TESCO

TESCO METERING

CAT. 1039

TESCO SAFETY DISCONNECT DEVICE (SDD)

User's Guide

TUG-1039-2021-V1.0.43 R-

TABLE OF CONTENTS

1.0   PRODUCT HIGHLIGHT

1.1   Introduction

This section describes the functionalities and features of the Safety Disconnect Device (SDD).

1.2   Functionality

TESCO's portable Safety Disconnect Device (Catalog No. 1039) allows you to safely disconnect power using the meter's remote disconnect from the palm of your hand without removing the meter from the socket. This Safety Disconnect Device can also be used as a meter probe.

COST EFFICIENT: Perform Disconnect Testing without the need for more expensive test equipment in the lab.

EASY TO USE: The device will light up when you align the device with the meter, letting you know it's working. LEDs show status of Safety Disconnect Device.

SAFE and SECURE: Utilities download a security password through a PC interface to the Safety Disconnect Device. The Safety Disconnect Device now has a built-in security feature that will disable the device if lost or stolen. The user can only use the device if they know the customized 5-keypress sequence.

CONVENIENT and PORTABLE: TESCO's ergonomic design fits in the palm of your hand during use and can be stored in a toolbox in your work truck.

1.3 Features

- Compatible with GE/Aclara, Landis + Gyr, and Itron meters with a disconnect

- Open and close the remote disconnect switch on meters with an optical port

- Leave the meter in the socket during disconnect/reconnect

- Allow meter to be installed with switch open for safety and arcing (allowing the installer to set the meter without worry of fault on load side)

- Save time and money sending techs out in the field

- Read meter serial number or meter ID and Firmware version

1.4 Other Uses

TESCO's Safety Disconnect Device can also be used for emergency situations like a residential or commercial fire when emergency responders are trying to enter the structure. Using password protected data from the local utility, emergency responders can easily shut the power off to enter the structure safely.

TESCO's Safety Disconnect Device can also be used as a meter probe for any manufacturer's meter.

2.0 HARDWARE

2.1 Introduction

This section describes the hardware and multiple operations of the Safety Disconnect Device (Cat 1039 - SDD).

2.2 Description

The SDD contains a lithium Ion rechargeable battery. When a USB cable is attached, the smart charging circuit charges the battery. In this mode, the unit will stay active if the USB cable is attached. When the USB cable is removed, the unit will stay active for 2 ½ minutes. The unit completely powers down after this time out, conserving battery charge.

The middle button turns the unit ON, allowing use of the connect/disconnect buttons described below. In battery powered mode, the unit will remain operational for 2 ½ minutes after the last activity. Note that the battery-save mode will not be initiated while you are connected in "USB Connected Mode".

Figure 1 Safety Disconnect Device with Cat. 2100

2.3 Operation

2.3.1 Using the SDD in "Stand Alone" mode

1	The left and right buttons located on the SDD are used to disconnect and connect service to the meter. This is a convenient tool that can be used to quickly make service adjustments to meters in the field without the use of a computer.
2	Once the device is programmed with the meter-type specific password, make sure the unit is powered up by pressing the middle black button above the USB port.
3	To open a **disconnect**, press the **left black** button. To **reconnect**, press the **right black** button. • Note: Some meters have timers that will not allow an opening of a disconnect for up to 3 minutes after powering up and will not allow a re-closure for up to 3 minutes after you've opened the disconnect. Therefore, multiple attempts may be required. • In addition, for some of the newer Aclara meters, the baud rate is set to a lower value than the other meters and it will take additional time to communicate to it.

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2.3.2 Using the SDD Security Feature

If the security feature is enabled (**refer to Chapter 3.2.3**), and a keypress sequence programmed in, the SDD cannot be operated after going into battery save mode until the user presses the programmed key sequence. The operation is as follows:

1	The middle button must first be pressed in order to re-energize the SDD.
2	Both of the LEDs on the back of the device will be red and the disconnect function will not be available.
3	To enable the disconnect function, press the programmed key sequence using the left and right **black buttons**. For example: Left-Right-Left-Left-Right
4	The SDD will return to secure mode when it goes into battery save mode.

2.3.3 Using the SDD in USB Connected Mode

1	The SDD works as a pass thru connection from your computer if you would like to control your meters disconnect using the SDD Field Tool Software (**refer to Chapter 3.0 Software**).
2	If you are using a Windows 7 (or greater) machine, simply plug a mini USB cable (included with your shipment) to the SDD and you will notice a serial port shows up in your device manager. Use this serial port in your SDD Field Tool Software. • Note: Windows versions earlier than Windows 7 will require our USB CDC driver (SDD Tool usb driver.zip)
3	The SDD can be used as a meter probe with any meter manufacturer's software when the setup is properly implemented. • For L&G, GE, and most Aclara meters, the default baud rate is correct and applicable. • For newer Aclara meters, the baud rate must be set to 2400 in this mode. To do this, make sure that no Serial Port is selected, and then choose "2400" from the Baud Rate pulldown menu. Then, select the correct Serial Port and continue normally.
4	The only change that may be required to use this device as a probe is when it is used with Landis+Gyr 1132Com software. That software institutes some timeouts in its communication that the SDD violates.
5	For it to work properly in this mode with Landis+Gyr software, simply open the connection window in 1132Com and then click on "Advanced" and select 9600 as the maximum baud rate. Then, proceed as you normally would.

8
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2.3.4 Using the SDD in Wireless Connected Mode (-WP Option Only)

1	The Wireless SDD (Catalog No. 1039-WP) works as a pass thru connection from your computer if you would like to control your meters disconnect using the SDD Field Tool Software (**refer to Chapter 3.0 Software**) or to communicate to the meter through the SDD acting as a probe using the meter manufacturers' software.
2	If you are using a Windows 7 (or greater) machine, simply plug the USB dongle (included with your shipment) into your computer and you will notice a serial port shows up in your device manager. Use this serial port in your SDD Field Tool Software. • Note: Windows versions earlier than Windows 7 may require our USB FTDI driver (SDD Tool usb wireless dongle driver.zip)
3	The wireless connection between the USB dongle and the SDD (1039-WP) is unique and set by addresses. The USB dongle will only communicate with one SDD and the SDD will only talk with one dongle. The addresses of the components and their pairs are listed on the sticker that is applied to the component.
4	Notes **3** through **5** from section 2.3.3 above apply to this version as well.

2.3.5 Battery

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1	The SDD has a 1Amp-hour Polymer Li-Ion battery in it. The battery is rechargeable through the USB port. It will take a maximum of 5 hours to charge if completely discharged.
2	The battery uses approximately 1mA-h per button press (1 close or 1 open), so it should last about 1000 operations before needing to be re-charged.

3.0   SOFTWARE

3.1 Introduction

This section describes the software field tool of the Safety Disconnect Device (SDD) and how to troubleshoot the Safety Disconnect Device using the SDD Field tool software.

3.2 SDD Field Tool Software

The SDD Field tool software is mainly used to pre-load the SDD with passwords for GE/Aclara, L+G, and Itron meters. In addition, the software gives the user the ability to upgrade the firmware on the SDD unit, and setup the security feature. The software also can read general manufacturer information from the meter and both set and read the stored serial number on each SDD for your inventory purposes. The software also allows the service to be disconnected and reconnected on the connected meter. See below for a screen shot of the SDD Field Tool:
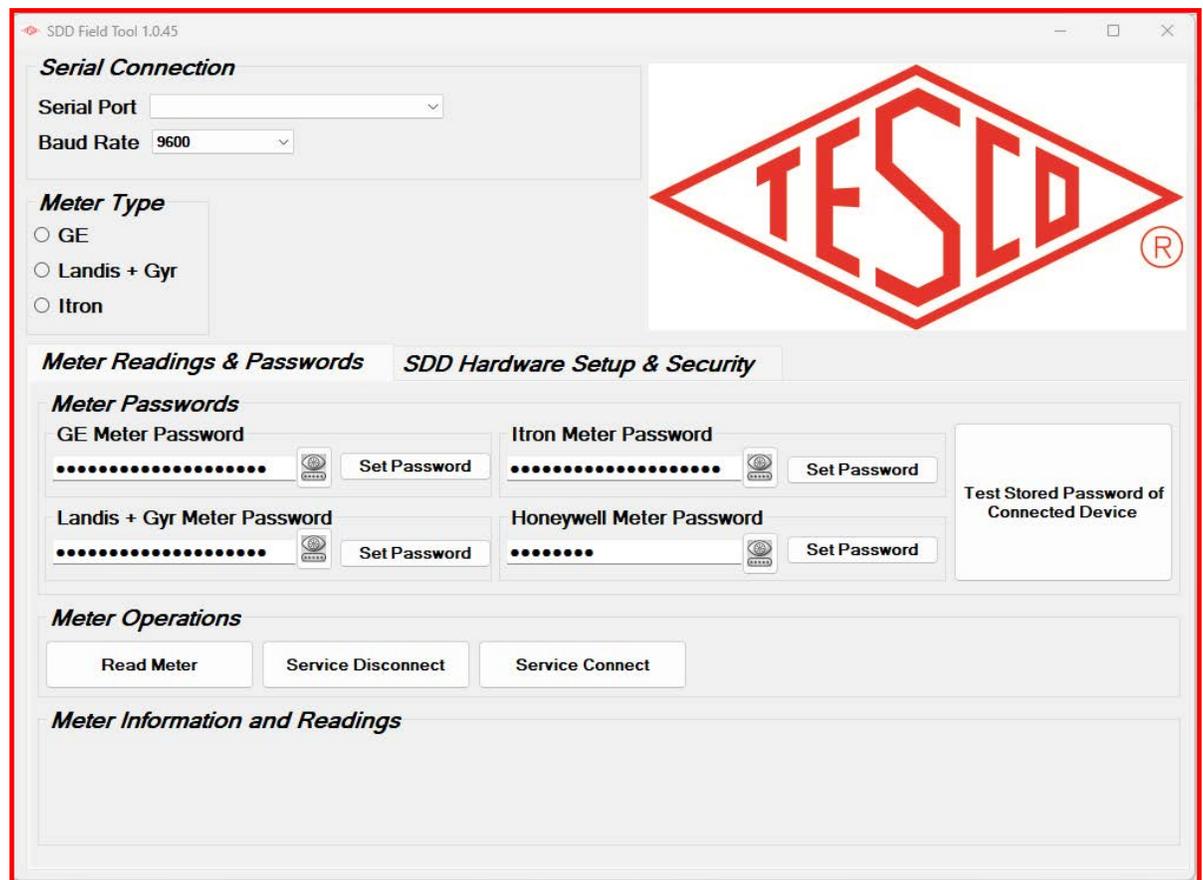
When the SDD Field Tool reads the meter, it automatically populates the "Meter Type" field and adjusts its communications protocols based on the connected meter type.

The "Set Password" field above is used to set a stored password for each of the meter manufacturers listed. Currently, there is only the ability to store one per manufacturer type. The SDD Field Tool saves these passwords for its own use in pass through mode. It also forwards these passwords o the SDD which is saved for "stand alone" mode.
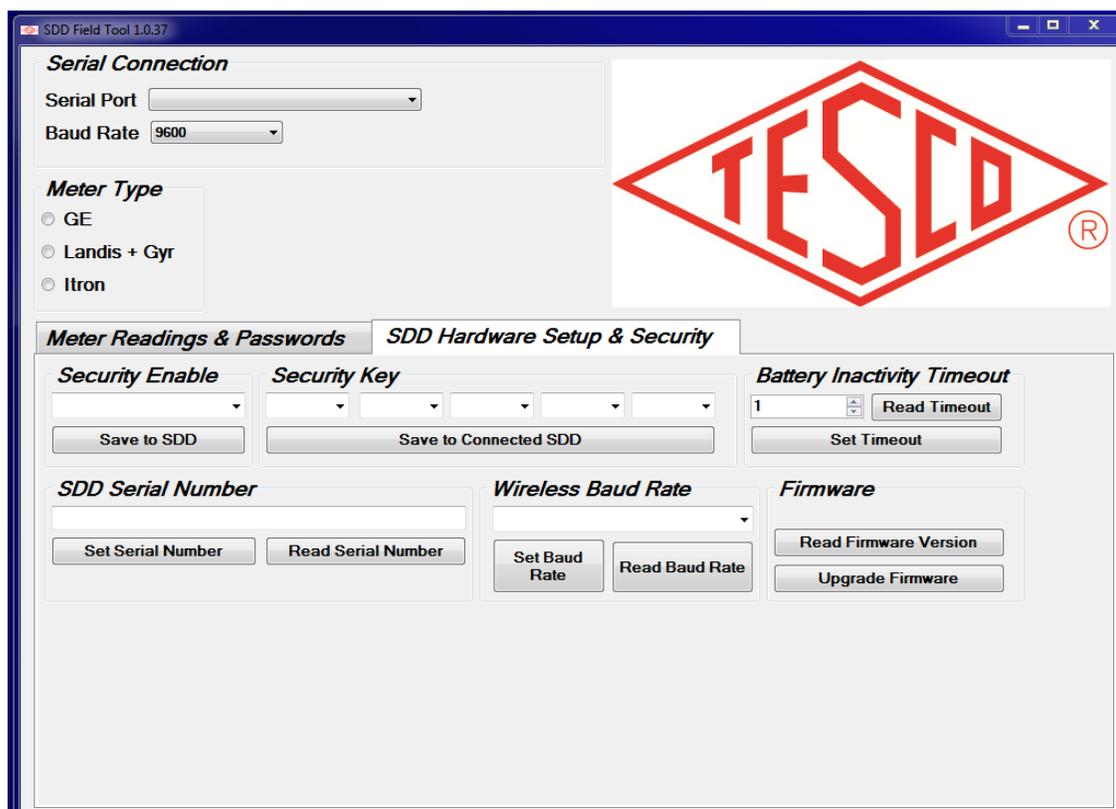
3.2.1   Using the Field Tool Software to Setup Passwords

1	Plug in the unit and note on your computer which serial port is used for the SDD. This can be done by right-clicking on the Computer icon on the desktop, then click "Manage", select "Device Manager", and select "Ports". The SDD is usually listed as "USB Serial Port". Record the "Com" number for this port.
2	Open the software and click on the Serial Connection pulldown menu and select the port from 1 above. Note that at any time if the SDD is unplugged from the computer with the software running, it is best to close the program, plug the SDD back into the computer and restart the application.
3	Click on the "Meter Readings & Passwords" Tab and in the password field for each meter brand, enter the passwords for the meters which you are programming the SDD.
4	GE default password is "ABABABABABABABABABAB".
5	L+G default password is "55555555555555555555".
6	To our knowledge, there is no default Itron password.
7	The software will save the last entered values for each of these fields so when you open the application, these fields will be populated. Note that this does not necessarily mean that the passwords are stored on the SDD. It is always safest to click on the "Set Password" buttons to confirm that the SDD has the latest passwords loaded on it.

3.2.2   Using the Field Tool Software to Confirm Passwords

1	With the SDD plugged into a computer using the Field Tool Software in USB connected mode, you can click on the "Test Stored Password on Connect Device" button to confirm that the password set in the software and on the SDD is correct for the meter being tested.
2	This will help determine what the problem is if the SDD is not opening or closing the disconnect. • This function is only available to the GE/Aclara and Itron meters. • Note: When using this function on some Aclara meters, the baud rate may have to be changed to 2400 (see "Using the SDD in USB Connected Mode"). L+G has disabled this function.

3.2.2.1   Using the Field Tool Software to Setup Security

!	**The settings in this section MUST be done without the SDD being mounted to a meter. Failure to do so may prevent the function from working properly.**
1	Plug in the unit and note on your computer which serial port is used for the SDD. This can be done by right-clicking on the Computer icon on the desktop, then click "Manage", select "Device Manager", and select "Ports". The SDD is usually listed as "USB Serial Port". Record the "Com" number for this port.
2	Open the software and click on the Serial Connection pulldown menu and select the port from 1 above. Note that at any time if the SDD is unplugged from the computer with the software running, it is best to close the program, plug the SDD back into the computer and restart the application.
3	Click on the "SDD Hardware Setup & Security" tab. If you desire the security feature to be enabled, click on the pull down menu under "Security Enable" and select "Enabled", otherwise, leave blank or select "Disabled". Click on "Save to SDD" to store your selection on the SDD.
4	If you've enabled the security, look under the "Security Key" heading at the 5 setup boxes. In each of the pull-downs, there is a selection of either right or left. Choose the 5 keypress options desired. Click on "Save to Connected SDD" to store your selection on the SDD.

3.2.3 Using the Field Tool Software to Assign or Read a Serial Number

The SDD has the ability to store an internal serial number that can be assigned to the unit by the customer. This serial number can also be retrieved at a later date.

!	**The settings in this section MUST be done without the SDD being mounted to a meter. Failure to do so may prevent the function from working properly.**
1	With the SDD plugged into a computer using the Field Tool Software in USB connected mode, enter any eight character alpha numeric into the "SDD Serial Number" field on your SDD.
2	To store the entered serial number, click on the "Set Serial Number" button.
3	To read a serial number already stored on the SDD, simply click on the "Read Serial Number" button.

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3.2.1 Using the Field Tool Software to Assign or Read the wireless baud rate

The SDD has the ability to change the wireless baud rate. At this time, this setting should stay at the default 9600 baud.

3.2.2 Using the Field Tool Software to Update SDD firmware

If a new firmware version is available for the SDD, TESCO will contact you so that the updated file can be transmitted or sent to you, based on your preferred method of transmittal. Typically, this can be done through email, DropBox transfer, or simply delivered to you on a thumb drive. Upon receiving the updated firmware file (will be named OVIE_RADIO.production <rev>.hex – where <rev> will be the latest revision number), you will need to store the file on a computer that is set up to run the Field Tool Software.

1	With the SDD plugged into a computer using the Field Tool Software in USB connected mode, click on the "Read Firmware Version" button to confirm the firmware version currently loaded on your SDD.
2	Once you've confirmed that the version you've been sent is newer than the version that is currently on the device, click the "Upgrade Firmware" button to begin the process.
3	This will open a navigation window to allow you to select the new firmware file. Click "Open" to select the file and start the process.
4	Once the process is completed, close the Field Tool Software, then restart it and connect to the SDD. Confirm that the software has been updated by clicking on the "Read Firmware Version" button.

3.2.3 Using the Field Tool Software to Set the Battery Inactivity Timeout

The SDD is programmed to go into a "sleep" mode after a certain time without activity. This mode is not enabled if the SDD is plugged into the USB.

!	**The settings in this section MUST be done without the SDD being mounted to a meter. Failure to do so may prevent the function from working properly.**
1	With the SDD plugged into a computer using the Field Tool Software in USB connected mode, click either on the up or down arrows, or type a number directly into the field under the "Battery Inactivity Timeout" heading.
2	To store the setting on the SDD, simply click on the "Set Timeout" button.
3	To read back an already stored timeout value, click on the "Read Timeout" button.
4	Note that the values entered are in minutes. The default setting is 2 minutes. The range of values is 1-1440 (24 hours) minutes.

3.3 Troubleshooting the SDD in conjunction with the Field Tool Software

The Field Tool software was developed to interface to the SDD and to setup the meter passwords in it. For the SDD to properly operate, the software must be able to communicate the password information to the SDD, which will then be used to communicate to the meter in order to interface to the disconnect circuit.

If the Field Tool software is unable to get this information to the SDD, it will not operate properly. In addition, the Field Tool software can be used to read information from the meter, check and update the firmware, and independently open and close the disconnect.

If there is a problem with the SDD working independently to cycle the disconnect, the problem is most likely in the setting of the password in the SDD. Typically, this problem is caused by an issue with the communications between the computer and the SDD.

The computer uses a combination of the Field Tool application and a standard Windows driver to communicate with the SDD. There are times where the serial connection can become disconnected through this software path, leading to unexpected results.

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In order to troubleshoot such problems, make sure that the PC can communicate to the SDD. This can be done simply by clicking on the "Read Firmware Version" button. Once clicked, the software returns the appropriate firmware version, which will be displayed above the button. If this does not show up, then there is a problem with the communication.

This should be quickly resolved by following this procedure:

1	Close the Field Tool application.
2	Unplug the USB cable from the computer, leaving the other end of the cable connected to the SDD.
3	Wait for 5 seconds.
4	Plug the USB cable back into the computer.
5	Reopen the Field Tool application.
6	Select the appropriate COM port.
7	Click on the "Read Firmware Version" button again, confirming that the correct version is reported on the screen.
8	Once this process shows that the communication to the SDD is working properly, the password setting, reading from the meter, and disconnect functions should also be working.