APPLICATION NOTE

HORN LOADED 18” SUBWOOFER
KEY FEATURES

- High performance 1 x 18” subwoofer system;
- Multiple driver choice is possible;

18TLW3000 woofer key features:
1800 W AES power handling
100 mm (4 In) Tetracoil dual voice coil
Ultra linear suspension behaviour for excellent sound clarity
Low noise forced air cooling design

18LW2500 woofer key features:
1600 W AES power handling
100 mm (4 In) Interleaved voice coil (ISV)
Composite reinforced straight ribbed cone
Ultra linear dual magnet motor design

18LW2400 woofer key features:
1200 W AES power handling
100 mm (4 In) Interleaved voice coil (ISV)
Double Silicon Spider (DSS)
Double Demodulating Rings (DDR)

General Specifications
- Nominal Diameter: 460 mm (18 in)
- Rated Impedance: 8 Ohm
- AES Power: 1800 W
- Program Power: 3600 W
- Peak Power: 10000 W
- Sensitivity: 95 dB
- Frequency Range: 30 - 2000 Hz
- Power Compression @-10dB: 0.6 dB
- Power Compression @-3dB: 2.0 dB
- Power Compression @Full Power: 3.4 dB
- Max Rec. Frequency: 300 Hz
- Recom. Enclosure Volume: 100 - 350 L (3.53 - 12.36 cuft)
- Minimum Impedance: 5.7 Ohms at 25°C
- Max Peak To Peak Excursion: 45 mm (1.77 in)
- Voice Coil Diameter: 100 mm (4 in)
- Voice Coil Winding Material: Copper
- Suspension: Triple roll, Polycotton
- Cone: Curved fiberglass loaded cellulose

Thiele Small Parameters
- Fs (Hz): 33 Hz
- Re (Ohm): 4.6
- Se: 0.1225 sq. m. (189.88 sq. in.)
- Qms: 13.0
- Qes: 0.42
- Qts: 0.41
- Vas (cuft): 185 ft. (6.53 cuft)
- Mms (oz): 266.4 (0.91 lb)
- BL (T/m): 34.5 T/m
- Linear Mathematical Xmax: ± 12 mm (± 0.47 in)
- Le (1kHz): 1.80 mH
- Ref. Efficiency 1W@1m (half space): 94.0 dB

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### 18LW2400

<table>
<thead>
<tr>
<th>General Specifications</th>
<th>18LW2500</th>
<th>General Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Nominal Diameter</strong></td>
<td>460 mm (18 in)</td>
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</tr>
<tr>
<td><strong>Rated Impedance</strong></td>
<td>8 Ohm</td>
<td>8 Ohm</td>
</tr>
<tr>
<td><strong>AES Power</strong></td>
<td>1200 W</td>
<td>1600 W</td>
</tr>
<tr>
<td><strong>Program Power</strong></td>
<td>2400 W</td>
<td>3200 W</td>
</tr>
<tr>
<td><strong>Peak Power</strong></td>
<td>7000 W</td>
<td>7300 W</td>
</tr>
<tr>
<td><strong>Sensitivity</strong></td>
<td>98 dB</td>
<td>95 dB</td>
</tr>
<tr>
<td><strong>Frequency Range</strong></td>
<td>31 Hz - 2500 Hz</td>
<td>30 Hz - 1000 Hz</td>
</tr>
<tr>
<td><strong>Power Compression @-10dB</strong></td>
<td>0.7 dB</td>
<td>0.6 dB</td>
</tr>
<tr>
<td><strong>Power Compression @-3dB</strong></td>
<td>1.5 dB</td>
<td>2.2 dB</td>
</tr>
<tr>
<td><strong>Max. Recommended Power</strong></td>
<td>3.1 kW</td>
<td>5.0 kW</td>
</tr>
<tr>
<td><strong>Max. Recommended Frequency</strong></td>
<td>250 Hz</td>
<td>250 Hz</td>
</tr>
<tr>
<td><strong>Minimum Impedance</strong></td>
<td>6.3 Ohm at 25ºC</td>
<td>6.1 Ohm</td>
</tr>
<tr>
<td><strong>Max. Peak To Peak Excursion</strong></td>
<td>50 mm (1.97 in)</td>
<td>70 mm (2.76 in)</td>
</tr>
<tr>
<td><strong>Voice Coil Diameter</strong></td>
<td>150 mm (6 in)</td>
<td>100 mm (4 in)</td>
</tr>
<tr>
<td><strong>Voice Coil Booking Material</strong></td>
<td>Copper</td>
<td>Copper wire</td>
</tr>
<tr>
<td><strong>Suspension</strong></td>
<td>Triple roll, Polyurethane</td>
<td>Triple roll, Heavy Polyurethane</td>
</tr>
<tr>
<td><strong>Cone</strong></td>
<td>Straight ribbed, fiberglass reinforced cellulose</td>
<td>Curved ribbed, fiber loaded cellulose</td>
</tr>
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</table>

### Thiele Small Parameters

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<th><strong>Parameter</strong></th>
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<tbody>
<tr>
<td>Fs</td>
<td>35 Hz</td>
<td>34 Hz</td>
</tr>
<tr>
<td>Re</td>
<td>5 Ohm</td>
<td>4.9 Ohm</td>
</tr>
<tr>
<td>Sd</td>
<td>0.1225 sq. in. (189.88 square in.)</td>
<td>0.113 sq. in. (175.15 square in.)</td>
</tr>
<tr>
<td>Qms</td>
<td>0.7</td>
<td>2</td>
</tr>
<tr>
<td>Qts</td>
<td>0.33</td>
<td>0.34</td>
</tr>
<tr>
<td>Qt</td>
<td>0.13</td>
<td>0.38</td>
</tr>
<tr>
<td>Vns</td>
<td>230 ft (88.12 cu ft)</td>
<td>200 ft (7.94 cu ft)</td>
</tr>
<tr>
<td>Mms</td>
<td>192 lbs (0.42 lb)</td>
<td>200 lbs (0.89 lb)</td>
</tr>
<tr>
<td>BL</td>
<td>26.6 ft</td>
<td>30 ft</td>
</tr>
<tr>
<td>Linear Mathematical Xmax</td>
<td>5.5 mm (0.22 in)</td>
<td>5.14 mm (0.20 in)</td>
</tr>
<tr>
<td>Le (1kHz)</td>
<td>1.35 mH</td>
<td>2.87 mH</td>
</tr>
<tr>
<td>Ref. Efficiency 1W/ft (half space)</td>
<td>96.7 dB</td>
<td>99.3 dB</td>
</tr>
</tbody>
</table>
KEY FEATURES

- The enclosure should be made of Baltic birch plywood (15mm thickness)
- Bolts are M6x35mm (M6 T-Nuts recommended)
- Handling, rigging and connectors are user’s choice
KEY FEATURES

- It’s recommended to well damp the cabinet interior (an high density dampening material, such as Dacron or other synthetic fibers, is required for better performance)
- You should use the image as an example
UNFILTERED MAGNITUDE RESPONSE, 2.83V/1M AND RELATIVE PHASE RESPONSE WITH 18TLW3000

MAGNITUDE RESPONSE

PHASE RESPONSE
IMPEDANCE RESPONSE WITH 18TLW3000
FILTERED MAGNITUDE RESPONSE, 2.83V/1M WITH 18TLW3000

EQUALIZATION SETTINGS SUGGESTION

High Pass: Butterworth 12dB/Oct 45Hz
Parametric EQ: $f_0 = 150 / -9\text{dB} / Q = 1$
Parametric EQ: $f_0 = 90 / -3\text{dB} / Q = 3$
Parametric EQ: $f_0 = 50 / 1\text{dB} / Q = 2$
Low Pass: Butterworth 24dB/Oct 120Hz

GAIN = 3dB
UNFILTERED MAGNITUDE RESPONSE, 2.83V/1M AND RELATIVE PHASE RESPONSE WITH 18LW2500

MAGNITUDE RESPONSE

PHASE RESPONSE
IMPEDANCE RESPONSE WITH 18LW2500
FILTERED MAGNITUDE RESPONSE, 2.83V/1M PHASE WITH 18LW2500

EQUALIZATION SETTINGS SUGGESTION

High Pass: Butterworth 12dB/Oct 45Hz
Parametric EQ: fo = 150 / -7dB / Q = 1
Parametric EQ: fo = 90 / -4dB / Q = 3
Parametric EQ: fo = 50 / 1dB / Q = 2
Low Pass: Butterworth 24dB/Oct 120Hz

GAIN = 3dB
DETAILS: HORN CONSTRUCTION

8

60° angle

100° angle

262 mm

341 mm

410 mm

9

105° angle

102.5° angle

128 mm

341 mm

110° angle

10

102.5° angle

110° angle

273 mm

341 mm
DETAILS: REAR CONSTRUCTION
DETAILS: WOOFER
DETAILS: ACCESS PANEL REINFORCEMENT
DETAILS: ACCESS PANEL HOUSING
DETAILS: ACCESS PANEL HOUSING

- Dimensions:
  - Height: 625 mm
  - Width: 510 mm
  - Depth: 90 mm

- Markings:
  - 100 mm, 145 mm, 152 mm, 95 mm, 37 mm

- Notes:
  - All dimensions are in millimeters.
  - Diagram illustrates the housing structure with marked dimensions for reference.