AEM00941
Quick Start Guide EVK

FEATURES

Connectors
• 1 screw connector for the DC source
• 2 screw connectors for AC sources
• 1 screw connector + 1 JST connector for the storage element
• 1 screw connector for primary battery
• 1 screw connector for HVOUT LDO output (80mA @ 1.8 – 4.1 V)
• 1 screw connector for LVOUT LDO output (20mA @ 1.2 or 1.8 V)

Configuration
• 2 headers for SRC_LVL_RANGE[1:0] to define the input voltage regulation of the AEM
• 2 resistors or 1 potentiometer to set the source voltage regulation
• 3 headers CFG[2:0] to define the storage element protection levels
• 6 resistor footprints to configure the custom mode (CFG[000])
• 2 headers to enable/disable the internal LDOs
• 2 headers to disable the primary battery feature
• 1 header to set the dual cell supercapacitor BAL feature

Size
• 79mm x 49mm
• 4 x M2.5 mounting holes

SUPPORT PCB

BOM around the AEM00941

Footprint & Symbol: Available in the datasheet
**STEP 1: AEM00941 configuration**

- **Source range:** SRC_LVL_RANGE[1:0]

- **Storage element voltages protection:** CFG[2:0]

<table>
<thead>
<tr>
<th>Configuration pins</th>
<th>SRC_LVL_RANGE</th>
<th>Storage element threshold voltages</th>
<th>LDOs output voltages</th>
<th>Typical use</th>
</tr>
</thead>
<tbody>
<tr>
<td>H H H H</td>
<td>H H H H</td>
<td>V_{SRC}</td>
<td>V_{MAX}</td>
<td>V_{MIN}</td>
</tr>
<tr>
<td>H H H H</td>
<td>H H H L</td>
<td>4.12 V</td>
<td>3.67 V</td>
<td>3.60 V</td>
</tr>
<tr>
<td>H L H H</td>
<td>4.12 V</td>
<td>3.67 V</td>
<td>3.01 V</td>
<td>2.5 V</td>
</tr>
<tr>
<td>H L L L</td>
<td>2.70 V</td>
<td>2.30 V</td>
<td>2.20 V</td>
<td>1.8 V</td>
</tr>
<tr>
<td>L M M</td>
<td>4.50 V</td>
<td>3.67 V</td>
<td>2.83 V</td>
<td>2.3 V</td>
</tr>
<tr>
<td>L M M</td>
<td>4.50 V</td>
<td>3.92 V</td>
<td>3.60 V</td>
<td>3.3 V</td>
</tr>
<tr>
<td>L L M</td>
<td>3.63 V</td>
<td>3.10 V</td>
<td>2.80 V</td>
<td>2.5 V</td>
</tr>
<tr>
<td>L L L</td>
<td>Custom mode</td>
<td>1.8 V</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **BAL option:** Select “ToCn” to use the balancing or “GND” to disable it.

- **PRIM option:** Connect both headers “NoPRIM” to disable the primary battery feature or remove them if a primary battery is connected. Define the lower limit voltage on the primary battery using R7 and R8:
  
  - RP = R7 + R8
  - 100 kΩ ≤ RP ≤ 1 MΩ
  - R7 = \( \frac{V_{prim\_min}}{4} \) * RP / 2.2 V
  - R8 = RP – R7

- **LDOs outputs voltages:** ENHV (HVOUT) – ENLV (LVOUT)

- **Source level:** Use the potentiometer or resistors R9 and R10 in combination of the source range functionality to define the harvesting voltage.
  
  - RS = R9 + R10
  - 100 kΩ ≤ RS ≤ 500 kΩ
  - R9 = \( \frac{V_{src\_reg\_GAIN}}{2.2} \) * RS / 2.2 V
  - R10 = RS – R9
**STEP 2:** Connect the storage element (and the primary battery)

**STEP 3:** Connect the Load(s) to HVOUT / LVOUT

**STEP 4:** Connect the Harvester

*Internal Boost efficiency Vs. input voltage 100µH LBOOST:

**STEP 5:** Check the Status

<table>
<thead>
<tr>
<th>Status signals</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>STATUS[1]</td>
<td>Logic output. Asserted if the battery voltage falls under Vovdis or if the AEM is taking energy from the primary battery.</td>
</tr>
<tr>
<td>STATUS[0]</td>
<td>Logic output. Asserted when the LDOs can be enabled.</td>
</tr>
</tbody>
</table>