SEL-751

Feeder Protection Relay

SEL-751 Base Unit

- Vertical Chassis
- Front Panel
  - Large LCD Display
  - 8 Programmable Pushbuttons with Two Tri-Color LEDs each
  - 8 Target Tri-Color LEDs (6 Programmable)
  - Operator Control Interface
  - EIA-232 Port
- Processor and Communications Card
  - EIA-232 Port
  - Multimode ST® Fiber-Optic Serial Port (SEL-2812 Compatible)
  - IRIG-B Time Code Input
- Power Supply Card with 2 DI, 3 DO
- Slot Z 4 ACI/3 AVI card
- Synchrophasors with IEEE C37.118 Protocol
- User Configurable Labels
- ACSELERATOR QuickSet ® SEL-5030 Software
- Instruction Manual CD (printed manual available)
- English or Spanish Language Support for Settings and HMI Messages
- Protocols
  - Modbus® RTU
  - SEL ASCII and Compressed ASCII
  - SEL Fast Meter, Fast Operate, Fast SER
  - SEL Fast Message
  - Ymodem File Transfer
  - SEL MIRRORED BITS® Communications
  - Event Messenger®
- 3 Expansion Slots for Optional Cards
- Breaker Monitoring

Part Number: **7 5 1** _ _ _ _ _ _ _ _ _ _ _ _ **0** _ _ _

Firmware

Standard Firmware	0
Standard Firmware plus Reclosing	1
Standard Firmware plus Directional*	2
Standard Firmware plus Arc Sense Technology(7)*	3
Standard Firmware plus Reclosing and Directional*	4
Standard Firmware plus Reclosing, Directional and Arc Sense Technology(7)*	5
Standard Firmware plus Directional including ungrounded, low-impedance grounded, high-impedance grounded and Petersen coil grounded (requires 200mA neutral CT selection)*	6
Standard Firmware plus Reclosing and Directional including ungrounded, low-impedance grounded, high-impedance grounded and Petersen coil grounded (requires 200mA neutral CT selection)*	7
Standard Firmware plus Reclosing, Directional including ungrounded, low-impedance grounded, high-impedance grounded and Petersen coil grounded (requires 200mA neutral CT selection) and Arc Sense Technology(7)*	8

User Interface

English Language Support	0
Spanish Language Support	S

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SELECT Power Supply with I/O Option Slot A

Power Supply 110 –250 Vdc, 110–240 Vac, 50/60 Hz (SELECT PSIO / 2 DI / 3 DO)	125 Vdc/Vac Digital Input	1 A
	24 Vdc/Vac Digital Input	1 B
	48 Vdc/Vac Digital Input	1 C
	110 Vdc/Vac Digital Input	1 D
	220 Vdc/Vac Digital Input	1 G
	250 Vdc/Vac Digital Input	1 H
Power Supply 24–48 Vdc (SELECT PSIO / 2 DI / 3 DO)	125 Vdc/Vac Digital Input	2 A
	24 Vdc/Vac Digital Input	2 B
	48 Vdc/Vac Digital Input	2 C
	110 Vdc/Vac Digital Input	2 D
	220 Vdc/Vac Digital Input	2 G
	250 Vdc/Vac Digital Input	2 H

SELECT Processor Board Option Slot B

Processor Board (SELECT CPU/COM)	All Slot B options include EIA-232 Front, IRIG-B, Fiber Optic Serial Multimode ST, SEL ASCII, Compressed ASCII, Fast Meter, Fast Operate, Fast Message, MIRRORED BITS, and Modbus RTU	0

SELECT Ethernet/Rear Serial Options Slot B

Ethernet/Rear Serial Options	No Ethernet, EIA-232 Rear	0
	No Ethernet, EIA-485 Rear	1
	Single 10/100Base-T Ethernet, EIA-232 Rear*	2
	Single 10/100Base-T Ethernet, EIA-485 Rear*	3
	Single 100Base-FX MM LC Ethernet, EIA-232 Rear*	4
	Dual 10/100Base-T Ethernet, EIA-232 Rear*	6
	Dual 100Base-FX MM LC Ethernet, EIA-232 Rear*	8

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SELECT Protocols Slot B

Protocols	Standard	0
	Standard plus IEC 61850 (requires Ethernet)*	1
	Standard plus DNP3*	2
	Standard plus DNP3 plus IEC 61850 (requires Ethernet)*	3
	Standard plus IEC 60870-5-103*	4
	Standard plus IEC 60870-5-103 plus IEC 61850 (requires Ethernet)*	5
	Standard plus DNP3 plus IEC 60870-5-103*	6
	Standard plus DNP3 plus IEC 60870-5-103 plus IEC 61850 (requires Ethernet)*	7

SELECT I/O Card Option Slot C

No Card	Empty	0 X
Serial Communication Card (SELECT EIA-232/485)*		A 0
DeviceNet Communication Card (SELECT DeviceNet)*		A 3
3 Digital Input / 4 Digital Output / 1 4–20mA Analog Output (SELECT 3 DI / 4 DO / 1 AO)[1]	125 Vdc/Vac DI, Electromechanical DO*	B A
	24 Vdc/Vac DI, Electromechanical DO*	B B
	48 Vdc/Vac DI, Electromechanical DO*	B C
	110 Vdc/Vac DI, Electromechanical DO*	B D
	220 Vdc/Vac DI, Electromechanical DO*	B G
	250 Vdc/Vac DI, Electromechanical DO*	B H
4 Digital Input / 4 Digital Output (SELECT 4 DI / 4 DO)	125 Vdc/Vac DI, Electromechanical DO*	1 A
	24 Vdc/Vac DI, Electromechanical DO*	1 B
	48 Vdc/Vac DI, Electromechanical DO*	1 C
	110 Vdc/Vac DI, Electromechanical DO*	1 D
	220 Vdc/Vac DI, Electromechanical DO*	1 G

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	250 Vdc/Vac DI, Electromechanical DO*	1 H
	125 Vdc/Vac DI, Fast High Current Interrupting DO*	C A
	24 Vdc/Vac DI, Fast High Current Interrupting DO*	C B
	48 Vdc/Vac DI, Fast High Current Interrupting DO*	C C
	110 Vdc/Vac DI, Fast High Current Interrupting DO*	C D
	220 Vdc/Vac DI, Fast High Current Interrupting DO*	C G
	250 Vdc/Vac DI, Fast High Current Interrupting DO*	C H
4 Digital Input / 3 Digital Output (2 Form C, 1 Form B) (SELECT 4 DI / 3 DO)	125 Vdc/Vac DI, Electromechanical DO*	D A
	24 Vdc/Vac DI, Electromechanical DO*	D B
	48 Vdc/Vac DI, Electromechanical DO*	D C
	110 Vdc/Vac DI, Electromechanical DO*	D D
	220 Vdc/Vac DI, Electromechanical DO*	D G
	250 Vdc/Vac DI, Electromechanical DO*	D H
8 Digital Output	Electromechanical Form A DO*	2 A
	Electromechanical Form B DO*	2 B
	Electromechanical, 6 Form A DO, 2 Form B DO*	2 C
	Electromechanical, 2 Form A DO, 6 Form B DO*	2 D
	Electromechanical, 4 Form A DO, 4 Form B DO*	2 G
8 Digital Input (SELECT 8 DI)	125 Vdc/Vac*	3 A
	24 Vdc/Vac*	3 B
	48 Vdc/Vac*	3 C
	110 Vdc/Vac*	3 D
	220 Vdc/Vac*	3 G
	250 Vdc/Vac*	3 H
14 Digital Input (SELECT 14 DI)	125 Vdc/Vac*	4 A
	24 Vdc/Vac*	4 B
	48 Vdc/Vac*	4 C

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	110 Vdc/Vac*	4 D
	220 Vdc/Vac*	4 G
	250 Vdc/Vac*	4 H
8 Analog Input (SELECT 8 AI)	±20 mA or ±10 V Jumper Selectable*	5 X
4 Analog Input / 4 Analog Output (SELECT 4 AI / 4 AO)[2]	±20 mA or ±10 V Jumper Selectable*	6 X

SELECT I/O Card Option Slot D

No Card	Empty	0 X
3 Digital Input / 4 Digital Output / 1 4–20mA Analog Output (SELECT 3 DI / 4 DO / 1 AO)[1]	125 Vdc/Vac DI, Electromechanical DO*	B A
	24 Vdc/Vac DI, Electromechanical DO*	B B
	48 Vdc/Vac DI, Electromechanical DO*	B C
	110 Vdc/Vac DI, Electromechanical DO*	B D
	220 Vdc/Vac DI, Electromechanical DO*	B G
	250 Vdc/Vac DI, Electromechanical DO*	B H
4 Digital Input / 4 Digital Output (SELECT 4 DI / 4 DO)	125 Vdc/Vac DI, Electromechanical DO*	1 A
	24 Vdc/Vac DI, Electromechanical DO*	1 B
	48 Vdc/Vac DI, Electromechanical DO*	1 C
	110 Vdc/Vac DI, Electromechanical DO*	1 D
	220 Vdc/Vac DI, Electromechanical DO*	1 G
	250 Vdc/Vac DI, Electromechanical DO*	1 H
	125 Vdc/Vac DI, Fast High Current Interrupting DO*	C A
	24 Vdc/Vac DI, Fast High Current Interrupting DO*	C B
	48 Vdc/Vac DI, Fast High Current Interrupting DO*	C C
	110 Vdc/Vac DI, Fast High Current Interrupting DO*	C D
	220 Vdc/Vac DI, Fast High Current Interrupting DO*	C G

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	250 Vdc/Vac DI, Fast High Current Interrupting DO*	C H
4 Digital Input / 3 Digital Output (2 Form C, 1 Form B) (SELECT 4 DI / 3 DO)	125 Vdc/Vac DI, Electromechanical DO*	D A
	24 Vdc/Vac DI, Electromechanical DO*	D B
	48 Vdc/Vac DI, Electromechanical DO*	D C
	110 Vdc/Vac DI, Electromechanical DO*	D D
	220 Vdc/Vac DI, Electromechanical DO*	D G
	250 Vdc/Vac DI, Electromechanical DO*	D H
8 Digital Output	Electromechanical Form A DO*	2 A
	Electromechanical Form B DO*	2 B
	Electromechanical, 6 Form A DO, 2 Form B DO*	2 C
	Electromechanical, 2 Form A DO, 6 Form B DO*	2 D
	Electromechanical, 4 Form A DO, 4 Form B DO*	2 G
8 Digital Input (SELECT 8 DI)	125 Vdc/Vac*	3 A
	24 Vdc/Vac*	3 B
	48 Vdc/Vac*	3 C
	110 Vdc/Vac*	3 D
	220 Vdc/Vac*	3 G
	250 Vdc/Vac*	3 H
14 Digital Input (SELECT 14 DI)	125 Vdc/Vac*	4 A
	24 Vdc/Vac*	4 B
	48 Vdc/Vac*	4 C
	110 Vdc/Vac*	4 D
	220 Vdc/Vac*	4 G
	250 Vdc/Vac*	4 H
8 Analog Input (SELECT 8 AI)	±20 mA or ±10 V Jumper Selectable*	5 X
4 Analog Input / 4 Analog Output (SELECT 4 AI / 4 AO)[2]	±20 mA or ±10 V Jumper Selectable*	6 X
10 RTD Input (SELECT 10 RTD)*		9 X

SELECT I/O Card Option Slot E

No Card	Empty	0 X

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3 Digital Input / 4 Digital Output / 1 4–20mA Analog Output (SELECT 3 DI / 4 DO / 1 AO)[1]	125 Vdc/Vac DI, Electromechanical DO*	B A
	24 Vdc/Vac DI, Electromechanical DO*	B B
	48 Vdc/Vac DI, Electromechanical DO*	B C
	110 Vdc/Vac DI, Electromechanical DO*	B D
	220 Vdc/Vac DI, Electromechanical DO*	B G
	250 Vdc/Vac DI, Electromechanical DO*	B H
4 Digital Input / 4 Digital Output (SELECT 4 DI / 4 DO)	125 Vdc/Vac DI, Electromechanical DO*	1 A
	24 Vdc/Vac DI, Electromechanical DO*	1 B
	48 Vdc/Vac DI, Electromechanical DO*	1 C
	110 Vdc/Vac DI, Electromechanical DO*	1 D
	220 Vdc/Vac DI, Electromechanical DO*	1 G
	250 Vdc/Vac DI, Electromechanical DO*	1 H
	125 Vdc/Vac DI, Fast High Current Interrupting DO*	C A
	24 Vdc/Vac DI, Fast High Current Interrupting DO*	C B
	48 Vdc/Vac DI, Fast High Current Interrupting DO*	C C
	110 Vdc/Vac DI, Fast High Current Interrupting DO*	C D
	220 Vdc/Vac DI, Fast High Current Interrupting DO*	C G
	250 Vdc/Vac DI, Fast High Current Interrupting DO*	C H
4 Digital Input / 3 Digital Output (2 Form C, 1 Form B) (SELECT 4 DI / 3 DO)	125 Vdc/Vac DI, Electromechanical DO*	D A
	24 Vdc/Vac DI, Electromechanical DO*	D B
	48 Vdc/Vac DI, Electromechanical DO*	D C

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	110 Vdc/Vac DI, Electromechanical DO*	D D
	220 Vdc/Vac DI, Electromechanical DO*	D G
	250 Vdc/Vac DI, Electromechanical DO*	D H
8 Digital Output	Electromechanical Form A DO*	2 A
	Electromechanical Form B DO*	2 B
	Electromechanical, 6 Form A DO, 2 Form B DO*	2 C
	Electromechanical, 2 Form A DO, 6 Form B DO*	2 D
	Electromechanical, 4 Form A DO, 4 Form B DO*	2 G
8 Digital Input (SELECT 8 DI)	125 Vdc/Vac*	3 A
	24 Vdc/Vac*	3 B
	48 Vdc/Vac*	3 C
	110 Vdc/Vac*	3 D
	220 Vdc/Vac*	3 G
	250 Vdc/Vac*	3 H
14 Digital Input (SELECT 14 DI)	125 Vdc/Vac*	4 A
	24 Vdc/Vac*	4 B
	48 Vdc/Vac*	4 C
	110 Vdc/Vac*	4 D
	220 Vdc/Vac*	4 G
	250 Vdc/Vac*	4 H
8 Analog Input (SELECT 8 AI)	±20 mA or ±10 V Jumper Selectable*	5 X
4 Analog Input / 4 Analog Output (SELECT 4 AI / 4 AO)[2]	±20 mA or ±10 V Jumper Selectable*	6 X
Vsync, Vbat Input and 4 Arc-Flash Detection Input (SELECT 2 AVI/4 AFDI)	Vsync (300Vac), Vbat (300Vdc) Input and Arc-Flash Detection Input [3][4]*	7 0
LEA Vsync, Vbat Input and 4 Arc-Flash Detection Input (SELECT 2 AVI/4 AFDI)	LEA Vsync (8Vac), Vbat (300Vdc) Input and Arc-Flash Detection Input [3][4]*	L 0
8 Arc-Flash Detection Input (8 AFDI)	Arc-Flash Detection Input[3][4]*	7 7

SELECT I/O Card Option Slot Z

3-Phase AC Current Input/Neutral AC Current Input/3-Phase AC Voltage (300 Vac) (SELect 4 ACI/3 AVI)	1 Amp Phase, 1 Amp Neutral	8 1
	1 Amp Phase, 5 Amp Neutral	8 2

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	1 Amp Phase, 200 mA Neutral [6]*	8 3
	5 Amp Phase, 5 Amp Neutral	8 5
	5 Amp Phase, 1 Amp Neutral	8 6
	5 Amp Phase, 200 mA Neutral [6]*	8 7
3-Phase AC Input/Neutral AC Current Input/3-Phase LEA AC Voltage(8 Vac) (SELect 4 ACI/3 AVI)	1 Amp Phase, 1 Amp Neutral	L 1
	1 Amp Phase, 5 Amp Neutral	L 2
	1 Amp Phase, 200 mA Neutral[6]*	L 3
	5 Amp Phase, 5 Amp Neutral	L 5
	5 Amp Phase, 1 Amp Neutral	L 6
	5 Amp Phase, 200 mA Neutral[6]*	L 7

Conformal Coat

None	0
Conformal Coated Circuit Boards*	1

Accessories

Literature		
	Printed Instruction Manual[5]	P M 7 5 1 - 0 1
	Configurable Label Kit*	9 2 6 0 0 7 5
SEL Cables		
	SEL-C804 Multimode Fiber-Optic Arc-Flash Detection (AFD) Sensors (configurable length)*	Please see Online MOT or contact SEL REP or CSR for ordering information.
	SEL-C814 Arc-Flash Detection (AFD) Fiber Cables and Accessories (configurable length and number of splices)*	Please see Online MOT or contact SEL REP or CSR for ordering information.
	SEL-C234 EIA-232 Serial Cable, SEL-751 to DTE Device (9-Pin Female) (configurable length)*	Please see Online MOT or contact SEL REP or CSR for ordering information.
	SEL-C227A EIA-232 Serial Cable, SEL-751 to DTE Device (25-Pin Female) (configurable length)	C 2 2 7 A
	SEL-C222 EIA-232 Serial Cable, SEL-751 to DCE Device (25-Pin Female) (configurable length)	C 2 2 2

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	SEL-C272 EIA-232 Serial Cable, SEL-751 to SEL Communications Processor (without IRIG-B signal) (configurable length)*	Please see Online MOT or contact SEL REP or CSR for ordering information.
	SEL-C273 EIA-232 Serial Cable, SEL-751 to SEL Communications Processor (with IRIG-B signal) (configurable length)*	Please see Online MOT or contact SEL REP or CSR for ordering information.
	SEL-CA605 CAT5e, Shielded Twisted Pair (STP) Ethernet Cable (configurable length)*	Please see Online MOT or contact SEL REP or CSR for ordering information.
	SEL-C805 200 µm Multimode Fiber-Optic Cable (configurable length)*	Please see Online MOT or contact SEL REP or CSR for ordering information.
	SEL-C807 62.5/200 µm Multimode Fiber-Optic Cable (configurable length)*	Please see Online MOT or contact SEL REP or CSR for ordering information.
	SEL-C808 62.5/125 µm Multimode Fiber-Optic Cable (configurable length)*	Please see Online MOT or contact SEL REP or CSR for ordering information.

* Additional Cost

(1) Only one (1) 3 DI/4 DO / 1 AO card per chassis.
(2) Only one (1) 4 AI / 4 AO card per chassis.
(3) For Arc-Flash Detection Point Sensors, Bare-Fiber Sensors, or Cable Accessories, see SEL-C804 Multimode Fiber-Optic Arc-Flash Detection (AFD) Sensors and C814 Arc-Flash Detection (AFD) Fiber Cables and Accessories.
(4) In order to achieve the 2-5 ms operate times for Arc-Flash Protection it is required that the SEL-751 include a 4 DI/4 DO Fast High Current Interrupting Card.
(5) One complimentary printed instruction manual is available upon request with each product purchased.
(6) Non-directional relays can order this CT for SEF protection.
(7) Arc-sense technology for HIF detection is only applicable for low-impedance grounded systems.

NOTES:
- Base unit includes slots A, B (EIA-232), Z, HMI, and Front EIA-232 Port.
- Order 2 AVI / 4 AFDI Card for Vsync, VBat, Arc Flash Detection Input.
- The protocols SNTP and Modbus TCP are included in the STANDARD offering with Ethernet option.
- DNP3 LAN/WAN are included with DNP3 and Ethernet option.
- Download ACSELERATOR QuickSet SEL-5030 software for free at https://www.selinc.com/softwaresolutions/. ACSELERATOR QuickSet on CD (503001WX4) is available upon request.
- The SEL-751 can be ordered with a CD manual.
- A configuration kit is provided for the front panel configurable labels (packaged in the shipping box). For additional kits, order SEL part number 9260075.
- For additional remote I/O capability, order SEL-2505 Remote I/O Module that is SEL-2812 compatible (ST option only).
- Order external AC powered RTD module SEL-2600A or external DC powered RTD module SEL-2600D using WI-5997 to interface remote external resistive temperature devices (RTD) or use internal RTD inputs option in Slot D.
- The SEL-751 option cards are orderable separately for field installation. Use WI-12625 and contact your SEL representative to order option cards.
- For relay wire termination kits, please see Application Note AN2014-08 on the SEL website or contact SEL REP or CSR for ordering information.
- For SEL-751 Mounting Accessories including adapter plates, dust protectors, etc go to www.selinc.com/mounting_selector/.
- All Digital Outputs are Form-A unless noted otherwise.

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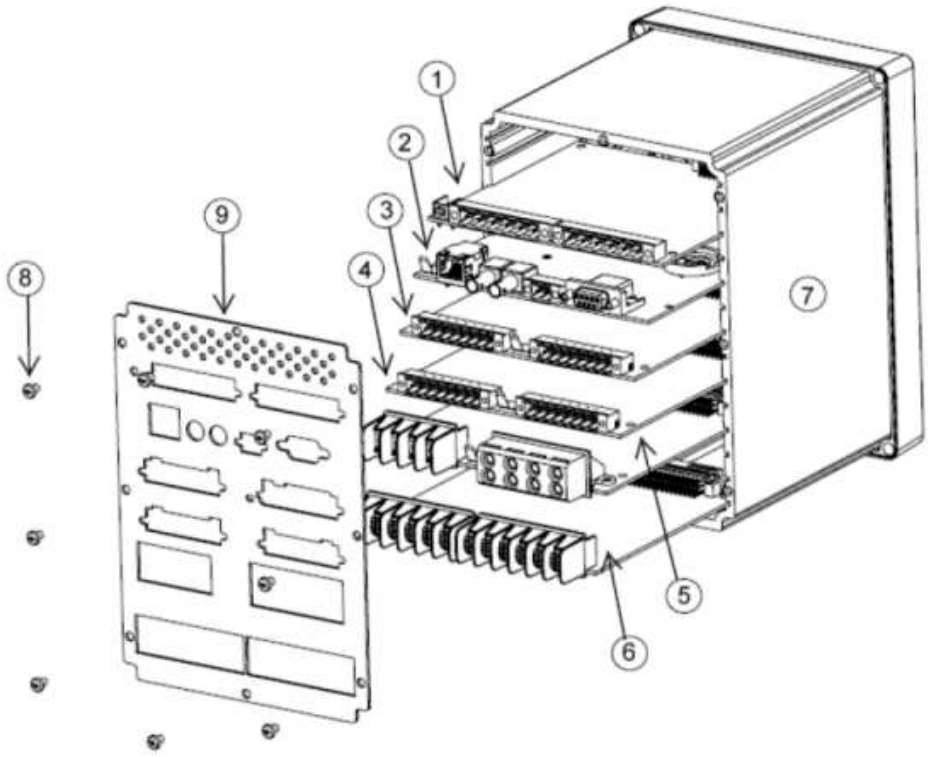
Chassis Card Slot Configuration Example



① SELECT Power Supply Card with I/O (Slot A)
② SELECT Processor and Communications Card (Slot B)
③ SELECT I/O Expansion Card (Slot C)
④ SELECT I/O Expansion Card (Slot D)
⑤ SELECT I/O Expansion Card (Slot E)
⑥ SELECT ACI/AVI Card (Slot Z)
⑦ Device Case
⑧ Rear Panel Mounting Screws
⑨ Rear Panel

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

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