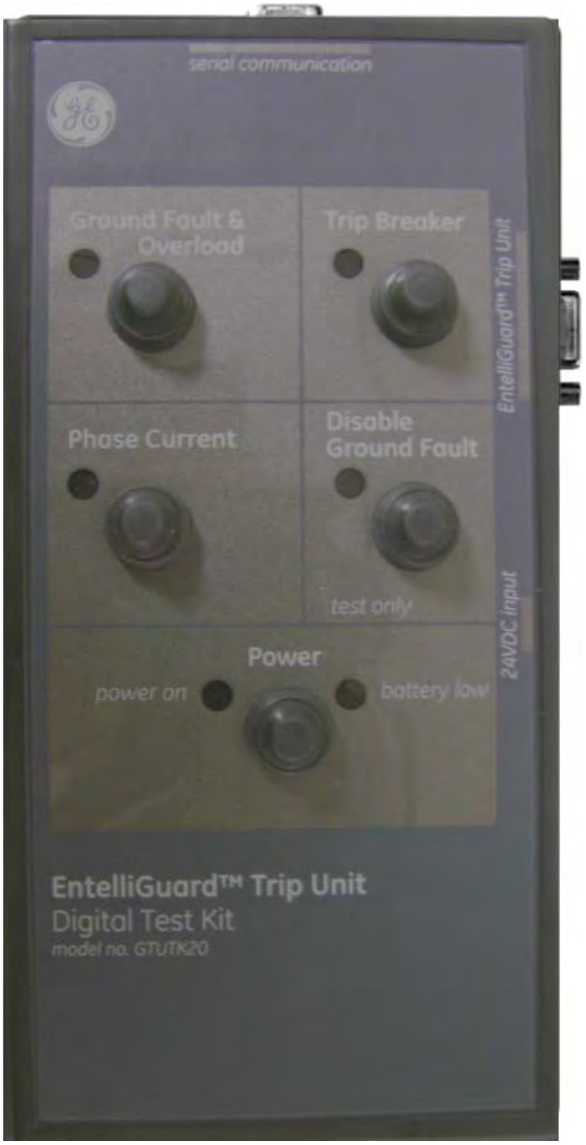
Industrial Solutions

DEH4568 User's Guide

EntelliGuard® Digital Test Kit



by ABB

DEH4568

WARNINGS, CAUTIONS, AND NOTES AS USED IN THIS PUBLICATION

WARNINGS

Warning notices are used in this publication to emphasize that hazardous voltage, currents, or other conditions that could cause personal injury are present in this equipment or may be associated with its use.

Warning notices are also used for situations in which inattention or lack of equipment knowledge could cause either personal injury or damage to equipment.

CAUTIONS

Caution notices are used for situations in which equipment might be damaged if care is not taken.

NOTES

Notes call attention to information that is especially significant to understanding and operating the equipment.

1-1 Description

EntelliGuard® TU Test Kit is a lightweight, portable test instrument designed for field-testing of EntelliGuard TU Trip Units. The Test Kit includes the following features:

- Operation from a 100-240VAC 50/60 Hz Universal plug supply or two 9-volt alkaline batteries (batteries not supplied).
- Provides power to the trip unit for viewing and setting set-points with no load on the breaker
- Verification of metering (phase simulation)
- Trip test
- Temporarily disable the Ground Fault feature during single phase breaker testing

1-2 Summary of Operation

The functions of the various switches and LEDs on the panel (see front cover) are as follows:

Power Switch

Pressing this button will power-up the trip unit. The green Power LED will indicate that power has been provided to the trip unit. A red Battery Low LED indicates that the batteries in the test kit should be replaced.

Trip Breaker Switch

Pressing this button will cause the breaker to trip. The switch has an associated red LED that indicates the state of the switch. If the LED is illuminated, then switch is ON and firing the flux shifter to trip the breaker.

Disable Ground Fault

Pressing this button will cause the trip unit GF protection to be temporarily disabled. To enable the GF, the switch and associated red LED must be turned off. The GF switch has an associated red LED that indicates the state of the switch (GF disabled when red LED illuminated).

WARNING: When using EntelliGuard Digital Test Kit to defeat Ground Fault function of EntelliGuard Trip Units, the ground fault protection of the trip unit will not be active. Power to the breaker should be removed prior to using this feature. Before applying load to the breaker, ensure that the Disable GF LED is OFF or the Test Kit is disconnected from the trip unit.

Failure to follow this procedure can result in deactivation of the Trip Unit GF protection.

Ground Fault & Overload

Pressing this button will cause a trip either on the Ground Fault or Overload protection. The switch has a red LED that is ON when the switch is pressed. This feature will store the trip event in the Event log and set off bell alarms.

CAUTION: With the Phase Current enabled, the Entelli-Guard trip unit will not provide correct protection to the system, which may result in a trip below desired levels. Power should be disconnected from the circuit breaker prior to entering Phase Current Mode.

Ensure that the Phase Current LED is OFF when in normal operation. Failure to follow this procedure can result in improper operation of the system

Phase Current

By pressing this switch, the EntelliGuard trip unit will display approximately 100A +/- 10A on each current phase. This can be viewed on the trip unit LCD under METER menu. The switch has a red LED that indicates the state of the switch (LED On when Switch is ON).

Ground Fault & Overload Operation:

In order to perform the Ground Fault test, Short Time and Instantaneous pickup must be set to 5X.

To perform an overload test Ground Fault should be disabled through the test kit.

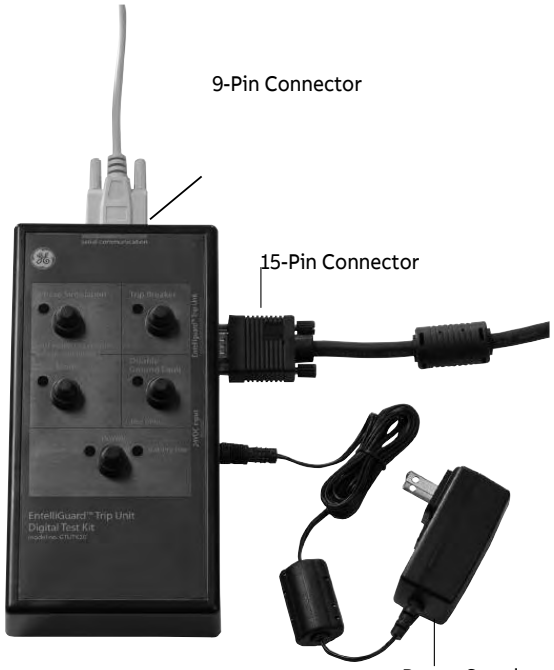


Figure 1. EntelliGuard Test Kit Connections

1.3 Specifications

The EntelliGuard Digital Test Kit Catalog Number is GTUTK20. It includes the following components:

- Test kit box
- 24VDC power supply – CUI Inc., Part Number EMS 240075- P5P-SZ or equivalent. Voltage polarity is as follows:

- Serial Communication Test Kit cable (6 ft DB9 (male)/DB9 (female) cable). This cable connects the Test Kit to a PC. Part number 45-0314 from GC Electronics or equivalent. Below is the connection diagram between the test kit and PC.

Test Kit DB-9		PC Comm port DB-9
2	----------	2
3	----------	3
5	----------	5

- EntelliGuard Trip Unit cable (6-ft. SVGA/VGA Monitor Extension Cable HD15M to HD15F). This cable connects the Test Kit to the EntelliGuard® Trip Unit. Part Number SPC20050 from SPC Technology or equivalent. Below is the connection diagram between the Test Kit and Trip Unit.

Test Kit HD15F		**Trip Unit HD15M**
1	----------	1
2	----------	2
3	----------	3
6	----------	6
7	----------	7
8	----------	8
9	----------	9
10	----------	10
11	----------	11

- Batteries – two 9V alkaline batteries.

1.4 Detailed Operation

Cables: The Test Kit is provided with a 15-pin trip unit cable that connects to the side (EntelliGuard trip unit port) of the test kit and to the front of the trip unit. This cable allows the test kit to power the trip unit and to apply signals for the test functions provided below.

In addition, the test kit is provided with a 9-pin cable that connects to the top (serial communication port) of the test kit to support Modbus communication. Modbus communication requires a computer, Modbus software and configuration to be used. See the EntelliGuard Trip Unit Manual (DEH4567) for Modbus register information. Contact your ABB Account Manager for availability of software specifically for use with the EntelliGuard Trip Unit.

Powering the trip unit: The test kit can be used to power the trip unit as follows:

- Connect the EntelliGuard Trip Unit cable to the trip unit.
- Press the Power button to power-on the trip unit.

The power ON LED will be lit. The trip unit can also be powered by external 24V that is wired to the secondary disconnect of the circuit breaker and is powered when sufficient current is flowing through the circuit breaker. The test kit can be used to power the trip unit in cases where current is flowing through the circuit breaker but the current is insufficient to power the trip unit. Applying power to the trip unit from the test kit while the trip unit is powered from another source will not damage the trip unit.

Trip Breaker Test: Pressing the Trip Breaker button signals the trip unit to trip the breaker by firing the flux shifter. This can be used to verify that the flux shifter is connected and installed properly and that the flux shifter trips the breaker mechanism. This test is performed by having the test kit connected and the breaker closed and then pushing the Trip Breaker button. The breaker will then open. No events will be stored in the event log and no bell alarm will fire.

If trip unit fails to trip the breaker in this test, remove the breaker from service and refer the trip unit and breaker to an authorized ABB service representative.

Ground Fault Disable: This feature should only be used when testing the breaker with the breaker disconnected from the source (upstream breaker or switch open or breaker racked out). This test is used when performing primary injection testing of overcurrent or short circuit protection features on 1 phase of the circuit breaker. This single-phase current will appear as a ground fault to the trip unit due to the phase unbalance (only 1 phase current applied). The ground fault disable feature will allow this testing to occur without the unit tripping on ground fault. Pressing the Disable Ground Fault button signals the trip unit to temporarily disable the GF protection.

WARNING: When using the EntelliGuard Digital Test Kit to defeat the Ground Fault function of EntelliGuard Trip Units the ground fault protection of the trip unit will not be active. Power to the breaker should be removed prior to using this feature. Before applying load to the breaker, ensure that the Disable GF LED is OFF or the Test Kit is disconnected from the trip unit.

Failure to follow this procedure can result in deactivation of the Trip Unit GF protection.

Phase Current: This feature should only be used when testing the breaker with the breaker disconnected from the source (upstream breaker or switch open or breaker racked out). The phase current button is used to apply a fixed voltage to the sensing circuitry for each phase. This will test the measurement circuitry of the trip unit. If the unit is working properly then 100A ± 10A will appear for each phase on the trip unit METER display.

CAUTION: With the Phase Current enabled, the EntelliGuard trip unit will not provide correct protection to the system, which may result in a trip below desired levels. Power should be off from the circuit breaker prior to entering Phase Current mode. Ensure that the Phase Current LED is OFF when in normal operation.

Failure to follow this procedure can result in improper operation of the system.

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