Redvision™

X2 COMBAT

The Next Generation of Rugged PTZ
Camera from Redvision CCTV.

X2 COMBAT
The Next Generation

A brief introduction to Redvision's latest rugged PTZ camera.

The X2-COMBAT™ rugged, ball PTZ cameras are designed for tough, outdoor, surveillance applications.

The X2-COMBAT™ uses advanced production techniques and state-of-the-art technology to offer a world-class, rugged CCTV camera with a best-in-class, feature set. The die-cast aluminium body is zinc-plated before being painted, making the camera environmentally tough and resistant to malicious attack or vandalism. Its operating temperature range is -25°C to 60°C.

Everything about the X2-COMBAT™ rugged, ball PTZ is of high quality. All moving parts are designed to last; from its long-life, silicon wiper through to the motor technology used in its pan and tilt mechanism and its 30x optical zoom camera module, with exceptional low-light performance.

The camera is perfectly balanced, minimising component wear and giving a mean time before failure (MTBF) rating of 7 years. It has intuitive, operator control, from fast pan and tilt speeds of up to 160° / second to speeds of less than 0.1° / second, for when an operator is precisely tracking a target. The COMBAT™ also features long-life, super-efficient, white-light and IR LED illumination technologies, for night-time operation.

The X2-COMBAT™ is designed for easy installation and configuration. A complete range of brackets, mounts and cable extensions allow installation in any environment, with a choice of RAL colour options to order. Cantilever arms enable the camera to view directly downwards on pole or tower mounts.

An extensive range of features give total flexibility in setup, from onboard, 128GB SD card-based edge storage; H265, H264 and MJPEG compression;

three video streams with a fourth service stream; ONVIF compliance to profile S, G and Q; and 'Secure System Integration' - 802.1x security authentication protocols built in.

The X2-COMBAT™ is set-up and configured using Redvision's web interface and can be controlled using Redvision's own video management software, VMS1000™, or any of the leading, open-platform VMS solutions. These give access to 400 pre-sets, 12 tours, 12 scans, 6 tracks and 8 privacy masks, if supported by the VMS; alarms, motion detection, intelligent analytics and tracking; and four video stream profile settings for recording, visualisation, set-up and servicing.

Redvision is the UK's leading manufacturer of high-performance CCTV cameras and housings. Our cameras are used extensively in public space, construction, commercial, education, health, industrial, leisure, marine, MOD, temporary, transport and utilities applications.

Excellent UK Customer Support

UK based design, manufacture and support for a streamline customer experience

UK Design & Manufacture

The team at Redvision has unprecedented security industry knowledge and experience. We are UK-based; understand CCTV products; and we know where and how our products are used. We take advantage of new technological developments, allowing us to maximise product performance and ensure seamless integration with wider security and building management systems. Our in-house knowledge informs our new product development, keeping us at the forefront of the market. It is also a resource our integrator partner customers can draw on in system design and project deployment.

Redvision Service & Support

Redvision's service centre provides free estimates for repairing or reconditioning X2-COMBAT™ rugged, ball PTZ cameras, irrespective of their age or supplier. Repair or reconditioning is to the latest build standard and cameras are returned to customers within a week; even with a 24-hour soak test included for all newly-serviced camera modules.

Our estimation service for repairs is free, to encourage installers to return faulty cameras to Redvision and not to an unqualified, third party repair centre. This avoids unnecessary or irreversible damage to the cameras. Warranty repairs arev free. Chargeable, out-of-warranty, repair estimates are provided to customers within 48 hours. All the new parts are Redvision-approved and manufactured and have a 3-year warranty. New seals are fitted to maintain the IP67 rating and each camera is pressure tested to ensure moisture seal integrity.

High quality and reliability - 7-year MTBF and low TCO

The Mean Time Before Failure (MTBF) figures for the X2 COMBAT™ rugged ball PTZ are exceptional, showing a 7 years life in normal use applications. Not only does this demonstrate the quality of the X2 COMBAT™ parts and construction, but it makes managing and budgeting for preventative servicing and replacement far easier. Factoring in such longevity in CCTV applications has a direct impact on reducing the total cost of ownership (TCO), where lesser cameras might need replacing every three years which greatly increases the real cost of the system deployment.

X2 COMBAT™ cameras are easy to install, upgrade, replace, repair and service, reducing costs with less frequent and shorter down-time, even during routine and reactive maintenance and repair work. TCO is reduced still further by the X2 COMBAT™ low power consumption figures, which are just 50W with IR and white light illumination in use.

Features

Some key features included in
our X² Series Rugged PTZ Cameras.

Smart IR, White Light and Dual Light Options

The Redvision X2-COMBAT™ rugged, ball PTZ cameras have infra-red (IR) and white light illumination options, using long-life, super-efficient LEDs. DORI (Detection, Observation, Recognition and Identification) tests show that the X2-COMBAT™ has exceptional performance.

DORI tests	IR	White Light
Detection	300m	250m
Observation	250m	200m
Recognition	150m	150m
Identification	75m	75m

The Dual Light X2-COMBAT™ toggles automatically between IR and white light modes to suit ambient lighting conditions. Pre-defined lighting profiles can be assigned to each of the cameras 400 pre-set positions.

Lighting strength and type are automatically adjusted to produce optimal images in   each of its night-time, daytime or weekend modes, including during a tour or following an alarm.

White light can be switched on as a visual deterrent to intruders; a feature which can be combined with audio warnings for even greater effect. However, safe operation is guaranteed with the 'dark-zone' feature, where white light LEDs are supressed in pre-defined areas to prevent nuisance or hazardous operation, such as dazzling drivers.

The X2-COMBAT™ has adaptive Smart illumination, automatically adjusting IR and white light intensity in proportion to zoom and scene content. This feature ensures scene images are well-lit, but not bleached by over-exposure.

White Light at 75m

Infared light at 75m

VMS Integration with VMS 1000

Redvision's X2-COMBAT™ rugged, ball PTZ cameras are integrated with many leading VMS platforms. Variable speed PTZ operation, with minimal joy-stick latency, is enabled along with washer, wiper, IR and white light illumination switching and scheduling and access to multiple pre-sets, tours and absolute camera positioning. Full HD video stream recording, with lower resolution sub-streams, allows efficient, remote control, display and transmission.

Redvision's VMS1000™, server-based, open-platform control system is cost-effective, scalable and intuitive, with no annual maintenance fees. It is powered by market-leading Digifort software and offers unique features for Redvision cameras, such as analytics on pre-sets and button-click control of lights, wipers, washers and telemetry. It is integrated with over 300 other CCTV camera brands and 4MP, 8MP and 12MP cameras. It also enables the re-use of legacy analogue CCTV cameras through encoders.The Redvision VMS1000™ has Analytics, License Plate Recognition (LPR) and Facial Recognition add-on modules, making the system future-proof.

Rugged Mounting Brackets

All X2-COMBAT™ rugged, ball PTZ mounts and brackets, including the steel pedestal, pendant, swan, corner, wall extension, pole and dynamic mount have a corrosion-resistant, zinc plating beneath the powder-coated, paint finish.

This zinc plating is marine-rated and was originally developed for oil rig applications. It is environmentally tough, making the X2-COMBAT™ ideal for a diverse range of challenging locations, from coastal sites to chemical plants.

The mounts and brackets are available in light grey (RAL 7035) or black (RAL 9005) powder-coat paint as standard, or they can be ordered in any bespoke colour from the RAL range.

The stainless-steel, washer adapter bracket is unpainted.
All mounts and brackets include cable management access, with flying leads from 3 to 10 metres, for simple and convenient installation.
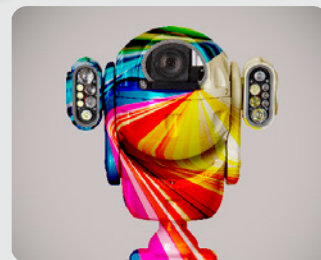
Custom RAL Colours Options

The X2-COMBAT™ rugged, ball PTZ camera range is available in light grey (RAL 7035) or black (RAL 9005) powder-coat paint as standard. However, the cameras can also be ordered in any matt or gloss RAL colour. Customers simply specify the colour they require and all the X2-COMBAT™ camera's external, zinc-plated parts, including pedestal, wall and pendant mounting brackets, are painted to order. The powder-coat paint gives a robust, light-stable finish.

Our colour service means X2-COMBAT™ cameras can be visually sympathetic to their environment, whether used on listed buildings and heritage sites or the latest architectural structures and designs.

Camera Module

The X2-COMBAT™ uses a 1/2.8" CMOS 3MP low-light sensor with 30x optical zoom. It produces three video streams and a fourth service stream.

Stream one is for recording at 3MP and up to 30 FPS. Streams 2 and 3 are for live viewing, including by smartphone, and are D1 and VGA respectively.

SIlicon, Long-Life Wiper & Washer

The X2-COMBAT™ has a silicon wiper option to keep the camera's view through the flat, scratch-resistant window free of water and dirt. A linkage-free, sprung steel mechanism reduces wiper wear and a polycarbonate window gives an even tougher option. Wiper activation is by a button press on VMS systems, including the VMS1000™, or by pre-set.

ONVIF Profiles S, G & Q Compliant

The X2-COMBAT™ is ONVIF Profile S, G and Q compliant. ONVIF Profile S covers pan/tilt/zoom control, audio, multicasting and relay output control. Profile G adds support for audio and metadata streams. Profile Q allows quick discovery and basic configuration of the camera, as well as covering Transport Layer Security (TLS).

Brushless Stepper Motor for Resiliance

The X2-COMBAT™ uses brushless stepper motors for both fast movement and slow, precise tracking of targets. A silicon drive belt ensures vandal attacks or malicious jamming do not damage the COMBATs™ finely tuned gears. The same design has been used in the previous X-SERIES™ models which have a proven MTBF of 7 years.

Intelligent Auto-PTZ Tracking

The X2-COMBAT™ has intelligent, auto-PTZ tracking where the camera will automatically follow people or vehicles moving within a scene, adjusting zoom and focus in real-time.

Auto-PTZ tracking ensures the camera captures important site events, even without operator control.

SD Card 'Edge' Recording

The X2-COMBAT™ allows on-board recording with an optional SD card of up to 128GB. When used with the Redvision VMS1000™, or other leading VMS solutions, edge recording will buffer video during reduced bandwidth or broken connections. When the network is re-established, centralised recording is repaired in an automated, 'self-healing' process.

Case Studies

A few examples of satisfied customers using the X2 COMBAT out in the field.

Highways England

Highways England has used seventy Redvision rugged PTZ cameras on a traffic management, improvement and maintenance system on the M62 motorway. The M62 is one of the busiest motorways in the UK, carrying up to 120,000 vehicles a day. The CCTV system helps manage gantry signage and vehicle speeds over a 15km section of motorway, reducing congestion and alerting operators if there is a stopped vehicle or hazard in the carriageways. The system also provides real-time, traffic information to traffic officers and the public on its Traffic England website.

A Digifort VMS system, running on high-resilience, DELL servers, is used for camera recording and control. A video wall comprising sixteen multi-screen monitors, with a further four desk monitors configured in alarm screen and report screen modes, is used. The system operates on a dedicated, high bandwidth, low latency fibre network, ensuring the Redvision cameras are responsive to operators over the large distances involved.

British Steel

British Steel is using Redvision rugged CCTV cameras to protect and manage its site in Scunthorpe. It is a major local employer, with over 4000 staff, and makes 2.8 million tonnes of steel each year for world-wide markets. There are a vast array of steel manufacturing and processing plants on site, including some hazardous areas requiring special protection and 24/7 coverage.

Redvision rugged PTZ cameras are used in the CCTV system, which also comprises a Luxriot EVO Global Enterprise recording system; Dahua bullet cameras; and a network infrastructure which includes Silvernet wireless transmission. A new control room ensures 24/7 operator coverage.

British Steel in Scunthorpe is a streamlined organisation, with efficient processes and a responsive approach to production. The state-of-the-art CCTV system, with Redvision cameras at its core, helps British Steel to protect and manage the facility as it strives to become a world-class, UK manufacturer.

London Borough of Lambeth

Lambeth is a densely populated, inner-city borough of London with a population of over 300,000. The council's priority is public safety and it works with the police and other agencies to prevent crime; protect victims of crime; and increase the personal safety of Lambeth residents, businesses and visitors.

The CCTV system, comprising over 250 Redvision PTZ cameras and a Synectics Control system, is watched by a team of highly trained operators, 24/7. This ensures immediate and proportional responses to incidents and suspicious activity. High-quality video evidence is provided for prosecution purposes and the system fully supports police investigations.

It was important that Redvision is based in the UK, so any support issues are handled quickly by the company's technical team. It was also essential that the cameras offered a seven-year MTBF. Repairs are infrequent and the council operates a preventative maintenance programme to reduce the risk of unplanned down time.

Camera Specification

Camera module	30x optical zoom, 3MP, 1/2.8 CMOS Low-Light sensor, True-ICR
Lens	4.5mm ~ 135mm FOV: 59.8° (Wide) ~ 2.3° (Tele)
Sensitivity	Colour: 0.01Lux @ F1.2 Monochrome: 0.0001Lux @ F1.2 (AGC ON)
Shutter Speed	Auto, 1-10,000/s
Iris	Auto/ Manual
Noise Reduction	3D Digital
Image Enhancement	dWDR, BLC, HLC, Defog
Digital Image Stabilisation	Yes
P/T Range	Pan: 360° continuous Tilt: 150° (Cantilever function gives 180° view range)
P/T Speed	Pan: 160°/sec Tilt: 90°/sec
Privacy	20 Masks, individual colour choice
Preset Positions	400
Preset Tours	12
Autopan Scans	12
Mimic Patterns	6
P/T Coordinates	Yes, OSD Display

Video Streaming

Video Compression	H.265, H.264, MJPEG
Streams	3 + Service Stream
Resolutions	Stream 1: 2048 x 1536 (3MP), 1920 x1080 (2MP), 1280 x 720 (1.3MP) Stream 2: D1, VGA, 640 x 360, CIF, QVGA Stream 3: VGA, CIF, QVGA
RTSP Video	RFC2326, Supports VLC & QuickTime
FPS	30fps max.
Bitrate	Stream 1: 500kbps ~ 12Mbps Stream 2: 100kbps ~ 6Mbps Stream 3: 100kbps ~ 6Mbps
ROI	Yes

Network Interface

Interface	Ethernet RJ45, 10-100Base-T connection
Supported Protocols	IPv4, HTTP, HTTPS, 802.1x, TCP, UDP, RTSP, DHCP, NTP, RTCP/RTP, PPPoE, SMTP, SNMP, DNS, UPnP, FTP, ICMP, IGMP, Unicast/ Multicast
Languages (Web interface)	English, French, Italian, Spanish, Russian
ONVIF	Profile S, G, Q
Edge Storage (optional)	Up to 256GB
Security	Base-64 authentication, HTTPS (SSL), 802.1x, IP Address Filtering

Events

Alarm I/O	4 in, 2 out
Intelligent Motion Tracking	Yes
Event Notifications/ Actions	Email (5 recipients), FTP Upload, SD Event recording, alarm output, live stream display, mobile app push notification.
Intelligent Analytics	Perimeter, Virtual Fences, Loitering, Objects left/Removed, Speed, Illegal Parking, with scene calibration and scheduling, email recipients upon event, FTP upload, record event to SD, ONVIF event notification and video overlay.
Motion Detection	Detection grid, scheduling
System Events	SD, Network issue, ICR Switch

Electrical & Physical

Power Supply	24VDC via RVX2 PSU module; input 100~240VAC 50/60Hz
Power Consumption	24VDC: 50W
Dimensions	Non-LED models: H 340mm W 191mm LED models: H 340mm W 293mm
Weight	5.2kg without lamps, 5.8kg with lamps
Operating Temperature	-40°C ~ +70°C (Light colours only, Black: 50°C)
Impact rating	Meets IK10 standards (w/ Polycarbonate)
Ingress protection	Meets IP67 standards
Vibration testing	TEN 50556:2011, clauses 6.3.2 & 11 (Table 3, Class AL2) EN 60068-2-64-2008 Test Fh
EMC	EN 55032:2015 EN55035:2017 Class A
Camera body	Marine finish as standard, Aluminium, die-cast alloy, with anodised, powder-coated finish
Colour	RAL 7035 Light-Grey or RAL 9005 Black. Custom RAL made to order.

Lighting & DORI

Illumination Range	IR (850nm) to 300m White Light to 250m

DORI Category	Distance covered
Detection	IR Light: 300m White Light: 250m
Observation	IR Light: 250m White Light: 200m
Recognition	IR Light: 150m White Light: 150m
Identify	IR Light: 75m White Light: 75m

340mm

191mm

340mm

293mm

- Tough, rugged camera, Marine-Grade finish as standard
- Adaptive White Light and IR (zoom-linked) operation
- Intelligent, Auto- PTZ Tracking
- SD Card recording option, up to 256GB.
- VMS Integration, including Redvision VMS1000™
- Rugged Mounting Bracket Options
- Brushless Stepper Motors for Resilience and durability
- ONVIF Compliant
- Custom Colour options

ONVIF | The IP-based Security Standard

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