2026

Technology Beyond Technologies



THERMAL IMAGING SOLUTION

TBT

TBT Inc.

TBT Inc. is a global small and medium-sized company that specializes in developing and manufacturing uncooled/cooled thermal imaging cameras and exports them not only in Korea but also abroad.



Technology *Beyond Technologies*

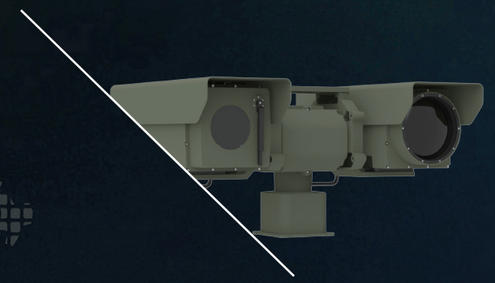
TBT Inc. is a **Manufacturer Specializing in Thermal Imaging Cameras**
that develops and manufactures thermal imaging cameras and image analysis monitoring systems.

Recently, in recognition of the performance of our products,
we are exporting thermal imaging cameras not only in Korea but also abroad such as Asia, the Middle East, and Europe.

We also offer a wide range of solutions
in defense, government agencies, and private industries for different purposes.

TMS Sereis

Multisensor Lineup



EO/IR Identification System

TMS-20M Series

SPECIFICATIONS

PT DRIVER		TMS-20M_O42Y103	TMS-20M_O69Y103
Range		PAN : 360° Endless, TILT : 90° ~ -90°	
Speed		PAN : 0.01° ~ 60°/sec, TILT : 0.01° ~ 30°/sec	
Accuracy		0.001°	
Power Supply		24V DC (22 - 32V)	
Interface	Control	Ethernet	
	Sensor	Ethernet TCP/IP(10/100base)	



EO CAMERA	
Image Sensor	1/2" Sony CMOS Sensor
Effective Pixels	1937(H) x 1097(V) = 2.12M Pixels
Video Format	1080p@60/50fps, 1080p@30/25fps, 720p@60/50fps, 720p@30/25fps
Vedio Output	HD-SDI
Lens Focal length	16 ~ 1030mm (x64 Optical Zoom, x32 Digital Zoom)
F/#	F2.8 - F22
HFOV	26.0°~0.4°
ND Filter	ND10%
Min. Illumination	Color: 0.15 lux/DSS 0.0375 lux, B/W: 0.01 lux/DSS 0.002 lux
Image Correction	BLC, DNR, Defog, DIS
Focus	Auto / Manual

IR CAMERA		
Detector Type	Cooled InSb, 640(H) x 512(V)	
F/#	F/#4.0	
Output Resolution	1280x720, Option 1920x1080	
Lens Focal length	21mm ~ 420mm	35mm ~ 690mm
HFOV	25.1° ~ 1.3°	15.2° ~ 0.8°
Pixel Pitch	15µm	
Spectral Range	3.7µm ~ 5µm (MWIR)	
NETD	<20mK typical (without Lens)	
Focus	Auto / Manual	
Vedio Output	HD-SDI	
Image Correction	DNR, DIS, Adaptive HEQ, LAE, Auto Integral Time, DDE	

MECHANICAL		
Operating Temp.	-32°C to +55°C	
Certification	IP66, MIL-STD-461G, MIL-STD-810G	
Dimensions	911.2mm(W) x 455.3mm(H) x 665mm(D)	
Weight	65kg	68.2kg

FEATURES

- With the composition of a zoom lens visible camera and a thermal camera, it has excellent detection ability even in bad weather.
- High precision (zero backlash) controllable by installing a harmonic reducer.
- Stability and prevention of displacement due to strong winds/ heavy snowfall.
- Easy replacement and maintenance with the unitization of each sensor that is easy to disassemble.
- IP66 Protection Level.
- MIL-STD-461G, MIL-STD-810G Certification.
- Built-in image tracking for reliable tracking.

DRI			
Lens	16~1030mm	21~420mm	35~690mm
Drone 0.3 x 0.3 m	D : 6.54km R : 3.19km I : 1.71km	D : 4.2km R : 1.05km I : 0.66km	D : 6.2km R : 1.7km I : 1.2km

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

EO/IR Identification System

TMS-20J Series

SPECIFICATIONS

PT DRIVER		
Range		PAN : 360° Endless, TILT : -70° ~ 45°
Speed		PAN : 0.01° ~ 30°/sec, TILT : 0.01° ~ 30°/sec
Resolution		0.0009°
Accuracy		0.01°
Power Supply		24V DC (22 - 32V)
Interface	Control	Ethernet, RS422
	Sensor	Ethernet



EO CAMERA	
Image Sensor	1/2.8" 5MP CMOS Sensor (2592 x 1944)
Output Resolution	2592 x 1944
Shutter Type	Rolling Shutter
Lens Focal length	12.5 ~ 1000mm (over x4 Digital zoom)
FOV	0.29°~23.4°/0.22°~17.6°
DRI	Vehicle (5m x 2m) : over 12km Vessel (15m x 10m) : over 47km
Defog	100 Steps
Min. Illumination	0.001Lux
Backlight Correction	BLC, HLC, WDR, SSDR
Focus	Auto / Manual
DIS	Support

IR CAMERA	
Detector Type	Cooled InSb, 1280(H) x 1024(V)
F/#	F/#4.0
Output Resolution	1920x1080
Pixel Pitch	10µm
Spectral Range	3µm ~ 5µm
NETD	<25mK typical (without Lens)
Lens	33mm ~ 420mm
FOV	1.7°~20.0°/1.4°~17.6°
DRI	Vehicle (5m x 2m) : approx. 11km Vessel (15m x 10m) : approx. 42km
Focus	Auto / Manual
Image Correction	AGC, Adaptive HEQ, LAE, DDE, DNR, Gamma, Sharpness, Auto Integral Time, Stabilizer

MECHANICAL	
Operating Temp.	-32°C to +55°C
Certification	IP66
Dimensions	928.7mm(W) x 474.2mm(H) x 800mm(D)
Weight	56.5kg

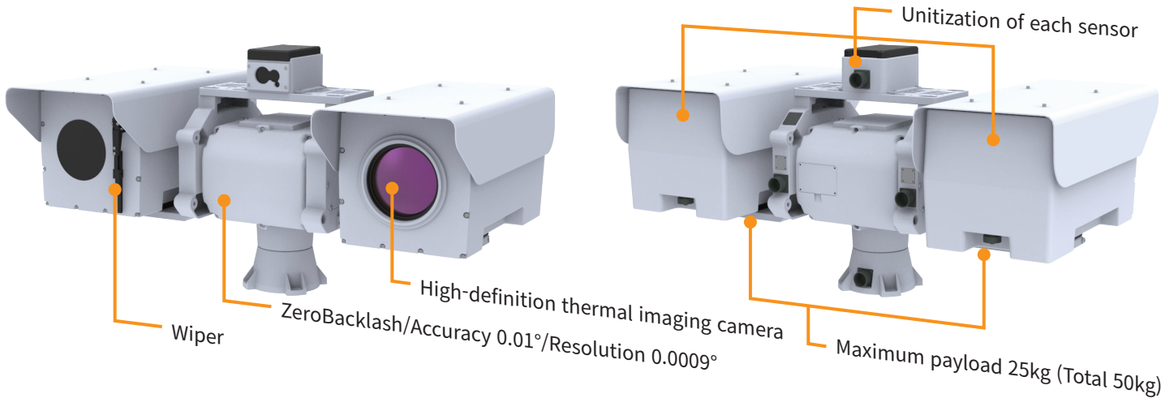
FEATURES

- With the composition of a zoom lens visible camera and a thermal camera, it has excellent detection ability even in bad weather.
- High precision (zero backlash) controllable by installing a harmonic reducer.
- Stability and prevention of displacement due to strong winds/ heavy snowfall.
- Easy replacement and maintenance with the unitization of each sensor that is easy to disassemble.
- IP66 Protection Level.
- Built-in image tracking for reliable tracking.

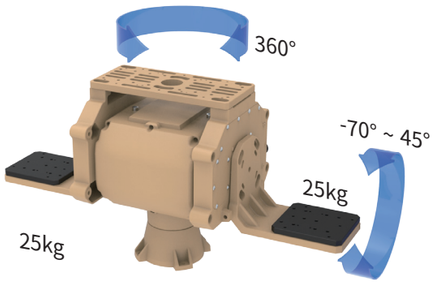
IR CAMERA DRI	
Lens	21~420mm
Drone 0.3 x 0.3 m	D : 5.1km R : 1.36km I : 0.89km
Human 1.8 x 0.5 m	D : 13.8km R : 4.3km I : 2.8km
Vehicle 2.3 x 2.3 m	D : 20.6km R : 8.9km I : 6.1km
Vessel 15 x 15 m	D : 32.9km R : 24.5km I : 21.1km

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

TMS-20 Series



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°(0.18mrad), Resolution 0.0009°(0.0157mrad).

Automatic Integration Time

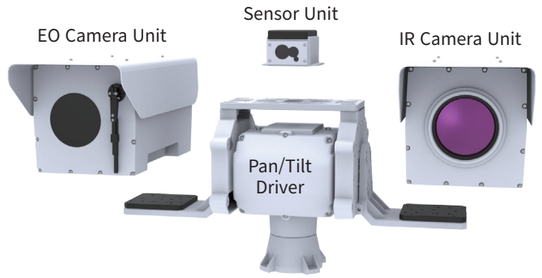
It is a function that optimizes image quality by detecting rapid temperature changes in the operating environment and adjusting the integration time in real time.
There is no hassle of adjusting the integration time according to weather conditions such as summer, winter, and high daily temperature differences.



[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)

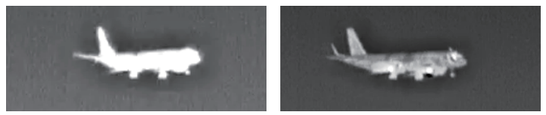
Increase situational awareness by improving image contrast for very dark or very bright areas with local processing.



[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

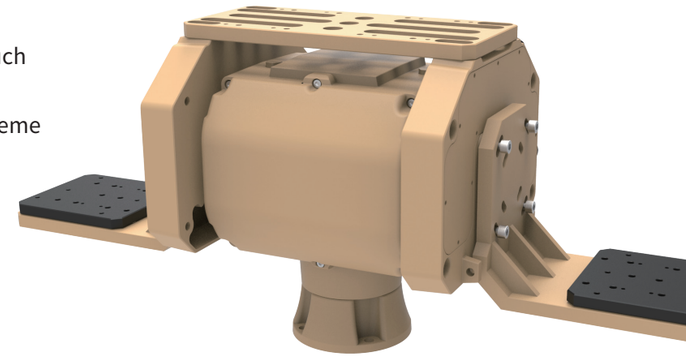


[HEQ Off] [HEQ On]

Pan Tilt Driver

PT Driver *TMS-20 Series*

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	

Megapixel Cooled Thermal Camera F/#4.0

IR CAMERA *TMS-20 Series*

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

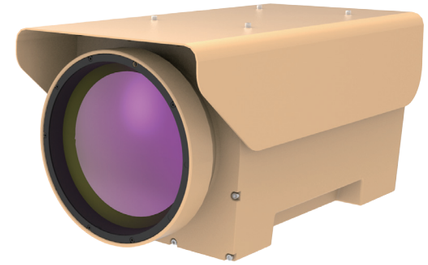
Lens Focal length	15 to 300mm	33 to 420mm	60 to 600mm	60 to 690mm	72 to 900mm	100 to 1200mm
HFOV (H)	44.9° to 2.4°	20° to 1.7°	11.4° to 1.2°	11.5° to 1°	9.3° to 0.8°	6.8° to 0.6°
F/#	F/#4.0	F/#4.0	F/#4.0	F/#4.0	F/#4.0	F/#4.0
Drone 0.3 x 0.3 m	D : 3.7km R : 1km I : 0.62km	D : 5.1km R : 1.36km I : 0.89km	-	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.

Cooled Thermal Camera F/#4.0

IR CAMERA *TMS-20 Series*

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

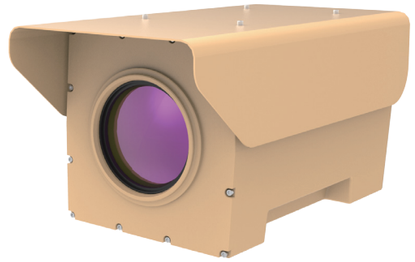
Lens Focal length	15 to 300mm	21 to 420mm	30 to 600mm	35 to 690mm	45 to 900mm	60 to 1200mm
HFOV (H)	35.1° to 1.8°	25.1° to 1.3°	17.2° to 0.9°	15.2° to 0.8°	10.9° to 0.6°	8.6° to 0.5°
F/#	F/#4.0	F/#4.0	F/#4.0	F/#4.0	F/#4.0	F/#4.0
Drone 0.3 x 0.3 m	D : 3.5km R : 0.94km I : 0.59km	D : 4.8km R : 1.3km I : 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.

Cooled Thermal Camera F/#5.5

IR CAMERA F5.5 *TMS-20 Series*

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 (H)	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.

UnCooled Thermal Camera

IR CAMERA *TMS-20 Series*

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

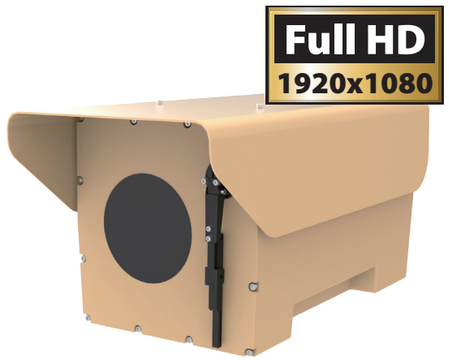
Lens Focal length	26-105mm	15-150mm	25-225mm
HFOV (H)	17.1°~4.1°	29°~2.9°	17.7°~1.9°
F/#	F/1.6	F/0.85-1.35	F/0.95~1.5
Human 1.7 x 0.5 m	D : 3.83km R : 0.9km I : 0.48km	D : 5.47km R : 1.29km I : 0.68km	D : 8.2m R : 1.93km I : 1.02km
Vehicle 2.3 x 2.3 m	D : 10.85km R : 2.25km I : 1.19km	D : 15.46km R : 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.

Daylight Camera

EO CAMERA *TMS-20 Series*

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	1/1.8" CMOS	1/2.8" CMOS
Interface	Network	Network
Ethernet	RJ-45(10/100BASE-T)	RJ-45(10/100BASE-T)
Resolution	1920x1080	1920x1080, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360, 320x240
Gyro Image Stabilizer	Support (EIS)	Support (Built-in Gyro Sensor)
Backlight Correction	BLC, HLC, WDR	BLC, HLC, WDR, SSDR
Defog	Support (NIR)	Support
Acceptable Lens	6-540mm, 15-850mm	27-1070mm, 41-1560mm

LENS OPTION

Lens Focal length	6 to 540mm	15 to 850mm	27 to 1070mm	41 to 1560mm
HFOV (H)	65.24° to 0.82°	29.12° to 0.53°	15.4° to 0.45°	10.3° to 0.30°
Human 1.8 x 0.5 m	TBD	TBD	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	TBD	TBD	D : 40.7km R : 16.3km I : 8.1km	D : 59.4km R : 23.7km I : 11.8km
Dimensions (WxHxD, Unit : mm)	TBD	TBD	255x249.9x705	255x249.9x705
Weight	TBD	TBD	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.

Sensor Unit / Joystick Controller

OPTION *TMS-20 Series*

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



The smooth control stick allows precise control, while the precision nano trim wheel enables fine orientation adjustment.
A high-resolution contactless sensor ensures accurate response to control stick inputs and extends the controller's service life.

SPECIFICATIONS

OS	Windows 10/11
Interface	USB-C to USB-A
Weight	820g
Dimensions (WxHxD)	164.1 x 216.84 x 230.47mm

TMS-10 Series



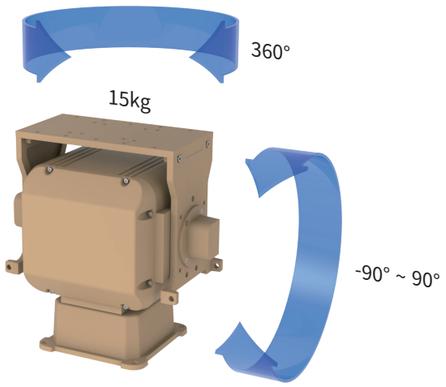
Pan/Tilt Step Motor drive method

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



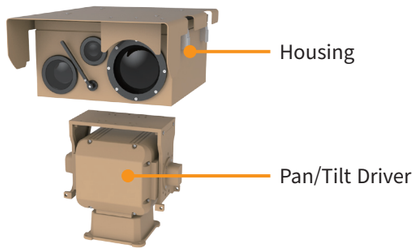
It is developed with domestic technology from the product design stage and manufactured through gravity casting molds to ensure high durability and excellent quality.
It can withstand up to 15kg of weight and has a design that is resistant to rain, wind, vibration, etc. to ensure durability without problems in long-term operation.
Minimum PT speed of 0.02°/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

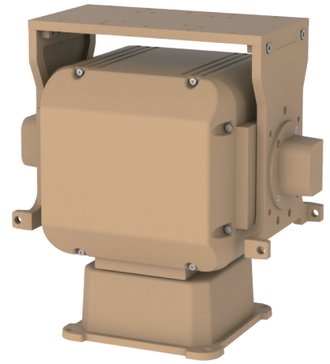


The housing and pan/tilt are easy to attach and detach, so spare parts of the same equipment can be replaced immediately on site to prevent monitoring gaps in case of emergency maintenance.
It also has a wide range of interfaces and compatibility to operate complex equipment such as EO/IR, LRF, GPS, DMC, etc., and can be mounted on various equipment (Vehicle, Mast, Stand, Vessel, etc.) according to the customer's use.

Pan Tilt Driver

PT Driver *TMS-10 Series*

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	

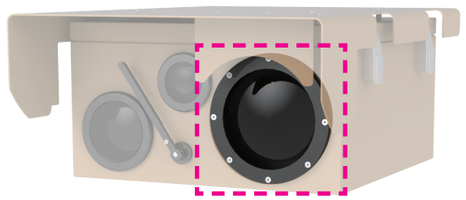
UnCooled Thermal Camera

IR CAMERA *TMS-10 Series*

640x480 sensors deliver high-definition quality and NETD 55mK 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	<55mk@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	15-150mm	25-225mm
HFOV (H)	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 1.7 x 0.5 m	D : 3.83km R : 0.9km I : 0.48km	D : 5.47km R : 1.29km I : 0.68km	D : 8.2km 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

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

Daylight Camera

EO CAMERA *TMS-10 Series*

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.



SPECIFICATIONS

Detector Type	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

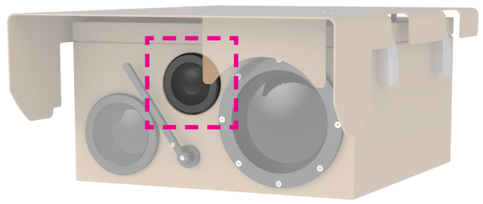
Lens Focal length	7.1 to 300mm
HFOV (H)	41.54° to 1.07°
Human 1.8 x 0.5 m	D : 10.3km R : 4.1km I : 2km
Vehicle 2.3 x 2.3 m	D : 14.7km R : 5.9km I : 2.9km

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

Housing / Joystick Controller

OPTION *TMS-10 Series*

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	1.5μm
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



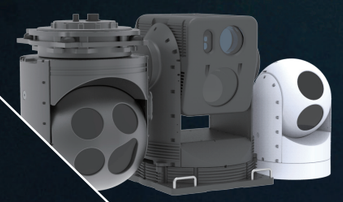
The smooth control stick allows precise control, while the precision nano trim wheel enables fine orientation adjustment.
A high-resolution contactless sensor ensures accurate response to control stick inputs and extends the controller's service life.

SPECIFICATIONS

OS	Windows 10/11
Interface	USB-C to USB-A
Weight	820g
Dimensions (WxHxD)	164.1 x 216.84 x 230.47mm

TBX Sereis

Gimbal Lineup



TBX Series















THERMAL	TBX-05 Series	TBX-10, 15 Series	TBX-20 Series	TBX-20F Series	TBX-20T Series	TBX-30, 35 Series	TBX-40 Series
Sensor Type	Uncooled TiOx 640x480	Uncooled TiOx 640x480	Cooled InSb 640x512	Cooled InSb 640x512	Cooled InSb 640x512	Cooled InSb 640x512	Cooled InSb 640x512
Pixel Pitch	17μm	17μm	15 μm	15 μm	15 μm	15 μm	15 μm
NETD	≤50mK @F1.0	≤50mK @F1.0	<20mK typical (without lens)	<20mK typical (without lens)	<20mK typical (without lens)	<20mK typical (without lens)	<20mK typical (without lens)
Focal Length	35mm (H:17.5° x V:13.2°)	19mm, 35mm(H:17.5°)	20-275mm(28.0° ~ 1.9°)	20-275mm(28.0° ~ 1.9°)	20-275mm(28.0° ~ 1.9°)	21-420mm(25.1°~1.3°), 35-690mm(15.2° ~ 0.8°), 45-900mm(10.9° ~ 0.6°)	20-275mm(28.0° ~ 1.9°)
F Number	F/1.2	F/1.2	F/5.5	F/5.5	F/5.5	F/4.0	F/5.5
Cooler	-	-	Stirling Cooler	Stirling Cooler	Stirling Cooler	Stirling Cooler	Stirling Cooler
COLOR CAMERA							
Sensor Type	1/1.8” Global Shutter	1/2.8" 2MP CMOS	1/2.8 inch CMOS	1/2.8 inch CMOS	1/2.8 inch CMOS	1/1.8 inch CMOS	1/2 inch CMOS
Resolution	1920 x 1080	1920 x 1080	1920 x 1080	1920 x 1080	1920 x 1080	1920 x 1080	1920 x 1080
Focal length	6~180mm 30x Zoom, 2MP HD	4.44 ~ 142.6mm, 32x Optical Zoom, 16x Digital Zoom		4.44 ~ 142.6mm, 32x Optical Zoom, 16x Digital Zoom		15.2 ~ 500mm, Auto Focus, 32x Optical Zoom, 16x Digital Zoom	5.8 ~ 210mm, 36x Optical Zoom, 12x Digital Zoom
Field of View(H)	60°(Wide) ~ 2°(Tele)	62.8°(Wide) ~ 2.23°(Tele)		62.8°(Wide) ~ 2.23°(Tele)		25.6°(Wide) ~ 0.81°(Tele)	60°(wide) ~ 3.7°(tele)
GIMBAL							
Dimensions (D x H, mm)	110 x 170	190 x 270	290 x 420	322 x 449	320 x 440	420 x 650	322 x 449
Weight	≤1.6Kg	≤1.3Kg, ≤7Kg	≤18Kg	≤28Kg	≤28Kg	≤65Kg	≤60Kg
Gimbal Travel Characteristic	Varies by product	Pan : 360° continuous, Tilt : -30° ~ +90°	Pan : 360° continuous, Tilt : -60° ~ +90°	Pan : 360° continuous, Tilt : -60° ~ +90°	Pan : 360° continuous, Tilt : -60° ~ +90°	Pan : 360° continuous, Tilt : -30° ~ +75°	Pan : 360° continuous, Tilt : -60° ~ +90°
Max Speed	Pan : 60°/s, Tilt : 60°/s	Pan : 60°/s, Tilt : 30°/s	Pan : 60°/s, Tilt : 60°/s	Pan : 60°/s, Tilt : 60°/s	Pan : 60°/s, Tilt : 60°/s	Pan : 60°/s, Tilt : 60°/s	Pan : 60°/s, Tilt : 60°/s
Gyroscope	MEMS	MEMS	MEMS	FOG	FOG	FOG	FOG
Gyro	2~3 axis, Pitch, Roll& Yaw	2~3 axis, Pitch, (Roll) & Yaw	2~3 axis, Pitch, (Roll) & Yaw	4 axis Dual Pitch & Yaw	3 axis, Pitch, Roll & Yaw	3 axis: pitch, roll & yaw 4 axis: dual pitch & yaw	3 / 4 axis, Pitch, Roll & Yaw
ENVIRONMENT							
Standards	-	-	MIL-STD-810G, MIL-STD-461G	MIL-STD-810G,506.4 Rain	MIL-STD-810G	MIL-STD-810G, MIL-STD-461F	MIL-STD-810G and MIL-STD-461G
Operating Temperature	Varies by product	-30°C to +55°C	-20°C to +55°C	-20°C to +55°C	-20°C to +55°C	-32°C to +55°C	-20°C to +55°C
Storge Temperature	-	-	-30°C to +75°C	-30°C to +75°C	-30°C to +75°C	-30°C to +75°C	-30°C to +75°C
POWER REQUIREMENT							
Voltage	12V DC	12-34 VDC	22-34 VDC	22-34 VDC	22-34 VDC	22-32 VDC	22-34 VDC
Consumption	≤10W / ≤30W	≤100W	300W(max)	300W(max)	300W(max)	500W(max)	300W(max)
OPTION							
Laser Ranger Finder	O	O	O	O	O	O	O
Laser Pointer	-	-	O	O	O	O	O
Laser Desigsntor	O / -	O	O	O	O	O	O
SWIR	O	O	O	O	O	O	O
Software	O	O	O	O	O	O	O
Controller	O	O	O	O	O	O	O
Auto Tracker	O	O	O	O	O	O	O

* Specifications may vary depending on selected options. Please contact our sales team for detailed information.

TPV Sereis

Uncoold Camera



Uncooled IR Camera

TPV-IHW/IAHW Series



FEATURES

Uncooled Thermal Imaging Camera

- 1280 x 720 Output Resolution
- NETD : ＜55mk@f/1.0
- Pixel Pitch : 12μm

Temperature Detection(TPV-IAHW)

- Area (10) / Center / Mask (3)
- Temperature Range -20°C ~ 350°C
- Accuracy ±2°C or ±2%

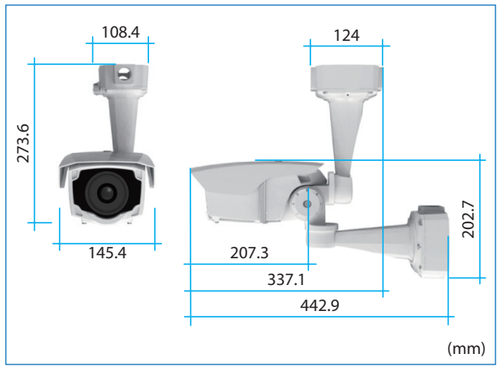
SPECIFICATIONS

• Specifications are subject to change without notice.

THERMAL MODULE	
SENSOR	
Thermal Sensor	Uncooled Microbolometer
Pixel Pitch	12μm
Spectral Range	8 ~ 14μm
NETD	<55mK@f/1.0, 30Hz, 300K
VIDEO	
Output Frequency	NTSC : 59.94Hz (30fps), PAL : 50Hz (25fps)
Video Output	CVBS : 1.0Vp-p/75Ω
Array Format	640 x 480
Output Resolution	1280 x 720
LENS	
Lesn	8mm (FOV 58.3°x42.5°)[Basic]/19mm (FOV 22.8° x17.2°)[Option], 35mm (FOV 12.5°x9.4°)[Option]
MEASUREMENT	Only TPV-IAHW
Detect Mode	Area (10) / Center / Mask (3)
Temperature Range	-20°C ~ 350°C
Accuracy	±2°C or ±2%
Emissivity Correction	0.10 ~ 2.00
FUNCTION	
Calibration	Manual / Auto / Interval
IDE Set	0 ~ 30 (31 steps)
Mirror Mode	Enable / Disable
Image Flip	Enable / Disable
Inverse Mode	Enable / Disable
Image Mode	11 Colors(Gray/Rainbow/Iron/Jet/Thermal/ BlueOrangeIcb/Smart/Cool/Gray+Rainbow/Gray+Jet/ Gray+Iron)
AGC Mode	MGC Mode / AGC#1(Low) / AGC#2(Middle) / AGC#3(High)
MECHANICAL	
Dimensions	337.1mm(W) x 273.6mm(H) x 153.7mm(D)
Weight	2.3kg
ELECTRICAL	
Power Consumption	DC12V 1.73A 21.0W Max
Power Supply	12V DC (2A)
ETC	
Interface	IP
Storage Temp.	-40°C ~ 60°C
Operating Temp.	-20°C ~ 55°C

NETWORK	
Video compression	H.265 Main profile, H.264(High, Main, Base Line profile), MJPEG
Resolution	Color : 1920x1080, 1280x1024, 1280x720, 704x480, 704x576, 640x486, 352x288, 320x240 Thermal : 1280x720, 720x480, 640x480, 320x240
Frame Rate	Color : Max 60fps @ 1920X1080 Thermal : Max 30fps @ 1280X720
Video Streaming	H.265, H.264, M-JPEG Triple Streaming (Independently controllable frame rate and bandwidth)
LAN Interface	10/100BaseT Ethernet Auto-Aware
Control	Joystick Controller (RS-485:Pelco-D)
Security Features	Multi user level protection for camera access
Support Protocol	TCP/IP, UDP, IPv4/v6, HTTP, HTTPS, FTP, UPnP, RTST, RTCP, DHCP, ARP, Zeroconf
Viewer and Control	Easy access through the viewer, controlling/setting temperature measurement functionality with dedicated software.

DIMENSIONS



TPV-IHDR Series



FEATURES

Uncooled Thermal Camera
- 1280 x 720 Output Resoluton
- NETD : <55mk (@300K,F1.0)
- Pixel Pitch : 12µm

36x Zoom Full HD Color Camera
- 2 Megapixel 36x Zoom Full HD Camera
- Defog
- Wiper type

Laser illuminator
- Visibility 200m

SPECIFICATIONS

* Specifications are subject to change without notice.

THERMAL MODULE	
SENSOR	
Thermal Sensor	Uncooled Micro Bolometer, 640 x 480, 12µm Pixel Pitch
Wave Langth	8 ~ 14µm
NETD	<55mk (@f1.0, 30Hz, 300k)
Output Frequency	NTSC : 59.94Hz (30fps), PAL : 50Hz (25fps)
Resolution	1280 x 720
Lens	26 ~ 105mm (17.1°~4.1°), 15 ~ 150mm (29°~2.9°)
FUNCTION	
Calibration	Manual / Auto / Interval
IDE Set	0 ~ 30 (31 steps)
Mirror Mode	Enable / Disable
Image Flip	Enable / Disable
Inverse Mode	Enable / Disable
Image Mode	11 Colors(Gray/Rainbow/Iron/Jet/Thermal/BlueOrangeIcb/ Smart/Cool/Gray+Rainbow/Gray+Jet/Gray+Iron)
AGC Mode	MGC Mode / AGC#1(Low) / AGC#2(Middle) / AGC#3(High)
COLOR MODULE	
Image Sensor	Sony IMX385LQR, 1/2" RGB Bayer Array CMOS Sensor
Total Image Pixels	1952(H) x 1113(V) approx. 2.17M pixels
Lens	6.0 ~ 216 mm±5%, F1.5±5%(Wide) ~ F4.8±5%(Tele) 36x Day & Night Zoom Lens, H56.5°(W) ~ V33.6°(W)
Scanning Mode	Progressive Scan
Luminance S/N ratio	More than 50dB
FUNCTION	
HDR	DOL(Digital Over Lab) HDR
Noise Reduction	2D-NR, 3D-NR
Digital Zoom	X8
BLC	On/Off
HLC	On/Off
Defog	Off / On(Auto / Manual)
Laser illuminator	
Visibility	200m

NETWORK	
Video compression	H.265 Main profile, H.264(High, Main, Base Line profile), MJPEG
Resolution	Color : 1920x1080, 1280x1024, 1280x720, 704x480, 704x576, 640x486, 352x288, 320x240 Thermal : 1280x720, 720x480, 640x480, 320x240
Frame Rate	Color : Max 60fps @ 1920X1080 Thermal : Max 30fps @ 1280X720
Video Streaming	H.265, H.264, M-JPEG Triple Streaming (Independently controllable frame rate and bandwidth)
Application Programming Interface	ONVIF
LAN Interface	10/100BaseT Ethernet Auto-Aware
Control	Joystick Controller (RS-485:Pelco-D)
Security Features	Multi user level protection for camera access
Support Protocol	TCP/IP, UDP, IPv4/v6, HTTP, HTTPS, FTP, UPnP, RTST, RTCP, DHCP, ARP, Zeroconf
Viewer and Control	Easy access through the viewer, controlling/ setting temperature measurement functionality with dedicated software.
MECHANISM	
Interface	
Preset	256 (1 Home-Position)
Video Output	rtsp(H.264), CVBS : 1.0Vp-p / 75Ω
Alarm Input	2
Aux Output	2 Relay
Auto Flip	Digital Auto Flip (Automatic angle detection)
Auto calibration	Auto calibration when out of 0.5° or more
PAN/TILT	
Pan / Tilt Rotation Angle	0° ~ 360° Endless
Pan / Tilt Speed	Manual : 0.1° ~ 90°/sec (64steps), Preset : MAX 100°/sec
System Accuracy	0.0225°
OTHERS	
Dimensions (WxHxD)	26~105mm : 490mm x 239.3 x 265mm 15~150mm : 530mm x 239.3mm x 355mm
Weight	26~105mm : 15kg, 15~150mm : 17.5kg
Construction	Aluminum die casting
Storage Temperature	-32°C ~ 60°C
Operating Temperature	-32°C ~ 60°C
POWER	
Power Consumption	Camera : DC24V 3.3A 80W Max Heater : DC24V 3.53A 84.7W Max
Power Supply	DC24V 5A



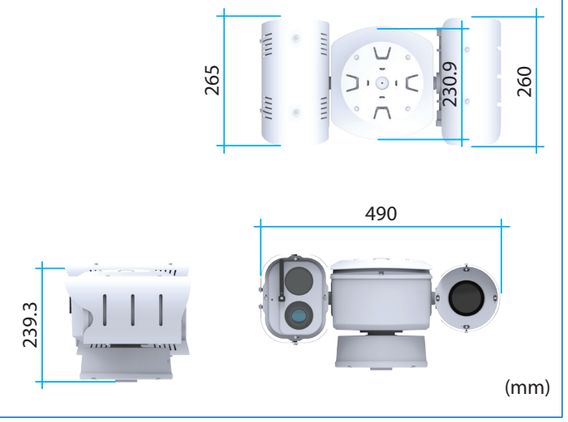


Color Camera Lens Option	6mm~216mm

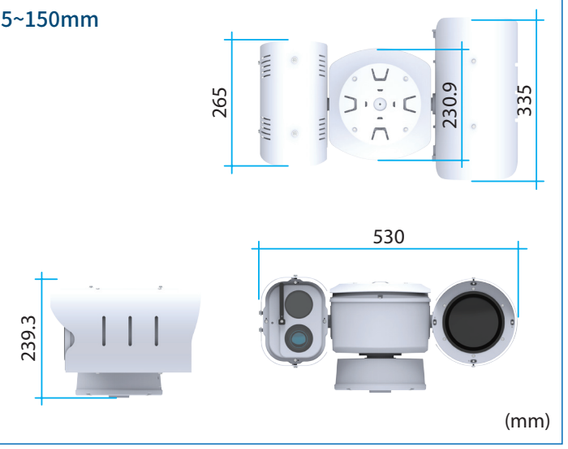
Thermal Imaging Camera Lens Option	26~105mm	15~150mm

DIMENSIONS

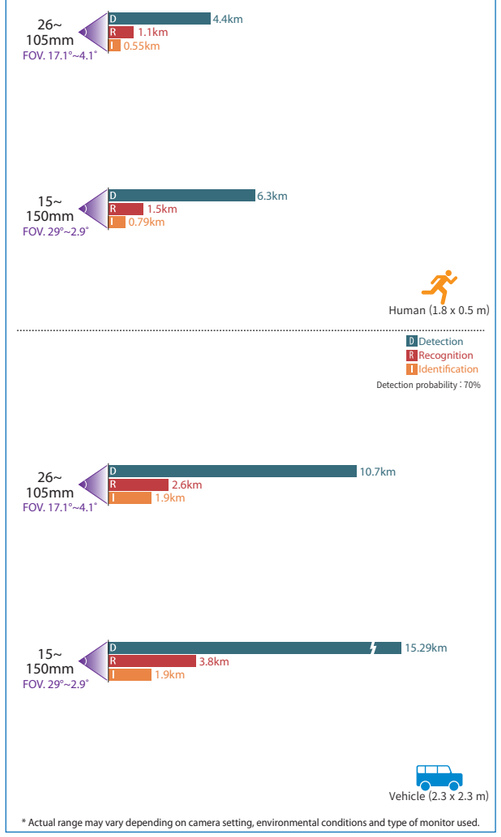
26~105mm



15~150mm



RANGE PERFORMANCE



* Actual range may vary depending on camera setting, environmental conditions and type of monitor used.

TPV-IAHDR Series



FEATURES

Uncooled Thermal Camera
- 1280 x 720 Output Resoluton
- NETD : <55mk (@300K,F1.0)
- Pixel Pitch : 12μm
- Thermography

36x Zoom Full HD Color Camera
- 2 Megapixel 36x Zoom Full HD Camera
- Defog
- Wiper type

Laser illuminator
- Visibility 200m

SPECIFICATIONS

* Specifications are subject to change without notice.

THERMAL MODULE	
SENSOR	
Thermal Sensor	Uncooled Micro Bolometer, 640 x 480, 12μm Pixel Pitch
Wave Langth	8 ~ 14μm
NETD	<55mk (@f1.0, 30Hz, 300k)
Output Frequency	NTSC : 59.94Hz (30fps), PAL : 50Hz (25fps)
Resolution	1280 x 720
Lens	8mm (58.3°x42.5°), 19mm (22.8°x17.2°), 35mm (12.5°x9.4°), 60mm (7.3°x5.5°), 100mm (4.4°x3.3°)
FUNCTION	
Calibration	Manual / Auto / Interval
IDE Set	0 ~ 30 (31 steps)
Mirror Mode	Enable / Disable
Image Flip	Enable / Disable
Inverse Mode	Enable / Disable
Image Mode	11 Colors(Gray/Rainbow/Iron/Jet/Thermal/BlueOrangeIcb/ Smart/Cool/Gray+Rainbow/Gray+Jet/Gray+Iron)
AGC Mode	MGC Mode / AGC#1(Low) / AGC#2(Middle) / AGC#3(High)
MEASUREMENT	
Detect Mode	Area (10) / Center / Mask (3)
Temperature Range	-20°C ~ 350°C
Accuracy	±2°C or ±2%
Emissivity Correction	0.10 ~ 2.00
COLOR MODULE	
Image Sensor	Sony IMX385LQR, 1/2" RGB Bayer Array CMOS Sensor
Total Image Pixels	1952(H) x 1113(V) approx. 2.17M pixels
Lens	6.0 ~ 216 mm±5%, F1.5±5%(Wide) ~ F4.8±5%(Tele) 36x Day & Night Zoom Lens, H56.5°(W) ~ V33.6°(W)
Scanning Mode	Progressive Scan
Luminance S/N ratio	More than 50dB
FUNCTION	
HDR	DOL(Digital Over Lab) HDR
Noise Reduction	2D-NR, 3D-NR
Digital Zoom	X8
BLC	On/Off
HLC	On/Off
Defog	Off / On(Auto / Manual)
Laser illuminator	
Visibility	200m

NETWORK	
Video compression	H.265 Main profile, H.264(High, Main, Base Line profile), MJPEG
Resolution	Color : 1920x1080, 1280x1024, 1280x720, 704x480, 704x576, 640x486, 352x288, 320x240 Thermal : 1280x720, 720x480, 640x480, 320x240
Frame Rate	Color : Max 60fps @ 1920X1080 Thermal : Max 30fps @ 1280X720
Video Streaming	H.265, H.264, M-JPEG Triple Streaming (Independently controllable frame rate and bandwidth)
Application Programming Interface	ONVIF
LAN Interface	10/100BaseT Ethernet Auto-Aware
Control	Joystick Controller (RS-485:Pelco-D)
Security Features	Multi user level protection for camera access
Support Protocol	TCP/IP, UDP, IPv4/v6, HTTP, HTTPS, FTP, UPnP, RTST, RTCP, DHCP, ARP, Zeroconf
Viewer and Control	Easy access through the viewer, controlling/ setting temperature measurement functionality with dedicated software.
MECHANISM	
Interface	
Preset	256 (1 Home-Position)
Video Output	rtsp(H.264), CVBS : 1.0Vp-p / 75Ω
Alarm Input	2
Aux Output	2 Relay
Auto Flip	Digital Auto Flip (Automatic angle detection)
Auto calibration	Auto calibration when out of 0.5° or more
PAN/TILT	
Pan / Tilt Rotation Angle	0° ~ 360° Endless
Pan / Tilt Speed	Manual : 0.1° ~ 80°/sec (64steps), Preset : MAX 80°/sec
System Accuracy	0.0225°
OTHERS	
Dimensions (WxHxD) (Unit:mm)	8, 19, 35, 60mm : 473±5 x 237.5±2 x 265 100mm : 530±5 x 237.5±2 x 265
Weight	8mm, 19mm, 35mm : 14.5kg / 60mm : 14.8kg 100mm : TBD
Construction	Aluminum die casting
Storage Temperature	-32°C ~ 60°C
Operating Temperature	-32°C ~ 60°C
POWER	
Power Consumption	Camera : DC24V 3.3A 80W Max Heater : DC24V 3.53A 84.7W Max
Power Supply	DC24V 5A





Color Camera Lens Option	6mm~216mm



Thermal Imaging Camera Lens Option	8 / 19mm	35mm	60mm	100mm

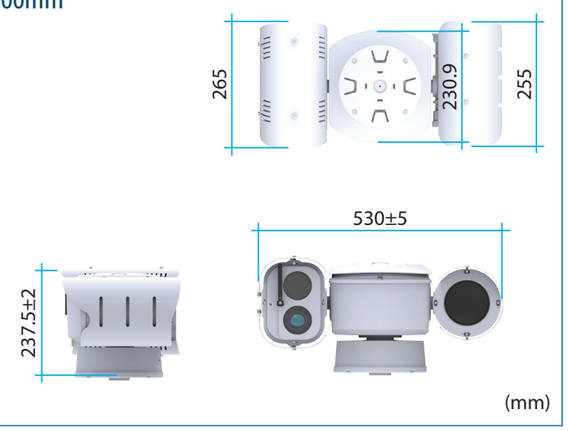


DIMENSIONS

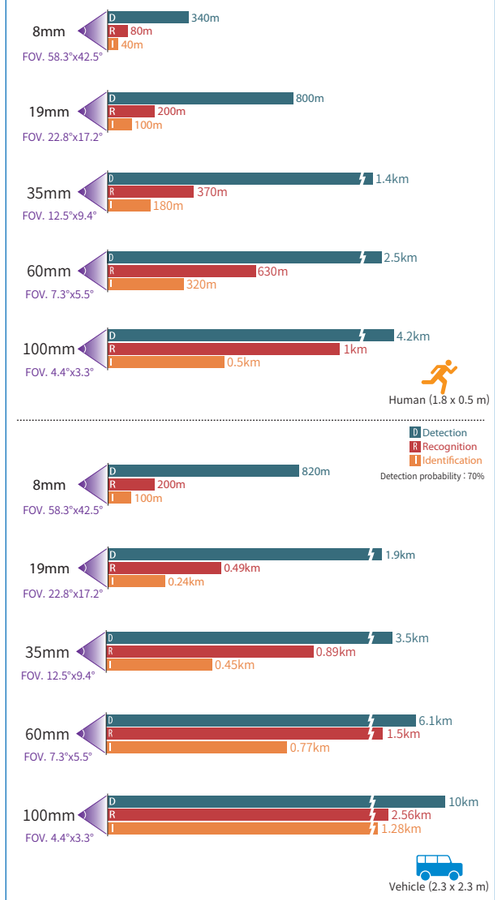
8, 35, 19mm / 60mm



100mm



RANGE PERFORMANCE



* Actual range may vary depending on camera setting, environmental conditions and type of monitor used.



Mini Bi-spectrum Radiometric Detector

TPV-IASW-M2+



FEATURES

Thermal Imaging Camera

- Uncooled VOx Micro bolometer 256×192 resolution
- Sensitivity ≤60mK
- Support 3 temperature measurement rule types (Spot, Line, Area)
- Temperature Range : -20°C ~ 150°C, Option 0°C ~ 550°C
- Temperature accuracy : ±2 °C, ±2%
- Reliable temperature exception alarm function

Color Camera

- 2MP 1600x1200p

Certifications

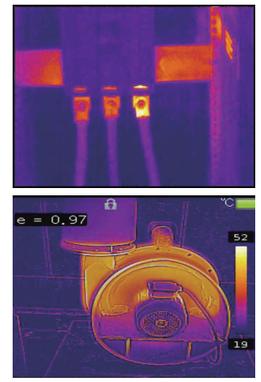
- CE, FCC, IP67

SPECIFICATIONS

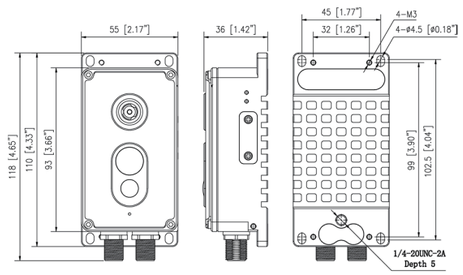
• Specifications are subject to change without notice.

Thermal Camera	
Thermal Sensor	Vanadium Oxide Uncooled Focal Plane Arrays
Array Resolution	256 x 192 (Up-scale 704 x 576)
Pixel Pitch	12μm
Wave Length	8 ~ 14μm
NETD	≤60mk
Angle of View	H : 90°, V : 65°
Image Setting	Brightness, Contrast, Sharpness
Color Palettes	up to 17 modes
Temperature Detection	
Temperature Range	-20°C ~ +150°C, Option 0°C ~ +550°C
Accuracy	±2% or ±2°C
Temperature Detection	Support 3 temperature measurement rule types (Spot, Line, Area) total 19ea
Visible Camera	
Sensor Type	1/2.8" 2MP STARVIS CMOS
Output Resolution	1600 (H)×1200(V)
Shutter Speed	1/5 ~ 1/20,000s
Angle of View	H : 100°, V : 75°
Minimum Illumination	Color: 0.05Lux @(F2.2, AGC ON), B/W: 0.005Lux @(F2.2, AGC ON), 0Lux with illuminator on
EVENT	
Temperature Alarm	Over temperature alarm, Temperature difference alarm
POWER	
Power Supply	12 VDC ±20%/PoE (802.3af)
Power Consumption	Max 3W
NETWORK	
Protocols	IPv4/IPv6, HTTP/HTTPS, DNS, DDNS, DHCP, PPPOE, RTSP/RTP/RTCP, TCP/UDP, NTP, ARP, UPnP, FTP, SMTP, QoS, 802.1x, SNMP, Multicast
Application Programming Interface	ONVIF (Profile S/T/G/M), CGI, SDK
Control	Web Viewer
INTERFACE	
Ethernet	10/100 Base-T RJ−45 Connector
Alarm	1ch Alarm Input, 1ch Alarm Output
RS-232	Support
RS-485	Support
GENERAL	
Operating Temp.	-30°C ~ +60°C (0% ~ 90%RH)
Ingress Protection	IP67
Certifications	CE, FCC
Dimensions	55 x 118 x 36mm
Weigh	300g

PERFORMANCE



DIMENSIONS



Unit : mm

TPV-IASW-M3 Series

Feature 01 — High-Definition Video with Thermal Camera of 256x196 resolution & 4Mega pixel color camera

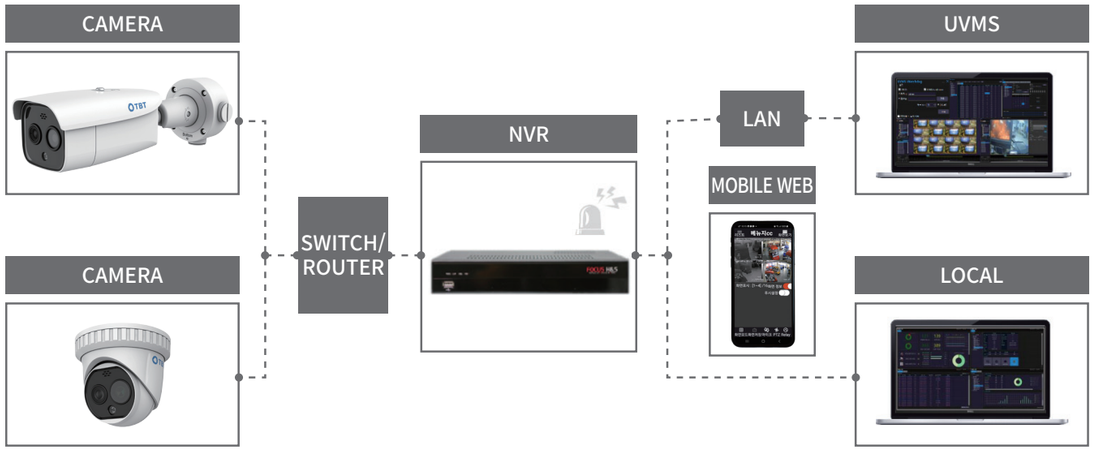
Feature 02 — Provides time for prevention based on rapid temperature anomaly detection

Feature 03 — Human/Vehicle Detection Using Deep Learning AI Technology

Feature 04 — Strobe lights and audio alarms, crime prevention warnings (announcement)

Feature 05 — Prevents false detection with area set

System Configure (Provision of Outsourced Integrated Monitoring Service)



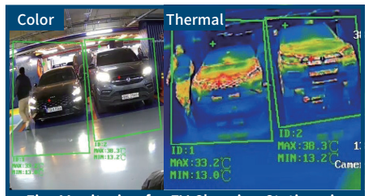
Installation Cases



Fire Monitoring for Underground Apartment EV Charging Stations



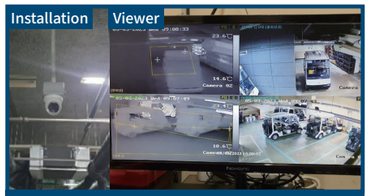
Fire Monitoring for Public EV Charging Stations



Fire Monitoring for EV Charging Stations in Large Buildings



Server Room Overheat Detection



Electric Golf Cart Fire Monitoring



Object Recognition for Automatic Pedestrian Detection Signals

Thermal Image Detection AI Dual Dome Camera

TPV-IASW-M3-D-3.6mm



FIRE Detection

TTA Verified — 공공기관용 IP카메라 보안 성능품질 Ver.1 [보안 Ⅱ 성능품질 □] (TTA-V-24-1009)

FEATURES

Uncooled Thermal Imaging Camera
- 256 x 192 resolution, 12 µm
- NETD : 40mK

Color Camera
- 2688 x 1520 CMOS, 0.0017 Lux
- DDE,AGC,3D DNR

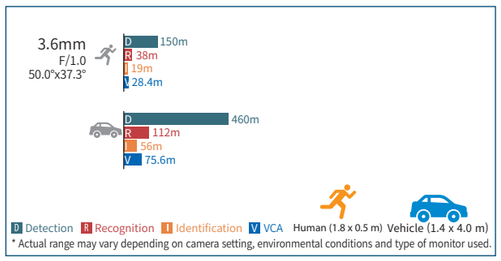
Temperature Detection
- Range -20°C to 150°C, Accuracy ± 8°C
- Fire prevention and VCA AI DEEP Learning
- 10 points, 10 areas, and 1 line

SPECIFICATIONS

* Specifications are subject to change without notice.

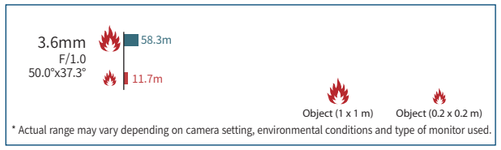
Thermal Module	
Image Sensor	VOx Uncooled Focal Plane Arrays, 256 x 192, 12 µm Pixel Pitch
Spectral Range	8 µm ~ 14 µm
NETD	< 40 mK (25°C, F1.0)
Lens Focal Length	F1.0, 3.6mm (H50.0° x V37.3°)
Digital Zoom	x2, x4
Color Module	
Image Sensor	1/2.7" Progressive Scan CMOS, 2688 × 1520
Min. Illumination	Color: 0.0176 Lux @ (F2.25, AGC ON) B/W: 0.0035 Lux @ (F2.25, AGC ON)
Shutter Speed	1 s to 1/100,000 s
Lens Focal Length	F1.6, 4.3 mm(84.0° x 43.1°)
IR Illuminator Distance	Up to 15 m
Smart Function	
VCA	4 VCA rule types (line crossing, intrusion, region entrance, and region exiting), up to 8 VCA rules in total.
Temperature Measurement	3 temperature measurement rule types, 21 rules in total (10 points, 10 areas, and 1 line)
Temperature Range	-20°C to 150°C (-4°F to 302°F)
Temperature Accuracy	± 8°C (± 14.4°F)
Network	
Protocols	IPv4/IPv6, HTTP, HTTPS, 802.1x, Qos, FTP ,SMTP, UPnP, SNMP, DNS, DDNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMP, ICMP, DHCP, PPPoE, Bonjour, SFTP, SRTP
Application Programming Interface	CGI, RTSP, ONVIF Support
Video Compression	Main Stream: H.265/H.264 Sub-Stream: H.265/H.264/MJPEG
Main Stream	Thermal: 30 fps (1280 x 720, 704 x 576, 640 x 512, 320 x 240) Optical: 30 fps (2688 x 1520, 1920 x 1080, 1280 x 720)
Sub-stream	Thermal: 30 fps (704 x 576, 640 x 512, 320 x 240) Optical: 30 fps (704 x 480, 352 x 240)
Audio Compression	G.722.1/G.711ulaw/G.711alaw/MP2L2/G.726/PCM
Interface	
Alarm Input	1, alarm input
Alarm Output	1, alarm output
Audio Input	1, 3.5 mm Mic in/Line in interface Line input: 2 to 2.4 V [p-p], output impedance: 1 KΩ ± 10%
Audio Output	Linear level, impedance: 600 Ω
Communication Interface	1, RJ45 10 M/100 M Self-adaptive Ethernet interface.
General	
Power Consumption	12VDC ±25%: 0.5A, Max. 6, PoE (IEEE802.3at)
Operating Temperature/Humidity	Temp.: -40°C to 65°C (-40°F to 149°F) Humidity: 95% or less
Protection Level	IP68 Standard
Dimensions	138.3mm x 138.3mm x 123.1mm
Weight	940g (2.07 lb)

LENS DRI RANGE



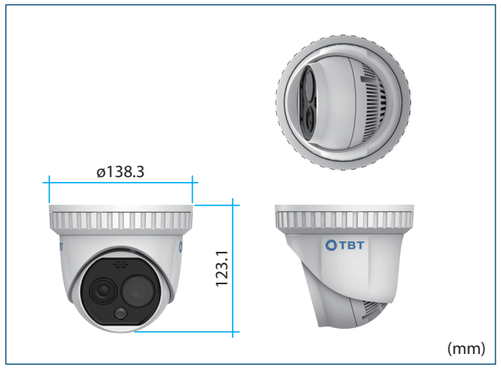
* Actual range may vary depending on camera setting, environmental conditions and type of monitor used.

FIRE DETECTION RANGE



* Actual range may vary depending on camera setting, environmental conditions and type of monitor used.

DIMENSIONS



Thermal Image Detection AI Dual Bullet Camera

TPV-IASW-M3-B-6.9mm



TTA Verified
공공기관용 IP카메라 보안 성능품질 Ver.1 [보안 Ø 성능품질 □] (TTA-V-24-1008)

FEATURES

Uncooled Thermal Imaging Camera
- 256 x 192 resolution, 12 µm
- NETD : 40mK

Color Camera
- 2688 x 1520 CMOS, 0.0017 Lux
- DDE,AGC,3D DNR

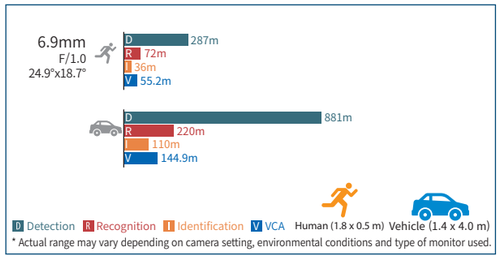
Temperature Detection
- Range -20°C to 150°C, Accuracy ± 8°C
- Fire prevention and VCA AI DEEP Learning
- 10 points, 10 areas, and 1 line

SPECIFICATIONS

* Specifications are subject to change without notice.

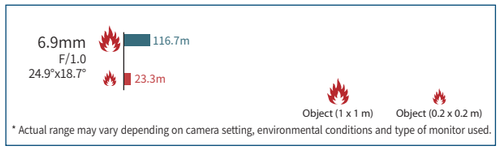
Thermal Module	
Image Sensor	VOx Uncooled Focal Plane Arrays, 256 x 192, 12 µm Pixel Pitch
Spectral Range	8 µm ~ 14 µm
NETD	< 40 mK (25°C, F1.0)
Lens Focal Length	F1.0, 6.9mm (H24.9° x V18.7°)
Digital Zoom	x2, x4
Color Module	
Image Sensor	1/2.7" Progressive Scan CMOS, 2688 × 1520
Min. Illumination	Color: 0.0176 Lux @ (F2.25, AGC ON) B/W: 0.0035 Lux @ (F2.25, AGC ON)
Shutter Speed	1 s to 1/100,000 s
Lens Focal Length	F1.6, 6.4 mm(53.0° x 28.0°)
IR Illuminator Distance	Up to 30 m
Smart Function	
VCA	4 VCA rule types (line crossing, intrusion, region entrance, and region exiting), up to 8 VCA rules in total.
Temperature Measurement	3 temperature measurement rule types, 21 rules in total (10 points, 10 areas, and 1 line)
Temperature Range	-20°C to 150°C (-4°F to 302°F)
Temperature Accuracy	± 8°C (± 14.4°F)
Network	
Protocols	IPv4/IPv6, HTTP, HTTPS, 802.1x, Qos, FTP ,SMTP, UPnP, SNMP, DNS, DDNS, NTP, RTSP, RTCP, RTP, TCP, UDP, IGMP, ICMP, DHCP, PPPoE, Bonjour, SFTP, SRTP
Application Programming Interface	CGI, RTSP, ONVIF Support
Video Compression	Main Stream: H.265/H.264 Sub-Stream: H.265/H.264/MJPEG
Main Stream	Thermal: 30 fps (1280 x 720, 704 x 576, 640 x 512, 320 x 240) Optical: 30 fps (2688 x 1520, 1920 x 1080, 1280 x 720)
Sub-stream	Thermal: 30 fps (704 x 576, 640 x 512, 320 x 240) Optical: 30 fps (704 x 480, 352 x 240)
Audio Compression	G.722.1/G.711ulaw/G.711alaw/MP2L2/G.726/PCM
Interface	
Alarm Input	2, alarm input
Alarm Output	2, alarm output
Audio Input	1, 3.5 mm Mic in/Line in interface Line input: 2 to 2.4 V [p-p], output impedance: 1 KΩ ± 10%
Audio Output	Linear level, impedance: 600 Ω
Communication Interface	1, RJ45 10 M/100 M Self-adaptive Ethernet interface.
General	
Power Consumption	12VDC ±25%: 0.5A, Max. 6, PoE (IEEE802.3at)
Operating Temperature/Humidity	Temp.: -40°C to 65°C (-40°F to 149°F) Humidity: 95% or less
Protection Level	IP68 Standard
Dimensions	358.43mm x 114.19mm x 113mm
Weight	1550g (3.41 lb)

LENS DRI RANGE



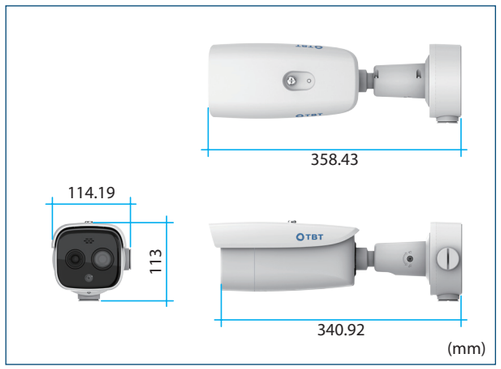
* Actual range may vary depending on camera setting, environmental conditions and type of monitor used.

FIRE DETECTION RANGE



* Actual range may vary depending on camera setting, environmental conditions and type of monitor used.

DIMENSIONS



Intelligent Multi-Sensor Fire Detection Solution

TPV-IASW-M3-F



FEATURES

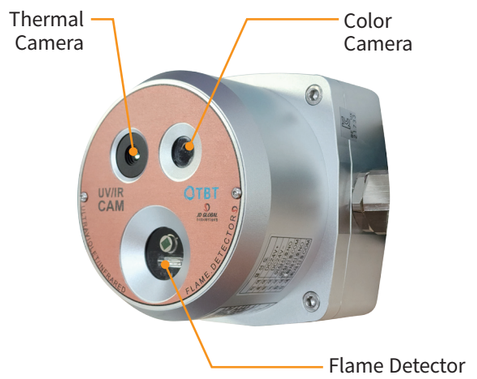
- High-quality video with 256 x 196 thermal imaging and 4MP visible imaging
- Rapid detection of abnormal temperature changes helps secure time for fire prevention
- Human/vehicle detection using deep learning AI technology
- Built-in UV/IR dual-spectrum flame detector
- Configurable detection zones help prevent false alarms

SPECIFICATIONS

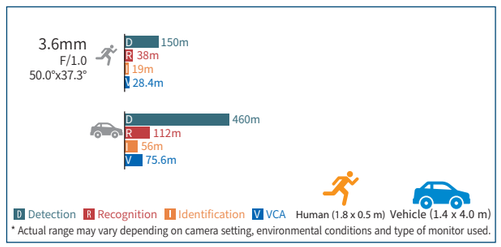
* Specifications are subject to change without notice.

Thermal Module	
Image Sensor	VOx Uncooled Focal Plane Arrays, 256 x 192, 12 µm Pixel Pitch
Spectral Range	8 µm ~ 14 µm
NETD	< 40 mK (25°C, F1.0)
Lens	F1.0, 3.6mm (50.0°x37.3°)
Digital Zoom	x2, x4
Color Module	
Image Sensor	1/2.7" Progressive Scan CMOS, 2688 × 1520
Min. Illumination	Color : 0.0176 Lux @ (F2.25, AGC ON) B/W : 0.0035 Lux @ (F2.25, AGC ON)
Shutter Speed	1 s to 1/100,000 s
Lens Focal Length	F1.6, 4.3 mm(84.0° x 43.1°)
IR Illuminator Distance	Up to 15 m
Smart Function	
VCA	4 VCA rule types (line crossing, intrusion, region entrance, and region exiting), up to 8 VCA rules in total.
Temperature Measurement	3 temperature measurement rule types, 21 rules in total (10 points, 10 areas, and 1 line)
Temperature Range	-20°C to 150°C
Temperature Accuracy	± 8°C
Flame Detector	
Detection Type	UV / IR dual-spectrum type
Detection Time	1-10sec
Detection Range	50M
Field of View	90°
Self-Diagnosis	Power fault, internal temperature fault, UV sensor fault, and IR sensor fault
기타	
Input Voltage	Non-polarized DC 24V, tolerance ±20%
Power Consumption	12V 16mA(동작시), 12V 27mA(화재 알람 상태)
Operating Temperature	-40°C to 85°C
Operating Humidity	95% RH or less
Certification	Type Approval : GAM24-30 (Acid-resistant type / reusable type / waterproof type / indoor & outdoor type etc)
Dimensions	132mm x 132mm x 108mm (without Bracket)
Material	Aluminum die-casting / SUS 6061

TPV-IASW-M3-F



LENS DRI RANGE



* Actual range may vary depending on camera setting, environmental conditions and type of monitor used.

FIRE DETECTION RANGE



* Actual range may vary depending on camera setting, environmental conditions and type of monitor used.

Module

Cooled / Uncooed



Uncooled Thermal Imaging Camera Module

TQM-1M Series

SPECIFICATIONS

* Specifications are subject to change without notice.

DETECTOR

Detector Type	Uncooled Micro Bolometer, 640x480
Pixel Pitch	12μm
Spectral Response	8μm ~ 14μm (LWIR)
Frame rate	30Hz
Thermal Time Constant	<10ms
NETD	Room Temperature Condition - Performance Grade: ≤ 50mK
Operability	≥ 99.5%

VIDEO

Video Format	All Digital Standard Format applied - CVBS 720x480i60, 720x576i50 - BT.1120 SEP16 1280x720p30

FUNCTION

Calibration	Manual/Interval/Auto Mode Selectable
Image Enhance	Brightness, Contrast, Equalization, Edge, CLAHE
Image Utility	Auto Focus, DIS, DNR
Colorization	3EA (Gray, Jet, Plasma)
D-Zoom	X1.0 ~ X4.0 (per X0.1)

MECHANICAL

Dimensions (WxHxD)	33mm x 33mm x 24.3mm (without lens)
Weight	55g (without lens)

ELECTRICAL

Power Consumption	3.5 W
Power Supply	12V

ETC

Operating Temperature	-32°C ~ +60°C
Storage Temperature	-40°C ~ +65°C
Command & Control	RS232
NUC	Factory Calibrated, Periodic Shutter Calibration



TQM-1M is an Intelligent Thermal Engine Module applied with Cutting Edge GPU Processor. This elaborated module, provides User's friendly Development Characteristics such as various interfaces & video format, easy mount and a multiple of optical lens options for customer's camera systems.

FEATURES

- Automotive Certificated SoC Processor Applied (AEC-Q100)
- User's selectable optical FOVs
- Various IR Image Processing and Standard Digital Video Interfaces
- Designed for commercial and Military Environments

APPLICATIONS

This module is the most suitable for EST Camera and SWaP-C applications, which are Hand-held Thermal Imaging Systems, Surveillance, UAV/Drone, Automotive Night Vision and etc.

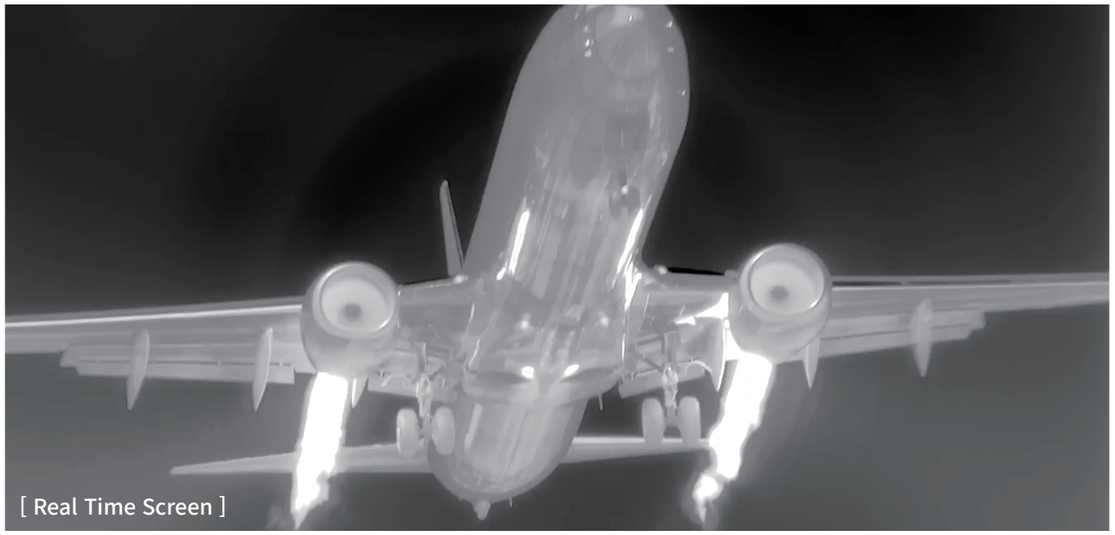
LENS OPTION

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

Lens Focal length	6.2mm	19mm	26-105mm	15-150mm	25-225mm
HFOV	75°	22.8°	17.1°~4.1°	29°~2.9°	17.7°~1.9°
F/#	F/1.0	F/1.03	F/1.6	F/0.85-1.35	F/0.95~1.5
DRI Human 0.5 x 1.7 m	D : 280m R : 70m I : 30m	D : 680m R : 180m I : 90m	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
DRI Vehicle 2.3 x 2.3 m	D : 570m R : 150m I : 80m	D : 1,260m R : 350m I : 180m	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 (Unit : mm, DxL)	33 x 55.7	33 x 57.52	Ø82 x 207.47	Ø143.5 x 191.54	Ø189.5 x 362.44
Weight	85g	90g	550g	3.2kg	4.13kg

** The Dimension and Weight can be varied according to the options.

NYX Series



The NyX series is a completely redesigned thermal imaging camera platform designed to deliver unsurpassed performance with state-of-the-art technology, which can always provide good thermal imaging in dark and bright areas without user adjustment. NyX technology enables you to experience improved situational awareness.

LAE (Local Area Enhancement)

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

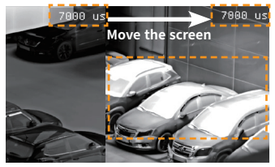

[LAE Off]


[LAE On]

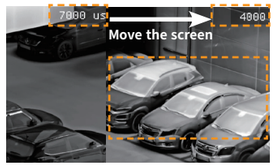
Automatic Integration Time

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]

DDE (Digital Detail Enhancement)

Improves detailed description of objects by enhancing low contrast targets in high dynamic ranges.


[DDE Off]


[DDE On]

ROI User Settings



It is a function that processes images only in certain areas.

Only the set area can be processed separately by setting a specific area by the user himself.

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]

Cooled Thermal Imaging Camera Module

NYX-1280R Series

SPECIFICATIONS

* Specifications are subject to change without notice.

DETECTOR

Detector Type	Cooled InSb, 1280(H) x 1024(V)
Pixel Pitch	10μm
Spectral Response	3μm ~ 5μm (MWIR)
F/#	F/#4.0
NETD	<25mK typical (without lens)

COOLER

Cooler Type	Stirling Cooler, MTTF: 12,000Hours (Option: 17,000Hours)
Cool-down Time	<7Minute (@23°C) (Max)

VIDEO

Output Frequency	30Hz
Video Output	HDMI (Option : HD-SDI, Camera Link)
Resolution	1920 x 1080, Option (1280x1024/1280x720/720x576)

FUNCTION

Calibration	Manual /Interval(min) Mode Selectable
Image Translation	FLIP(Vertical, Horizontal), Inverse
Image Enhance	AGC, Adaptive HEQ, LAE, DDE, DNR, Gamma, Sharpness, Auto Integral Time
Image Utility	Auto Focus, Digital Zoom (x8)
Pseudo Color	WhiteHot / Rainbow / Twilight / TwilightShifted / Turbo / Iron / Plasma

MECHANICAL

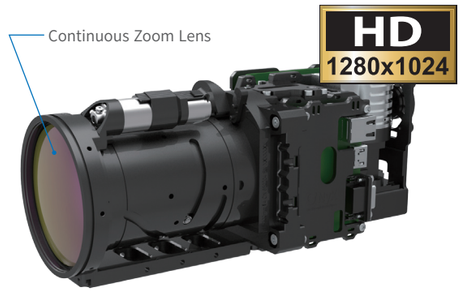
Dimensions (WxHxD)	117mm x 110mm x 158mm
Weight	1.74kg

ELECTRICAL

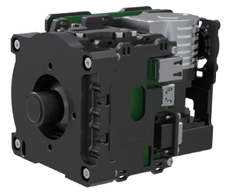
Power Supply	DC24V / 1.76A[42.24W] (Max)

ETC

Ext-Interface	RS-232, RS-422 (9600/19200/38400/57600/115200bps)
Operating Temperature	-32°C ~ +55°C
Storage Temperature	-40°C ~ +65°C



[With 15-300mm Zoom Lens]


[Without Lens]

- Detector type : Cooled InSb 10μm (1280 x 1024)
- NETD : <25mk typical (without lens)
- Continuous ZOOM LENS
- Continuous Digital Zoom x8
- Advanced image processing
  - Auto Gain Control (AGC)
  - Adaptive Histogram Equalization (Adaptive HEQ)
  - Local Area Enhancement (LAE)
  - Digital Detail Enhancement (DDE)
  - Denoise Reduction (DNR)
  - Sharpness
- MTTF(Mean Time To Failure)
  - 12,000 hours (Option : 17,000 hours)
- Various color sets
  (WhiteHot / Rainbow / Twilight / TwilightShifted / Turbo / Iron / Plasma)

LENS OPTION

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

Lens Focal length	15 ~ 300mm	33 ~ 420mm	60 ~ 600mm	60 ~ 690mm	72 ~ 900mm	100 ~ 1200mm
HFOV	44.9° ~ 2.4°	20.0° ~ 1.7°	11.4° ~ 1.2°	11.5° ~ 1.0°	9.3° ~ 0.8°	6.8° ~ 0.6°
F/#	F/4.0	F/4.0	F/4.0	F/4.0	F/4.0	F/4.0
DRI 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
DRI 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
Dimensions (Unit : mm, WxHxD)	117 x 113.6 x 274	132 x 132 x 344.5	173 x 173 x 396	210 x 210 x 408	286 x 286 x 481.6	388 x 388 x 567.2
Weight	2.9kg	3.6kg	5.4kg	6.3kg	10kg	16.4kg

Cooled Thermal Imaging Camera Module

NYX-640R Series

SPECIFICATIONS

• Specifications are subject to change without notice.

DETECTOR

Detector Type	Cooled InSb, 640(H) x 512(V)
Pixel Pitch	15μm
Spectral Response	3.7μm ~ 5μm (MWIR)
F/#	F/#4.0
NETD	<20mK typical (without lens)

COOLER

Cooler Type	Stirling Cooler, MTTF : 15,000Hours
Cool-down Time	<7Minute (@23°C) (Max)

VIDEO

Output Frequency	30Hz
Video Output	HDMI (Option : HD-SDI, CVBS, Camera Link)
Resolution	1280x720, Option (1920x1080/1280x1024/720x576)

FUNCTION

Calibration	Manual /Interval(min) Mode Selectable
Image Translation	FLIP(Vertical, Horizontal), Inverse
Image Enhance	AGC, Adaptive HEQ, LAE, DDE, DNR, Gamma, Sharpness, Auto Integral Time
Image Utility	Auto Focus, Digital Zoom (x8)
Pseudo Color	WhiteHot / Rainbow / Twilight / TwilightShifted / Turbo / Iron / Plasma

MECHANICAL

Dimensions (WxHxD)	118.2mm x 108.7mm x 150.7mm
Weight	1.74kg

ELECTRICAL

Power Supply	DC24V / 1.37A [32.88W] (Max)

ETC

Ext-Interface	RS-232, RS-422 (9600/19200/38400/57600/115200bps)
Operating Temperature	-32°C ~ +55°C
Storage Temperature	-40°C ~ +65°C

Continuous Zoom Lens



[With 15-300mm Zoom Lens]



[Without Lens]

- Detector type : Cooled InSb 15μm (640 x 512)
- NETD : <20mk typical (without lens)
- Continuous ZOOM LENS
- Continuous Digital Zoom x8
- Advanced image processing
  - Auto Gain Control (AGC)
  - Adaptive Histogram Equalization (Adaptive HEQ)
  - Local Area Enhancement (LAE)
  - Digital Detail Enhancement (DDE)
  - Denoise Reduction (DNR)
  - Sharpness
- MTTF(Mean Time To Failure) 15,000 hours
- Various color sets
  (WhiteHot / Rainbow / Twilight / TwilightShifted / Turbo / Iron / Plasma)

LENS OPTION

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

Lens Focal length	15 ~ 300mm	21 ~ 420mm	30 ~ 600mm	35 ~ 690mm	45 ~ 900mm	60 ~ 1200mm
HFOV	35.1° ~ 1.8°	25.1° ~ 1.3°	17.2° ~ 0.9°	15.2° ~ 0.8°	10.9° ~ 0.6°	8.6° ~ 0.5°
F/#	F/#4.0	F/#4.0	F/#4.0	F/#4.0	F/#4.0	F/#4.0
DRI 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
DRI 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
Dimensions (Unit : mm, WxHxD)	118.2 x 111.4 x 265.5	132 x 132 x 336	173 x 173 x 387.4	210 x 210 x 399.5	286 x 286 x 423.2	388 x 388 x 559.9
Weight	2.9kg	3.6kg	5.4kg	6.3kg	10kg	16.4kg

Cooled Thermal Imaging Camera Module

NYX-640C Series

SPECIFICATIONS

• Specifications are subject to change without notice.

DETECTOR

Detector Type	Cooled InSb, 640(H) x 512(V)
Pixel Pitch	15μm
Spectral Response	3.7μm ~ 5μm (MWIR)
F/#	F/#5.5
NETD	<20mK typical (without lens)

COOLER

Cooler Type	Stirling Cooler, MTTF : 10,000Hours
Cool-down Time	<7Minute (@23°C) (Max)

VIDEO

Output Frequency	30Hz
Video Output	HDMI (Option : HD-SDI, CVBS, Camera Link)
Resolution	1280x720, Option (1920x1080/1280x1024/720x576)

FUNCTION

Calibration	Manual /Interval(min) Mode Selectable
Image Translation	FLIP(Vertical, Horizontal), Inverse
Image Enhance	AGC, Adaptive HEQ, LAE, DDE, DNR, Gamma, Sharpness, Auto Integral Time
Image Utility	Auto Focus, Digital Zoom (x8)
Pseudo Color	WhiteHot / Rainbow / Twilight / TwilightShifted / Turbo / Iron / Plasma

MECHANICAL

Dimensions (WxHxD)	99.7mm x 88.4mm x 130.9mm
Weight	1.14kg

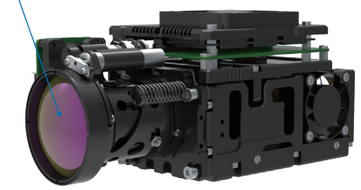
ELECTRICAL

Power Supply	DC24V / 1.40A [33.79W] (Max)

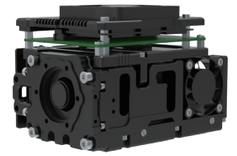
ETC

Ext-Interface	RS-232, RS-422 (9600/19200/38400/57600/115200bps)
Operating Temperature	-32°C ~ +55°C
Storage Temperature	-40°C ~ +65°C

Continuous Zoom Lens



[With 20-275mm Zoom Lens]



[Without Lens]

- Detector type : Cooled InSb 15μm (640 x 512)
- NETD : <20mk typical (without lens)
- Continuous ZOOM LENS
- Compact Type
- Continuous Digital Zoom x8
- Advanced image processing
  - Auto Gain Control (AGC)
  - Adaptive Histogram Equalization (Adaptive HEQ)
  - Local Area Enhancement (LAE)
  - Digital Detail Enhancement (DDE)
  - Denoise Reduction (DNR)
  - Sharpness
- MTTF(Mean Time To Failure) 10,000 hours
- Various color sets
  (WhiteHot / Rainbow / Twilight / TwilightShifted / Turbo / Iron / Plasma)

LENS OPTION

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

Lens Focal length	20 ~ 275mm	50 ~ 700mm	80 ~ 1200mm
HFOV	28° ~ 1.9°	10.9° ~ 0.8°	7.1° ~ 0.5°
F/#	F/#5.5	F/#5.5	F/#5.5
DRI 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 : 9.1km I : 6.1km
DRI 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 : 15.7km I : 11.7km
Dimensions (Unit : mm, WxHxD)	99.7 x 88.4 x 195.1	156.2 x 156.2 x 304.7	268 x 268 x 453.5
Weight	1.4kg	2.78kg	8.54kg

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Design and specifications are subject to change without notice.

