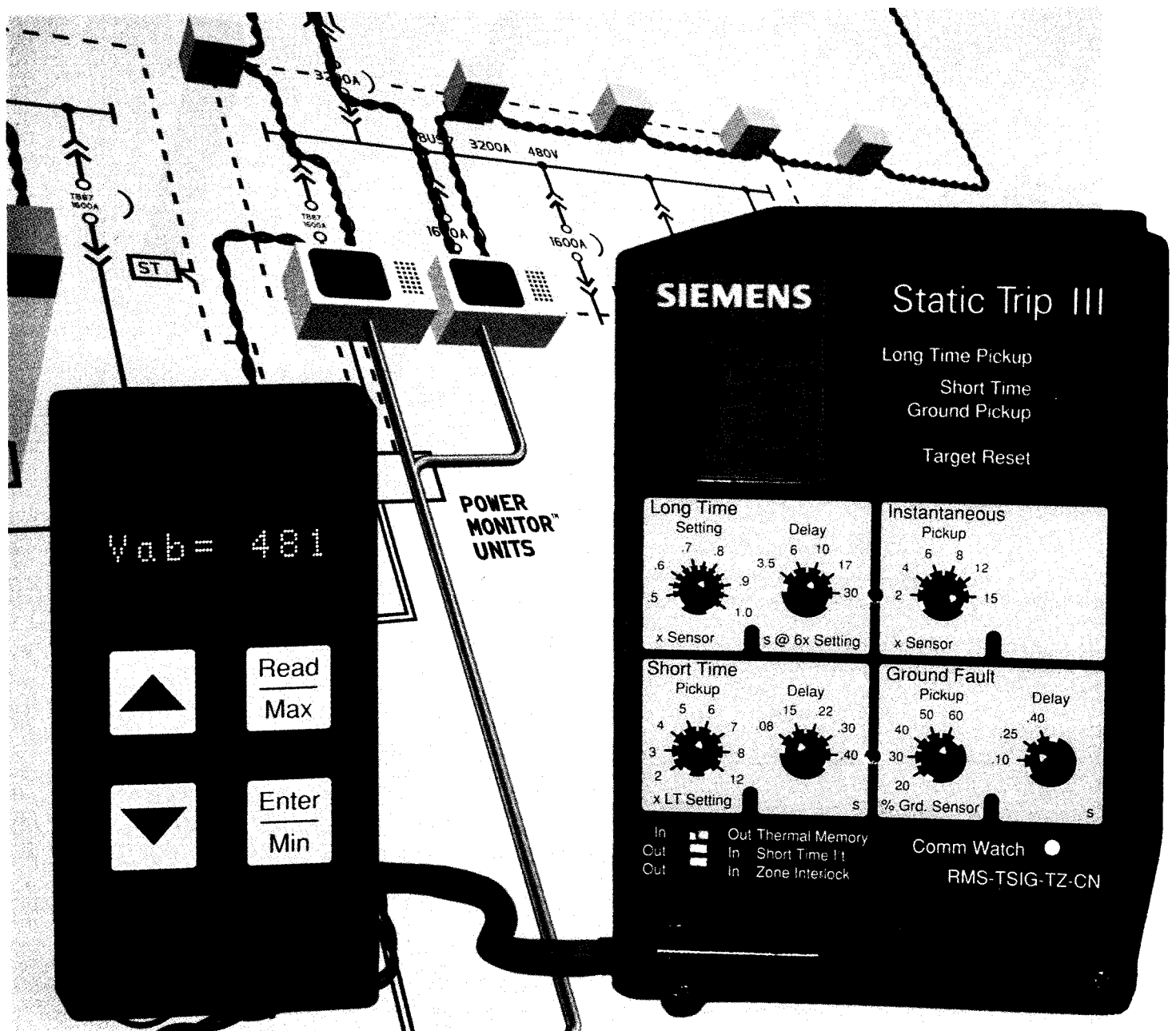


**SIEMENS**

Microprocessor-based Tripping System

# Static Trip III



# The Static Trip III Advantage

Finally, there's a sensible approach to power system management. Now you can monitor, evaluate and control your power distribution system — circuit by circuit — with the new generation of Static Trip III trip units from Siemens.

Siemens has harnessed the power of sophisticated microprocessors to create a new family of "smart" trip units. Trip units that not only provide overcurrent protection, but also comprehensive metering and extended protective relaying. And to top it all off, these intelligent trip units can communicate all this information to displays at the breaker or at remote locations.

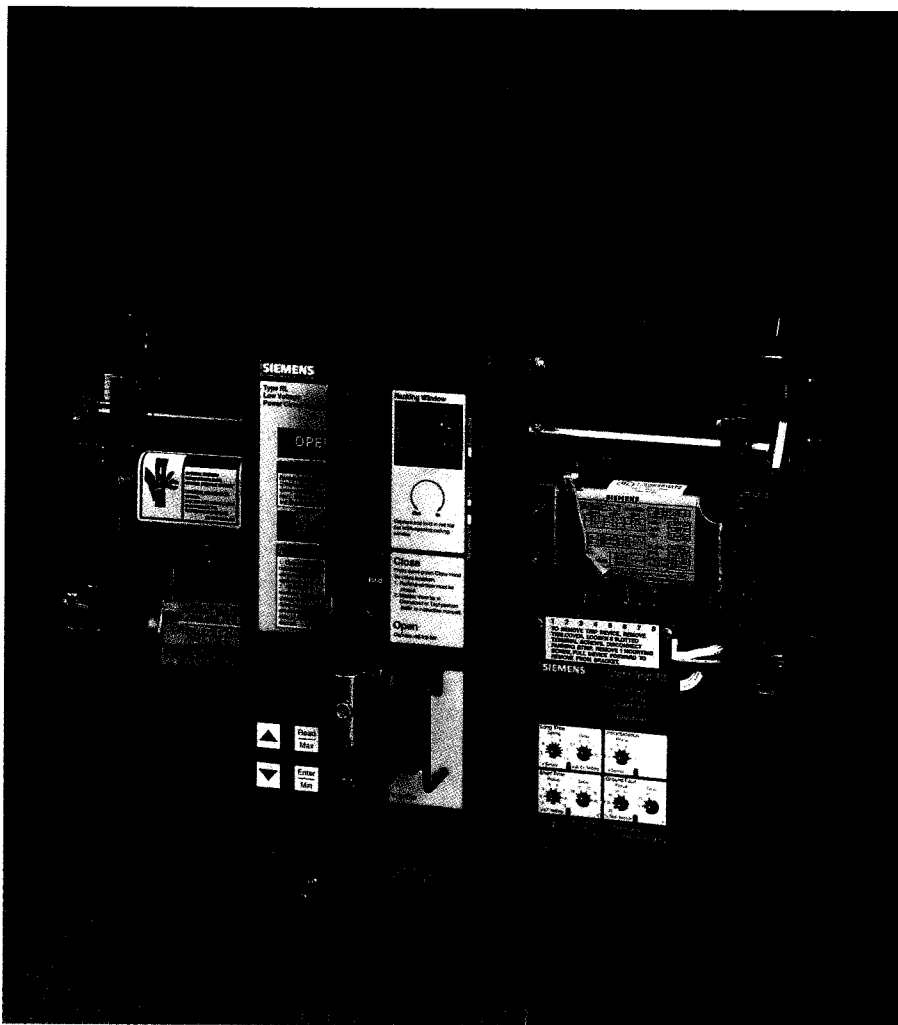
Now you can know, not guess, exact power conditions circuit by circuit. Now your trip unit can alert you to changing load conditions and log specific actions to help keep your power system on-line. You tell it in straightforward engineering language what you want it to do. And your Static Trip III trip unit does it.

Nowhere else will you find such a complete range of protection and control, or the unparalleled flexibility for new and retrofit applications, in a single package. Only Siemens gives you the freedom to specify basic overcurrent protection or a completely integrated power monitoring and communications module from one family of trip units. Only Siemens has the Static Trip III Advantage.

## Versatility Simplifies Application

The Static Trip III Advantage starts with a family of four basic models that covers a full range of applications. Simply pick the options to meet your specific requirements.

- Static Trip III versions provide basic overcurrent protective functions.
- Static Trip IIIC models add communications and current metering.
- Static Trip IIICP units add full power metering.
- Static Trip IIICPX devices include extended protective relaying.



## RMS Sensing Eliminates Nuisance Trips

As more and more non-linear loads are coming on line, industry is being plagued by harmonics-induced nuisance trips. Static Trip III trip units use RMS current sensing to properly include the impact of harmonics and keep your facility up and running.

## Interchangeability Means Low Cost Flexibility

Static Trip III trip units are interchangeable on any frame rating of Siemens type RL low voltage power circuit breakers. With Static Trip III units, you need fewer spares and stocking of fragile rating plugs is eliminated. You get maximum application

flexibility with minimum investment.

## Intelligence Is Power

You need to know what's happening on critical circuits. Static Trip III trip units capture the real-time, worst case and diagnostic data you need to effectively manage your electrical power system. Static Trip III trip units can meter current, voltage, power and energy consumption so you can allocate cost and reduce utility bills. They can remember minimum and maximum values for each measured parameter to help you manage loads and avoid unnecessary tripping.

### Communication Reduces Footwork

Static Trip III trip units can communicate valuable real-time, historical and status information to wherever you need it. Review data at the breaker on the Breaker Display Unit, or tie into a facility-wide ACCESS™ communication system to remotely monitor and control your entire electrical distribution system 24 hours a day. Get all the latest facts without time-wasting footwork.

### Logic Triggers Action

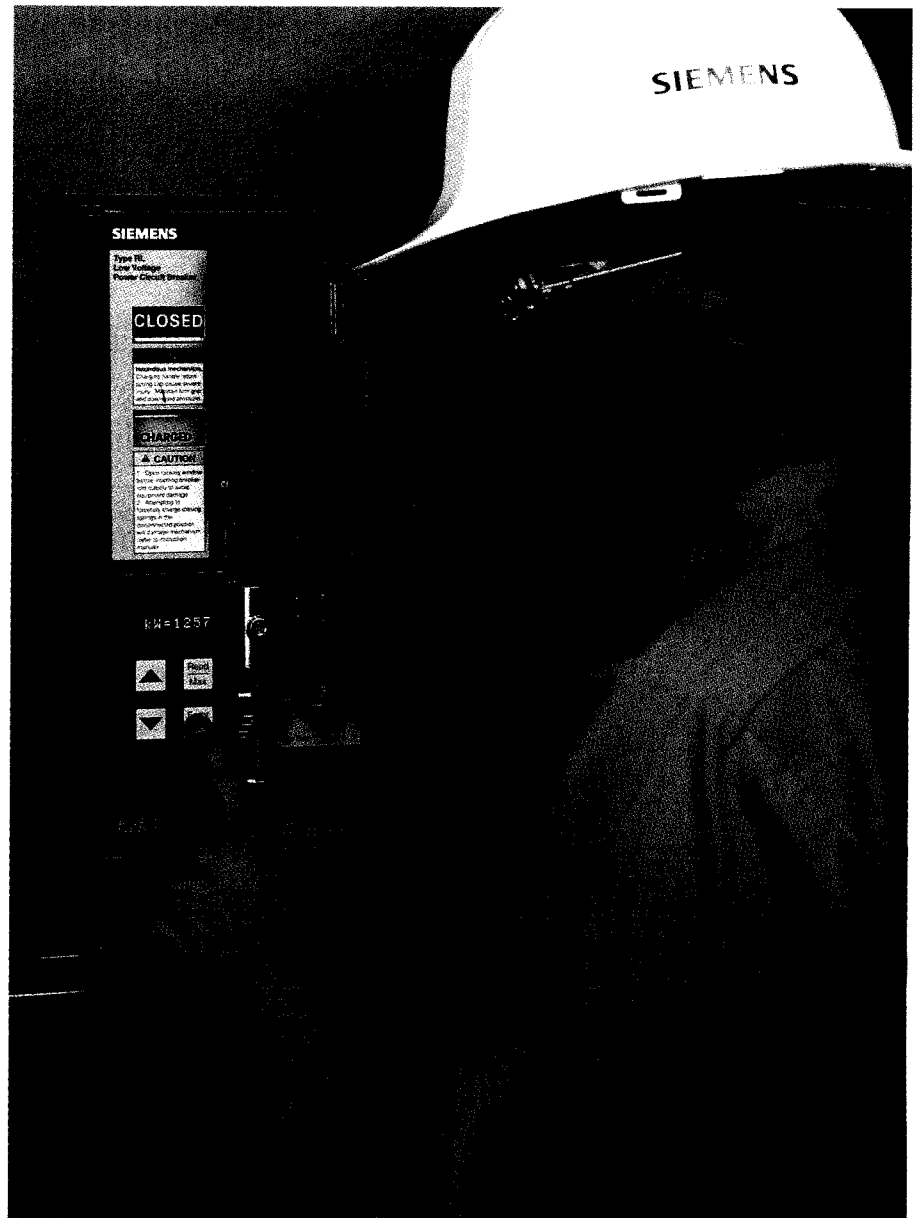
Static Trip III trip units can provide alarm and protective relaying functions beyond basic overcurrent protection. Trip or alarm operation can be activated by setpoints for measured parameters, such as reverse power for mains, current unbalance for motors or under-frequency for generators.

### Components Deliver Reliable Protection

Siemens has gone the extra mile to assure reliable protection for your equipment and personnel. Switches use gold-plated contacts. Printed circuit boards are conformal coated. Each unit is burned-in. Microprocessor-based overcurrent protection circuits are already time-proven worldwide in thousands of applications.

### Shadow Curve Provides Redundant Protection

A unique "shadow" time-current function in communicating models provides backup overcurrent tripping. In the unlikely event the primary microprocessor fails, your people and equipment are still protected.



### Rugged Design Withstands Tough Environments

Static Trip III trip units stand up to tough industrial environments. The tripping system is hardened to withstand electromagnetic interference, arcing in the switchgear, radio frequency interference or voltage surges in the primary or control wiring. All units withstand surge and fast transient tests specified in ANSI C37.90. Five hundred volts galvanic isolation exists between the communication bus and the trip unit's electronics so inadvertent contact with other equipment wiring will not compromise protection. And, of course, Static Trip III trip units are UL listed.

### Specify Static Trip III Trip Units

Only Static Trip III trip units from Siemens give you the broad application flexibility necessary to control and manage the electrical distribution systems of tomorrow — complete interchangeability of trip units among breaker frame sizes, RMS sensing, accurate metering, electronic relaying and digital communications.

Specify Static Trip III trip units for new and retrofit applications. And put the Siemens Advantage to work for you and your clients.

# Protection For The 21st Century

The basic overcurrent protective features of all Static Trip III tripping systems are designed to meet demanding requirements of today's and tomorrow's electrical power systems. As more and more harmonics-producing equipment comes on line, your need for Static Trip III devices will only increase.

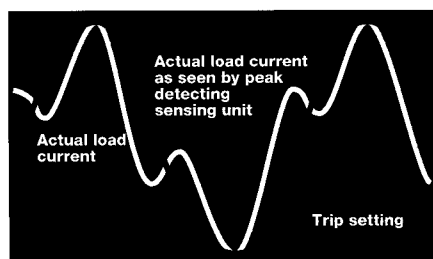
## RMS Sensing For True Current Measurement

Every Static Trip III trip unit features RMS current sensing so you get accurate protection, not overprotection or underprotection. RMS sensing measures the true heating value of the current wave including harmonic distortion and provides more accurate protection than peak-sensing trip units. Nuisance tripping and inadequate thermal protection are eliminated.

## Simple, Convenient User Interface

Static Trip III trip units are designed for straightforward operation. The front panel groups functions together with descriptive labeling to make proper settings a snap. Settings may be secured with a clear plastic face plate.

A liquid crystal display (LCD) clearly indicates the cause of tripping: OVERLOAD, SHORT CIRCUIT or GROUND FAULT. A separate watchdog circuit monitors the protective microprocessor and the word DISABLED is displayed in the unlikely event a program execution error is detected.



Harmonics distort the wave shape of current and can increase its peak value. Normal peak-sensing units are often confused and may trip, causing nuisance shut-downs, or may fail to trip, causing damage to the electrical plant.

## Reliable Self-Powered Operation

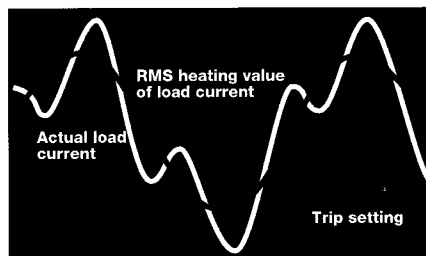
Overcurrent tripping uses energy from the fault current itself to power the Static Trip III device and release a flux shifting actuator to mechanically trip the circuit breaker. No external power source is required for overload, short circuit or ground fault protection on any Static Trip III system. Even the LCD targets require no batteries so valuable information won't be inadvertently lost.

## Long Time For Thermal Protection

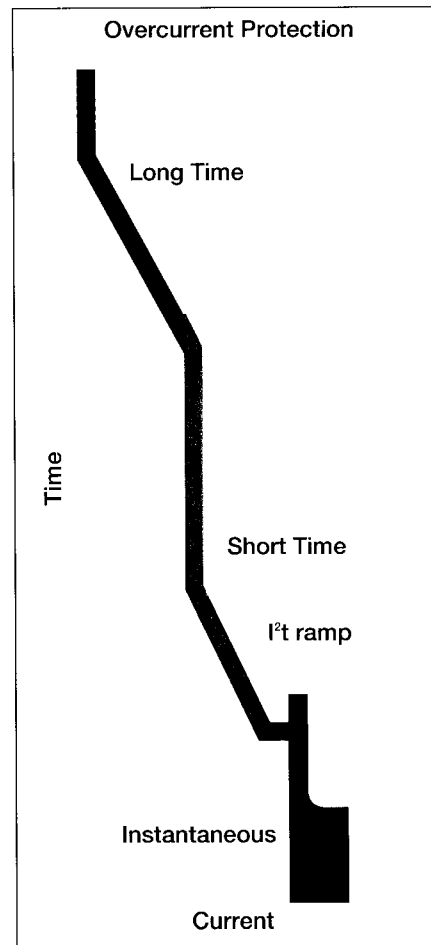
All Static Trip III trip units include adjustable long time setting and delay for overload protection. Eleven adjustable continuous current settings from 0.5 to 1.0 times the current sensor rating allow the circuit breaker to operate without tripping. Cumbersome rating plugs are not required.

Five time delay bands allow a wide range of adjustment for circuit breaker tripping in response to sustained overload conditions. Settings are labeled in seconds delay at six times the long time current setting for easy coordination and are referenced to the minimum of their time bands.

Switchable thermal memory is provided as standard. It remembers the heating effects of intermittent overloads and gives an added level of protection.



Siemens RMS sensing samples the entire current wave shape and calculates the effective heating value of the current. RMS sensing properly evaluates distortion on the line, provides accurate load protection and avoids unnecessary trips.



## Short Time For Selective Coordination

Short time pickup and delay can be specified to provide maximum flexibility in selectively coordinated systems. Short time pickup may be set at 2 to 12 times the long time setting. This method automatically coordinates long time and short time settings and allows minimum short time pickup at all long time settings for low available fault applications such as emergency generators.

Short time delay may be set on any of five bands from .08 to .40 seconds to allow time-selective coordination with other devices at high short circuit current levels. A "Short Time I²t" switch replaces the square knee of the pickup and delay curve with a ramp function to provide closer coordination with thermal magnetic breakers and fuses.

## Instantaneous Tripping For Maximum Short Circuits

Fault currents exceeding the instantaneous pickup setting will trip the circuit breaker without intentional time delay. Instantaneous tripping minimizes equipment damage and allows application of feeder breakers at their full interrupting capabilities. The pickup adjustment is from 2 to 15 times the

LCD target provides clear readouts without batteries.

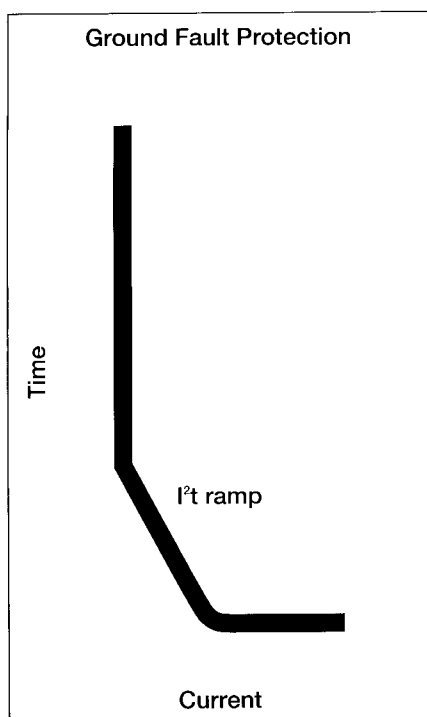
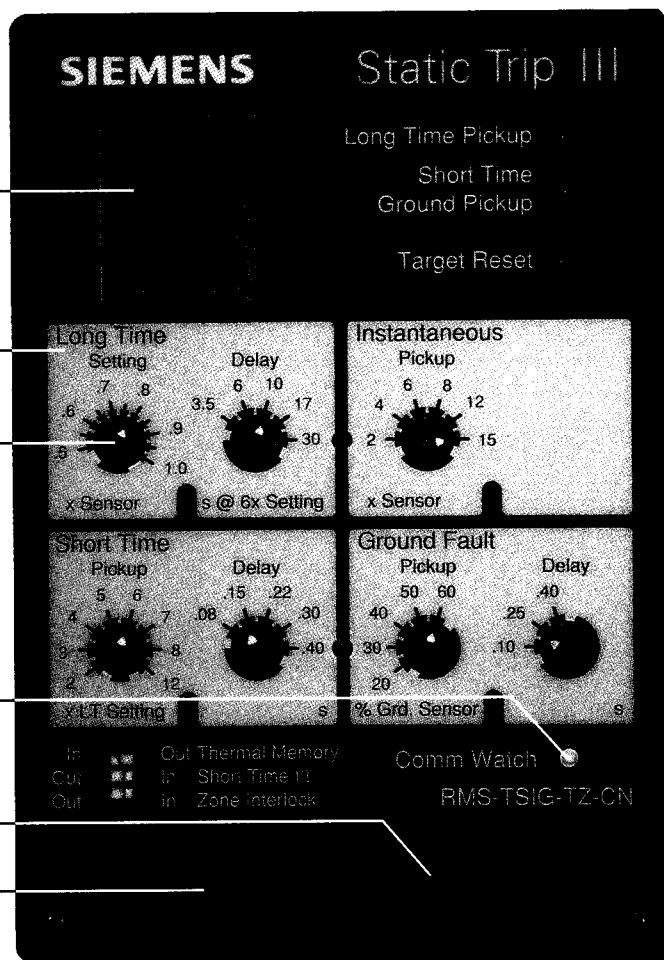
Trip functions are grouped to make adjustments easy.

Sealed binary coded switches use gold plated contacts for reliable settings.

A dual-function LED confirms proper operation of communicating versions.

All trip units with short time or ground fault can be wired into zone interlocking systems.

Communicating models provide a port for convenient local data readout.



current sensor rating for all circuit breaker frame sizes, providing complete interchangeability. Referencing pickup to the current sensor also provides the maximum useable range between continuous current and instantaneous pickup settings to allow for high efficiency motor inrush currents.

### Unique Ground Fault Sensing Meets NEC

Static Trip III trip units can be specified with integral ground fault protection to meet a variety of power system requirements including three or four wire residual sensing as well as single current sensor direct or zero sequence measurement. Ground fault pickup settings are from 20% to 60% of the "ground sensor" rating which is easily defined for any of these ground fault schemes. For residual sensing, the ground sensor rating equals the current sensor rating through 2000A. A separate integral 2000A ground sensor winding is offered for 3200A and 4000A sensors so the maximum ground fault pickup is limited to 1200A (2000A X 60%) in compliance with the NEC Article 230-95 for service entrance application. This unique method gives you complete trip unit interchangeability between breaker

frames to reduce the need for costly spares and provide maximum flexibility.

Three time delay bands with fixed  $I^2t$  ramp are provided for coordinated tripping between devices. A memory function protects against intermittent arcing faults.

### Zone Interlocking Minimizes Equipment Damage

Zone interlocking for both short time and ground fault functions provides the quickest opening times while maintaining selectivity. Interlocked trip units share information about a fault's location and direct the circuit breaker closest to the fault to trip at minimum time delay. Zone interlocking capability is standard on all Static Trip III devices with short time or ground fault. Additional wiring using separate isolating couplers and expanders is required for zone interlocking system operation. Siemens Sentron™ series molded case circuit breakers with Sensitrip® III trip units can also be tied in for the maximum flexibility in designing your power system. A Zone Interlock IN/OUT switch allows trip units to remain completely interchangeable with non-interlocked systems.

# Accurate Metering with Versatile Communications

Static Trip IIIC/CP trip units are provided with two powerful microprocessors: one for basic self-powered overcurrent protection; the second for metering and communications capability. The Static Trip IIIC version meters and communicates phase currents; the CP version meters and communicates currents, voltages, power and energy information. Neutral and ground current metering is available on both models.

## Eliminate Costly Traditional Metering

Static Trip IIIC/CP trip units eliminate the need for traditional, space-wasting analog metering systems and provide all the advantages of state-of-the-art digital technology. The same high quality toroidal current sensors used for protection are used to meter currents. For the Static Trip IIICP models, voltages are input from specially designed PT modules. Additional instrument compartment space and associated wiring are not required. And because all elements have been designed to work as one integrated

system, the resulting accuracy is comparable with separate traditional analog instrumentation. RMS sensing is used to account for harmonics and allow correct correlation with protective settings.

The powerful metering capability of Static Trip IIICP trip units breaks the barriers of traditional instrumentation to give you valuable information about how your system is really operating. Minimum and maximum values for each measured parameter are stored in nonvolatile memory to capture changing load conditions. Kilowatt hours are integrated separately for reverse power flow so you can adjust for utility billing and document periodic emergency generator operation. And kilowatt demand periods are programmable to align with utility billing methods.

## Display Data At The Breaker Or Remote Location

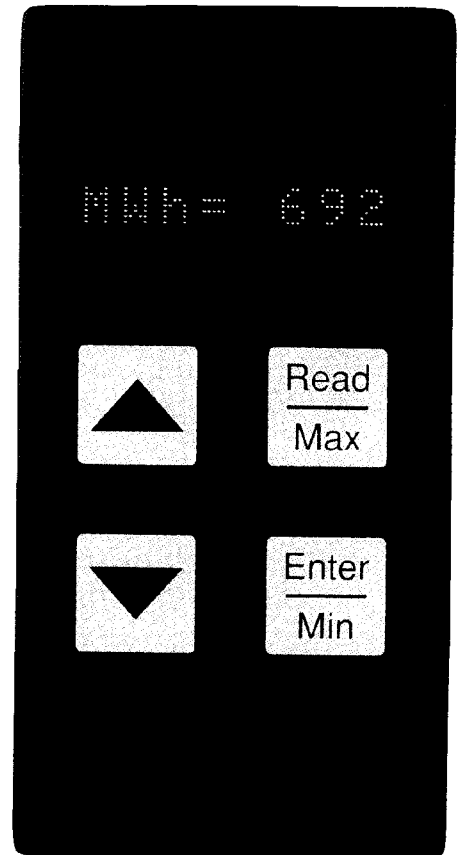
Two communications ports make Static Trip IIIC/CP units extremely versatile. The local port drives a unique, high visibility Breaker Display Unit (BDU). At the touch of a finger, the bright, eight character alphanumeric LEDs show the parameter measured with its present value. The BDU can be mounted on the front of the circuit breaker or any nearby compartment door for local readout.

An industry standard RS-485 port allows trip units to become part of the ACCESS electrical distribution communication network where data can be read at a Power Monitor™ panel or personal computer. Network communications occur over a shielded twisted pair communications bus. Each trip unit contains a real-time clock which can be periodically synchronized from a master device on the network for accurate time stamping of events down to the second.

Regardless of which devices are used to display data, operation is kept simple and straightforward.

## See Protection In Action.

There's a wealth of information in Static Trip IIIC/CP trip units beyond their powerful metering capabilities. These intelligent devices monitor and report status of the protective watch-



*The BDU is designed for simple operation and can be mounted on the circuit breaker or an adjacent compartment door.*

**Ia = 756**

*Use the arrow keys to scroll through data. Each measured parameter is clearly identified.*

**Max = 935**

*Press the "Max" key to see the highest recorded value for any real-time parameter.*

**TRIP LOG**

*When a trip occurs, the cause and associated measured parameters in the unit's trip log are automatically displayed.*

Metering Functions		
Measured Parameters	Model	
	IIIC	IIICP
Phase Currents	•	•
Avg Phase Currents	•	•
Ground Current <sup>(1)</sup>	•	•
Neutral Current <sup>(2)</sup>	opt	opt
Phase Voltages <sup>(3)</sup>		•
Avg Phase Voltage <sup>(3)</sup>		•
Line Voltages		•
Avg Line Voltage		•
kW		•
kW Demand		•
kW Hours		•
kW Hours Reverse		•
kVA		•
kVAR		•
kVAR Hours		•
Power Factor		•
Frequency		•

<sup>(1)</sup> Included when ground fault protection specified

<sup>(2)</sup> Requires "N" option and neutral current sensor

<sup>(3)</sup> Only displayed for four wire systems

*The communications microprocessor provides backup "shadow" protection just above the overcurrent protective microprocessor's highest settings.*

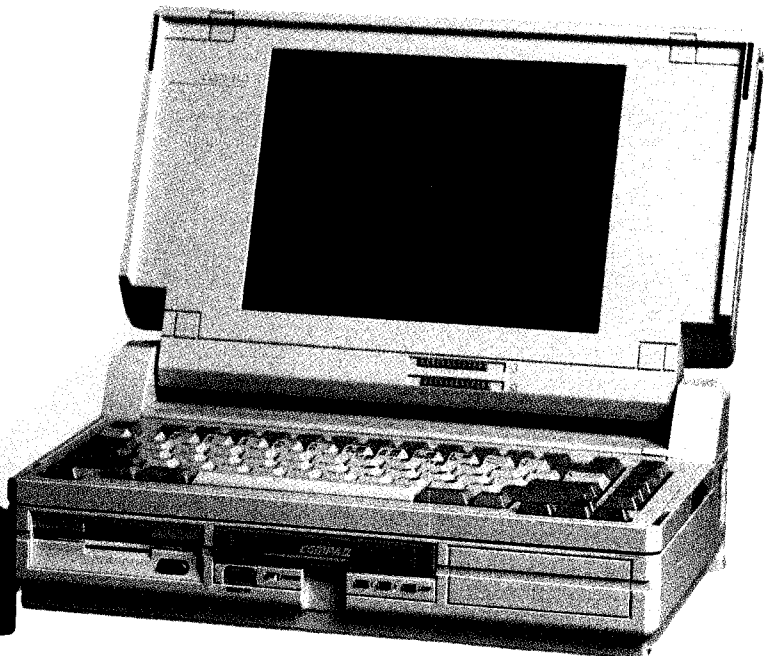
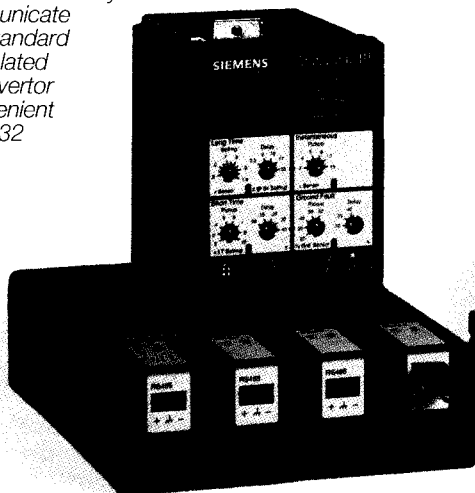
dog and overcurrent pickups (including return to normal) so you'll know your protection system is functional. Open/closed breaker operation is counted and reported; even a "Failure" message is recorded if the mechanism exceeds a preset time delay to open after a trip command is issued.

The most recent pickup conditions are recorded in the trip unit's time-stamped event log where they can be read over the communications bus. Tripping events are recorded in the unit's nonvolatile trip log memory along with cause and time-stamped current information. With this kind of diagnostic data, you'll start seeing normal pickup conditions and how long they're active so you can avoid unnecessary tripping events. And if an unavoidable trip occurs, you'll know which phases were involved and can correlate time with other system events to quickly pinpoint the problem.

A watchdog circuit constantly monitors operation of the communications microprocessor. The dual-function "Comm Watch" LED confirms microprocessor operation as well as active communication. Should communications fail, critical protective functions remain fully operational.

*Static Trip IIIC/CP trip units maintain trip log, min/max table and complete configuration data in nonvolatile memory which is unaffected by loss of control power. The trip log of this trip unit is being interrogated by a portable personal computer. Trip units can be configured prior to being placed into service in this same way.*

*Trip units communicate using industry standard RS-485. The Isolated Multi-Drop™ convertor provides a convenient RS-485 to RS-232 interface.*

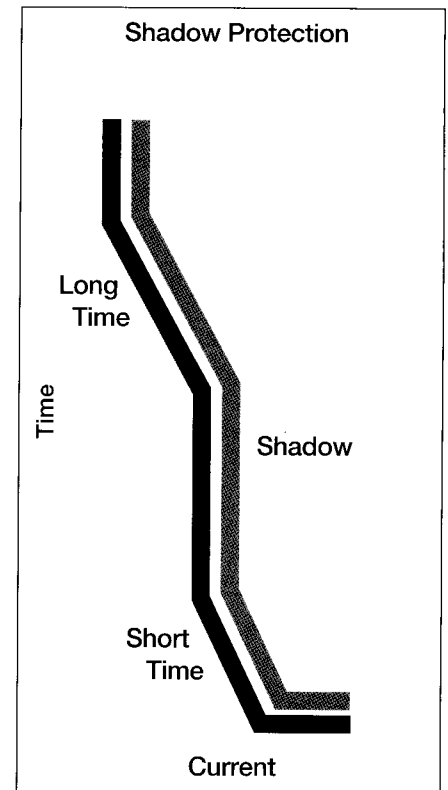


### Shadow Protection Provides Backup

Static Trip IIIC/CP trip units deliver double protection. The communications microprocessor also includes a fixed time-current curve just above the curve defined by the highest overcurrent pickup and delay settings, effectively providing backup or "shadow" protection. In the unlikely event of a protective microprocessor failure, your equipment and people are still protected. And tripping operation due to "shadow" protection is recorded in the unit's nonvolatile trip log.

### Alarm Output For Early Warning

Any of the trip unit's measured parameters can be set to activate an alarm output relay based on programmable threshold and delay set-points. For example, use the alarm output to signal changing load current conditions before they cause unwanted trips. The options are up to you. While the alarm output is standard on Static Trip IIIC and CP models, breaker and cubicle wiring must be specified to meet your application. Operation of the alarm relay is recorded in the unit's event log for remote signaling via the communications bus.



### Remote Open/Close/Trip

Of particular importance where the orderly shutdown of a process is required, Static Trip IIIC/CP trip units can optionally be wired to open and/or close an electrically operated circuit breaker on command from a Power Monitor unit or ACCESS host PC. The alarm relay output is used for the "open" command, thereby restricting use for other alarm functions. All open/close/trip communication commands are secure to prevent unintended operations.

# Extended Protective Relaying

The Static Trip III family includes the Static Trip IIICPX — “X” for extended protective relaying. Static Trip IIICPX trip units offer the most comprehensive package of overcurrent protection, metering, communications and protective relaying features available in an integrated low voltage tripping system.

Seven protective relaying functions are provided, each with its own programmable pickup threshold and one to fifteen second time delay. Traditional separate current unbalance, undervoltage, overvoltage, voltage unbalance, reverse power, overfrequency and underfrequency relays can now be replaced with one reliable package to reduce panel space requirements, eliminate bulky wiring and save you time and money. And Static Trip IIICPX units provide features not even found in traditional analog relaying like continuous monitoring, simple programming in meaningful engineering units and time-stamped recording of pickup and tripping events.



Protective relay setpoints can be accessed using the BDU. The arrow highlights functions that are programmed to trip.



Simply press “Read” to display pickup and delay settings.



Setpoints can only be changed after entering the proper security code.

Protective relay setpoints can be accessed from a Power Monitor panel or personal computer. The screen shows programmed values along with confirmation of actual trip unit settings for reliable setup.

Static Trip IIICPX Protective Relay Functions				
Protective Function	Setting Range	Typical Applications		
		Motors	Generators	Mains
Current Unbalance	5-50%	•	•	
Voltage Unbalance	5-50%	•		•
Overvoltage	60-660V		•	
Undervoltage	60-660V	•	•	
Reverse Power	10-2000kW		•	•
Overfrequency	50.0-70.0Hz		•	
Underfrequency	45.0-60.0Hz		•	

## Secure Setpoints

Protective relay setpoints are stored in nonvolatile memory within the trip unit where they can be accessed using the local BDU port or remote communications bus. Programming of settings is password protected. While display of setpoint values is available at all times, setpoints can only be changed by authorized personnel.

## Eliminate Startup Guesswork

With Static Trip IIICPX trip units, you can know circuit conditions and eliminate guesswork. Use the min/max data capture and alarm setpoint functions to record and analyze actual worst case conditions before deciding on trip setpoints. You can program

values, but not activate trip, until typical system operating conditions are known.

## Know Trip History

Static Trip IIICPX trip units record all protective relay pickup and trip events in internal memory, just as is done for basic overcurrent protective functions. The three most recent trip events are maintained in the unit's nonvolatile trip log with time, cause and associated measured values; e.g. voltages are recorded in the case of voltage unbalance tripping. With such detailed, time-stamped information, problems can be quickly resolved and steps taken to avoid similar occurrences in the future.

Protective Settings for Circuit: Main M ST IIICPX									
Protective Function	Power Monitor Settings			Present Device Configuration					
	Pickup	Delay	Trip	Pickup	Delay	Trip			
Current unbalance	10 %	2 s	Y	10 %	2 s	Y			
Voltage unbalance	500 V	10 s	Y	500 V	10 s	Y			
Overvoltage	0	s		0	s				
Undervoltage	0	s		0	s				
Reverse power	100 kW	3 s	Y	100 kW	3 s	Y			
Overfrequency	Hz	s		Hz	s				
Underfrequency	Hz	s		Hz	s				

Key Assignment



# Specify Static Trip III Trip Units

Four models. A world of application flexibility. That's the Static Trip III family of intelligent trip units.

It's a given that you need reliable overcurrent protection on every low voltage power circuit. Static Trip III trip units deliver that protection.

But when you also need to know the real-time current values on any circuit, specify Static Trip IIIC trip units. There's no need to buy and install stand-alone ammeters, switches and wiring. A Static Trip IIIC trip unit with a Breaker Display Unit satisfies your need to know.

When you need complete power metering, specify Static Trip IIICP trip units and you'll have accurate real-time and min/max information at the touch of a finger. No longer will you have to dedicate additional compartments for metering modules and suffer the expense of buying, installing and calibrating so many devices.

And when you need extended protective relaying, specify Static Trip IIICPX trip units. Again, you'll eliminate the need for and cost of additional compartment space, wiring and installation of outboard sensors and relays, but you'll still get the additional protection you need.

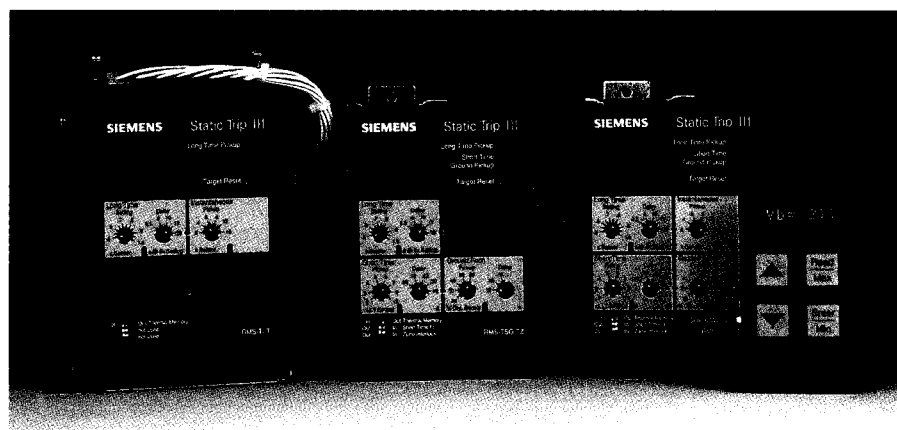
All the reliability, protection and performance of the Static Trip III family is available for retrofit to almost any low voltage circuit breaker from almost any manufacturer. Now you can apply this powerful technology where it is needed regardless of the switchgear manufacturer or vintage. The retrofit version features a universal mounting package.

For protection, application flexibility, intelligence gathering, communications and extended protective relaying, the Static Trip III family of trip units will give you the advantage for years to come. Specify Static Trip III trip units. And put the Static Trip III Advantage to work for you.

(l to r) Static Trip III trip unit with universal mounting package for retrofit application, cat. no. RMS-TI-T-R; basic overcurrent protective model, cat. no. RMS-TSG-TZ; communicating and power metering model, cat. no. RMS-TSIG-CP with BDU.

Functions / Static Trip III Model	III	IIIC	IIICP	IIICPX
Self-Powered Overcurrent Protection	•	•	•	•
RMS Sensing	•	•	•	•
Switchable Thermal Memory	•	•	•	•
Ground Fault Protection	opt	opt	opt	opt
LCD Target	•	•	•	•
Protective Microprocessor Watchdog	•	•	•	•
Pickup LEDs	•	•	•	•
Zone Interlocking <sup>(1)</sup>	opt	opt	opt	opt
Retrofit Universal Mounting Package	opt	opt	opt	opt
RS-485 Communications Port		•	•	•
Breaker Display Unit Port <sup>(2)</sup>		•	•	•
Communications Microprocessor Watchdog		•	•	•
Comm Watch LED		•	•	•
Backup "Shadow" Protection		•	•	•
Trip Log		•	•	•
Alarm Relay Output <sup>(1)</sup>		opt	opt	opt
Trip Unit Status Indication		•	•	•
Breaker Position Indication		•	•	•
Breaker Operation Counter		•	•	•
Communication Open/Close/Trip <sup>(1)(5)</sup>		opt	opt	opt
Event Log		•	•	•
Phase Current Metering		•	•	•
Ground Current Metering <sup>(3)</sup>		•	•	•
Neutral Current Metering <sup>(4)</sup>		opt	opt	opt
Min/Max Current Log		•	•	•
Power Metering Functions			•	•
Min/Max Power Log			•	•
Extended Protective Relaying				•
Extended Trip Log				•

<sup>(1)</sup> Requires additional wiring to meet specific application.  
<sup>(2)</sup> Supports optional Breaker Display Unit accessory.  
<sup>(3)</sup> Included when ground fault protection specified.  
<sup>(4)</sup> Requires "N" option and neutral current sensor.  
<sup>(5)</sup> Open command uses alarm relay output and restricts use for other alarm functions. Close command requires electrically operated breaker



# Guide Form Specification

The following specification can be added to the appropriate sections of low voltage switchgear or switchboard specifications to guarantee important features and functions of the Static Trip III tripping system are provided. Specifications for related Siemens electrical distribution communications system components may also be included, such as the Power Monitor display and monitoring unit and ACCESS host computer:

"Each low voltage power circuit breaker shall be equipped with a self-powered microprocessor-based trip device to sense overload and short circuit conditions. Trip devices shall be interchangeable so that any trip device can be used with any frame size circuit breaker. The device shall measure true RMS currents. Peak sensing devices will not be accepted. All adjustment setting switches shall be digitally encoded type with gold contacts."

"The trip device shall include an adjustable long time current setting with switchable thermal memory. Eleven current settings shall be available to provide adjustment from .5 to 1.0 times the circuit breaker current sensor rating. Long time pickup shall be fixed at 1.1 times the current setting selected. A long time pickup LED shall be included. Five long time delay bands shall be provided. Devices that require current setting adjustment as a function of a removable rating plug will not be acceptable."

"Short time pickup shall be adjustable from 2 to 12 times current setting selected. Five short time delay bands shall provide adjustment from .08 to .40 seconds. A switchable I<sup>2</sup>t ramp shall be included. Instantaneous tripping shall be adjustable from 2 to 15 times current sensor rating. This adjustment range shall be provided regardless of circuit breaker frame size."

"Ground fault pickup shall be adjustable from 20% to 60% of ground sensor rating. It shall not be possible to exceed a 1200 amp maximum pickup. Three time delay bands and an I<sup>2</sup>t ramp shall be included when ground fault protection is provided."

"An LCD electronic target shall be provided to indicate trip from overload,

short circuit or ground fault. Retention of target information shall not rely on batteries. A continuous self-checking watchdog circuit shall be provided to monitor and indicate improper operation of the protective microprocessor."

(Optional: "Zone interlocking connections shall be made between feeder and main circuit breakers for short time and ground fault functions.")

"Communications and metering functions shall be provided using a second microprocessor and power supply which also shall provide backup for the self-powered overcurrent protective microprocessor. An LED shall confirm proper functioning of the second microprocessor. Measured parameters shall be phase currents plus ground current when ground fault protection is specified." (Optional: "Neutral currents shall also be measured.")

"An industry standard RS-485 communications port shall be provided to remotely read real-time and min/max measured values, monitor breaker position and trip unit status, interrogate event and trip logs and program trip unit configuration. The port shall contain at least 500V galvanic isolation between the communications bus and trip device protective function circuitry. A means shall be provided to periodically synchronize the trip unit's internal clock with a master bus clock so that trip log data is accurately time-stamped to within one second. A separate communications port shall be included for local readout of real-time and min/max values, interrogation of the trip log, and programming of trip unit configuration." (Optional: "A display unit shall be provided and shall be mounted on the circuit breaker where it can be read and operated with the breaker compartment door closed. The breaker display shall include an eight-character alphanumeric LED display and shall be operated using clearly labeled, sealed membrane keys with stainless steel switch elements.")

"A programmable alarm relay output shall be provided to activate, based on threshold and time delay values associated with any of the measured parameters. Alarm output operation shall be recorded in an event log.

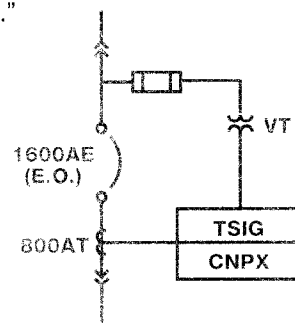
The alarm output shall be wired to provide the following functions (customer to define in text or with circuit diagrams)."

"Measured parameters shall include true RMS real-time and min/max values of line and phase voltages, kW, kW demand, kVA and kVAR. The kW demand period shall be programmable. Power factor, frequency, kW hours, kW hours reverse, and kVAR hours shall also be measured."

"The trip units shall include programmable tripping setpoints for current unbalance, voltage unbalance, overvoltage, undervoltage, reverse power, overfrequency and underfrequency. Protective function operation shall be recorded in the trip log with cause and associated value at time of trip."

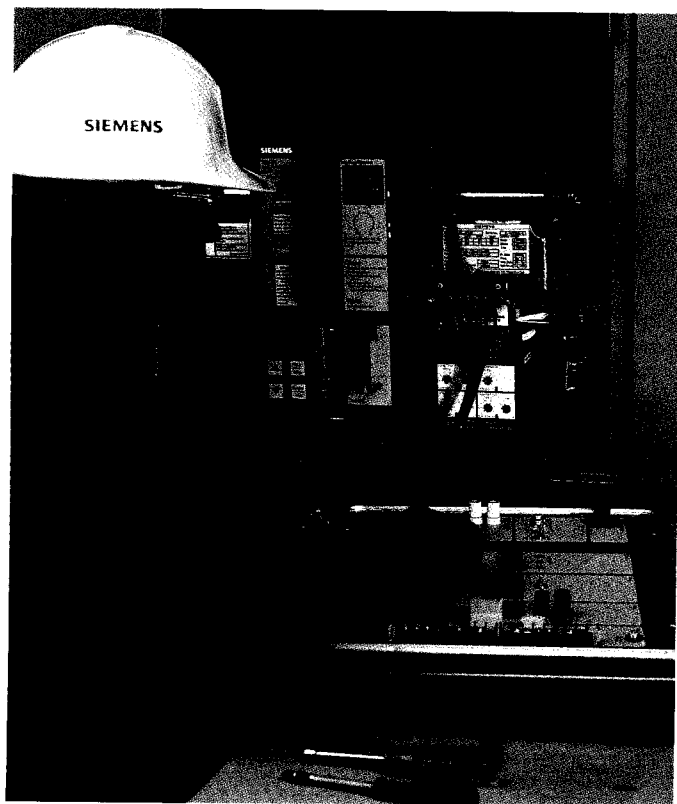
"Trip units shall include long time, short time, instantaneous, ground fault, communications, power metering and extended protective relay functions as shown on the one-line diagrams accompanying this specification." (See figure for recommended symbol.)

"A portable test set shall be included for secondary current input testing of trip unit overcurrent protective functions over their full range of adjustment. This device shall be capable of testing a trip device separately or mounted on a circuit breaker, and shall be capable of exercising the tripping actuator."



The above symbol is recommended for specifying the Static Trip III tripping system. The VT is only required for "CP" and "CPX" models.

Legend: T=Long Time with switchable thermal memory; S=Short Time; I=Instantaneous; G=Ground Fault; C=Communications and current metering; N=Neutral metering; P=Power metering; X=Extended protective relaying.



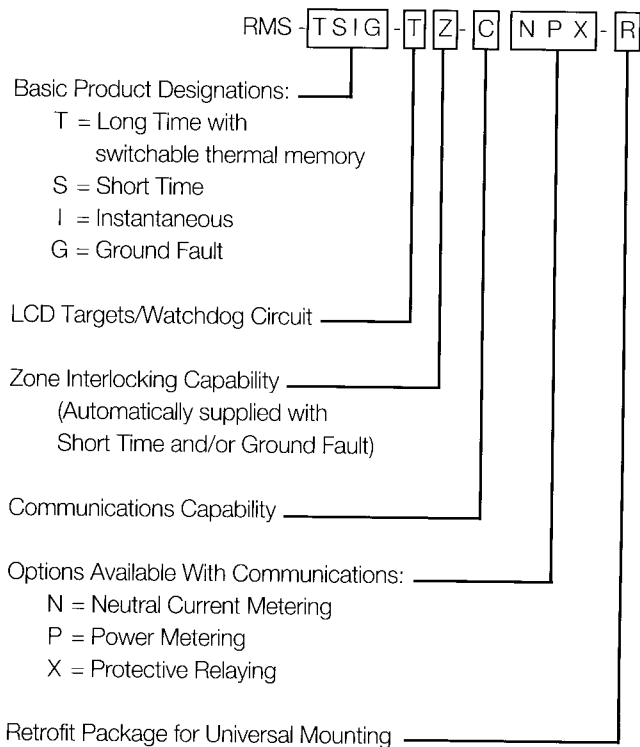
### Minimum Maintenance Required

Periodic testing of the Static Trip III protection system is accomplished with the PTS-4 portable test set. The PTS-4 injects secondary current to properly test the full range of overcurrent protective functions and exercise the tripping actuator. Units may be tested mounted on the breaker or the work bench. A comprehensive, step-by-step training video is available to supplement operating and instruction manuals.

Other publications available from your Siemens sales representative:

- Type R Low Voltage Switchgear brochure (SG3069)
- Type R Low Voltage Switchgear specifying and application guide (SG3061)
- Power Monitor™ Display And Monitoring Unit brochure (SG3129)
- ACCESS™ Electrical Distribution Communication System brochure (SG3099)

### Static Trip III Catalog Number Designations



### Available Sensor Ratings

Frame Size	Max Amp Rating	Sensor Rating (Amps)
RL -800 RLE-800 RLI -800 RLF-800	800	150, 200, 300 400, 600, 800
RL -1600 RLF-1600	1600	150, 200, 300, 400, 600, 800, 1200, 1600
RL -2000 RLE-2000 RLF-2000	2000	150, 200, 300, 400, 600, 800, 1200, 1600, 2000
RL -3200 RLF-3200	3200	1200, 1600 2000, 3200 <sup>(1)</sup>
RL -4000 RLE-4000 RLF-4000	4000	1600, 2000, 3200 <sup>(1)</sup> , 4000 <sup>(1)</sup>

<sup>(1)</sup> Optionally available with integral 2000A ground sensor winding to meet NEC 230-95 requirements.



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