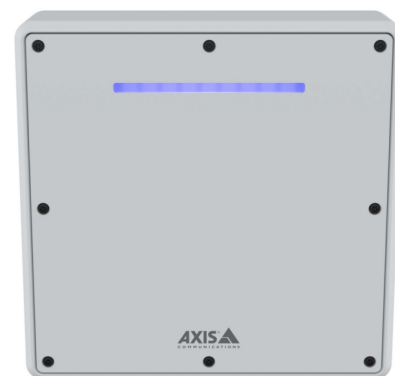# AXIS D2210-VE Radar

60 GHz radar for area and traffic monitoring 24/7

This network-based device uses advanced radar technology to accurately detect, classify, and track humans and vehicles in various weather and light conditions. With the road monitoring profile enabled, it can monitor speeds up to 200 km/h (125 mph). Plus, the integrated dynamic LED strip can be used to deter, warn or notify. Or it can be switched off for more discrete monitoring. Furthermore, PoE out lets you power an additional device without an extra cable drop. For instance, you can add AXIS D2210-VE to an existing camera installation. Or connect a horn speaker to remotely address people or play prerecorded messages to deter unwanted activities.

> 95° coverage to detect, classify, and track objects

> Area and road monitoring profiles available

> Monitor vehicle speeds up to 200 km/h (125 mph)

> Easily connect with PoE out and edge-to-edge

> Compact design with integrated LED strip

ONVIF® | GMST

AXIS D2210-VE Radar

Radar

Profiles	Area monitoring Road monitoring
Sensor	FMCW (Frequency Modulated Continuous Wave)
Object data	Object type (classes: humans, vehicles, unknown), range, direction, velocity
Frequency	**Channel 1:** 61.00–61.25 GHz **Channel 2:** 61.25–61.50 GHz
RF transmit power	<100 mW (EIRP) License free. Unharmful radio-waves.
Recommended mounting height	3.5–12 m (11–39 ft)[a]
Recommended mounting tilt	15°[b]
Detection range	**Area monitoring profile:** 5–60 m (16–200 ft) when detecting a person[c] 5–90 m (16–300 ft) when detecting a vehicle[c] **Road monitoring profile:** Up to 150 m when detecting a vehicle[d]
Radial speed	**Area monitoring profile:** up to 55 km/h (34 mph) **Road monitoring profile:** up to 200 km/h (125 mph)
Field of detection	Horizontal: 95°
Speed accuracy	+/- 2 km/h (1.25 mph)
Distance accuracy	**Area monitoring profile:** 0.5 m (1.6 ft) **Road monitoring profile:** 0.8 m (2.6 ft)
Angle accuracy	1°
Spatial differentiation	3 m[e]
Data refresh rate	10 Hz
Coverage	**Area monitoring profile:** 2700 m^2 (29000 sq ft) for persons 6100 m^2 (65600 sq ft) for vehicles
Coexistence zone	Frequency band: 61 GHz Radius: 350 m (1148 ft) Recommended number of radars: up to 8
Radar controls	Multiple detection zones, line crossing detection with one or two lines, exclude zones with filters for short-lived objects, object speed, object type, configurable trigger duration Radar transmission on/off, reference map, grid opacity, zone opacity, color scheme, trail lifetime, detection sensitivity, swaying object filter, small object filter, frequency channel

System on chip (SoC)

Model	ARTPEC-8
Memory	1048 MB RAM, 8192 MB Flash
Compute capabilities	Deep learning processing unit (DLPU)

Video

Video compression	H.264 (MPEG-4 Part 10/AVC) Baseline, Main and High Profiles H.265 (MPEG-H Part 2/HEVC) Main Profile Motion JPEG
Resolution	1920x1080 to 640x360
Frame rate	Up to 10 fps in all resolutions
Video streaming	Up to 20 unique and configurable video streams[f] Controllable frame rate and bandwidth VBR/ABR/MBR H.264/H.265 Video streaming indicator
Image settings	Compression, rotation: 0°, 90°, 180°, 270°, dynamic text and image overlay

Audio

Audio features	Speaker pairing
Audio output	Output via speaker pairing

Network

Network protocols	IPv4, IPv6 USGv6, ICMPv4/ICMPv6, HTTP, HTTPS[g], HTTP/2, TLS[g], QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, mDNS (Bonjour), UPnP®, SNMP v1/v2c/v3 (MIB-II), DNS/DNSv6, DDNS, NTP, NTS, RTSP, RTP, SRTP/RTSPS, TCP, UDP, IGMPv1/v2/v3, RTCP, ICMP, DHCPv4/v6, ARP, SSH, LLDP, CDP, MQTT v3.1.1, Secure syslog (RFC 3164/5424, UDP/TCP/TLS), Link-Local address (ZeroConf), IEEE 802.1X (EAP-TLS), IEEE 802.1AR

System integration

Application Programming Interface	Open API for software integration, including VAPIX®, metadata and AXIS Camera Application Platform (ACAP); specifications at *axis.com/developer-community*. ACAP includes Native SDK and Computer Vision SDK One-click cloud connection ONVIF® Profile G, ONVIF® Profile M, ONVIF® Profile S, and ONVIF® Profile T, specifications at *onvif.org*
Video management systems	Compatible with AXIS Camera Station, video management software from Axis' Application Development Partners available at *axis.com/vms*
Onscreen controls	Play media clip
Edge-to-edge	Speaker pairing Camera pairing
Event conditions	Application Device status: above/below/within operating temperature, IP address blocked, IP address removed, new IP address, network lost, system ready, live stream active, radar data failure Edge storage: recording ongoing, storage disruption, storage health issues detected I/O: digital input, digital output, manual trigger, virtual input MQTT: subscribe Radar motion Scheduled and recurring: schedule
Event actions	I/O: toggle I/O once, toggle I/O while the rule is active MQTT: publish Notification: HTTP, HTTPS, TCP and email Overlay text Radar: dynamic LED strip, radar autotracking, radar detection Recordings: SD card and network share SNMP traps: send, send while the rule is active Status LED: flash, flash while the rule is active Upload of images or video clips: FTP, SFTP, HTTP, HTTPS, network share and email
Data streaming	Radar metadata with relative position, GPS position,[h] velocity, direction, and object type
Built-in installation aids	Reference map calibration, sensor for tilt angle, GPS position

Analytics

Applications	Included AXIS Speed Monitor, AXIS Radar Integration for Microbus Support for AXIS Camera Application Platform enabling installation of third-party applications, see *axis.com/acap*
Supporting software	AXIS Radar Autotracking for PTZ (Slew to Cue) For supported cameras, see *axis.com/products/axis-radar-autotracking*

Approvals

Product markings	CSA, UL/cUL, CE
Supply chain	TAA compliant
Wireless	EN 301489-1, EN 301489-3, EN 305550-2, FCC Part 15 Subpart C
EMC	EN 55035, EN 55032 Class A, EN 50121-4, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2 **Canada:** ICES-3(A)/NMB-3(A) **USA:** FCC Part 15 Subpart B Class A
Safety	CAN/CSA C22.2 No. 62368-1 ed. 3, IEC/EN/UL 62368-1 ed. 3
Environment	IEC 60068-2-1, IEC 60068-2-2, IEC 60068-2-6, IEC 60068-2-14, IEC 60068-2-27, IEC 60068-2-78, IEC/EN 60529 IP66/IP67, IEC/EN 62262 IK10, NEMA 250 Type 4X, NEMA TS 2 (2.2.7-2.2.9)
Network	NIST SP500-267
Cybersecurity	ETSI EN 303 645

Cybersecurity

Edge security	**Software:** Signed firmware, brute force delay protection, digest authentication and OAuth 2.0 RFC6749 OpenID Authorization

	Code Flow for centralized ADFS account management, password protection **Hardware:** Axis Edge Vault cybersecurity platform TPM 2.0 (CC EAL4+, FIPS 140-2 Level 2), system-on-chip security (TEE), secure keystore, secure boot, encrypted filesystem (AES-XTS-Plain64 256bit)
Network security	IEEE 802.1X (EAP-TLS, PEAP-MSCHAPv2)[g], IEEE 802.1AE (MACsec PSK/EAP-TLS), IEEE 802.1AR, HTTPS/HSTS[g], TLS v1.2/v1.3[g], Network Time Security (NTS), X.509 Certificate PKI, host-based firewall
Documentation	*AXIS OS Hardening Guide* *Axis Vulnerability Management Policy* *Axis Security Development Model* *AXIS OS Software Bill of Material (SBOM)* To download documents, go to *axis.com/support/cybersecurity/resources* To read more about Axis cybersecurity support, go to *axis.com/cybersecurity*

General

|	
Casing	IP66/IP67-, NEMA 4X- and IK10-rated Aluminum casing Color: white NCS S 1002-B For repainting instructions, go to the product's support page. For information about the impact on warranty, go to *axis.com/warranty-implication-when-repainting*.
Power	Power over Ethernet (PoE) IEEE 802.3at, Type 2 Class 4 Typical 5.88 W, max 8 W **For PoE output**: Power over Ethernet (PoE) IEEE 802.3bt, Type 3 Class 6, max 38 W. The radar provides Power over Ethernet (PoE) IEEE 802.3at, Type 2 Class 4 (30 W) to a second device 10–28 V DC, typical 5 W, max 6.44 W
Connectors	Network: Shielded RJ45 10BASE-T/100BASE-TX/1000BASE-T PoE Network: RJ45 1000BASE-T PoE output to power an external PoE device I/O: Terminal block for 1 supervised alarm input and 1 output (12 V DC output, max. load 50 mA) Power: DC input, terminal block
Dynamic LED	Dynamic LED strip with RGB (red, green, blue) LEDs and predefined light patterns Daylight visibility up to 60 m (197 ft)[i]
Storage	Support for microSD/microSDHC/microSDXC card Support for SD card encryption (AES-XTS-Plain64 256bit) Recording to network-attached storage (NAS) For SD card and NAS recommendations see *axis.com*
Operating conditions	-40 °C to 60 °C (-40 °F to 140 °F) Humidity 10–100% RH (condensing) Wind speed (sustained): 75 m/s (168 mph)[j]
Storage conditions	-40 °C to 65 °C (-40 °F to 149 °F) Humidity 5–95% RH (non-condensing)
Dimensions	For the overall product dimensions, see the dimension drawing in this datasheet.

	Effective Projected Area (EPA): 0.023 m^2 (0.25 ft^2)
Weight	1250 g (2.8 lb)
Box content	Radar, AXIS TQ1003-E Wall Mount, installation guide, TORX® T20 screw driver, TORX® T30 bit, terminal block connectors, connector guard, cable gaskets, owner authentication key
Optional accessories	AXIS T8415 Wireless Installation Tool AXIS Surveillance Cards For more accessories, go to *axis.com/products/axis-d2210-ve-radar#accessories*
System tools	AXIS Site Designer, AXIS Device Manager, product selector, accessory selector Available at *axis.com*
Languages	English, German, French, Spanish, Italian, Russian, Simplified Chinese, Japanese, Korean, Portuguese, Polish, Traditional Chinese
Warranty	5-year warranty, see *axis.com/warranty*
Part numbers	Available at *axis.com/products/axis-d2210-ve-radar#part-numbers*

Sustainability

Substance control	PVC free, BFR/CFR free in accordance with JEDEC/ECA Standard JS709 RoHS in accordance with EU RoHS Directive 2011/65/EU/ and EN 63000:2018 REACH in accordance with (EC) No 1907/2006. For SCIP UUID, see *echa.europa.eu*
Materials	Renewable carbon-based plastic content: 20 % (recycled) Screened for conflict minerals in accordance with OECD guidelines To read more about sustainability at Axis, go to *axis.com/about-axis/sustainability*
Environmental responsibility	*axis.com/environmental-responsibility* Axis Communications is a signatory of the UN Global Compact, read more at *unglobalcompact.org*

a. *The mounting height affects the detection range. See the user manual at axis.com for more information.*
b. *The radar can be tilted 0–30°. When the back part of the chassis is level, the radar is tilted 15°. The mounting tilt affects the detection range. See the user manual at axis.com for more information.*
c. *Measured at 5 m mounting height, with 15° tilt. See the user manual at axis.com for more information.*
d. *Measured at 7 m mounting height, with 15° tilt. The mounting height, tilt and placement of the radar affects the detection range. The recommended placement of the radar is in front of or behind the moving vehicles. See the user manual at axis.com for more information.*
e. *Minimum distance between moving objects.*
f. *We recommend a maximum of 3 unique video streams per channel, for optimized user experience, network bandwidth, and storage utilization. A unique video stream can be served to many video clients in the network using multicast or unicast transport method via built-in stream reuse functionality.*
g. *This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (openssl.org), and cryptographic software written by Eric Young (eay@cryptsoft.com).*
h. *Enter the radar's GPS position manually to get the objects' GPS position in the data stream.*
i. *In direct sunlight. The range increases in conditions with less light.*
j. *For drag force calculations, use Effective Projected Area (EPA).*

Dimension drawing
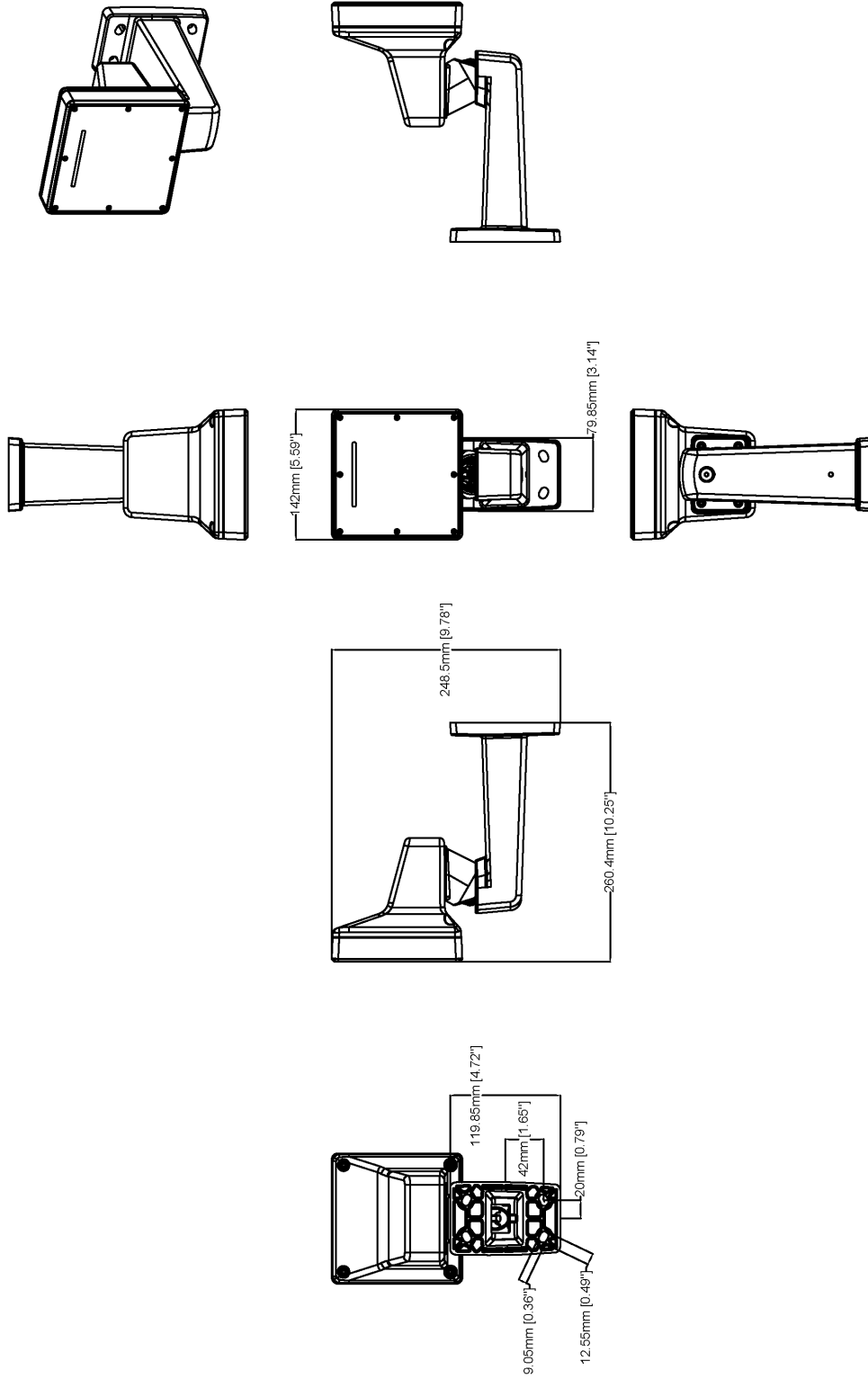
AXIS D2210-VE Radar

Revision		v.01	Revision date	2023-08-25
Paper size		A4	Release date	2023-08-25
Created by		MS	Scale	1:6

© 2023 Axis Communications

142mm [5.59"]

79.85mm [3.14"]

248.5mm [9.78"]

260.4mm [10.25"]

119.85mm [4.72"]

42mm [1.65"]

20mm [0.79"]

9.05mm [0.36"]

12.55mm [0.49"]

www.axis.com

Key features and technologies

Radar profiles

Area monitoring is a detection profile for radar in surveillance use cases. Best used for objects moving up to 55km/h (34 mph). Detects whether an object is a human, a vehicle, or an unknown object.

Road monitoring is a detection profile for radar in traffic use cases. Best used to track vehicles moving at up to 200 km/h (125 mph) in urban zones, closed zones, and on suburban roads. This mode should not be used for the detection of humans or other types of objects. The ability for detection at high speeds is dependent on the Axis radar product in use.

Dynamic LED strip

Dynamic LED strip is a feature in selected Axis radars. With RGB (red, green, blue) LEDs and predefined light patterns, it can be used to deter, warn or notify.

Edge-to-edge

Edge-to-edge technology is a way to make IP devices communicate directly with each other. It offers smart pairing functionality between, for example, Axis cameras and Axis audio or radar products.

Axis Edge Vault

Axis Edge Vault is the hardware-based cybersecurity platform that safeguards the Axis device. It forms the foundation that all secure operations depend on and offers features to protect the device's identity, safeguard its integrity from factory and protect sensitive information from unauthorized access.

Establishing the root of trust starts at the device's boot process. In Axis devices, the hardware-based mechanism **secure boot** verifies the operating system (AXIS OS) that the device is booting from. AXIS OS, in turn, is cryptographically signed (**signed firmware**) during the build process. Secure boot and signed firmware tie into each other and ensure that the firmware has not been tampered with during the lifecycle of the device and that the device only boots from authorized firmware. This creates an unbroken chain of cryptographically validated software for the chain of trust that all secure operations depend on.

From a security aspect, the **secure keystore** is the critical building-block for protecting cryptographic information used for secure communication (IEEE 802.1X, HTTPS, Axis device ID, access control keys etc..) against malicious extraction in the event of a security breach. The secure keystore is provided through a Common Criteria and/or FIPS 140 certified hardware-based cryptographic computing module. Depending on security requirements, an Axis device can have either one or multiple such modules, like a TPM 2.0 (Trusted Platform Module) or a secure element, and/or a system-on-chip (SoC) embedded Trusted Execution Environment (TEE).

To read more about Axis Edge Vault, go to *axis.com/solutions/edge-vault*.

For more information, see *axis.com/glossary*

AXIS®
COMMUNICATIONS