iCITE® DA-Data Aggregator®
DA-400™

Installation and Operations Manual

THIS MANUAL CONTAINS IMPORTANT INSTALLATION INSTRUCTIONS

iCITE®

Intelligent Cabinet Interface to Traffic Equipment

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Section 1 INTRODUCTION

1.1 OVERVIEW

Thank you for selecting the EDI Data Aggregator, DA-400™ to address your remote intersection connectivity, VPN, and traffic data collection requirements. This manual is provided to give you the information needed to conduct a successful installation of the DA-400™ into a traffic signal controller cabinet. This device will work with all North American cabinet types and controller manufacturers, and will also work with many international controller and cabinet types. Depending on the type of cabinet in which the Data Aggregation device is installed, there will be some wires within the harness that will not need to be connected. Those wires can be removed from the iCITE® DA-400™ wiring harnesses if desired and stored for potential later installation and utilization if needed.

The iCITE® DA-400™ is designed to provide comprehensive information about the operational health and status of the traffic control cabinet and to allow remote communications and connectivity from the traffic controller cabinet and its associated components to an iCITE READY® Web-based user interface and display. The local unit and web-based configuration software is called iCITE G2® (Intelligent Cabinet Interface to Traffic Equipment), and is capable of communicating with as many units as are installed and connected to the system. This iCITE G2® is accessible through an administrator-issued user name and password, wherever there is internet connectivity available. Information provided through the local Ethernet interface, the cellular connection and on iCITE G2® can be viewed on any browser; however, Google Chrome is the web browser recommended. The DA-400™, along with an iCITE READY® data analytics partner, is also capable of collecting and transmitting the raw data needed to provide comprehensive travel time information and route analytics. VPN capabilities and the ability to act as a replacement for an On-Street Master are also provided. This manual will provide a step-by-step process of installing, connecting and configuring the DA-400™ and its associated wiring harnesses into the traffic cabinet. There is also a required 5-band antenna that will need to be installed and connected onto the top exterior of the traffic cabinet.

Figure 1 DA-400 Front Panel View, Connections
Figure 2 DA-400 Rear Panel View, Connections
Section 2 HARDWARE

2.1 HARDWARE REQUIREMENTS

The hardware required for installation consists of the following: A DA-400™, two (2) harnesses, H5 and H7 and a 5-band antenna. The DA-400™ is designed to be shelf mounted and will have one (1) mounting ear for left or right side rail mount installation into a standard 19-inch EIA rack type cabinet. Several tools will be required for installation of the DA-400™ depending on your chosen and required installation configuration. In each type of potential installation, cabinet wiring will be terminated in different locations and in potentially different configurations. It will be up to the end user agency to determine the correct locations based on the implemented cabinet designs and the desired connectivity functionalities.

For those Agencies requiring specification assistance, please contact EDI for additional information and implementation guidance. See the contact information in Troubleshooting Section 5 of this manual.

2.2 TOOLS

The tools required for a typical traffic cabinet installation are:

- Flat Head Screwdriver
- Phillips #1 Screwdriver
- Phillips #2 Screwdriver
- Wire Cutters
- Wire Strippers
- Wire Crimpers
- Digital Multi-meter
- Stepped Hole Bit – up to 1 inch (Antenna Mounting Hole is ½”)
- Drill
- Assorted tie wraps

The following pictures represent the hardware that will be installed, optional equipment shown is the antenna bracket to mount antenna bracket on the side of a cabinet. The two harnesses and rack mounting ear are not shown.
Figure 3 Optional Side Mount Antenna Mounting Bracket

*NOTE:* The DA-400™ is ready to install out of the box.

Figure 4 DA-400 Front and Back Panel View
Section 3 INSTALLATION

3.1 PREPARING FOR INSTALLATION
To begin the installation, unpack all the equipment for installation. Ensure you have all the tools and materials required to complete the installation. The tools are listed in paragraph 2.2 Tools. The cabinet does not have to be in flash, and the DA-400™ is designed to be installed while the intersection is running if the user takes all appropriate IMSA and MUTCD recommended safety precautions. Follow all applicable and appropriate State DOT/local agency rules and procedures for working in an operational Traffic Control Cabinet, with the potential of creating a fault condition that could cause a flash condition in the cabinet. Different administrative agencies will have different guidelines and requirements up to and including having a Law Enforcement Officer on-site for traffic control in the event of a traffic signal cabinet service interruption. Preparations should be made to correctly identify and note the locations of all field wiring terminations, before the DA-400™ wiring harnesses installation begins.

CAUTION: Care should be taken to make sure that critical 24 VDC and 120 VAC are not disturbed or disrupted, or the cabinet may potentially go into a flash, failure or fault condition.

3.2 PLACING THE DA-400™ INTO THE CABINET
Determine where the DA-400™ will be placed in the cabinet. It may be located anywhere in the cabinet there is space available for the unit. The floor of the cabinet should be avoided due to the potential for water intrusion. The unit should be placed in a location allowing air to circulate freely around it. The leads for all wire harnesses are 8 feet (2.4 meters) in length so the position of the DA-400™ should be located such that all required connections can be terminated based on its position inside the traffic control cabinet. Once a location is established, the DA-400™ can be placed on the shelf, or mounted on the side rail of the rack assembly. A mounting ear is supplied. Screw the mounting ear onto the DA-400™ and attach the device to the side of the equipment rack.

3.3 CONNECTING THE DA-400™ HARNESSES
Once the DA-400™ is placed into the cabinet, the next step will be to wire in the two (2) connection harnesses. Each harness has a different sized connector pin-out and wire color code to prevent cross wiring. Each wire is also marked with printed wording to indicate the specific function of the wire and its associated monitoring termination point. These marks provide information to where the wires need to be terminated within the cabinet. The harnesses are labeled: H5 and H7. The following is the wiring information for each harness. Not all the connections on each harness will be connected on every installation. For example, if there is no Battery Backup System (BBS) in the cabinet, none of these wires will have a place to be connected. All unused wires should be looped and tied back.

CAUTION: DO NOT CUT BACK HARNESS WIRES. Leave wiring intact for possible future installation.

CAUTION: Do not plug the harnesses into the DA-400™ until all terminations are completed. It is also good practice to make sure the correct voltages are on each wire before connecting the harness to the DA-400™. All AC voltages are for 120 VAC connections.
NOTE 1: Digital inputs are voltage based, and are referenced to the Logic Ground provided on H7.

NOTE 2: Typical input impedance is 150K Ohm.

NOTE 3: Each input pin can have a pull-up resistor connected by applying a pull-up voltage (typically 12VDC or 24VDC) to the associated Pull up VREF pin.
Figure 5 Typical Digital DC Input

Figure 6 H-5 Connector / Detector inputs

Figure 7 H-7 Connector Inputs
### Table 2 H-7 Harness Inputs

**NOTE 1:** The AC input voltages are all referenced to the “AC NEUTRAL” connection, and are isolated from the Logic ground. If the AC NEUTRAL wire is not connected, the measured voltages will be incorrect.

**NOTE 2:** DC measurements referenced to AC NEUTRAL may also be made.

**NOTE 3:** AC1 (CAB AC LN) is used to measure the frequency of oscillation for cabinet.

**NOTE 4:** Typical input impedance is 202K Ohm.

**NOTE 5:** All DC inputs are referenced to LOGIC GND.

<table>
<thead>
<tr>
<th>Pin</th>
<th>WIRE MARKING</th>
<th>WIRE COLOR</th>
<th>RECOMMENDED VOLTAGE RANGE</th>
<th>MAXIMUM VOLTAGE WITHOUT DAMAGE</th>
<th>FUNCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1</td>
<td>ANALOG DC 1</td>
<td>BLUE</td>
<td>0-30 VDC</td>
<td>0-42 VDC</td>
<td>Typically used to measure Stop Time signal level</td>
</tr>
<tr>
<td>A2</td>
<td>ANALOG DC 3</td>
<td>BLUE</td>
<td>0-30 VDC</td>
<td>0-42 VDC</td>
<td>Typically used to measure the voltage on the BBS status output</td>
</tr>
<tr>
<td>A3</td>
<td>ANALOG DC 5</td>
<td>BLUE</td>
<td>0-30 VDC</td>
<td>0-42 VDC</td>
<td>Typically used to measure the +12VDC cabinet voltage</td>
</tr>
<tr>
<td>A4</td>
<td>ANALOG DC 7</td>
<td>BLUE</td>
<td>0-30 VDC (8-28 VDC for power)</td>
<td>0-42 VDC (5-30 VDC for power)</td>
<td>Analog DC in 7 DC Input (FC1 installed 1.25A ATO)</td>
</tr>
<tr>
<td>A5</td>
<td>LOGIC GROUND</td>
<td>BLACK</td>
<td></td>
<td></td>
<td>Cabinet Logic Ground connection</td>
</tr>
<tr>
<td>A6</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A8</td>
<td>ANALOG AC 3</td>
<td>YELLOW</td>
<td>0-240VAC</td>
<td>0-300VAC</td>
<td>Typically used to measure the Voltage applied to the Cabinet Heater</td>
</tr>
<tr>
<td>A9</td>
<td>ANALOG AC 5</td>
<td>YELLOW</td>
<td>0-240VAC</td>
<td>0-300VAC</td>
<td>Typically used to measure the Door Switch Voltage</td>
</tr>
<tr>
<td>A10</td>
<td>ANALOG AC 7</td>
<td>YELLOW</td>
<td>0-240VAC</td>
<td>0-300VAC</td>
<td>User defined AC input signal</td>
</tr>
<tr>
<td>B1</td>
<td>ANALOG AC 2</td>
<td>BLUE</td>
<td>0-30 VDC</td>
<td>0-42 VDC</td>
<td>Typically used to measure the voltage on the positive lead of the Battery Backup System Battery</td>
</tr>
<tr>
<td>B2</td>
<td>ANALOG DC 4</td>
<td>BLUE</td>
<td>0-30 VDC</td>
<td>0-42 VDC</td>
<td>Typically used to measure the signal level for cabinet Flash</td>
</tr>
<tr>
<td>B3</td>
<td>ANALOG DC 6</td>
<td>BLUE</td>
<td>0-30 VDC</td>
<td>0-42 VDC</td>
<td>Typically used to measure the voltage on the Battery Backup on Batt signal.</td>
</tr>
<tr>
<td>B4</td>
<td>Temperature Sensor</td>
<td>BLUE</td>
<td>0-5 VDC(temp sensor (0-24 VDC as analog input))</td>
<td>0-30 VDC</td>
<td>Temperature sensor + (Analog DC input 8)</td>
</tr>
<tr>
<td>B5</td>
<td>Temp Sense -</td>
<td>BLACK</td>
<td></td>
<td></td>
<td>Temperature sensor -</td>
</tr>
<tr>
<td>B6</td>
<td>EARTH GROUND</td>
<td>GREEN</td>
<td></td>
<td></td>
<td>Earth Ground to the cabinet</td>
</tr>
<tr>
<td>B7</td>
<td>ANALOG AC 2</td>
<td>YELLOW</td>
<td>0-240VAC</td>
<td>0-280VAC</td>
<td>Typically used to measure Battery Backup AC line</td>
</tr>
<tr>
<td>B8</td>
<td>ANALOG AC 4</td>
<td>YELLOW</td>
<td>0-240VAC</td>
<td>0-280VAC</td>
<td>Typically used to measure the Cabinet Fan Voltage</td>
</tr>
<tr>
<td>B9</td>
<td>ANALOG AC 6</td>
<td>YELLOW</td>
<td>0-240VAC</td>
<td>0-280VAC</td>
<td>User defined AC input signal</td>
</tr>
<tr>
<td>B10</td>
<td>ANALOG AC 8</td>
<td>YELLOW</td>
<td>0-240VAC</td>
<td>0-280VAC</td>
<td>User defined AC input signal</td>
</tr>
</tbody>
</table>

After wiring all the associated, active connections and testing them for proper voltages, the DA-400™ can then be powered up. The Input Power connector should be plugged into the unit first. A LED on the front panel (POWER) should light up. This indicates that the unit is...
powered and that the processor and functionality is operational for the DA-400™. The other
connectors can now be attached. No specific or particular connection order is required.

3.4 INSTALLING THE DA-400™ ANTENNA / ANTENNA ASSEMBLY

The next step is to install the 5-band antenna and Radome assembly. Now that the location
for the DA-400™ has been established determine where the antenna will need to be
mounted. If the antenna will be mounted on top of the cabinet use a step-down drill bit to
drill the desired size hole to feed the mounting bolt through. For the 5-band antenna it will
need to be a 1/2 in. (12.7mm) feed through hole. Feed the cables through the hole. Take
care to ensure that no rough edges on the drilled hole cut the antenna cable shielding.
Place the Radome firmly onto the cabinet. A small amount of silicone adhesive can be used
to ensure a better seal. Then thread the cables through the provided cut out nut and
washer inside the cabinet. Tighten the nut to secure the antenna Radome. Care should be
taken to not drop the nut or washer inside the operational cabinet and ensure the antenna
has been located in a position where the threaded connection will be accessible to your
hand to place the nut and washer and have adequate room to use a wrench to tighten the
nut. Pay special attention to any internal cabinet “voids” where metal has been folded and
the antenna mount will not penetrate fully. Metal Epoxy Putty can be used if need to repair
unwanted cabinet penetrations. It is recommended to utilize a cardboard box inside the
cabinet to capture any metal drill shavings and prevent potential wiring shorts inside the
cabinet. Drilling from the outside in provides an opportunity to capture the drill shavings.

If the Radome cannot be mounted to the top of the cabinet a side mounted bracket is
available for purchase. The feed hole will be drilled in the side of the cabinet and the
bracket will be mounted to the side of the cabinet, where the mounting ears are located, if
there are detachable mounting ears. Otherwise two smaller holes will need to be drilled for
the attachment bolts.

Once the antenna assembly is mounted, connect the GPS and the Cell leads to the DA -
400™. Each lead will be marked accordingly and will be found next to the SMA connector.
At this time, the DSRC and Bluetooth leads can be left disconnected. It is recommended
they are looped and tie-wrapped in an inconspicuous location inside the cabinet for future
use.

After the GPS and the cellular antenna are attached there will be a second indications on
the front of the DA-400™. The LED marked HEART may take several minutes to light up,
but once it lights up will it begin to flash. This is the indication that the Cellular modem
has connected to the cloud based software, and reported the location of the DA-400™.

**NOTE:** The Antenna Radome Assembly and Harness Assemblies are sold separately.
Figure 9. Five-Band Antenna Specifications.
3.5 INSTALLING THE CELLULAR SIM CARD INTO THE DA-400™

The DA-400™ is shipped to the customer with no SIM card populating the SIM Card Holder. To install the SIM card, the rear access plate must be detached from the unit by removing the (5) screws on the back of the DA-400™ unit. Once removed, the unit will look like this:

Figure 10. SIM Card Slot - Depopulated.

Figure 11. SIM Card Slot - Populated.

Insert the SIM card into the slot using the orientation shown in the picture. The SIM Card must be industrial rated to guarantee continuous, uninterrupted operation in a NEMA Cabinet operating across a wide operating temperature and humidity range.

3.6 CONNECTING A NEMA TS-2 TYPE 2 SDLC TO THE DA-400™

If the DA-400™ is being installed into a NEMA TS-2 Type 2 cabinet, there is additional information that is relayed to the iCITE G2® software. This is through the SDLC communications of the TS-2 Type 2 cabinet. If there is an existing spare SDLC cable it can simply be plugged into the front of the DA-400™. No additional programming in the controller is necessary. If there is not a spare SDLC cable, one could be installed, or the DA-400™ could be connected in serial on an existing SDLC connection using the two provided SDLC connections on the front of the DA-400™ and two SDLC Cables. Prior to disconnecting the SDLC from the detector BIU, it is advisable to pull the BIU from the rack. Alternatively, depending on the controller and the capabilities of the installer, you may be able to “deactivate” the BIU SDLC bus from within the Controller’s programming menu.
Disconnecting the SDLC prior to this step, may cause the intersection to go into a flash condition. Most manufacturers sell additional SDLC cables for their respective cabinets. **NOTE:** **It is not recommended to place the DA-400™ into a serial connection between the controller and the cabinet.**

The information that is provided to the DA-400™ is “sniffed” from the standard SDLC communications protocol, and will include the following:

**From Monitor**
- Cabinet Status – Fault / No Fault
- Fault Condition if in Fault
- Channel color – Red, Yellow, Green, Walk, Walk Clearance
- Cabinet Voltages – AC voltage and frequency / DC voltages

**From Detectors**
- Detector Status – On/Off (cannot count multiple actuations on long loops)
- Detector Fault Status (if communicated via SDLC)

### 3.7 CONNECTING THE DA-400™ TO ORACLE DETECTORS

This is an optional functionality of the DA-400™. The detectors to which the DA-400™ can communicate are inductive loop detectors manufactured by EDI (Eberle Design Inc.) and are called Oracle Detectors. There are two EDI model detectors to which the DA-400™ can communicate. They are the EDI Oracle 2ECX and the EDI Oracle 4ECX detectors. Each of these detectors has a 2.5 mm headphone type jack on the faceplate. These are the same as are seen on the front of the DA-400™ just below and to the left of the GPS antenna connector. They are labeled (Aux 1 – Aux 8).

The Oracle detectors can be used if there is a need for more accurate and robust vehicle presence or count detection. The information from the SDLC is sufficient for determining if detection is working and if traffic is flowing and daily trending capabilities; however, the SDLC bus does not provide highly accurate detection counts. If the Oracle inductive loop detectors are properly installed, highly accurate detector counts can be provided from any type of inductive loop installed, including long loops. The Oracle detectors will communicate to the DA-400™ without any programming. If an Oracle detector is plugged into the DA-400™ it will automatically begin logging data and sending it to iCITE G2® as it collects the detector information.

Any other communicating detectors utilizing the RS-485 communications protocol can also be monitored in addition to the EDI Oracle Detectors.

### 3.8 CONNECTING THE RELAY OUTPUT

The output relay is used to output the Programmed Sync Pulse. Consult your controller and cabinet Manufacturer to determine proper configuration parameters to accept an externally generated Sync Pulse Input for cabinet clock timing purposes.

**NOTE:** **The relay output is used for driving an external relay and should not be used to directly power any external light sources. Doing so will damage the unit.**

### 3.9 CONNECTING THE ETHERNET PORT

The Ethernet port can be configured or enabled for communications to a remote central system via a WAN connection, or other traffic signal control devices inside the cabinet via a LAN connection. The two (2) Ethernet ports can be configured to act as a pass-thru VPN communications device enabling a remote central system to enable full system connectivity to either a Controller or an On-Street Master.
The local Ethernet port is also used to access the DA-400™ configuration menu where a number of configuration options are available for selection and programming.

To connect to the DA-400™ with an Ethernet cable:

1. Connect a computer or laptop via an Ethernet Cable to Ethernet Port 1 on the DA-400™.
2. Configure your computer or laptop Network Adaptor to connect to the DA-400™ with the network IP range of 192.168.1.XXX (the DA-400™ is 192.168.1.20).
3. Open an Internet Browser on your computer or laptop and enter the IP Address 192.168.1.20 in the URL Browser bar.

**NOTE:** A password is not required to review the DA-400™ configurations.

### 3.10 CONFIGURATION REVIEW

a. **Unit Serial Number** – This will display the Serial number assigned to the DA-400™

b. **Listen Port** – This is the assigned HTTP Port the DA-400™ is “Listening” to.
c. **Network Settings – ETH1** – This will display the current network settings of ETH1.

d. **Network Settings – ETH2** – This will display the current network settings of ETH2.
e. Network Settings – Connection Priority – This will show the order of connection priority.

f. Network Settings – DNS Settings – This will show the Domain Name Server Settings.
g. Network Settings – NTP Server – This will show the Network Time Protocol Settings.

h. Network Settings – Network APN – This will show the Access Point Name of the Cellular Service Provider.
i. Network Settings – Update Frequency – This will show the update frequency of various DA-400™ configuration parameters.

j. Network Settings – Sync Pulse Settings – This will show the assigned time zone and times of the Sync Pulse Outputs.
k. Network Settings – Utility Server Settings – This will show the URL of the assigned Utility Server.

l. Network Settings – Monitor Settings – This will show the IP address of the attached Signal Monitor if appropriate.
m. Network Settings – OpenVPN Settings – This will show status of the OpenVPN setting.

n. Network Settings – Serial Port Settings – This will show the status of the Serial Port settings.
o. Network Settings – MQTT 1 – This will show the associated MQTT Database Server Settings and configuration parameters.

p. Logging In
   i. Select Configuration Radio Button
ii. Select Edit Configuration Radio Button (Green Radio Button)

iii. Enter Password – Default Password is "simplepass" (all lowercase)
3.11 CHANGING CONFIGURATIONS

a. Main Page

b. Commit Changes (Save Configuration)

3.12 LOCAL WEBSITE SETTINGS

a. Listen Port

b. Change Password
i. Select “Change Configuration Password” Radio Button

ii. Enter New Password and “Confirm”

iii. Enter New Password again, “Confirm”, and select green “Commit” button

3.13 NETWORK SETTINGS

a. Network Settings – Ethernet 1
b. Static IP Selection

c. DHCP Selection

d. Network Settings – Ethernet 2 – (See ETH1 for configuration options)
3.14 UPDATE FREQUENCY

a. Update Frequency – AAC Voltage Change

b. Update Frequency – AAC Min Time (s)
c. Update Frequency – DAC Volt Change (V)

d. Update Frequency – DAC Min Time (s)

e. Update Frequency – Detector Min Time (s)

f. Update Frequency – Cell Min Time (s)
g. Update Frequency: Cell Min Change

h. Update Frequency: Cell Min RX/TX Change

i. Update Frequency: GPS Min Time (s)

j. Update Frequency: GPS Min Change (ft)

k. Update Frequency: Temperature Min Time(s)
I. Update Frequency: Temperature Min Change (F)

m. Update Frequency: Wi-Fi Min Time (s)

n. Update Frequency: Monitor Min Time (s)

o. Update Frequency: Diagnostic Min Time (s)
3.15 SYNC PULSE SETTINGS

a. Sync Pulse Settings – Select Sync Pulse Desired Time Zone

b. Select time for Sync Pulse to occur (Enter using a 24-hour Clock Format) Enter additional Sync Pulse times in Sync 2, 3, and 4 as needed
3.16 UTILITY SERVER SETTINGS

a. Utility Server Settings – Utility Server URL

b. Utility Server Settings – Service Key

c. Utility Server Settings – Connect on Start (True or False)
3.17 MONITOR SETTINGS

a. Monitor Settings - Enter IP Address of connected EDI or RAE IP enabled Signal Monitor
3.18 MQTT SETTINGS

a. Add MQTT Server

NOTE 1: Multiple MQTT Servers can be added and configured to the DA-400™.

NOTE 2: Be aware that adding remote MQTT broadcast reception servers will increase the DA-400™ Unit’s cellular data utilization rate.

b. MQTT Settings – Hub URL

c. MQTT Settings – Port
d. MQTT Settings – Username

e. MQTT Settings – Password

f. MQTT Settings – Transport
g. MQTT Settings – QoS

**Image:**

- Hub URL: percentage of available devices.
- Port: 8883
- Username: hostname
- Password: ZTYu0Ck/Z7hDelegate
- Transport: TCP
- QoS: 1
- Message Format: JSON
- Auth Type: AZURE
- Enable Cloud-To-Device messages: True
- Cert Key File: Not chosen

**Button:**
- Cancel
- Save

h. MQTT Settings – Message Format

**Image:**

- Message Format: JSON

i. MQTT Settings – Auth Type

**Image:**

- Auth Type: AZURE

j. MQTT Settings - Enable Cloud-To-Device messages
k. MQTT Settings - Cert Key File (Choose File)

l. MQTT Settings - Save Configuration Changes
3.19 OPENVPN SETTINGS

a. OpenVPN Settings – Enable VPN (True or False)

b. OpenVPN Settings – VPN Configuration File (Choose File)
3.20 SERIAL PORT

a. Serial Port Settings – Configured for None

b. Serial Port Settings – External Monitor

c. Serial Port Settings – Forwarding

d. Forwarding – Port
e. Forwarding – Parity

f. Forwarding – Baud

g. Forwarding – Data Bits

h. Forwarding – Stop Bits
Section 4 MAINTENANCE

4.1 MAINTENANCE REQUIREMENTS

Other than standard periodic preventative maintenance the traffic signal technician performs on the cabinet equipment, there is no maintenance required or anticipated for the DA-400™ after installation.
Section 5 TROUBLESHOOTING

5.1 REPAIRS AND SERVICING

The DA-400™ has no user serviceable or repairable subassemblies. After installation, the iCITE G2™ configuration should be verified through Eberle Design technical support staff or other trained and authorized support staff. The majority of the issues that will relate to a non-functional unit will require factory inspection, diagnosis and repair. For cases where the unit has issues, contact your local distributor or Eberle Design Inc. directly. iCITE® DA-400™ Technical support is available Monday – Friday 8:00 am to 5:00 pm Mountain Standard Time, in Phoenix Arizona by calling +1-(844) 334-7366. [Request to speak with Technical Support].

NOTE: Opening the chassis or attempting to repair or service the DA-400™ will void the factory warranty. Should the device not function correctly, please contact EDI for technical support or an RMA if the unit needs repaired.

Troubleshooting the following conditions are possible, but additional equipment may be needed.

5.2 NO CENTRAL LIGHT (DARK)

Central light does not come on after several minutes of having the antenna connected.

   a.  Make sure the antenna leads were installed on the correct connectors.
   b.  Verify a good Cellular signal.

      i.  The seven (7) segment LED indicator next to the Cell Antenna lead should provide an indication of the signal strength. A number “5” or better should be indicated, 0 being no signal and 9 being the strongest signal. This will be equivalent to “bars” on a Smart Phone. Most of the smart phones (Android, iOS) have the capability of finding the true cellular signal strength, not just the bars. If the signal strength is greater than -90 dB the device should connect. If the signal strength is between (-90 dB to -120 dB) there may be intermittent connections. Below -120 dB additional measures may be needed to get cellular service. The DA-400™ unit can operate optimally with a cellular strength display of two (2) or higher.

         ii. A different antenna implementation and/or configuration may be required, such as a directional or Yagi antenna, which can be ordered from Eberle Design.

         iii. Raising the height of the mounting location of the antenna may be required.

         iv. A combination of the two options above may be required in extreme circumstances.

         v. A signal may not be present at all; a cellular signal amplifier/repeater may work if it is not cost prohibitive, and perhaps nothing can be done to increase the cellular signal strength in very remote locations, which is out of the manufacturer’s control.

5.3 NO HEART LED (DARK)

The DA-400™ HEART LED is not on.

   a.  This indicates a condition that might require replacement. It is indicative of a corrupt file or operating system.
   b.  Try unplugging and repowering the DA-400™. If this does not fix the problem, please call customer support to help diagnose the problem further.
5.4 NO CELLULAR CONNECTION
   a. Check if the 7-segment LED is displaying a number from 1-9 to indicate cellular
      signal strength. Intermittent connections will upload data when connectivity is
      available. Data will only be near real-time during network connection.
   b. Verify that there is an operational SIM card installed in the unit.
      a. Verify SIM Card has been oriented correctly so the metal contactors of the SIM
         card are mating with the metal contactors of the Data Aggregator Unit.
      b. Verify the correct connector on the 5-band antenna (labeled cellular) is
         connected to the CELL input on the face of the unit and that is properly seated
         and fully engaged to contact the internal pins on the unit. Do not over tighten the
         connector.
   c. If the signal strength is zero (0), connectivity will not be established.
   d. An upgraded (-12db) signal antenna can be used to potentially connect to the
      nearest cellular signal tower.
   e. In remote areas, a cellular signal booster can be used.
   f. In extreme cases, a cellular Yagi-style antenna and signal booster could be
      deployed. This will result in an increased deployment cost per site. Check the
      website cellfinder.com to determine the compass azimuth direction of the nearest
      cellular tower transmitting with your service provider. It is good operational
      practice to review the website in advance of equipment ordering and deployment
      to ensure there is adequate cellular service coverage in the area the Data
      Aggregator will be installed.

5.5 LED DISPLAY BLANK
   a. Check the power outlet for 110VAC with your meter.
   b. Check the power plug for any abnormalities and test for end-to-end continuity.
   c. If power is being delivered to the unit and it fails to power up and pass POST
      (Power On Self-Test) It will need to be returned to the factory for repair. Call the
      main office phone number to check warranty status, obtain RMA and verify
      shipping information.

5.6 NO GPS INFORMATION
   a. If GPS information is not displaying in the application, verify the correct connector
      on the 5-band antenna (labeled GPS) is properly connected to the GPS input on
      the face of the unit and that it is fully seated and engaged to contact the internal
      pins on the unit.
   b. Verify the wiring connection is not broken, frayed or degraded with a visual
      inspection.
   c. Do not over tighten the connector.

5.7 NO WI-FI TRAVEL TIME INFORMATION
   a. If travel time data is not displaying in the application, verify the correct connector
      on the 5-band antenna (labeled Wi-Fi) is properly connected to the Wi-Fi input on
      the face of the unit and that it is fully seated and engaged to contact the internal
      pins on the unit.
   b. Verify the wiring connection is not broken, frayed or degraded with a visual
      inspection.
   c. Do not over tighten the connector.

5.8 NO CABINET DATA INFORMATION
   a. If cabinet data, (phase and detector information) are not displaying in the
      application, verify that the SDLC cable has been properly seated on both or all
      three connectors with either the installed "straight" or "Y" SDLC cable.
b. Verify the SDLC connector chosen has been enabled in the controller if it is a “secondary” SDLC that has been installed for “future” use but not activated. Configuration will vary by manufacturer.

c. Verify the wiring connection is not broken, frayed or degraded with a visual inspection.

d. Verify pin-to-pin continuity on the SDLC cable.

5.9 NO BLUETOOTH TRAVEL TIME INFORMATION

**NOTE:** – Bluetooth connectivity requires the installation of a USB dongle to establish connectivity.

a. If travel time data is not displaying in the application, verify the correct connector on the 5-band antenna (labeled Bluetooth) is properly connected to the USB dongle input on the face of the unit and that it is fully seated and engaged to contact the internal pins on the unit.

b. Verify the wiring connection is not broken, frayed or degraded with a visual inspection.

c. Do not over tighten the connector.

5.10 UNABLE TO CONNECT TO DATA AGGREGATOR VIA ETHERNET CONNECTION

a. Verify the Ethernet cable is not a crossover cable.

b. Verify the Ethernet Cable is not broken, frayed or degraded with a visual inspection.

c. Check the Ethernet adaptor configuration of your laptop and ensure you have assigned an IP address in the correct range (192.168.1.xxx).
   i. Do not use the same IP address you have selected for the Data Aggregator (192.168.1.xxx).

d. Open Command Line Interface (CLI) and ping the IP address of the Data Aggregator to verify connectivity. If unable to ping, connectivity has not been established.

e. Sometimes a computer needs to be re-booted when the IP configuration has changed.

f. Verify the Ethernet Interface is correctly configured with the IPCONFIG command from the Command Line Interface (CLI). You should see a response of 192.168.1.xxx. (xxx = any value < .100)

g. Configure the default gateway using the Data Aggregator IP address of 192.168.1.20 if needed to force all traffic to assigned IP address.