



SPT and MPT 31x and 33x Series

SSBL Positioning Transponder (SPT) Multifunction Positioning Transponder (MPT)

The medium frequency Kongsberg Simrad SPT and MPT 31x and 33x Series of transponders are the subsea and seabed elements of the Kongsberg Simrad underwater positioning and navigation systems.

The transponder models have 56 channels for use with the HiPAP systems and the HPR Series. Common for all these models are that they, on interrogation, replies with a single- or a multi-pulse response. This reply contains different information to the HiPAP / HPR system, depending on the current application.

The Multifunction Positioning Transponder (MPT) can be operated in both Super-Short Base Line (SSBL) and Long Base Line (LBL) modes. All required telemetry functionality is built-in.

The SSBL Positioning Transponder (SPT) can only operate in Super-Short Base Line. However, the SPT also supports telemetry capabilities and functionality. The SPT may be upgraded to MPT.

The SPT and MPT transponders can also be used by the HPR 309/310 and even earlier models with the originally 14 channels. The transponder channel is preset from the manufacturer, but can be altered by either adjusting internal switches, or by acoustic telemetry from the HiPAP and HPR 400 systems. HPR 309/310 and earlier systems can not send telemetry for this purpose.

FEATURES AND BENEFITS

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

Units and options

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 \pm width of the beam pattern.

The electronics with software is modular for all the models. The housing length is defined by the transponder model.

Special facilities

The acoustic telemetry link may be used to:

- Set the transponder into different modes of operation
- Transfer data from the transponder
- Set the transponder receiver sensitivity and transmitter power level

This is used to achieve optimal performance and battery lifetime, read the remaining battery lifetime and change the pulse length and turnaround delay.

Naming principles

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

MPT = Multifunction Positioning Transponder

xx4 = +45 ° beamwidth

H = Heading magnetic compass

SPT = SSBL Positioning Transponder

xx3 = +30 ° beamwidth

S = Unit with Split transducer

3xx = 30 kHz band

DT = Depth and Temperature sensors

Si = Serial Interface

x1x = Depth rated for 1000 meters

I = Inclinometers (X and Y angles)

xx9 = +90 ° beamwidth

R = Release mechanism



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SPT AND MPT 31X TECHNICAL SPECIFICATION

Maximum depth rating	1000 meters
Housing material	Aluminium
Coating	Polyurethane
Weight in air / water	24 kg / 10 kg

OUTSIDE DIAMETER

Housing / Clamping ring	131 mm / 171 mm
Overall length	1420 mm
Transducer beamwidth	±90 ° or ±45 °

SOURCE LEVEL

±90 °, 4 steps: max 188 dB relative to 1 µPa. ref. 1m
 ±45 °, 4 steps: max 195 dB relative to 1 µPa. ref. 1m
 ±30 °, 4 steps: max 192 dB relative to 1 µPa. ref. 1m
 Rx sensitivity, 2 steps: max 100 dB relative to 1 µPa

FREQUENCY BANDS:

Rx	21.000 - 24.500 kHz
Telemetry	25.000 - 26.500 kHz
Tx.	27.000 - 31.500 kHz

VERSION /DT

Basic data applies with the following exceptions

DT sensors; max depth	1000 m
Accuracy/ pressure sensor	±1 m
Resolution pressure sensor	0.1 m
Range temperature sensor	-10 ° to + 40 ° C
Accuracy temperature sensor	0.2 ° C
Resolution temperature sensor	0.1 ° C

VERSION /R AND DTR

Basic data applies with the following exceptions:

Weight in air / water	27 kg / 11 kg
Overall length	1470 mm
Release; lift / buoyancy	225 kg
Separate battery pack	400 releases

VERSION /I

Data as basic and DT except:

Maximum detectable angle:-	
HPR 300 channels	±15 °
HPR 400 channels	±60 °
Resolution:-	
HPR 300 channels	0.25 °
HPR 400 channels	0.02 °
Accuracy with standard sensors	0.25 °

VERSION /H

Specifications as for basic unit except:

Compass	TCM2-20-TTL
Heading:	
Accuracy level	±1.0 ° RMS
Resolution / repeatability	0.1 ° / ±0.1 °
Tilt:	
Tilt	±20 °
Accuracy	±0.2 °
Resolution / repeatability	0.1 ° / ±0.2 °

VERSION /SI

Weight in air / water	27 kg / 11 kg
Overall length	1486 mm

VERSION /S

Transducer unit:

Weight in air / water	12 kg / 5 kg
Overall length	327 mm

Electronic unit:

Weight in air / water	27 kg / 11 kg
Overall length	1247 mm

LITHIUM

Weight	7.6 kg
Shelf lifetime	10 years

ALKALINE

Weight	8.0 kg
Shelf lifetime	4 years
Max effect	100 W

RECHARGEABLE

Weight	8.5 kg
Number of charge / discharge cycles	250

BATTERY CHARGER

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

FLOATING COLLAR

Collar type	119-086872
Depth rating	1000 m
Total weight in air	30 kg
Total buoyancy in water	28.5 kg
Overall height	570 mm
Width x depth	375 x 375 mm
Diagonal diameter	535 mm
Colour	Orange

BEAM PATTERN

The transponder beam pattern shows the transmit / receive sensibility in the different directions.

The MPT 313 transponder series is equipped with a ±30 ° beamwidth transducer. This transducer is "doughnut-shaped" and provides a horizontal beam.

	LITHIUM	ALKALINE	RECHARGEABLE
Battery Type no	L10/36 (18/30)	A10/36 (24/24)	N10/36 (18/30)
Battery Part no	290-101665	290-216804	290-212364
Maximum continuous on-time	180 days	71 days	80 days
Quiescent time	930 days	301 days	300 days
No. of replies, low source level	6.4 million	1.44 million	0.64 million
No. of replies, max source level	1.6 million	0.36 million	0.16 million



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SPT AND MPT 33X TECHNICAL SPECIFICATION

MODELS

SPT 331
 SPT 331/R
 SPT 331/St
 SPT 331/R-St
 SPT 331/I-St
 SPT 331/II-St
 SPT 331/RspSx110 Vac-St
 SPT 331/RspSx 110 Vac
 MPT 331/DTDuB
 MPT 331/DTRDuB
 MPT 331/DuBSi
 MPT 331/DTDuB-St
 MPT 331/DTRDuB-St
 MPT 339/DT
 MPT 339/DTR
 MPT 339/St
 MPT 339/DTR-St
 MPT 339/DTRspSx
 110 Vac-St

BASIC DATA

Max depth rating 3000 meters
 Aluminium, weight in air / water 35.5 kg / 13.5 kg
 Stainless steel, weight in air / water 60 kg / 42 kg
 Overall length 1101-1850 mm

OUTSIDE DIAMETER:

Aluminium, Housing / Flange 138 mm / 200 mm
 Stainless steel, Housing / Flange 125 mm / 178 mm
 Transducer beam widths $\pm 90^\circ$, $\pm 15^\circ$

SOURCE LEVEL (RELATIVE TO 1 μ PA. REF. 1 M):-

$\pm 90^\circ$, 4 steps of 3 dB max 195 dB
 $\pm 15^\circ$, 4 steps of 3 dB max 206 dB
 Sidebeam (DuB) max 190 dB
 Rx sensitivity, 2 steps 100/106 dB
 (Relative to 1 μ Pa)

FREQUENCY BAND:-

Rx. 21.0 - 24.5 kHz
 Telemetry 25.0 - 26.5 kHz
 Tx 27.0 - 31.5 kHz

VERSION/R AND /DTR

As in basic data, except:
 Aluminium, weight in air / water 38 kg / 13 kg
 Stainless steel, weight in air / water 65 kg / 46 kg
 Overall length 1613 -1850 mm
 Release; lift/buoyancy Alu / St. max 250 kg / 140 kg
 Separate release battery St 1000 releases
 Depth, max depth on sensor 3000 m
 Resolution / Accuracy 0.1 m / < 0.1%
 Temp range on sensor -5 $^\circ$ to +30 $^\circ$ C
 Resolution / Accuracy 0.1 $^\circ$ C / 0.2 $^\circ$ C

VERSION/RSPSX 110 VAC

As in basic data, except: Combined responder and transponder.
 Normally powered by 110 Vac.
 It turns into transponder mode with backup battery if 110 Vac power is lost. Includes a 1 m pig-tail with "Gisma" U-connector.

Aluminium, weight in air / water 25 kg / 10 kg
 Stainless steel, weight in air / water 45 kg / 33 kg
 Overall length 1101-1140 mm
 Maximum power consumption, 110 Vac 7.5 W

VERSION/DUB

As in basic data, except:
 Aluminium weight in air / water 38 kg / 14 kg
 Stainless steel weight in air / water 62 kg / 41 kg
 Overall length 1695-1731 mm

TRANSDUCER BEAMWIDTH DUAL BEAM (DUB):-

Vertical $\pm 15^\circ$
 Horizontal $\pm 15^\circ$

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.

	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	0.64 million
No. of replies, max source level	1.6 million	0.36 million	0.16 million

LITHIUM BATTERY

SPT 331/MPT 331

Battery type L10/36 (15/40) reg. no 290-103053
 (For data see table)

SPT 331/RSPSX 110 VAC

Battery type L10/40 (3/11) reg. no 290-102726
 Maximum continuous on-time 30 days
 Quiescent time 155 days
 No. of replies, low source level 1.68 million
 No. of replies, max source level 0.42 million

MPT 339/DTRSPSX 110 VAC

Same as SPT 331/RspSx 110 Vac

MPT 339

Battery type L10/50 (12/42) reg. no 290-089592
 Maximum continuous on-time 120 days
 Quiescent time 620 days
 No. of replies, low source level 5.6 million
 No. of replies, max source level 1.4 million

ALKALINE BATTERY

This battery pack may be used as an replacement for the standard L10/36 (15/40) battery.
 Weight 8.0 kg

RECHARGEABLE BATTERY

This battery pack may be used as an replacement for the standard L10/36 (15/40) battery.
 Weight 8.5 kg
 Number of charge / discharge cycles 250

BATTERY CHARGER

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

FLOATING COLLAR

Depth rating 3000 m
 Total weight in air 77 kg
 Total buoyancy in water 65 kg
 Overall height 950 mm
 Width x depth 450 x 450 mm
 Diagonal diameter 640 mm
 Colour Orange