cNODE® Micro 31-180

The cNODE® Micro transponder is rated to 600 metres and is small and light enough to be used by divers and shallow water ROV's. Operating on Kongsberg Cymbal digital acoustic protocols, the cNODE® Micro provides the optimal positioning performance with the Kongsberg range of SSBL systems, from μPAP® through to HiPAP®.

The cNODE® Micro is extremely flexible featuring Cymbal digital telemetry and both SSBL & Long Baseline positioning capabilities. With range accuracies of better than 2 cm achievable, measured baselines between transponders on the seabed provide capabilities for simple diver metrology or archeology.

The telemetry capability allows the battery status to be read during operation and the integrated tilt sensor can be turned on and off with positioning updates. Multiple cNODE® Micro transponders can be interrogated simultaneously in SSBL positioning mode using the μPAP® and HiPAP® Fast track feature to ensure the fastest possible updates during operation.

Specifications

Product	cNODE Micro 31-180
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 ± 90°r
- 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

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

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

Split transducer
Material
Aluminium
Cable length
6 m

Top section modules

Depth sensor
Material
Aluminium
Accuracy
0.01% FS

Multi sensor module
Material
Aluminium
Inclinometer
0.05°
Sound velocity
± 0.02 m/s
Depth
0,01% FS

Tubes

Maxi

Midi

	Maxi	Midi
Material	Aluminium/ Stainless steel	Aluminium
Coating	Polyurethane	Polyurethane

Bottom end cap modules

	Basic end cap	Release mechanism	Sensor interface	Inclinometer
			 Interface external sensors	 nternal 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

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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		

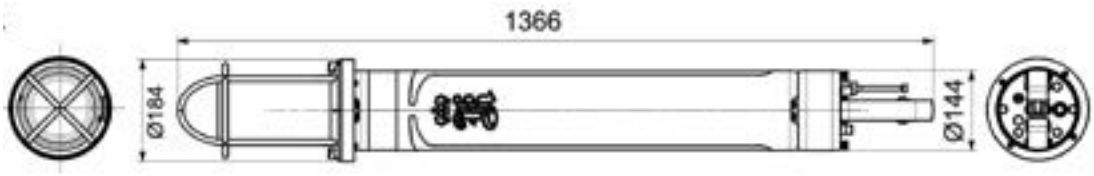
TTC 30 - Transponder Test and Configuration unit

P/N	345775 TTC 30
Frequency band	Test Transducer Serial Line Cable) Mains Power Cable

TDR - Remote transducers for Split transponders (S)

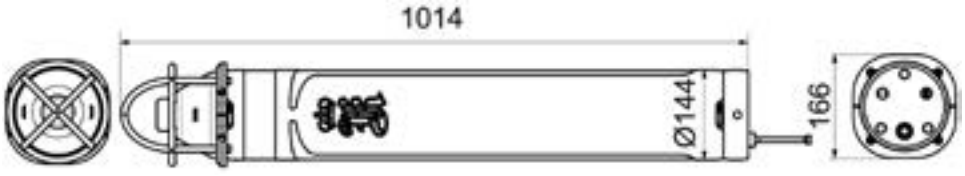
	TDR 30H	TDR 180	TDR 40V	TDR 30V	Transducer cable (6m)
					
Beam width	30° horizontal	180° horizontal	40° vertical	30° vertical	
Receiver sensitivity	100 dB	100 dB	90 dB	85 dB	
Source level - max	194 dB	190 dB	203 dB	206 dB	
Dimensions L x dia	262.4 x Ø77	209.8 x Ø88	218.6 x Ø100	279.5 x Ø166	
P/N	345773 (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



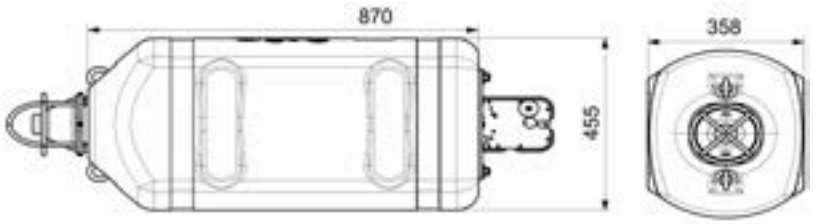
Tube length	805 mm
Weight in air	30 kg
Weight in water	13 kg

Maxi 34-180



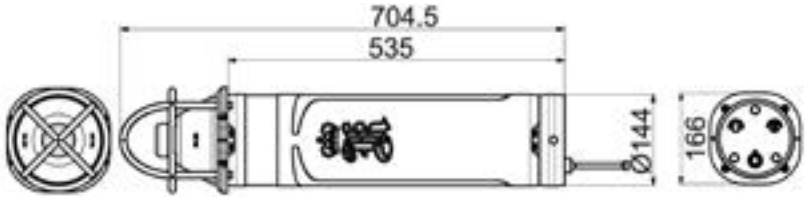
Weight in air	28 kg
Weight in water	12 kg

Floating collar outline drawing



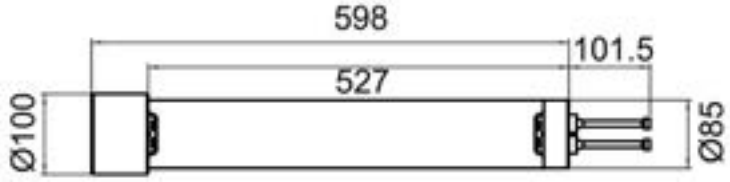
Weight in air	70 kg
Nominal Buoyancy	30 kg

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