

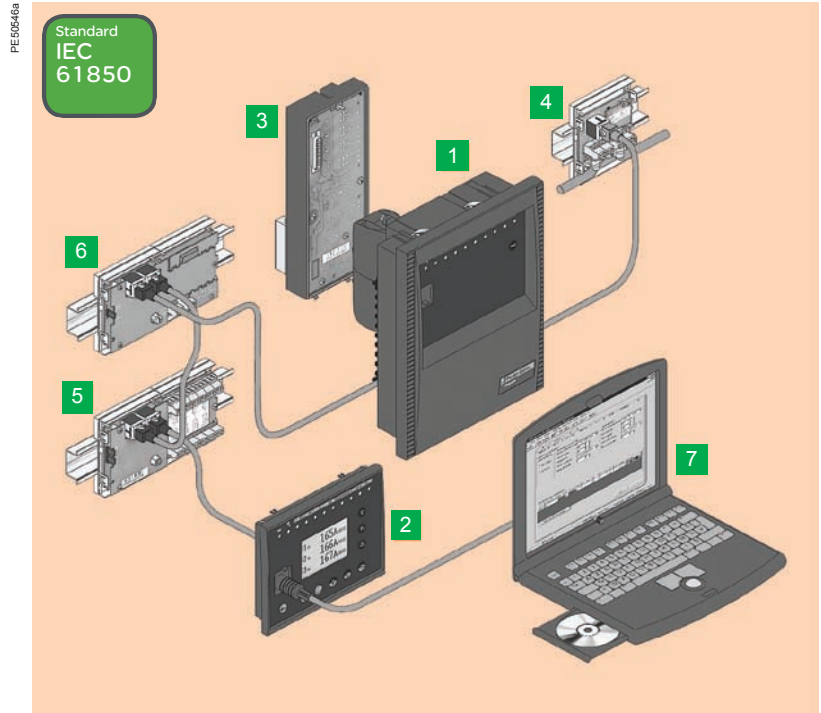


# Sepam series 20

## Sepam series 20 and its optional modules

- 1 Base unit, with various types of User Machine Interfaces (UMI):**
  - basic UMI
  - advanced UMI with graphical LCD screen.
- 2 Remote advanced UMI.**
- 3 10 logic inputs and 8 output relays,** 4 outputs on the base unit + 1 optional module providing 10 inputs and 4 outputs.
- 4 1 communication port:**
  - connection to 1 or 2 S-LAN and/or E-LAN networks
  - Modbus, Modbus TCP/IP, IEC 60870-5-103, DNP3 and IEC 61850 communication protocols
  - RS 485 ( 2or 4 wire) or fiber optic network.
- 5 Temperature data from 8 sensors,** Pt100, Ni100, or Ni120.
- 6 1 analog output,** 0-10 mA, 4-20 mA or 0-20 mA.
- 7 Software tools:**
  - Sepam parameter and protection setting
  - recovery and display of disturbance recording data
  - local or remote operation via an E-LAN.

Sepam *series 20* is a family of *current* or *voltage* digital protection relays, for medium voltage public and industrial distribution networks.



## Characteristics

### Conformity to standards

|   |   |
|---|---|
| IEC 60255 - Protection relays           | IP52 on front panel                             |
| IEC 60529 - Degree of protection        |   |
| IEC 60068 - Operating temperature       | -25°C to +70°C (-13°F to +158°F)                |
| IEC 61850-6, 7-1, 7-2, 7,3, 7-4 and 8-1 | Communication networks and system in substation |

### Certifications

CE, UL508, CSA C22.2

### Auxiliary power supply

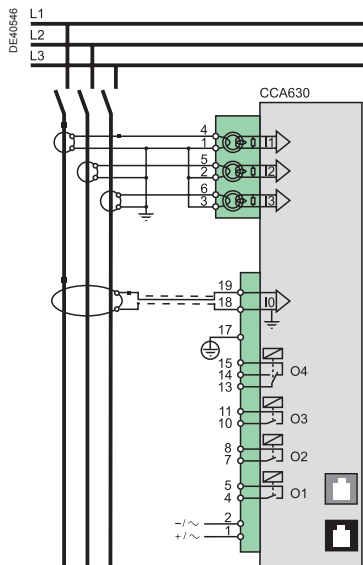
24-250 V DC and 110-240 V AC

### Overall size of base units (H x W x D)

222 X 176 X 130 mm

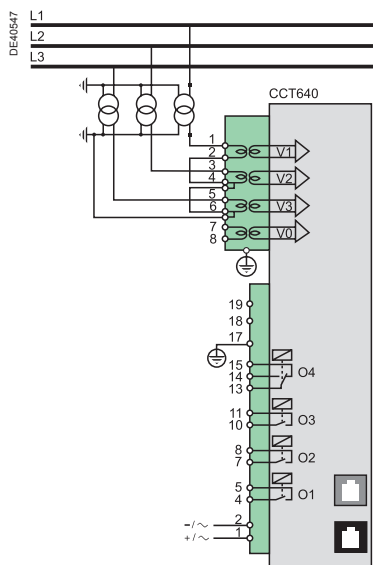
## Current applications

- S20, S24: substation incomers and feeders protection
- T20, T24: transformer protection
- M20: motor protection.



## Voltage applications

- B21: busbar protection
- B22: loss of mains protection.



| Protections  | ANSI code          | S20                      | S24                      | T20                      | T24                      | M20                      |
|--|--------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| Phase overcurrent  | 50/51              | 4                        | 4                        | 4                        | 4                        | 4                        |
| Cold load pick-up with phase overcurrent protection          | CLPU 50/51         |                          | 1                        |                          | 1                        |                          |
| Earth fault, sensitive earth fault                           | 50N/51N<br>50G/51G | 4                        | 4                        | 4                        | 4                        | 4                        |
| Cold load pick-up with earth fault protection                | CLPU 50N/51N       |                          | 1                        |                          | 1                        |                          |
| Breaker failure  | 50BF               |                          | 1                        |                          | 1                        |                          |
| Unbalance/negative sequence                                  | 46                 | 1                        | 1                        | 1                        | 1                        | 1                        |
| Thermal overload   | 49 RMS             |                          |                          | 2                        | 2                        | 2                        |
| Phase undercurrent   | 37                 |                          |                          |                          |                          | 1                        |
| Excessive starting, time locked rotor                        | 48/51LR/14         |                          |                          |                          |                          | 1                        |
| Starts per hour  | 66                 |                          |                          |                          |                          | 1                        |
| Recloser (4 cycles)  | 79                 | <input type="checkbox"/> | <input type="checkbox"/> |                          |                          |                          |
| Thermostat / Buchholz 26/63                                  |                    |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| Temperature monitoring 38/49T                                |                    |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Metering</b>  |                    |                          |                          |                          |                          |                          |
| Phase current I1, I2, I3 RMS                                 |                    | ■                        | ■                        | ■                        | ■                        | ■                        |
| Residual current I0  |                    | ■                        | ■                        | ■                        | ■                        | ■                        |
| Average current I1, I2, I3                                   |                    | ■                        | ■                        | ■                        | ■                        | ■                        |
| Peak demand phase current IM1, IM2, IM3                      |                    | ■                        | ■                        | ■                        | ■                        | ■                        |
| Temperature  |                    |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Network and machine diagnosis</b>                         |                    |                          |                          |                          |                          |                          |
| Tripping current Trip1, Trip2, Trip3, Trip0                  |                    | ■                        | ■                        | ■                        | ■                        | ■                        |
| Unbalance ratio/negative sequence current                    |                    | ■                        | ■                        | ■                        | ■                        | ■                        |
| Running hours counter/operating time                         |                    |                          |                          | ■                        | ■                        | ■                        |
| Thermal capacity used  |                    |                          |                          | ■                        | ■                        | ■                        |
| Remaining operating time before overload tripping            |                    |                          |                          | ■                        | ■                        | ■                        |
| Waiting time after overload tripping                         |                    |                          |                          | ■                        | ■                        | ■                        |
| Starting current and time / overload                         |                    |                          |                          |                          |                          | ■                        |
| Start inhibit time delay, number of starts before inhibition |                    |                          |                          |                          |                          | ■                        |
| Disturbance recording  |                    | ■                        | ■                        | ■                        | ■                        | ■                        |
| <b>Switchgear diagnosis</b>                                  |                    |                          |                          |                          |                          |                          |
| Cumulative breaking current                                  |                    | ■                        | ■                        | ■                        | ■                        | ■                        |
| Trip circuit supervision                                     |                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Number of operations   |                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Operating time   |                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Charging time  |                    | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| <b>Control and monitoring</b>                                |                    |                          |                          |                          |                          |                          |
| Circuit breaker / contactor control                          | 94/69              | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Latching / acknowledgment                                    | 86                 | ■                        | ■                        | ■                        | ■                        | ■                        |
| Logic discrimination   | 68                 | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Switching of groups of settings                              |                    | ■                        | ■                        | ■                        | ■                        | ■                        |
| Annunciation   | 30                 | ■                        | ■                        | ■                        | ■                        | ■                        |
| <b>Protections</b>   |                    |                          |                          |                          |                          |                          |
| Positive sequence undervoltage                               | 27D/47             |                          |                          | 2                        | 2                        |                          |
| Remanent undervoltage  | 27R                |                          |                          | 1                        | 1                        |                          |
| Phase-to-phase undervoltage                                  | 27                 |                          |                          | 2                        | 2                        |                          |
| Phase-to-neutral undervoltage                                | 27S                |                          |                          | 1                        | 1                        |                          |
| Phase-to-phase overvoltage                                   | 59                 |                          |                          | 2                        | 2                        |                          |
| Neutral voltage displacement                                 | 59N                |                          |                          | 2                        | 2                        |                          |
| Overfrequency  | 81H                |                          |                          | 1                        | 1                        |                          |
| Underfrequency   | 81L                |                          |                          | 2                        | 2                        |                          |
| Rate of change of frequency                                  | 81R                |                          |                          |                          |                          | 1                        |
| <b>Metering</b>  |                    |                          |                          |                          |                          |                          |
| Line voltage U21, U32, U13                                   |                    |                          |                          | ■                        | ■                        |                          |
| Phase-to-neutral voltage V1, V2, V3                          |                    |                          |                          | ■                        | ■                        |                          |
| Residual voltage V0  |                    |                          |                          | ■                        | ■                        |                          |
| Positive sequence voltage / rotation direction               |                    |                          |                          | ■                        | ■                        |                          |
| Frequency  |                    |                          |                          | ■                        | ■                        |                          |
| <b>Network diagnosis</b>                                     |                    |                          |                          |                          |                          |                          |
| Disturbance recording  |                    |                          |                          | ■                        | ■                        |                          |
| <b>Control and monitoring</b>                                |                    |                          |                          |                          |                          |                          |
| Circuit breaker / contactor control                          | 94/69              |                          |                          | <input type="checkbox"/> | <input type="checkbox"/> |                          |
| Latching / acknowledgment                                    | 86                 |                          |                          | ■                        | ■                        |                          |
| Annunciation   | 30                 |                          |                          | ■                        | ■                        |                          |

■ standard, □ according to parameter settings and optional modules.

Note: the figures (in the table) give the number of independant protection sets for each protection function.

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