EMD®’s Locomotive Interface Gateway (LIG) is an innovative, integrated design solution that utilizes a state-of-the-art Cat® A5:N2 controller. The secure OEM platform relies on various ports that interface with proprietary networks for EM2000, Functional Integrated Railroad Electronics (FIRE) and EMDEC®. These ports also enable the system to communicate with legacy equipment—including Positive Train Control (PTC), event recorders, end of train (EOT) devices, fuel monitors and more. LIG’s robust design offers a common network architecture for all third party applications, no matter what vintage EMD® locomotive. Ruggedized for the rail environment, the solution’s 6 Modular Concept Unit (MCU) requires no forced air cooling and meets or exceeds industry EMI standards.

Features:
- Collects data from Locomotive Control System (LCS) and other on-board systems for consumption, per industry standard
  - Provides periodic data to any approved onboard systems (Class C)
  - Provides interface for “command and control” functions (Class D)
  - Provides “standardized” Positive Train Control (PTC) data set to PTC system
- Interface with onboard communications system to provide railroad back office with real-time alerts and fault data
- Physical attributes
  - 6 MCU size
  - 15 pounds
  - Locomotive system integration shelf or wall bracket mount

LIG serves as a base platform for the following products:
- Remote software upload
  - Phase I — EM2000
    EMDEC®
    CAL Codes,
    FIRE
  - Phase II — MPU
    EMDEC® Software
    3rd Party Systems
- LEADER® Autocontrol
- Locomotive Command and Control Module (LCCM)
- IntelliTrain™ without FIRE

USB Ports
One USB port in conformance with USB 2.0 functional and electrical specifications

LED’s
- POWER Green
- STATUS Green
- FAILURE Red

RS-485 Port
One RS-485 port with maximum bit rate of 250k Baud and a minimum bit rate of 152 baud in compliance with RS-485 interface specifications

Dual Ground Lugs
Dual #10 Chassis Ground

CAN Ports
Two 3-wire CAN 2.0B ports supporting both the standard (11-bit) and extended (29-bit) message frames described in the Bosch CAN 2.0B specification capable of communicating at a maximum bit rate of 500 kbit/s, with support for 250kbit/s and 125kbit/s

RS-232 Ports
Three RS-232 ports with maximum bit rate of 115.2k baud and a minimum bit rate of 50 baud in compliance with EIA RS-232 interface specifications

Ethernet Ports
Four Ethernet ports that conform to appropriate IEEE 802.3 standards

Power 15VDC
POWER input rated at 15VDC +/- 10%, typical operation 6W with maximum 30W
## TESTING — ENVIRONMENT

<table>
<thead>
<tr>
<th>TEST DESCRIPTION</th>
<th>SPECIFICATION SECTION</th>
<th>TEST RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>TEMPERATURE VIBRATION (RANDOM)</td>
<td>59401, IEC 61373, and IEC 60729-3-5</td>
<td>Pass</td>
</tr>
<tr>
<td>MECHANICAL SHOCK</td>
<td>Customer Instruction with ref. Mil-STD-810G, Method 516.6, Procedure II</td>
<td>Pass</td>
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## TESTING EMI

<table>
<thead>
<tr>
<th>TEST DESCRIPTION</th>
<th>TESTED RANGE</th>
<th>RESULTS</th>
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<tbody>
<tr>
<td>CE</td>
<td>Conducted Emissions</td>
<td>9kHz to 30MHz</td>
</tr>
<tr>
<td>RE</td>
<td>Radiated Emissions</td>
<td>150kHz to 4GHz</td>
</tr>
<tr>
<td>RI</td>
<td>Radiated Immunity</td>
<td>80MHz to 2.5GHz</td>
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</tbody>
</table>

## TESTING STANDARDS

- **BS EN 50121-3-2:2006**: Railway applications – Electromagnetic compatibility – Part 3-2: Rolling stock -Apparatus
- **CISPR 11: 2010 Edition 5.1**: Industrial, scientific and medical equipment. Radio-frequency disturbance characteristics. Limits and methods of measurement
- **AARS-9401**: Railroad Electronics Environmental Requirements