applied acoustics
underwater technology

TAE KWANG ELECTRONICS CORPORATION
5th FLR., K-BLDG., 3,
SANGAM-RO 41-GIL, GANGDONG-GU
SEOUL 05307, KOREA

T 02 479 2703 ~ 4
E taekwang@tkec.co.kr
W tkec.co.kr

EZT-2785 / 2786 MIPS 2

Key features

- Accurate and stable
- Integrated pitch, roll and heading sensors
- Integrated depth and temperature sensors
- Tested to military standards for compatibility
- Approved for military use

EZT-2785 / 2786 MIPS 2

- The 2785 / 2786 Mobile Integrated Positioning System (MIPS) is an advanced Ultra Short Baseline (USBL) underwater tracking system
- The MIPS 2 antenna provides a subsea positioning solution in a compact design for use in a naval environment
- System integration is via a high speed serial link ideal for OEM applications.
- The MIPS 2 antenna is deployed from a single point mooring allowing a variety of platforms to be utilised.

EZT-2785 / 2786 MIPS 2 Overview

The second generation of Mobile Integrated Positioning System (MIPS 2) is a family of advanced Ultra Short Baseline (USBL) underwater tracking systems. The high performance ruggedized MIPS 2 transceivers are available in 2 formats offering hemispherical and directional acoustic footprints for all naval subsea positioning requirements.

The MIPS 2 antenna provides a subsea positioning solution in a compact design for use on naval platforms and environments.

System integration is via a high speed serial link ideal for OEM applications on board both crewed and autonomous vessels.

Acoustic Specification

EZT-2785

Factory calibrated multi-element transceiver head complete with integral AHRS.

Accuracy/Performance

Accuracy is based on the correct speed of sound being entered, no ray bending and an acceptable S/N ratio.

Position accuracy	0.1% of slant range, acoustic repeatability 0.07° DRMS at > 20° depression angle
Range resolution	Calculated to 0.01m resolution
Max range	Up to 3000m, range limited version available (995m)
Frequency band (MF)	18 - 32 kHz
Tracking beam pattern	150° Calibrated.
Transmitter	Variable, typical max 195dB re 1µPa at 1m
Beacon types	10 Targets Transponder / Responder AAE Sigma 1, Sigma 2 Digital Spread Spectrum and AAE Tone channels. AAE V-NAV channels. HPR 400 channels 1100, 1000, 1200A, 1300A Series Beacons
Interrogation rate	Internally set or external synch.

EZT-2786

Factory calibrated multi-element transceiver head complete with integral AHRS.

Accuracy/Performance

Accuracy is based on the correct speed of sound being entered, no ray bending and an acceptable S/N ratio.

Position accuracy	0.25% of slant range, acoustic repeatability 0.13° DRMS at > 10° depression angle
Range resolution	Calculated to 0.01m resolution
Max range	Up to 2000m
Frequency band (MF)	18 - 32 kHz
Tracking beam pattern	180°
Transmitter	Variable, typical max 192dB re 1µPa at 1m
Beacon types	10 Targets Transponder / Responder. aae Sigma 1, Sigma 2 Digital Spread Spectrum and aae Tone channels. aae V-NAV channels. HPR 400 channels 1100, 1000, 1200A, 1300A Series Beacons
Interrogation rate	Internally set or external synch

User Interface

Data communication	DS010-9020 Interface protocol North and vessel orientated data sets.
Down link	RS-422, 115,200 baud (Default)
Up link	RS-422, 115,200 baud (Default)
Responder / synch	RS-422 drivers/receivers

Electrical Specification

Power requirements	48VDC 0.5A Average

Environmental Specification

Temperature

DEF STAN 00-35 Part 3: Issue 4 including temperature shock test.CL14

Operation in water	-4˚C to +32˚C
Operation in air	-20˚C to +44˚C
Storage temperature	-20˚C to +44˚C

High ambient temperature operation in air is for short duration system checks only, thermal protection is fitted and unit will auto shut down.

Shock

DEF STAN 00-35 Part 3: Issue 4

M7: Shock Testing for Warship Equipment & Armament Stores:

Classical Shock Pulse

NCUE – Classical Shock Pulse

	Vertical	Lateral	Longitudinal
Pulse Shape	Half Sine		
Pulse Width	10ms		
Acceleration	45g	25g	25g
Duration	1 shock in each direction of each orientation (6 in total)		

Humidity

Operation	5% to 95% non condensating
Storage	5% to 95% non condensating

Compatibility

EMC

MIL STD 461D tests: CE101, CE102, RE101, RE102, CS101, CS114, RS101, RS103 to an upper limit of 1GHz.*

*Subject to power supply.

Reliability

Mean Time Between Failure (MTBF)

EZT-2686 Nexus 2 Transceiver in-service MTBF >26,700 (2017 to 2020)

*All 2686 Nexus 2 Transceivers (common core parts to EZT-2785)

Interface Cable

Cable Jacket	Polyurethane jacket
Construction	4 screened twisted pairs (STP)
Diameter	10.8mm approx.
Bend Radius	200mm minimum
Max Length	100m
SWL (Safe working Load)	25kg, (tested to 50kg)
Electrical connector subsea	Souriau 12 contact
Electrical connector – surface	Wire end

Export Control

EZT-2785	ML9a1 UK Export Control Controlled
EZT-2786	ML9a1 UK Export Control Controlled

applied acoustics
underwater technology

EZT-2785 / 2786 MIPS 2 / November 2023
EZT-2785-9000/2