminates when both disconnect legs are closed and turns off when either leg opens.

When using disconnect 2100 models with a 1000VA transformer for disconnect testing, the 2S and 12S form selections use a three-wire circuit with a virtual neutral that is hardwired. The voltage selector switch is disconnected.

The REVERSE switch changes the phase of the load current by 180 degrees relative to the applied voltage.

When performing disconnect testing on units equipped with the Load Selector option, the Load Selector must be placed in the OFF position before closing the meter disconnect.

3.6 Optional TWACS Functionality

The Instrument may be equipped with TWACS testing capability.

TWACS communication may be applied through the AC line input or through front panel banana jacks when operating in PRTU mode.

The LINE / PRTU switch selects the TWACS operating mode.

The TWACS Configuration switch has three positions:

1. Position 1 supports line-to-line TWACS modules and is limited to 120/240 VAC
2. Position 2 supports line-to-neutral TWACS modules
3. Position 3 supports line-to-line TWACS modules without limitation of potential

When operating in PRTU mode, the potential selector must be set between 120V and 240V. Other potential selector positions disconnect meter potential from the TWACS connectors to protect the PRTU test unit.

When operating in PRTU mode with the potential selector set to 120V, the TWACS Configuration switch must be in position 2 or potential may be removed from the meter.

When performing disconnect testing on TWACS equipped units, the Load Selector must be placed in the OFF position before closing the meter disconnect.

4.0 OPERATING PROCEDURE

4.1 Introduction

4.2 Meter Installation and Setup

4.3 Power and Load Application

4.4 Power Removal and Meter Removal

4.1 Introduction

This section provides the complete operating sequence for the 2100 Desktop Meter Station. The steps outlined in this section describe how to safely and correctly operate the Instrument from meter installation through power removal.

4.2 Meter Installation and Setup

Verify meter compatibility, required operating voltage, and applicable load restrictions prior to installation. Install the meter into the zero-insertion-force socket and secure it in place.

Ensure all configuration selections are set appropriately before applying power.

4.3 Power and Load Application

Apply meter potential voltage using the POWER push button. Load may be applied using internal or external load options, depending on the configuration of the Instrument.

Observe load restrictions for the meter form under test to prevent overcurrent conditions.

4.4 Power Removal and Meter Removal

When testing is complete, remove meter potential voltage before unlocking the socket. Remove the meter only after power has been removed.

5.0 OPTIONAL FEATURES

5.1 Introduction

5.2 External Load Options

5.3 TWACS Options

5.1 Introduction

This section describes optional features and configurations that may not be present on all 2100 Desktop Meter Station units. These features expand the Instrument's capabilities and should be used only when the corresponding options are installed.

5.2 External Load Options

When equipped, the Instrument supports external load connection through front-panel binding posts. External load boxes must be powered from the same source as the Instrument.

When external load is selected, the internal load is disabled.

5.3 TWACS Options

Optional TWACS functionality supports communication testing through LINE or PRTU configurations. Configuration switches must be set according to the selected operating mode.

Certain voltage limitations apply during TWACS testing to prevent interference or equipment damage.

6.0 MAINTENANCE

6.1 Introduction

6.2 General Maintenance

6.3 Service and Repair

6.1 Introduction

This section provides general maintenance and service guidance for the Catalog No. 2100 Desktop Meter Station. Routine care and service considerations are described to support continued reliable operation of the Instrument.

6.2 General Maintenance

The 2100 Desktop Meter Station requires minimal routine maintenance. Periodic visual inspection of the Instrument and its connections is recommended.

6.3 Service and Repair

Fuse replacement or service should be performed only by qualified personnel. If the Instrument fails to operate normally, it should be removed from service and evaluated by trained service personnel. Click **1.2 Contacting TESCO** to learn more.