EATS115
EATS120
EATS220

Installation
and user manual
SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS. This manual contains important instructions that should be followed during installation and maintenance of the ATS.

The EATON ATS models that are covered in this manual are intended for installation in an environment within 32°F to 104°F (0°C to 40°C) and free of conductive contaminant.

Certification standards

- Safety: IEC 62310-1
- EMC: IEC 62310-2
- Performance: IEC 62310-3
- CE Mark
- cULus Mark: UL 60950-1
- FCC Part 15 Class A
- This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
  - this device may not cause harmful interference and
  - this device must accept any interference received, including interference that may cause undesired operation.

Important safety notes

- Only qualified personnel can service this equipment.
- Follow the following precautions when working on this unit.
  - Remove watches, rings, or other metal objects.
  - Use tools with insulated handles.
- Examine the packing container. Notify the carrier immediately if any damage is present.
- Do not disassemble the unit.
- Do not operate the unit near water or in an area with excessive humidity.
- Keep liquid and foreign objects from getting inside the unit.
- Do not operate the unit close to gas or fire.
- Verify whether the branch circuit breaker or fuse on service feed is correct.
- Verify line voltage requirements and the supplied line voltage prior to installation.
- This unit is supplied from multiple sources, disconnect all sources before servicing.

Electrical warnings

- Check that power cords, plugs, and outlets are in good condition.
- **RAL equipment**: “Equipment intended for installation in Restricted Access Location”.

Warning

- Intended to be connected to computer load.
- Not to be connected to inductive load or with >3:1 crest factor load.
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1. Introduction

The EATON ATS is designed to guarantee the uninterrupted operation of sensitive equipment. It is powered by two independent power sources and automatically makes a rapid switch from one source to the other when the power supply used to power its connected load fails. This ATS is designed to be efficient and reliable.

Users can know EATON ATS’s power flow, status, parameters from the LCD interface. Besides, the unit has a network interface for users to read and write parameters. The network interface can be implemented via the Ethernet protocol through an RJ45 connector.

2. Presentation

2.1 Weights and dimensions

Rack installation

<table>
<thead>
<tr>
<th>Description</th>
<th>Weights (lb/kg)</th>
<th>Dimensions H x W x D (inch/mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EATS115</td>
<td>9.14 / 4.15</td>
<td>1.7 x 12.24 x 9.84 / 43 x 438 x 250</td>
</tr>
<tr>
<td>EATS120</td>
<td>9.16 / 4.16</td>
<td>1.7 x 12.24 x 9.84 / 43 x 438 x 250</td>
</tr>
<tr>
<td>EATS220</td>
<td>7.8 / 3.54</td>
<td>1.7 x 12.24 x 9.84 / 43 x 438 x 250</td>
</tr>
</tbody>
</table>

2.2.1 Rear panel layout - EATS115 - EATS120 - EATS220

EATS115

1  2  3

1 Input Source 1: 5-15P cord  
2 Input Source 2: 5-15P cord  
3 Output: 10 x 5-15R

EATS120

1  2  3

1 Input Source 1: 5-20P cord  
2 Input Source 2: 5-20P cord  
3 Output: 10 x 5-20R

EATS220

1  2  3  4

1 Input Source 1: IEC C20 inlet  
2 Input Source 2: IEC C20 inlet  
3 Output: 8 x C13 10 A  
4 Output: 1 x C19 16 A
2.3 Control panel

The ATS has three buttons on the control panel and a LCD display. It provides useful information about the ATS itself, load status, events, measurements and settings.

2.4 LCD description

2.4.1 Power flow

<table>
<thead>
<tr>
<th>S1 or S2</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1¹ or S2²</td>
<td>S1 is defined as the priority source (true by default) or S2 is defined as the priority source (can be set)</td>
</tr>
<tr>
<td>or</td>
<td>S1 not powered or S2 not powered</td>
</tr>
<tr>
<td>or</td>
<td>S1 powering the load or S2 powering the load</td>
</tr>
<tr>
<td>or</td>
<td>S1 powered but not powering the load or S2 powered but not powering the load</td>
</tr>
<tr>
<td>or</td>
<td>Transfer from S1 to S2 or Transfer from S2 to S1</td>
</tr>
<tr>
<td>or</td>
<td>Transfer from S1 to S2 for Test or Transfer from S2 to S1 for Test</td>
</tr>
</tbody>
</table>
2. Presentation

2.4.2 Measures

| Output current (default display) | 12.0 A |
| Output voltage | 120 V |
| Input voltage : S1 (default display only when S1 voltage is Out Of Tolerance) | 120 V |
| Input frequency: S1 (default display only when S1 frequency is Out Of Tolerance) | 62 Hz |
| Input voltage : S2 (default display only when S2 voltage is Out Of Tolerance) | 120 V |
| Input frequency: S2 (default display only when S2 frequency is Out Of Tolerance) | 62 Hz |
| S1 and S2 phase shift (Available only when S1 and S2 are not synchronized) | 180° |

2.5 ATS settings

| OUTPUT: Sets voltage thresholds | EATS115-EAT120: 100 V - 110 V - 120 V (default) - 125 V EATS220: 200 V - 208 V (default) - 220 V - 230 V - 240 V |
| ALARM: Silents alarm | ON: normal beep in warning or fault mode, by default OFF: silent. |
| P SOURCE: Sets the priority source | Sc.1: Priority on Source 1, by default Sc.2: Priority on Source 2 |
| TRANSFER: | Std: no additional break even if S1 and S2 are not synchronized, by default Gap: additional break during transfer if S1 and S2 are not synchronized. |
Press Enter to reach settings menu

- To cancel the changes
- To select value
## 2. Presentation

### 2.6 Warning

For Fault, refer to troubleshooting section 6.1.

<table>
<thead>
<tr>
<th>Event</th>
<th>Example of displays</th>
<th>Rootcause</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overload</td>
<td><img src="image" alt="Overload Icon" /></td>
<td><img src="image" alt="Overload Display" /> Load is over nominal rating Remove some of the equipment from the ATS. The ATS continues to operate, but may shutdown if the load increases. The alarm resets when the condition becomes inactive.</td>
</tr>
<tr>
<td>Unsynchronized sources</td>
<td><img src="image" alt="Unsynchronized Sources Icon" /></td>
<td><img src="image" alt="Unsynchronized Sources Display" /> S1 and S2 are fed by different phase (L1/L2/L3) One source N and L are reversed</td>
</tr>
<tr>
<td>Source 1 or Source 2 power loss</td>
<td><img src="image" alt="Source Power Loss Icon" /></td>
<td><img src="image" alt="Source Power Loss Display" /> One of the source is missing. The ATS power on the load with the source that is present.</td>
</tr>
<tr>
<td>Source 1 or Source 2 voltage out of tolerance</td>
<td><img src="image" alt="Source Voltage Out of Tolerance Icon" /></td>
<td><img src="image" alt="Source Voltage Out of Tolerance Display" /> One of the source voltage is out of tolerance. The display shows the voltage measure of the faulty source.</td>
</tr>
<tr>
<td>Source 1 or Source 2 frequency out of tolerance</td>
<td><img src="image" alt="Source Frequency Out of Tolerance Icon" /></td>
<td><img src="image" alt="Source Frequency Out of Tolerance Display" /> One of the source frequency is out of tolerance. The display shows the frequency measure of the faulty source.</td>
</tr>
<tr>
<td>Source 1 and Source 2 quality</td>
<td><img src="image" alt="Source Quality Icon" /></td>
<td><img src="image" alt="Source Quality Display" /> The sources are outside ranges so that it generates too many transfers within a short period of time. The alarm resets when the condition becomes inactive.</td>
</tr>
</tbody>
</table>
3. Installation for ATS

3.1 Checking the accessory kit - EATS115 - EATS120 - EATS220

- Verify that the following additional items are included with the ATS:

**EATS115 - EATS120**

1. User manual
2. Quick start guide
3. Safety manual printed
4. RJ45 cable
5. RS232 cable
6. DB9/RJ45 serial cable for NMC card
7. Accessories for rack installation
8. Plastic strips for output locking

**EATS220**

1. User manual
2. Quick start guide
3. Safety manual printed
4. RS232 cable
5. 2 x Input cables: C19-L6-20P
6. RJ46 cable
7. 2 x Input cables: C19-C20
8. DB9/RJ45 serial cable for NMC card
9. 2 x Input cable lockers
10. Plastic strips for output locking
11. Accessories for rack installation
3. Installation for ATS

3.2 Storage

- Please store the ATS in its original package and in a dry place.
  Keep the storage temperature between -13°F (-25°C and +55°C).

3.3 Installation for rack mounting (normal installation)

Follow steps 1 to 3 for module mounting on the rails.

Accessories for rack installation

- 1 x Ear (Left)
- 1 x Ear (Right)
- 4 x M4 x 6 flat screw for ear
- 4 x M6 x 10 cage nut clip for rack
- 4 x M6 x 12 flat screw for rack
- 4 x M6 washer conical plate for rack

3.4 Installation for rack mounting (2 post installation)

Follow steps 1 to 3 for module mounting on the rails.

Accessories for rack installation

- 1 x Ear (Left)
- 1 x Ear (Right)
- 4 x M4 x 6 flat screw for ear
- 4 x M6 x 10 cage nut clip for rack
- 4 x M6 x 12 flat screw for rack
- 4 x M6 washer conical plate for rack
3. Installation for ATS

3.5 Wall installation

Follow steps 1 to 2 for module mounting on the wall.

3.6 Instructions

1. Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (Tmax) specified by the manufacturer.

2. Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.

3. Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.

4. Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

5. Reliable Earthing - Reliable grounding of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).
4. Power cables connection

4.1 Installation diagram

4.2 Input/Output connection EATS115 - EATS120

1. Connect input power cables to UPSs output (S1 is the default priority source).
2. Connect ATS output to the equipment.

4.3 Input/Output connection EATS220

1. Connect input power cables to UPSs output and to ATS inputs (S1 is the default priority source).
2. Connect ATS output to the equipment.
5. Communication

5.1 Communication ports

- RS232 communication port

1. Connect the RS232 communication cable to the serial or USB port on the computer.

2. Connect the other end of the communication cable to the RS232 communication port on the ATS.

The ATS can now communicate with EATON power management software.

- Characteristics of the optocouplers communication port

When a signal is activated, the contact is closed between the common (Pin 4) and the pin of the corresponding signal for n.o contact, and vice versa for n.c contact.

**Contact characteristics (optocoupler)**

- Voltage: 48 V DC max
- Current: 25 mA max
- Power: 1.2 W

<table>
<thead>
<tr>
<th>Pin assignment</th>
<th>Description</th>
<th>Contact type</th>
<th>Open State</th>
<th>Close State</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pin 1</td>
<td>Summary alarm signal</td>
<td>n.o</td>
<td>Normal</td>
<td>Alarm occurred</td>
</tr>
<tr>
<td>Pin 2</td>
<td>RX</td>
<td>n.c</td>
<td>Source 1 OK</td>
<td>Source 1 is failure</td>
</tr>
<tr>
<td>Pin 3</td>
<td>TX</td>
<td>n.c</td>
<td>Source 2 OK</td>
<td>Source 2 is failure</td>
</tr>
<tr>
<td>Pin 4</td>
<td>Common</td>
<td>n.c</td>
<td>Source 1 not take load</td>
<td>Source 1 takes load</td>
</tr>
<tr>
<td>Pin 5</td>
<td>GND</td>
<td>n.c</td>
<td>Source 2 not take load</td>
<td>Source 2 takes load</td>
</tr>
<tr>
<td>Pin 6</td>
<td>Source 1 OK</td>
<td>n.c</td>
<td>Source 1 is failure</td>
<td>Source 1 is ok</td>
</tr>
<tr>
<td>Pin 7</td>
<td>Source 2 OK</td>
<td>n.c</td>
<td>Source 2 is failure</td>
<td>Source 2 is ok</td>
</tr>
<tr>
<td>Pin 8</td>
<td>Load on source 1</td>
<td>n.c</td>
<td>Source 1 not take load</td>
<td>Source 1 takes load</td>
</tr>
<tr>
<td>Pin 9</td>
<td>Load on source 2</td>
<td>n.c</td>
<td>Source 2 not take load</td>
<td>Source 2 takes load</td>
</tr>
</tbody>
</table>

n.o: normally opened
n.c: normally closed
5. Communication

- **Connectivity Cards**

Connectivity cards allow the ATS to communicate in a variety of networking environments and with different types of devices. The Network-MS card has SNMP and HTTP capabilities as well as monitoring through a Web browser interface; connects to Ethernet network. In addition, an Environmental Monitoring Probe can be attached to obtain humidity, temperature, smoke alarm, and security information.

![Network-MS card](image)

5.2 **Eaton Intelligent Power Software suite**

Eaton Software suite provides up-to-date graphics of ATS power and system data and power flow. It also gives you a complete record of critical power events, and it notifies you of important ATS or power information.
## 6.1 Troubleshooting

<table>
<thead>
<tr>
<th>Operation status</th>
<th>Possible cause</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overload</td>
<td>Power requirement exceeds the ATS capacity (greater than 105% of nominal).</td>
<td>Remove some of the equipment from the ATS. The ATS continues to operate, but may shutdown if the load increases. The alarm resets when the condition becomes inactive.</td>
</tr>
<tr>
<td>Short-circuit fault</td>
<td>A short-circuit occurred.</td>
<td>Check device connection or integrity. If error persists, note the alarm message and the ATS serial number, and then contact your service representative.</td>
</tr>
<tr>
<td>Internal relay fault</td>
<td>Internal relay fault, note that the load is no powered.</td>
<td>Note the alarm message and the ATS serial number, and then contact your service representative.</td>
</tr>
<tr>
<td>Source 1 or Source 2 power supply fault</td>
<td>Internal power supply of one of the source is faulty; the other source is powering the load.</td>
<td>Note the alarm message and the ATS serial number, and then contact your service representative.</td>
</tr>
<tr>
<td>EEPROM fault</td>
<td>EEPROM fault, note that the load is still powered.</td>
<td>Note the alarm message and the ATS serial number, and then contact your service representative.</td>
</tr>
</tbody>
</table>
7. Specifications

Table 1. Model list

<table>
<thead>
<tr>
<th>Model</th>
<th>Operating voltage</th>
<th>Current rating</th>
<th>Operating frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>EATS115</td>
<td>100/110/120/125Vac 1ϕ</td>
<td>12A</td>
<td></td>
</tr>
<tr>
<td>EATS120</td>
<td></td>
<td>16A</td>
<td>50/60Hz</td>
</tr>
<tr>
<td>EATS220</td>
<td>200/208/220/230/240Vac 1ϕ</td>
<td>16A</td>
<td></td>
</tr>
</tbody>
</table>

Table 2. Weights and dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Dimensions H x W x D (inch/mm)</th>
<th>Weight (lb/kg)</th>
</tr>
</thead>
<tbody>
<tr>
<td>EATS115</td>
<td>1.7 x 17.24 x 9.84 / 43 x 438 x 250</td>
<td>9.14 / 4.15</td>
</tr>
<tr>
<td>EATS120</td>
<td></td>
<td>9.16 / 4.16</td>
</tr>
<tr>
<td>EATS220</td>
<td></td>
<td>78 / 3.54</td>
</tr>
</tbody>
</table>

Table 3. Electrical input connections

<table>
<thead>
<tr>
<th>Model</th>
<th>Input connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>EATS115</td>
<td>5-15P cord</td>
</tr>
<tr>
<td>EATS120</td>
<td>5-20P cord</td>
</tr>
<tr>
<td>EATS220</td>
<td>IEC C20 inlet (2 x Input cables: C19-L6-20P provided)</td>
</tr>
</tbody>
</table>

Table 4. Electrical output connections

<table>
<thead>
<tr>
<th>Model</th>
<th>Output connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>EATS115</td>
<td>10 x 5-15R</td>
</tr>
<tr>
<td>EATS120</td>
<td>10 x 5-20R</td>
</tr>
<tr>
<td>EATS220</td>
<td>1 x C19 8 x C13</td>
</tr>
</tbody>
</table>

Table 5. Environmental and safety

- **Operating temperature**: 32°F to 104°F (0°C to 40°C)
- **Storage temperature**: -13°F to 131°F / -25°C to 55°C
- **Relative humidity**: Storage: 0-90% Operating: 20-85%
- **Operating altitude**: 6252 ft (2000m meters)
- **Audible noise**: 25 dBA max (without buzzer)