CNODE® TRANSPONDERS

MINI - MEDIUM FREQUENCY, 4000 M

cNODE® is a family of transponders for underwater acoustic positioning and data link and operates with both HiPAP®, HPR and cPAP® transceivers. cNODE® operates with either the HiPAP/HPR 400 channels and telemetry or with the new Cymbal acoustic protocol. The Medium frequency (MF) cNODE® family consists of the following types, each with a separate product specification sheet:

• cNODE Maxi and cNODE Midi (Medium frequency, 4000 m)
• cNODE Mini (Medium frequency, 4000 m)

The cNODE® design is very modular and covers a large range of applications with its variety of different transducers, internal and external sensors, housing materials and other add-on functions. Both new configurations and software can easily be downloaded from the Transponder Test and Configuration unit (TTC30) without opening the transponder. The floating collar design make the launch/recovery operation safe and easy. Spare parts for cNODE® are based on the main modules. The cNODE® housing rated for 4000m is manufactured in coated anodized aluminium. Transducer options include an 180 degree omni directional and 40 degree vertical transducer to ensure the link can be optimized based on water depth and environment.

- Transparent Modem function
- Both transponder and responder functions
- Compatible with both Cymbal acoustic protocol for positioning and data link, and HiPAP®/HPR 400 channels and telemetry
- SSBL positioning
- Internal tilt sensor ± 90°. Accuracy ± 2°
- LBL positioning
- Pressure relief valve and vent screw (safety devices)
- Acoustic data link for command and data transfer
- External connector for transponder configuration and software update via serial line (TTC30 or TTC Light)
- Modular design; the transducer, transponder electronics, battery pack and optional add-ons can be replaced individually.
- Range measurement between transponders (typical, 1 σ standard deviation):
  - Range accuracy: 0.02 m
  - Repeatability: 0.01 m
SYSTEM OVERVIEW

COMMON FEATURES FOR ALL MINI MODELS

- Depth rating: 4000 m
- Operating temperature: -5°C to +55°C

Aluminium (Alu) transponders can only consist of Aluminium modules.

Stainless steel (St) transponders can only consist of Stainless steel modules.

MINI MODELS

Examples of models:
- cNODE Mini 34-40V
- cNODE Mini 34-180
- cNODE Mini 34-S
- cNODE Mini 31-80V-St
- cNODE Mini 31-80V-D-St

Transponder model name description:
- cNODE Mini
- 3 4 - TD type or - Top section - Bottom end cap - Material
- 3 = 30 kHz
- 4 = 4000 m

Transponder example:
cNODE Mini 34-180-St indicates that this transponder is operating in the 30 kHz band, is rated to 4000 metre depths, with a 180° transducer beam width and all modules are made from stainless steel.

COMMON FEATURES FOR ALL MINI MODELS

- Depth rating: 4000 m
- Operating temperature: -5°C to +55°C

Aluminium (Alu) transponders can only consist of Aluminium modules.

Stainless steel (St) transponders can only consist of Stainless steel modules.
## Transducers

<table>
<thead>
<tr>
<th>Model</th>
<th>TD180</th>
<th>TD40V</th>
<th>TD30H</th>
<th>TD80V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam width</td>
<td>180°</td>
<td>40° vertical</td>
<td>30° horizontal</td>
<td>80° vertical</td>
</tr>
<tr>
<td>Receiver sensitivity</td>
<td>100 dB</td>
<td>90 dB</td>
<td>100 dB</td>
<td>85 dB</td>
</tr>
<tr>
<td>Source level - max.</td>
<td>190 dB</td>
<td>203 dB</td>
<td>194 dB</td>
<td>188 dB</td>
</tr>
<tr>
<td>Dimensions (L x D)</td>
<td>70.5 x Ø88</td>
<td>71 x Ø100</td>
<td>123 x Ø77</td>
<td>36.5 x Ø80</td>
</tr>
<tr>
<td>Models (material)</td>
<td>Alu and St</td>
<td>Alu and St</td>
<td>Alu and St</td>
<td>St (Depth rating: 1000 m)</td>
</tr>
<tr>
<td>Part number</td>
<td>333059 (Alu) 320885 (St)</td>
<td>332186 (Alu) 365401 (St)</td>
<td>361662 (Alu) 375760 (St)</td>
<td>352910 (St)</td>
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</tbody>
</table>

## TDR - Remote transducers for Split transponders (S)

<table>
<thead>
<tr>
<th>Model</th>
<th>TDR180</th>
<th>TDR40V</th>
<th>TDR30H</th>
<th>TDR30V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beam width</td>
<td>180°</td>
<td>40° vertical</td>
<td>30° horizontal</td>
<td>30° vertical</td>
</tr>
<tr>
<td>Receiver sensitivity</td>
<td>100 dB</td>
<td>90 dB</td>
<td>100 dB</td>
<td>85 dB</td>
</tr>
<tr>
<td>Source level - max.</td>
<td>190 dB</td>
<td>203 dB</td>
<td>194 dB</td>
<td>188 dB</td>
</tr>
<tr>
<td>Dimensions (L x D)</td>
<td>209.8 x Ø88</td>
<td>71 x Ø100</td>
<td>123 x Ø77</td>
<td>36.5 x Ø80</td>
</tr>
<tr>
<td>Models (material)</td>
<td>Alu and St</td>
<td>Alu and St</td>
<td>Alu and St</td>
<td>Alu and St</td>
</tr>
<tr>
<td>Part number</td>
<td>349742 (Alu) 375361 (St)</td>
<td>349743 (Alu) 375360 (St)</td>
<td>345773 (Alu) 375359 (St)</td>
<td>333445 (Alu) 370447 (St) 345772</td>
</tr>
</tbody>
</table>

## Top end cap

<table>
<thead>
<tr>
<th>Model</th>
<th>Split transponder (S) for remote transducer</th>
<th>Model</th>
<th>Depth sensor (Dx)</th>
<th>Model</th>
<th>Basic end cap</th>
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</thead>
<tbody>
<tr>
<td>Dimensions (L x D)</td>
<td>31.5 x Ø85</td>
<td>Dimensions (L x D)</td>
<td>154 x Ø85</td>
<td>Dimensions (L x D)</td>
<td>31.5 x Ø85</td>
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<tr>
<td>Models (material)</td>
<td>Alu and St</td>
<td>Models (material)</td>
<td>Alu and St</td>
<td>Models (material)</td>
<td>Alu and St</td>
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<tr>
<td>Part number</td>
<td>349750 (Alu) 330071 (St)</td>
<td>Part number</td>
<td>383197 (Alu) 353515 (St)</td>
<td>Part number</td>
<td>332020 (Alu) 349131 (St)</td>
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<tr>
<td>-</td>
<td>-</td>
<td>Accuracy</td>
<td>0.1% FS</td>
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## Tube

<table>
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<tr>
<th>Coating</th>
<th>Polyurethane</th>
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<th>329992</th>
<th>Type</th>
<th>NIHM, rechargeable</th>
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<tr>
<td>Models (material)</td>
<td>Alu and St</td>
<td>-</td>
<td>-</td>
<td>Battery lifetime</td>
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<tr>
<td>Dimensions (L x D)</td>
<td>495 x Ø85</td>
<td>-</td>
<td>-</td>
<td>• 60 days quiescent</td>
<td></td>
</tr>
<tr>
<td>Part number</td>
<td>381646 (Alu) 381343 (St)</td>
<td>-</td>
<td>-</td>
<td>• No. of replies: 30.000 to 750,000</td>
<td></td>
</tr>
</tbody>
</table>

## Chassis with PCB

| Part number | 290-220675 |
### Mini 34-40V

**Weight in air:** 6.7 kg  
**Weight in water:** 3.4 kg

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### TTC 30 - Transponder Test and Configuration unit*

**Frequency band:** Medium frequency (MF)  
**Part number:** 345775  
The unit comes with:  
- Test transducer  
- Serial line cable  
- Charger cable  

* See separate TTC 30 Product Specification for more information.

### OUTLINE DIMENSIONS

#### Mini 34-80V-D-St

**Weight in air:** 15.4 kg  
**Weight in water:** 11.4 kg

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Specifications subject to change without any further notice.