TC3-X

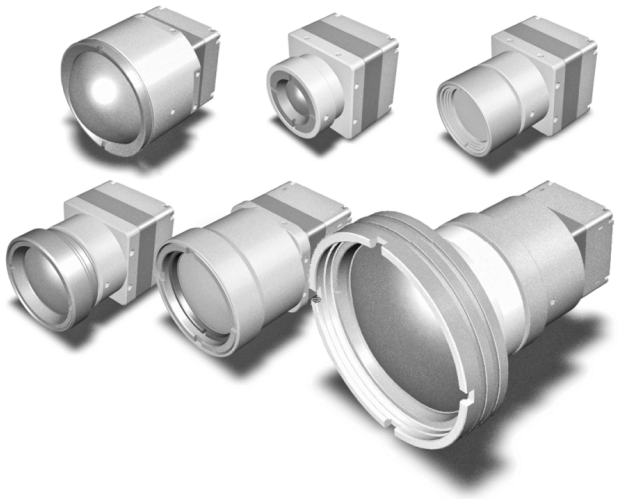
Open-frame 3rd generation thermal camera, 384x288 or 640x512

DESCRIPTION

The TC3-X is a thermal module to be built-in the 3rd generation explosion proof (EX3) and the marine and industrial (SA3) camera housings from TKH Security. Thermal imaging can be used 24/7 for al sorts of monitoring and detection purposes. The Thermal module is fitted with video analytics to actively help with perimeter surveillance, fire detection, flare monitoring, and hotspot detection.

FEATURES

- Fully Integrated in the Siqura EX3- or SA3-housings
- Uncooled thermal imager
- 384x288 or 640x512 resolution
- Choice of different lenses up to 50 mm
- Export free (9Hz) or Dual Use (30Hz)
- Plug & Play
- Built-in analytics
- AI prepared
- ONVIF Profile S conformant



Description

Marine, Offshore, Oil and Gas

The TC3 thermal modules are essential parts of the Marine, Offshore, Oil and Gas solutions from TKH Security. The module is fitted inside the 316L thermal camera housing and forms the digital hart of the camera.

Integrated thermal camera

The thermal module is fitted with a highly sensitive uncooled microbolometer for thermal imaging. It detects temperature differences as small as 30 mK and can spot heat sources invisible to the naked eye. When the darkness obscures the vision of an ultra-low light CCTV camera, the thermal camera gives a clear overview of what’s going on.

Multi-streaming and multicasting

The Thermal module has multi-streaming capabilities for simultaneous transmission of one or more H.264 or H.265 streams. This guarantees interoperability with existing VMS systems. Multiple combinations of resolution and frame rate can be configured to satisfy different live-viewing and recording scenarios. In addition, multicasting is supported for complex, multi-user video networks.

Open standards

The SA3- or EX3- thermal camera integrates with the common VMS systems. Being ONVIF Profile S conformant, the camera is supported by most video management systems. When needed, the camera can be controlled through a comprehensive HTTP API (Siqura Programming Interface). This specifically enables deployment in projects with custom requirements.

Built-in video analysis

The thermal module is fitted with on-board analytics. The flare monitor is a specialized algorithm for 24/7 flare height monitoring or fire/hotspot detection. With the thermal PID the camera detects intrusion in a customized zone or crossing of virtual fences in the highest possible accuracy and lowest number of nuisance alerts.

Export restrictions (Dual Use)

The Slow thermal modules (TC3-Txx**S**yX limited to 9Hz frame rate) are not export controlled. They can be exported to all countries except terrorist supporting

countries (Country Group E:1), unless otherwise prohibited. Note: Special regulations (EAR, ITAR) apply in the U.S.
Fast thermal modules (TC3-Txx**F**yX 25/30 fps) are controlled for export, This product is controlled for export under Regulation (EU) 2021/821 and Export Control Classification Number (ECCN) 6A003.b.4.b applies.

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Thermal imager (TC3-Txxyzz)							
- xx = Focal Length in mm	05; 09; 13; 25; 35; 50						
- y = Max frame rate	S (Slow= 8.3 fps); F (Fast= 30 fps)						
- zz = Resolution	3X (= 384x288); 6X (= 640x512)						
Model name	TC3-T05y3X	TC3-T09y3X	TC3-T13y3X	TC3-T19y3X	TC3-T25y3X		
- Focal length	4.9 mm	9.1 mm	13 mm	19 mm	25 mm		
- Pixel size	17µm	17µm	17µm	17µm	17µm		
- Resolution	384x288	384x388	384x288	384x288	384x288		
- Field of view (HxV)	80.8°x59.6°	39.5°x30.1°	28.2°x21.3°	19.5°x14.7°	14.9°x11.2°		
- f-number	f/1.1	f/1.0	f/1.0	f/1.0	f/1.1		
- Min. focus distance	0.5 m	1.5 m	3 m	6 m	10 m		
Model name	TC3-T05y6X	TC3-T09y6X	TC3-T13y6X	TC3-T19y6X	TC3-T25y6X	TC3-T35y6X	TC3-T50y6X
- Focal length	4.9 mm	9.1 mm	13 mm	19 mm	25 mm	35 mm	50 mm
- Pixel size	12µm	12µm	12µm	12µm	12µm	12µm	12µm
- Resolution	640x512	640x512	640x512	640x512	640x512	640x512	640x512
- Field of view (HxV)	95.1°x74.8°	45.7°x37.3°	32.9°x26.6°	22.9°x18.4°	17.4°x14.0°	12.5°x10°	8.7°x7°
- f-number	f/1.1	f/1.0	f/1.0	f/1.0	f/1.0	f/1.0	f/1.0
- Min. focus distance	0.5 m	2 m	5 m	10 m	16 m	30 m	70 m
Imager	uncooled micro-bolometer						
Max frame rate (y)							
- TC3-TxxFzz (Fast)	30 fps (Export controlled)						
- TC3-TxxSzz (Slow)	8.3 fps						
Spectral bandwidth	7.5 µm to 13.5 µm (LWIR)						
Sensitivity (NETD)	35 mK @ f/1.0						
Time to image	less then 60 s (boot time)						
Color palette	7 color palettes; 1 isotherm palette with adjustable temp. levels						
Radiometric	yes (Isotherm color palette)						

Video stream	
Number of streams	2x streams
Compression algorithm(s)	AVC/H.264 (MP), HEVC/H.265
Supported output resolutions	Output images are up/down scaled
	720x576; 704x480; 704x240; 640x512, 352x288; 336x256, 176x120
Compression bit rate control	Variable bit rate (VBR)
Output bit rate (per H.264 stream)	Up to 6Mb/s
Number of video output streams	Up to 20 (RTSP) per input
Total output data rate (max)	50Mb/s
Video overlay	3x Text lines

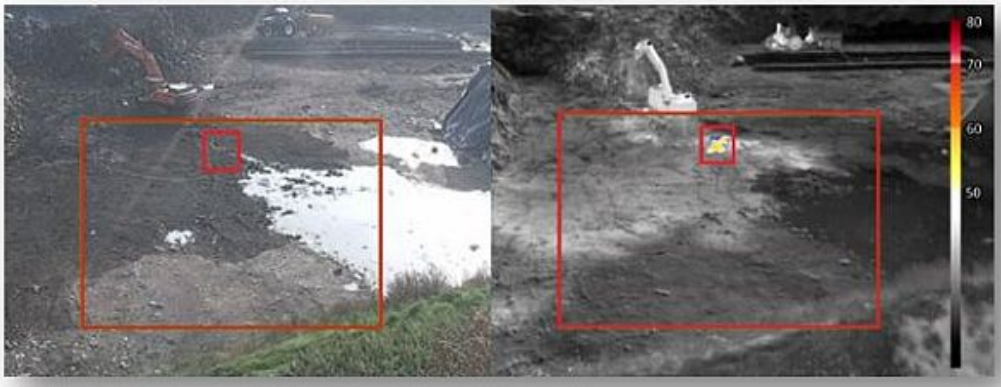
Analytics	
PID	Intrusion detection. Free form zones or detection lines
- Detection line	Touch, Cross (directional sensitive), Cross
- Detection zone	Touch
Hotspot detection	in two zones

Specs

Analytics	
- Measuring range	-20°C to 150°C or 0°C to 550°C
- Accuracy (at 5 m)	+/- 3°C (below 100 °C); +/- 3% (over 100°C)
Flare monitoring	Flare-on, Flare-off and Flare-too-large
Event time	0 to 10 s
Event output	generic ONVIF, SPI
Network	
Interface(s)	1000/100 Mb Ethernet, auto negotiating, MDI/MDX
Protocols	IPv4, TCP/IP, UDP, RTP, RTSP, HTTP, HTTPS, ICMP, FTP, SMTP, DHCP, UPnP,
	IEEE 802.1x (EAP-MD5 or EAP TLS), IGMP, SNMP, QoS, ONVIF, TLS1.2, TLS1.3
Password levels	Viewer, Operator and Administrator
Supported browsers	Edge, Chrome, Firefox, Safari
User accounts	20
Ordering information	
(Please Note	Export restrictions apply for 30 fps (Fast) thermal cameras.)
TC3-T05S3X	Assembly thermal module 384x288 , 8.3 fps, 4.9 mm, radiometric
TC3-T09S3X	Assembly thermal module 384x288 , 8.3 fps, 9 mm, radiometric
TC3-T13S3X	Assembly thermal module 384x288 , 8.3 fps, 13 mm, radiometric
TC3-T19S3X	Assembly thermal module 384x288 , 8.3 fps, 19 mm, radiometric
TC3-T25S3X	Assembly thermal module 384x288 , 8.3 fps, 25 mm, radiometric
TC3-T05F3X	Assembly thermal module 384x288 , 30 fps, 4.9 mm, radiometric
TC3-T09F3X	Assembly thermal module 384x288 , 30 fps, 9 mm, radiometric
TC3-T13F3X	Assembly thermal module 384x288 , 30 fps, 13 mm, radiometric
TC3-T19F3X	Assembly thermal module 384x288 , 30 fps, 19 mm, radiometric
TC3-T25F3X	Assembly thermal module 384x288 , 30 fps, 25 mm, radiometric
TC3-T05S6X	Assembly thermal module 640x512 , 8.3 fps, 4.9 mm, radiometric
TC3-T09S6X	Assembly thermal module 640x512 , 8.3 fps, 9 mm, radiometric
TC3-T13S6X	Assembly thermal module 640x512 , 8.3 fps, 13 mm, radiometric
TC3-T19S6X	Assembly thermal module 640x512 , 8.3 fps, 19 mm, radiometric
TC3-T25S6X	Assembly thermal module 640x512 , 8.3 fps, 25 mm, radiometric
TC3-T35S6X	Assembly thermal module 640x512 , 8.3 fps, 35 mm
TC3-T50S6X	Assembly thermal module 640x512 , 8.3 fps, 50 mm
TC3-T05F6X	Assembly thermal module 640x512 , 30 fps, 4.9 mm, radiometric
TC3-T09F6X	Assembly thermal module 640x512 , 30 fps, 9 mm, radiometric
TC3-T13F6X	Assembly thermal module 640x512 , 30 fps, 13 mm, radiometric
TC3-T19F6X	Assembly thermal module 640x512 , 30 fps, 19 mm, radiometric
TC3-T25F6X	Assembly thermal module 640x512 , 30 fps, 25 mm, radiometric
TC3-T35F6X	Assembly thermal module 640x512 , 30 fps, 35 mm
TC3-T50F6X	Assembly thermal module 640x512 , 30 fps, 50 mm

TC3-T X replacement for TC-336/640

TC(R1) series	HFOV TC	<>	TC3-T series	HFOV TC3
TC(R1)-336-S7.5	45°	<>	TC3-T05S3X	80,8°
TC(R1)-336-S9	35°		TC3-T09S3X	39,46°
TC(R1)-336-S13	25°		TC3-T13S3X	28,2°
TC(R1)-336-S19	17°		TC3-T19S3X	19,5°
TC(R1)-336-S25	13°		TC3-T25S3X	14,9°
TC(R1)-336-S35	9,3°		X	X
TC(R1)-336-S50	6,5°		X	X
TC(R1)-336-S60	5,5°		X	X
TC(R1)-336-S100	3,3°		X	X
TC(R1)-336-F7.5	45°	<>	TC3-T05S3X	80,8°
TC(R1)-336-F9	35°		TC3-T09S3X	39,46°
TC(R1)-336-F13	25°		TC3-T13S3X	28,2°
TC(R1)-336-F19	17°		TC3-T19S3X	19,5°
TC(R1)-336-F25	13°		TC3-T25S3X	14,9°
TC(R1)-336-F35	9,3°		X	X
TC(R1)-336-F50	6,5°		X	X
TC(R1)-336-F60	5,5°		X	X
TC(R1)-336-F100	3,3°		X	X
TC(R1)-640-S7.5	90°	<>	TC3-T05S6X	92,3°
TC(R1)-640-S9	69°		X	X
TC(R1)-640-S13	45°		TC3-T09S6X	48°
TC(R1)-640-S19	32°		TC3-T13S6X	32,9°
TC(R1)-640-S25	25°		TC3-T19S6X	22,9°
TC(R1)-640-S35	18°		TC3-T25S6X	17,4°
TC(R1)-640-S50	12,4°		TC3-T35S6X	12,5°
TC(R1)-640-S60	10,4°		TC3-T50S6X	8,7°
TC(R1)-640-S100	6,2°		TC3-T70S6X	6,2°
TC(R1)-640-F7.5	90°	<>	TC3-T05F6X	92,3°
TC(R1)-640-F9	69°		X	X
TC(R1)-640-F13	45°		TC3-T09F6X	48°
TC(R1)-640-F19	32°		TC3-T13F6X	32,9°
TC(R1)-640-F25	25°		TC3-T19F6X	22,9°
TC(R1)-640-F35	18°		TC3-T25F6X	17,4°
TC(R1)-640-F50	12,4°		TC3-T35F6X	12,5°
TC(R1)-640-F60	10,4°		TC3-T50F6X	8,7°
TC(R1)-640-F100	6,2°		TC3-T70F6X	6,2°



FlameGuard: Hotspot detection at a waste management site



Flame Guard: Fire detection in a machine room

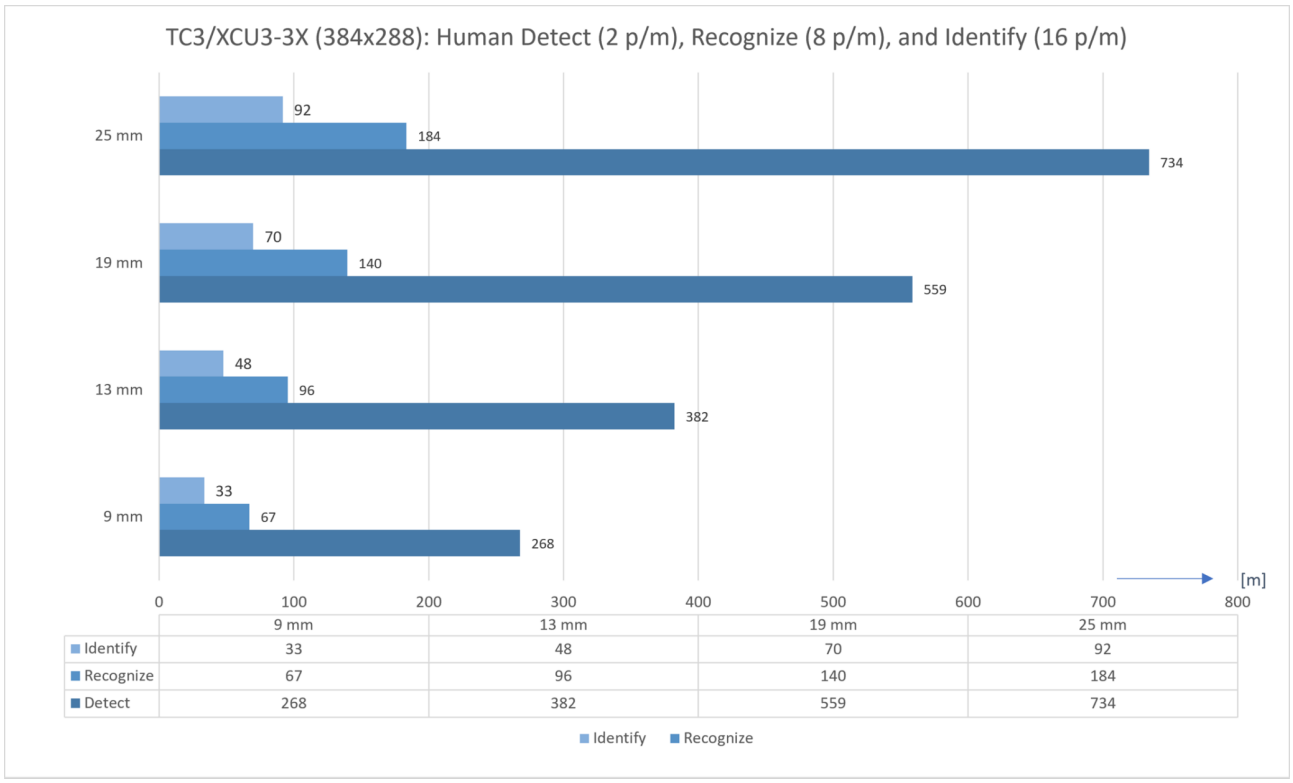


FenceGuard: Perimeter intrusion detection

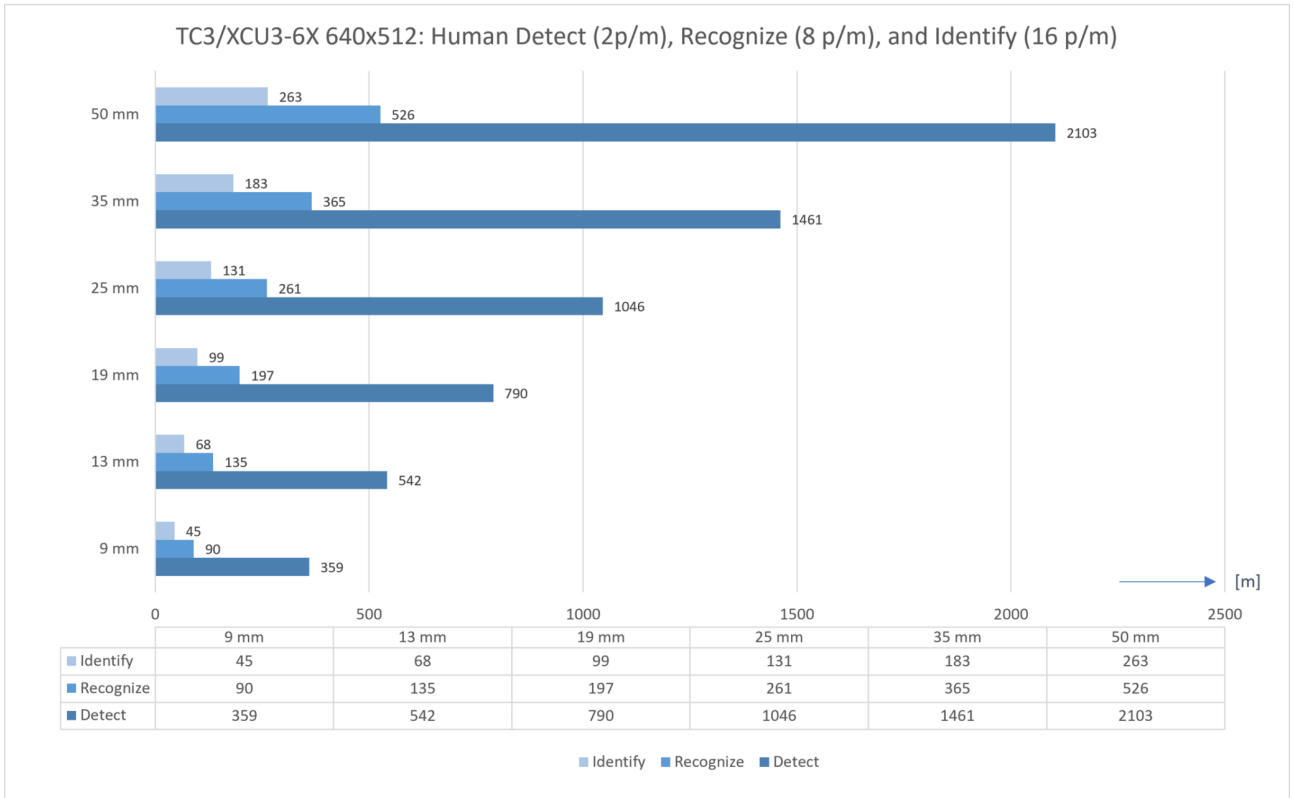


Fire detection, hot-spot and flare monitoring

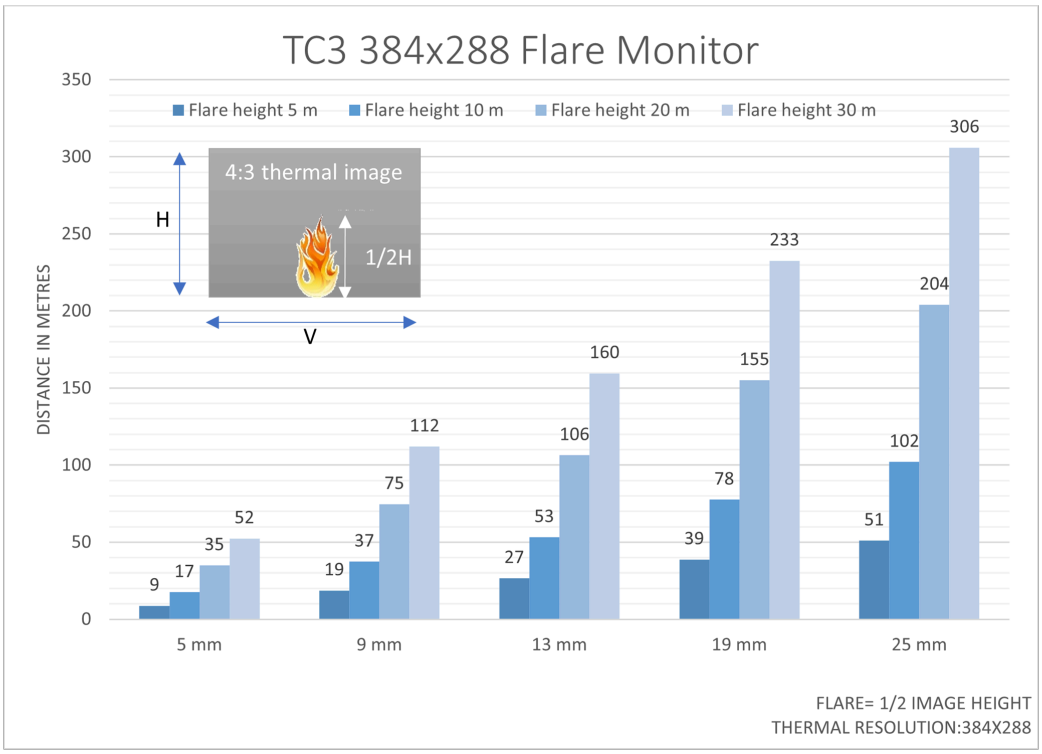
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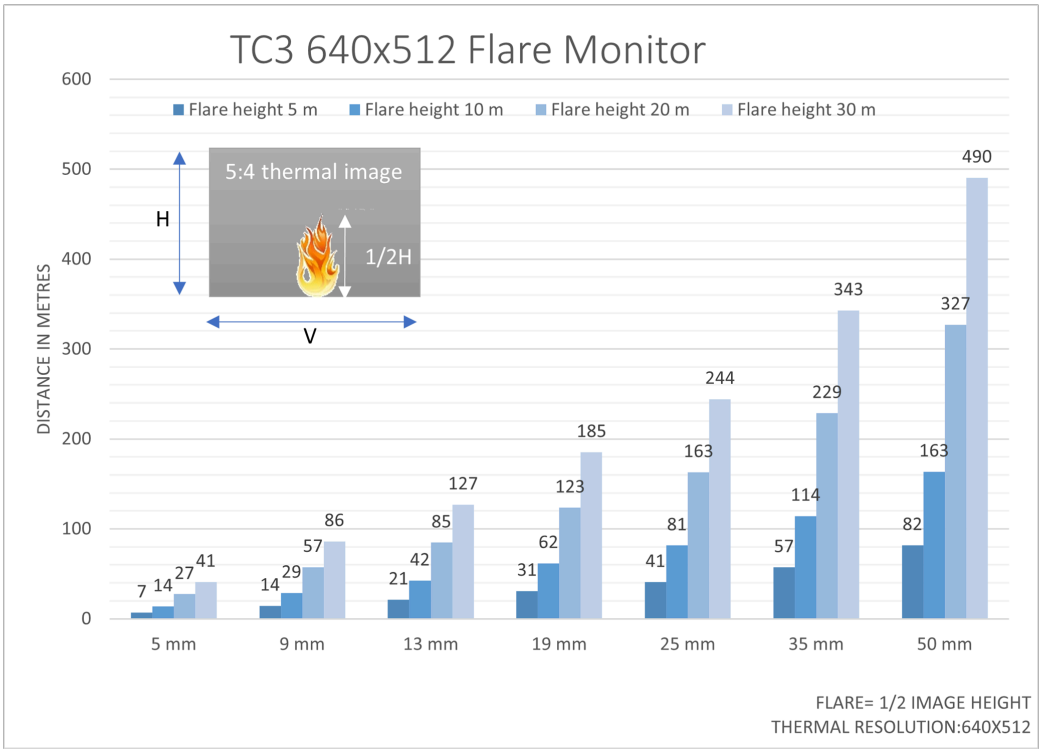


	9 mm	13 mm	19 mm	25 mm
Identify	33	48	70	92
Recognize	67	96	140	184
Detect	268	382	559	734



	9 mm	13 mm	19 mm	25 mm	35 mm	50 mm
Identify	45	68	99	131	183	263
Recognize	90	135	197	261	365	526
Detect	359	542	790	1046	1461	2103


TC3 384x288 Flare Monitor
Flare height 5 m
Flare height 10 m
Flare height 20 m
Flare height 30 m
DISTANCE IN METRES
4:3 thermal image
H
1/2H
V
5 mm
9 mm
13 mm
19 mm
25 mm
9
17
35
52
19
37
75
112
27
53
106
160
39
78
155
233
51
102
204
306
FLARE= 1/2 IMAGE HEIGHT
THERMAL RESOLUTION:384X288


TC3 640x512 Flare Monitor
Flare height 5 m
Flare height 10 m
Flare height 20 m
Flare height 30 m
DISTANCE IN METRES
5:4 thermal image
H
1/2H
V
5 mm
9 mm
13 mm
19 mm
25 mm
35 mm
50 mm
7
14
27
41
14
29
57
86
21
42
85
127
31
62
123
185
41
81
163
244
57
114
229
343
82
163
327
490
FLARE= 1/2 IMAGE HEIGHT
THERMAL RESOLUTION:640X512