



## Type UCTB Functional Test Box

Effective: July 1989  
NEW INFORMATION

### CAUTION

It is recommended that the user of this equipment become acquainted with the information in this instruction leaflet before energizing the relay. Failure to do so may result in injury to personnel or damage to the equipment, and may affect the equipment warranty.

### 1. APPLICATION

The UCTB is a portable test box used to functionally test phase comparison systems such as LCB II or SPCU - 1 based systems. The UCTB can be rack mounted in a system cabinet or transported and stood on the floor at the base of a system under test. A test harness that is supplied with the UCTB mates with Westinghouse type FT-1 switches to facilitate test connections.

The test box provides a single switchable current source to apply phase A, B, C, or ground faults in the forward or reverse direction. This current source is derived from single phase to ground 120 Vac, 60 Hz. station service. A complete functional back to back system test can be performed using the UCTB in conjunction with voice communication.

Refer to the appropriate systems' instruction leaflets for details on functionally testing with the UCTB.

### 2. CONSTRUCTION

The test box contains an isolating step down transformer, loading resistor, FT-1 switch to accept the test

harness, a fault applicator rotary switch and a fault selector rotary switch. An 8 foot test harness terminated with FT-1 style plugs is included with the UCTB. Figure 1 shows the outline and dimensions of the test box.

A set of brackets is available to mount the test box in a standard 19" rack using 3 rack units (5.25 inches) of space. When mounting the test box in a system, 2 latches on the front panel will lock the unit into the auxiliary brackets. Two handles, also on the front panel, allow the unit to be easily removed from the system and carried to another location. Rubber feet on the rear panel of the UCTB allow standing the unit in an upright position on the floor. There are no tools, hardware, or wiring required to use the test box.

### 3. OPERATION

Refer to the systems test schematic, Figure 2, which includes the internal schematic of the UCTB.

The UCTB is a single phase voltage to current source capable of reversing polarity for the functional test of phase comparison systems. All inputs and outputs run through the test harness and the FT-1 switch on the front panel. The test transformer has a 115 to 12 volt (AC) ratio and dual secondary coils. A single phase voltage is applied to terminals 1 and 19 of the FT-1 switch and the primary of the test transformer is energized through either the forward or reverse contacts of the fault applicator switch. The fault applicator switch has an "OFF" position. In the "OFF" position no voltage is applied to the test transformer, however the white indicating lamp will remain on, indicating there is voltage supplied to the test box.

*All possible contingencies which may arise during installation, operation or maintenance, and all details and variations of this equipment do not purport to be covered by these instructions. If further information is desired by purchaser regarding this particular installation, operation or maintenance of this equipment, the local ABB representative should be contacted.*

The transformer secondary dual coils are wired in parallel. Two variable resistors in series with the secondary coils and output terminals act as current limiting resistors and allow a limited range of adjustment in the current output level.

The fault selector switch determines which one of the four pairs of output terminals (phases A,B,C, or ground) the current will go through.

The fault applicator switch applies power to the test transformer in either the "FWD" or "REV" positions. The switch simply flips the input voltage to the primary, shifting the current output 180 degrees from its' previous position.

**NOTE: WHEN PERFORMING TWO STATION BACK-TO-BACK FUNCTIONAL TESTS, INPUT VOLTAGE TO THE TEST BOXES AT BOTH ENDS MUST BE IN PHASE TO PROVIDE A COMMON REFERENCE FOR THE TEST.**

**4. CHARACTERISTICS**

Input voltage: 115 Vac

A C Burden: 175 VA

Dimensions: (see figure 1)

Weight: 23.5 lbs.

**5. ACCEPTANCE CHECK**

The current output of the UCTB is pre-set at the factory, however an acceptance check can be performed to verify the correct adjustment upon receipt. The only equipment required is an AC ammeter with a 15 to 20 amp range, and a single phase 120 Vac source. The procedure is as follows:

1. Remove the FT-1 cover and open all switch blades.
2. Set the "Fault Applicator" switch to "A" and the "Fault Selector" switch to "OFF".
3. Connect the 120 Vac source to the FT-1 switch positions A and J on the inside terminal (opposite the blade). Connect the AC ammeter to FT-1 positions "B" and "C" also on the inside terminal opposite the blade.

4. Energize the power source and note the white indicating lamp has come on. Turn the fault applicator switch to both "FWD" and "REV" positions. Current through the ammeter should read approximately 13 amps in both positions.

5. Turn fault applicator to the "OFF" position and move the ammeter to terminals D and E. Turn the fault selector switch to "B" and repeat step 4 to verify current.

6. Repeat test for fault selector position "C" with ammeter on F and G and fault selector position "G" with ammeter on H and I.

This completes the UCTB acceptance test.

**6. RENEWAL PARTS**

Repair work can be done most satisfactorily at the factory. However, interchangeable parts can be furnished to customers who are equipped for doing repair work. When ordering replacement parts, always give the complete description and style number of part.

**PARTS LIST**

Test Transformer	5925A98H01
Resistor 6 175W	5926A03H01
Fault Selector Switch	5937A62G01
Fault Applicator Switch	5937A63G01
Varistor	3509A31H04
FT-1 Switch	3501A86G02
Lamp Housing	837A632H03
Lamp 120V	837A632H07
Lens White	837A632H05
Resistor 2.7K	184A856H17
Test Plug	1164046
Harness	1441C67G01

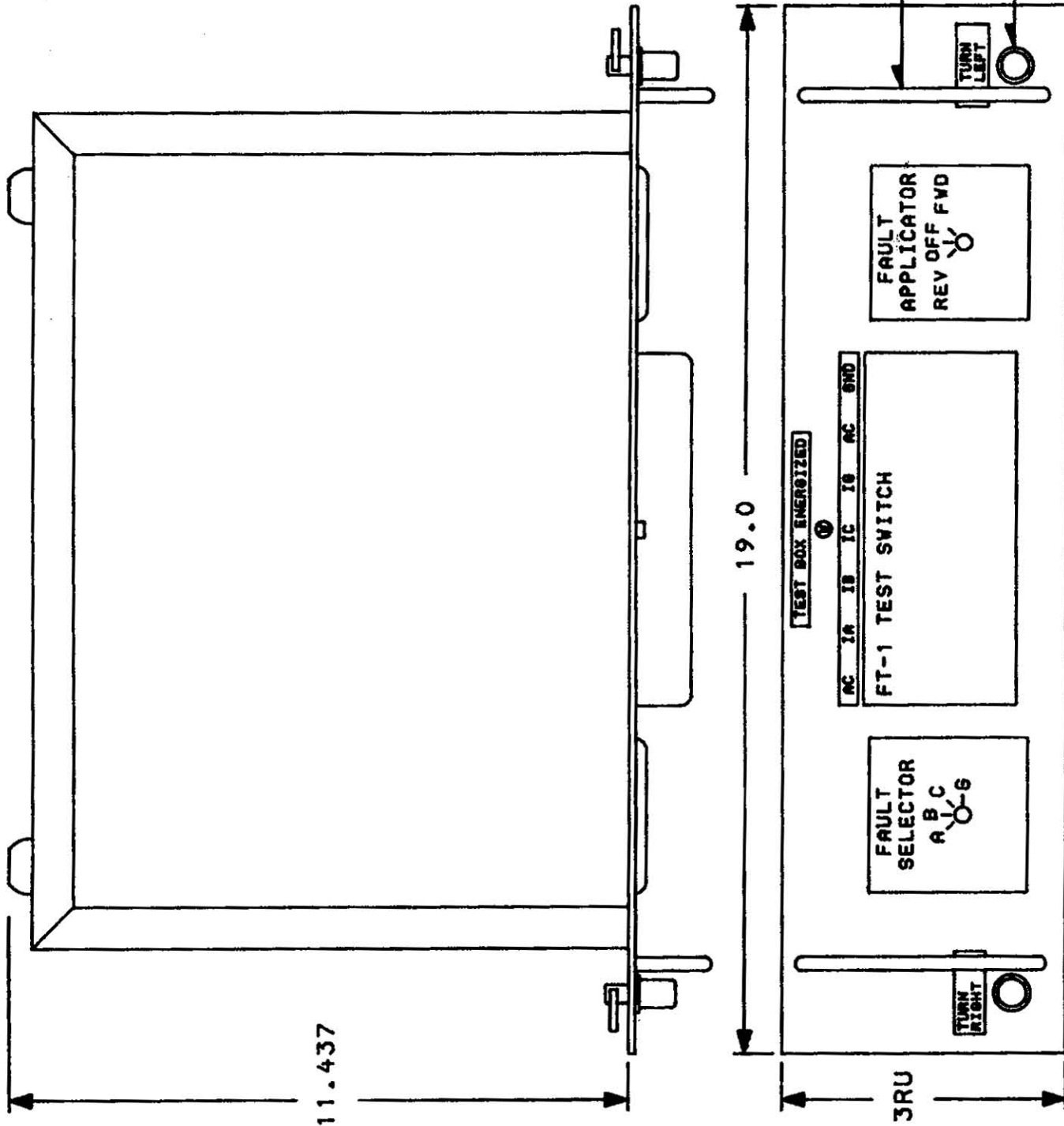
**Single Pole Trip Model**

Resistor 50 Ohms 5W	185A209H06
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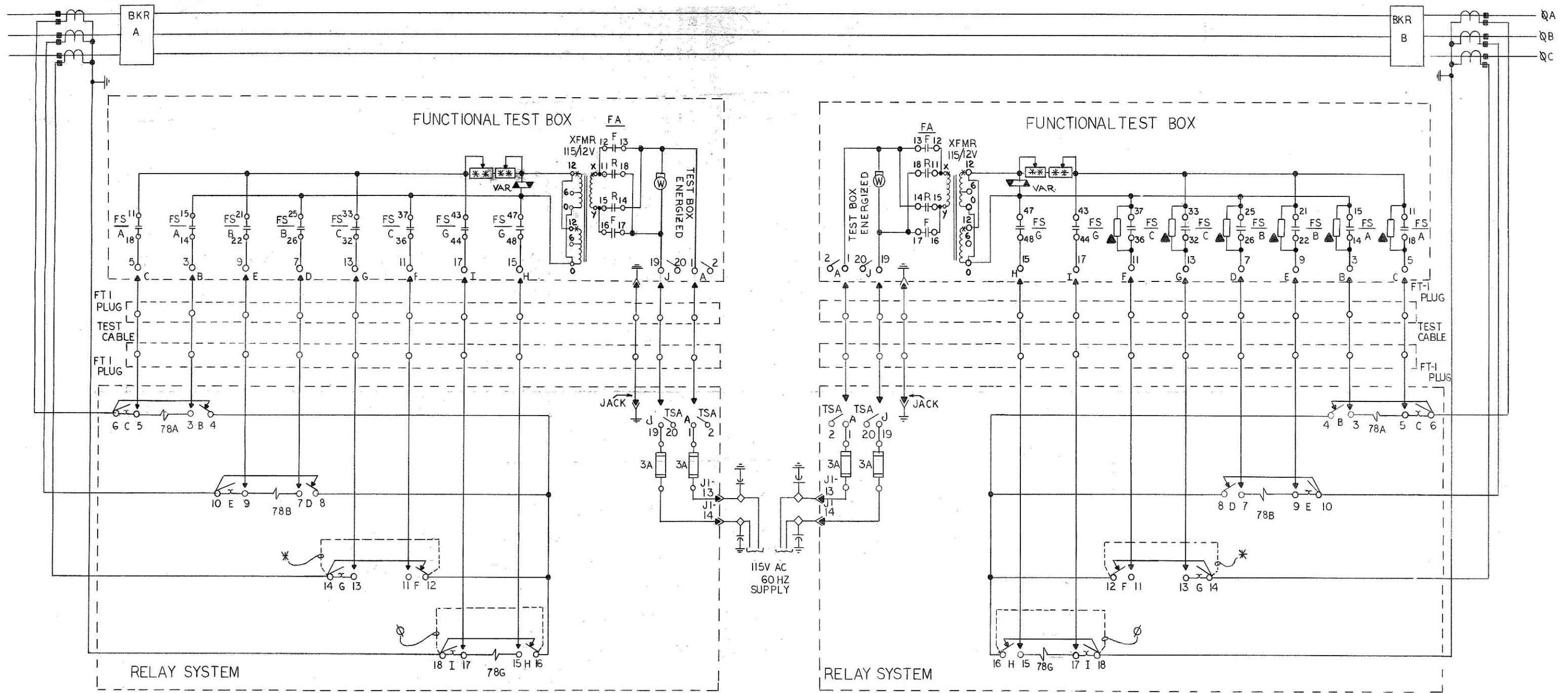
**1 Amp Model**

Resistor 3 Ohms 175W	5926A03H02
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3520A69 - SUB 4



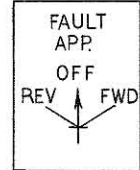
UCTB - PORTABLE TEST BOX UNIT - S# 1337D24G02



STATION A

STATION B

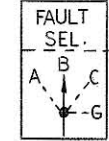
STAYPUT SWITCH



FA

DECK	CONT	POSITION		
		REV	OFF	FWD
I	18-11	X		
	11-12		X	
	12-13			X
	14-15	X		
	15-16		X	
	16-17			X
	17-18			

STAYPUT SWITCH



FS

DECK	CONT	POSITION			
		A	B	C	G
I	18-11	X			
	11-12		X		
	12-13			X	
	13-14				X
	14-15	X			
	15-16		X		
	16-17			X	
	17-18				X

DECKS 2-4  
SAME AS 1

NOTES

- \* ADD JUMPER ON DELTA/GROUND SYSTEM
- ∅ ADD JUMPER ON A, B, C, SYSTEM
- \*\* USE 0.6Ω RESISTOR FOR S# 1337D 24-G02 & G04 (5A. C/TS)
- USE 3.0Ω RESISTOR FOR S# 1337D 24-G03 (1A. C/TS)
- ▲ 50Ω 5WATT RESISTOR FOR S# 1337D 24-G04 ONLY (5A. C/TS) I.P. TRIP (SPCU-1A)



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IL 40-250 - Revision A