Maximize protection

Sepam series 20, 40, 80
Modular range of digital protection relays
Increase energy availability

Fast response + Maximum dependability = 100% available energy

Your electrical equipment is under control. With Sepam protection relays, you get maximum energy availability for your process.
Maximize energy availability and the profits generated by your installation while protecting life and property.

Keep informed to manage better
With Sepam, you get intuitive access to all system information in your language so that you can manage your electrical installation effectively. If a problem occurs, clear and complete information puts you in a position to make the right decisions immediately. The electrical supply is restored without delay.

Maintain installation availability
Sepam maintains high energy availability thanks to its diagnostics function that continuously monitors network status. In-depth analysis capabilities and high reliability ensure that equipment is de-energized only when absolutely necessary. Risks are minimized and servicing time reduced by programming maintenance operations.

Enhance installation dependability
Sepam series 80 is the first digital protection relay to deliver dependability and behaviour in the event of failure meeting the requirements of standard IEC 61508. Sepam manufacturing quality is so high that the units can be used in the most severe environments, including off-shore oil rigs and chemical factories (IEC 60062-2-60).
Improve satisfaction

A set of simple and effective functions suited to your customer’s application

Fast response from Schneider Electric: save time at every step in your project

With Sepam protection relays, you can count on simple, high-performance products and the support of top-notch Schneider Electric teams. Meet your obligations the easy way.

= 100% satisfaction
Go for simplicity
With multi-functional Sepam protection relays, you can measure, manage, analyze and produce diagnostics for all applications in an installation. Range modularity makes it easy to select the relay corresponding exactly to your needs. The range is structured for typical applications (substations, transformers, generators, capacitors, busbars and motors) and provides the necessary functions for each application (protection, metering, control and monitoring, etc.). Starting with a Sepam base unit, complete solutions can be built up by adding input/output modules, sensors and communication modules.

Make settings easily
A single PC software tool for the entire Sepam range makes system start-up and operation particularly easy. The user-friendly program guides you step by step from the initial programming on through to final commissioning. Sepam produces a detailed report on system configuration and all the activated protection functions. On Sepam series 80, the entire setup is saved to a memory cartridge that can be accessed in front, for instance when replacing a unit.

Communicate the open way
In addition to the DNP3 and IEC 60870-5-103 Modbus standards, Sepam complies with IEC 61850 and uses the communication protocol that is today’s market standard to interface with all brands of electrical-distribution devices.
Sepam range design is based on a simple idea. All users should be able to find a solution corresponding exactly to their needs and offering the right balance between performance, simplicity and cost.

A Sepam relay for each application...

- Substations
- Transformers
- Generators
- Capacitors
- Busbars
- Motors

...and different levels of protection

- Thermal protection based on temperature rise calculations, with predictive indications to optimize process control.
- Directional phase-overcurrent protection for closed-loop networks.
- Directional earth-fault protection for all types of neutral systems.
- Fast and highly-sensitive protection of transformers, motors and generators using differential functions with restraint.

What level of safety? For what applications?

Sepam protection relays
**For custom applications**

**Sepam series 80**
- Standardized dimensions for enhanced protection of incomers/feeder, transformer, motor, generator, bus, capacitor-bank applications
- Differential protection of transformer or machine transformer units
- Differential protection of motors and generators
- Protection for incomers, couplings and important feeders
- Expanded logic-equation capabilities
- Graphical assistance for setting software
- Battery backup for historical and fault waveform data retention
- Optional mimic-based display units are available to view a portion of single-line and phasor diagrams

**For demanding applications**

**Sepam series 40**
- Compact case provides standardized dimensions (< 100 mm deep)
- Directional over-current protection for dual incomers, couplings and closed-loop feeders
- Current and voltage inputs
- Setting software with Boolean logic equation assistance
- CT/VT and trip circuit supervision
- Sixteen seconds of fault recording configurable for multiple captures, detailed history of last 5 trip reports and retention of last 200 time-tagged alarms
- 16 RTD inputs

**For usual applications**

**Sepam series 20**
- Backlit LCD graphic bitmap display
- 16 inverse time over-current characteristic curves
- Easy software setup
- Two 86-cycle fault records, last trip fault values and last 64 time-tagged alarms
- Self-test diagnostics
- Wide range of control power inputs (AC/DC)
- Breaker/Failure function for S23 and T23
Sepam protection relays

Three relay series with increasing protection capabilities for six types of applications to provide all possible protection configurations.

### Series 20

- **Applications**
  - Substations: Current
  - Transformers: Current, Temperature
  - Motors: Current, Voltage, Frequency
  - Generators: Current, Voltage, Frequency
  - Busbars: Voltage, Frequency
  - Capacitors: Voltage, Frequency

- **Protection functions**

- **Characteristics**
  - Logic input/outputs: Inputs 0 to 10, Outputs 4 to 8
  - Temperature sensors: 0 to 8, 0 to 16
  - Channels: Current 3I + Io, Voltage 3V + Vo, LPCT (1)
  - Communication ports: 1 to 2
  - Control: Matrix (2), Logic equation editor
  - Other: Yes

- **ANSI codes**
  - 12: Overspeed (2 set points)
  - 14: Underspeed (2 set points)
  - 21B: Underimpedance
  - 24: Overfluxing (V/Hz)
  - 25: Synch-check
  - 26/63: Thermostat / Buchholz
  - 27/27S: Undervoltage (L-L/L-N)
  - 27D: Positive-sequence undervoltage
  - 27R: Remanent undervoltage
  - 30: Annunciation
  - 32P: Directional real overpower
  - 32Q/40: Directional reactive overpower
  - 37: Phase undercurrent
  - 37P: Directional active underpower
  - 38/49T: Temperature monitoring
  - 40: Field loss (underimpedance)

### Series 40

- **Applications**
  - Substations: Current
  - Transformers: Current, Voltage, Frequency, Temperature
  - Motors: Current, Voltage, Frequency
  - Generators: Current, Voltage, Frequency
  - Busbars: Voltage, Frequency
  - Capacitors: Voltage, Frequency

- **Protection functions**

- **Characteristics**
  - Logic input/outputs: Inputs 0 to 10, Outputs 4 to 8
  - Temperature sensors: 0 to 8, 0 to 16
  - Channels: Current 3I + Io, Voltage 3V, LPCT (1)
  - Communication ports: 1 to 2
  - Control: Matrix (2), Logic equation editor
  - Other: Yes

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(1) LPCT: low-power current transducer complying with standard IEC 60044-8.
(2) Control matrix for simple assignment of information from the protection, control and monitoring functions.
Compact and light, Sepam fits anywhere

Build your own solution

1. Base unit
   - with integrated or remote advanced user-machine interface (UMI),
   - or integrated mimic-based UMI (Sepam series 80).

2. Additional input/output modules for integral equipment control.

3. Connection to RS485 (2 or 4 wire) or optic-fibre communication network. Protocols include Modbus, IEC 60870-5-103, DNP3.0 and IEC 61850.

4. Module for eight temperature measurements via Pt100, Ni100 or Ni120 sensors, to protect transformers, motors and generators.

5. Low-level analog output (0-10, 4-20, 0-20 mA) for transmission of Sepam measurements in analog form.

6. Module to check synchronization between two voltages (Sepam series 80).

7. Software
   - Sepam parameter settings, protection settings and personalization of control functions,
   - local or remote operation of the installation,
   - disturbance recording data display.

Series 80

- Current
- Voltage
- Frequency
- Temperature
- Rotation speed

+ directional and differential protection

Inputs 0 to 42
Outputs 5 to 23
Current 2 x 3I + 2x Io
Voltage 2 x 3V + Vo
LPCT (1)
Matrix (2)
Logic equation editor
Logipam (3)
Memory cartridge with settings
Backup battery

Base unit
- with integrated or remote advanced user-machine interface (UMI),
- or integrated mimic-based UMI (Sepam series 80).

Additional input/output modules for integral equipment control.

Connection to RS485 (2 or 4 wire) or optic-fibre communication network. Protocols include Modbus, IEC 60870-5-103, DNP3.0 and IEC 61850.

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Low-level analog output (0-10, 4-20, 0-20 mA) for transmission of Sepam measurements in analog form.

Module to check synchronization between two voltages (Sepam series 80).

Software
- Sepam parameter settings, protection settings and personalization of control functions,
- local or remote operation of the installation,
- disturbance recording data display.

(3) Logipam ladder language (PC programming environment) to make full use of Sepam series 80 functions.

64G 100% stator earth fault
64REF Restricted earth fault
66 Starts per hour
67 Directional phase overcurrent
67N/67NC Directional ground fault
68 Logic discrimination / zone selective interlocking
74 Circuit connection supervision
78PS Pole slip
79 Recloser (4 cycles)
81H Overfrequency
81L Underfrequency
81R Rate of change of frequency (df/dt)
86 Latching / acknowledgement
87M Machine differential
87T Two-winding transformer differential
94/69 Circuit breaker / contactor control
Start-up was never so easy

The Sepam programming and operating software provides a single environment for the entire range. The result is a simple, user-friendly approach for fast system commissioning.

**Setup**

- **Equipment setup**
  - Set up the various modules (input/outputs, display, communication, sensors).

- **Protection setup**
  - Prepare the single-line diagram either by reworking a mimic diagram from the library or by creating a new one.

- **Protection activation**
  - Graphically create the links between sensors and the measurements carried out by the relays.

- **Summary of functions**
  - Assign easily and quickly the various protection, control and monitoring functions.

10 minutes 5 minutes 5 minutes 40 minutes
The setup is now ready to be deployed on all the Sepam units in the installation.

Automatic generation of the relay setup report.

Operation

Analysis of waveform capture
Display, analysis and printing of disturbance-recording data.

Real-time supervision
Supervision of the status of all the relays in the electrical installation.

Management of alarms and events

15 years of peace of mind
Sepam protection relays

Services to optimize performance of your protection plan

Custom services

Creation of an electrical installation with a control-monitoring architecture requires more than correct analysis of needs. The best balance between technical aspects and cost issues is the product of in-depth know-how and long experience.

Your Schneider Electric representative is on hand to propose tailored services:
> training for technicians,
> discrimination studies for your network,
> design of the control and monitoring architecture,
> personalized Sepam units for your application,
> system tests and commissioning,
> installation upgrades and maintenance.

Via your Schneider Electric representative, access all the resources and know-how of Schneider Electric, including the certified COFRAC test lab, software for network simulations, short-circuit calculations and dynamic stability studies, etc. These resources cover all types of situations and provide solutions that fit your needs.

Retrofit

Sepam functions make it particularly suitable for retrofit projects. It adapts to all types of sensors and its programming is so flexible that any type of control scheme can be implemented.

Our service teams are on hand to help you design upgrades for your installation and maintain the highest level of performance.

Training is available worldwide, near you.

For more information:
www.sepamrelay.com

Make the most of your energy

Schneider Electric Industries SAS
89 Bd. Franklin-Roosevelt
F-92505 Rueil-Malmaison
FRANCE
Tel. +33 (0) 1 41 29 70 00
www.schneider-electric.com

As standards, specifications and designs change from time to time, please ask for confirmation of the information given in this publication.
Published by Schneider Electric
Design by pemaco
Photos by Getty Images, Photodisc, Patrick Avavian
Printing: