The SEL-3360-2 Compact Industrial Computer uses a high-performance x86-64 architecture processor to support modern operating systems like Microsoft Windows and Linux. The extremely rugged SEL hardware of the SEL-3360-2 enables you to use your choice of computer operating system and software in very harsh environments not suitable for general purpose computers.

Integrate the SEL-3360-2 in computing applications that demand high performance, reliability, and low maintenance in extreme, harsh environments. The SEL-3360-2 offers a mean time between failure (MTBF) of at least ten times that of typical industrial computers by eliminating all moving parts, including rotating hard drives and fans; using high-quality solid-state drives; and by using error-correcting memory technology. By eliminating vent holes, the SEL-3360-2 significantly reduces dust buildup and foreign contaminants. Power the SEL-3360-2 from 12 Vdc power sources with voltage ranging from 10.0–16.6 Vdc, enabling simple integration with common power sources and battery-powered systems with high float-charge levels. You can install software from SEL and third-party software vendors to customize the SEL-3360-2 for your specific applications. Every SEL-3360-2 comes with the unprecedented ten-year, worldwide SEL warranty.

### Major Features and Benefits

The SEL-3360-2 provides a rugged, easy-to-use computing platform for substation, industrial, or other harsh environments.

- **x86-64 Architecture.** The SEL-3360-2 uses the Intel Xeon E3 microprocessor architecture to deliver very high performance and broad operating system and software compatibility. Multiple processor cores and Intel Hyper-Threading Technology enable you to run multiple time-critical applications simultaneously. Choose between 2.0 GHz and 2.8 GHz quad-core CPU options.

- **Operating System Choices.** The SEL-3360-2 may be purchased as hardware only, or with a variety of modern Microsoft Windows operating systems to provide extreme flexibility and functionality along with enhanced security features.
➤ **Form Factor.** The SEL-3360-2 provides a compact wall-mount chassis, designed for substation and industrial control applications. The system includes rear-panel I/O connectors for network, peripherals, storage, video, audio, alarm, and serial I/O—all with protection against electrical shock and surge.

➤ **Power Supply.** The SEL-3360S-2 can be powered from any 12 Vdc source, such as the robust, reliable SEL-9331 power supply module. The SEL-3360E-2 has an integral power supply that can be powered from low- and high-voltage ac and dc power sources.

➤ **Mass Storage.** The SEL-3360-2 supports two 2.5-inch SATA drives, which are hot-swappable and accessible after removing the right-side panel. High-performance, industrial-rated solid-state drives (SSD) are available as ordering options.

➤ **RAID.** The integrated SATA controller supports Redundant Array of Independent Disks (RAID) configurations to maximize data availability and improve storage volume performance.

➤ **Display Interfaces.** DVI, DisplayPort, or HDMI video connections enable you to connect as many as three simultaneous, independent, high-definition displays.

➤ **Audio Interface.** Analog HD audio inputs and outputs enable connection to amplified speakers, microphone, and audio sources for clear audible user feedback, audio capture and analysis, and voice recognition. Digital audio can be streamed through the digital display interfaces for simple integration and high-definition surround-sound.

➤ **USB Connectivity.** The SEL-3360-2 has four rear-panel and two front-panel USB ports for connection to a local keyboard, mouse, and any USB peripherals. Each port is individually current limited, protecting the system from external short circuits, and enabling high-power devices such as USB hard drives to be powered from any USB port.

➤ **PCIe Expansion.** The SEL-3360E-2 supports as many as two standard PCIe form factor expansion cards, enabling you to customize the system I/O to meet your application needs. Choose from a selection of SEL PCIe expansion cards, or install your own custom third-party expansion card.

➤ **Ethernet.** Two 10/100/1000 Mbps Ethernet connections on the rear panel support high-speed network connectivity and enable connections to independent networks, or redundant paired network connections. Network interface cards such as the SEL-3390E4 quad-gigabit Ethernet card can be added to the SEL-3360E-2 for additional network connectivity.

➤ **Serial I/O.** Two standard EIA-232 serial ports enable connection to nearby electronic devices such as automation controllers, communication radios, and modems. As many as two SEL-3390S8 serial expansion cards can be added to the SEL-3360E-2 for applications that require many serial I/O connections and IRIG time synchronization and distribution.

➤ **System Monitoring and Watchdog.** An embedded controller works in unison with the SEL SysMon software to provide an extra level of computer system reliability and detect failures in the application software or operating system. The system logs any abnormal conditions, enables the system alarm to alert operators of a problem, and if necessary, can restart the system to return to a good operation state.

➤ **Alarm Contact Output.** SEL SysMon software controls the alarm contact output to signal in case of system health problems or malfunctions. The Form C contact supports both normally open and normally closed alarm operation.

➤ **Remote Management.** The SEL-3360-2 supports remote access over Ethernet by using Windows Remote Desktop or Intel vPro Active Management Technology (AMT), enabling full access to the system video, keyboard, mouse, and storage.
Functional Overview

**Watchdog Functionality**

An embedded controller provides an extra level of computer system reliability. One function of the embedded controller is to restart the computer if there is an operating system problem or a problem with specific software services running on the operating system.

**SEL System Monitor**

SEL System Monitor software monitors system performance and component health. Alerts for alarm conditions are issued on configurable thresholds. Example thresholds include CPU usage, free disk space, and available system memory.

**Ethernet**

Ethernet connections allow the SEL-3360-2 to connect to two separate, high-speed Ethernet networks via built-in Gigabit Ethernet. Aggregate ports for increased performance or redundancy or separate local area networks (LANs) for control, data, or engineering access. Additional copper or fiber-optic Ethernet ports can be added to the SEL-3360E-2 by installing PCI Express expansion cards such as the SEL-3390E4. For information on those cards, please refer to the appropriate expansion card instruction manual.

**Time**

The COM 1 serial port accepts IRIG-B time-code input for precise time input from a GPS clock or other source.

**EIA-232 Serial Ports**

The SEL-3360-2 computing platform has two built-in EIA-232 DB-9 ports, which can provide +5 V power to run external transceivers, modems, and other serial-connected accessories. Additional serial ports can be added to the SEL-3360E-2 by installing PCI Express expansion cards such as the SEL-3390S8. For information on those cards, please refer to the appropriate expansion card instruction manual.

**Alarm Output**

An alarm contact output on the rear panel can be used to signal internal errors and operating system malfunctions.

**Programmable LEDs**

Program three front-panel bicolor LEDs for use with your custom applications.

**Out-of-Band Management**

Intel vPro Active Management Technology (AMT) provides out-of-band management for security, configuration, and monitoring.
Applications

Virtualization for HMI and Other Applications

Create your own virtualization appliance by leveraging Intel Virtualization Technology (VT-x) to allow one hardware platform to function as multiple “virtual” platforms. Isolate your computing activity onto separate virtual machines to maintain productivity and realize improved manageability and reduced downtime. For example, run a virtualized OS specifically for your HMI or other essential but noncritical applications. Should your HMI require that the system be restarted, simply restart the virtual machine and avoid an outage for your other critical processes. Similarly, multiple SEL-3360-2 computing platforms may be virtualized and entire operating systems transparently migrated from one physical SEL-3360-2 to another for hardware upgrades, security or software updates, or testing purposes.

Control System Applications

Use the SEL-3360-2 for process control applications, including as an HMI or for protocol conversion and high-speed control when working with other SEL products and solutions.

Security Applications

Improve security with a single sign-on, enabled through using the SEL-3360-2 as a local Lightweight Directory Access Protocol (LDAP) server. Centrally manage user accounts and group memberships with Microsoft Active Directory or with your choice of back-end database support.

Disturbance Recording System for PRC-002-2

Event Collection Applications
Front- and Rear-Panel Diagrams

1. **LAMP TEST** Button. Press and hold to test front-panel LEDs. Can be programmed to be an on/off or reset button.
2. **ENABLED** and **ALARM** LEDs provide operational status. A green **ENABLED** LED indicates normal operation. The **ALARM** LED illuminates red when a nonoptimal system condition exists.
3. **ETHERNET** Status Indicators. **LINK (LNK)** indicates that the port is connected, and **ACT (ACT)** indicates when data are being transmitted and received.
4. **SERIAL** Status Indicators. **TX** and **RX** LEDs indicate activity on serial ports.
5. **PINHOLE** button. Provides reset and power functions; requires a pushpin to prevent accidental use.
6. **HDD** Activity Indicator. Illuminates when SATA drives are accessed.
7. **AUXILIARY** Status Indicators. Three programmable, bicolor LEDs for your custom application.
8. **USB** Ports. Two easily accessible ports to connect USB 3.1 peripherals.

**Figure 7** Front-Panel Diagram
Figure 8 Rear-Panel Diagram

1. **DVI-D**. Connect digital monitors by using native DVI or an HDMI adapter.
2. **ETH1** and **ETH2**. Onboard independent Gigabit Ethernet interfaces.
3. **USB** Ports. Connect as many as four USB 3.1 peripherals at the rear panel.
4. **AUDIO** Ports. Line Input (blue), Line Output (green), and Microphone Input (pink).
5. **COM1** and **COM2**. Standard EIA-232 serial ports with configurable +5 Vdc power on Pin 1.
6. **DISPLAYPORT**. Connect new digital monitors supporting the DisplayPort interface.
7. **GROUND** Terminal Screw. The earth ground connection for the SEL-3360-2.
8. **POWER** Input Terminals. The rated input voltage is clearly marked on the chassis near the terminals.
9. **ALARM**. The Form C alarm contact output enables both normally closed and normally open wiring connections.
10. **PCI** Expansion Slots. Install SEL or third-party PCI Express expansion cards for additional network, serial, or other application-specific I/O.
Product Dimensions

Figure 9  SEL-3360S Dimensions Diagram

Figure 10  SEL-3360E Dimensions Diagram
Specifications

Compliance

Designed and manufactured under an ISO 9001 certified quality management system

47 CFR 15B, Class A

Note: This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at his own expense.

UL Recognized to U.S. and Canadian safety standards (File E220228, NRAQ)
CE Mark
RCM Mark
RoHS Compliant

General

Supported Operating Systems

Microsoft Windows 7
Microsoft Windows 8/8.1
Microsoft Windows 10*
Microsoft Windows Server 2008 R2
Microsoft Windows Server 2012 R2
Microsoft Windows Server 2016*
Microsoft Windows Server 2019*
CentOS Linux 6
CentOS Linux 7
Red Hat Enterprise Linux 6
Red Hat Enterprise Linux 7
VMware ESXi 5.x and 6.0
* Orderable as a factory-installed option.

CPU

Intel Xeon E3-1505L Quad-Core
Speed: 2.0 GHz base, 2.8 GHz turbo
Cache: 1 MB L2, 8 MB L3

Intel Xeon E3-1505M Quad-Core (SEL-3360S-2 Only)
Speed: 2.8 GHz base, 3.7 GHz turbo
Cache: 1 MB L2, 8 MB L3

RAM

4–32 GB DDR4 ECC PC4-17000 (2133 MHz)

Chipset

Intel CM236 Express Chipset

Mass Storage

Internal Drive Bay: Supports 2.5 inch SATA drives, two industrial-grade drives, one consumer-grade drive

Intel CM236 SATA Controller provides standard AHCI and Intel RST RAID modes

SATA II 3.0 Gb/s
RAID level 0, 1
Hot-Swap Support

Optional SATA Drives:
- Industrial-Grade SLC SSD
  30–250 GB
  10-year warranty
- Industrial-Grade iMLC SSD
  120–480 GB
  5-year warranty
- Consumer-Grade MLC SSD
  240–1920 GB
  3-year warranty

Video

Intel P530 Graphics Controller

Three Independent Displays:
- DVI-D (digital only) maximum resolution
  1920 x 1200 @ 60 Hz
- DisplayPort 1.2 maximum resolution
  4096 x 2304 @ 60 Hz
- Cable length <10 m

Audio

TSI (IDT) 92HD91 HD Audio Codec

3 Analog 3.5 mm TRS Jacks:
- Line input
- Line/headphone output
- Microphone input
- Cable length <2 m

Intel Display Audio

Digital Audio Outputs: DVI-D1, DVI-D2, DisplayPort

USB

4 Rear-Panel Ports, 2 Front-Panel Ports
USB 3.1 Compliant
2000 mA Maximum Current Each
Cable length <2 m
2 Internal Ports on 1 Main Board Header
USB 2.0 Compliant

Expansion Cards (SEL-3360E-2 Only)

2 Half-Length, Full-Height PCI Expansion Card Slots:
- PCI 1: PCIe x1 (Revision 2.0)
- PCI 2: PCIe x4 (Revision 2.0)

Ethernet

2 Rear-Panel, 1 Gbps Copper RJ45 Ports

ETH1: Intel WG1219LM, 10/100/1000 Mbps RJ45 copper

ETH2: Intel WG1210IT, 10/100/1000 Mbps RJ45 copper

Optional SEL-3390E4 PCIe x4 Expansion Card (SEL-3360E-2 Only):
As many as four additional 10/100/1000 Mbps ports, copper or LC fiber SFP

Serial Ports

Standard Ports: 2 EIA-232 ports, DB-9 connectors
300 to 115200 bps
(Meets EIA/TIA-562 Specifications)

Optional SEL-3390S8 PCIe x1 Expansion Cards (SEL-3360E-2 Only):
As many as 12 additional EIA-232/EIA-422/EIA-485 ports, RJ45 connectors
300 to 921600 bps

Time-Code Input

Main Board (Input Only)

Connector: COM1 DB-9 serial port

Time Code: Demodulated IRIG-B TTL compatible
SEL-3390S8 Expansion Card (Input/Output) (SEL-3360E-2 Only)

Connector: RJ45 serial port
Time Code: Demodulated IRIG-B TTL compatible

Note: Output generated from either IRIG-B input or SEL-3360-2 clock.

Real-Time Clock/Calendar

Battery Type: IEC No. BR2335 Lithium
Battery Life: 10 years with power
2 years without power

BIOS

AMI UEFI

Trusted Platform Module

Infineon SLB 9670VQ2.0 TPM 2.0

Intel Active Management Technology

Intel AMT v11, accessible through ETH1

Power Supply

See Table 1 for additional burden information.

No Power Supply (SEL-3360S-2 only)

Voltage Rating: 12 Vdc
Voltage Range: 10–16.6 Vdc
Typical Burden: 25 W
Max Burden: 144 W (cold startup)
Peak Inrush: 15 A
Negative input power terminal is internally tied to chassis ground.

SEL-9331 160 W LV Power Supply

Voltage Rating: 48 Vdc
Voltage Range: 38–58 Vdc
Maximum Constant Burden
External SEL-9331: 149 W
Internal SEL-3360E-2: 178 W
Maximum Peak Burden: 225 W
DC Ripple: <15% rated voltage
Peak Inrush: 20 A
Insulation: 3600 Vdc
Input Isolated From Chassis Ground: Yes

SEL-9331 160 W HV Power Supply

Voltage Ratings: 125/250 Vdc
120/220/240 Vac; 50/60 Hz
DC Range: 100–300 Vdc
Maximum DC Dropout: 88 Vdc
AC Range: 85–264 Vac
Frequency Range: 45–65 Hz
Maximum Constant Burden
External SEL-9331: 155 W, 160 VA
Internal SEL-3360E-2: 188 W, 194 VA
Maximum Peak Burden: 240 W, 248 VA
DC Ripple: <15% rated voltage
Peak Inrush: 20 A
Insulation: 3600 Vdc

Power Factor: >0.9 (at full load)
Input Isolated From Chassis Ground: Yes

Recommended External Overcurrent Protection

Breaker Type: Standard
Breaker Rating: 20 A at 250 Vdc
Current Breaking Capacity: 10 kA
Grounded Neutral Systems: Devices in series with the HOT or energized conductor
DC and Isolated Systems: Device in serial with both conductors
Distance from Equipment: Less than 2 m

Fuse Ratings

12 Vdc Input Power
Fuse F1: 60 Vdc/50 A break rating

LV Power Supply Fuse
Rating: 15 A
Maximum Rated Voltage: 500 Vdc, 500 Vac
Breaking Capacity: 20 kA at 500 Vdc
Type: Time-lag T

HV Power Supply Fuse
Rating: 5 A
Maximum Rated Voltage: 250 Vdc, 277 Vac
Breaking Capacity: 1500 A at 277 Vac
Type: Time-lag T
Heater Fuses F2, F3: 5 A, 125 V slow blow
125 Vdc/50 A break rating
Fuses are not serviceable.

Alarm Output Contact

Per IEC 255-0-20:1974, using the simplified method of assessment
Output Type: Relay, Form C, break-before-make
Power Supply Burden: <1 W maximum
Mechanical Life: 2000000 operations
Operational Voltage: 250 Vac/Vdc
Make: 30 A at 250 Vdc
Carry: 6 A continuous at 70°C
1 s Rating: 50 A
MOV Protection: 270 Vac/360 Vdc, 75 J
Insulation Voltage: 300 Vac/Vdc
Pickup Time: <8 ms
Dropout Time: <8 ms
Breaking Capacity (10,000 Operations):
24 V 0.75 A L/R = 40 ms
48 V 0.50 A L/R = 40 ms
125 V 0.30 A L/R = 40 ms
250 V 0.20 A L/R = 40 ms
Cyclic Capacity (2.5 Cycles/Second):
24 V 0.75 A L/R = 40 ms
48 V 0.50 A L/R = 40 ms
125 V 0.30 A L/R = 40 ms
250 V 0.20 A L/R = 40 ms
Terminal Ratings

Compression Screw Terminal

Power Wiring
- Insulation: 300 V min.
- Size: 12–14 AWG, length <2 m

Alarm Wiring
- Insulation: 300 V min.
- Size: 12–18 AWG

Tightening Torque
- Minimum: 0.6 Nm (5 in-lb)
- Maximum: 0.8 Nm (7 in-lb)

Crimp Ferrule Recommended

Grounding Screw

Ground Wiring
- Insulation: 300 V min.
- Size: 12 AWG, length <3 m

Tightening Torque
- Minimum: 0.9 Nm (8 in-lb)
- Maximum: 1.4 Nm (12 in-lb)

Ring Terminal Recommended

Serial Port

Tightening Torque
- Minimum: 0.6 Nm (5 in-lb)
- Maximum: 0.8 Nm (7 in-lb)

Video Port

Tightening Torque
- Minimum: 0.6 Nm (5 in-lb)
- Maximum: 0.8 Nm (7 in-lb)

Temperature Range

Operating
- SEL-3360S-2 With E3-1505L CPU: –40° to +75°C (~40° to +167°F)
- SEL-3360S-2 With E3-1505M CPU: –40° to +60°C (~40° to +140°F)
- SEL-3360E-2 With E3-1505L CPU: –40° to +60°C (~40° to +140°F)

Note: UL ambient 40°C. See Safety Information in the SEL-3360-2 Instruction Manual for additional restrictions.

Storage
- –40° to +85°C (~40° to +185°F)

Relative Humidity
- 5% to 95% noncondensing

Maximum Altitude
- 5000 m

Atmospheric Pressure
- 80–110 kPa

Overvoltage Category
- Category II

Insulation Class
- 1

Pollution Degree
- 2

Weight
- 4.1 kg (9 lb) maximum (SEL-3360S-2)
- 6.8 kg (15 lb) maximum (SEL-3360E-2)

Product Standards

Communications
- IEC 61850-3:2013
- IEEE 1613-2009
- Severity Level: Class 1

Industrial Environment
- IEC 61000-6-2:2005
- IEEE 61000-6-4:2006

Electrical Equipment for Measurement, Control, and Laboratory Use
- IEC 61010-1:2013
- UL 61010-1:2016, C22.2 No. 61010-1:12
- IEC 61010-2-201:2013
- UL 61010-2-201:2017, C22.2 No. 61010-2-201:14

Measuring Relays and Protection Equipment
- IEC 60255-26:2013
- IEC 60255-27:2013

Type Tests

Note: To ensure good EMI and EMC performance, type tests were performed using shielded Ethernet and serial cables with the shield grounded at both ends of the cable, and the USB, video, and audio cables with ferrite chokes. Double-shielded cables are recommended for best EMI and EMC performance.

Electromagnetic Compatibility Emissions

Conducted and Radiated
- CISPR 11:2009 + A1:2010
- CISPR 22:2008
- CISPR 32:2015
- IEC 61000-6-4:2006
- IEC 61850-3:2013
- FCC 15.107:2014
- Severity Level: Class A

Harmonic Current:
- IEC 61000-3-2:2014
- Severity Level: Class A

Voltage Flicker:
- IEC 61000-3-3:2013

Electromagnetic Compatibility Immunity

Conducted RF:
- IEC 61000-4-6:2013
- Severity Level: 10 Vrms

Electrostatic Discharge:
- IEC 61000-4-2:2008
- IEEE C37.90.3-2001
- Severity Level:
  - 2, 4, 6, 8 kV contact discharge;
  - 2, 4, 8, 15 kV air discharge

Fast Transient/Burst:
- IEC 61000-4-4:2012
- Severity Level: Class A
  - 4 kV, 5 kHz on power supply and outputs;
  - 2 kV, 5 kHz on communications lines

Magnetic Field:
- IEC 61000-4-8:2009
- Severity Level:
  - 1000 A/m for 3 s
  - 100 A/m for 1 m

Power Supply:
- IEC 61000-4-11:2004
- IEC 61000-4-29:2000

Radiated Radio Frequency:
- Severity Level: 10 V/m
- IEEE C37.90.2-2004
- Severity Level: 20 V/m
### Surge Withstand Capability:

- **Surge Withstand Capability:** IEC 61000-4-18:2006 + A1:2010
  - **Severity Level:**
    - Power supply and outputs
      - 2.5 kV peak common mode
      - 1.0 kV peak differential mode
    - Communications ports
      - 1.0 kV peak common mode
  - IEEE C37.90.1-2012
  - **Severity Level:**
    - 2.5 kV oscillatory
    - 4 kV fast transient

### Surge Immunity:

- **Surge Immunity:** IEC 61000-4-5:2005
  - 1 kV line-to-line
  - 2 kV line-to-earth
  - 2 kV communications ports

### Environmental

#### Change of Temperature:

- **Change of Temperature:** IEC 60068-2-14:2009
  - **Severity Level:**
    - 5 cycles, 1°C per minute ramp
  - SEL-3360S-2 With E3-1505L CPU: -40°C to +75°C
  - SEL-3360S-2 With E3-1505M CPU: -40°C to +60°C
  - SEL-3360E-2 With E3-1505L CPU: -40°C to +60°C

#### Cold, Operational:

- **Cold, Operational:** IEC 60068-2-1:2007
  - **Severity Level:** 16 hours at -40°C

#### Cold, Storage:

- **Cold, Storage:** IEC 60068-2-1:2007
  - **Severity Level:** 16 hours at -40°C

#### Damp Heat, Cyclic:

- **Damp Heat, Cyclic:** IEC 60068-2-30:2005
  - **Severity Level:** 12 + 12-hour cycle
    - 25°C to 55°C, 6 cycles, >93% r.h.

#### Damp Heat, Steady:

- **Damp Heat, Steady:** IEC 60068-2-78:2012
  - **Severity Level:**
    - 40°C, 240 hours, >93% r.h.

#### Dry Heat, Operational:

- **Dry Heat, Operational:** IEC 60255-1:2009
  - IEC 61850-3:2013
  - IEC 60068-2-2:2007
  - **Severity Level:**
    - SEL-3360S-2 With E3-1505L CPU: 16 hours at 75°C
    - SEL-3360S-2 With E3-1505M CPU: 16 hours at 60°C
    - SEL-3360E-2 With E3-1505L CPU: 16 hours at 60°C

#### Dry Heat, Storage:

- **Dry Heat, Storage:** IEC 60255-1:2009
  - IEC 61850-3:2013
  - IEC 60068-2-2:2007
  - **Severity Level:**
    - 16 hours at 85°C

#### Free Fall:

- **Free Fall:** IEEE 1613-2009
  - **Severity Level:** 100 mm

#### Vibration:

- **Vibration:** IEC 60255-21-1:1988
  - **Severity Level:**
    - Endurance Class 2
    - Response Class 2
  - IEC 60255-21-2:1988
  - **Severity Level:**
    - Shock Withstand, Bump Class 1
    - Shock Response Class 2
  - IEC 60255-21-3:1993
  - **Severity Level:**
    - Quake Response Class 2

### Safety

#### Enclosure Protection:

- **Enclosure Protection:** IEC 60529-2001 + CRGD:2003
  - **Severity Level:** IP30

#### Dielectric Strength:

- **Dielectric Strength:** IEC 60255-27:2013
  - IEEE C37.90-2005
  - **Severity Level:**
    - 3600 Vdc on power supply
    - 2500 Vac on contact output
    - 1500 Vac Ethernet ports
    - Type tested for one minute

#### Impulse:

- **Impulse:** IEC 60255-27:2013
  - IEEE C37.90-2005
  - **Severity Level:**
    - 5 kV common mode, power supply, contact outputs
    - 1.5 kV Ethernet ports
### Table 1  System Power Consumption (at 12 Vdc Input Voltage)

<table>
<thead>
<tr>
<th>Component</th>
<th>Power Consumptiona</th>
</tr>
</thead>
<tbody>
<tr>
<td>Base System (E3-1505L CPU, 4 GB RAM, 1 SATA Drive):</td>
<td>Minimum</td>
</tr>
<tr>
<td>Base System (E3-1505L CPU, 4 GB RAM, 1 SATA Drive):</td>
<td>15 W</td>
</tr>
</tbody>
</table>

**Additional Consumption From Optional Components**

- SEL-9331 Power Supply (standard on SEL-3360E-2): +10 W +10 W +10 W
- E3-1505M CPU: +2 W +5 W +13 W
- 8–32 GB RAM Configuration: +2 W +2 W +3 W
- 2nd SATA Drive: +1 W +2 W +3 W
- SEL-3390E4 Ethernet Card: +6 W +8 W +10 W
- SEL-3390S8 Serial Card: +4 W +5 W +7 W
- Chipset Heaterb
  - cold startup (<5°C [41°F]): N/A N/A +90 W
  - continuous operation (0°C [32°F]): 0 W +5 W +10 W
  - continuous operation (–40°C [–40°F]): 0 W +20 W +40 W

*a Minimum: 0% load on all components; minimum power consumption booted up and idle.
Typical: 25%–50% load on all components; good indication of most application loads.
Maximum: 100% load on all components; generally cannot be reached in normal applications.

b Chipset heaters operate at low temperatures to keep the CPU and PCH within specified operating limits.

### Table 2  Peripheral Connection Rated Current Output

<table>
<thead>
<tr>
<th>Connection</th>
<th>Current Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>DVI-D</td>
<td>0.2 A, +5 Vdc, 1 W total for both</td>
</tr>
<tr>
<td>DisplayPort</td>
<td>0.6 A, +3.3 Vdc, 2 W</td>
</tr>
<tr>
<td>COM1 and COM2</td>
<td>0.5 A, +5 Vdc, 2.5 W each</td>
</tr>
<tr>
<td>USB Ports</td>
<td>2.0 A, +5 Vdc, 10 W each, 25 W all ports combined</td>
</tr>
</tbody>
</table>