

## ***TMS-10 SERIES*** *EO/IR Multi Sensor Series*

- ☑ Lowest speed of 0.01°/s and ZeroBacklash ensures stable operation with high precision mechanisms
- ☑ Built-in digital image stabilizer (EO/IR) effectively corrects image shaking due to wind and external influences.
- ☑ Strong waterproof/dustproof capability with IP66 grade.
- ☑ System Accuracy 0.01° (0.18 mrad) / System Resolution 0.0009° (0.0157 mrad)
- ☑ Precise Optical Boresight. (EO/IR/LRF)
- ☑ Offers customized solutions in a variety of options.



# Features

\* Features vary by option. Please contact us for details.



## Pan/Tilt Step Motor drive method

The motor, a key rotational drive part of the pan/tilt, uses a step motor with low error and very responsive

※ Step motor: The rotor rotates at a specific angle or step with the drive shaft

### Advantages of a Step Motor

Ultra-precise control with fine-grained step angles using micro-step methods

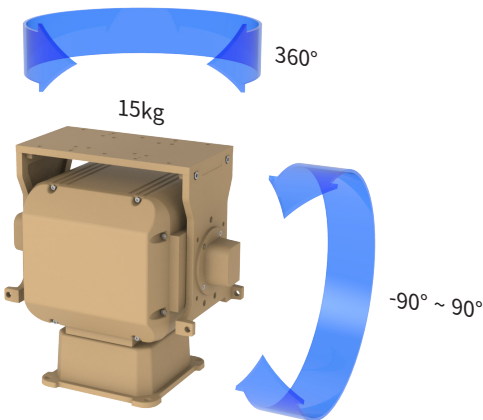
Angle errors per step are very low and errors are not accumulated. High responsiveness of running, stopping, and reverse rotation and low tremor in stop.

Excellent positioning against wind and other external forces with solid stationary conditions.

There is no need for maintenance such as replacing the brush of a regular DC motor.

The high resolution encoder provides excellent position detection accuracy.

## Durability-based design



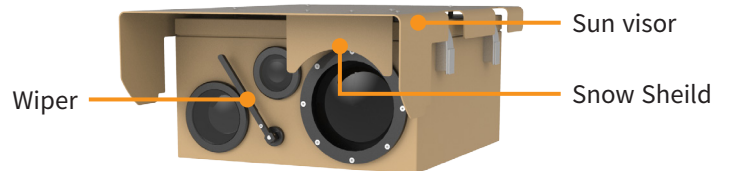
It is developed with domestic technology from the product design stage and manufactured through gravity casting molds to ensure high durability and excellent quality.

It can withstand up to 15kg of weight and has a design that is resistant to rain, wind, vibration, etc. to ensure durability without problems in long-term operation.

Minimum PT speed of 0.01°/s and Zero Backlash.

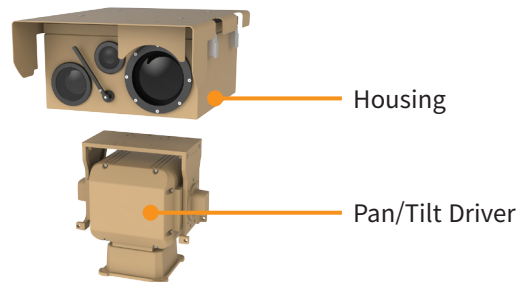
System accuracy 0.01° (0.18 mrad), system resolution 0.0009° (0.0157 mrad).

## Securing the Vision



The design of sun visors and wipers provides clear visibility even in direct sunlight, snow, or rainy environments.

## Compatibility and Convenience



The housing and pan/tilt are easy to attach and detach, so spare parts of the same equipment can be replaced immediately on site to prevent monitoring gaps in case of emergency maintenance.

It also has a wide range of interfaces and compatibility to operate complex equipment such as EO/IR, LRF, GPS, DMC, etc., and can be mounted on various equipment (Vehicle, Mast, Stand, Vessel, etc.) according to the customer's use.



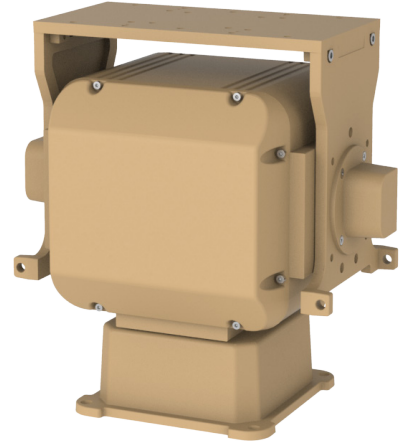
# Pan/Tilt driver

It can withstand up to 15kg of weight and can be operated with high precision with a wide range of sensors such as EO/IR and LRF/GPS/DMC of various lenses.

Designed with strong durability, it is strong in extreme environments such as long periods of rain, wind, and earthquakes.

Excellent resolution and Zero Backlash ensure smooth operation when equipped with long zoom lenses.

Various interfaces and wide compatibility enable a wide range of sensors to be mounted according to user needs.



## SPECIFICATIONS

Range	Azimuth	n x 360°
	Elevation	-90° ~ 90°
Speed	Azimuth	0.02°/s to 60°/s
	Elevation	0.02°/s to 50°/s
Resolution	0.0009° (0.0157 mrad)	
Accuracy	0.01° (0.18 mrad)	
Payload	15kg	
Interface	Control	Ethernet, RS422 (P/T Only)
	Sensor	Ethernet
Temperature	Operating	-32°C to +55°C
	Storage	-40°C to +60°C
Power Supply	DC24V±20% / max. 200W (including Fan, Heater)	
Environmental Protection	IP66	
Dimensions (WxHxD)	342mm x 230mm x 341mm	
Weight	approx. 12kg	

## OPTION

LRF	Safety	Eye Safe Class 1
	Precision	<1.5m
	Range(km)	5 / 10 (Nato Target)
Control Soft ware	Basic GUI	
	Auto Targeting	
	Auto Tracking	
Joystick	3Axis / USB Interface	



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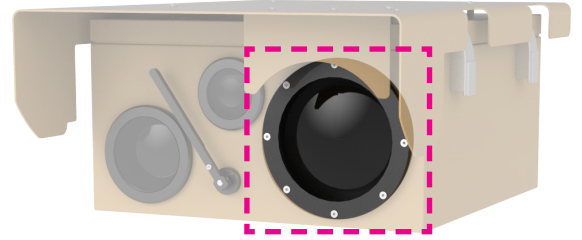
[ Real Time Screen ]

# IR Camera *UnCooled Thermal Camera*

640x480 sensors deliver high-definition quality and NETD 60mK resolution with UpScale.

Various image processing ensures clear image quality even in extreme environments, and depending on the lens, it can detect more than 14 km (vehicle).

It has excellent IP rating and has the best durability for waterproofing and dustproofing.



## SPECIFICATIONS

Detector Type	Uncooled LWIR Thermal Imager
Array Format	640 x 480
Output Resolution	1280 x 720 (Digital or Network)
Pixel Pitch	12μm
Spectral Range	8 ~ 14μm
NETD	<50mk@F1.0 @ Room Temperature
Video Interface	Ethernet, CVBS (Option)
Control Interface	RS-232, Network
Power	DC 12V/3.0A, DC24V/3.5A

## LENS OPTION

Lens Focal length	26-105mm	12-120mm	30-150mm
HFOV	17.46°~4.19°	35°~3.7°	14.7°~2.9°
F/#	F/1.6	F/1.2	F/0.85-1.2
Human 1.8 x 0.5 m	D : 3.9km R : 0.98km I : 0.6km	D : 4.47km R : 1.11km I : 0.69km	D : 5.59km R : 1.39km I : 0.87km
Vehicle 2.3 x 2.3 m	D : 10km R : 2.5km I : 1.5km	D : 11.5km R : 2.87km I : 1.79km	D : 14.3km R : 3.59km I : 2.24km

D : Detection R : Recognition I : Identification \* Actual range may vary depending on camera setting, environmental conditions and type of monitor used.



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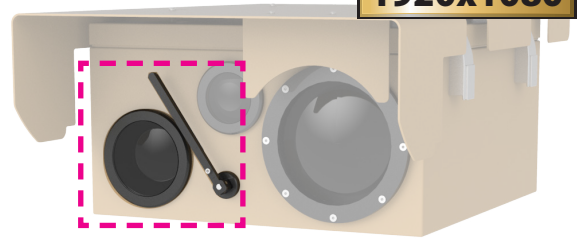
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# EO Camera *Daylight Camera*

Get clear daytime and nighttime images with ultra-sensitive sensors. It has a built-in image shake correction function using a gyro sensor. Effective image correction is possible through functions such as WDR/BLC. Auto Focus enables you to always have clear subjects.

**Full HD**  
**1920x1080**



## SPECIFICATIONS

Image Sensor	1/2.8" 2MP CMOS
Interface	Network
Ethernet	10Base-T/100Base-Tx
Resolution	1920x1080, 1280x720, 720x576, 720x480, 352x288, 352x240, 176x144, 176x120
Backlight Correction	HLC
Defog	Support (Built in Optical Filter)
Power	DC 12V/3.0A, DC24V/3.5A

## LENS OPTION

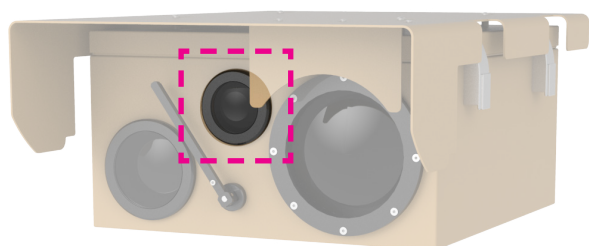
Lens Focal length	7.1 to 300mm
Angle View (H)	41.54° to 1.07°
Human 1.8 x 0.5 m	D : 10.3km
	R : 4.1km
	I : 2km
Vehicle 2.3 x 2.3 m	D : 14.7km
	R : 5.9km
	I : 2.9km

D : Detection    R : Recognition    I : Identification    \* Actual range may vary depending on camera setting, environmental conditions and type of monitor used.



# Option *Sensor Unit / Joystick Controller*

## Housing Option



Highly integrated LRF laser distance meters, compact and eye-safe, are used in many applications, from demanding military measurements to portable systems.

Highly integrated technology enables accurate distance measurement under harsh environmental conditions.

### SPECIFICATIONS

Laser safety class	Eye Safe Class 1
Wavelength	1.5 $\mu$ m
Measurement range (NATO Target)	5km / 10km
Extinction ratio	44.7dB
Measurement rates	0.2, 1, 4, 10, 15, 200 Hz
Precision	<1.5m
Beam divergence	0.35mrad
False detection rate	< 1%
Target discrimination	< 30m
Range gating resolution	1m
Option	Laser Pionter

## Joystick Controller



A three-axis joystick controller dedicated to PTZ. UConvenience is greatly enhanced by easy installation through USB connection, and sophisticated and ergonomic panel design and button arrangement enable function setting according to your environment.

### SPECIFICATIONS

PTZ Control	Joystick (3 Axis Twist zoom)
OS	Window Vista, XP
Interface	USB 2.0, DirectX
Operating Temperature	-25°C ~ 70°C
Operating Humidity	10% ~ 70%
Power	5V DC, 32mA (USB)
Dimensions (WxHxD)	157 x 127 x 168mm