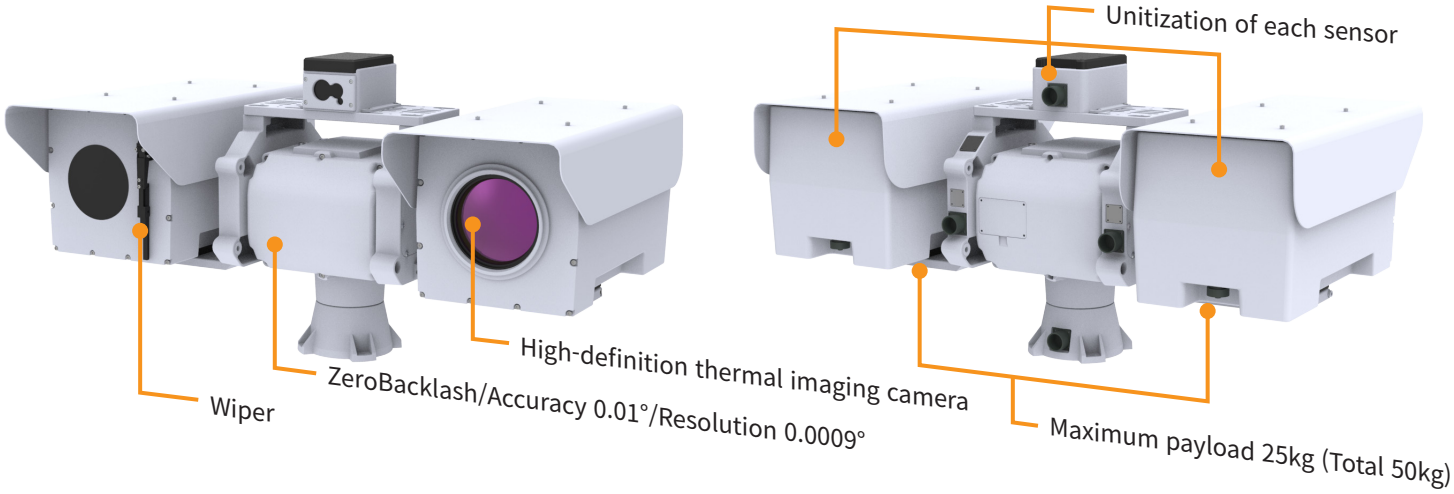
TMS-20 SERIES *EO/IR Multi Sensor Series*

- ☑ High-precision mechanism ensures stable operation with a minimum speed of 0.01°/s and ZeroBacklash.
- ☑ 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)
- ☑ Easy replacement and maintenance with unitization of each sensor that is easy to disassemble and assemble.
- ☑ Advanced thermal imaging camera platform designed entirely to deliver unsurpassed performance with advanced technology, providing clear visibility in a wide range of environments. (varies by option)
  - LAE (Local Area Enhancement)
  - DDE (Digital Detail Enhancement)
  - Adaptive HEQ
  - Auto Integration Time
  - Accelerated image processing
  - Fast and flexible GUI systems for H/W acceleration
  - Gyro-based sensing system

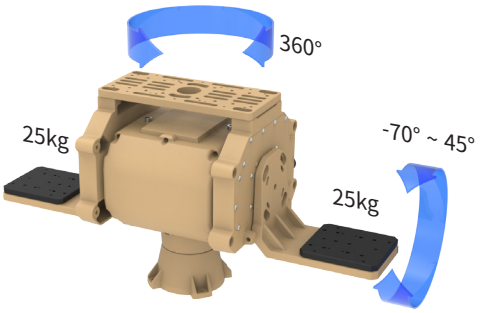
TBT

Features

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



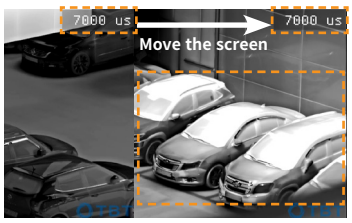
Durability-based design



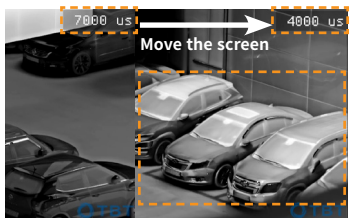
With a structure that can withstand up to 50kg of weight and a design that is resistant to rain, wind, vibration, etc., we have secured durability without problems in long-term operation.
Minimum PT speed of 0.01°/s and Zero Backlash.
Accuracy 0.01°(0.18 mrad), Resolution 0.0009°(0.0157 mrad).

Automatic Integration Time

It is a function that optimizes image quality by detecting rapid temperature changes in the operating environment and adjusting the integration time in real time.
There is no hassle of adjusting the integration time according to weather conditions such as summer, winter, and high daily temperature differences.



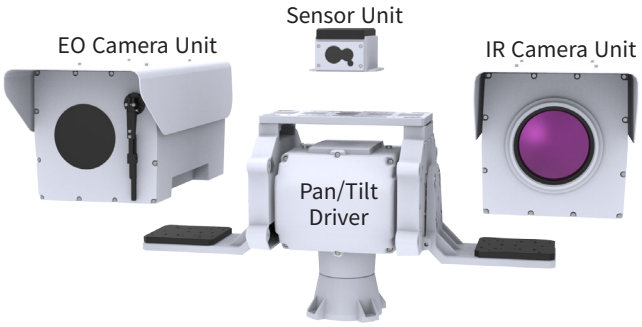
[Before]



[After]

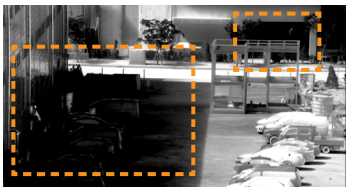
Rapid Maintenance

Since it is designed as a unit of all components, it is easy to disassemble and assemble and convenient to maintain.

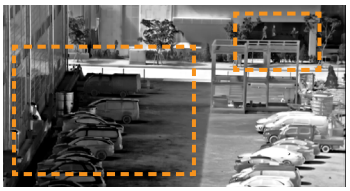


LAE (Local Area Enhancement)

Increase situational awareness by improving image contrast for very dark or very bright areas with local processing.



[LAE Off]

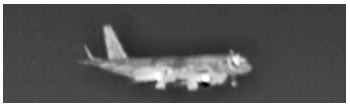


[LAE On]

Adaptive HEQ (Adaptive Histogram Equalization)

Special imaging processing that highlights complex (high entropy) areas in a scene improves object details except for backgrounds such as sky, sea, etc

[HEQ Off]



[HEQ On]

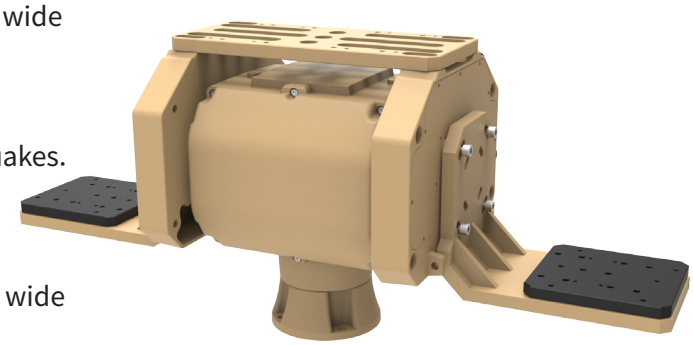
PT Driver *Pan Tilt Driver*

It can withstand up to 50kg of weight, and it can be operated with high precision with EO/IR lenses of 1,000mm or higher and a wide range of sensors such as LRF/GPS/DMC.

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-range zoom lenses.

Wide compatibility with a wide range of interfaces enables a wide range of sensors to be mounted according to user needs.



SPECIFICATIONS

Range	Azimuth	n x 360°
	Elevation	-70° ~ 45°
Speed	Azimuth	0.01°/s to 60°/s
	Elevation	0.01°/s to 60°/s
Resolution	0.0009° (0.0157 mrad)	
Accuracy	0.01° (0.18 mrad)	
Payload (Side Mount)	2 x 25kg	
Interface	Control	Ethernet, RS422 (P/T Only)
	Sensor	Ethernet
Temperature	Operating	-32°C to +55°C
	Storage	-40°C to +60°C
Power Supply	24V DC (20 - 32V)	
Environmental Protection	IP66	
Dimensions (WxHxD)	807mm x 393.5mm x 323mm	
Weight	approx. 24.9kg	

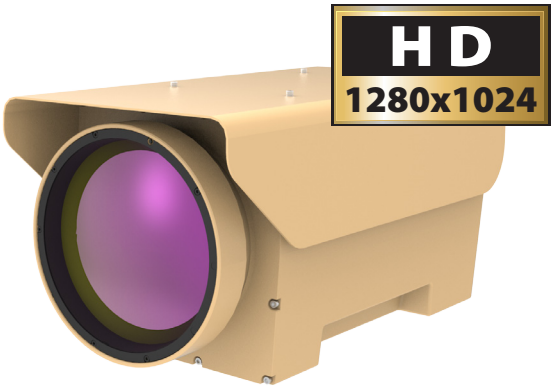
OPTION

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

TBT
10, Seounsandan-ro 4-gil, Gyeyang-gu, Incheon, 21072 Korea
TEL +82. 32. 552. 1941~3 **FAX** +82. 32. 552. 1944 **E-MAIL** sales@tbtsys.com **Website** www.tbtsys.com

IR Camera *Megapixel Cooled Thermal Camera F/#4.0*

With the 1280x1024 sensor, the UpScale delivers excellent picture quality with FHD-class picture quality and NETD 25mK resolution.
A completely redesigned thermal imaging camera platform that delivers unsurpassed performance with state-of-the-art technology.
Always provide good thermal imaging even in dark and bright areas without user adjustment.
Various image processing ensures clear image quality even in extreme environments, and depending on the lens, it can detect more than 26km (vehicle).
It has excellent IP grade and has the best durability for waterproofing and dustproofing.



SPECIFICATIONS

Detector Type	Cooled InSb
Array Format	1280 x 1024
Output Resolution	1920 x 1080 , Option (1280 x 1024 / 1280 x 720 / 720 x 576)
Pixel Pitch	10μm
Spectral Range	3 ~ 5μm
F/#	F/#4.0
NETD	<25mK typical (without Lens)
Video Interface	Ethernet, HDMI / Option : CVBS, HD-SDI
Control Interface	Ethernet RS232, RS422 (Option)

LENS OPTION

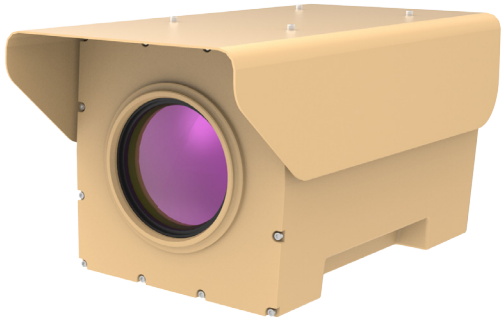
Lens Focal length	15 to 300mm	33 to 420mm	60 to 600mm	60 to 690mm	72 to 900mm	100 to 1200mm
HFOV	44.9° to 2.4°	20° to 1.7°	11.4° to 1.2°	11.5° to 1°	9.3° to 0.8°	6.8° to 0.6°
F/#	F/#4.0	F/#4.0	F/#4.0	F/#4.0	F/#4.0	F/#4.0
Drone 0.3 x 0.3 m	D : 3.7km R : 1km I : 0.62km	D : 5.1km R : 1.36km I : 0.89km	-	D : 7.8km R : 2.26km I : 1.39km	D : 9.8km R : 2.9km I : 1.8km	-
Human 1.8 x 0.5 m	D : 10.7km R : 3.2km I : 2km	D : 13.8km R : 4.3km I : 2.8km	D : 17.4km R : 6km I : 3.9km	D : 18.8km R : 6.8km I : 4.5km	D : 21.5km R : 8.5km I : 5.7km	D : 24.3km R : 10.7km I : 7.3km
Vehicle 2.3 x 2.3 m	D : 17.7km R : 6.8km I : 4.5km	D : 20.6km R : 8.9km I : 6.1km	D : 23.5km R : 11.6km I : 8.2km	D : 24.5km R : 12.8km I : 9.1km	D : 26.3km R : 15.1km I : 11.1km	D : 28.1km R : 17.7km I : 13.6km
Vessel 15 x 15 m	D : 31.3km R : 22.1km I : 17.7km	D : 32.9km R : 24.5km I : 21.1km	-	D : 35.4km R : 28km I : 25km	D : 36.7km R : 29.5km I : 25.8km	-
Dimensions (WxHxD, Unit : mm)	255x253x665	255x253x665	255x253x705	255x253x705	295x300x800	392x396x870
Weight	12.2kg	12.9kg	15.2kg	16.1kg	22.1kg	30.5kg

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

TBT
10, Seounsandan-ro 4-gil, Gyeyang-gu, Incheon, 21072 Korea
TEL +82. 32. 552. 1941~3 **FAX** +82. 32. 552. 1944 **E-MAIL** sales@tbtsys.com **Website** www.tbtsys.com

IR Camera *Cooled Thermal Camera F/#4.0*

The 640 x 512 sensor delivers excellent picture quality with FHD-class picture quality and NETD 20mK resolution with UpScale.
A completely redesigned thermal imaging camera platform that delivers unsurpassed performance with state-of-the-art technology.
You can always provide good thermal imaging images in dark and bright areas without user adjustment.
Various image processing ensures clear image quality even in extreme environments, and depending on the lens, it can detect more than 24 km (vehicle).
It has excellent IP grade and has the best durability for waterproofing and dustproofing.



SPECIFICATIONS

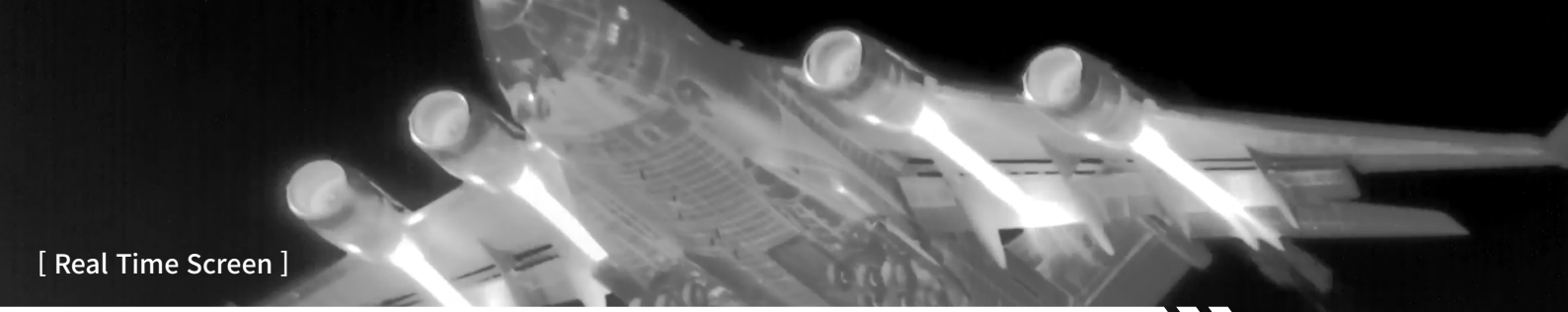
Detector Type	Cooled InSb
Array Format	640 x 512
Output Resolution	1280 x 720, Option (1920 x 1080 / 1280 x 1024 / 720 x 576)
Pixel Pitch	15μm
Spectral Range	3.7 ~ 5μm
F/#	F/#4.0
NETD	<20mK typical (without Lens)
Video Interface	Ethernet, HDMI / Option : CVBS, HD-SDI
Control Interface	Ethernet RS232, RS422 (Option)

LENS OPTION

Lens Focal length	15 to 300mm	21 to 420mm	30 to 600mm	35 to 690mm	45 to 900mm	60 to 1200mm
HFOV	35.1° to 1.8°	25.1° to 1.3°	17.2° to 0.9°	15.2° to 0.8°	10.9° to 0.6°	8.6° to 0.5°
F/#	F/#4.0	F/#4.0	F/#4.0	F/#4.0	F/#4.0	F/#4.0
Drone 0.3 x 0.3 m	D : 3.5km R : 0.94km I : 0.59km	D : 4.8km R : 1.3km I : 0.83km	-	D : 7.3km R : 2.1km I : 1.3km	D : 9km R : 2.7km I : 1.7km	-
Human 1.8 x 0.5 m	D : 10km R : 3km I : 1.9km	D : 12.9km R : 4.1km I : 2.6km	D : 16.2km R : 5.6km I : 3.6km	D : 17.6km R : 6.3km I : 4.2km	D : 20.2km R : 7.9km I : 5.3km	D : 22.8km R : 10km I : 6.8km
Vehicle 2.3 x 2.3 m	D : 16.5km R : 6.3km I : 4.2km	D : 19.3km R : 8.3km I : 5.6km	D : 22km R : 10.8km I : 7.5km	D : 23km R : 11.9km I : 8.4km	D : 24.7km R : 14.1km I : 10.7km	D : 26.4km R : 16.4km I : 12.5km
Vessel 15 x 15 m	D : 29.2km R : 20.5km I : 16.6km	D : 30.9km R : 22.9km I : 19.4km	-	D : 33.3km R : 26.1km I : 23.1km	D : 34.5km R : 27.6km I : 24.9km	-
Dimensions (WxHxD, Unit : mm)	255x253x665	255x253x665	255x253x705	255x253x705	295x300x800	392x396x870
Weight	12.2kg	12.9kg	15.2kg	16.1kg	22.1kg	30.5kg

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

TBT
10, Seounsandan-ro 4-gil, Gyeyang-gu, Incheon, 21072 Korea
TEL +82. 32. 552. 1941~3 **FAX** +82. 32. 552. 1944 **E-MAIL** sales@tbtsys.com **Website** www.tbtsys.com


[Real Time Screen]

IR Camera *Cooled Thermal Camera F/#5.5*

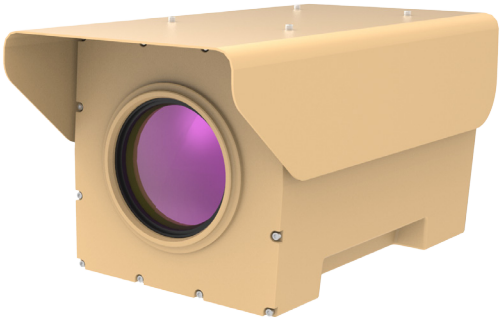
UpScale with 640x512 sensors delivers excellent picture quality with FHD-class picture quality and NETD 20mK resolution.

A completely redesigned thermal imaging camera platform that delivers unsurpassed performance with state-of-the-art technology.

Always provide good thermal imaging even in dark and bright areas without user adjustment.

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

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



SPECIFICATIONS

Detector Type	Cooled InSb
Array Format	640 x 512
Output Resolution	1280 x 720, Option (1920 x 1080 / 1280 x 1024 / 720 x 576)
Pixel Pitch	15µm
Spectral Range	3.7 ~ 5µm
F/#	F/#5.5
NETD	<20mK typical (without Lens)
Video Interface	Ethernet, HDMI / Option : CVBS, HD-SDI
Control Interface	Ethernet RS232, RS422 (Option)

LENS OPTION

Lens Focal length	20 to 275mm	50 to 700mm	80 to 1200mm
HFOV	28.0° ~ 1.9°	10.9° to 0.8°	7.1° to 0.5°
F/#	F/#5.5	F/#5.5	F/#5.5
Drone 0.3 x 0.3 m	D : 2.9km R : 0.75km I : 0.47km	D : 6.7km R : 1.9km I : 1.2km	D : 8.8km R : 3km I : 1.9km
Human 1.8 x 0.5 m	D : 8.4km R : 2.4km I : 1.5km	D : 16.7km R : 5.7km I : 3.7km	D : 22km R : 9km I : 6km
Vehicle 2.3 x 2.3 m	D : 14.9km R : 5.2km I : 3.4km	D : 22.5km R : 11.1km I : 7.8km	D : 26.1km R : 15.6km I : 11.6km
Vessel 15 x 15 m	D : 28.5km R : 19.1km I : 15.1km	D : 33.2km R : 25.8km I : 22.7km	D : 36.4km R : 30.4km I : 26.9km
Dimensions (WxHxD, Unit : mm)	180x180x400	255x253x665	268x268x446
Weight	7kg	12.5kg	21kg

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

TBT
10, Seounsandan-ro 4-gil, Gyeyang-gu, Incheon, 21072 Korea
TEL +82. 32. 552. 1941~3 **FAX** +82. 32. 552. 1944 **E-MAIL** sales@tbtsys.com **Website** www.tbtsys.com

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 21 km (vehicle).

It has excellent IP grade 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	CVBS : 1.0Vp-p 75Ω (Option : HD-SDI)
Control Interface	RS-232, Network

LENS OPTION

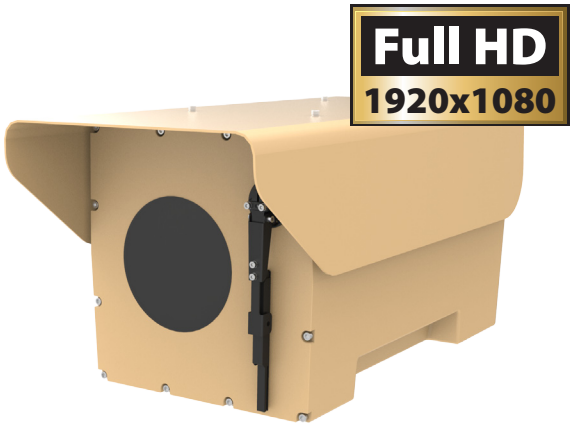
Lens Focal length	26-105mm	15-150mm	25-225mm
HFOV	17.1°~4.1°	29°~2.9°	17.7°~1.9°
F/#	F/1.6	F/0.85-1.35	F/0.95~1.5
Human 1.8 x 0.5 m	D : 3.83km R : 0.9km I : 0.48km	D : 5.47km R : 1.29km I : 0.68km	D : 8.2m R : 1.93km I : 1.02km
Vehicle 2.3 x 2.3 m	D : 10.85km R : 2.25km I : 1.19km	D : 15.46km R : 3.21km I : 1.7km	D : 23.19km R : 4.81km I : 2.56km
Dimensions (WxHxD, Unit : mm)	255x253x665	255x253x665	255x253x665
Weight	12.6kg	13.6kg	14kg

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

TBT
10, Seounsandan-ro 4-gil, Gyeyang-gu, Incheon, 21072 Korea
TEL +82. 32. 552. 1941~3 **FAX** +82. 32. 552. 1944 **E-MAIL** sales@tbtsys.com **Website** www.tbtsys.com

EO Camera *Daylight Camera*

Ultra-sensitive sensors help ensure clear day and night images.
Excellent visibility at night with very low illumination specifications.
It has a built-in image shake correction function using a gyro sensor.
With a wide range of cameras and lens options, you can install lenses of 1000mm or more.
WEffective image correction is possible through functions such as WDR/BLC.
Auto Focus allows you to always have clear subjects.



SPECIFICATIONS

Image Sensor	1/2.8" 2MP CMOS	1/2" 2MP CMOS
Interface	Network	Network
Ethernet	10Base-T/100Base-Tx	RJ-45(10/100BASE-T)
Resolution	1920x1080, 1280x720, 720x576, 720x480, 352x288, 352x240, 176x144, 176x120	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Gyro Image Stabilizer	-	Yes (Built-in Gyro Sensor)
Backlight Correction	HLC	BLC, HLC, WDR, SSDR
Defog	Support (Built in Optical Filter)	Support
Acceptable Lens	7.1 to 300mm	Acceptable All (Without 7.1 to 300mm Lens)

LENS OPTION

Lens Focal length	7.1 to 300mm (1/2.8" Sensor Only)	14.5 to 500mm	21 to 750mm	27 to 1070mm	41 to 1560mm
Angle View (H)	41.54° to 1.07°	25° to 0.73°	16.8° to 0.49°	15.4° to 0.45°	10.3° to 0.30°
Human 1.8 x 0.5 m	D : 10.3km R : 4.1km I : 2km	D : 13.3km R : 5.3km I : 2.6km	D : 20km R : 8km I : 4km	D : 28.5km R : 11.4km I : 5.7km	D : 41.6km R : 16.6km I : 8.3km
Vehicle 2.3 x 2.3 m	D : 14.7km R : 5.9km I : 2.9km	D : 19km R : 7.6km I : 3.8km	D : 28.5km R : 11.4km I : 5.7km	D : 40.7km R : 16.3km I : 8.1km	D : 59.4km R : 23.7km I : 11.8km
Dimensions (WxHxD) (Unit : mm)	255x249.9x665	255x249.9x665	255x249.9x705	255x249.9x705	255x249.9x705
Weight	13.5kg	17.5kg	18.5kg	18.5kg	18.5kg

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

TBT
10, Seounsandan-ro 4-gil, Gyeyang-gu, Incheon, 21072 Korea
TEL +82. 32. 552. 1941~3 **FAX** +82. 32. 552. 1944 **E-MAIL** sales@tbtsys.com **Website** www.tbtsys.com

[Real Time Screen]

Option *Sensor Unit / Joystick Controller*

Sensor Unit

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	1.5μm
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

TBT
10, Seounsandan-ro 4-gil, Gyeyang-gu, Incheon, 21072 Korea
TEL +82. 32. 552. 1941~3 **FAX** +82. 32. 552. 1944 **E-MAIL** sales@tbtsys.com **Website** www.tbtsys.com