

Create Advanced Automation and Control Systems



Use SELogic[®] control equations for high-speed automation, protection, control, and reporting.



Features and Benefits

Protection

Coordinate complex trip and close decisions to clear faults using data from up to 15 remote devices.

Integration

Communicate using SEL MIRRORING BITS[®] communications, DNP3 Level 2 Slave, and SEL Fast Meter and Fast Operate protocols.

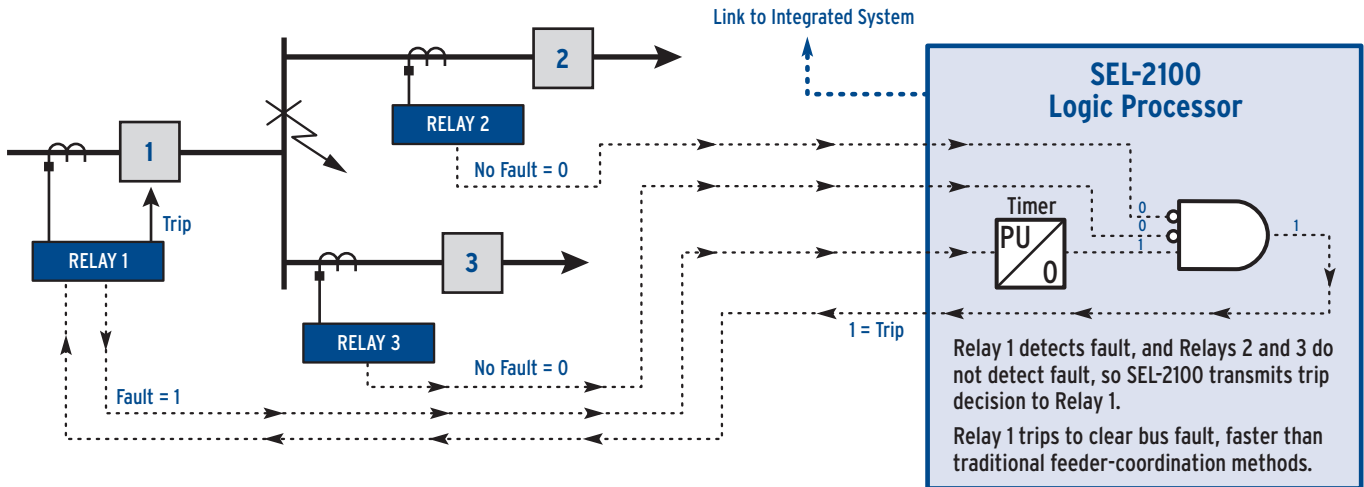
Automation and Control

Use local and remote information to dynamically control power system apparatus and switch relay settings groups. Apply Advanced Application Logic for high-speed control and fast reconfiguration to meet system needs.

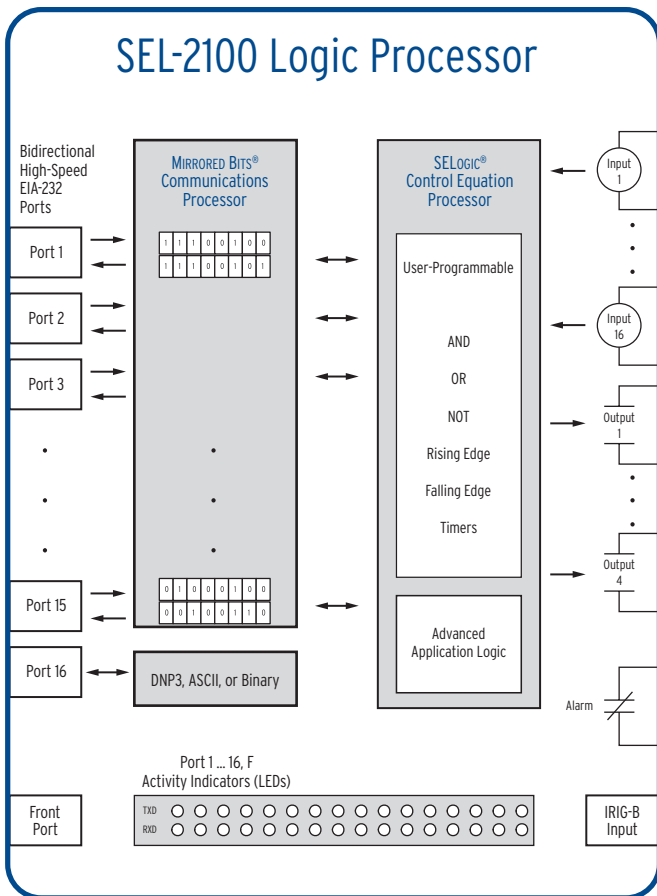
Sequential Events Recorder

Stores status of up to 144 user-selected elements in more than 32,000 nonvolatile records.

Fast Bus Trip Application Diagram



Functional Overview



Speed SEL-2100 Applications With ACSELERATOR QuickSet® SEL-5030 Software

- Save engineering time and decrease settings errors. Communicate with the SEL-2100 Logic Processors through any ASCII terminal, or use the ACSELERATOR QuickSet graphical user interface.
- Develop settings offline with a menu-driven interface and complete help screens. Speed installation by copying existing settings files and modifying application-specific items.
- Simplify the settings procedure with rules-based architecture to automatically check interrelated settings. Out-of-range or conflicting settings are highlighted for correction.

Use ACSELERATOR QuickSet Designer® Feature for QuickSet Design Templates

- Create custom views of settings, called QuickSet Design Templates with ACSELERATOR QuickSet Designer. This makes installation of a new device simple and helps ensure that new devices are applied according to your organization's standards. For example, rename, hide, lock, or calculate selected settings.
- Import and use the custom templates with ACSELERATOR QuickSet Software. Each device requires few user entries because the template hides the standardized, unused, and application-specific settings.

Advanced Application Logic

Advanced Application Logic Modules

The SEL-2100 can be ordered with optional logic modules, called Advanced Application Logic. For special applications, SEL engineers can deliver custom high-speed logic applications as Advanced Application Logic in Logic Processors. The first standard module available from SEL is the Crosspoint Switch (CPS) Advanced Application Logic.

CPS Advanced Application Logic

The CPS table below is an array of bits (32 rows by 128 columns). Rows correspond to logic variables in the SEL-2100 (Row 1 to LV1, Row 2 to LV2, etc.) and are the inputs to the CPS logic. Columns correspond to SEL-2100 Transmit MIRRORRED BITS outputs for Ports 1–16 and 8 logic points (LP9–LP16). Connect the inputs to the outputs by enabling switch cells (the light-blue cells of the CPS table below) using SEL Fast Message commands. SEL communications processors or rugged computers quickly change the CPS switch-cell assignments through SEL Fast Messages.

	Port 1									Port 15																
Bits	0	1	2	3	4	5	6	7	...	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	
LV1									...																	
LV2																										
.																										
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LV31																										
LV32																										
Relay Word Bit	T8 P1	T7 P1	T6 P1	T5 P1	T4 P1	T3 P1	T2 P1	T1 P1	...	T8P 15	T7P 15	T6P 15	T5P 15	T4P 15	T3P 15	T2P 15	T1P 15	LP 9	LP 10	LP 11	LP 12	LP 13	LP 14	LP 15	LP 16	

Receive MIRRORRED BITS elements and other logic points are combined in each logic variable and then routed to the Transmit MIRRORRED BITS elements on each port, based upon the enabled switch cells (the light-blue cells) in the CPS table. In this example, when LV1 asserts, the SEL-2100 asserts Port 1 TMB1 (T1P1) and Port 15 TMB3 (T3P15). When LV31 asserts, the SEL-2100 asserts Port 15 TMB8 (T8P15).

SEL engineers initially applied the CPS Advanced Application Logic to implement an optimal, adaptive load-shedding system for a large refinery. Software in an SEL rugged computer uses SEL Fast Messages to rapidly redefine the intersection points in the matrix to change the load-dropping priorities to match plant conditions.

SEL-2100 Logic Processor

General Specifications

Rear Serial Data Ports 1-16

Interface	EIA-232 + IRIG-B
Connector	9-pin female, DTE
Speed	300 to 38400 bits per second
Protocols	MIRRORED BITS communications (ports 1-15 only), DNP3, SEL ASCII, SEL Fast Messages (Only one port can be set to DNP3)

Front Serial Port

Interface	EIA-232
Connector	9-pin female, DTE
Speed	300 to 9600 bits per second
Protocol	SEL ASCII

Rear Time-Code Input

Connector	Female BNC
Time Codes	Modulated or demodulated IRIG-B

Sequential Events Recorder

Programmable SER Triggers	144
Time-Stamped Records	32000

Rear Digital I/O

Base Unit

Alarm Output	1
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Optional I/O

Digital Outputs (DO)	4
Digital Inputs (DI)	16
DI Voltages	24, 48, 110, 125, 250 Vdc or Vac

Front-Panel HMI

1 lamp test pushbutton

LEDs

17 green transmit data (TXD)
17 red receive data (RXD)
1 red ALARM

SELogic Control Equations

Elements	1030
Edges	216
Remote Bits	64
Logic Variables	32

Substation- and Plant-Grade Equipment

Designed, built, and tested with the same practices, processes, and standards that are used for SEL protective relays, communications processors, and other products.



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