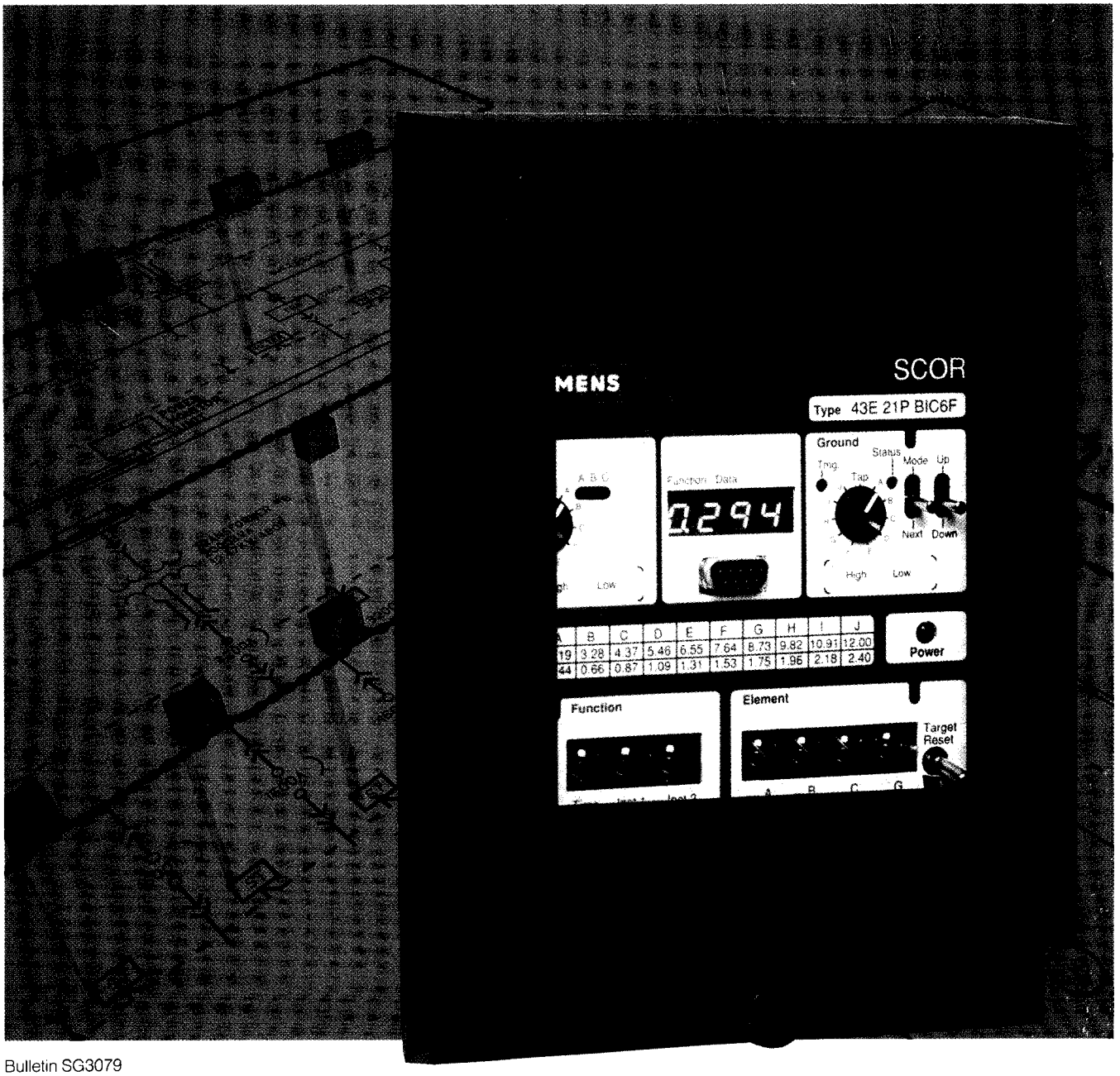
SIEMENS

SCOR Overcurrent Protective Relay



Bulletin SG3079

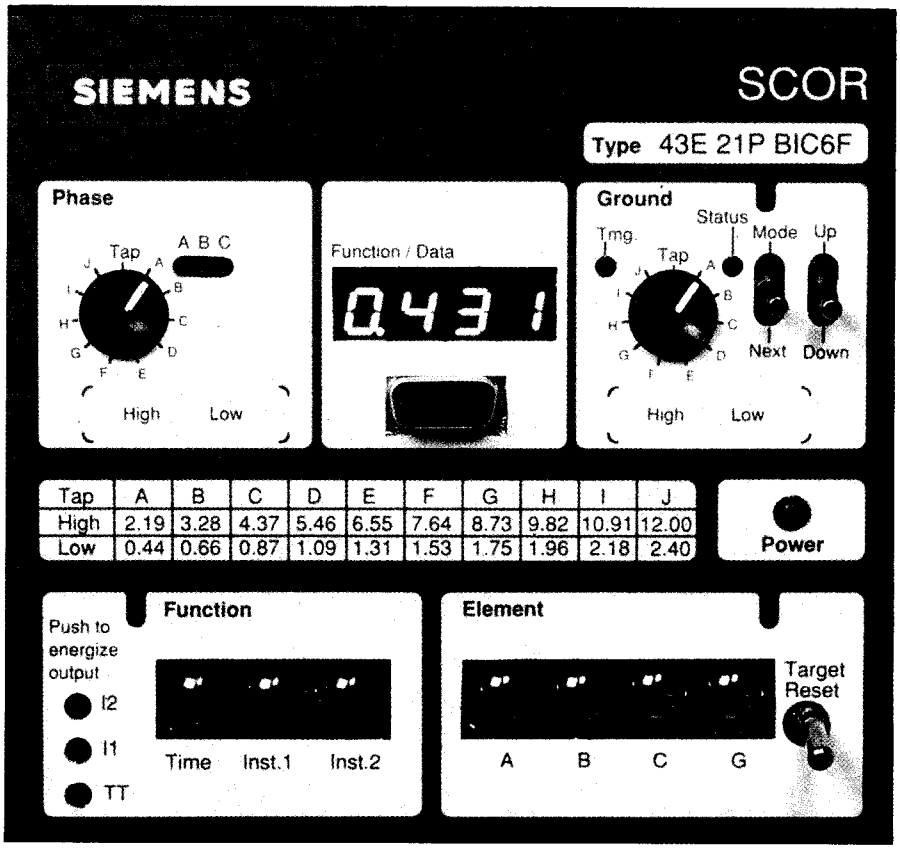
Know The Score With SCOR.

The multi-function SCOR protective relay — Siemens Communicating Overcurrent Relay — provides accurate overcurrent, short circuit and ground fault protection and selective tripping for electrical power system applications. The SCOR relay also communicates real-time and historical circuit and breaker data to power monitoring and management devices such as the Power Monitor™ unit and the ACCESS™ electrical distribution communication system from Siemens.

Apply SCOR relays anywhere accurate protection and communication are required in industrial, commercial and utility medium voltage power distribution schemes. The SCOR relay extends contemporary power monitoring and management technology to medium voltage switchgear. Now process and facility engineers can have the data they need to evaluate and optimize systems; operations and financial management can better allocate and control costs.

The SCOR protective relay incorporates solid state technology proven in rugged environments. This microprocessor-based relay has been designed to provide years of dependable service and represents the leading edge of technology in power engineering.

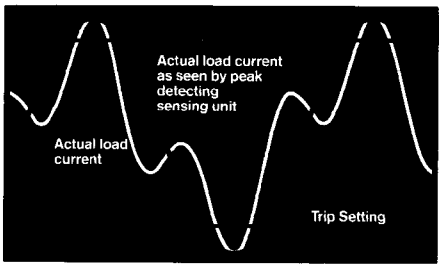
SCOR relays are available on GM switchgear from Siemens and can be applied or retrofitted to switchgear from any manufacturer. Specify SCOR protective relays for reliable medium voltage protection and communication.



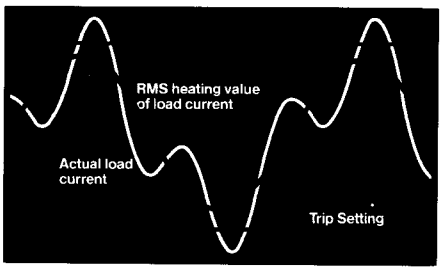
SCOR relays indicate an overcurrent condition on the front panel LED. Upon trip, the SCOR relay captures the time of trip, current at time of trip and nature of trip in nonvolatile memory. The "event" data is accessible remotely at the Power Monitor unit or the ACCESS host computer.

Accurate Protection with RMS Sensing

The SCOR protective relay uses RMS sensing, a technology first introduced by Siemens in 1985, to sample the current wave shape and quickly calculate the effective heating value of the current. SCOR relays evaluate the impact of harmonics and provide accurate circuit protection, not over protection or under protection.



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 shutdowns, or may fail to trip causing damage to the electrical plant.



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

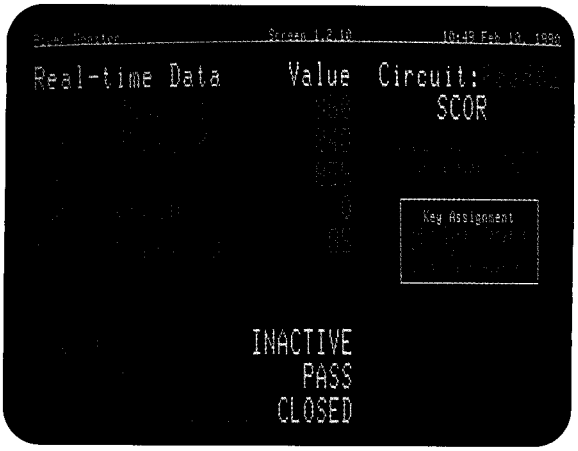
SCOR Devices Display Circuit Conditions

The high visibility readout displays phase amperes, ground amperes and amperes demand for each phase. You can set the display to show one value continuously or to sequence through the metered values automatically.

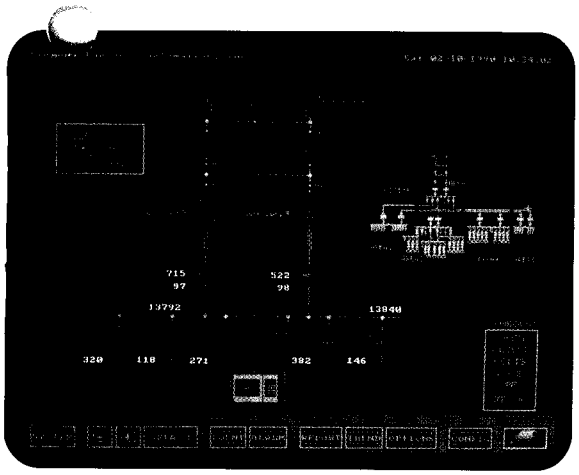
SCOR Relays Capture And Communicate Valuable Data

The SCOR relay captures and stores significant operating data in nonvolatile memory...data that can be viewed at the relay or communicated upward using Siemens ACCESS system to a Power Monitor unit, a remote PC host, or a customer's DCS or SCADA system. Data captured and communicated includes:

- Real-time data — for phase amperes, ground amperes, and amperes demand for each phase.
- Relay status — normal and pickup target status and breaker position.
- Trip data — time of the trip, values of amperes for each phase at the time of trip, element which caused the trip and fault accumulation.
- Trip log — stores 20 most recent events with time stamp, state change description and RMS current values at the time of event.
- MIN/MAX log — logs the minimum and maximum measured values which have occurred since last cleared.
- Selected setting data for phase and ground, including time current curve family and curve selected.



All SCOR data, both real-time and historical, can be displayed on the Power Monitor™ display and monitoring unit. This detail data screen provides real-time current data, status of pickup and the self-test watchdog circuit, and indication of breaker position.



The ACCESS™ electrical distribution communication system provides sophisticated facility-wide monitoring capability. This single line shows critical real-time values and present breaker status for all circuits in the Area 1 substation via Power Monitor unit number 10.

SCOR Relays Use "Open" Communications Protocol

Siemens has designed the SCOR relay for serial data communication using industry standard hardware and an "open" protocol for greater flexibility in designing communicating systems and applying devices. Other manufacturers use closed protocols which require single sourcing. Siemens commitment to an "open" protocol means you have the option to connect non-Siemens systems now or in the future.

Communications occur on an industry standard EIA RS-485 serial bus using shielded, twisted pair cable. Since communications are isolated from protective functions, in the unlikely event of lost communications, the SCOR protective functions are not compromised.

Protect Today. Communicate Tomorrow.

Even if you have no immediate plans to implement remote monitoring of your power system, specify SCOR relays. Since SCOR relays use a field installable communications board, you'll have the flexibility to add communications at a future time without replacing the relays. Simply snap in the Com-board and connect the communications bus.

Guide Form Specification

The following specification can be added to the appropriate relaying section of medium voltage switchgear specifications to guarantee important features and functions of the SCOR overcurrent protective relay:

"A multi-function microprocessor-based relay shall be used to provide overcurrent, short-circuit and ground fault protection, and selective tripping. The relay shall provide true RMS sensing and contain a built-in digital display for programming and to display amperes (phase and ground) plus demand amperes (each phase). The relay shall be utility grade, in drawout cases with built-in test facilities and include element and function targets of the magnetically latched type. LED's indicate when pickup is exceeded and the power supply status."

Relay Options: The SCOR protective relay is available in four models:

A. Three phase, device 51.
B. Three phase with instantaneous, device 50/51.
C. Three phase with ground (typically applied to main incoming circuit breakers), device 51/51N or 51/51G.
D. Three phase with ground and instantaneous (typically used for feeder circuit breakers), device 50/51-50N/51N or 50/51-50G/51G.

Communications Options: "A communications option will be provided by the addition of a printed circuit board which will access data in non-volatile memory. The communicating relay can be accessed from an RS-232 port located on the front of the relay, or data can be transmitted to a remote monitoring unit via a EIA standard RS-485 serial bus using a shielded, twisted pair cable."

"Communications shall be isolated from the relay protective functions so that protection is not compromised by a problem with the communications cable."

Data and settings available from the relay include:

A. Real time data for amperes, (each phase and ground) and amperes demand (each phase).
B. Relay status (normal-pickup), target status, and circuit breaker position (open-closed).
C. Trip data with values of amperes at time of trip, time stamp, element which caused the trip, and fault accumulation.
D. Trip log including state changes with description, RMS current values and time stamp. The last 20 trip events are stored in the relay.
E. Min/max log which contains values of amperes which have occurred since last cleared.
F. Selected setting data for phase and ground, including timing characteristic family and delay selected, pickup settings and current transformer ratio.

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