



Product Brief:

Mobileye[®] 8 Connect

An AI-powered fleet safety solution that helps prevent collisions while tracking driving behavior.



Product Overview

For fleet managers who want to improve fleet safety and their bottom line, Mobileye 8 Connect provides AI-powered, aftermarket collision avoidance system that helps both prevent collisions and improve driver performance.

This proactive solution can be retrofitted to almost any vehicle on the road. It provides drivers with real-time audio and/or visual warnings of potential hazards, giving them time to prevent or mitigate a collision.

Mobileye 8 Connect is unique amongst collision avoidance systems in its ability to receive over-the-air updates, thus ensuring your fleet always has the benefit of Mobileye's latest safety features and enhancements.

Our online fleet management tool, Mobileye Connect Platform, combines collision avoidance alerts with g-sensor data to provide a powerful picture of how fleet safety is improving.

This gives fleet managers concrete insights into drivers' safety-related behavior and vehicle tracking, so you can give your drivers the support they need.

Mobileye 8 Connect™ Components







1. A camera unit containing the camera, EyeQ chip, speaker, G-sensor, modem + SIM card, cellular antenna and gyroscope, mounted on the inside of the windshield. The camera has a viewing angle of 52° degrees, 26° on each side of the camera.
2. An EyeWatch™ display for visual alerts displayed to the driver.
3. A GPS unit for localization services

Product Overview

Mobile EyeQ4 System-on-Chip

Mobileye 8 Connect is powered by EyeQ4, the most advanced System-on-Chip in the Mobileye EyeQ family. The EyeQ4 technology has significantly faster processing power and includes the newest approaches in machine learning (ML) - Deep Neural Network (DNN) algorithms. DNN uses structures that are similar to the way the human brain thinks allowing a machine to handle layers of information. The computer can then recognize a complex pattern in the data and react accordingly.

The new EyeQ4 architecture and DNN-based algorithms mean:

-  Better detection of vehicles including nonstandard shape
-  Pedestrian detection in low light
-  Higher quality detection
-  Improved detection range



System Features

Alerts:

 Forward Collision Warning	Alerts drivers of an imminent collision with a vehicle or motorcycle ahead, both on highways and in urban areas. *	Active over 30 KPH (19 MPH). Three sensitivity levels can be configured--near (2.4 seconds), medium (2.7 seconds), far (3.0 seconds).
 Pedestrian & Cyclist Collision Warning	Alerts drivers of an imminent collision with a pedestrian or cyclist. Mobileye 8 Connect can detect vehicles, pedestrians and cyclists at night. **	Active under 50 KMH (31 MPH).
 Headway Monitoring & Warning	Helps drivers keep a safe following driving distance from the vehicle ahead and alerts drivers if the distance becomes unsafe.	Active above 30 KPH (19 MPH). Three sensitivity levels can be configured--near (0.6 seconds), medium (1.2 seconds), far (2.5 seconds).
 Lane Departure Warning	Alerts drivers when there is an unintentional deviation from the driving lane. *	Active over 55 KPH (34 MPH).
 Speed Limit Indication	Recognizes certain traffic signs and speed limit signs, and notifies the driver, both of the new speed limit and if they exceed it. ***	

* Meets NHTSA's guidelines.

** Night detection requires a minimal amount of light and does not operate in complete darkness.

*** Detects signs declared valid by the Vienna Convention on Road Signs and Signals.

System Features

Data Capabilities

Over-the-air updates (OTA)

Mobileye is continuously developing new features and improving its alerts and algorithms. Over-the-air updates will automatically download and install software updates, ensuring the system is kept up-to-date with the latest improvements and features. The OTAs are delivered without interrupting the normal mode of operation or performance of the system and are implemented only once the update process is complete. The customer will be notified of updates by email.

Mobileye Connect Platform

Mobileye Connect Platform, alert and incident data is made available for the fleet's records. This gives fleet managers clear information on their drivers' driving habits.

Platform capabilities:



Track

Track a vehicles' position and any alerts they have triggered in real-time.



Geo-Fencing

Set boundaries, ensuring that managers will be notified if vehicles leave their defined.



Trace

Track vehicles' position and any alerts they have triggered in real-time.



Reporting

Generate reports reflecting the fleet's safety and efficiency.



FAQs



How does Mobileye® 8 Connect™ work?

Just like when we drive using our vision to scan the road, judging how far we are from obstacles and what potential dangers they pose, a camera can also scan the way ahead – with the advantage of never becoming bored or distracted. But the key element is in the ability of our system to mimic how people understand these images. This is where Mobileye’s EyeQ® chip and our leading role in developing artificial intelligence come into play.

Images captured by the camera are collected by the EyeQ® chip’s SoC (system-on-chip) and each object is recognized by the chip’s AI. This AI then uses changes in perspective, shading and other data to determine if an object poses a danger. If it does, the system notifies the driver with an audio and/or a visual alert. Of course, this entire process must take place at an extraordinary speed – the EyeQ4 chip built into Mobileye 8 Connect can conduct an almost unfathomable 2.5 trillion operations per second.

The AI making these determinations is based on two decades of experience, stress-testing Mobileye algorithms against real-life driving situations derived from over 200 million miles of high-resolution video from automaker pre-production testing. Building on this historical knowledge, the AI’s deep learning capabilities allow it to develop its own algorithms, training itself with no human intervention.

What does “Connect” mean in Mobileye 8 Connect?

The “Connect” in Mobileye 8 Connect indicates that the system is able to both receive information from and send information to the cloud. This allows for implementation of features such as over-the-air (OTA) updates.

What data does the Mobileye 8 Connect device record about my driving?

Mobileye 8 Connect is able to record alerts issued by the system in addition to incidents of harsh (sudden) braking, accelerating and cornering. For fleets using Mobileye’s optional (subscription) Mobileye Connect Platform, alert and incident data is made available for the fleet’s records. This gives fleet managers clear information on their drivers’ driving habits.

Why does the system warn me when there doesn’t appear to be any danger?

The Mobileye 8 Connect device is constantly calculating and reevaluating distance, speed, and trajectory at a rate far faster than humans are capable of. Therefore, the system sometimes realizes, before the driver does, that there is a potential danger and issues an alert.

Will Mobileye 8 Connect automatically brake or keep me in lane?

Mobileye 8 Connect is an alert system only, and does not intervene in vehicle operation.

Does Mobileye 8 Connect detect pedestrians and cyclists at night?

One of Mobileye 8 Connect’s new features is the ability to detect pedestrians and cyclists at night. Note that Mobileye 8 Connect also detects vehicles at night but this is not a new feature. (This feature works in very low light but not in total darkness).

What is the maximum range of detection?

Mobileye 8 Connect can detect vehicles up to 200 meters (650 feet) ahead, motorcycles up to 100 meters (325 feet) ahead, and pedestrians at up to 70 meters (230 feet) ahead.

Technical Specifications

Mobileye® 8 Connect™ Main Unit			
Physical Characteristics		Focus range	5m to infinity
Length	120mm	Output interface:	12-bit DVP, MIPI/LVDS CSI-2
Width (without lens)	78mm	Image transfer rate:	36 fps
Height	44mm	Audio Synthesizer	
Weight	200g	SPL Minimum	86dB @ 10cm
Color	Black	EyeQ4® Vision Processor Main Features	
Case material	Aluminum/plastic	Hyper-thread 64bit RISC interAptiv MIPS CPU	
Cable length	3m	1Gb Ethernet Port	
Cable diameter	4.8mm	128MB Flash x 2 (for code memory redundant)	
Electrical Characteristics		2 x 1.6GHz, 32bit LPDDR4 SDRAM interfaces	
Input voltage	10-36VDC	4x MIPI CSI-2 Rx serial video and image preprocessing input ports	
Input current min:	12v > 500mA, 24v > 250mA	1x parallel video image preprocessing input port	
Input current max:	12v > 700mA, 24v > 300mA	3 x CAN ports (>1Mbps)	
Max power:	8.5W	3 x UART ports (5Mbps)	
Environmental Characteristics		3 x I2C Interfaces (1Mbs)	
Operating temperature	-20°c to +85°c	4 x SPI interfaces	
Storage temperature	-40°c to +105°c	Manufacture Standard	
Vision Sensor		Mobileye® 8 Connect manufactured in ISO/TS 16949 certified sites.	
Vision sensor	OV10642 RCCC CMOS 13MP HDR		
Active array size:	1280H x 1080V		
Optical format	1/2.56"		
Pixel size	4.2µm x 4.2µm		
Dynamic range	48° (horizontal)		
Shutter type	Rolling shutter		
Responsivity	4.8 V/lux sec (550nm)		
Angle of view	52° (horizontal) 42° (vertical)		

EyeWatch™ Display Unit	
Physical Characteristics	
Diameter	49mm
Depth	24mm
Depth (leg closed)	29mm
Depth (leg open)	66mm
Weight	46g
Color	Black
Case material	Plastic
Cable length	3m
Cable diameter	3.1mm
Electrical Characteristics	
Input voltage	5VDC
Input current	500mA
Environmental Characteristics	
Operating temperature	-20°c to +85°c
Storage temperature	-40°c to +100°c
Operating humidity	Up to 95%
Display Characteristics	
Viewing angle	100°
Display colors (backlighting)	LCD Full color – 40 mcd (min)
Resolution	128x128 pixels
Full System Electrical Characteristics	
Input voltage	10-36VDC
Input current (full operation)	12v > 750mA, 24v > 320mA
Input current (stand-by max)	12v > 0.4mA, 24v > 0.6mA
Max power consumption	9W

Technical Specifications

Mobileye® 8 Connect™ 3G Cellular Module	
Specification	
GSM / GRPS protocol	3.75G HSPA
Coverage area:	Global
Bands:	2G : 850/900/1800/1900 MHz 3G : 800/850/900/1900/2100 MHz
Data rates:	Up to 7.2 Mbit/s DL Up to 5.76 Mbit/s UL
Internet protocol version	IPv4 / IPv6 dual-stack
Transport layer security	Embedded TLS 1.2
Certification	GCF/PTCRB/R&TTE/CE/FCC/IC/Anatel/RCM/Giteki
Telecommunications standards	3GPP TS 27.010
Serial interface	UART (up to 921,600 bps)
Power supply	3.3 to 4.4V
SIM voltage:	1.8V
Sim size:	Nano SIM 10mm X 12.5mm X 1.2mm
Environmental Characteristics	
Operating temperature	-40°c to +85°c
Storage temperature	-40°c to +100°c

Mobileye® 8 Connect™ GNSS Module	
Receiver type	
Receive and track multiple GNSS systems:	Support following satellite GPS, GLONASS, BeiDou and QZSS signals
Features	
Frequency of time pulse signal [1PPS]	10 Hz
Module Type:	External module with antenna included
Installation	Attaches on windshield for free sky view Clock and data backup on sleep mode
Voltage Operation:	1.65-3.6V
Dimension:	40mm x 40mm
Cable length:	250mm
Environmental Characteristics	
Operating temperature	-40°c to +85°c
Storage temperature	-40°c to +100°c



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