

## cNODE<sup>®</sup> TRANSPONDERS

### MINI - MEDIUM FREQUENCY, 4000 M

cNODE<sup>®</sup> is a family of transponders for underwater acoustic positioning and data link and operates with both HiPAP<sup>®</sup>, HPR and cPAP<sup>®</sup> transceivers. cNODE<sup>®</sup> operates with either the HiPAP/HPR 400 channels and telemetry or with the new Cymbal acoustic protocol. The Medium frequency (MF) cNODE<sup>®</sup> 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<sup>®</sup> 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 makes the launch/recovery operation safe and easy. Spare parts for cNODE<sup>®</sup> are based on the main modules. The cNODE<sup>®</sup> 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.

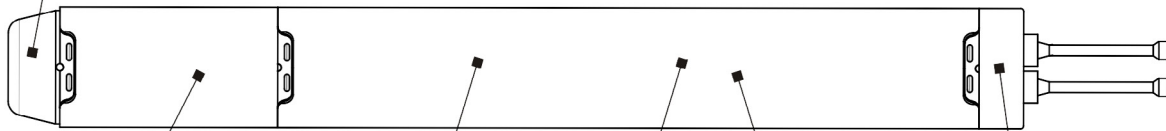
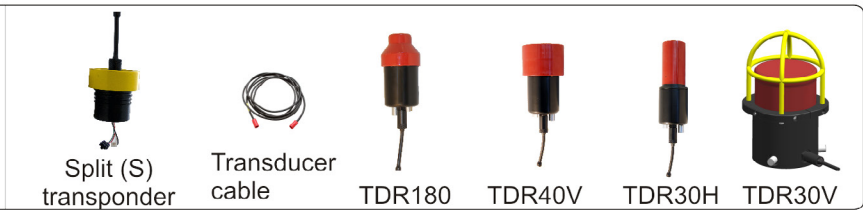
- Transparent Modem function
- Compatible with both Cymbal acoustic protocol for positioning and data link, and HiPAP<sup>®</sup>/HPR 400 channels and telemetry
- SSBL positioning
- LBL positioning
- Acoustic data link for command and data transfer
- Range measurement between transponders (typical, 1  $\sigma$  standard deviation):
  - Range accuracy: 0.02 m
  - Repeatability: 0.01 m
- Both transponder and responder functions
- Internal tilt sensor  $\pm 90^\circ$ . Accuracy  $\pm 2^\circ$
- Pressure relief valve and vent screw (safety devices)
- 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.

# SYSTEM OVERVIEW

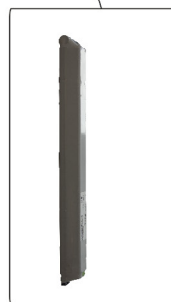
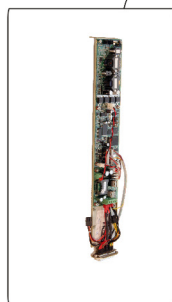
## Transducers



## Remote transducers for Split transponders



Top section module



## Auxiliary equipment

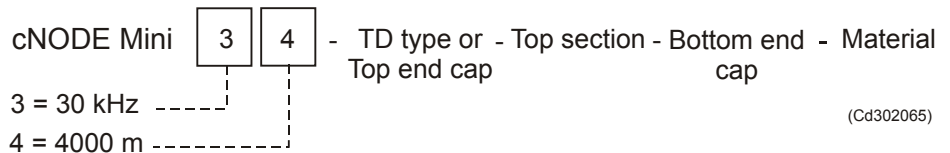


# MINI MODELS

## 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



## 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



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

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



Model	TDR180	TDR40V	TDR30H	TDR30V	Transducer cable (6 m)
Beam width	180°	40° vertical	30° horizontal	30° vertical	-
Receiver sensitivity	100 dB	90 dB	100 dB	85 dB	-
Source level - max.	190 dB	203 dB	194 dB	188 dB	-
Dimensions (L x D)	209.8 x Ø88	71 x Ø100	123 x Ø77	36.5 x Ø80	-
Models (material)	Alu and St	Alu and St	Alu and St	Alu and St	-
Part number	349742 (Alu) 375361 (St)	349743 (Alu) 375360 (St)	345773 (Alu) 375359 (St)	333445 (Alu) 370447 (St)	345772

## Top end cap

## Top section module

## Bottom end cap module

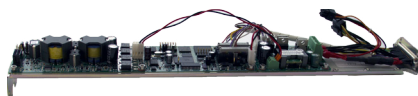


Model	Split transponder (S) for remote transducer	Model	Depth sensor (Dx)	Model	Basic end cap
Dimensions (L x D)	31.5 x Ø85	Dimensions (L x D)	154 x Ø85	Dimensions (L x D)	31.5 x Ø85
Models (material)	Alu and St	Models (material)	Alu and St	Models (material)	Alu and St
Part number	349750 (Alu) 330071 (St)	Part number	383197 (Alu) 353515 (St)	Part number	332020 (Alu) 349131 (St)
-	-	Accuracy	0.1% FS	-	-

## Tube

## Chassis with PCB

## Battery



Coating	Polyurethane	Part number	329992	Type	NiHM, rechargeable
Models (material)	Alu and St	-	-	Battery lifetime	<ul style="list-style-type: none"> <li>60 days quiescent</li> <li>No. of replies: 30.000 to 750.000</li> </ul>
Dimensions (L x D)	495 x Ø85	-	-	-	-
Part number	381646 (Alu) 381343 (St)	-	-	Part number	290-220675

## Floating collar



## Power AC/DC unit



## Battery charger



For aluminium transponders		Input	110/230 VAC	Battery charger, NiMH	
Part number	366186	Output	15 VDC/300 W	Part number	290-220687
Dimensions (L x D)	845 x 318	Dimensions (L x D)	309 x Ø85	Dimensions (L x D)	355 x 256
Depth rating	4000 m	Models (material)	Alu and St	Weight	2.9 kg
-	-	Part number	346471 (Alu) 367386 (St)	-	-

## Accessories

### 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.

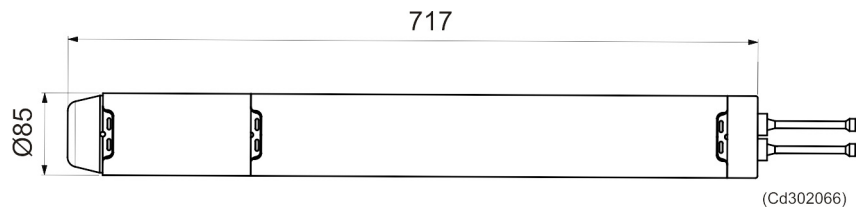


## OUTLINE DIMENSIONS

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

**Weight in air:** 15.4 kg

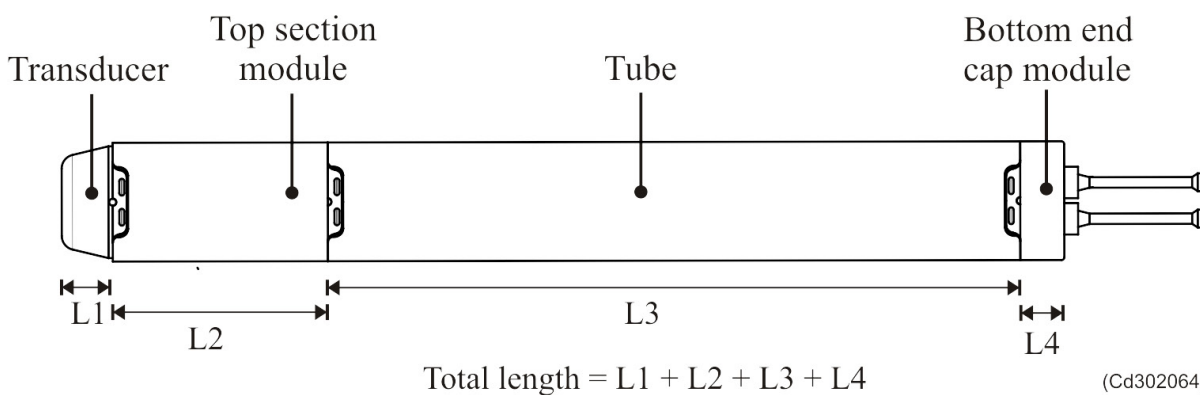
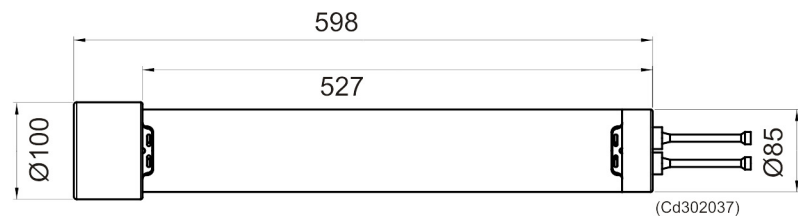
**Weight in water:** 11.4 kg



### Mini 34-40V

**Weight in air:** 6.7 kg

**Weight in water:** 3.4 kg



cNODE®  
modular  
design

Specifications subject to change without any further notice.