SEL-787-2, -3, -4 Transformer Protection Relay

Standard Features

- **Protection**
  - Phase Differential Elements
  - Overcurrent
  - Breaker Monitoring
  - Breaker Failure
- **Hardware**
  - 6 AC Current Inputs
    - Slot Z
  - 2 Digital Inputs (DI)
    - Slot A
  - 3 Digital Outputs (DO)
    - Slot A
  - Multimode Fiber ST (Port 2)
    - Slot B
  - IRIG-B Time Code Input
    - Slot B
- **Human Machine Interface (HMI)**
  - Display
  - Programmable Pushbuttons with Two Tri-Color LEDs each
  - 8 Target Tri-Color LEDs (6 Programmable)
  - Operator Control Interface
  - EIA-232 Port (Port F)
  - Multi-language support
- **Protocols**
  - IEEE C37.118 Synchrophasors
  - 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
- **Other**
  - Instruction Manual CD
  - ACSELERATOR QuickSet SEL-5030 Software
  - User Configurable Labels

Part Number:	0	7	8	7																	
Model Options																					
Two-Winding Current Differential					2	X															
Two-Winding Current Differential, 1 Neutral Current Input					2	1								A							
Two-Winding Current Differential, 1 Neutral Current and 3 Voltage Inputs					2	E								7							
Three Winding Current Differential, 1 Neutral Current and 3 Voltage Inputs					3	E								7							
Three Winding Current Differential with Four Voltage Inputs (Phase and Sync/Vbat)					3	S								7							
Four Winding Current Differential					4	X								A							
User Interface																					
English							E														
Spanish							S														
Front Panel																					
2x16 LCD With 8 Pushbuttons																		0			
5" Color Touchscreen With 8 Pushbuttons																		A			
Slot A Power Supply Voltage | Slot A Digital Input Voltage																					
110–250 Vdc (110–240 Vac) | 125 Vdc/Vac								1	A												
110–250 Vdc (110–240 Vac) | 24 Vdc/Vac								1	B												
110–250 Vdc (110–240 Vac) | 48 Vdc/Vac								1	C												
110–250 Vdc (110–240 Vac) | 110 Vdc/Vac								1	D												
110–250 Vdc (110–240 Vac) | 220 Vdc/Vac								1	G												

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110–250 Vdc (110–240 Vac) | 250 Vdc/Vac	1	H
24-48 Vdc | 125 Vdc/Vac	2	A
24-48 Vdc | 24 Vdc/Vac	2	B
24-48 Vdc | 48 Vdc/Vac	2	C
24-48 Vdc | 110 Vdc/Vac	2	D
24-48 Vdc | 220 Vdc/Vac	2	G
24-48 Vdc | 250 Vdc/Vac	2	H

Slot B Ethernet (Port 1) | Rear Serial Port (Port 3)

o EIA-485 available only with No Ethernet or Single 10/100BASE-T Ethernet options in slot B

None | EIA-232	0
None | EIA-485	1
Single 10/100BASE-T | EIA-232	2
Single 10/100BASE-T | EIA-485	3
Single 100BASE-FX MM LC | EIA-232	4
Dual 10/100BASE-T | EIA-232	6
Dual 100BASE-FX MM LC | EIA-232	8

IEC 61850 Protocol | DNP3 Protocol | IEC 60870-5-103 Protocol | EtherNet/IP Protocol

o IEC 61850 and EtherNet/IP available only for models with Ethernet options in Slot B

None	0
IEC 61850 Protocol	1
DNP3 Protocol	2
IEC 61850 Protocol | DNP3 Protocol	3
IEC 60870-5-103 Protocol	4
IEC 61850 Protocol | IEC 60870-5-103 Protocol	5
DNP3 Protocol | IEC 60870-5-103 Protocol	6
IEC 61850 Protocol | DNP3 Protocol | IEC 60870-5-103 Protocol	7
EtherNet/IP Protocol	8
IEC 61850 Protocol | EtherNet/IP Protocol	9
DNP3 Protocol | EtherNet/IP Protocol	A
IEC 60870-5-103 Protocol | EtherNet/IP Protocol	B
IEC 61850 Protocol | DNP3 Protocol | EtherNet/IP Protocol	C
IEC 61850 Protocol | IEC 60870-5-103 Protocol | EtheNet/IP Protocol	D
DNP3 Protocol | IEC 60870-5-103 Protocol | EtherNet/IP Protocol	E
IEC 61850 Protocol | DNP3 Protocol | IEC 60870-5-103 Protocol | EtherNet/IP Protocol	F

Slot C | Slot C Digital Input Voltage

o Only one (1) 3 DI / 4 DO / 1 AO card per chassis
o Only one (1) 4 AI / 4 AO card per chassis

Empty	0	X
Serial Communications (EIA-232/485)	A	0
3 DI / 4 DO / 1 AO (4-20 mA Range) | 125 Vdc/Vac	B	A

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3 DI / 4 DO / 1 AO (4-20 mA Range) | 24 Vdc/Vac										B	B										
3 DI / 4 DO / 1 AO (4-20 mA Range) | 48 Vdc/Vac										B	C										
3 DI / 4 DO / 1 AO (4-20 mA Range) | 110 Vdc/Vac										B	D										
3 DI / 4 DO / 1 AO (4-20 mA Range) | 220 Vdc/Vac										B	G										
3 DI / 4 DO / 1 AO (4-20 mA Range) | 250 Vdc/Vac										B	H										
4 DI / 4 DO Electromechanical | 125 Vdc/Vac										1	A										
4 DI / 4 DO Electromechanical | 24 Vdc/Vac										1	B										
4 DI / 4 DO Electromechanical | 48 Vdc/Vac										1	C										
4 DI / 4 DO Electromechanical | 110 Vdc/Vac										1	D										
4 DI / 4 DO Electromechanical | 220 Vdc/Vac										1	G										
4 DI / 4 DO Electromechanical | 250 Vdc/Vac										1	H										
4 DI / 4 DO Fast High Current Hybrid | 125 Vdc/Vac										C	A										
4 DI / 4 DO Fast High Current Hybrid | 24 Vdc/Vac										C	B										
4 DI / 4 DO Fast High Current Hybrid | 48 Vdc/Vac										C	C										
4 DI / 4 DO Fast High Current Hybrid | 110 Vdc/Vac										C	D										
4 DI / 4 DO Fast High Current Hybrid | 220 Vdc/Vac										C	G										
4 DI / 4 DO Fast High Current Hybrid | 250 Vdc/Vac										C	H										
8 DO Electromechanical (Form A)										2	A										
8 DO Electromechanical (Form B)										2	B										
8 DO Electromechanical (6 Form A, 2 Form B)										2	C										
8 DO Electromechanical (2 Form A, 6 Form B)										2	D										
8 DO Electromechanical (4 Form A, 4 Form B)										2	G										
8 DI | 125 Vdc/Vac										3	A										
8 DI | 24 Vdc/Vac										3	B										
8 DI | 48 Vdc/Vac										3	C										
8 DI | 110 Vdc/Vac										3	D										
8 DI | 220 Vdc/Vac										3	G										
8 DI | 250 Vdc/Vac										3	H										
14 DI | 125 Vdc/Vac										4	A										
14 DI | 24 Vdc/Vac										4	B										
14 DI | 48 Vdc/Vac										4	C										
14 DI | 110 Vdc/Vac										4	D										
14 DI | 220 Vdc/Vac										4	G										
14 DI | 250 Vdc/Vac										4	H										
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 125 Vdc/Vac										D	A										
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 24 Vdc/Vac										D	B										

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4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 48 Vdc/Vac										D	C										
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 110 Vdc/Vac										D	D										
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 220 Vdc/Vac										D	G										
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 250 Vdc/Vac										D	H										
4 AI / 4 AO (±20 mA or ±10 V Range)										6	X										

Slot D | Slot D Digital Input Voltage

o Only one (1) 3 DI / 4 DO / 1 AO card per chassis
o Only one (1) 4 AI / 4 AO card per chassis

Empty												0	X								
3 DI / 4 DO / 1 AO (4-20 mA Range) | 125 Vdc/Vac												B	A								
3 DI / 4 DO / 1 AO (4-20 mA Range) | 24 Vdc/Vac												B	B								
3 DI / 4 DO / 1 AO (4-20 mA Range) | 48 Vdc/Vac												B	C								
3 DI / 4 DO / 1 AO (4-20 mA Range) | 110 Vdc/Vac												B	D								
3 DI / 4 DO / 1 AO (4-20 mA Range) | 220 Vdc/Vac												B	G								
3 DI / 4 DO / 1 AO (4-20 mA Range) | 250 Vdc/Vac												B	H								
4 DI / 4 DO Electromechanical | 125 Vdc/Vac												1	A								
4 DI / 4 DO Electromechanical | 24 Vdc/Vac												1	B								
4 DI / 4 DO Electromechanical | 48 Vdc/Vac												1	C								
4 DI / 4 DO Electromechanical | 110 Vdc/Vac												1	D								
4 DI / 4 DO Electromechanical | 220 Vdc/Vac												1	G								
4 DI / 4 DO Electromechanical | 250 Vdc/Vac												1	H								
4 DI / 4 DO Fast High Current Hybrid | 125 Vdc/Vac												C	A								
4 DI / 4 DO Fast High Current Hybrid | 24 Vdc/Vac												C	B								
4 DI / 4 DO Fast High Current Hybrid | 48 Vdc/Vac												C	C								
4 DI / 4 DO Fast High Current Hybrid | 110 Vdc/Vac												C	D								
4 DI / 4 DO Fast High Current Hybrid | 220 Vdc/Vac												C	G								
4 DI / 4 DO Fast High Current Hybrid | 250 Vdc/Vac												C	H								
8 DO Electromechanical (Form A)												2	A								
8 DO Electromechanical (Form B)												2	B								
8 DO Electromechanical (6 Form A, 2 Form B)												2	C								
8 DO Electromechanical (2 Form A, 6 Form B)												2	D								
8 DO Electromechanical (4 Form A, 4 Form B)												2	G								
8 DI | 125 Vdc/Vac												3	A								
8 DI | 24 Vdc/Vac												3	B								
8 DI | 48 Vdc/Vac												3	C								

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8 DI | 110 Vdc/Vac												3	D									
8 DI | 220 Vdc/Vac												3	G									
8 DI | 250 Vdc/Vac												3	H									
14 DI | 125 Vdc/Vac												4	A									
14 DI | 24 Vdc/Vac												4	B									
14 DI | 48 Vdc/Vac												4	C									
14 DI | 110 Vdc/Vac												4	D									
14 DI | 220 Vdc/Vac												4	G									
14 DI | 250 Vdc/Vac												4	H									
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 125 Vdc/Vac												D	A									
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 24 Vdc/Vac												D	B									
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 48 Vdc/Vac												D	C									
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 110 Vdc/Vac												D	D									
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 220 Vdc/Vac												D	G									
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 250 Vdc/Vac												D	H									
4 AI / 4 AO (±20 mA or ±10 V Range)												6	X									
10 RTD Inputs												9	X									

Slot E \| Slot E Digital Input Voltage

o Only one (1) 3 DI / 4 DO / 1 AO card per chassis
o Only one (1) 4 AI / 4 AO card per chassis

Empty					2	X								0	X							
3 DI / 4 DO / 1 AO (4-20 mA Range) | 125 Vdc/Vac					2	X								B	A							
3 DI / 4 DO / 1 AO (4-20 mA Range) | 24 Vdc/Vac					2	X								B	B							
3 DI / 4 DO / 1 AO (4-20 mA Range) | 48 Vdc/Vac					2	X								B	C							
3 DI / 4 DO / 1 AO (4-20 mA Range) | 110 Vdc/Vac					2	X								B	D							
3 DI / 4 DO / 1 AO (4-20 mA Range) | 220 Vdc/Vac					2	X								B	G							
3 DI / 4 DO / 1 AO (4-20 mA Range) | 250 Vdc/Vac					2	X								B	H							
4 DI / 4 DO Electromechanical | 125 Vdc/Vac					2	X								1	A							
4 DI / 4 DO Electromechanical | 24 Vdc/Vac					2	X								1	B							
4 DI / 4 DO Electromechanical | 48 Vdc/Vac					2	X								1	C							
4 DI / 4 DO Electromechanical | 110 Vdc/Vac					2	X								1	D							
4 DI / 4 DO Electromechanical | 220 Vdc/Vac					2	X								1	G							
4 DI / 4 DO Electromechanical | 250 Vdc/Vac					2	X								1	H							
4 DI / 4 DO Fast High Current Hybrid | 125 Vdc/Vac					2	X								C	A							
4 DI / 4 DO Fast High Current Hybrid | 24 Vdc/Vac					2	X								C	B							
4 DI / 4 DO Fast High Current Hybrid | 48 Vdc/Vac					2	X								C	C							

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4 DI / 4 DO Fast High Current Hybrid | 110 Vdc/Vac					2	X								C	D						
4 DI / 4 DO Fast High Current Hybrid | 220 Vdc/Vac					2	X								C	G						
4 DI / 4 DO Fast High Current Hybrid | 250 Vdc/Vac					2	X								C	H						
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 125 Vdc/Vac					2	X								D	A						
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 24 Vdc/Vac					2	X								D	B						
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 48 Vdc/Vac					2	X								D	C						
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 110 Vdc/Vac					2	X								D	D						
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 220 Vdc/Vac					2	X								D	G						
4 DI / 3 DO Electromechanical (2 Form C, 1 Form B) | 250 Vdc/Vac					2	X								D	H						
8 DO Electromechanical (Form A)					2	X								2	A						
8 DO Electromechanical (Form B)					2	X								2	B						
8 DO Electromechanical (6 Form A, 2 Form B)					2	X								2	C						
8 DO Electromechanical (2 Form A, 6 Form B)					2	X								2	D						
8 DO Electromechanical (4 Form A, 4 Form B)					2	X								2	G						
8 DI | 125 Vdc/Vac					2	X								3	A						
8 DI | 24 Vdc/Vac					2	X								3	B						
8 DI | 48 Vdc/Vac					2	X								3	C						
8 DI | 110 Vdc/Vac					2	X								3	D						
8 DI | 220 Vdc/Vac					2	X								3	G						
8 DI | 250 Vdc/Vac					2	X								3	H						
14 DI | 125 Vdc/Vac					2	X								4	A						
14 DI | 24 Vdc/Vac					2	X								4	B						
14 DI | 48 Vdc/Vac					2	X								4	C						
14 DI | 110 Vdc/Vac					2	X								4	D						
14 DI | 220 Vdc/Vac					2	X								4	G						
14 DI | 250 Vdc/Vac					2	X								4	H						
4 AI / 4 AO (±20 mA or ±10 V Range)					2	X								6	X						
1 Amp Neutral AC Current Input (SELECT 1 ACI)					2	1								A	6						
5 Amp Neutral AC Current Input (SELECT 1 ACI)					2	1								A	7						
1 Amp Neutral AC Current Input / 3-Phase AC Voltage (300 Vac) Inputs (SELECT 1 ACI / 3 AVI)					2	E								7	8						
5 Amp Neutral AC Current Input / 3-Phase AC Voltage (300 Vac) Inputs (SELECT 1 ACI / 3 AVI)					2	E								7	9						
3-Phase 1 Amp AC Current Input / 1 Amp Neutral AC Current Input / 3-Phase AC Voltage (300 Vac) Inputs (SELECT 4 ACI / 3 AVI)					3	E								7	2						
3-Phase 5 Amp AC Current Input / 5 Amp Neutral AC Current Input / 3-Phase AC Voltage (300 Vac) Inputs (SELECT 4 ACI / 3 AVI)					3	E								7	6						

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3-Phase 5 Amp AC Current Input / 1 Amp Neutral AC Current Input / 3-Phase AC Voltage (300 Vac) Inputs (SELECT 4 ACI / 3 AVI)	3 E 7 3
3-Phase 1 Amp AC Current Input / 5 Amp Neutral AC Current Input / 3-Phase AC Voltage (300 Vac) Inputs (SELECT 4 ACI / 3 AVI)	3 E 7 7
3-Phase 1 Amp AC Current Input / 3-Phase AC Voltage (300 Vac) and Vsync/Vbat Inputs (300 V) (SELECT 3 ACI / 4 AVI)	3 S 7 1
3-Phase 5 Amp AC Current Input / 3-Phase AC Voltage and Vsync/Vbat Inputs (300 V) (SELECT 3 ACI / 4 AVI)	3 S 7 5
6-Phase AC Current Input (1 Amp Winding 3/1 Amp Winding 4) (SELECT 6 ACI)	4 X A 1
6-Phase AC Current Input (1 Amp Winding 3/5 Amp Winding 4) (SELECT 6 ACI)	4 X A 2
6-Phase AC Current Input (5 Amp Winding 3/5 Amp Winding 4) (SELECT 6 ACI)	4 X A 5

Slot Z Current Inputs

6-Phase AC Current Input (1 Amp Winding 1/1 Amp Winding 2) (SELECT 6 ACI)	8 1
6-Phase AC Current Input (1 Amp Winding 1/5 Amp Winding 2) (SELECT 6 ACI)	8 2
6-Phase AC Current Input (5 Amp Winding 1/5 Amp Winding 2) (SELECT 6 ACI)	8 5

Conformal Coat

None	0
Conformally Coated Circuit Boards*	1

Accessories

Literature		
	Printed Instruction Manual	PM787-02
	Configurable Label Kit for 8 Pushbutton SEL-700BT, SEL-700G, SEL-710-5, SEL-751, SEL-787-2, -3, -4 (2 Sheets)*	9260136
	Configurable Label Kit for 8 Pushbutton SEL-700BT, SEL-700G, SEL-710-5, SEL-751, SEL-787-2, -3, -4 (25 Sheets)*	9260137
SEL Cables		
	SEL-C222 Serial Cable for Modem (RS-232, DTE-DCE, DB9 M/DB25 M, Hardware Flow Control)*	Please see Online MOT or contact SEL REP or CSR for ordering information.

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	SEL-C227A Serial Cable for PC (RS-232, DTE-DTE, DB9 M/DB25 F, Hardware Flow Control)*	Please see Online MOT or contact SEL REP or CSR for ordering information.
	SEL-C234 Serial Cable (RS-232, DTE-DTE, DB9 M/DB9 F)*	Please see Online MOT or contact SEL REP or CSR for ordering information.
	SEL-C272 Serial Cable (RS-232, DTE-DTE, DB9 M/DB9 M, Hardware Flow Control)*	Please see Online MOT or contact SEL REP or CSR for ordering information.
	SEL-C273 Serial Cable (RS-232, DTE-DTE, DB9 M/DB9 M, IRIG-B)*	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 62.5/200µm 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*	Please see Online MOT or contact SEL REP or CSR for ordering information.
	SEL-CA605 CAT5e, Shielded Twisted Pair (STP) Ethernet Cable*	Please see Online MOT or contact SEL REP or CSR for ordering information.

Additional Information

• Base unit includes slots A, B (EIA-232), Z, HMI, and Front EIA-232 Port.
• The protocols SNTP, IEEE 1588-2008 firmware-based PTP and Modbus TCP are included in the standard offering with Single Ethernet option.
• The protocols SNTP, IEEE 1588-2008 firmware-based PTP, PRP and Modbus TCP are included in the standard offering with Dual Ethernet option.
• DNP3 LAN/WAN are included with DNP3 and Ethernet options.
• 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-787-2,-3,-4 comes standard with a CD manual. One complimentary printed instruction manual is available upon request with each product purchased.
• A configuration kit is provided for the front panel configurable labels (packaged in the shipping box). For additional kits, order SEL part number 9260136 (2 Sheet Kit) or 9260137 (25 Sheet Kit).
• 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-787-2,-3,-4 option cards are orderable separately for field installation. Use WI-12174 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-787-2,-3,-4 Mounting Accessories including adapter plates, dust protectors, etc go to https://selinc.com/applications/mountingselector/.
• acSELerator Bay Screen Builder SEL-5036 software is available with touchscreen models.
• All Digital Outputs are Form-A unless noted otherwise.

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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

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