

ToughCam-1000™ Gen 2 Specification Sheet

Version 1.5



The second generation of ToughCam-1000™ upholds the exceptional build quality, reliability, and resistance to vibration, shock, and extreme weather that defined its predecessor. Additionally it has a number of improvements: reduced size, improved electrical noise immunity, microphone option and flexible cable routing options. While it does not include the self-cleaning features of the ToughEye-1700™, the ToughCam-1000™ Gen 2 is the ideal choice for applications facing harsh, yet not necessarily dirty, environments. You can mix and match ToughCam-1000™ and ToughEye-1700™ in the same installation, as the cables are interchangeable.

ExcelSense can customize ToughCam-1000™ installations for almost any application. Please inquire with info@excelsensetechnologies.com.



SPECIFICATIONS

GENERAL

Dimensions	68mm x 64mm x 101mm [2.677in x 2.5197in x 3.9764in]
Weight	0.65kg [1.433lb] including M12 cable - 1.15kg [2.535lb] with Bracket and Sunshield
Power	IEEE802.3af Type 1 Class 0 (PoE)
Thermal	-40°C to 60°C (operation and storage)
IP Rating	Camera: IP67/IP69 Cable: IP67 ¹
Vibration	Camera tested to >100g Camera and mount tested to 12g MIL-STD-810H-514.8 , MIL-STD-202-204 and IEC 60068-2-27 ²
Certifications	FCC, ISED, CE

¹ To achieve IP69 seal when mated, apply linerless rubber tape over 100% of the mating interface.

² Test parameters and procedures are derived and adjusted from MIL-STD-810, MIL-STD-202, and IEC 60068-2-27 to best fit product applications. For more details, please contact info@excelsensetechnologies.com.



ELECTRICAL

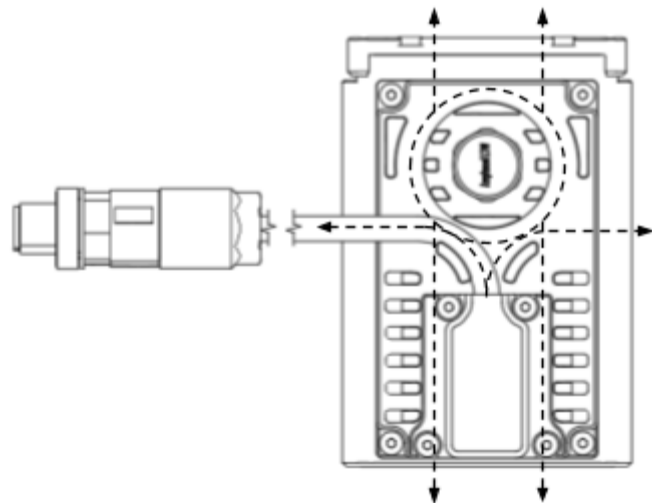
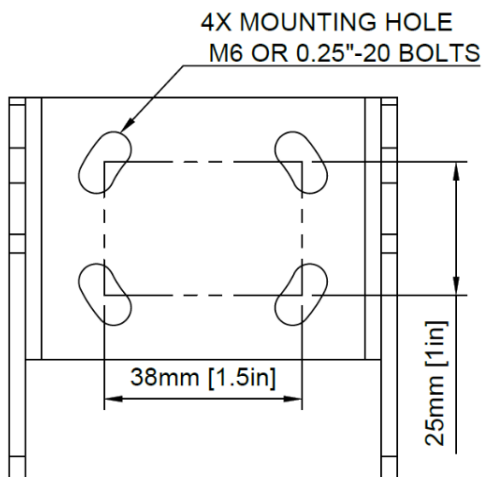
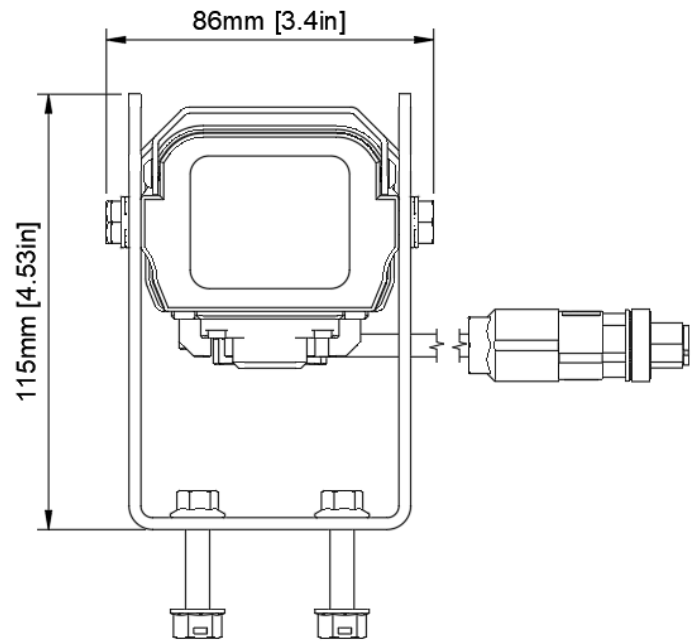
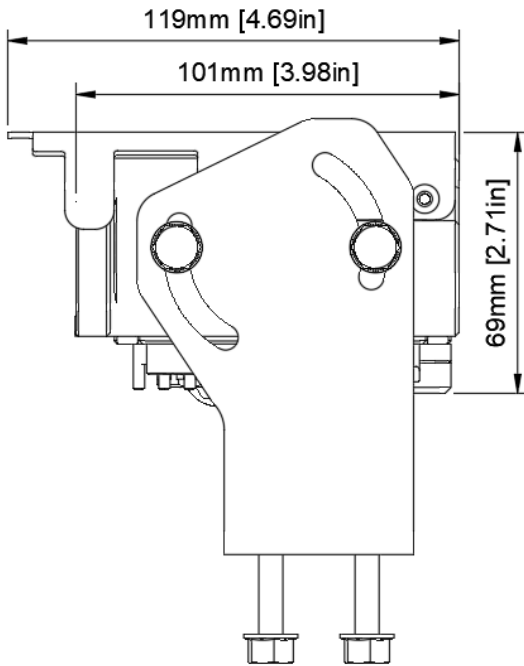
Parameter	Min	Typ	Max
Input Voltage (Active PoE), V_{IN}	37V		57V
Power Consumption, P_{IN}	4W (Idle)		12W (Heating)
Max Cable Length ² , L_{MAX}			100m

CAMERA

Image Sensor	2.1 MP
Effective Pixels	1920 (H) x 1080 (V)
Horizontal FoV	Approx. 20°, 40°, 60°, 80°, 90° Low-Distortion, 120° Low-Distortion
Min Illumination	Color: 0.001 Lux @ (F1.2, AGC ON) B/W: 0.0001 Lux @ (F1.2, AGC ON)
Wide Dynamic Range	True WDR (>120dB)
IP Video	H.265 (1920x1080) H.264 (1920x1080) MJPEG (1280x720)
Streaming Capability	Stream 1: 1920x1080/1280x720 @50/60fps Stream 2: D1/VGA/640x360/CIF/QVGA @25/30fps Stream 3: VGA/CIF/QVGA @25/30fps
Network	IPv4/IPv6, 802.1x, HTTP, HTTPS, TCP/IP, UDP/IP, RTSP, DHCP, NTP, RTCP/RTP, PPPoE, SMTP, DNS, UPnP, FTP, ARP, SNMP
ONVIF	Profile S, Profile G
Recording ³	128GB max storage - Continuous, Motion, Pre/Post Alarm
Microphone	Final specifications TBD.

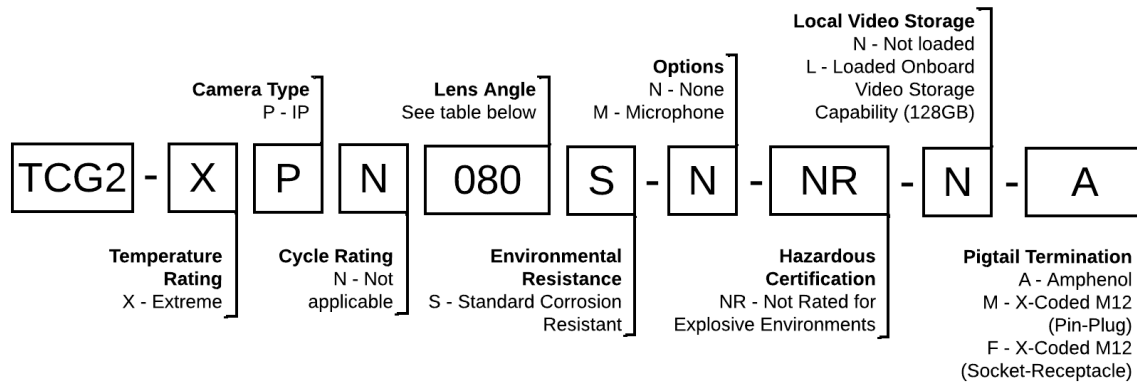
³ Loaded onboard storage variant only.

MECHANICAL DRAWING





ORDERING OPTIONS



Product Family

TCG2 - ToughCam-1000™ Gen 2 Camera

Temperature Rating

X - Extreme: -40°C to 60°C

Options

N - None

M - Microphone

Camera Type

P - IP Camera

Hazardous Locations Certification

NR - Not Rated for Explosive Environments

Cycle Rating

N - Not Rated

Local Video Storage

N - Not Loaded

L - Loaded Onboard Video Storage Capability (128GB)

Environmental Resistance

S - Standard Corrosion Resistant

Pigtail Termination

A - Amphenol

M - M12 X-Coded (Pin-Plug)

F - M12 X-Coded (Socket-Receptacle)

Lens Angle Options

ID	HFoV	VFoV	Recommended Object Distance at Standard Factory Focus	Notes
020	19.6	12.0	11.5m to Infinity	Custom closer focus available
040	41.0	23.0	5.5m to Infinity	Custom closer focus available
060	62.9	38.0	1.0m to Infinity	Low-distortion lens

080	82.3	52.9	1.2m to Infinity
090	89.1	61.0	0.5m to Infinity
120	118.7	84.0	0.2m to Infinity

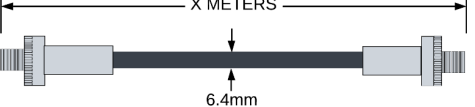
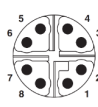
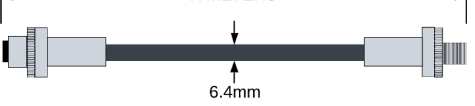
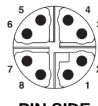
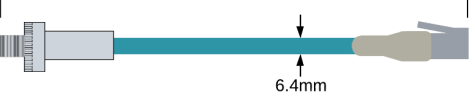
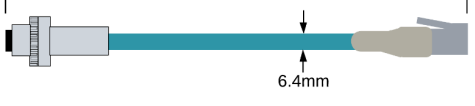
Low-distortion lens
Low-distortion lens
Low-distortion lens

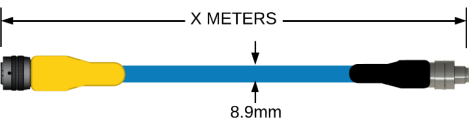
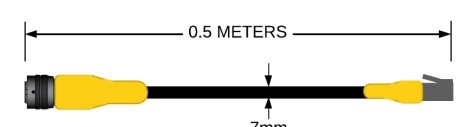


ACCESSORIES

External Harness Options

The following table lists standard cables available. Detailed drawings for each cable harness shown below are available upon request. Note that if a variant is required that cannot be found in this table, please contact an ExcelSense representative.

M12-8 X-Code Plug-Pin to M12-8 X-Code Plug-Pin Highly-Shielded (SF/FTP) Cat6a Cable [M12XPP-M12XPP-xxM-HS-CAT6A]	The M12 series cables extend TC-1000 Gen2 connections to panel-mount X-coded M12 or RJ45 female receptacles.	CONN ID#1  PIN SIDE VIEW		CONN ID#3  PIN SIDE VIEW
M12-8 X-Code Rcp-Sckt to M12-8 X-Code Plug-Pin Highly-Shielded (SF/FTP) Cat6a Cable [M12XRS-M12XPP-xxM-HS-CAT6A]		CONN ID#1  SOCKET SIDE VIEW		CONN ID#3  PIN SIDE VIEW
M12-8 X-Code Plug-Pin to RJ45 Double-Shielded (S/FTP) Cat6a Adapter Cable, 1m [M12XPP-RJ45-DS-CAT6A]		CONN ID#1  PIN SIDE VIEW		
M12-8 X-Code Rcp-Sckt to RJ45 Double-Shielded (S/FTP) Cat6a Adapter Cable, 1m [M12XRS-RJ45-DS-CAT6A]		CONN ID#1  SOCKET SIDE VIEW		

Adapter Cable Series, M12 Adapter [AC17-M12X-xxM-IP]		CONN ID#1  SOCKET SIDE VIEW	 X METERS 8.9mm	CONN ID#3  PIN SIDE VIEW
Adapter Cable, RJ45 Adapter [AC17-RJ45]	The Amphenol series cables extend TC-1000 Gen2 connections to M12 or RJ45 receptacles.	CONN ID#1  SOCKET SIDE VIEW	 0.5 METERS 7mm	CONN ID#3  EXTERNAL VIEW



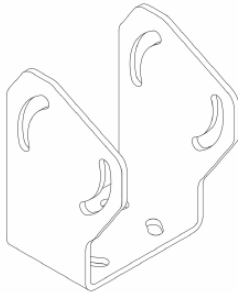
Power Supply Options

ToughCam-1000™ is compatible with virtually any IEEE802.3af/at PoE injector or switch on the market. Below are some options available directly from ExcelSense.

Part Number	Description	Preview	Datasheet
INJ-POE-S	Commercial-grade PoE+ injector, ideal for areas protected from the environment, and benchtop testing and demonstration, Input:100-240V AC		TPE-115GI (v2.1)
INJ-POE-N	Industrial-grade PoE+ injector, with integrated DIN-rail mount. Suitable for field deployment with a wide temperature range: -40C to 65C. Input: 10-30 VDC		POE-24
INJ-POE-N48	Industrial-grade PoE+ injector, with integrated DIN-rail mount. Suitable for field deployment with a wide temperature range: -40C to 75C. Input: 48-56 VDC		TI-IG30 (v1.0R)



Mounting Options



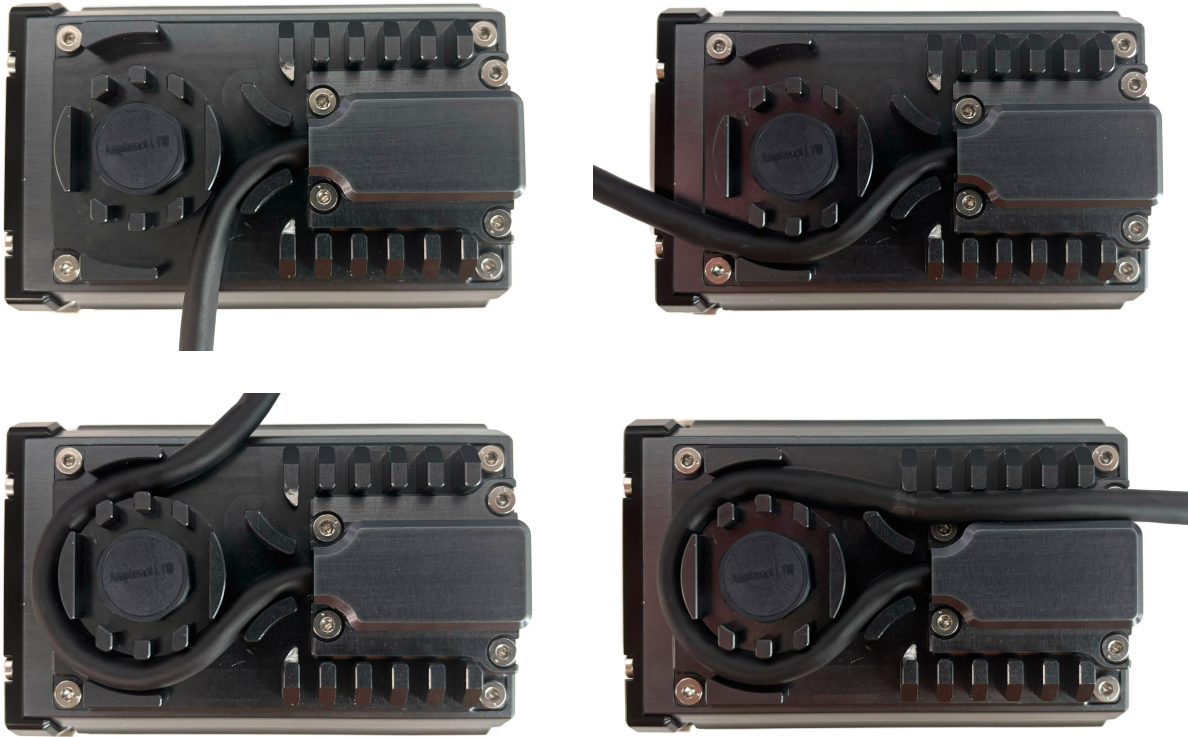
MB - TC10 - S

Standard mounting bracket. Suitable for installations requiring +15° to -60° down camera orientations. The MB-TC10-S comes standard with the ToughCam-1000™.



Cable Routing

The ToughCam-1000™ Gen 2 has a pigtail connection which can be routed to have the cable pointing in any direction utilizing the features on the bottom of the camera.



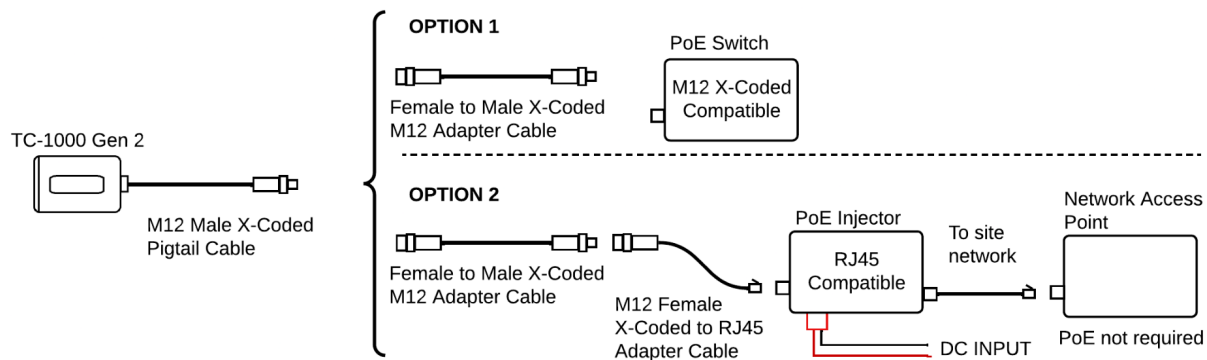


Typical Installation

The installations shown below illustrate the two main methods of powering and connecting to the ToughCam-1000™ Gen 2 through PoE.

Power and Stream with PoE

This configuration allows any Cat-5e or better ethernet cable to be used to power and communicate with the ToughCam-1000™ Gen 2 camera. No custom cabling is required to be routed, as the ethernet cable plugs into the custom short adapter cable for plug and play functionality. As seen in the diagram below, either a PoE compliant power sourcing equipment or a non-compliant switch with a PoE injector can be used to power the camera.



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