



EXCELSENSE



ToughCam-1000™

User Manual, V1.1

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Overview

The ToughCam-1000™ is a rugged IP camera, suitable for many applications. It is built using the same rugged design principles as our ToughEye™ line of self cleaning cameras.

Important Safety Instructions

Warning

1. This is an ITE class A device. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.
1. This is an IEEE 802.3af compliant device equipped with Layer 1 (hardware interface) PoE detection and classification hardware. If using power-over-ethernet, only connect to IEEE 802.3af compliant power sourcing equipment (PSE) devices with all software-layer (e.g. LLDP, CDP, etc.) communications disabled on the port, which should be preset to deliver up to 15.4W of guaranteed power as per the IEEE 802.3af standard. Failure to meet these requirements may cause faults that can lead to permanent damage to the ToughCam-1000™'s internal electronics.
2. All electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations. Electrical power is not to be applied to conductors at any point during this process.
3. Connecting the ToughCam-1000™ cable incorrectly poses a risk of injury due to electric shock to the user, and can damage the device.
4. Damaged or faulty cable connections may leave electrical conductors bare and/or short-circuited. Extra care must be taken during cable installation in order to avoid this scenario. In such a circumstance, do not attempt to handle conductors before removing power.
5. The ToughCam-1000™ lens is made with hardened glass. The user should take necessary precautions when handling the system. If excessive, direct force is induced, the glass may break, causing system failure and potential injury to the user.

 **Caution**

1. Alterations or modifications carried out without appropriate authorization may invalidate the user's right to operate the equipment.
2. When powering the device, the power sourcing equipment (PSE) must be compliant with the IEEE802.3af standard.
3. Only use fully-compatible cabling, as recommended by ExcelSense representatives, to connect ToughCam-1000™ cameras in your application. Failure to do this may cause unintended behaviour and permanent damage.
4. This device is not compatible with ToughEye-3100™ cabling. If replacing a ToughEye-3100™ product with this device, new cabling or an appropriate ExcelSense adapter cable must be used with this device. Consult your ExcelSense representative for more information.
5. Do not attempt to disassemble ToughCam-1000™ in order to access internal components. Consult ExcelSense for technical support as required.
6. Never face the ToughCam-1000™ directly towards the sun or any bright or reflective light, which may cause smear on the picture and possible damage to the CCD.
7. Do not remove the ToughCam-1000™ label containing P/N and S/N information for warranty service.
8. Never expose ToughCam-1000™ to conditions outside those specified in the *Specifications* section. Doing this can cause permanent damage to the device.
9. Damaged ToughCam-1000™ equipment must be replaced through an ExcelSense representative. Failure to do this may cause incompatibilities and permanent damage to the system.
10. Follow the cleaning procedure outlined in *Cleaning ToughCam-1000™* to avoid scratching the lens.

Compliance

Electromagnetic Compliance Information

USA

The ToughCam-1000™ and its custom peripheral hardware, produced and sold by ExcelSense Technologies, have been tested and found to comply with the applicable regulatory requirements and limits for electromagnetic compatibility (EMC) for a Class A device, pursuant to part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) this device must accept any interference received, including interference that may cause undesired operation

These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his/her own expense.

Please follow the recommended installation guidelines as expressed in this manual when installing this device and its peripherals and cabling. Any changes or modifications made to the recommended system architecture or installation instructions could result in electromagnetic non-compliance, and so may void the authority granted to the user by the FCC to operate this equipment.

Canada

This Class A digital apparatus complies with CAN ICES-3. Cet appareil numérique de la classe A est conforme à la norme NMB-003 du Canada.

Europe

This digital equipment fulfills the requirements for RF emissions according to the Class A limit of CISPR 32 / EN 55032.

Australia/New Zealand

This digital equipment fulfills the requirements for RF emissions according to the Class A limit of AS/NZS CISPR 32.

Specifications

CAMERA

Image Sensor	2.1 MP
Effective Pixels	1920 (H) x 1080 (V)
Horizontal FoV	Approx. 20°, 60°, 80°, 100°, 125°
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, Profile Q
Recording	128GB max storage - Continuous, Motion, Pre/Post Alarm

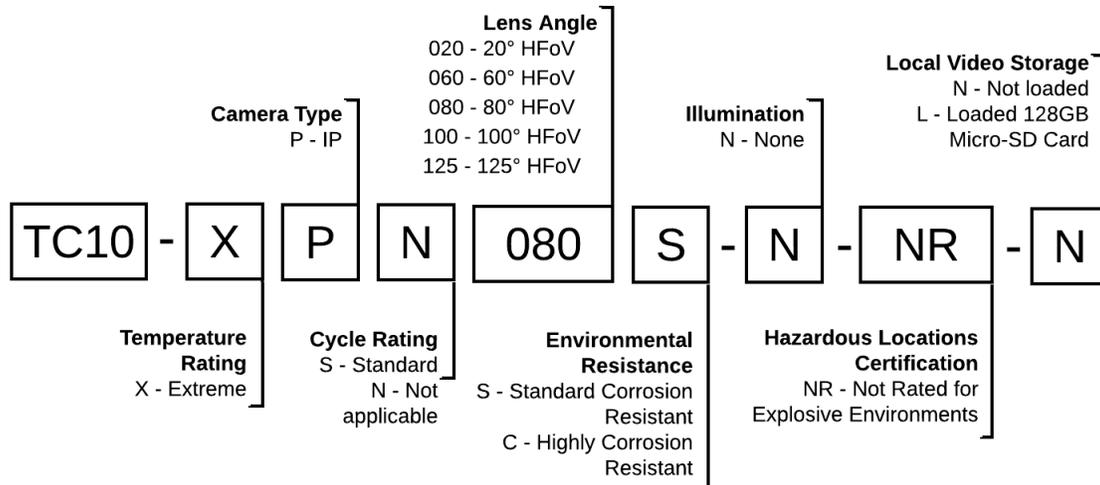
GENERAL

Dimensions	68mm dia x 126mm [2.677in x 4.962in]
Weight	0.65kg [1.433lb] - 1.1kg [2.425lb] with Bracket and Sunshield
Power	PoE (IEEE802.3af/at, Class 4)
Thermal	-40°C to 60°C (operation and storage)
IP Rating	Designed to IP69
Vibration	11g

ELECTRICAL

Parameter	Min	Typ	Max
Input Voltage (Active PoE), V_{IN}	36V		57V
Power Consumption, P_{IN}	4W (Idle)		10.5W (Heating)
Max Cable Length ² , L_{MAX}			100m

Ordering Options



TC10 - ToughCam-1000™ camera

Temperature Rating

X - Extreme: -40°C to 60°C

Camera Type

P - IP: IP Camera

Lens Angle (customization available)

020 - Approx. 20° Horizontal FoV
 060 - Approx. 60° Horizontal FoV
 080 - Approx. 80° Horizontal FoV
 100 - Approx. 100° Horizontal FoV
 125 - Approx. 125° Horizontal FoV

Environmental Resistance

S - Standard Corrosion Resistant
C - Highly Corrosion Resistant

Illumination

N - No Illumination

Hazardous Locations Certification

NR - Not Rated for Explosive Environments

Local Video Storage

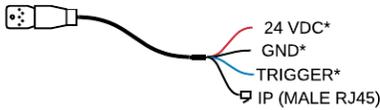
N - Not Loaded
L - Loaded 128GB Micro-SD Card

Accessories List

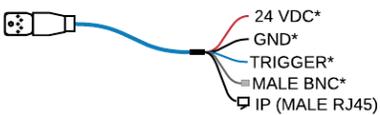
The following lists the standard accessories available for ToughCam-1000™ installations.

MAIN CABLE

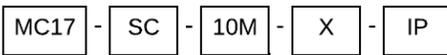
MC17-SC-XXM-X-IP



MC17-SC-XXM-X-DU



Cable Type
 AN - Analog Cable
 IP - IP Cable
 DU - Dual (Analog/IP) Cable



Length
 XXM - XX meter

Main cable can be used in IP camera ToughCam-1000 installations. The IP cable includes a shielded Cat-5e cable for 10/100 Base-T signal transmission.

* No connection when used with ToughCam-1000

Available in: **10m, 20m, 30m, 40m** lengths

M12 ADAPTER IP CABLE



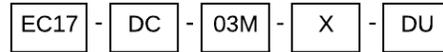
Conn 1
 AC17 - TE1700
 Connector

Length
 XXM - XX meter

Conn 2
 M12XRA - M12
 X coded,
 Right-Angle

M12 adapter cables can be used in all IP camera TC10 installations. These cables take advantage of PoE input to reduce cabling complexity and cost.

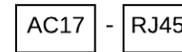
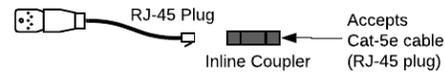
EXTENSION CABLE



Length
 XXM - XX meter

Extension cables can be used to increase the length of existing cables. Available in: **3m, 10m** lengths

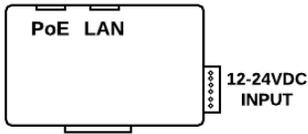
POE ADAPTER KIT



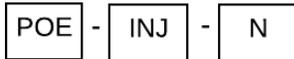
The PoE adapter kit provides a waterproof RJ-45 connection using the IP67 inline coupler, which accepts an RJ-45 plug. When connected to a IEEE802.3af compliant PSE (e.g. PoE Injector or switch), it is the simplest way to power and operate the camera.

PoE / PoE+ INJECTOR

Industrial Version



ExcelSense Part Number



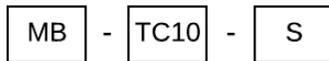
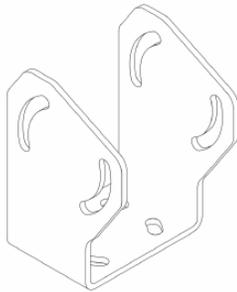
Manufacturer

American Electrical Inc.

Manufacturer Part Number

POE-24

Industrial IEEE 802.3af/at PoE/PoE+ injector with integrated DIN-rail mount for use with PoE adapter cable or the IP main cable. Recommended for industrial applications. Accepts 12-24VDC, 33W max.



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

Standard Version



ExcelSense Part Number



Manufacturer

TrendNet

Manufacturer Part Number

TPE-115GI

Standard IEEE 802.3af/at PoE/PoE+ injector for use with PoE adapter cable or the IP main cable. Recommended for non-industrial indoor applications. Accepts 100-240VAC, 50/60Hz, 0.6A max.

System Installation

Configuration Selection

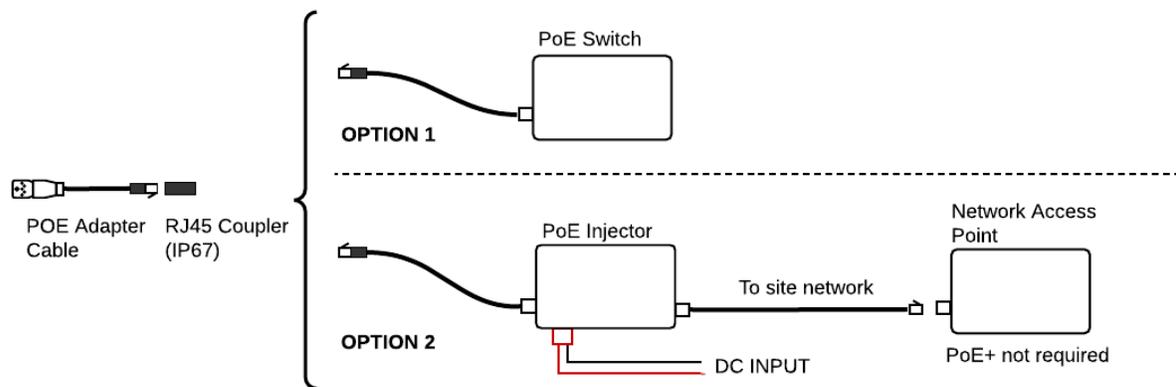
The ToughCam-1000™ IP camera supports a network video stream, which provides simple connections, high resolution video, and accessibility from any device connected to the same network.

It is important to note that IP video has inherent latency due to video compression. The ToughCam-1000™ latency is tested at approximately 150ms¹, so only in applications where this latency can be tolerated is the network stream recommended.

Below are the recommended installations for the ToughCam-1000™.

Network Configuration A-1

This configuration allows any shielded Cat-5e cable to be used to power and communicate with the ToughCam-1000™ camera. No custom cabling is required to be routed, as the Cat-5e cable plugs into the custom short adapter cable for plug and play functionality.



System Diagram using PoE Adapter Cable

1. Latency tested by directly plugging a short Cat-5e cable to a laptop and streaming 1080p H.264 video onto the IP Cam Viewer 4 software at 30fps. Note that depending on the network environment, bit rate, server specification, and viewing software, the measured latency may differ from this rating

Option 1

This option is the simplest configuration shown in the figure above and uses an endspan IEEE802.3af (PoE) compliant power sourcing equipment (PSE) to provide power to the camera through the same shielded Cat-5e cable used for data transmission.

Option 2

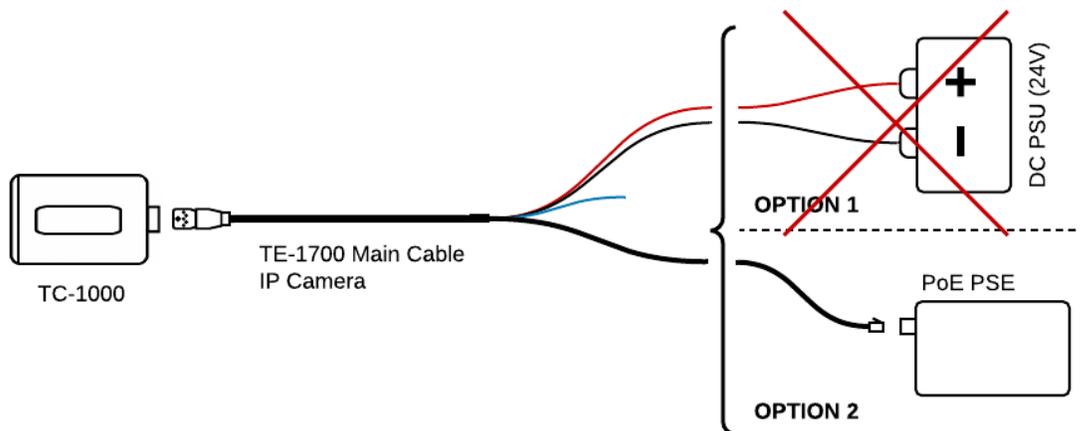
This option is optimal for applications with existing network switches that are not IEEE802.3af compliant. In this configuration, a midspan PoE injector can be used (see *Accessories* section earlier in this document for ordering information) in-line between the switch and the camera as shown above. The injector accepts a 12~24VDC input and supplies PoE power to the camera while also transmitting the data signals.

This configuration is designed to be simple to install and configure:

1. From an IEEE 802.3af compliant PoE PSE (power sourcing equipment) - either an endspan switch or midspan injector - route a shielded Cat-5e or better cable to the ToughCam-1000™. Ensure the routed cable is appropriately rated for your application (temperature, ingress protection, ruggedness, etc).
2. Once the cable has been routed to within 1m of the camera, it can be plugged into the waterproof Cat-5e adapter. For details on usage of the Cat-5e adapter please refer to section *Sealed In-line RJ45 Coupler*.
3. The PoE Adapter Cable [AC17-RJ45] can now be plugged into the ToughCam-1000™ camera.

Network Configuration A-2

In this configuration, a ToughEye-1700™ IP or dual-output series cable can be used to power and interface with the ToughCam-1000™ camera. This is because the ToughCam-1000™ IP camera is fully compatible with the IP camera terminations within the ToughEye-1700™ cabling. However, it is important to note that the ToughCam-1000™ does not accept a DC input supply, as it solely relies on **PoE power** (see *Powering The ToughCam™*). The recommended installation is shown below.



System Diagram using IP style Main Cable

This configuration allows for a seamless transition between ToughEye-1700™ and ToughCam-1000™ IP cameras without the need to re-route the main cable. **Note:** *It is highly recommended that the cable be installed into an electrical cabinet via an appropriately sized cable gland. The TE-1700 IP style main cable jacket is 12mm (0.47") in diameter.*

Option 1

- Originally designed for use with the ToughEye-1700™ self-cleaning camera, the TE-1700 Main Cable includes DC input leads - coloured red and black and labelled "24V" and "0V", respectively - which cannot be used to power ToughCam-1000™.

Option 2

- In this option, a PoE or higher compliant (IEEE 802.3af/at) PSE is used to power the camera, making the connection much cleaner.
- Connect the main cable's RJ45 connector into the PSE's PoE output port, and route the main cable to the *ToughCam-1000™* camera. If an extension cable is used, it should be connected in-line between the main cable and the camera. **Note:** *Care should be taken to properly secure routed cables. Use of conduit, cable clamps or appropriately rated cable ties is recommended.*
- Carefully and cleanly cut, insulate, and secure the spare red, black, and blue wires as they are not used in this configuration.

Interfacing the ToughCam-1000™

Powering the ToughCam-1000™

Important Note: As per rule 2-024(2) of the Canadian Electrical Code Part I, ToughCam-1000™ does not require approval in order to be installed. However, it must be connected to a Class 2 output, as permitted by the Canadian Electrical Code Part I. (See rule 16-222 and relevant appendices).

WARNING: This is an IEEE 802.3af compliant device equipped with Layer 1 (hardware interface) PoE detection and classification hardware. If using power-over-ethernet, only connect to IEEE 802.3af compliant power sourcing equipment (PSE) devices with all software-layer (e.g. LLDP, CDP, etc.) communications disabled on the port, which should be preset to deliver up to 15.4W of guaranteed power as per the IEEE 802.3af standard. Failure to meet these requirements may cause faults that can lead to permanent damage to the ToughCam-1000™'s internal electronics.

PoE Power Source

When powering the device using the PoE protocol, an appropriate shielded Cat-5e or better cabling solution is required (see *Network Configurations A-1* and *A-2*). Aside from selecting the correct cabling, it is critical to ensure the Power Sourcing Equipment (PSE) is IEEE 802.3af compliant. Be sure that the PSE has all software-layer auto-detection capabilities disabled on the port, and that it is confirmed to be capable of delivering up to 15.4W of power as per the IEEE 802.3af standard.

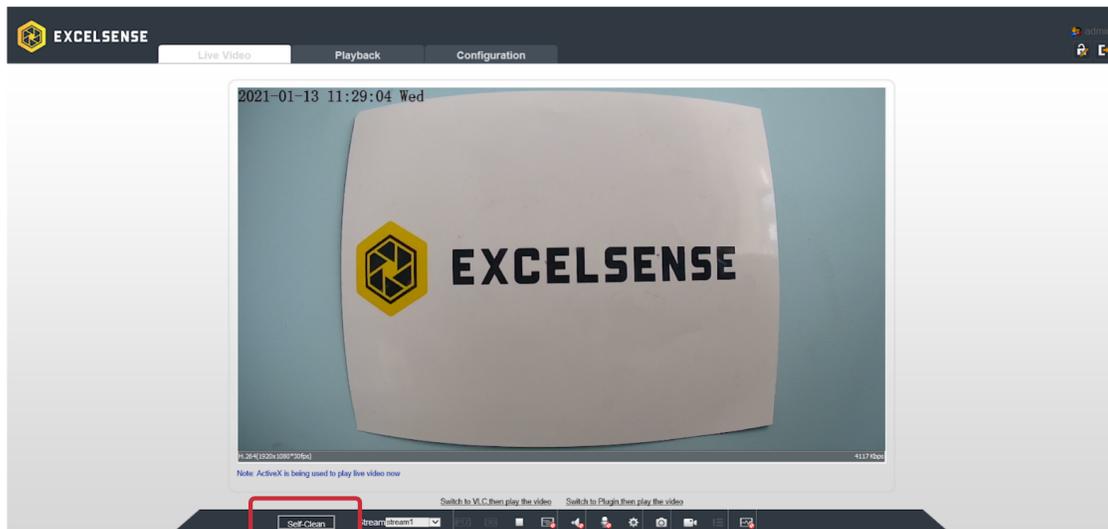
Note: Care should be taken to properly secure routed cables. Use of conduit, cable clamps or appropriately rated cable ties is recommended. Added conduits or protective sleeves may oversize the effective cable OD with respect to the in-line coupler's gland.

Triggering the ToughCam-1000™

Note that the ToughCam-1000™ does not have Self-Cleaning capabilities. Within the web interface, certain features and settings pertaining to self-cleaning will have no functionality when using ToughCam-1000™, as they are intended to interface with supported ToughEye™ series cameras. Similarly, the trigger wire on the compatible main cable will have no effect (see *ToughCam-1000™ Main Cables* section).

Remote Manual Trigger using Web Interface

As seen below, the ToughCam-1000™ web interface shows the Self-Clean button on the live view page, although it has no effect since ToughCam-1000™ does not support Self-Cleaning.

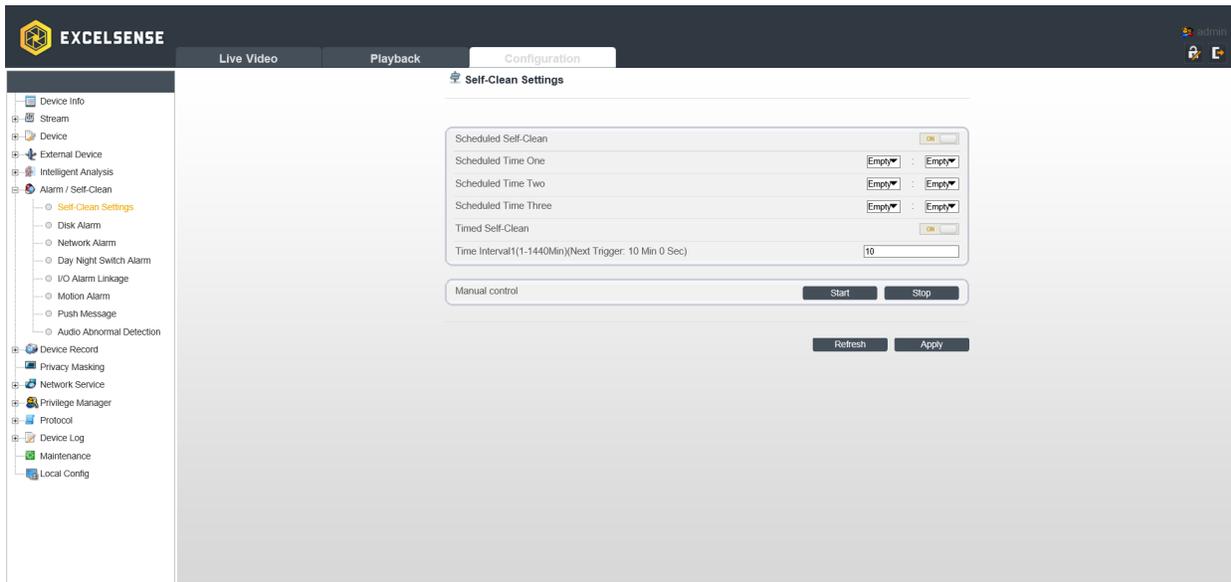


Self-Clean Button

Camera Module Web Interface Live View Page

Automatic Trigger

The ToughCam-1000™ camera web interface also displays several automatic self-clean trigger options which have no effect when applied to ToughCam-1000™. Both the *Timed Self-Clean* and *Scheduled Self-Clean* trigger methods may be enabled simultaneously on supported ToughEye™ series cameras.



Web Interface Self-Clean Settings Page

Cleaning the ToughCam-1000™ Lens

The recommended cleaning procedure is to gently spray off the lens with a hose or bottle to remove abrasive particles. A microfibre cloth may be used to complete the cleaning process, lightly wiping off any remaining contaminants.

Technical Information

Network Camera

Factory-Setting Parameters

IP Settings

IP Address: 192.168.0.120
Subnet Mask: 255.255.255.0
Default Gateway: 192.168.0.1

Login Credentials

Username: admin
Password: admin

Main Stream Settings

Video Encode Type: H.265
Resolution: 1920 x 1080
Frame Rate: 30 fps

Connecting to the Web Interface

The camera's web interface exposes all of the camera's features to the user. It is primarily used for streaming the live view, retrieving previously saved recordings, or modifying camera settings.

In order to access the web interface, the client PC and IP camera must share the same subnet. To do this, the computer's ethernet settings can be modified by following the steps below:

- (1) Navigate to the PC's **Network Connections** page by typing it into the Start menu
- (2) Right-click on the corresponding Ethernet device and select Properties
- (3) Open the Internet Protocol Version 4 (TCP/IPv4) Properties by either double-clicking the item from the list or selecting it and clicking the Properties button
- (4) Check the "Use the following IP address" box and type in address that is on the same subnet as the camera. For example, the following can be entered:

IP address	192.168.0.1
Subnet mask	255.255.255.0
Default gateway	192.168.0.1

- (5) Click OK on this page as well as on the Ethernet Properties page

Finding the Camera on the Network

The camera's default IP address is 192.168.0.120 as listed in the *Factory Settings Parameters* section. However, if this IP changes from the default, a useful tool to find the camera on the local network using its IP address is the SADP (Search Active Devices Protocol) software. This tool searches active online devices within your subnet and displays the information of the devices. You can also modify basic network information of the devices with this software.

Streaming on Web Interface Using Internet Explorer

High-Quality Streaming (H.265 / H.264)

If it is desired to use the web interface for high-quality video streaming, the browser that must be used is Internet Explorer (IE). A small plug-in is also required to be installed on the client PC which enables H.265/H.264 streaming through the web interface running on the IE browser.

Note: *If a 3rd-party IP camera software is to be used to stream the H.265/H.264 footage, this plug-in is not required to be installed. All configuration settings, including manual, timed, and scheduled self-clean features, can be configured without this plug-in.*

Follow the steps below to download and install this plug-in:

- (1) To connect to the camera's web interface, first ensure that the client PC's subnet matches that of the camera's. Refer to the *Connecting to the Web Interface* section above for more information.
- (2) Open IE **as Administrator** and enter the IP address of the camera into the address bar. If the camera has the factory-setting IP address, the following can be entered:
http://192.168.0.120
- (3) Enter the login credentials for the camera
- (4) Optionally if using the default factory-setting credentials, you can set a new password, or click Cancel to continue with the same credentials
- (5) Click "*Download and install the new plugin*". This is a small plug-in that is required for streaming the camera's H.265/H.264 streams on the IE browser. Make sure to temporarily disable Windows Defender Real-Time Protection, FireWall, etc during the installation process, as not doing this may block the computer from downloading and installing this plug-in.
- (6) After the plugin is installed, reopen the IE browser with Administrator privileges and navigate to the camera IP address.

Streaming on Web Interface Using Microsoft Edge

Confirmed on Edge Version 105.0.1343.42 (Official build) (64-bit)

Downloading Plugin for High-Quality Streaming (H.265 / H.264)

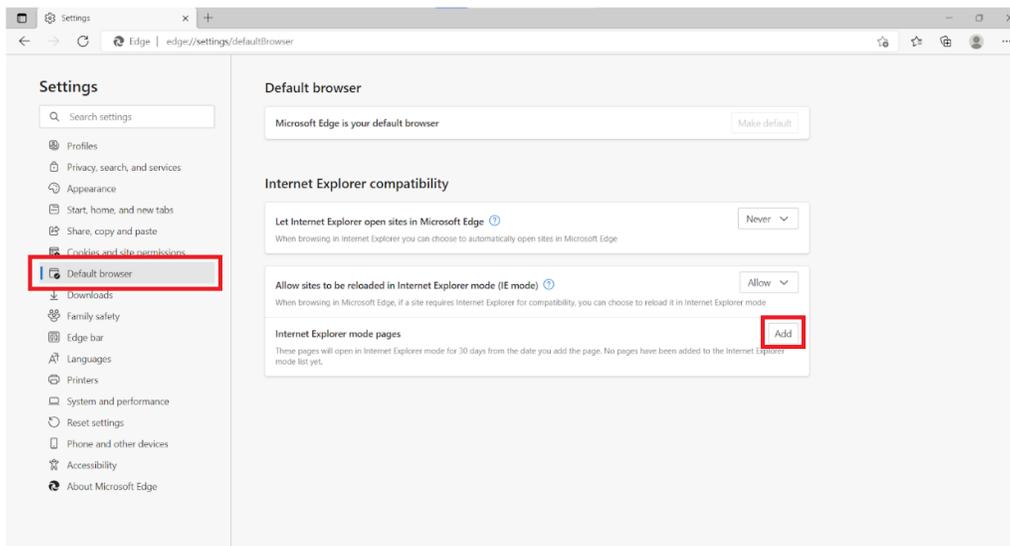
Follow the steps below to download and install this plug-in:

- (1) To connect to the camera's web interface, first ensure that the client PC's subnet matches that of the camera's. Refer to the **Connecting to the Web Interface** section above for more information.
- (2) Open Microsoft Edge as Administrator and enter the IP address of the camera into the address bar. If the camera has the factory-setting IP address, the following can be entered: *http://192.168.0.120*
- (3) From the ellipsis menu (...) in the upper right corner of Edge, select 'Reload in Internet Explorer mode'
- (4) Enter the login credentials for the camera
- (5) Optionally if using the default factory-setting credentials, you can set a new password, or click Cancel to continue with the same credentials
- (6) Click "*Download and install the new plugin*". This is a small plug-in that is required for streaming the camera's H.265/H.264 streams on the Edge browser. Make sure to temporarily disable Windows Defender Real-Time Protection, FireWall, etc during the installation process, as not doing this may block the computer from downloading and installing this plug-in.
- (7) After the plugin is installed, reopen the Edge browser and navigate to the camera IP address in Internet Explorer mode.

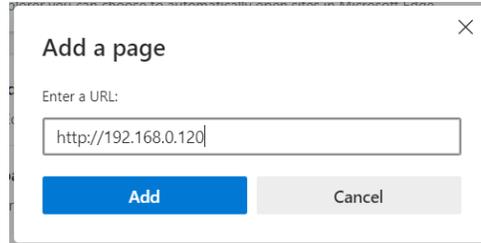
Known Limitations of Microsoft Edge

When using Microsoft Edge as the default web interface browser, some functionality is unavailable compared to using Internet Explorer in Administrative mode. The Snapshot and Local Record buttons on the Live Video page do not work.

From the Edge settings menu under 'Default Browser', there is an option to add pages to be opened using Internet Explorer mode by default. Note that this feature is limited to 30 days after the initial setup, and needs to be re-added after that timeframe.



Edge settings menu



Adding the default camera IP

Additionally, the user can add the 'Reload tab in Internet Explorer mode' button to the toolbar by following these steps:

1. Click on the horizontal ellipses '...' in the upper right corner
2. Click on the gear to open the settings menu
3. Navigate to the appearance tab
4. Scroll down to and enable 'Internet Explorer mode (IE mode) button'
5. Close and reopen the browser if necessary



These steps will enable the  button next to the toolbar. Clicking the button will reload the current page in IE mode, or switch back to Edge mode depending on the current state.

Lower Frame-Rate Streaming (MJPEG)

If frame rate and video compression are not critical factors, the MJPEG stream can be viewed over the web interface. In this case, multiple browser options are available aside from the default IE browser, including Google Chrome and Microsoft Edge.

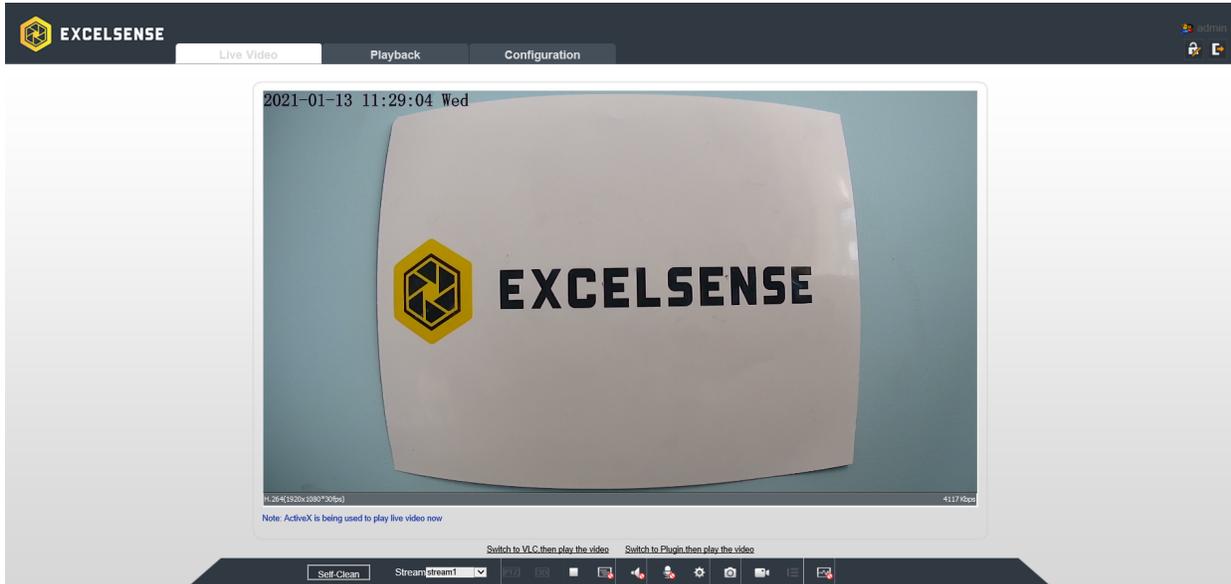
Note: *The maximum frame rate for the MJPEG stream is 12fps, but the resolution can be set to as high as 1080p. No plug-in is required to stream MJPEG on the browser.*

Integrating with 3rd-Party IP Camera Software

The ToughCam-1000™ IP camera can be integrated with 3rd-party IP camera software, as the camera is ONVIF Profile G and S compliant. It is important to note that full integration cannot be confirmed with all 3rd-party software platforms (i.e. camera features and settings are not guaranteed to be accessible or configurable), therefore it is recommended to use the camera's native IE browser interface to access and modify camera settings.

Live View Page

The main page where live view can be streamed, snapshots and recordings can be taken, etc. Note that the Self-Clean action is not applicable to ToughCam-1000™.



Web Interface Live View Page

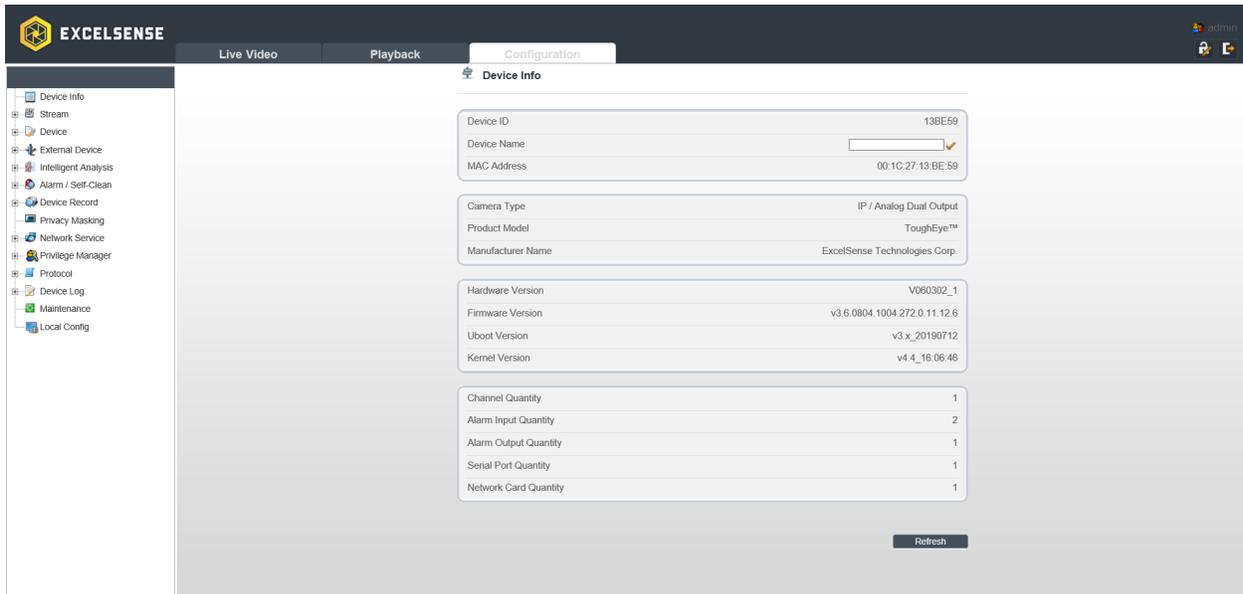
Configuration

Permanently Saving Changes to Camera Settings

Important Note: When applying any changes to camera settings, it is extremely important to understand that the changes are permanently saved only if one of the following conditions are met:

- (1) Camera remains powered for 3 minutes after the change has been applied (i.e. the *Apply* button has been clicked), or
- (2) A software restart is initiated (Configuration > Maintenance > Restart).

All camera settings can be accessed and modified in this page, including streaming video quality, IP settings, local recording, etc.



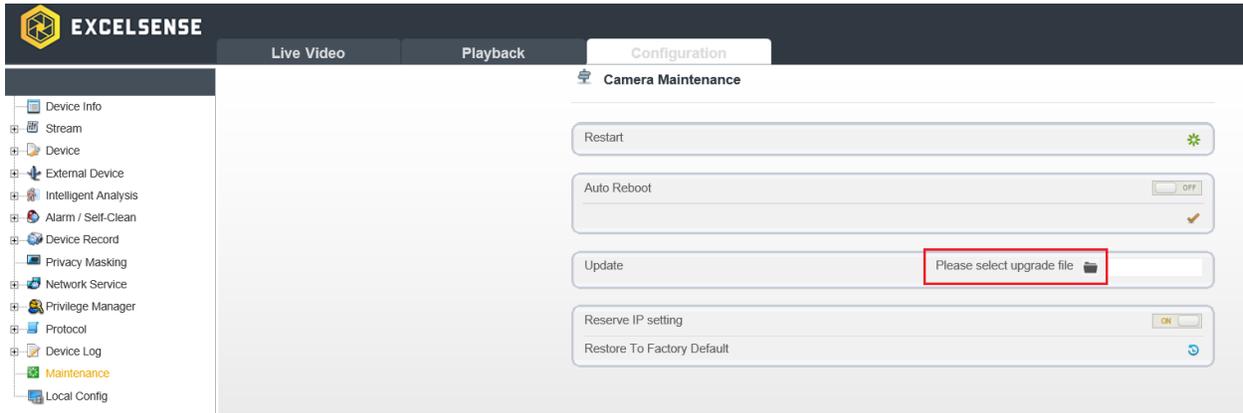
Device Info	
Device ID	13BE59
Device Name	<input type="text"/>
MAC Address	00:1C:27:13:BE:59
Camera Type	IP / Analog Dual Output
Product Model	ToughEye™
Manufacturer Name	ExcelSense Technologies Corp.
Hardware Version	V060302_1
Firmware Version	v3.6.0804.1004.272.0.11.12.6
Uboot Version	v3_x_20190712
Kernel Version	v4.4_16.06.46
Channel Quantity	1
Alarm Input Quantity	2
Alarm Output Quantity	1
Serial Port Quantity	1
Network Card Quantity	1

[Refresh](#)

Web Interface Configuration Page

Updating Camera Module Firmware

To update the camera module firmware, navigate to Configuration > Maintenance, and click the folder icon in the *Update* section to browse for the firmware file (provided by ExcelSense).



Web Interface Firmware Browse Button

Click the Update button to initialize the firmware update process (this should take approximately 1-2 minutes).



Web Interface Update Firmware Button

The camera module will then automatically reboot. After about 1-2 minutes, restart the IE browser and login. If prompted, download and install the new camera plug-in (this may be required for full functionality of the new firmware). Make sure to temporarily disable Windows Defender Real-Time Protection, FireWall, etc during the installation process, as not doing this may block the computer from downloading and installing this plug-in.

Note: If a 3rd-party IP camera software is to be used to stream the H.265/H.264 footage, this plug-in is not required to be installed. All configuration settings can be configured without this plug-in.

Local Recording

Configure Local Recording

ToughCam-1000™ cameras with enabled local video storage (see device *Ordering Options* section) can record video locally onto an integrated 128GB Micro-SD card.

To enable this feature, first ensure that the Micro-SD card is enabled by navigating to Configuration > Device Record > Record Directory. In the table, there should be a line item for an SD Card that is enabled and in a “Usable” state. If the SD card is shown to be in an “Error” state (see below), it will need to be formatted.

Record Directory

Disk Type	Disk Id	Group ID	Enable	Total Space(MB)	Usable Space (MB)	Alarm Threshold(%)	State
SD Card	1	1	Yes	0	0	100	Error

Record Directory Page - MicroSD Error Status

To format the MicroSD card, click Modify and Format with the default settings as shown below.

Record Path Modify
×

SD Card

Disk Id
1

Total Space(MB)
0

Alarm Threshold(1-100)

MicroSD Formatting Page

Once the formatting is completed, the state should be updated to “Usable” (see below).

Disk Type	Disk Id	Group ID	Enable	Total Space(MB)	Usable Space (MB)	Alarm Threshold(%)	State
SD Card	1	1	Yes	7168	7104	100	Usable

MicroSD Usable Status

Set Record Schedule

Navigate to the Record Policy page to configure the recording schedule. As an example, to set up the camera to always record footage onto the MicroSD card, the following settings can be used. Click Apply to save the settings.

 **Record Policy**

Schedule Record ON

Alarm Post Record(0-86400s) *86400

Record Audio OFF

Record Rule Cycle Store ▼

Stream Name stream1 ▼

	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Sun																									
Mon																									
Tues																									
Wed																									
Thur																									
Fri																									
Sat																									

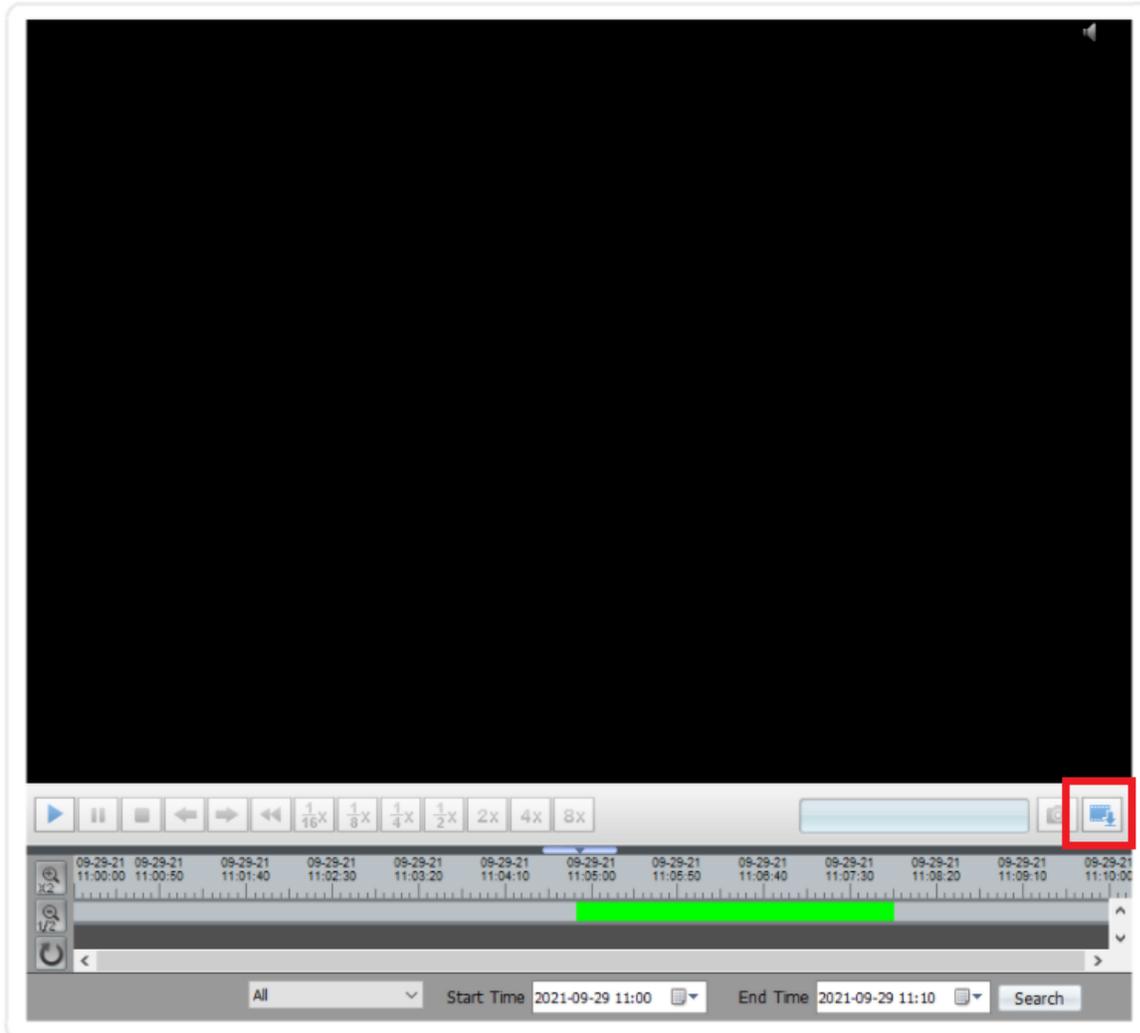
Record Policy Setup Menu

In the example above, the camera will record onto its onboard MicroSD card, and upon reaching the maximum storage capacity, it will overwrite the oldest footage on disk.

Note: Before enabling the recordings, first ensure that the camera's date and time are set appropriately. Navigate to Configuration > Device > Date and Time to set the device time either manually or latch it onto a local PC or NTP server.

Download Local Recordings using the Web Interface

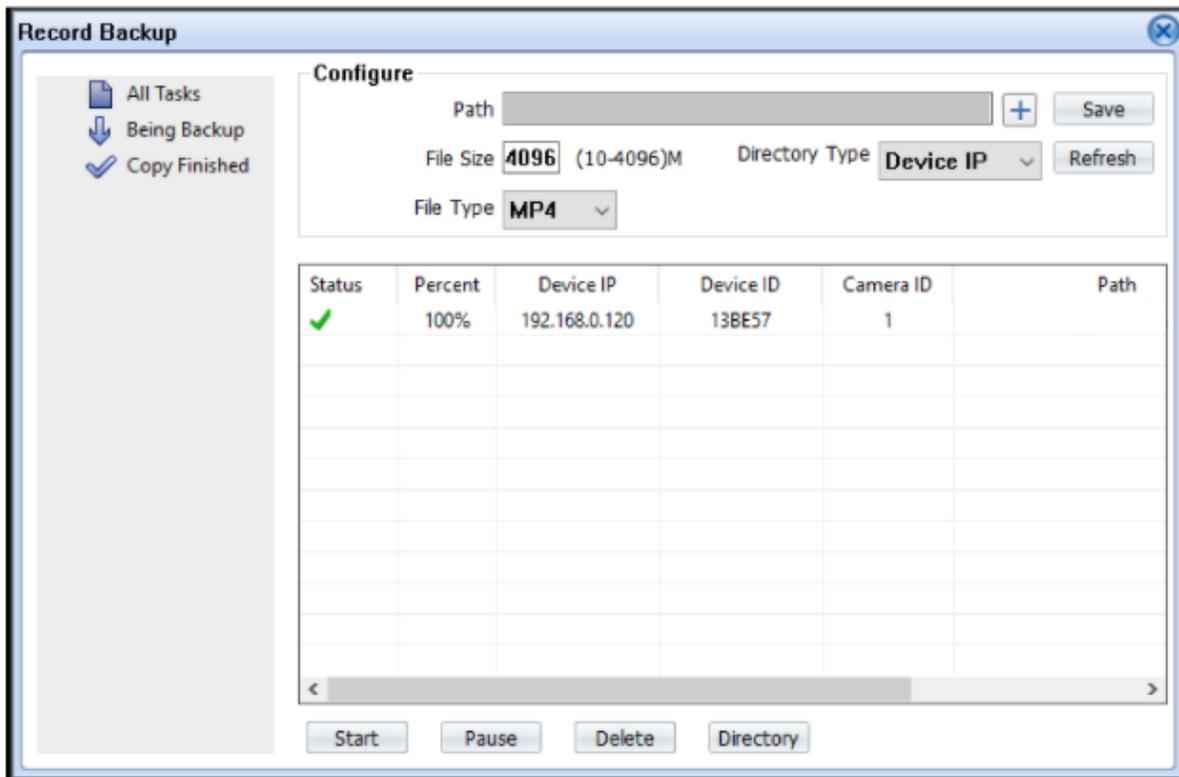
To download the local recordings, navigate to the Playback page on the web interface.



Playback Menu

To configure the download settings, click the Backup button (shown in the red box).

The following window will appear.



Recording Settings Menu

Choose the destination path by clicking the “+” button next to the Path textbox. Click Save to close the window.

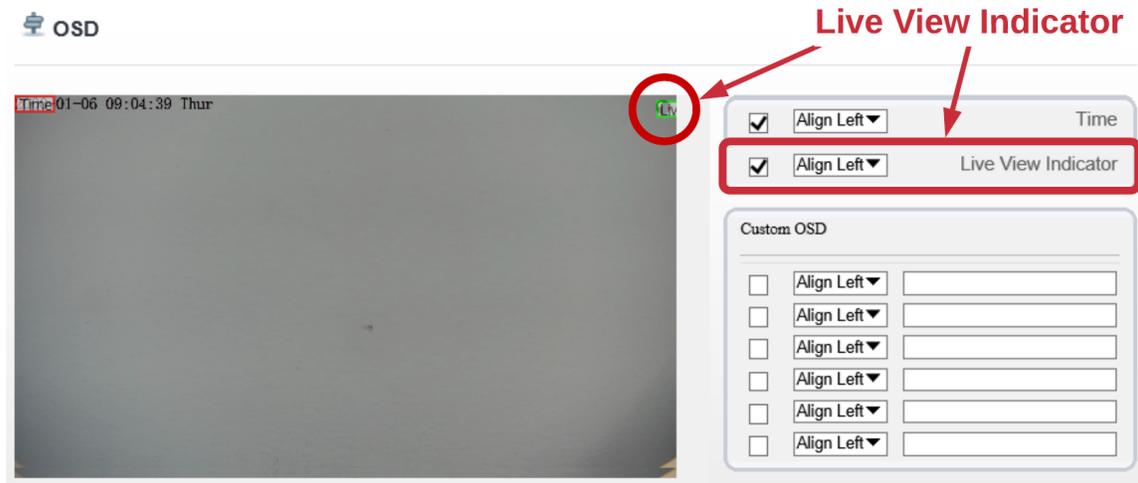
To find the desired recordings, select the start and end dates and times and click Search. The recordings will appear as bright green sections in the timeline at the bottom of the page.

Once the desired recordings have been found, click and drag over the desired section of footage to be downloaded. The selected section will turn blue. Right-click on the section and select Backup.

The Record Backup window will appear again. If the download doesn’t start automatically, click on the line item pertaining to the IP address of the desired camera. The files will be downloaded to the location selected in the Path textbox.

Live View Indicator

The live view indicator is a small dynamic icon on the OSD (on-screen display) which provides instant visual verification that the current stream is live. This is an optional feature that can be enabled on the IP camera stream by navigating to Configuration > Device > OSD > Advanced, and checking the Live View Indicator button. The location of the indicator can be adjusted by dragging the green indicator reference box in the live preview window of the OSD menu page.



Web Interface OSD Configuration - Live View Indicator Enabled

ToughCam-1000™ Thermal Regulation

ToughCam-1000™ is equipped with a thermal control system running on its integrated control module. This enables the device to be used in extremely cold temperatures as low as -40°C.

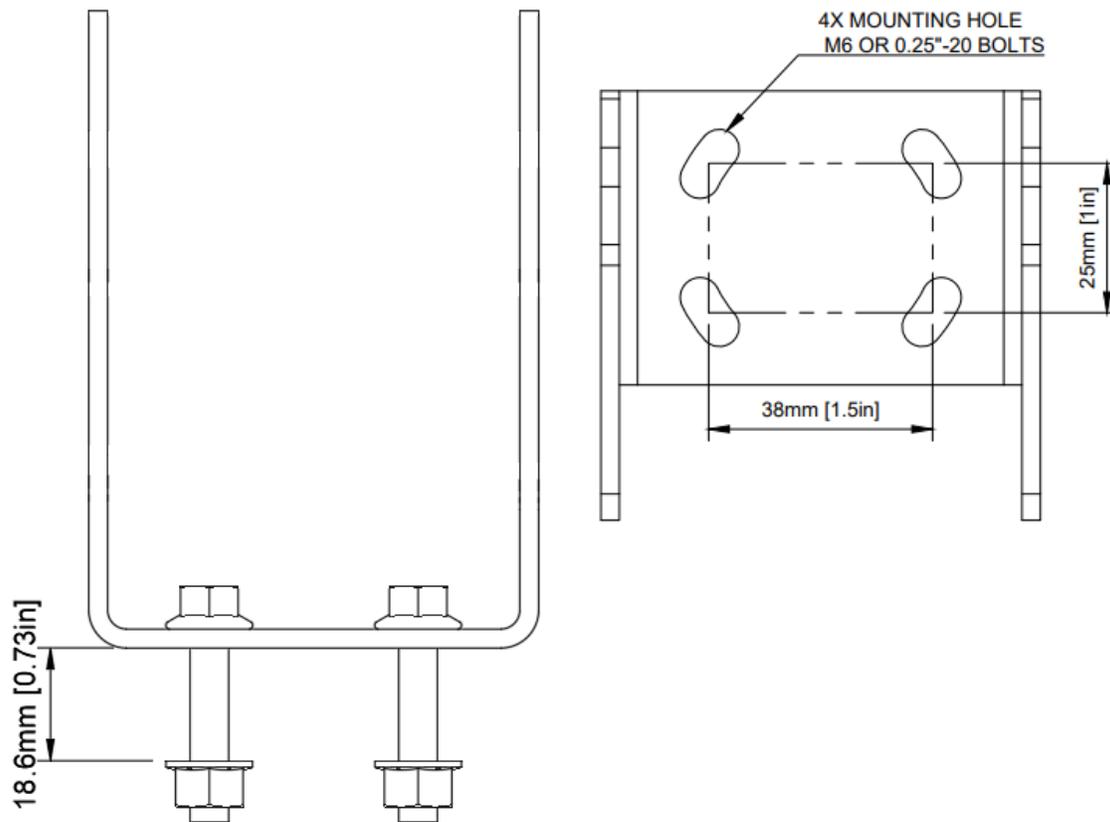
The thermal subsystem aims to maintain the internal temperature at an optimal level. During cold startup, the internal optical subsystem will be disabled until it has reached a temperature of -5°C. The front glass will continue to heat until it reaches a temperature of +5°C. This is done to ensure ice build-up on the lens has been properly melted prior to operation.

Accessories

The following sections outline the specifications, sizes, and other relevant information for critical accessories.

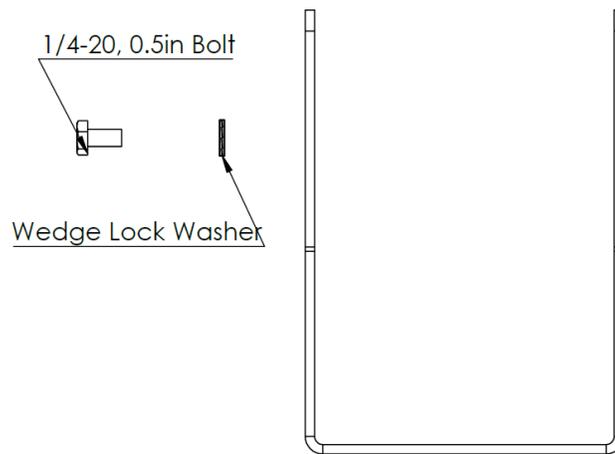
ToughCam-1000™ Standard Bracket

The ToughCam-1000™ Standard Bracket [MB-TC10-S] is included as the default bracket in most ToughCam-1000™ installations. The bracket should first be mounted to a suitable horizontal support with sufficient strength. The camera ships with high strength, 1/4"-20, 1.25" long bolts, suitable for mounting to plates up to 0.625" thick. If mounted to a thicker support, suitable Grade 8 bolts should be sourced. The standard bolt and nylock can be installed using 9/16" wrenches or sockets. When using supplied Grade 8 bolts, they should be torqued to 8.8 ft-lbs.



Mounting pattern and bolt details

With the bracket mounted the camera can be installed. Start by placing the camera within the bracket and loosely attaching it at all 4 mounting points. Be sure to use the included wedge lock washers:



Camera bolt installation ordering

Rotate the camera to the desired orientation. Note that the standard bracket accommodates mounting angles from 0° (horizontal) to down by 80°. With the camera at the desired orientation, tighten the bolts using a 7/16" wrench or socket. Bolts should be torqued to 8.8 ft-lb (11.9Nm) to ensure they do not slip under vibration.

ToughCam-1000™ Main Cables

Below are the wiring diagrams for the ToughCam-1000™.

IP Style Main Cable [MC17-SC-xxM-X-DU]



Wire(s)	Label	Function	Connection
Red, x2 (20AWG)	24V	Positive DC supply (Not used)	No connection
Black, x2 (20AWG)	0V / GND	Ground supply (Not used)	No connection
White (20AWG)	TRIG	Self-Clean Trigger (Not used)	No connection
RJ45 (jack)		10/100 Base-T Ethernet	Network access point (switch, router, etc.)

Dual-Output Style Main Cable [MC17-SC-xxM-X-DU]



Wire(s)	Label	Function	Connection
Red, x2 (20AWG)	24V	Positive DC supply (Not used)	No connection
Black, x2 (20AWG)	0V	Ground supply (Not used)	No connection
Blue (20AWG)	TRIG	Self-Clean Trigger (Not used)	No connection
BNC (male)		Analog video (CVBS) (Not used)	No connection
RJ45 (jack)		10/100 Base-T Ethernet	Network access point (switch, router, etc.)

Sealed Inline RJ45 Coupler

The sealed in-line RJ45 female-to-female coupler is included in the PoE adapter cable kit [AC17-RJ45] to achieve an IP67 network cable connection.

With reference to the diagram below, to install the coupler perform the following steps on either side:

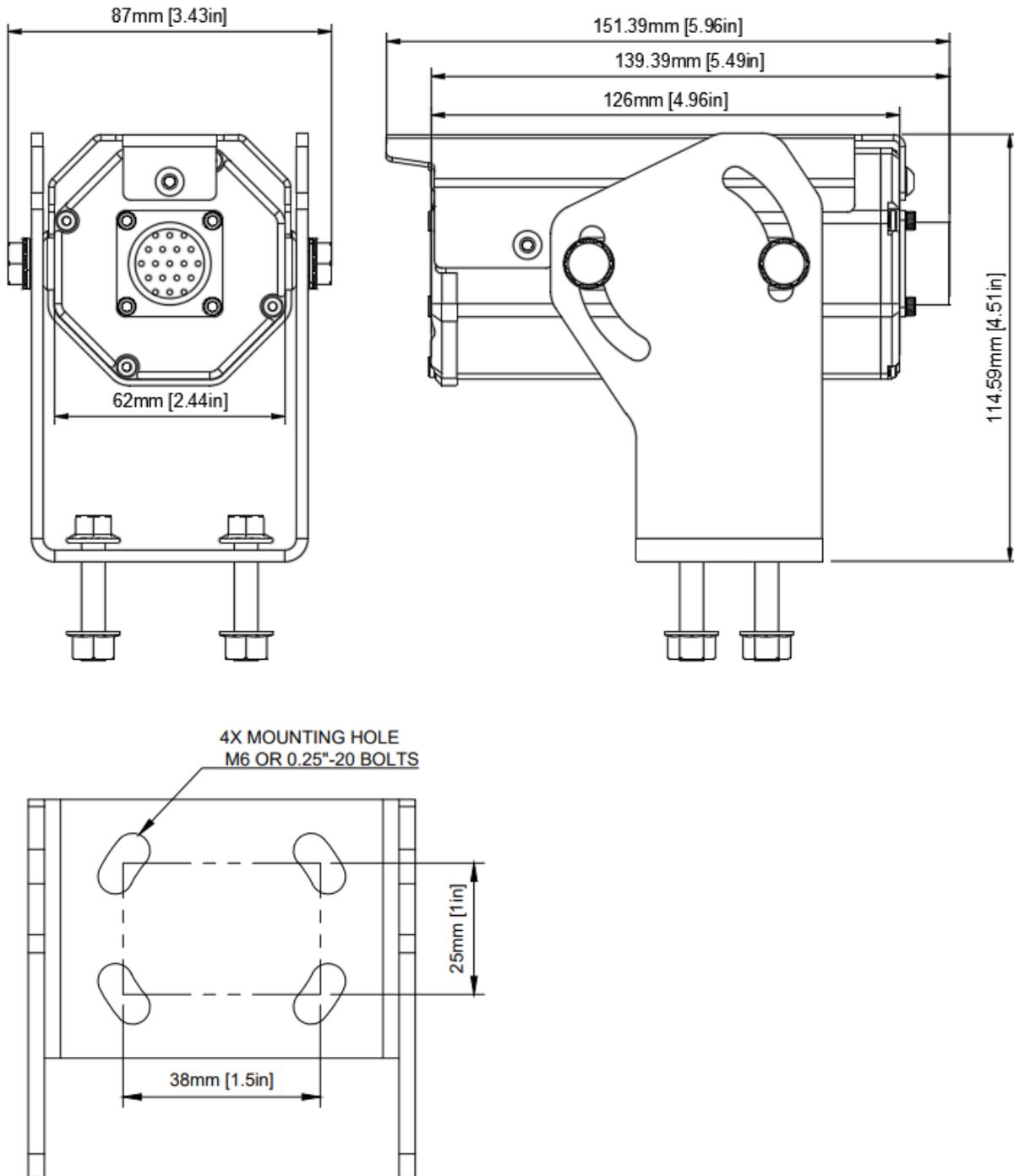
1. Loosen the cable gland nut (1) and unscrew the waterproof connector (3) from the middle RJ45 coupler (4/5)
2. Insert the shielded Cat-5e RJ45, through the nut, apron and connector (1, 2, 3) and into the female coupler (4)
3. Tighten both the connector (3) and gland nut (1) to achieve a fully water-tight seal



- | | |
|------------------------|-------------------------|
| ① Waterproof nuts | ④ Waterproof gasket |
| ② Waterproof apron | ⑤ Shielded RJ45 Coupler |
| ③ Waterproof connector | |

Sealed In-line RJ45 Coupler

ToughCam-1000™ Dimensions



ToughCam-1000™ Mechanical Dimensions