



KONGSBERG

MPT 163 series

Multifunction Positioning Transponder (MPT)

Deep water use - 6000 m rated

System

The new generation Low Frequency (LF) MPT transponders are the subsea and seabed elements of the Kongsberg Maritime underwater positioning and navigation systems.

The transponder models have 30 channels for use with a HPR 400 LF system.

Common for all the models are that they, on interrogation, will reply with a single- or a multi-pulse response. This contains different information for the HPR 400 LF system, depending on the application.

Applications

- Dynamic position reference for surface vessels.
- Navigation of underwater vehicles and towed bodies.
- Positioning aid for pipeline and underwater structure maintenance and construction.
- Positioning and re-entry of Blow Out Preventers (BOPs).
- Riser angle and BOP angle monitoring.
- Telemetry of inclinometers, acoustic release or external sensors.
- Sensor-reading telemetry transponder (depth and temperature).
- Position transponder in a Long Base Line (LBL) array.
- Master / slave transponder in an LBL array.
- Transponder Range-Positioning mode where it positions itself.
- Range measuring transponder.



Transponder main units

The transponder consists of the following main components:

- Transducer-head
- Battery
- Electronics
- Housing

The transponders are supplied with different transducer heads. The last digit in the model number identifies the width of the beam pattern. The battery type provided will vary, as some types require very high energy for the transmitting pulse. The electronic circuitry with software is modular and used with all models, while the physical housing length varies with transponder type.

The unique Split Beam

These transponders have a Split Beam transducer. This is designed for use in Long Base Line (LBL) deep water positioning. The array calibration is performed with the use of a wide beam.

In LBL, using Remotely Operated Vehicle (ROV) / Tow fish positioning, the wide beam is used. For telemetry and Super Short Base Line (SSBL) operation, the narrow beam can be used to optimize the signal to noise ratio at the vessel's system.

- The wide beam is $\pm 60^\circ$.
- The narrow beam is $\pm 30^\circ$.

The transponders can be used with the following HPR systems:

- HPR 1507
- HPR 410 LF
- HPR 418 LF
- HPR 400 S16 LF

Multifunction Positioning Transponders (MPT)

A MPT transponder can operate in both SSBL and LBL modes. All required telemetry functionality is built-in.

Special facilities

As mentioned above, the transponders have an acoustic telemetry link.

This link may be used to:

- Command the transponder into different modes of operation or to initiate data transfer from the transponder.

The unique setting of transponder receiver sensitivity and transmitter power level is used to achieve optimal performance and battery lifetime. Remaining battery lifetime is known by telemetry of the internal battery status monitoring. Commands for changing the pulse length and turnaround delay are other operator selected parameters.

Power supply

The transponder is normally self-contained with power supply using very long life lithium battery. A rechargeable battery with battery charger and a alkaline battery are available. These batteries may be used as a replacement for the transponder battery, L10/36 (15/40).

Housing material

The housing material (aluminium) is selected for long mechanical lifetime. The unit is very robust.

Naming principles

The transponder name contains three letters followed by three digits, and the letter after the digits describes the options.

MPT	= Multifunction Positioning Transponders
1xx	= 10-15 kHz band
x6x	= 6000 meter depth rated
xx3	= $\pm 30^\circ$ beamwidth
xxxSpB	= Split Beam wide beam $\pm 60^\circ$ and narrow beam $\pm 30^\circ$
R	= includes Release mechanism
RspSx 110 Vac	= Responder, short tube, small backup battery and power supply
S	= Split housing and transducer
U	= Unlisted function which is custom specified

Models

- MPT 163/RSpB
- MPT 163/SpBRsp Sx 110 Vac SU

Specifications

Basic data (with SpB)

Maximum depth rating..... 6000 meters
 Housing material..... Aluminium
 Flange and transducer head material Polyurethane coated
 Weight in air / water..... 60 kg / 30 kg
 Outside diameter:
 - Housing..... 160 mm
 - Flange 200 mm
 Overall length..... 1600 mm
 Operation temperature 0° to +30° C
 Transducer beam widths ±60°, ±30°
 Source level (relative to 1 µPa ref. 1 m):
 - ±60°, 4 steps of 3 dB 186
 - ±30°, 4 steps of 3 dB 198
 Receiver sensitivity:
 - ±60°, 2 steps 100 / 106
 - ±30°, 2 steps 85 / 91
 Frequency band:
 - Rx..... 10.000 - 12.500 kHz
 - Telemetry 12.125 - 12.875 kHz
 (at 250 kHz intervals)
 - Tx..... 13.000 - 15.750 kHz
 Battery..... Lithium L10/36 (15/40)

Version /R

As in basic data, except:
 Weight in air / water..... 62 kg / 31 kg
 Overall length..... 1740 mm
 Maximum release load..... 100 kg

Batteries

The L10/36 (15/40) battery pack may be replaced by an Alkaline or a Rechargeable battery. The specification for these batteries are shown in the table to the right.

Battery data	Lithium	Alkaline	Rechargeable
Battery Type no	L10/36 (15/40)	A10/36 (24/24)	N10/36 (18/30)
Battery Part no	290-103053	290-216804	290-212364
Maximum continuous on-time	180 days	71 days	16 days
Quiescent time	930 days	301 days	90 days
No. of replies, low source level	6.4 million	1.44 million	0.72 million
No. of replies, max source level	1.6 million	0.36 million	0.16 million

Lithium

Delivered as standard with the transponder.
 For more data see table.

Alkaline battery

Weight..... 8.0 kg
 For more data see table.

Version /SpBRsp Sx 110 Vac SU

As in basic data, except:

Electronics unit

Weight in air / water..... 32 kg / 14.5 kg
 Overall length..... 1094 mm
 Maximum power consumption 110 Vac 7.5 W
 Backup Lithium battery quiescent lifetime.... 130 days

Transducer unit

Weight in air / water..... 20 kg / 12 kg
 Overall length..... 335 mm
 Length of cable 5 m



Rechargeable battery

Weight..... 8.5 kg
 Number of charge / discharge cycles 250
 For more data see table.

Battery Charger

Type..... BCN 1036
 Weight 3.5 kg
 Outline dimension..... 172 x 120 x 231 mm

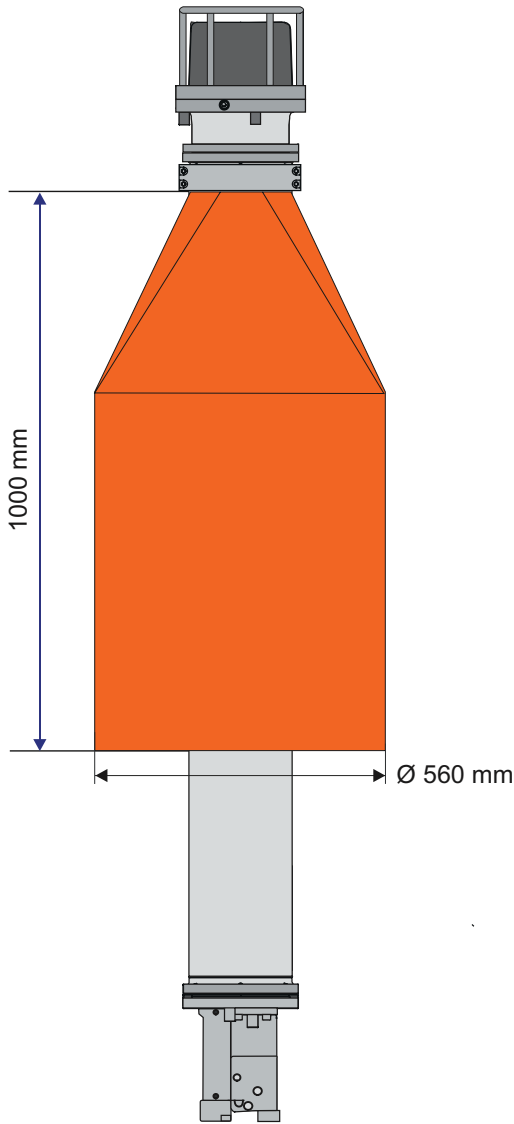
Floating Collar

Depth rating	7000 m
Total weight in air	175 kg
Total buoyancy in water	65 kg
Overall height.....	1000 mm
Width x depth.....	560 x 560 mm
Colour	Orange

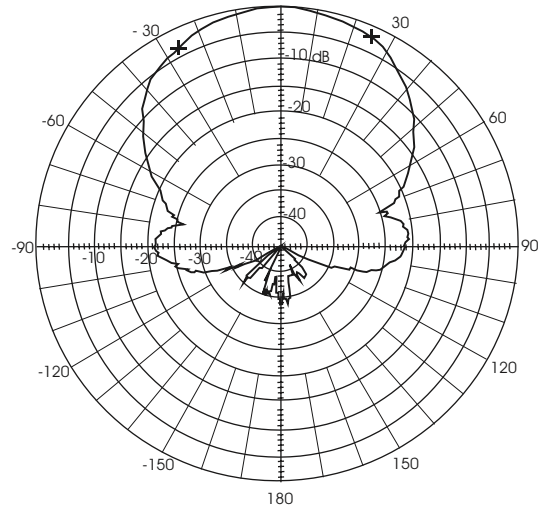
Beam pattern

The examples of beam pattern shows the transmit / receive sensitivity in the different directions.

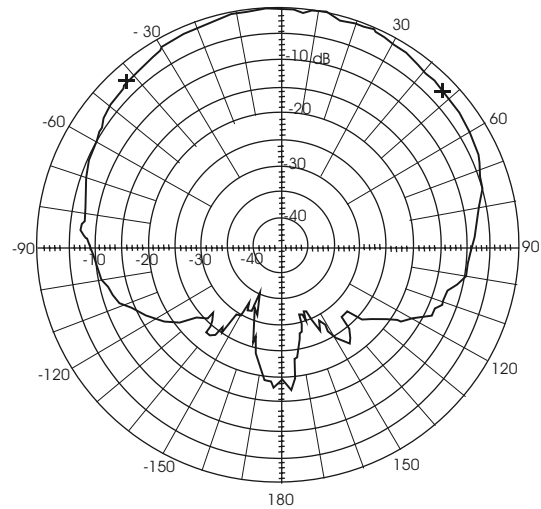
- Wide beam $\pm 60^\circ$
- Narrow beam $\pm 30^\circ$



MPT 163/RSpB



MPT 163
Narrow beam $\pm 30^\circ$
Source level = 198 dB



MPT 163
Wide beam $\pm 60^\circ$
Source level = 186 dB

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