

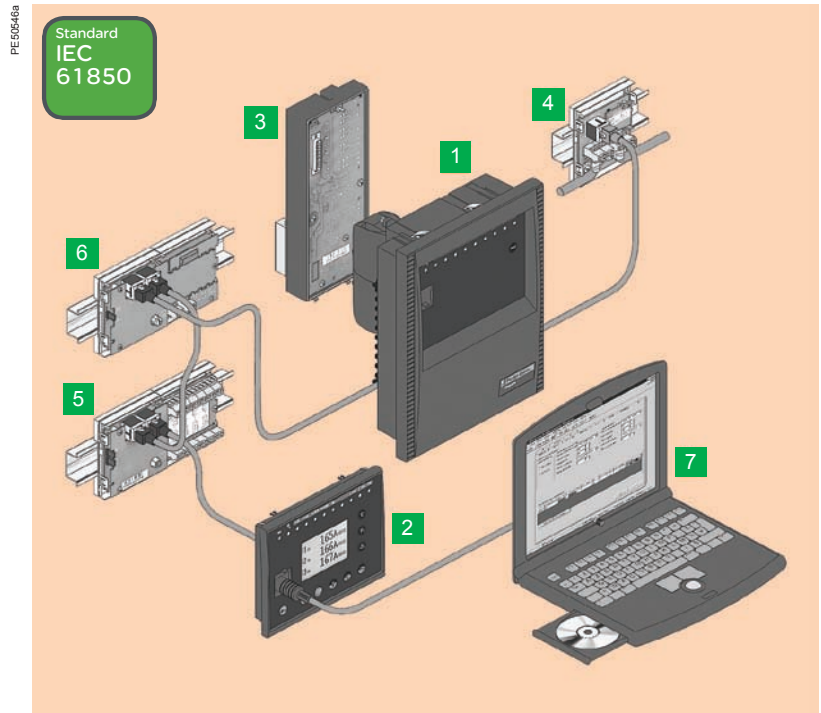


Sepam series 40

Sepam series 40 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, IEC60870-5-103, DNP3 and IEC 61850 communication protocols
 - TCP/IP redundancy
 - RS 485 (2or 4 wire) or fiber optic network.
- 5 Temperature data from 16 sensors,**
Pt100, Ni100, or Ni120.
- 6 1 analog output,**
0-10mA, 4-20mA or 0-20mA.
- 7 Software tools:**
 - Sepam parameter and protection setting and control function customization
 - recovery and display of disturbance recording data
 - local or remote operation via an E-LAN.

Sepam *series 40* is a family of *current* and/or *voltage* digital protection relays, for medium voltage public and industrial distribution networks.



Characteristics

Conformity to standards

IEC 60255 - Protection relays	
IEC 60529 - Degree of protection	IP52 on front panel
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

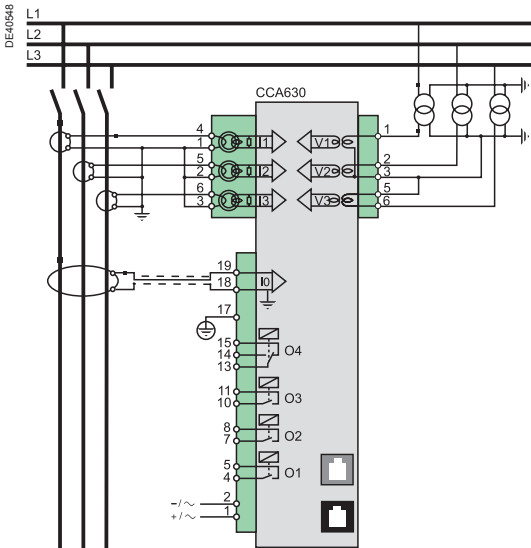
Overall size of base units (H x W x D)

222 X 176 X 130 mm

14 types of Sepam series 40

- S40, S41, S42, S43, S50, S51, S52, S53: substation incomers and feeders protection.
- T40, T42, T50, T52: transformer protection.
- M41: motor protection.
- G40: generator protection.

Protections	ANSI code	S40	S50	S41	S51	S42	S52	S43	S53	T40	T50	T42	T52	M41	G40
Phase overcurrent	50/51	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Cold load pick-up with phase overcurrent protection	CLPU 50/51		4		4		4		4		4		4		
Voltage restrained overcurrent	50V/51V														1
Earth fault, sensitive earth fault	50N/51N, 50G/51G	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Cold load pick-up with earth fault protection	CLPU 50N/51N		4		4		4		4		4		4		
Breaker failure	50BF	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Unbalance/negative sequence	46	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Broken conductor	46BC		1		1		1		1		1		1		
Directional phase overcurrent	67					2	2					2	2		
Directional earth fault	67N/67NC				2	2	2		2			2	2		
Directional real overpower	32P			1	1	1	1	1	1					1	1
Directional reactive overpower	32Q/40													1	1
Thermal overload	49 RMS									2	2	2	2	2	2
Phase undercurrent	37													1	
Locked rotor, excessive starting time	48/51LR/14													1	
Starts per hour	66													1	
Positive sequence undervoltage	27D													2	
Remanent undervoltage	27R													1	
Undervoltage (2)	27/27S	2	2	2	2	2	2			2	2	2	2	2	2
Overvoltage (2)	59	2	2	2	2	2	2			2	2	2	2	2	2
Neutral voltage displacement	59N	2	2	2	2	2	2			2	2	2	2	2	2
Negative sequence overvoltage	47	1	1	1	1	1	1			1	1	1	1	1	1
Overfrequency	81H	2	2	2	2	2	2			2	2	2	2	2	2
Underfrequency	81L	4	4	4	4	4	4			4	4	4	4	4	4
Recloser (4 cycles)	79	□	□	□	□	□	□	□	□						
Temperature monitoring (8 or 16 RTDs, 2 set points per RTD)	38/49T									□	□	□	□	□	□
Thermostat / Buchholz	26/63									□	□	□	□	□	□



Metering	S40	S41	S42	S43	T40	T42	M41	G40
RMS phase current I1, I2, I3, residual current I0	■	■	■	■	■	■	■	■
Average current I1, I2, I3	■	■	■	■	■	■	■	■
Peak demand current IM1, IM2, IM3	■	■	■	■	■	■	■	■
Voltage U21, U32, U13, V1, V2, V3	■	■	■	■	■	■	■	■
Residual voltage V0	■	■	■	■	■	■	■	■
Positive sequence voltage Vd/rotation direction, Negative sequence voltage Vi	■	■	■	■	■	■	■	■
Frequency	■	■	■	■	■	■	■	■
Active / reactive / apparent power P, Q, S	■	■	■	■	■	■	■	■
Peak demand power PM, QM, power factor	■	■	■	■	■	■	■	■
Calculated active / reactive energy (±W.h, ±var.h)	■	■	■	■	■	■	■	■
Active/reactive energy impulse counter (±W.h, ±var.h)	□	□	□	□	□	□	□	□
Temperature	■	■	■	■	■	■	■	■
Network and machine diagnosis								
Tripping current Tripl1, Tripl2, Tripl3, Tripl0	■	■	■	■	■	■	■	■
Tripping context	■	■	■	■	■	■	■	■
Unbalance ratio/negative sequence current	■	■	■	■	■	■	■	■
Peak demand negative sequence and positive sequence current ratio (3)	■	■	■	■	■	■	■	■
Phase shift φ0, φ1, φ2, φ3	■	■	■	■	■	■	■	■
Disturbance recording	■	■	■	■	■	■	■	■
Fault locator (4)	■	■	■	■	■	■	■	■
Thermal capacity used	■	■	■	■	■	■	■	■
Remaining operating time before overload tripping	■	■	■	■	■	■	■	■
Waiting time after overload tripping	■	■	■	■	■	■	■	■
Running hours counter / operating time	■	■	■	■	■	■	■	■
Starting current and time	■	■	■	■	■	■	■	■
Start inhibit time delay, number of starts before inhibition	■	■	■	■	■	■	■	■
Switchgear diagnosis								
Cumulative breaking current	■	■	■	■	■	■	■	■
Trip circuit supervision	□	□	□	□	□	□	□	□
Number of operations, operating time, charging time	□	□	□	□	□	□	□	□
CT/VT supervision	■	■	■	■	■	■	■	■
Control and monitoring								
Circuit breaker / contactor control (1)	94/69	■	■	■	■	■	■	■
Latching / acknowledgment	86	■	■	■	■	■	■	■
Logic discrimination	68	□	□	□	□	□	□	□
Switching of group of settings		■	■	■	■	■	■	■
Annunciation	30	■	■	■	■	■	■	■
Logical equation editor		■	■	■	■	■	■	■
Communication port								
Measurement readout		□	□	□	□	□	□	□
Remote indication and time tagging of event		□	□	□	□	□	□	□
Remote control orders		□	□	□	□	□	□	□
Remote setting of protections		□	□	□	□	□	□	□
Transfer of disturbance recording data		□	□	□	□	□	□	□

■ standard, □ according to parameter setting and MES114/MES114E/ MES114F or MET148-2 input/output module options.
 (1) For shunt trip unit or undervoltage trip unit.
 (2) Exclusive choice, phase-to-neutral voltage or phase-to-phase voltage for each of the 2 relays.
 (3) Only for S50, S51, S52, S53, T50, T52 applications.
 (4) Only for S50, S51, S52, S53 applications.

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This document has been printed on ecological paper.

Design: Schneider Electric
 Photos: Schneider Electric
 Printed: