SEL-411L

Current Differential Relay With full Distance Backup Protection.

NOTE: When applying the SEL-411L relay in line current differential applications, relays at all terminals of a protected line must use firmware that is compatible as shown in Table A.1.

Part Number: **0 4 1 1 L** _ _ _ _ _ _ _ _ **X** _ _ _ _ _ _ _ _

Firmware

Standard Current Differential and Distance Element	0
Standard Plus Sub-cycle Distance Elements, Series Compensation Logic and Traveling-Wave Fault Location*	1
Standard Current Differential and Distance Element for Single Breaker, Three-Pole Tripping Applications*	A C

Conformal Coat

None	X
Conformally Coated Circuit Boards*	2

Power Supply

24-48 Vdc	2
48-125 Vdc or 110-120 Vac	4
125-250 Vdc or 110-240 Vac	6

Connector Type

Screw Terminal Block	X
Connectorized® Relay[5]*	2

Secondary Inputs

300 V Phase - Neutral Maximum (Wye), 1 A Phase	1
300 V Phase - Neutral Maximum (Wye), 5 A Phase	5

Ethernet Communications Protocols and 87L Line Current Differential

None	X X
FTP, Telnet, Synchrophasors and DNP3 LAN/WAN[1]	B
FTP, Telnet, Synchrophasors[6], DNP3 LAN/WAN and IEC 61850[1]*	C

Ethernet Connection Options

None	X X
Four 10/100BASE-T Connectors[1][7]*	6
Four 100BASE-FX Connectors[1]*	7
Two 10/100BASE-T and Two 100BASE-FX Connectors[1][4]*	8

Serial Line Current Differential Communications Channel 1

None[2]	0 0
Isolated EIA-422*	A
Isolated G.703 Co-Directional*	B
850 nm IEEE C37.94 Fiber[7]*	C

1300 nm Fiber*	D
1550 nm Fiber*	E
1300 nm IEEE C37.94 Fiber*	H

Serial Line Current Differential Communications Channel 2

None[(2)]	0
Isolated EIA-422*	A
Isolated G.703 Co-Directional*	B
850 nm IEEE C37.94 Fiber*	C
1300 nm Fiber*	D
1550 nm Fiber*	E
1300 nm IEEE C37.94 Fiber*	H

Mounting

Horizontal Rack Mount	H
Horizontal Panel Mount	3
Vertical Rack Mount	V
Vertical Panel Mount	4

Chassis

4U, One I/O Board	4 X X X X
5U, Up to Two I/O Boards	5 X X
6U, Up to Three I/O Boards	6

I/O Board Position B for 4U, 5U or 6U Chassis

8 Optoisolated Independent Level-Sensitive Inputs, 13 Standard Form A, 2 Standard Form C Outputs*	2
8 Optoisolated Independent Level-Sensitive Inputs, 13 High-Current Interrupting Form A, 2 Standard Form C Outputs*	7
24 Optoisolated Level-Sensitive Inputs, 2 Standard and 6 High-Speed High-Current Interrupting Form A Outputs*	C
24 Optoisolated Level-Sensitive Inputs, 8 Standard Form A Outputs*	D
8 Optoisolated Independent Level-Sensitive Inputs, 8 High-Speed High-Current Interrupting Form A Outputs*	E

I/O Board Position B Input Voltage

24 Vdc	1
48 Vdc	2
110 Vdc	3
125 Vdc	4
220 Vdc	5
250 Vdc	6

I/O Board Position C for 5U or 6U Chassis

Empty I/O Board Position	0 X X X
8 Optoisolated Independent Level-Sensitive Inputs, 13 Standard Form A, 2 Standard Form C Outputs*	2

8 Optoisolated Independent Level-Sensitive Inputs, 13 High-Current Interrupting Form A, 2 Standard Form C Outputs*	7
24 Optoisolated Level-Sensitive Inputs, 2 Standard and 6 High-Speed High-Current Interrupting Form A Outputs*	C
24 Optoisolated Level-Sensitive Inputs, 8 Standard Form A Outputs*	D
8 Optoisolated Independent Level-Sensitive Inputs, 8 High-Speed High-Current Interrupting Form A Outputs*	E

I/O Board Position C Input Voltage

24 Vdc	1
48 Vdc	2
110 Vdc	3
125 Vdc	4
220 Vdc	5
250 Vdc	6

I/O Board Position D for 6U Chassis Only

Empty I/O Board Position	0 X
8 Optoisolated Independent Level-Sensitive Inputs, 13 Standard Form A, 2 Standard Form C Outputs*	2
8 Optoisolated Independent Level-Sensitive Inputs, 13 High-Current Interrupting Form A, 2 Standard Form C Outputs*	7
24 Optoisolated Level-Sensitive Inputs, 2 Standard and 6 High-Speed High-Current Interrupting Form A Outputs*	C
24 Optoisolated Level-Sensitive Inputs, 8 Standard Form A Outputs*	D
8 Optoisolated Independent Level-Sensitive Inputs, 8 High-Speed High-Current Interrupting Form A Outputs*	E

I/O Board Position D Input Voltage

24 Vdc	1
48 Vdc	2
110 Vdc	3
125 Vdc	4
220 Vdc	5
250 Vdc	6

Accessories

Literature		
	Instruction Manual Set for SEL-411L and SEL-400 Series	PM411L-KT-01
Wiring Harness		
	Wiring Harness for Connectorized SEL-411L[5]*	Please see Online MOT or contact SEL REP or CSR for ordering information.

* Additional Cost

[1] Ports 5A and 5B can be configured for line current differential communication or for IEEE Precision Time Protocol (PTP). If PTP is enabled, 87L over Ethernet will be performed on Ports C, D instead of A, B. PTP is only available on Ports A, B.
[2] Line current differential protection requires serial line differential communication options.

[3] This product comes standard with a CD manual. One complimentary printed instruction manual kit is available upon request with each product purchased.
[4] Ports 5A and 5C are dedicated as 100BASE-FX and Ports 5B and 5D are dedicated as 10/100BASE-T.
[5] Order a Connectorized® Wiring Harness for SEL-411L (harness shipped separately).
[6] Synchrophasors are not included with the SEL-411L-A.
[7] Included with the SEL-411L-A.

Table A.1

Firmware Version	Firmware is compatible with:
R101 - R107	R101 - R107
R108 - R123	R108 - R123
R124 - R125	R124 -R125
R126 and higher	R126 and higher

Making Electric Power Safer, More Reliable, and More Economical ®

SEL SCHWEITZER ENGINEERING LABORATORIES, INC.
2350 NE Hopkins Court - Pullman, WA 99163 USA
Phone: +1.509.332.1890 - Fax: +1.509.332.7990