Overview

The Element-D (Model ED1) is a wall-powered Internet of Things (IoT) smart programmable product that connects many lab instruments. The pre-configured device includes a specific cable and configurable software that automatically retrieves data from its assigned equipment. After retrieving data, the device securely transmits this data directly to the EM Insights Dashboard, which provides a digital data archive for interactive monitoring, documentation, and transforming this data into insights via state-of-the-art data science.

Performance Highlights

• Connects to any lab instrument equipped with a digital output
• Expansive communication library supports many instruments
• Retrieves digital data automatically from instruments and securely transmits it to EM Insights Dashboard
• Expandable platform can easily add more devices
• Mounts magnetically with no mounting screws

Communication

• **Wireless Communication**: Requires WiFi or Ethernet network access with direct connection from device to EM Insights Dashboard
• **Wireless Range**: ~100 ft (~33 m)
• **Data Sampling Rate**: 15 seconds
• **Reporting**: Record data and automate weekly or monthly reports
• **Security**: Google Cloud Platform’s (GCP) SOC2 compliant services keeps data safe
• **Connectivity**: Application Programming Interface (API) sends data to 3rd party software platforms

Connect many different devices, capture digital data, and send securely to the EM Insights Dashboard

<table>
<thead>
<tr>
<th>SENSOR SPECIFICATIONS</th>
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<tbody>
<tr>
<td><strong>Size</strong>: 3.6 in x 2.5 in x 1.1 in (9.2 cm x 6.2 cm x 2.8 cm)</td>
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<tr>
<td><strong>Power Requirements</strong>: 5V, 2.4A micro-USB power adapter</td>
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<tr>
<td><strong>Operating Conditions</strong> 32°F – 122°F (0°C – 50°C)</td>
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Installation

Each Element-D device includes a power cable, a data cable, and comes pre-configured to a specific lab equipment machine. The data cable connects the Element-D to the digital output module on the lab equipment. The device contains a magnet that holds it firmly in place. If attaching to a non-ferrous surface, you can request an Elemental Metal Mounting Plate. There are no tools, mounting holes, or screws required.

Many Applications

- Balance - mass and label
- CO₂ Incubators - temperature, RH, CO₂% and O₂ %
- CO₂ Shaker - temperature, RH, CO₂ Speed (RPM)
- Cryogenic Freezer - temperature and liquid nitrogen (LN₂) Level
- Oven - temperature
- Ambient Gas Sensor - CO₂ and O₂
- Particulate Counter - small particle and large particle
- pH Meter - pH
- Shaker Incubators - CO₂, RH, RPM, & Temperature
- Other Biology, Chemistry, Manufacturing, or Lab Equipment with a digital data output

Supported Communication Protocols

- ModBus-TCP
- ModBus-RTU
- OPC/XML-DA
- RS-232
- RS-422
- RS-485
- USB

Device Readout

Data varies by machine make and model and can include:

- Temperature
- Relative Humidity (RH)
- CO₂ incubator reading
- O₂ incubator reading
- Shaker speeds (including incubators)
- Pressure
- Differential Pressure
- Ambient CO₂ level
- Ambient O₂ level
- pH readings
- Balance readings
- Particulate count

Temperature Reading Over Time

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