Typical and maximum power consumption in Axis cameras

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1   Introduction

The power consumption of an Axis camera is specified in its datasheet as a typical value and a maximum value. These values represent the power consumption of two predefined scenarios. Some camera types can have other values listed as well.

Table 1.1 *The power section in an example camera datasheet.*

Power
Power over Ethernet (PoE) IEEE 802.3af/802.3at Type 1 Class 3 Max 12.6 W, typical (heater off, IR off) 4.7 W Features: power meter

This white paper lists the camera configurations that are used to provide the typical and maximum power consumption values.

2   Typical power

The typical power scenario reflects normal use of the device under normal conditions, including room temperature and nominal supply voltage. It represents the average power consumption. In the datasheet it's specified as "typical (heater off, IR off)" or "typical (no IR)".

Table 2.1 *Camera configuration for typical power value.*

Function or interface	Settings [3]	Description
Image / encoding	Default	Video format: one H.264 stream Resolution: highest Frame rate: highest WDR: default as in camera
Compression	Default	H.264 compression: 30 Zipstream: strength low, dynamic FPS / GOP disabled
Analytics	On	AXIS Object Analytics running
Local storage	Continuous recording to SD card	Axis surveillance card with default stream settings
Ethernet	Connection type: auto-negotiate	Ethernet switch or midspan with support for maximum possible speed
Ethernet multiple ports	Connection type: auto-negotiate	Ethernet switch or midspan with support for maximum possible speed
Motors (pan, twist, tilt, roll, and zoom) [1]	Stationary after initialization	
Focus motor [1]	Autofocus, on	
Iris [1]	Operational	
IR-cut filter [1]	Day-and-night mode, on	
Radar [2]	Default	
Audio [1]	Default	No connection

Function or interface	Settings [3]	Description
I/O [1]	Default	No connection
USB 2.0 / USB 3.0 [1]	Default	No connection
RS-485 / RS-422 [1]	Default	No connection
HDMI [1]	Default	No connection
Other interfaces	Default	No connection
Wireless interface [1]	Enabled	
Heaters / IR illumination [1]	Off	Heaters and IR illumination off
Fans [1]	Default	

[1] Only applicable if supported by the camera.
[2] Only applicable if radar is part of the camera.
[3] Default settings can differ depending on product specification.

3   Typical power (legacy)

Until recently, the datasheets listed a typical power value that was based on a slightly different camera configuration. The main difference is that the old value was measured with IR illumination activated (50% of the time, if supported by the camera). This is still reflected in some Axis datasheets, resulting in higher typical power values. But as modern cameras are very light sensitive, IR illumination is used less frequently and is now less relevant to include in the typical power value.

The typical power (legacy) value is specified as "typical", as opposed to the "typical (heater off, IR off)" or "typical (no IR)" values in newer datasheets.

4   Maximum power

The maximum power scenario reflects camera use under worst-case conditions (regarding temperature and supply voltage), during a momentary power load peak. This power value is important to consider when you're designing your system and selecting the switches, DC power supplies (if applicable), and other equipment to use.

The camera configuration for the maximum power scenario includes, for example:

- Resolution and frame rate highest possible
- Multiple video streams in different formats (AV1, H.265, H.264, and MJPEG)
- Continuous recording to SD card
- All motors and fans running at full speed [1]
- Heaters at maximum power [1]
- IR illumination on at 100% [1]
- Audio enabled [1]
- I/O power out maximum load [1]
- HDMI monitor connected [1]

[1] Only applicable if supported by the camera

Some cameras have a low power mode that affects the maximum power consumption. Read more in the whitepaper about power profiles, at *whitepapers.axis.com/power-profiles*

5   Power meter

With the integrated power meter in many cameras you can measure the camera's power consumption in real time and test how it's affected by various settings, such as activating IR illumination or heaters.

The power meter provides values for current power usage, average power usage, maximum power usage, and power consumption over time. You can choose to include live power data as an overlay in the video. You can also send the power data to other systems via MQTT.

6   Considerations

- **Power budget.** The typical and maximum power values refer to the consumption of the camera itself. For a total, realistic power estimate you should also take into account the power loss in the Ethernet cable from the power source equipment (network switch or midspan) to the camera. Make sure that your power source provides enough power for the camera plus the expected losses.

- **PoE standards and margins.** The typical and maximum power values are intended for guidance. It's important that the voltage input is within the margins of the PoE standards.

- **AC or DC power input.** Some cameras support AC or DC power input as well as PoE. The datasheet will provide typical and maximum power values for all applicable types of power input. The values typically vary between the different types of power input.

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Axis has around 5,000 dedicated employees in over 50 countries and collaborates with technology and system integration partners worldwide to deliver customer solutions. Axis was founded in 1984, and the headquarters are in Lund, Sweden.