

cNODE[®] Maxi Transponders



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 and release design make the launch/recovery operation safe and easy. Spare parts for cNODE are based on the main modules

Specifications

Product	cNODE [®] Maxi Transponders
Country of origin	Norge
Manufacturer	Kongsberg Discovery

Common for all cNODE® transponders

- Responder and transponder functionalities
- SSBL and LBL positioning
- Range accuracy of 0,01 m between transponders
- Acoustic data link for command and data transfer
- Compatible with both Cymbal® acoustic protocol for positioning and data link, and HiPAP®/HPR 400 channels and telemetry
- Operates together with HiPAP®, HPR and cPAP® transceivers
- Internal tilt sensor $\pm 90^\circ$
- Both transponder and responder functions
- Pressure relief valve and vent screw (safety devices)
- External connector for transponder configuration and software update via serial line (TTC 30).
- Modular design such that the transducer, transponder electronics, battery pack and optional add-on's can be replaced individually

cNODE is a family of transponders for underwater acoustic positioning and data link and operates with both HiPAP®, HPR and cPAP® transceivers. 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)

cNODE operates with either the HiPAP/HPR 400 channels and telemetry or with the new Cymbal acoustic protocol.

Maxi/Midi - Models and standard features

Examples of models		
Maxi		Midi
34-180	34-30V-I-St	34-180
34-30V30H-R	34-30V-II-St	34-30V
34-30V30H-Dx-R	34-30V-St	34-30V30H
34-30V-Si	34-30V30H-R-St	34-S-R

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

Transducers

Examples of models		
Maxi		Midi
34-180	34-30V-I-St	34-180
34-30V30H-R	34-30V-II-St	34-30V
34-30V30H-Dx-R	34-30V-St	34-30V30H
34-30V-Si	34-30V30H-R-St	34-S-R

System overview cNODE Maxi/Mid

Transducers



Top section modules



SvPI

Chassis



Midi

Maxi

Bottom end caps modules



MGC

Release mechanism

Basic end cap

Inclinometer

Sensor interface

Remote transducers for Split transponders

TDR 30H TDR 180 TDR 40V Split transponder



TDR 30V

Transducer cable (6m)



Tubes



Midi



Maxi

Batteries



Midi



Maxi

Transducers



Maxi Aluminium 2000m

Maxi Aluminium 4000m

Maxi Stainless steel 4000m

Installation for end caps



Stainless steel

Aluminium

External sensors



Inclinometer

Transducers

TD180



TD30V



TD30V30H



	TD180	TD30V	TD30V30H
Frequency band	Medium Frequency	Medium Frequency	Medium Frequency
Beam width	180°	30° vertical	30° vertical/30° horizontal
Receiver sensitivity	100 dB	85 dB	85 dB
Source level - max	190 dB	206 dB	206 dB/190 dB
Material	Aluminium/Stainless steel	Aluminium/Stainless steel	Aluminium/Stainless steel

Top end cap

Top section modules

Split transducer	Depth sensor	Multi sensor module
		Material
Material	Material	Aluminium
Aluminium	Aluminium	Inclinometer
Cable length	Accuracy	0.05°
6 m	0.01% FS	Sound velocity
		± 0.02 m/s
		Depth
		0,01% FS

Tubes

Maxi



Midi



Material	Aluminium/ Stainless steel	Aluminium
Coating	Polyurethane	Polyurethane

Bottom end cap modules

MGC



Basic end cap



Release mechanism



Sensor interface



Interface external sensors

Inclinometer



Internal X and Y inclinometer

Material	Aluminium/ Stainless steel	Aluminium/ Stainless steel	Aluminium	Aluminium
Serial line	190 dB		RS-232/-485/-422	
Safe working load		500 kg		
Range	190 dB			± 60°
Accuracy	190 dB			0.25°
Number of sensors			3	
P/N	330498 (Alu) and 330805 (St)	325026 (Alu) and 356511 (St)	347652 (Alu) and 361410(St)	320818
Dimensions L x dia	40 x Ø144	243 x Ø144	72.8 x Ø144	128 x Ø144

Batteries

Maxi



Midi



Type	Lithium, nonrechargeable	Lithium, nonrechargeable
Battery lifetime	Quiescent: 2.5 years No. of replies: 0.7 to 11.5 millions	Quiescent: 1.25 years No. of replies: 0.35 to 5.75 millions

Transducers

Maxi Aluminium 2000m



Maxi Aluminium 4000m



Maxi Stainless steel 4000m



	Maxi aluminium 2000m	Maxi aluminium 4000m	Maxi stainless steel 2000m
Depth rating:	2000 m	4000 m	4000 m
P/N:	320772	319301	331151

External sensors



External X and Y inclinometer to be used together with Inclinometer (I)

Range	± 60°
Accuracy	0.25°
Dimensions (L x dia)	175 x Ø112
Material	Stainless steel
P/N	322355

Third party external sensors

- Pressure sensor
- Temperature sensor
- Heading sensor
- Doppler Velocity Log
- Environmental sensors
- Sea current sensor

Floating collar



Max. operation depth	± 60°
Safe working on unit	500 kg
Minimum anchor weight	60 kg

Batteries

Top section modules

Tubes

Bottom end cap modules



Material	Stainless steel	Aluminium/Stainless steel	Aluminium/Stainless steel
Coating		Polyurethane	
Accuracy	0.1% FS		

TTC 30 - Transponder Test and Configuration unit



P/N 345775 TTC 30

Frequency band Test Transducer
Serial Line Cable)
Mains Power Cable

TDR - Remote transducers for Split transponders (S)

TDR 30H



TDR 180



TDR 40V



TDR 30V

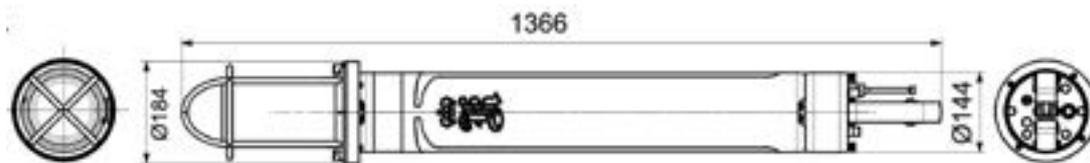


Transducer cable (6m)



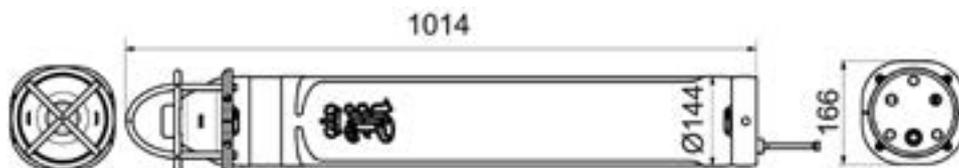
Beam width	30° horizontal	180° horizontal	40° vertical	30° vertical	
Receiver sensitivity	100 dB	100 dB	90 dB	85 dB	
Source level - max	194 dB	190 dB	203 dB	206 dB	
Dimensions L x dia	262.4 x Ø77	209.8 x Ø88	218.6 x Ø100	279.5 x Ø166	
P/N	345773 (Alu) and 375359 (St)	349742 (Alu) and 375361 (St)	349743 (Alu) and 375360 (St)	333445 (Alu) and 370447 (St)	345772
Material	Aluminium/ Stainless steel	Aluminium/ Stainless steel	Aluminium/ Stainless steel	Aluminium/ Stainless steel	
Connectors					Subconn MCILF and MCIL4M

Maxi 34-30V30H-R and Maxi 34-30V30H-R-St outline drawings



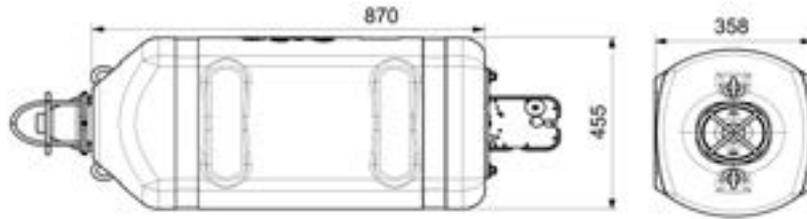
Tube length	805 mm
Weight in air	30 kg
Weight in water	13 kg

Maxi 34-180



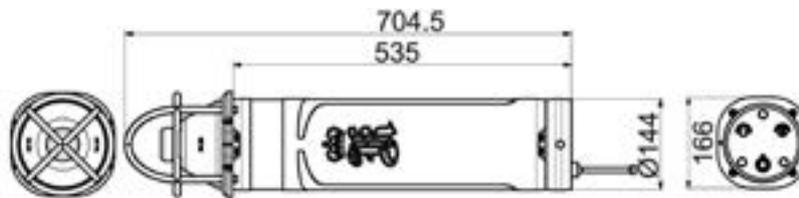
Weight in air	28 kg
Weight in water	12 kg

Floating collar outline drawing



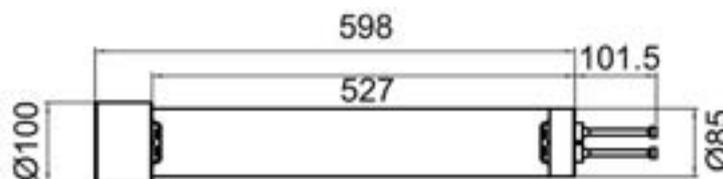
Weight in air	70 kg
Nominal Buoyancy	30 kg

Midi 34-180 outline drawing



Tube length	495 mm
Weight in air	16.5 kg
Weight in water	8.5 kg

Mini 34-40V outline drawing



Tube length	496 mm
Weight in air	6.7 kg
Weight in water	3.4 kg