

Transformer Protection and Monitoring

Applications	SEL-487E	SEL-387E	SEL-387	SEL-387A	SEL-787	SEL-787-2X/-21/-2E	SEL-787-3E/-3S/-4X	SEL-587	SEL-2414	Instrumentation and Control	SEL-487E	SEL-387E	SEL-387	SEL-387A	SEL-787	SEL-787-2X/-21/-2E	SEL-787-3E/-3S/-4X	SEL-587	SEL-2414	
Breaker Failure Protection	■	f	f	f	■	■	■	f	f	SELogic® Control Equations	■	■	■	■	■	■	■	■	■	
Transformer and Machine Current Differential	■	■	■	■	■	■	■	■		Voltage Check on Closing	f	f			f	f	f			
Low-Impedance Bus Differential	■	■	■				■			Transformer Cooling Fan Control	f				f	f	f		■	
Underfrequency Load Shedding	■	f			+	+	+			Nonvolatile Latch Control Switches	■	■	■	■	■	■	■		■	
Undervoltage Load Shedding	■	f			+	+	+			SELogic Remote Control Switches	■	■	■	■	■	■	■	■	■	
Three-Phase Current Inputs	5	3	4	2	2	2*	3 or 4	2	3*	SELogic Local Control Switches	■	■	■	■	■	■	■		■	
Three-Phase Voltage Inputs	2	1			1*	1*	1*		1*	Display Points	■	■	■	■	■	■	■		■	
Protection										Multiple Settings Groups	■	■	■	■	■	■	■			
24 Overexcitation (Volts/Hertz)	■	■			+	+	+			Substation Battery Monitor	■	■	■	■		+	+		f	
25 Synchronism Check	■						+			Breaker Wear Monitor	■	■	■	■		■	■			
27/59 Under-/Overvoltage	■	■			+	+	+			Event Report (Multicycle Data)	■	■	■	■	■	■	■	■	■	
32 Directional Power	■				+	+	+			Sequential Events Recorder	■	■	■	■	■	■	■		■	
46 Current Unbalance	■									Instantaneous and Demand Meter	■	■	■	■	■	■	■	■	■	
49 Equipment Thermal Monitoring	■		+	■	■	■	■			Load and Temperature Profile Report	■				■	■	■		■	
50FO Flashover Protection	f	f			f	f	f			RTD (Resistance Temperature Detector) Inputs					+	+	+		+	
50 (N,G) Overcurrent (Neutral, Ground)	■	■	■	■	■	■	■	■		Built-In Web Server	■	■				+	+			
50P Phase Overcurrent, 50Q Negative-Sequence Overcurrent	■	■	■	■	■	■	■	■		Software-Invertible Polarities	■									
51 (N,G) Time Overcurrent (Neutral, Ground)	■	■	■	■	■	■	■	■		IEC 60255-Compliant Thermal Model	■									
51P Phase Time Overcurrent	■	■	■	■	■	■	■	■		IEEE C37.118 Synchrophasors	■			■	■	■				
51Q Negative-Sequence Time Overcurrent	■	■	■	■	■	■	■	■		IEC 61850	+	+			+	+	+		+	
67 (P,G,Q) Directional Overcurrent (Phase, Ground, Negative Sequence)	■									IEC 61850-9-2 Sampled Values Technology	+									
81 Under-/Overfrequency	■	■			+	+	+			Simple Network Time Protocol (SNTP)	■				+	+	+			
81R Rate-of-Change of Frequency	f									Parallel Redundancy Protocol (PRP)	■				+	+	+			
87 Current Differential	■	■	■	■	■	■	■	■		IEEE 1588 Precision Time Protocol Version 2 (PTPv2)						+	+			
REF Restricted Earth Fault	■	■	■	+	+	+	■			EtherNet/IP							+	+		
										Time-Domain Link (TiDL®) Technology	+									
										Through-Fault Monitor	■	■	+	■	■	■	■	■	■	
										Thermal Model/SEL-2600 RTD Module Communications	■		+	■	■	■	■		■	

■ Standard feature + Model option

f May be created using relay elements, device word bits, analog quantities, and timers