

Technology Beyond Technologies

# **THERMAL IMAGING SOLUTION**

# TBT Inc.

TBT Inc. is a global small and medium-sized company that specializes in developing and manufacturing non-cooled/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.



# Long Range Surveillance Camera

## TMS SERIES



### FEATURE 1 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).

### FEATURE 2 Rapid Maintenance

All components are self-developed, and each component that is easy to disassemble and maintain is integrated to facilitate replacement and maintenance.

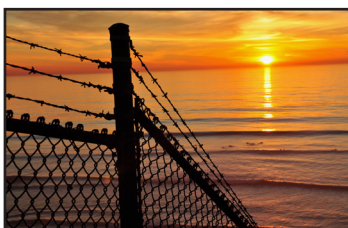
### FEATURE 3 Deliver a customized solutions

Through its wide compatibility with various interfaces, it can operate complex equipment such as EO/IR, LRF, GPS, DMC, etc., and can be mounted on various equipment (Vehicle, Master, Stand, Vessel, etc.) according to customer's use.

## SPECIFICATIONS

Model	TMS-10	TMS-20
Pan/Tilt Driver		
Range	Pan : n x 360° Tilt : -90° ~ 90°	Pan : n x 360° Tilt : -70° ~ 45°
Speed	Pan : 0.02°~60°/s Tilt : 0.02°~50°/s	Pan : 0.01°/s to 60°/s Tilt : 0.01°/s to 60°/s
Resolution	0.0009° (0.0157 mrad)	0.0009° (0.0157 mrad)
Accuracy	0.01° (0.18 mrad)	0.01° (0.18 mrad)
Reducer	Harmonic Drive	Harmonic Drive
Payload	15kg (Top Mount)	2 x 25kg (Side Mount)
Environmental Protection	IP66	IP66
Option		
LRF	O	O
GPS	O	O
DMC	O	O
Control Software	O	O
Joystick	O	O

## APPLICATIONS



[ Coastal Guard ]



[ Border Surveillance ]



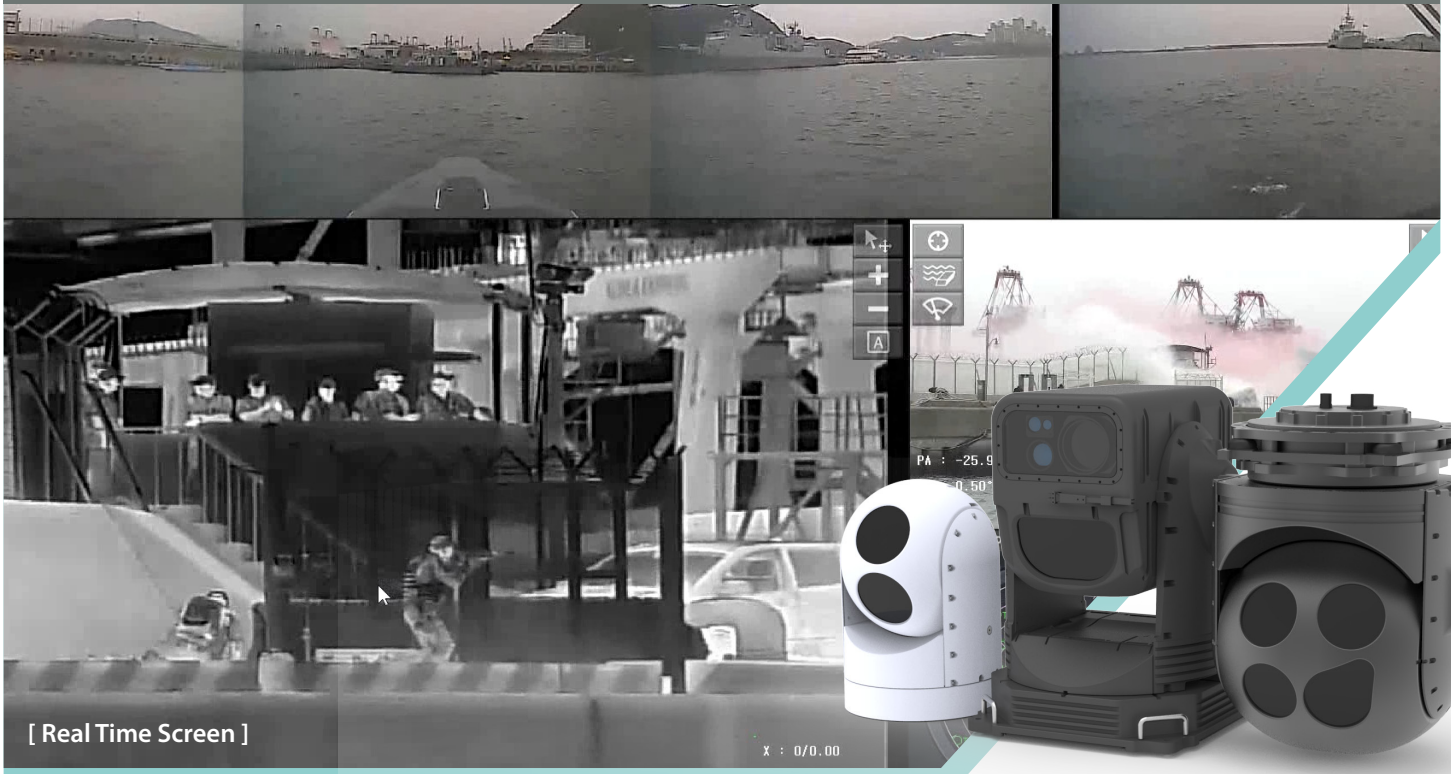
[ Airport Surveillance ]



[ Drone Detection ]

# Gyro Stabilized Gimbal

## TBX SERIES



[ Real Time Screen ]

X : 0/0.00

### FEATURE 1

## Professional-Based Self-Development

Dedicated to the EO/IR field, Know-How is built on repeated challenges, failures and successes to ensure more stable and reliable performance.

### FEATURE 2

## Deliver a customized solutions

The TBX series offers customized solutions based on customer needs with a wide range of options. It can be installed in various applications such as UAV, Vehicle, and Vessel.

### FEATURE 3

## Versatile Features

Features such as Gyro Sensor Stabilization and Auto Tracking provide environment of the best mission experience with faster, more unshakable images.

## SPECIFICATIONS (Difference for each Item)

Model	TBX Series	
Gimbal		
Max Range	Pan	n x 360°
	Tilt	-30° ~ +90°
Max Speed	Pan	60°/s
	Tilt	30°/s, 60°/s
Attitude Indicator	MEMS, FOG	
Gyro	2, 3, 4 Axis	
Weight	400g ~ 70kg	
Option		
Composition	Thermal Imager (Uncooled, Cooled), Daylight Continuous Zoom, SWIR, MWIR, LWIR, Laser Ranger Finder, Laser Pointer, Laser Designator, Software, Controller, Auto Tracker	
Standards	MIL-STD-810G, MIL-STD-461G, 506.4 Rain, MIL-STD-461F	

## APPLICATIONS



[ Airborne ]



[ Armoured Vehicle ]



[ Navy ]



[ Maritime ]



# Armored Vehicle Cameras

## TSM-G1M SERIES



### FEATURE 1

#### Implementation of Global Defense Standard Performance

HD-SDI support (292M, 274M, 352M) enables customers to meet their diverse needs. It also secured IP66 grade dustproof/waterproof functions and stability according to extreme environmental tests such as MIL-STD-810 and MIL-STD-461.

### FEATURE 2

#### Expanding situational awareness

In the case of military tanks and armored vehicles, there are blind spots between operations, and this camera can make the most of maximize situational awareness, especially during night operations.

### FEATURE 3

#### Rapid Maintenance

It is a product developed by itself for all parts and software except infrared detectors, and in the event of a problem with the product, it can be quickly maintained and repaired.

## SPECIFICATIONS

Model	TSM-G1M
Sensor	
Detector Type	Uncooled Micro Bolometer, 640x480
Pixel Pitch	12μm
Spectral Response	8μm ~ 14μm (LWIR)
Frame rate	30Hz
NETD	<50mK typical
Video	
Video Output	CVBS(720×576), HD-SDI(1920×1080)
Function	
Image Enhance	Brightness, Contrast, Equalization, Edge, CLAHE(Optional)
Image Utility	Auto Focus, DIS, DNR
D-Zoom	X1.0 ~ X4.0 (per X0.1)
Standards	
Standards	MIL-STD-810, MIL-STD-461

## APPLICATIONS



[ Anti-Craft Gun ]



[ Armored Vehicle ]



[ Tank ]



[ Artillery ]

# Uncooled Camera Modules

## TQM-1M SERIES



### FEATURE 1 Durable Design

Designed for commercial and military environments, it offers high durability.

### FEATURE 2 12 $\mu$ m sensor applied

With the application of 12  $\mu$ m pixel pitch, small optical lenses can be applied, it is possible to make it smaller and lighter.

### FEATURE 3 Various optical lens options

It provides user-friendly development characteristics such as a variety of interfaces and video formats, easy mounts, and a variety of optical lens options for the customer's camera system.

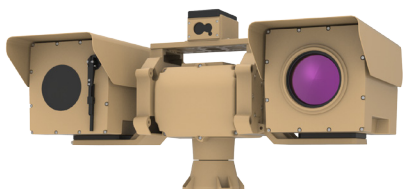
### SPECIFICATIONS

Model	TQM-1M
Sensor	
Detector Type	Uncooled Micro Bolometer, 640x480
Pixel Pitch	12 $\mu$ m
Spectral Response	8 $\mu$ m ~ 14 $\mu$ m (LWIR)
Frame rate	30Hz
NETD	<50mK typical
Function	
Image Enhance	Brightness, Contrast, Equalization, Edge, CLAHE(Optional)
Image Utility	Auto Focus, DIS, DNR
D-Zoom	X1.0 ~ X4.0 (per X0.1)
Mechanical	
Dimensions	50mm x 50mm x 50mm (wihtout lens)
Weight	150g (wihtout lens)
Lens	
Lens Option	6.2mm, 19mm, 26-105mm, 12-120mm, 30-150mm, 36-180mm, 25-225mm

## APPLICATIONS



[ Gimbal ]



[ Multi Sensor ]



[ RCWS ]



[ Armored Vehicle  
Cameras ]



[ Industrial ]



# Cooled Camera Modules

## NYX SERIES



### FEATURE 1 High Definition Video

1280x1024 resolution delivers HD-class or higher-definition images for the best thermal imaging.

### FEATURE 2 Powerful Thermal Imaging

Features such as Histogram Equation (HEQ), Local Area Enhancement (LAE), and Digital Detail Enhancement (DDE) enable clear image implementation even in adverse weather conditions.

Auto integration time change automatically adjusts integration time in extreme weather conditions such as summer and winter to deliver clear images in extreme environments.

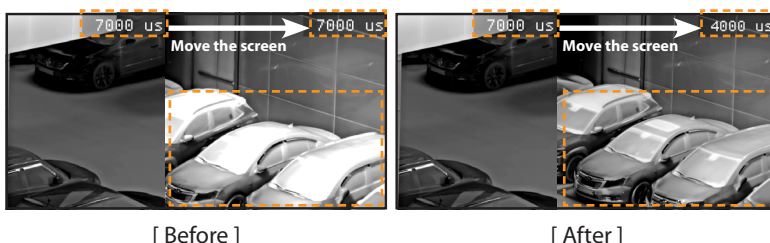
### FEATURE 3 Longer than 10,000 hours

The Nyx series features longer than 10,000 hours of cooler life, increasing uptime and significantly reducing downtime, maintenance and logistics costs.

### SPECIFICATIONS (Difference for each Item)

Model	NYX-SC Series
Sensor	
Detector Type	Cooled InSb
Pixel Pitch	15μm, 10μm
Array Format	640 X 512, 1280 X 1024
Spectral Response	3 ~ 5μm, 3.7 ~ 5μm
F/#	F/#4.0, F/#5.5
NETD	<20mK, <25mK typical (without lens)
Cooler	
Cooler Type	Stirling Cooler
Cool-down Time	<7Minute (@23°C) (Max)
MTTF	10,000 Hours
Function	
Image Enhance	Adaptive HEQ, LAE, DDE, 3DNR, DNR

## Auto Integration Time Change



## LAE (Local Area Enhancement)





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Design and specifications are subject to change without notice.

