

# AXIS Q1656-DLE Radar-Video Fusion Camera

## Next-level detection and visualization

This unique device fuses two powerful technologies to deliver next-level detection and visualization for reliable wide-area intrusion protection 24/7. Video and radar analytics come together in AXIS Object Analytics to provide precise localization and object classification powered by deep learning and distance and speed measurements based on an object's radar signature and movement characteristics. By default, our intelligent fusion system handles notifications in the most advantageous way depending on what best suits the circumstances. Or, if you prefer, you can choose between minimizing false notifications or never missing a thing.

- > **Two powerful technologies in one device**
- > **Increased scene intelligence**
- > **Accurate detection 24/7**
- > **Built-in cybersecurity features**
- > **Premium Axis Q-line camera functionality**



# AXIS Q1656-DLE Radar-Video Fusion Camera

## Camera

### Image sensor

1/1.8" progressive scan RGB CMOS

### Lens

Varifocal, 3.9–10 mm, F1.5  
Horizontal field of view: 96°–44°  
Vertical field of view: 63°–26°  
Autofocus, i-CS lens, IR corrected, remote zoom and focus, P-Iris control  
Minimum focus distance: 0.5 m (1.6 ft)

### Day and night

Automatically removable infrared-cut filter

### Minimum illumination

4 MP 25/30 fps with Forensic WDR and Lightfinder 2.0  
Color: 0.05 lux at 50 IRE, F1.5  
B/W: 0.01 lux at 50 IRE, F1.5  
4 MP 50/60 fps with Lightfinder 2.0  
Color: 0.1 lux at 50 IRE, F1.5  
B/W: 0.02 lux at 50 IRE, F1.5  
0 lux with IR illumination on

### Shutter speed

1/47500 s to 1 s

## Radar

### Profiles

Area monitoring  
Road monitoring

### Sensor

FMCW (Frequency Modulated Continuous Wave)

### Object data

Object type (classes: humans, vehicles, unknown), range, direction, velocity

### Frequency

Area monitoring profile Channel 1: 61.25–61.48 GHz  
Area monitoring profile Channel 2: 61.02–61.25 GHz  
Road monitoring profile Channel 1: 61.25–61.43 GHz  
Road monitoring profile Channel 2: 61.05–61.23 GHz

### RF transmit power

<100 mW (EIRP)  
License-free. Unharmful radio-waves.

### Recommended mounting height

3.5–12 m (11–39 ft)<sup>(1)</sup>

### Recommended mounting tilt

15–45°<sup>(1)</sup>

### Detection range

Area monitoring profile: 5–60 m (16–200 ft) when detecting a person<sup>(2)</sup>  
5–90 m (16–300 ft) when detecting a vehicle<sup>(2)</sup>  
Road monitoring profile: Up to 150 m when detecting a vehicle<sup>(3)</sup>

### 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<sup>(4)</sup>

### Data refresh rate

10 Hz

1. The mounting height and tilt affects the detection range. See user manual at [axis.com](https://axis.com) for more information.

2. Measured at 5 m mounting height, with 25° tilt. See user manual at [axis.com](https://axis.com) for more information.

3. Measured at 7 m mounting height, with 15° tilt. The mounting height, tilt and placement of the radar-video fusion camera affects the detection range. See the user manual at [axis.com](https://axis.com) for more information.

4. Minimum distance between moving objects.

## Coverage

Area monitoring profile: 2700 m<sup>2</sup> (29000 sq ft) for persons  
6100 m<sup>2</sup> (65600 sq ft) for vehicles

## Coexistence zone

Frequency band: 61 GHz  
Radius: 350 m (1148 ft)  
Recommend 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, and object type, configurable trigger duration  
Radar transmission on/off, grid opacity, zone opacity, color scheme, trail lifetime, detection sensitivity, swaying object filter, small object filter, frequency channel, reference map calibration with options to scale, pan, and zoom map

## System on chip (SoC)

### Model

ARTPEC-8

### Memory

2048 MB RAM, 8194 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

16:9 2688x1512 Quad HD to 160x90  
4:3 2016x1512 to 160x120

### Frame rate

No WDR: Up to 60/50 fps (60/50 Hz) in all resolutions  
WDR: Up to 30/25 fps (60/50 Hz) in all resolutions

## Video streaming

Multiple, individually configurable streams in H.264, H.265 and Motion JPEG  
Axis Zipstream technology in H.264 and H.265  
Controllable frame rate and bandwidth  
VBR/ABR/MBR H.264/H.265  
Low latency mode  
Video streaming indicator

## Image settings

Saturation, contrast, brightness, Forensic WDR: Up to 120 dB depending on scene, white balance, day/night threshold, tone mapping, exposure mode, exposure zones, defogging, electronic image stabilization, compression, dynamic text and image overlay, polygon privacy mask  
Scene profiles: forensic, vivid, traffic overview

## Audio

### Streaming

Two-way, full duplex  
Noise reduction

### Encoding

24bit LPCM, AAC-LC 8/16/32/48 kHz, G.711 PCM 8 kHz, G.726 ADPCM 8 kHz, Opus 8/16/48 kHz  
Configurable bit rate

### Input/output

External microphone input or line input, line output, ring power, digital audio input, automatic gain control

## Network

### Network protocols

IPv4, IPv6 USGv6, HTTP, HTTPS<sup>(5)</sup>, HTTP/2, TLS<sup>(5)</sup>, QoS Layer 3 DiffServ, FTP, SFTP, CIFS/SMB, SMTP, Bonjour, UPnP®, SNMP v1/v2c/v3 (MIB-II), DNS, DynDNS, NTP, PTP, RTSP, RTP, SRTP/RTSPS, TCP, UDP, IGMPv1/v2/v3, RTCP, ICMP, DHCPv4/v6, ARP, SOCKS, SSH, LLDP, MQTT v3.1.1, Secure syslog (RFC 3164/5424, UDP/TCP/TLS)

## System integration

### Application Programming Interface

Open API for software integration, including VAPIX® and AXIS Camera Application Platform; specifications at [axis.com/developer-community](https://axis.com/developer-community).  
One-click cloud connection  
ONVIF® Profile G, ONVIF® Profile M, ONVIF® Profile S, and ONVIF® Profile T, specification at [onvif.org](https://onvif.org)

5. This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. ([openssl.org](https://openssl.org)), and cryptographic software written by Eric Young ([ey@cryptsoft.com](mailto:ey@cryptsoft.com)).

## Onscreen controls

Electronic image stabilization  
Day/night shift  
Defogging  
Wide dynamic range  
Video streaming indicator  
IR illumination  
Heater

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## Edge-to-edge

Speaker pairing  
PTZ camera pairing

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## Event conditions

Application  
Audio: audio detection, audio clip playing  
Device status: above/below/within operating temperature, casing open, IP address blocked, IP address removed, live stream active, network lost, new IP address, ring power overcurrent protection, system ready, radar data failure; interference, no data, tampering  
Digital audio: digital signal contains Axis metadata, digital signal has invalid sample rate, digital signal missing, digital signal okay  
Edge storage: recording ongoing, storage disruption, storage health issues detected  
I/O: digital input, manual trigger, virtual input  
MQTT: stateless  
Radar motion detection  
Scheduled and recurring: schedule  
Video: average bitrate degradation, day-night mode, tampering

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## Event actions

Overlay text, external output activation, play audio clip, zoom preset  
I/O: toggle I/O once, toggle I/O while the rule is active  
Illumination: use lights, use lights while the rule is active  
MQTT: publish  
Notification: HTTP, HTTPS, TCP, and email  
Pre- and post-alarm video or image buffering for recording or upload  
Radar: radar autotracking, radar detection  
Record video: SD card and network share  
SNMP traps: send, send while the rule is active  
Upload of images or video clips: FTP, SFTP, HTTP, HTTPS, network share, and email

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## Data streaming

Video, radar, and fusion metadata with relative position, GPS position<sup>(6)</sup>, velocity, direction, and object type

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## Built-in installation aids

Remote zoom and focus, remote back focus, leveling assistant, pixel counter

## Analytics

### Applications

#### Included

AXIS Object Analytics, AXIS Scene Metadata, AXIS Image Health Analytics  
AXIS Video Motion Detection  
AXIS Speed Monitor<sup>(7)</sup>

#### Supported

AXIS License Plate Verifier  
Support for AXIS Camera Application Platform enabling installation of third-party applications, see [axis.com/acap](https://axis.com/acap)

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### AXIS Object Analytics

Object classes (radar-video fusion): humans, vehicles

Object classes (video only): humans, vehicles (types: cars, buses, trucks, bikes, other)

Scenarios (radar-video fusion): line crossing, object in area

Scenarios (video only): crossline counting, occupancy in area, time in area

Up to 10 scenarios

Key features: detection sensitivity, object speed

Other features: triggered objects visualized with color-coded bounding boxes

Polygon include/exclude areas

Perspective configuration

ONVIF Motion Alarm event

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### AXIS Image Health Analytics

#### Detection settings:

Tampering: blocked image, redirected image

Image degradation: blurred image, underexposed image

Other features: sensitivity, validation period

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### AXIS Scene Metadata

Object classes: humans, faces, vehicles (types: cars, buses, trucks, bikes), license plates

Object attributes: vehicle color, upper/lower clothing color, confidence, position

6. Enter the camera's GPS position manually to get the objects' GPS position in the data stream.

7. Available for download

## Approvals

### EMC

EN 55032 Class A, EN 55035, EN 61000-3-2, EN 61000-3-3, EN 61000-6-1, EN 61000-6-2, EN 50121-4

**Australia/New Zealand:** CISPR 24, CISPR 35, RCM AS/NZS CISPR 32 Class A

**Canada:** ICES-3(B)/NMB-3(B)

**Japan:** VCCI Class A

**Korea:** KS C 9832 Class A, KS C 9815, KS C 9835, KS C 9547

**USA:** FCC Part 15 Subpart B Class B

**Railway:** IEC 62236-4

### Safety

IEC/EN/UL 62368-1, IEC/EN/UL 60950-22, IEC 62471, IS 13252

### 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, IEC/EN 62262 IK10, NEMA 250 Type 4X, NEMA TS 2 (2.2.7-2.2.9), ISO 21207 (Method B)

### Wireless

EN 305550, EN 301489-1, EN 301489-3, EN 62311, FCC Part 15 Subpart C

### Network

NIST SP500-267

### Cybersecurity

ETSI EN 303 645, BSI IT Security Label, FIPS 140, EN 18031-1

## Cybersecurity

### Edge security

**Software:** Signed OS, brute force delay protection, digest authentication and OAuth 2.0 RFC6749 Client Credential Flow/OpenID Authorization Code Flow for centralized ADFS account management, password protection, Axis Cryptographic Module (FIPS 140-2 level 1), AES-XTS-Plain64 256bit SD card encryption

**Hardware:** Axis Edge Vault cybersecurity platform TPM 2.0 (CC EAL4+, FIPS 140-2 Level 2), secure element (CC EAL 6+), system-on-chip security (TEE), Axis device ID, secure keystore, signed video, secure boot, encrypted filesystem (AES-XTS-Plain64 256bit)

### Network security

IEEE 802.1X (EAP-TLS, PEAP-MSCHAPv2)<sup>(8)</sup>, IEEE 802.1AE (MACsec PSK/EAP-TLS), IEEE 802.1AR, HTTPS/HSTS<sup>(8)</sup>, TLS v1.2/v1.3<sup>(8)</sup>, 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](https://axis.com/support/cybersecurity/resources)

To read more about Axis cybersecurity support, go to [axis.com/cybersecurity](https://axis.com/cybersecurity)

## General

### Casing

IP66-, and NEMA 4X-rated, IK10 impact-resistant aluminum enclosure with integrated dehumidifying membrane

weathershield with black anti-glare coating

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](https://axis.com/warranty-implication-when-repainting).

### Sustainability

PVC free, BFR/CFR free, 2% recycled plastics, 6% bio-based plastics

### Power

Power over Ethernet (PoE) IEEE 802.3at Type 2 Class 4 Typical 10 W, max 25.5 W

10–28 VDC, typical 9.5 W, max 25.5 W

Power redundancy

### Connectors

RJ45 10BASE-T/100BASE-TX/1000BASE-T PoE

Terminal block for two supervised and two unsupervised configurable inputs / digital outputs (12 VDC output, max load 50 mA)

RS485/RS422, 2 pcs, 2 pos, full duplex, terminal block

DC input, terminal block, 3.5 mm mic/line in, 3.5 mm line out

### IR illumination

Optimized IR with power-efficient, long-life 850 nm IR LEDs

Range of reach 38 m (125 ft) or more depending on the scene

8. This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. ([openssl.org](https://openssl.org)), and cryptographic software written by Eric Young ([ey@cryptsoft.com](mailto:ey@cryptsoft.com)).

**Illumination LED**

Power-efficient, long-life white LED  
Range of reach 18 m (60 ft) or more depending on the scene

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**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](https://axis.com)

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**Operating conditions**

-40 °C to 60 °C (-40 °F to 140 °F)  
Start-up at -30 °C (-22 °F)  
Maximum temperature according to NEMA TS 2 (2.2.7):  
74 °C (165 °F)  
Humidity 10–100% RH (condensing)

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**Storage conditions**

-40 °C to 65 °C (-40 °F to 149 °F)  
Humidity 5–95% RH (non-condensing)

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**Dimensions**

404 x 159 x 234 mm (16 x 6.3 x 9.2 in)

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**Weight**

5 kg (11 lb)

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**Included accessories**

AXIS TQ1003-E Wall Mount, sunshield, connector kit, resistorx<sup>®</sup> T20 tool, installation guide, Windows<sup>®</sup> decoder 1-user license

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**Optional accessories**

AXIS T8415 Wireless Installation Tool  
AXIS Surveillance Cards  
For more accessories, see [axis.com](https://axis.com)

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**Supporting software**

AXIS Radar Autotracking for PTZ (Slew to Cue)  
For supported cameras, see [axis.com/products/axis-radar-autotracking](https://axis.com/products/axis-radar-autotracking)

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**Video management software**

AXIS Camera Station and video management software from Axis Application Development Partners available at [axis.com/vms](https://axis.com/vms)

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**Languages**

English, German, French, Spanish, Italian, Russian, Simplified Chinese, Japanese, Korean, Portuguese, Polish, Traditional Chinese, Dutch, Czech, Swedish, Finnish, Turkish, Thai, Vietnamese

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**Warranty**

5-year warranty, see [axis.com/warranty](https://axis.com/warranty)

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