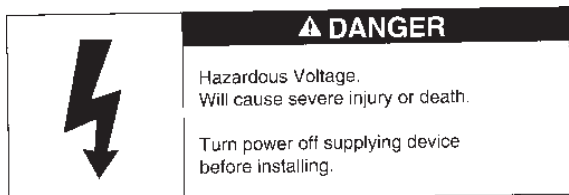
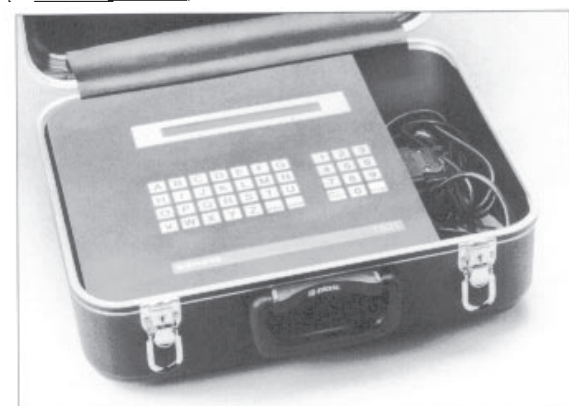


## Accessory - Universal Test Kit (TS-31 )



### ⚠ Safety Instructions



### Universal Test Kit

The TS-31 is used to test the operation of the fault protection functions of the Type SB Electronic Trip Unit. It has been designed to be user friendly. The user is prompted by the TS-31, in a step-by-step format, as to the required input information and test instruction. The test results are visually displayed to the user.

**NOTE:** Utilize individual instructions supplied with Test Kit for Type SB Encased Circuit Breaker testing.

**CAUTION:** Before conducting a "Trip" test on a circuit breaker which is "Closed" and in service, caution should be taken to evaluate effects on downstream loads. The breaker will open during testing, resulting in a disruption of service and possible erroneous readings might occur due to the effect of a systems load.

### Operating Instructions

A. Remove electrical loads from circuit breaker.

B. Plug the TS-31 test set into a grounded 120 VAC receptacle and turn it on. You will be greeted by the identifying turn-on message:

Siemens Energy & Automation, Inc.  
TS-31 Test Set. Press ENTER to continue

C. Select the appropriate ribbon cable assembly and connect it between the TS-31 and the circuit breaker, making sure of alignment and polarity. After pressing ENTER, the TS-31 will prompt:

Enter Catalog Number

D. Type in the catalog number and then press the ENTER key. The catalog number can be found on the nameplate of the circuit breaker. The TS-31 will respond with:

Searching Catalog . . .  
Searching Family Series . . .

If an invalid catalog number has been entered, the TS-31 will respond with:

Catalog Number xxxxxx  
Not Found. Press Enter to Continue

and you will be asked to enter another catalog number.

E. If valid catalog number has been entered, the TS-31 will prompt for the Breaker switch settings. The TS-31 will respond with:

Enter continuous current setting in %

Enter instantaneous pickup setting.

Enter long time delay in seconds.

For breakers with short time functions you may be asked one of the following:

Enter short time Pickup.

Select Short Time Delay: 1-Fixed 2-1<sup>st</sup>

Enter short time delay in seconds

Enter 1<sup>st</sup> delay in seconds.

For breakers with ground fault you will be asked:

Enter ground fault pickup setting in %

Enter ground fault delay in seconds

In each case, enter your breaker's switch settings. For example if your breaker is set for a continuous current of 70%, type 70 and then press enter. Entry of erroneous data in the above steps will result in false tests and results.

F. After entering the breaker switch setting you must select the test you wish to perform. The TS-31 will request:

Enter test to perform; see instructions.

Type in one of the following letters depending upon the test you wish to perform:

"L" - Long time or overload test,

"S" - Short time test,

"I" - Instantaneous test.

"G" - Ground fault test,

"C" - Current transformer continuity test,

G. The TS-31 will report the type of test you selected and give you a chance to abort the test. For example, if "I" was pressed above. The TS-31 will display:

Instantaneous Test  
Press ENTER to continue or A to abort

If you pressed the letter "A" to abort, you will be asked again:

## Accessory - Universal Test Kit (TS-31 )

- H. If you press ENTER, you will be prompted for the phase to test: The TS-31 will display:

Enter phase to test.

Enter one of the following letters:

"A" - Phase A or left pole.  
 "B" - Phase B or center pole.  
 "C" - Phase C or right pole.

- I. Press Enter again to start the test. Press any other key to STOP the test. Once a test has been started, the TS-31 will respond with:

Testing .

Be careful at this time. Any key press will abort the test.

CAUTION: Handling of the test cable, the breaker, or the trip unit at this time can cause electric shock which may result in injury and/or death.

- J. The test may take anywhere from a fraction of a second to minutes to complete, depending on which procedure was run. If the test passes, the display will show the following, depending on whether the breaker tripped or not.

Passed Test xxx.xx seconds  
 Press ENTER to continue.

If the circuit breaker tripped during the test, RESET the circuit breaker before continuing.

- K. The TS-31 will prompt for the next instructions. The display will show:

Change: 1 - Test 2 - Catalog 3 - Settings

Enter one of the following numbers:

"1" - Select a new test  
 "2" - Enter a new catalog number  
 "3" - Enter new switch settings

If you enter "1" you will be sent to step F. Choosing a "2" will send the program back to step C and entering a "3" will route program control back to step E. Entering "3" which sends you back to step E, will be slightly different the second time through. On the second line after the prompt for the setting, a number or text in angle brackets will appear. This will indicate the last setting you entered. If you DON'T wish to change a setting, just press ENTER. If you DO wish to change a setting, type in the new setting and press ENTER.

- L. If you pressed "C" when asked

Enter test to perform; see instructions

you will first be prompted by,

Current Transformer Test  
 Press ENTER to continue or A to abort,

and then by the phase to test. One of the following messages will then appear depending on the test results:

CT Resistance Test. Phase X Passed  
 Press ENTER to exit test and continue

CT Resistance Test. Phase X Failed  
 Press ENTER to exit test and continue

CT Resistance Test. Phase X Open  
 Press ENTER to exit test and continue

CT Resistance Test. Phase X Short  
 Press ENTER to exit test and continue

The "Phase X Failed" message indicates that the CT resistance is neither open nor shorted, but is not within design tolerance.

- M. There are additional ERROR messages which may appear on the display during this operation which were not covered previously:

Test Not Running! Check test cable connection  
 Press ENTER to continue.

The test set has sensed that current is not flowing properly in the breaker under test and that there is either an open or short circuit between the TS-31 and the breaker trip unit.

Function Not Available  
 Press ENTER to continue

You will get this error message if you enter a choice that is not available, such as entering "G" in step F for ground fault test on a catalog number that does not have ground fault.

Inconclusive Test, check settings  
 Press ENTER to continue or A to abort

- NOTE: This warning will appear if you attempt to run a short time test with the instantaneous pickup set equal to or below the short time pickup. It would also appear if you tried to run a long time test with short time pickup set to 2. This is only a warning: the test can still be run. However, passing or failing the test may not be conclusive.

Invalid Input  
 Press Enter to continue

- NOTE: This message will appear if you enter a setting value that does not exist. For example, a Type SB Electronic Trip Unit has continuous current settings of 50, 60, 65, 70, 75, 80, 85, 90, 95, and 100 percent. If you enter any other value than those listed, the above message will appear.

Test exceeds capability of TS-31  
 Press ENTER to continue

- NOTE: This message is not likely to occur. If it does, it means that a test requires more current to run than the TS-31 can produce.

Unit too hot! please wait

- NOTE: Running many successive high-current long time tests may over-heat the test set. It will protect itself from damage by preventing further tests until it has had a chance to cool down. The display will indicate when testing can resume.

## Ordering Information

**Electronic Trip Unit 800A Frame Size**

Catalog Number	Frame Ampere Rating	Continuous Current Setting	Long Time Delay	Short Time Pickup/Delay	Instantaneous Pickup	Ground Fault Pickup/Delay
SB04TLI	400	x	x		x	
SB04TLS	400	x	x	x		
SB04TLSI	400	x	x	x	x	
SB04TLIG	400	x	x		x	x
SB04TLSG	400	x	x	x		x
SB04TLSIG	400	x	x	x	x	x
SB08TLI	800	x	x		x	
SB08TLS	800	x	x	x		
SB08TLSI	800	x	x	x	x	
SB08TLIG	800	x	x		x	x
SB08TLSG	800	x	x	x		x
SB08TLSIG	800	x	x	x	x	x

**Electronic Trip Unit 2000A Frame Size**

Catalog Number	Frame Ampere Rating	Continuous Current Setting	Long Time Delay	Short Time Pickup/Delay	Instantaneous Pickup	Ground Fault Pickup/Delay
SB12TLI	1200	x	x		x	
SB12TLS	1200	x	x	x		
SB12TLSI	1200	x	x	x	x	
SB12TLIG	1200	x	x		x	x
SB12TLSG	1200	x	x	x		x
SB12TLSIG	1200	x	x	x	x	x
SB16TLI	1600	x	x		x	
SB16TLS	1600	x	x	x		
SB16TLSI	1600	x	x	x	x	
SB16TLIG	1600	x	x		x	x
SB16TLSG	1600	x	x	x		x
SB16TLSIG	1600	x	x	x	x	x
SB20TLI	2000	x	x		x	
SB20TLS	2000	x	x	x		
SB20TLSI	2000	x	x	x	x	
SB20TLIG	2000	x	x		x	x
SB20TLSG	2000	x	x	x		x
SB20TLSIG	2000	x	x	x	x	x

**Electronic Trip Unit 4000A Frame Size**

Catalog Number	Frame Ampere Rating	Continuous Current Setting	Long Time Delay	Short Time Pickup/Delay	Instantaneous Pickup	Ground Fault Pickup/Delay
SB25TLI	2500	x	x		x	
SB25TLS	2500	x	x	x		
SB25TLSI	2500	x	x	x	x	
SB25TLIG	2500	x	x		x	x
SB25TLSG	2500	x	x	x		x
SB25TLSIG	2500	x	x	x	x	x
SB32TLI	3200	x	x		x	
SB32TLS	3200	x	x	x		
SB32TLSI	3200	x	x	x	x	
SB32TLIG	3200	x	x		x	x
SB32TLSG	3200	x	x	x		x
SB32TLSIG	3200	x	x	x	x	x
SB40TLI	4000	x	x		x	
SB40TLS	4000	x	x	x		
SB40TLSI	4000	x	x	x	x	
SB40TLIG	4000	x	x		x	x
SB40TLSG	4000	x	x	x		x
SB40TLSIG	4000	x	x	x	x	x

## Ordering Information

### Rating Plugs 400A Frame Ampere Rating

Catalog Number	Plug Rating
04SB200	200
04SB225	225
04SB250	250
04SB300	300
04SB350	350
04SB400	400

### Rating Plugs 800A Frame Ampere Rating

Catalog Number	Plug Rating
08SB400	400
08SB450	450
08SB500	500
08SB600	600
08SB700	700
08SB800	800

### Rating Plugs 1200A Frame Ampere Rating

Catalog Number	Plug Rating
12SB600	600
12SB700	700
12SB800	800
12SB1000	1000
12SB1200	1200

### Rating Plugs 1600A Frame Ampere Rating

Catalog Number	Plug Rating
16SB800	800
16SB1000	1000
16SB1200	1200
16SB1600	1600

### Rating Plugs 2000A Frame Ampere Rating

Catalog Number	Plug Rating
20SB1000	1000
20SB1200	1200
20SB1600	1600
20SB2000	2000

### Rating Plugs 2500A Frame Ampere Rating

Catalog Number	Plug Rating
25SB1600	1600
25SB2000	2000
25SB2500	2500

### Rating Plugs 3200A Frame Ampere Rating

Catalog Number	Plug Rating
32SB1600	1600
32SB2000	2000
32SB2500	2500
32SB3000	3000
32SB3200	3200

### Rating Plugs 4000A Frame Ampere Rating

Catalog Number	Plug Rating
40SB2000	2000
40SB2500	2500
40SB3000	3000
40SB3200	3200
40SB4000	4000

### Other Items

Item	Catalog Number
Universal Test Set	TS-31
Auxiliary Power Module	SBAPM
Display Module	SBDM

### Neutral Transformers

Frame Ampere Rating	Catalog Number
400	N04SB
800	N08SB
1200	N12SB
1600	N16SB
2000	N20SB
2500	N25SB
3200	N32SB
4000	N40SB

## UL Listings and File Numbers

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Trip Unit & Breaker	E9896
Accessories	E57501
Drawout	E135453
CSA	LR57039

# SIEMENS

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