

Tilt, Rotate, Zoom (TRZ) underwater camera

0413-TRZ



## Safer, Clearer, Faster Underwater Navigation

The Kongsberg Maritime 0413 Tilt, Rotate, Zoom Camera offers a wide range of features in a versatile package. It has been specifically designed for low-light submarine based applications such as machinery-space monitoring and equipment deployment where space is at a premium.

The camera is based upon an enhanced high resolution and high sensitivity monochrome CCD camera, fitted with a 6:1 zoom lens and mounted on a tilt and rotate mechanism. The lens incorporates a custom designed optical corrector optimised for operation in seawater. The camera housing features an acrylic hemispherical dome fastened to a titanium alloy body. The housing can be purged with dry nitrogen prior to operation. The camera's rotating mechanism allows it to continuously rotate through 360 degrees in either direction. The tilt mechanism allows the camera to tilt from +90 degrees elevation to +5 degrees (5 degrees above horizontal).

The camera can optionally display the angular tilt and rotate positions as on-screen text.

### Features at a glance

- High resolution high sensitivity monochrome CCD
- 6:1 zoom, F1.0 large aperture
- Water corrected optics
- Corrosion resistant titanium housing
- Angular positions graphic overlay

### Standard Features

#### Electrical

Horizontal Resolution	570 TVL/ph (EIA version) 560 TVL/ph (CCIR version)
Sensitivity	2.4 x 10 <sup>-2</sup> Lux (scene) (50% video)
Sensor Type	1/2" Exview CCD
Signal-to-Noise Ratio	46dB
Scanning	525 lines/59.94Hz (EIA RS170A) 625 Line/50Hz (CCIR)
Power Input	+16 to +24Vdc, 700mA (typ), 1A (maximum)
Video Output	1V Pk-Pk composite video, into 75Ω
Gamma Correction	0.45 (typical)
Focus/Zoom/Tilt/Rotate Control	Through Single wire tri-state

#### Optical

Lens	8-48mm f/1.0 zoom lens
Field of View (in Water)	Wide: 33° (H) x 25° (V) Telephoto: 5.7° (H) x 4.3° (V)
Focus Range (in Water)	Wide: 1.0m to infinity Telephoto: 1.6m to infinity
Tilt Range	-5° to -90° elevation
Rotate Range	Unlimited 360° continuous rotation
Port	Acrylic dome port with internal correction lens optimised for operation in seawater
Iris Control	Automatic

#### Video Overlay

Video Overlay Format	Tilt and Rotate positions overlaid on video (optional)
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#### Physical

Diameter	253.23mm (port retaining ring)
Length	301.11mm (excl. connector)
Weight	23.1 Kg in Air 11.1 Kg in Water
Housing Material	Titanium Alloy 6AL/4V ASTM B 348-95a
Connector	Impulse MKS(W)-508-FCR Other connector options available

#### Environmental

Depth Rating	Operating: 945m in seawater Survival: 1,400m in seawater
Temperature	Operating: -5° to +40° C Storage: -20° to +60° C



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