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07-2022 (M.H)



## Bi-spectrum AI Thermal Camera

Accurate object detection through high resolution video  
and metadata analytics



## TNM-C4960TD/4950TD/4940TD

### Bi-spectrum AI Thermal Camera

- Bi-spectrum multi-channel : VGA thermal & 8MP visible sensor
- Metadata sharing between two channels for object detection & video analytics
- 3 lens options : C4960TD : 25mm fixed thermal & 10.9~29mm motorized varifocal visible  
C4950TD : 13.5mm fixed thermal & 10.9~29mm motorized varifocal visible  
C4940TD : 9.1mm fixed thermal & 4.4~9.3mm motorized varifocal visible
- Video analytics based on AI (Visible channel)
- Operating temperature : -40°C ~ +60°C (-40°F ~ +140°F)
- Wall & pole mount all-in-one design

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## Bi-spectrum multi-channel : VGA thermal & 8MP visible sensor

TNM-C4960TD/C4950TD/C4940TD provide both VGA thermal image and 8MP visible image at the same time. Rapid and accurate object detection is possible through simultaneous monitoring of temperature detecting thermal camera and high-resolution 8MP sensor visible camera.

### Object detection

**8MP visible image**  
2 motorized varifocal lens option  
4.4~9.3mm / 10.9~29mm



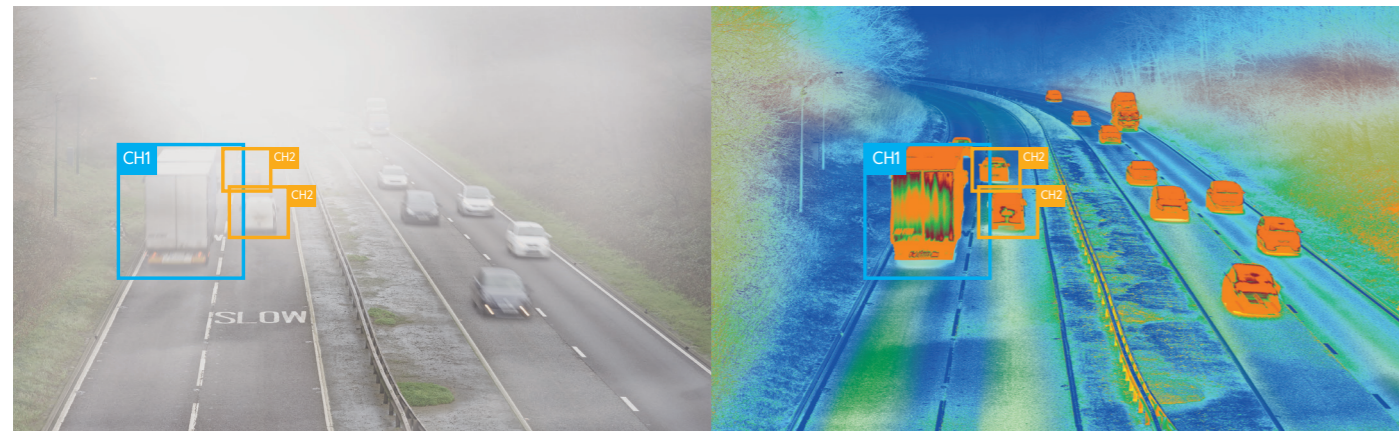
### Temperature detection

**VGA Thermal image**  
3 fixed focal lens option  
HFOV : 17.4° / 31.9° / 50°

## Rapid object detection through simultaneous monitoring of thermal camera and visible sensor

### Metadata sharing between two channels

- Rapid detection through sharing video analytics metadata between channels.
- The two channels complement each other in situations where visibility is difficult due to bad weather, such as rain, fog, fire, smoke and etc.



Visible sensor

Thermal camera

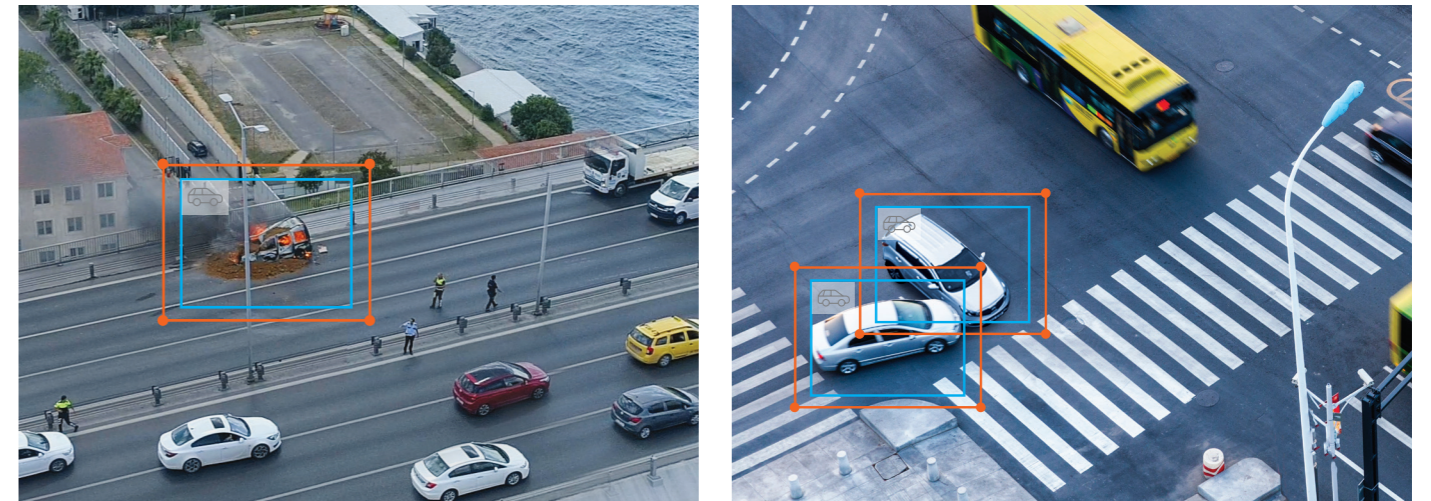
※ Images are optimized for best description.

## Optimized analytics for road/traffic detection

### Supports AI-engine based event analytics (visible channel)

#### Stopped vehicle detection based on AI

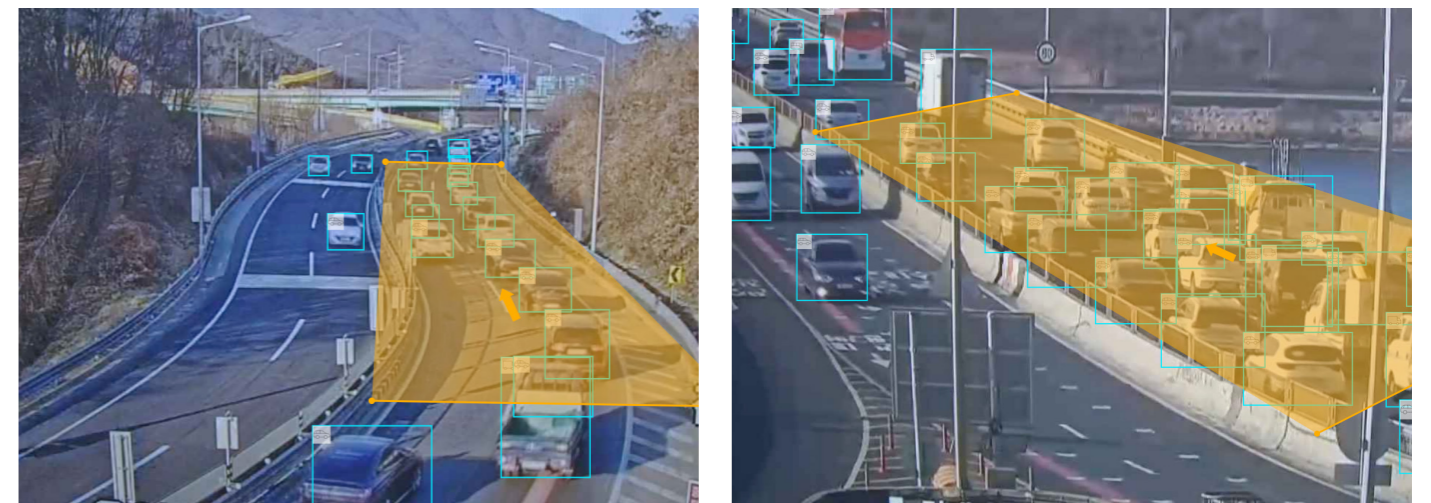
Monitoring traffic accident or sudden stopped vehicle on the road through object detection based on AI.



Stopped vehicle detection

#### Traffic jam detection based on AI

Efficiently managing various traffic conditions such as traffic jams, night driving, or bottleneck sections on the road through object detection based on AI.



Traffic jam detection



Spec

Thermal



Model	TNM-C4960TD	TNM-C4950TD	TNM-C4940TD
<b>Video</b>			
Imaging Device	Uncooled micro bolometer		
Resolution	1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360		
Max. Framerate	H.265/H.264: Max. 30fps MJPEG: Max. 3fps		
NETD	<60mK		
Pixel Size	12 $\mu$ m		
Min. Illumination	None		
Video Out	USB : Micro USB Type B, 1280x720 for installation		
<b>Lens</b>			
Focal Length (Zoom Ratio)	25mm fixed focal	13.5mm fixed focal	9.1mm fixed focal
Max. Aperture Ratio	F1.0		
Angular Field of View	H: 17.4°, V: 13.1°, D: 21.6°	H: 31.9°, V: 24.2°, D: 39.5°	H: 50.0°, V: 37.0°, D: 63.8°
Min. Object Distance	26m	7.6m(24.93ft)	3.5m(11.48ft)
Focus Control	Fixed		
<b>Operational</b>			
Camera Title	Displayed up to 85 characters		
Day & Night	None		
Backlight Compensation	None		
Wide Dynamic Range	None		
Digital Noise Reduction	None		
Digital Image Stabilization	None		
Motion Detection	8ea, polygonal zones		
Privacy Masking	6ea, rectangle zones - Color: Gray/Black/White		
Gain Control	None		
White Balance	None		
LDC	None		
Electronic Shutter Speed	None		
Analytics	- Analytics events : Directional detection, Motion detection, Enter/Exit, Virtual line, Temperature Change detection		
Alarm I/O	4 configurable I/O ports		
Alarm Triggers	Analytics, Network disconnect, Alarm input		
Alarm Events	When alarm trigger occurred - File upload(image) : e-mail/FTP - Notification : e-mail - Recording : SD/SDHC/SDXC or NAS recording at event triggers - Alarm output - Handover(PTZ preset, Send message by HTTP/HTTPS/TCP) - Audio clip playback		
Audio In	Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm		

Visible



Model	TNM-C4960TD	TNM-C4950TD	TNM-C4940TD
<b>Video</b>			
Imaging Device	1/1.8" CMOS		
Resolution	3840x2160, 3072x1728, 2592x1944, 2688x1520, 2560x1440, 2048x1536, 1920x1080, 1600x1200, 1280x1024, 1280x960, 1280x720, 1024x768, 800x600, 800x448, 720x576, 720x480, 640x480, 640x360		
Max. Framerate	H.265/H.264: Max. 30fps/25fps(60Hz/50Hz) MJPEG: Max. 1fps/1fps(60Hz/50Hz)		
NETD	None		
Pixel Size	None		
Min. Illumination	Color: 0.06Lux(F1.7, 1/30sec), BW: 0.005Lux(F1.7, 1/30sec)	Color: 0.06Lux(F1.3, 1/30sec) BW: 0.004Lux(F1.3, 1/30sec), 0Lux(IR LED on)	
Video Out	USB : Micro USB Type B, 1280x720 for installation		
<b>Lens</b>			
Focal Length (Zoom Ratio)	10.9~29mm(2.6x) motorized varifocal	4.4~9.3mm(2.2x) motorized varifocal	
Max. Aperture Ratio	F1.7(Wide)~F1.73(Tele)	F1.3(Wide)~F2.15(Tele)	
Angular Field of View	H:42.0°(Wide)~15.0°(Tele) / V:22.8°(Wide)~8.4°(Tele) / D:48.7°(Wide)~17.1°(Tele)	H:112.1°(Wide)~47.5°(Tele) / V:58.0°(Wide)~26.6°(Tele) / D:137.5°(Wide)~54.6°(Tele)	
Min. Object Distance	Wide: 2.5m(8.20ft) / Tele: 6m(19.68ft)	Wide: 1.75m(5.74ft) / Tele: 5.21m(17.09ft)	
Focus Control	Simple focus		
<b>Operational</b>			
Camera Title	Displayed up to 85 characters		
Day & Night	Auto(ICR)		
Backlight Compensation	BLC, WDR, SSSDR		
Wide Dynamic Range	WDR(120dB)		
Digital Noise Reduction	SSNR V, WiseNR II		
Digital Image Stabilization	Support(built-in gyro sensor)		
Motion Detection	8ea, polygonal zones		
Privacy Masking	6ea, rectangle zones - Color: Gray/Black/White		
Gain Control	Low / Middle / High		
White Balance	ATW / AWC / Manual / Indoor / Outdoor		
LDC	Support		
Electronic Shutter Speed	Minimum / Maximum / Anti flicker(1/5~1/12,000sec) Auto prefer shutter control(Based on AI engine)		
Analytics	- Analytics events based on AI engine(NPU) : Object detection (Person/Face/Vehicle(car/truck/bus/bicycle/motorcycle)/License plate), Bestshot, IVA (Virtual line/Area, Enter/Exit, Loitering, direction, intrusion), Stopped vehicle, Traffic jam - Analytics events : Defocus detection, Motion detection, Tampering, Audio detection, Sound classification, Shock detection, Appear/Disappear		
Alarm I/O	4 configurable I/O ports		
Alarm Triggers	Analytics, Network disconnect, Alarm input		
Alarm Events	When alarm trigger occurred - File upload(image) : e-mail/FTP - Notification : e-mail - Recording : SD/SDHC/SDXC or NAS recording at event triggers - Alarm output - Handover(PTZ preset, Send message by HTTP/HTTPS/TCP) - Audio clip playback		
Audio In	Selectable(mic in/line in) Supply voltage: 2.5VDC(4mA), Input impedance: 2K Ohm		

Memo

