

DATASHEET

TBX8000 UHD -UHD 4K-

AISI 316L stainless steel 12 Megapixel IP camera UHD 4K

- Made in AISI 316L stainless steel for marine/aggressive environments.
- IP67 weatherproof rating.
- **12 MP (UHD 4K)** for exceptional detail at fast speeds
- Extreme resolution at high speed (30 fps).
- Outstanding wide dynamic range (92+16 dB)
- Easy fastening and positioning by **Plug&Play** connector



maintenance free

IP camera 12 Megapixel (UHD 4K) made in AISI 316L stainless steel

TBX8000UHD With a resolution of 12 megapixels, offers clear, sharp and highly detailed images for high-level IP video surveillance. The camera captures 12-megapixel video at 20 fps (and UHD 4K at 30 fps) for optimal resolution of fast-moving objects.

The level of detail of the camera images allows an effective retrospective analysis to make the difference in the collection of forensic evidences, offering a wide angle view and multiple focus points on a single screen so as to focus on the details without sacrificing the whole image.

The camera is equipped with an easy connection system through a Plug & Play connector with quick coupling which allows to optimize installation and / or maintenance times.

The rugged AISI 316L stainless steel construction with electropolished treatment permits the installation in aggressive environments (steelworks, chemical industries, etc.) or in areas of high salinity, for example ports, oil rigs, etc.

DATASHEET

System overview

Advanced image processing techniques take the TBX8000 to the next level.

- **Intelligent Video Analysis:** tracks and focuses on relevant situations and adds sense and structure to stored video, allowing you to quickly retrieve the correct data.
- **Intelligent Auto Exposure:** gives superb front and back light compensation, providing you with the perfect picture every time.
- **Intelligent Dynamic Noise Reduction:** saves bitrate at the source and only uses bandwidth when needed. This results in up to 50% less bitrate and significantly reduces storage costs and network strain without compromising on video quality.

Versions

The camera is available in the following versions:

- Camera body with permanently attached 5 mm lens.
- Camera body with permanently attached 3.2 mm lens.
- Camera body with C/CS lens mount and motorized focus adjustment.
Three telephoto lenses (75 mm, 50 mm and 35 mm), specifically matched to the camera body, are optionally available.

FUNCTIONS

• Measured dynamic range

The dynamic range of the camera is outstanding and is obvious in real world performance comparisons 92 dB wide dynamic range for 4K UHD mode (plus an extra 16 dB when combined with Intelligent Auto Exposure).

The actual dynamic range of the camera is measured using Opto-Electronic Conversion Function (OECF) analysis with a standardized test chart based on ISO standards. This method provides more realistic and verifiable results in comparison with the theoretical approximations sometimes used.

• Intelligent Video Analysis

After only 20 minutes you can miss 90% of the activity on a screen. Intelligent Video Analysis (IVA) assists by alerting you when predefined alarms are triggered. By smartly combining up to 8 IVA rules, complex tasks are made easy and false alarms are reduced to a minimum.

IVA also adds sense and structure to your video by adding metadata. This enables you to quickly retrieve the relevant images from hours of stored video.

Metadata can also be used to deliver irrefutable forensic evidence or to optimize business processes based on people counting or crowd density information.

• Intelligent Auto Exposure

Fluctuations in backlight and front light can ruin your images. To achieve the perfect picture in every situation, Intelligent Auto Exposure automatically adjusts the exposure of the camera. It offers superb front light compensation and incredible backlight compensation by automatically adapting to changing light conditions.

• Intelligent Dynamic Noise Reduction

Quiet scenes with little or no movement require a lower bitrate. By intelligently distinguishing between noise and relevant information, Intelligent Dynamic Noise Reduction reduces bitrate by up to 50%.

Because noise is reduced at the source during image capture, the lower bitrate does not compromise on video quality.

DATASHEET

Intelligent Dynamic Noise Reduction adjusts spatial and temporal filtering (3DNR) based on intelligent analysis of the scene content. Motion compensated temporal filtering (MCTF) reduces motion blur normally associated with standard temporal filtering.

This maintains image quality of fast moving objects while still optimizing bitrate.

With Intelligent Dynamic Noise Reduction, our focus is to significantly reduce storage costs, and lessen network strain by only using bandwidth when needed.

- **Area-based encoding**

Area-based encoding is another feature which reduces bandwidth. Compression parameters for up to eight user-definable regions can be set. This allows uninteresting regions to be highly compressed, leaving more bandwidth for important parts of the scene.

- **Selectable resolution and aspect ratio**

The camera has three basic application variants that can be chosen at start-up to provide the best possible performance for typical applications:

- 12MP (4:3)
- 4K UHD (16:9)
- 1080p (16:9)

The 12MP variant can be used in applications where the highest resolution possible is required. The 4K UHD variant is suitable for applications where the 16:9 4K standard is required with a frame rate of 30 fps. The 1080p30 (16:9) variant is for applications that require extra sensitivity and dynamic range.

Each of these variants selects the best possible tuning parameters for the application so that you get the best performance possible from your camera.

- **Scene modes**

The camera has a very intuitive user interface that allows fast and easy configuration. Nine configurable modes are provided with the best settings for a variety of applications. Different scene modes can be selected for day or night situations.

- Indoor – general day-to-night changes in an indoor environment without sun highlights or street lighting effects.
- Outdoor – general day-to-night changes in an outdoor environment with sun highlights and street lighting effects.
- Night-optimized – optimized for details in low light environments.
- Low bit rate – reduces bandwidth requirements.
- Intelligent AE – optimized for scenes with fluctuating front and back light caused by sunlight or other illuminated objects in the scene.
- Vibrant – enhanced contrast, sharpness and saturation.
- Sports and gaming – high-speed capture, and improved color rendition and sharpness.
- Traffic – for monitoring traffic movement on roads or parking lots. It can also be used in industrial applications where fast moving objects are to be monitored. Motion artifacts are minimized.
- Retail – improved color rendition and sharpness with reduced bandwidth requirements.

- **Multiple streams**

The innovative multi-streaming feature delivers various H.264 streams together with an M-JPEG stream. These streams facilitate bandwidth-efficient viewing and recording, plus easy integration with third-party video management systems. Depending on the resolution and frame rate selected for the first stream, the second stream provides a copy of the first stream or a lower resolution stream.

DATASHEET

- **Regions of interest and E-PTZ**

Regions of Interest (ROI) can be user defined. The remote E-PTZ (Electronic Pan, Tilt and Zoom) controls allow you to select specific areas of the parent image.

These regions produce separate streams for remote viewing and recording. These streams, together with the main stream, allow the operator to separately monitor the most interesting part of a scene while still retaining situational awareness.

Intelligent Tracking continuously analyses the scene for moving objects. If a moving object is detected, the camera automatically adjusts its settings, including field of view, to optimally capture details of the object of interest.

- **Easy installation**

Power for the camera can be supplied via a Powerover-Ethernet compliant network cable connection.

With this configuration, only a single cable connection is required to view, power, and control the camera.

Using PoE makes installation easier and more cost effective, as cameras do not require a local power source.

- **Edge recording**

Insert a memory card into the card slot to store up to 2 TB of local alarm recording. Pre-alarm recording in RAM reduces recording bandwidth on the network, and extends the effective life of the memory card.

- **System integration**

The camera conforms to the **ONVIF Profile S** specifications. Compliance with these standards guarantees interoperability between network video products regardless of manufacturer.

- **DORI coverage**

DORI (**D**etect, **O**bserve, **R**ecognize, **I**dentify) is a standard system (EN-62676-4) for defining the ability of a camera to distinguish persons or objects within a covered area. The maximum distance at which a camera/lens combination can meet these criteria is shown below:

12MP Camera with 3.2 mm lens (112°)

DORI	DORI definition	Distance	Horizontal width
Detect	25 px/m (8 px/ft)	54 m (167 ft)	160 m (525 ft)
Observe	63 px/m (19 px/ft)	21 m (70 ft)	63 m (207 ft)
Recognize	125 px/m (38 px/ft)	11 m (36 ft)	32 m (105 ft)
Identify	250 px/m (76 px/ft)	5 m (16 ft)	16 m (53 ft)

DATASHEET

12MP Camera with 5 mm lens (70°)

DORI	DORI definition	Distance	Horizontal width
Detect	25 px/m (8 px/ft)	114 m (374 ft)	160 m (525 ft)
Observe	63 px/m (19 px/ft)	45 m (148 ft)	63 m (207 ft)
Recognize	125 px/m (38 px/ft)	23 m (76 ft)	32 m (105 ft)
Identify	250 px/m (76 px/ft)	11 m (36 ft)	16 m (53 ft)

12MP Camera with 35 mm lens (9.8°)

DORI	DORI definition	Distance	Horizontal width
Detect	25 px/m (8 px/ft)	933 m (3061 ft)	160 m (525 ft)
Observe	63 px/m (19 px/ft)	370 m (1214 ft)	63 m (207 ft)
Recognize	125 px/m (38 px/ft)	187 m (590 ft)	32 m (105 ft)
Identify	250 px/m (76 px/ft)	93 m (295 ft)	16 m (53 ft)

12MP Camera with 50 mm lens (6.8°)

DORI	DORI definition	Distance	Horizontal width
Detect	25 px/m (8 px/ft)	1347 m (4419 ft)	160 m (525 ft)
Observe	63 px/m (19 px/ft)	534 m (1752 ft)	63 m (207 ft)
Recognize	125 px/m (38 px/ft)	269 m (883 ft)	32 m (105 ft)
Identify	250 px/m (76 px/ft)	135 m (443 ft)	16 m (53 ft)

DATASHEET

12MP Camera with 75 mm lens (4.7°)

DORI	DORI definition	Distance	Horizontal width
Detect	25 px/m (8 px/ft)	1949 m (6394 ft)	160 m (525 ft)
Observe	63 px/m (19 px/ft)	774 m (2539 ft)	63 m (207 ft)
Recognize	125 px/m (38 px/ft)	390 m (1280 ft)	32 m (105 ft)
Identify	250 px/m (76 px/ft)	195 m (640 ft)	16 m (53 ft)

DATASHEET

Technical specification	
Sensor	1/2.3- inch CMOS
Pixels	12MP
Video performance – Sensitivity (permanently attached lens version) (3200K, 89% reflectivity, 30% IRE, F2.45)	
Color (12MP / 4K UHD mode)	0,36 lx
Color (1080p mode)	0,31 lx
Mono (12MP / 4K UHD mode)	0,120 lx
Mono (1080p mode)	0,103 lx
Video streaming	
Video compression	H.264 (MP); M-JPEG
Streaming	Multiple configurable streams in H.264 and MJPEG Configurable frame rate and bandwidth Regions of Interest (ROI)
Overall IP Delay	Min 120 ms, Max 340 ms
GOP structure	IP, IBP, IBBP
Encoding interval	1 to 30 [25] fps
Encoder regions	Up to 8 areas with encoder quality settings per area
Video resolution (H x V)	
12MP	4000 x 3000 (at 20 fps)
UHD 4K	3840 x 2160 (at 30 fps)
7,3 MP	3584 x 2016 (at 30 fps)
1080p HD	1920 x 1080 (at 30 fps)
720p HD	1280 x 720 (at 30 fps)
SVGA	800x600
D1 4:3 (downscaled/cropped)	704x480
480P SD	Encoding: 704 x 480 Displayed: 854 x 480
432p SD	768x432
288p SD	512x288
240p SD	Encoding: 352 x 240 Displayed: 432 x 240
144p SD	256x144
Optical	
Lens	See compatibility chart on last page
Lens type	5 mm F2.4, fixed-focus, fixed-iris lens (70 deg FoV) with minimum object distance of 1.1 m (3.6 ft) 3.2 mm F2.45, fixed-focus, fixed-iris lens (112 deg FoV) with minimum object distance of 0.45 m (1.5 ft)
Video functions	
Day/Night	Color, Monochrome, Auto (adjustable switchover points)
Adjustable picture settings	Contrast, Saturation, Brightness

DATASHEET

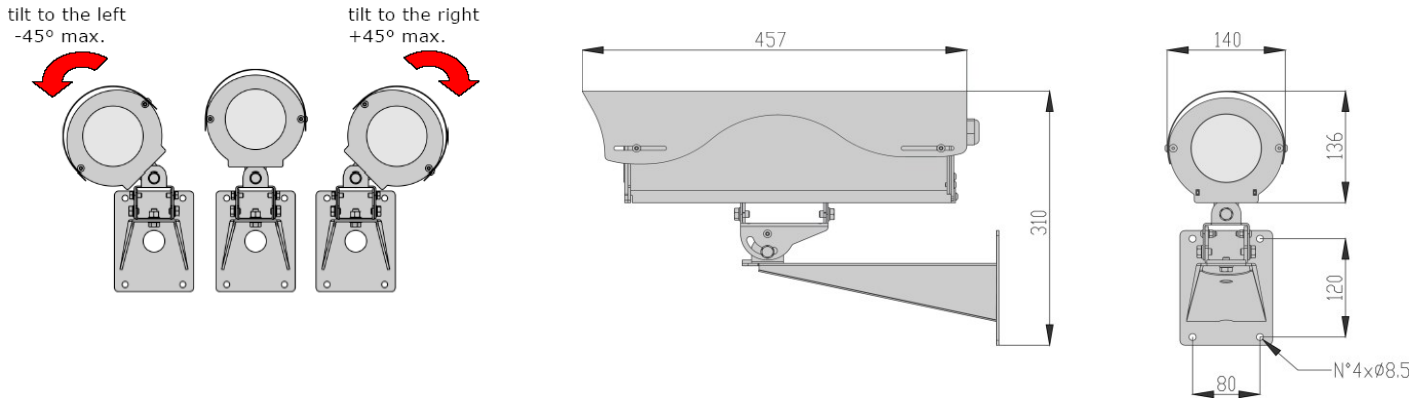
White Balance	2500 to 10000K, 4 automatic modes, manual mode and measure
Shutter	Automatic Electronic Shutter (AES) Fixed (1/30 [1/25] to 1/15000) selectable Default shutter
Backlight compensation	Off, auto, Intelligent Auto Exposure
Noise reduction	Intelligent Dynamic Noise Reduction with separate temporal and spatial adjustments
Contrast enhancement	On/Off
Intelligent Defog	Intelligent Defog automatically adjusts parameters for best picture in foggy or misty scenes (switchable)
Privacy masking	Eight independent areas, fully programmable
Video Motion Analysis	Intelligent Video Analysis
Scene modes	Nine pre-defined modes
Other functions	Image flip, Pixel counter, Video watermarking, Display stamping, Positioning
Audio streaming	
Standard	G.711, 8 kHz sampling rate L16, 16 kHz sampling rate AAC-LC, 48 kbps at 16 kHz sampling rate AAC-LC, 80 kbps at 16 kHz sampling rate
Signal-to-Noise Ratio	> 50 dB
Audio streaming	Full duplex / Half duplex
Input/output	
Analog video out	SMB connector, CVBS (PAL/NTSC), 1 Vpp, 75 Ohm
Audio line in	1 Vrms max, 18 kOhm typical
Audio line out	0.85 Vrms at 1.5 kOhm typical
Audio connectors	3.5 mm mono jack
Alarm input	2 inputs
Alarm input activation	+5 VDC nominal; +40 VDC max. (DC-coupled with 50 kOhm pull-up resistor to +3.3 VDC) (< 0.5 V is low; > 1.4 V is high)
Alarm output	1 output
Alarm output voltage	30 VAC or +40 VDC max. Maximum 0.5 A continuous, 10VA (resistive load only)
Ethernet	RJ45
Data port	RS-232/422/485
Network	
Protocols	IPv4, IPv6, UDP, TCP, HTTP, HTTPS, RTP/ RTCP, IGMP V2/V3, ICMP, ICMPv6, RTSP, FTP, Telnet, ARP, DHCP, APIPA (Auto-IP, link local address), NTP (SNTP), SNMP (V1, MIBII), 802.1x, DNS, DNSv6, DDNS (DynDNS.org, selfHOST.de, no-ip.com), SMTP, iSCSI, UPnP (SSDP), DiffServ (QoS), LLDP, SOAP, Dropbox, CHAP, digest authentication
Encryption	TLS 1.0, SSL, DES, 3DES, AES (optional)
Ethernet	10/100 Base-T, auto-sensing, half/full duplex
Connectivity	Auto MDIX
Interoperability	ONVIF Profile S; GB/T 28181

DATASHEET

Local storage	
Internal RAM	10 s pre-alarm recording
Memory card slot	Supports up to 32 GB microSDHC / 2 TB microSDXC card. (An SD card of Class 6 or higher is recommended for HD recording)
Recording	Continuous recording, ring recording, alarm/events/schedule recording
Technical specifications	
Power Supply	PoE+ (802.3at) -110/230Vac, 24Vac-dc or 12Vdc (<i>on request</i>)-
Power Consumption	9,6W (heater OFF) / 20W (heater ON)
Environmental	
Weatherproof rating	IP67
Operating Temperature	from -30 °C to +60 °C with heater ON (<i>from -22 °F to +140 °F with heater ON</i>)
Operating Humidity	0 - 100% RH
Storage Temperature	from -30 °C to +70 °C (<i>from -22 °F to +158 °F</i>)
Mechanical	
Dimensions(W x H)	140x136mm
Length (L)	457mm
Weight	8,5Kg.
Material	AISI 316L stainless steel electropolished

DATASHEET

TECHNICAL DRAWINGS



the values are in millimeters

LENS COMPATIBILITY CHART

camera model	(A) lens 3.2mm.	(B) lens 5mm.	(C) Telephoto lens 35mm.	(D) Telephoto lens 50mm.	(E) Telephoto lens 75mm..
TBX8000	YES	YES	YES	YES	YES

VERSION COMPATIBILITY CHART

model	power input			lens				
	POE+	230	24	A	B	C	D	E
TBX8000	●	●	●	●	●	●	●	●
TBX8000/WP (with wiper)	●	●	●	●	●	●	●	●
TBX8000/FO (with media converter Optical Fiber)	●	●	●	●	●	●	●	●