 Specifications

<table>
<thead>
<tr>
<th>Required tools</th>
<th>Size H20</th>
<th>Size P23</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hex security screwdriver</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Star head screwdriver</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Part</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td>emerald TS300f</td>
<td></td>
</tr>
<tr>
<td>DC power (unit only)</td>
<td>12V nominal (10V – 14V) @500mA peak. (Typically 300 – 400mA)</td>
</tr>
<tr>
<td>Power over Ethernet</td>
<td>15W power to the terminal only. Lock and/or exit reader power should be supplied separately</td>
</tr>
<tr>
<td>Inputs</td>
<td>Four analogue inputs - voltage supplied</td>
</tr>
<tr>
<td>Comms to exit reader</td>
<td>RS485 serial comms using Wiegand protocol</td>
</tr>
<tr>
<td>Comms to system host</td>
<td>10/100 Base-T TCP/IP CAT5/5e</td>
</tr>
<tr>
<td>Dry contact outputs</td>
<td>DC30V @ 5a</td>
</tr>
</tbody>
</table>

For dry contact outputs DC30V @ 5a. If the DC supply is less than 12V @ 500mA a separate PSU is required for the lock.

1. Software Setup

**Adding the device to AC2000**
2. In the left pane, expand the Controller to which the terminal is being added.
3. Right click the appropriate Device group and select Add Device.
4. In the Device Type drop down list, select the emerald model being installed (TS300).
5. In the Configuration Mode drop down list select the setting that matches your hardware setup.
6. In the Device Number drop down list select a device number.
7. Enter a unique description for the device in Device Location.
8. Enter the unique MAC Address of the device. (To display the MAC Address on the terminal select System Information | Network).
9. Enter the unique IP address of the device.
10. Click Add to complete the setup.

**Configuring Device Inputs**
If inputs are used to trigger alarms or events in AC2000 AED they must first be configured in the AC2000 Devices application. (See AC2000 Setup Guide.)

**Card Definitions**
Ensure that the appropriate card definitions for the chosen card technology are loaded on the CDC.

2. Mounting the Terminal

**Opening the terminal**
1. Set the terminal on a level surface.
2. Remove the four screws using a security hex screwdriver.
3. Remove the front part of the terminal, pivoting at the base.
4. Disconnect the ribbon cable from the I/O board.

**Removing the I/O board**
1. Remove the four screws and spacers using a star head screwdriver.
2. Lift the I/O board away from the back casing.
3. Drill the cable access holes using the guides on the back casing.
4. Drill the holes on the terminal casing to match the back box fixture points.

**Mounting the Terminal**
1. Using the drilled mounting holes, screw the back casing to the back box.
2. Screw the I/O board to the back casing, ensuring to replace the spacers.

3a. Wiring Configuration: emerald Fingerprint Reader + S610s SE + 3rd Party Read Head

**WIRING NOTES**
When using 24V power for a lock, it is imperative that the switch position is set to EXT. Setting the switch to INT will result in 24V being supplied to the terminal which may cause irreversible damage.

**External Power Supply**
When the switch is set to EXT a separate DC12 – 24V power source must be used to provide power for any locks or other devices such as sounders attached to the output (J18).

**Internal Power Supply**
When the switch is set to INT, DC12V 650mA is provided to the lock or other devices attached to each output from the terminal’s internal power circuitry.

**Fail-safe lock**
If the terminal loses power a fail-safe lock opens allowing free access. Therefore a lock that is constantly powered, such as a maglock, must be used.

**Fail-secure lock**
In fail-secure configuration, if the terminal loses power the lock remains closed. A lock that requires power to open such as a mortise lock must be used.
**Warnings**

**Warning**

This is a class B product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

**Warning - For FCC Labelled emerald Terminals**

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) This device must accept an interference received, including interference that may cause undesired operation.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. End users must follow the specific operating instructions for satisfying RF exposure compliance. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Changes or modifications not expressly approved by the party responsible for compliance could void the user’s authority to operate the equipment.

Installation of this device shall be performed by a qualified person in accordance to all local regulations.

This system must be installed within the protected premise in accordance with the National Electrical Code (NFPA70), and the local authorities having jurisdiction.

Equipment changes or modifications without the approval of the party responsible for compliance could void the user’s authority to operate the equipment and could create a hazardous condition.

---

**CEM emerald Intelligent Fingerprint Terminal product codes**

<table>
<thead>
<tr>
<th>CARD READ TECHNOLOGY</th>
<th>TS100F</th>
<th>TS200F</th>
<th>TS300F</th>
<th>FCC ID NUMBER</th>
<th>IC ID NUMBER</th>
</tr>
</thead>
<tbody>
<tr>
<td>MiFare CSN</td>
<td>TSR/100/115</td>
<td>TSR/200/115</td>
<td>TSR/300/115</td>
<td>QABTSR618V93F</td>
<td>12009A-TSR618V93F</td>
</tr>
<tr>
<td>Picopass</td>
<td>TSR/100/116</td>
<td>TSR/200/116</td>
<td>TSR/300/116</td>
<td>QABTSR618V93F</td>
<td>12009A-TSR618V93F</td>
</tr>
<tr>
<td>CEM DESFire</td>
<td>TSR/100/117</td>
<td>TSR/200/117</td>
<td>TSR/300/117</td>
<td>QABTSR618V93F</td>
<td>12009A-TSR618V93F</td>
</tr>
<tr>
<td>iClass &amp; iClass SE</td>
<td>TSR/100/118</td>
<td>TSR/200/118</td>
<td>TSR/300/118</td>
<td>QABTSR618V93F</td>
<td>12009A-TSR618V93F</td>
</tr>
<tr>
<td>multi smart card reader</td>
<td>TSR/100/618</td>
<td>TSR/200/618</td>
<td>TSR/300/618</td>
<td>QABTSR618V93F</td>
<td>12009A-TSR618V93F</td>
</tr>
</tbody>
</table>

**Note:** The typical read range for the integrated 13.56MHz read-head is 3 – 5cm (1.2” – 2”)

**Supported card technologies**
The emerald Intelligent Fingerprint Terminal multi smart card reader supports the following card technologies:

- CEM DESFire
- MiFare CSN
- iClass