SEL-3351 Computing Platform Guideform Specification

The SEL-3351 System Computing Platform shall operate as a computer with network access to provide a combination of functions including, but not limited to, automatic transmission of outgoing messages and parsing of responses, data aggregation, simultaneous collection of data from serial and Ethernet server devices (both SEL and non-SEL devices), and simultaneous data access for multiple client devices. The SEL-3351 shall conform to various industry standards, operate in harsh environments, and provide the operational and functional requirements as described below:

Power Supply. The Computing Platform shall be capable of operating on a wide range of power supply voltages and shall be available with one of three power supply types: 85–300 Vdc or 85–264 Vac, 38–140 Vdc or 85–140 Vac, or 20–60 Vdc.

Temperature. The Computing Platform shall be capable of continuous operation over a temperature range of –40° to +75°C (–40° to +167°F) at 50 percent processor burden in order to allow mounting in an outdoor control cubicle. The Computing Platform shall be type tested to IEC 60068-2-1:1990 (Test Ad 16 hr @ –40°C), IEC 60068-2-2:1974 (Test Bd 16 hr @ +75°C), and IEC 60068-2-30:1980 (Test Db 12 + 12-hour cycle @ 25° to 55°C, 6 cycles).

Environmental Testing. The Computing Platform shall be tested to the same standards as protective relays including IEC 60255-21-1, IEC 60255-21-2, IEC 60255-21-3, IEC 60255-22-1, IEC 60255-22-2, EN 61000-4-2, IEC 60255-22-3, IEC 60255-22-4, EN 61000-4-4, and IEEE C37.90.1 (see Specifications for details).

Communication Ports. The Computing Platform shall have two USB front-panel ports. Two USB ports, 16 serial ports, and two Ethernet ports shall be located on the rear panel. Two pins on each serial port shall be available as a demodulated IRIG-B time-synchronization signal. Sixteen rear ports shall have a selectable +5 Vdc output on Pin 1. Each rear serial port shall be capable of operation at 300–115200 bps. Ethernet ports shall be independent. All communication ports shall be ESD and RFI protected.

Password Security. The Computing Platform shall have a standard Microsoft® Windows® logon system. The passwords shall be user configurable and allow up to 12 characters including case-sensitive letters, digits, and special characters including !@#$%^&*()-_=+;:,<.>/?'"\|. This password scheme meets or exceeds all of the requirements of the DOE Password Guide (DOE G 205.3-1).

Configuration. Configuration of messages and data processing functions shall be through a simple GUI interface. Configuration interface shall be through local keyboard, mouse, and monitor port or via Windows Remote Desktop.

Alarm Output. There shall be an alarm contact output to signal internal errors and malfunctions. The alarm contact shall be controlled by an internal watchdog system that independently monitors the operating system.

Operating System. The Computing Platform shall be configured with Microsoft Windows XP Professional Operating System.

Configuration Storage. The Computing Platform shall store all settings and configuration in nonvolatile memory, allowing recovery after prolonged loss of power including failure of the internal battery.

Nonvolatile Storage. There shall be flash memory used as nonvolatile storage of incoming and calculated data within the Computing Platform. Data stored in the nonvolatile memory shall be available for retrieval after sustained power outage including failure of the internal battery.

Moving Parts and Vent Holes. The Computing Platform shall exclude all rotating disk drives, fans, moving parts, and vent holes.

Warranty. The Computing Platform shall be warranted for a minimum of 10 years.