CHOICE OF UPS (BACKUP SUPPLY) FOR DIGITAL MIXERS

The following notes are to aid selection of suitable UPS (Uninterruptible Power Supply) for use with Soundtracs and Digico mixers systems.

The mixer and racks have separate mains supply that can be fed from a single UPS. The mains to the racks can be fed from a cable running along side (but separate from) the madi links from a UPS located near the worksurface. Alternatively each rack and the Worksurface can separate UPS units.

In all cases the key feature required is that the UPS has a high purity sine wave output - typically 1% distortion. Cheaper consumer style PC/computer UPS's do not provide this. Such supplies will cause hum on the analogue audio sections of the mixer. If in doubt a UPS should be "auditioned" before installation to ensure it does not cause audible problems.

The internal supplies of the Soundtracs-Digico systems work over a wide range of inputs (typically 100-250V 50-60Hz) without adjustment. However control of this is not instant and they will not support the mixer during temporary voltage reductions ("brown outs") and the UPS should be used to provide this function also.

The response to power failure or voltage drop should be within 2 cycles (preferably 1.5) as the mixer supplies will not support the mixer for longer. The very high efficiency (cool running) switchmode supplies used in the mixer and rack have little stored energy and so require a fast external backup.

This requirement typically means the use of a so-called on-line or in-line UPS. The more recent on-line-interactive are better performance for computer systems but unlikely to offer any benefit with a mixer. Inexpensive "off-line" are hard to find now but should be avoided.

For units with dual supplies, either mixer or rack, only ONE supply should be connected via the UPS, the other should be fed direct from the mains. This will prevent problems in the event of an earth (ground) fault/impedance or electrical failure in the UPS.

The typical start power consumptions of the mixer and rack range please see list below. Note how power varies across the range and see how these are significantly less than a comparable analogue mixer.

It can be seen a typical mid size single mixer system with racks requires a 750VA (continuous) UPS to allow a reasonable load margin. If possible use the system at 220V to reduce mains current load (compared to use at 110V) . Dual mixer or mixer/RE mixer systems typically use 1.5KVA units.

Note the 1 cycle inrush to worksurface may over 20A (220V) so allow for this in fusing / MCB arrangements.

Whilst Digico UK do not endorse any particular UPS, our customers have used APC units with success.

IMPORTANT NOTE: A UPS system is NOT a substitute for a suitable good quality earth (ground) system. Low impedance earths with no or very low earth potential is critical for the correct operation of large digital mixer systems. There should be no difference in the earth (ground) potential between mixer and madi connected racks etc.

A list of the power consumption of Digico equipment follows.
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Note on heat output: There is effectively no difference in power consumption and heating load, there is no significant output except heat.

The low power factor means VA is approximately = Watts \times 3.4 = BTU approximately

The heat load is not usually very significant for Air Conditioning cooling calculations for studios or theatres but should be considered. It may possibly be significant in small trucks.

Mixers data

All units listed below are rated for operation 90V-260V 50-60Hz auto sense (unless shown otherwise)

<table>
<thead>
<tr>
<th>Model</th>
<th>Power Consumption</th>
<th>Notes</th>
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<tbody>
<tr>
<td>S21</td>
<td>125VA (faders idle &amp; active)</td>
<td>Single supply 185VA peak at startup</td>
</tr>
<tr>
<td>S31</td>
<td>135VA (faders idle &amp; active)</td>
<td>Single supply 195VA peak at startup</td>
</tr>
<tr>
<td>Q338</td>
<td>310VA (faders idle)</td>
<td>IEC power x 2 Dual redundant supplies. 345VA (all faders active) 315VA peak at startup</td>
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<tr>
<td>SD5</td>
<td>310VA (faders idle)</td>
<td>IEC power x 2 Dual redundant supplies. 560VA (all faders active) 750VA peak at startup</td>
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<tr>
<td>SD7/SD7Q</td>
<td>550VA (faders idle)</td>
<td>IEC power x 2 Dual redundant supplies. 600VA (all faders active) 650VA peak at startup</td>
</tr>
<tr>
<td>EX007</td>
<td>260VA (faders idle)</td>
<td>IEC power x 1 Single supply 300VA (all faders active) 300VA peak at startup</td>
</tr>
<tr>
<td>SD8</td>
<td>230VA (faders idle)</td>
<td>IEC power x 2 Dual redundant supplies. 295VA (all faders active) 295VA peak at startup (add Litlite power if used)</td>
</tr>
<tr>
<td>SD9</td>
<td>155VA (faders idle)</td>
<td>IEC power x 1 Single supply 195VA (all faders active) 225VA peak at startup</td>
</tr>
<tr>
<td>SD10</td>
<td>195VA (faders idle)</td>
<td>IEC power x 2 Dual redundant supplies. 225VA (all faders active) 240VA peak at startup (add Litlite power if used)</td>
</tr>
<tr>
<td>SD10-RE</td>
<td>235VA (faders idle)</td>
<td>IEC power x 2 Dual redundant supplies. 300VA (all faders active) 300VA peak at startup (add Litlite power if used)</td>
</tr>
<tr>
<td>SD-RE fader-pod</td>
<td>100VA (normal)</td>
<td>IEC power x 2 Dual redundant supplies. ( 115VA \text{ (all faders active)} ) ( 115VA \text{ peak at startup} ) ( \text{add screen power as used} )</td>
</tr>
</tbody>
</table>

Continued:
Racks and Solutions Boxes data

All units listed below are rated for operation 90V-260V 50-60Hz auto sense (unless shown otherwise)

- **SD11**
  - IEC power x 1
  - Single supply only.
  - 150VA (faders idle)
  - 175VA (all faders active)
  - 195VA peak at startup
  - (add Litlite power if used)

- **SD12**
  - IEC power x 2
  - Dual redundant supplies.
  - 180VA (faders idle)
  - 225VA (all faders active)
  - 200VA peak at startup

- **D5**
  - IEC power x 2
  - Dual redundant supplies.
  - 250VA (faders idle)
  - 300VA (all faders active)
  - 350VA peak at startup

- **SD Rack**
  - IEC power x 2
  - Dual redundant supplies.
  - Stage rack 160VA run
  - FOH rack 200VA run
  - 300VA peak at startup

- **SD Mini**
  - IEC power x 2
  - Dual redundant supplies.
  - FOH rack 120VA run
  - 300VA peak at startup

- **SD Nano**
  - IEC power x 2
  - Dual redundant supplies.
  - FOH rack 80VA run
  - 300VA peak at startup

- **DigiRack**
  - IEC power x 2
  - Dual redundant supplies.
  - Stage rack 175VA run
  - FOH rack 175VA run

- **MadiRack**
  - IEC power x 2
  - Dual redundant supplies.
  - Stage rack 175VA run
  - FOH rack 175VA run

- **D-Rack**
  - IEC power x 1
  - 100VA run, 280VA start

- **D-Rack Optional**
  - IEC power x 2
  - Dual redundant supplies
  - 115VA run, 350VA start
  - (both figures with fitted optional DAC card)

- **D2-Rack**
  - IEC power x 2
  - Dual redundant supplies
  - 100VA run and start
  - (fitted optional output card)

- **Orange Box**
  - IEC power x 2
  - Dual redundant supplies
  - 20VA run and start (maximum, dependent on actual modules fitted)
  - Empty chassis is approx. 6VA

- **Purple Box**
  - IEC power x 2
  - Dual redundant supplies
  - 15VA run and start

- **Little Red Box**
  - 5V d.c. 0.5 A (via USB “B” socket)

- **Little Blue Box**
  - 5V d.c. 0.5 A (via USB “B” socket)