

etc.12 S-series
Direct Programmer Replacement for
Siemens Static Trip I, II and III trip units
Section 1 Installation Manual



Intentionally Blank

CONTENTS

	Introduction	4
1.0	Required Tools	5
2.0	Reference Material	5
3.0	Installation	5
4.0	Setup and Settings	7

Introduction:

The Satin American *etc-12 / etd* trip system can be used to replace various OEM trip units while utilizing current sensors and flux trip devices that are already on the circuit breaker. This manual provides instructions for individuals with circuit breaker maintenance experience to use the *etc-12* to replace *Siemens / Allis Static Trip, Static Trip II and Static Trip III* devices.

Each kit is supplied with all of the necessary materials to upgrade a circuit breaker equipped with one of the above OEM trip units.

The *etc-12* trip unit is supplied with all protective functions. Unneeded protection bands can be shut off. The *etc-12* is compatible with residual-sensing ground fault for 3 and 4 wire applications. This trip unit cannot be utilized in applications where ground-strap or zero sequence CT's are used.

In the special instance when ground fault protection is being added on a 4-wire system, an additional neutral sensor, copper details and secondary disconnects may be required. Contact the factory before beginning a conversion of such a system

Installation requires familiarity with circuit breaker operation and maintenance, careful workmanship and compliance with instructions. Conversion requires removal of the original trip unit, installation of the new trip device and minor rewiring. In the event that any of the original components are defective, Satin American can provide compatible replacements. Qualified individuals can usually accomplish the upgrade in less than an hour.

IMPORTANT!!

RETROFITTED BREAKERS MUST BE PERFORMANCE TESTED BEFORE BEING RETURNED TO SERVICE. PRIMARY INJECTION TESTING IS STRONGLY RECOMMENDED. REFER TO THE *TESTING* SECTION IN THE *SECTION II* MANUAL FOR DETAILED INSTRUCTIONS.

WARNING!!

TO PREVENT ELECTRICAL SHOCK OR INJURY, DISCONNECT THE BREAKER FROM ALL PRIMARY AND SECONDARY POWER SOURCES AND CONFIRM THAT THE BREAKER IS OPEN AND THE CHARGING SPRINGS ARE DISCHARGED BEFORE THE DOING ANY WORK.

REFER TO NFPA-70E FOR COMPREHENSIVE ELECTRICAL SAFETY GUIDELINES.

1.0 Required Tools:

1.1. As each installation situation is unique, it is advised that a complete set of tools is available. The below list details the absolute minimum complement of tools required to complete this task.

- Socket set – 3/8” drive
- Open end wrench set
- Assorted screwdrivers
- Assorted Pliers.
- Abrasive hand pad (Scotch-Brite 7447 or equiv.)
- Electric drill.
- Drill bit set.
- Tap set and tap handle.
- Crimping tools
- 9 volt battery

2.0 Reference Material:

2.1. Manufacturers Circuit Breaker Maintenance Manual

2.2. etc-12 Section II Programmer Instruction Manual

IMPORTANT!!

BEFORE PROCEEDING, VERIFY THAT THE BREAKER IS OPEN AND CHARGING SPRINGS ARE DISCHARGED

3.0 Installation:

3.1. Verify that the proper kit was supplied and thoroughly inspect it for damage or missing components. Refer to the bill of materials on the last page.

3.2. Read and understand these instructions before beginning the retrofit.

3.3. Place the breaker on a solid bench in a clean work area were there is sufficient access to all sides of the breaker.

3.4. Perform a detailed mechanical inspection of the breaker. At a minimum, verify that the breaker opens and closes properly. Any mechanical problems should be fixed prior to beginning the retrofit. Normal maintenance can be performed prior to or during kit installation.

3.5. Remove and existing solid state tripping device. Before discarding this unit, be sure to make note of settings.

3.6. Connect new wiring harness to existing current sensors. The *etc-12/etd Section II Manual* contains a detailed wiring diagram. Route wire away from moving parts and avoid sharp edges. Secure the wire harness with the included cable ties and adhesive tie-down blocks.

3.7. Using the provided butt connectors, connect harness to the existing flux trip actuator per table 1, below.

Table 1, Flux Trip Connections	
Existing Flux	etc Wiring Harness
Black	White
Red	Black
Blue	Not Used

3.8. Attach the new etc. programmer to the mounting bracket using the two (2) #10-32 TPI lock nuts. See figure 1.

(1) #6-32 TPI Pan Head Screw



FIGURE 1, PROGRAMMER MOUNTING BRACKET INSTALLED ON BREAKER

3.9. Connect the wire harness into the *etc-12* programmer. Be sure that the harness is fully inserted so that it snaps into place. The *etd* display can either be nested to the *etc-12* or mounted externally. Refer to the *Section II* manual for further details.

Note:

On some retrofit kits, the harness connector cover supplied with the wire harness plug will not fit between the programmer and the breaker due to limited space. If this condition exists, remove and discard the black harness connector cover from the wire harness plug. This cover is not a wire harness support and is for cosmetic purposes only.

3.10. Verify that all hardware is tightened per the specifications of table 2.

Bolt	Torque (ft/lb)
¼-20	5
5/16-18	12
3/8-16	20
½-13	50

4.0 Setup and Settings

Warning!

This retrofit kit was not designed to increase the current rating of the air circuit breaker. Do not operate the breaker above the manufacturer's maximum ampere rating. Failure to adhere to this warning will result in damage to, failure of, or shortened life expectancy of your air circuit breaker.

4.1. Trip settings must be determined by a qualified engineer who has performed a comprehensive study on the distribution system where the breaker is to be used. The

etc-12 Section II manual provides detailed instructions entering these settings into the *etc-12*

4.2. Table 3 lists the current sensor secondary current rating for the current sensors originally supplied with various original trip units. In order to ensure proper protection and prevent nuisance tripping, it is important that this information be properly entered into the *etc-12* during set-up. Note that the screens for selecting the CT secondary rating are not available unless the trip unit is connected to its wiring harness.

Original Trip Unit	CT Secondary Rating
Allis-Chalmers <i>Static Overcurrent Trip Device</i>	1 A
Siemens – <i>Allis Static Trip II</i>	1 A
Siemens <i>Static Trip III</i>	500 mA

4.3. Table 4 provides a cross-reference of the alpha-numeric pickup values for the *Static Trip* and *Static Trip II* trip units to the closest available pickups on the *etc-12*.

<i>Siemens / Allis Static Trip and Static Trip II</i> Long Time Pickup	<i>etc-12</i> Pickup (Percent of Current Sensor Tap Value)
A	50
B	65
C	75
D	90
E	100
F	110
G	Closest available is 110

4.4. Table 5 provides a cross-reference of long-time delays that are available on the *Siemens / Allis Static Trip II*.

Table 5, LTD Cross-Reference	
Siemens / Allis Static Trip and Static Trip II Long Time Delay	Closest available etc-12) delay (time to trip at 6L)
1	1.0 sec
2	2.5 sec
3	4.5 sec
4	9.0 sec
5	18.0 sec
6	30.0 sec

5.0 Testing

5.1. Conduct a full performance test of the trip unit and breaker. Primary injection is strongly recommended for newly retrofitted breakers. Refer to the *etc-12 Section II* manual for detailed test procedures and specifications.

NOTE: The *Static Overcurrent Trip Devider*, *Static Trip II*, and *Static Trip III* are products that are / were manufactured by the *Allis Chalmers / Siemens-Allis* and *Siemens* Corporations.

The *etc-12 / etd* and the *pts/pts* adaptor are after-market upgrades manufactured by the *Satin American Corporation*. No formal relationship exists between *Satin American* and the *Allis Chalmers / Siemens-Allis* and *Siemens* Corporations.

Bill of Materials

Item	Description	Quantity
1.	etc.12 Trip Unit	1
2.	etd Display	1
3.	High Temperature Black Tie Wraps	9 to 12
4.	etc Programmer Mounting Bracket	1
5.	Adhesive Tie-Downs (1" Square)	4
6.	Section 1 & 2 Instruction Manual	1
7.	1-AMP etc-12 harness 199-0101	
8	Hardware Bag	1

Item	Hardware	Quantity	Use	Bag Color
8.1	6-34 x ¼" Pan Head Screw	1	Programmer mount	Yellow
8.2	#10-32 TPI NYLON INSERT, REGULAR OPEN END, STOPNUT, CRS, ZN, CLR	2	Programmer mount	Yellow
8.3	#10 Flat Washer, CRS, ZN, CLR	2	Programmer mount	Yellow

Intentionally Blank