Installation and configuration manual

Advanced People Sensor, Firmware 1.12

APS-90, APS-180E and APS-90-Outdoor

Draft

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1 Overview

The Advanced People Sensor (APS) counts persons within the configured area/monitored area based on stereoscopic imaging and image processing. The counting data is stored internally and can be transferred via different interfaces for external processing.

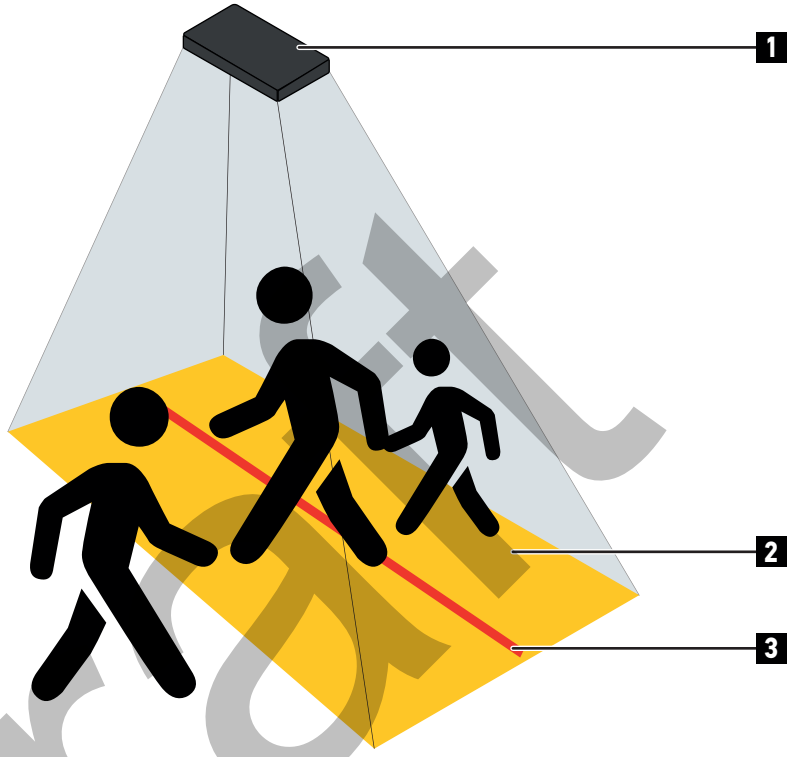

Fig. 1: People sensing

1 Advanced People Sensor (APS)
2 Configured area/monitored area
3 Counting line

The results can be verified using video recording (optional). This enables a precise proof of the counting accuracy.

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2 General information

2.1 About this document

This manual provides information for optimal configuration and efficient operation of the device.

Personnel must carefully read and fully understand this manual before performing any installation or configuration tasks.

The figures in this manual are for information only. Actual design may differ from illustrations.

Target group

This document is addressed to system integrators.

Software and hardware version

All information in this manual refers to firmware version 1.12 and hardware APS.

Modifications to the functionality which will be implemented through future software updates will be described in separate release notes or in an updated version of the manual.

Notes

Notes and safety instructions are marked by symbols in this manual.

For safety instructions the relevant symbol and words indicate the severity of the danger.

NOTICE!
This combination of symbol and signal word indicates a potentially dangerous situation, which can lead to property damage, data loss or misuse of the device if not avoided.

This symbol highlights useful tips and recommendations as well as information for efficient and trouble-free operation.

2.2 About the manufacturer

Service requests

Service requests regarding the device can be sent to the following e-mail address:

people.counter.support@hella.com

The general contact information is shown on page 2.

Warranty information

The warranty information is included in the general terms and conditions of Hella Aglaia.

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2.3 Limitation of liability

All the data and notes in this manual were compiled considering the applicable standards and regulations as well as the state of the art.

In the following cases HELLA Aglaia assumes no liability for damages:

- Non-compliance with this manual.
- Deviation from the intended use.
- Assignment of untrained personnel.
- Unauthorized technical changes.
- Use of unauthorized accessories.

For special models, use of additional order options, or current technical changes, the actual scope of delivery can deviate from the explanations and illustrations in this manual.

The obligations agreed upon in the delivery contract, General terms and conditions and delivery conditions of HELLA Aglaia as well as any legal regulations applicable at the time of the contract conclusion apply.

2.4 Scope of delivery

The standard scope of delivery for the Advanced People Sensor includes:

- The Advanced People Sensor.
- This operating manual as a digital version by download.

2.5 Use of the Advanced People Sensor

Intended use

The Advanced People Sensor is a sensor assembly, which must be integrated into other systems.

The Advanced People Sensor is intended for automatically counting persons in the configured monitored area.

The Advanced People Sensor is intended for detecting and monitoring persons in the configured monitored zone or detecting wireless devices in combination with a wireless USB adapter.

Proper and safe operation of the product requires appropriate transport, storage and installation as well as attentive operation and care.

The information in this manual must also fully comply with use to be deemed ‘intended’.

Any use which deviates or exceeds the intended use is considered as ‘misuse’.

Non intended use

The following list contains, but is not limited to, the following examples of non intended use:

- Use with unauthorized modified firmware.
- Use in unsuitable environments (e.g. use outdoors if the Advanced People Sensor is not specified for outdoor operations).

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2.6 Requirements for initial operation

Accessories

The following accessories are required for the initial operation of the device, but they are not included in the scope of delivery:

APS-90 and APS-180E

- RJ-45 Ethernet cable
- Ethernet switch with PoE or PoE injector, alternatively 24 V power supply for APS-IO models
- PC or tablet for configuration

APS-90-Outdoor and APS-90-Outdoor-PoE

- M12 Ethernet cable
- Ethernet switch with PoE or PoE injector for APS-90-Outdoor-PoE
- 12 to 24 V power supply for APS-90-Outdoor
- PC or tablet for configuration.

PC or tablet minimum requirements

- Latest web browser supporting HTML5 and WebSockets (e.g. Mozilla Firefox 44.0, Google Chrome 48.0, Apple Safari 9.0, Microsoft Edge).
- Optional OpenDHCP, to connect to a single device without any other DHCP server in the network e.g. inside a router.

2.7 Privacy of data statement

It should be noted that the APS can be used as a camera, and that it is possible to record and store video data. Under certain conditions it may also be possible to identify a person.

The standard scope of delivery is privacy by default.

The user must establish in advance whether there are legal requirements or privacy regulations applicable when using the people sensor. Appropriate measures should be taken to prevent unauthorized access to the unit.

To prevent unauthorized access to the unit change the password for full access. Also change the password for service access via linux ssh.

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3 Technical data

3.1 Electrical data

Supply voltage

Input voltage U_{PoE} (PD class 0) via Ethernet	36 .. 57 V DC
Power consumption P_{IN} (without USB load)	6 W (125 mA at 48 V DC)

Ethernet

	APS-90 APS-180 APS-180E	APS-90-Out-door
Transfer rate	100 / 1000 MBit/s	10 / 100 MBit/s
Cable length, maximum	100 m (328 ft)	
Connector type (APS/PC)	RJ-45	M12 D-coded, 4-pin, female

USB

	APS-90 APS-180 APS-180E	APS-90-Out-door
USB type	USB 2.0 type host	-
Connector type (APS/PC)	Type-A	-

3.2 Optical data

Category	Description
Image resolution	640 x 480 px, color
Aperture	1.8
Focal length	2.6 mm (0.10 in)
Angle of view	110° diagonal 100° horizontal
Light sensitivity, minimum	3 lx, HDR

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3.3 Environmental conditions

Category	APS-180E	APS-90 APS-180	APS-90-Outdoor
Operating temperature (ambient temperature housing)	-25 to 70 °C (-13 to 158 °F)	0 to 55 °C (32 to 131 °F)	-25 to 70 °C (-13 to 158 °F)
Storage temperature (when device is switched off)	-40 to 85 °C (-40 to 185 °F)		
Relative humidity (non-condensing)	0 .. 90%		95% .. 100% short-time maximum (relative)
Ingress protection (DIN IEC 60529)	IP40		IP65 in conjunction with appropriate mating connectors
Illuminance, minimum	3 lx		

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4 Cleaning, maintenance and troubleshooting

4.1 Cleaning

Materials:
- Lint-free cloth
- Commonly available neutral cleaners diluted with water

Optimal counting accuracy can be achieved only if the view of the cameras is not obstructed.

1. Check the lens cover plate or outside housing for dirt, scratches and stickers at regular intervals.

NOTICE!

Reduced transparency by cleaning with solvents

Solvents can reduce the transparency of the lens cover plate.

– Do not use cleaning agents containing solvents (such as gasoline, acetone, petroleum and turpentine)

2. Clean the lens cover plate or the housing if necessary.

4.2 Maintenance

The device does not require any preventive maintenance.

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5 Disposal

After decommissioning, the product shall be recycled as waste electronic in an environmentally safe way. In the European Union, the WEEE Directive 2012/19/EU applies. HELLA Aglaia will recollect its own electronic products free of charge and take care of the further processing.

Decommissioned devices can be sent to the address:

HELLA Aglaia Mobile Vision GmbH

Ullsteinstrasse 140

12109 Berlin

Germany

Please clearly mark the goods as **waste**.

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6 Appendix

6.1 CE Declaration of Conformity

Hella Aglaia

CE

EU Konformitätserklärung / EU *Declaration of Conformity (DoC)*

Wir / *We,*

Hella Aglaia Mobile Vision GmbH

(Name des Herstellers / seines Vertreters | *manufacturer / authorised representative)*

Ullsteinstraße 140, 12109 Berlin, Deutschland

(Adresse | *address*)

erklären auf eigene Verantwortung, dass das Produkt /
declare under our own responsibility that the product

Automatic People Sensor; APS-180E, APS-180E-IO

(Produktbeschreibung; Modellnamen | *product description; model names)*

auf das sich diese Erklärung bezieht, die Anforderungen nach den folgenden Normen einhält:
to which this declaration refers complies with the following standards:

EMC ; EN 55024:2010,
EN 55032:2012+AC:2013
RoHS ; EN 50581:2012

(Richtlinie; Nummern : Ausgabedatum der referenzierten Dokumente | *directive; number: date of issue of the referenced documents)*

Gemäß den Bestimmungen von:
According to the requirements of:

2014/30/EU : Elektromagnetische Verträglichkeit - EMV Richtline | *Electromagnetic Compatibility (EMC) Directive*
2011/65/EU : RoHS Richtline | *Restriction of the use of certain Hazardous Substances (RoHS) Directive*

(falls zutreffend | *if applicable)*

Geschehen am:
Done on:

verantwortliche Personen:
responsible persons:

Berlin, 2017-11-22

Matthias Nerlich
Head of Business Unit

Stefan Gliem
Head of Hardware development

Fig. 2: APS-180E CE declaration

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6.2 Federal Communications Commission (FCC) Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example- use only shielded interface cables when connecting to computer or peripheral devices).

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

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7 Glossary and abbreviations

APC	**A**utomatic **P**eople **C**ounter First generation people counter.
APS	**A**dvanced **P**eople **S**ensor Second generation people sensor, successor of the APC
APS-M	**APS** for **M**obile applications such as busses and trains.
APS-RS	**APS** for **R**etail & **S**ecurity and other stationary applications.
CSV	**C**omma **s**eparated **v**alues File format where values are separated by commas. Those files can be imported into Microsoft Excel.
DHCP	**D**ynamic **H**ost **C**onfiguration **P**rotocol Protocol and service dynamically distributing network configuration parameters, such as IP address and servers.
DNS	**D**omain **N**ame **S**ystem Resolves queries for FQDN host names into IP addresses
FQDN	**F**ully **Q**ualified **D**omain **N**ame Address of a device or server using DNS instead of an IP address
FTP	**F**ile **T**ransfer **P**rotocol Protocol for data transfer; used for transferring the counting data registered by the APS
H.264	Video compression standard. This is used by APS video storing and streaming.
HAGL	**H**ELLA **Agl**aia
HDR	**H**igh-**D**ynamic-**R**ange imaging Technique used in imaging to reproduce a greater dynamic range of luminosity.
HTML5	**H**yper**t**ext **M**arkup **L**anguage, fifth revision Markup language used for structuring and presenting content on the World Wide Web since 2014. This is used by the user interface of the APS.
HTTP	**H**yper**t**ext **T**ransfer **P**rotocol Application protocol for data transmissions in networks. HTTP is the basis for data communications in the World Wide Web.
HTTPS	**H**yper**t**ext **T**ransfer **P**rotocol **S**ecure Application protocol for secure communication in networks
IP address	**I**nternet **P**rotocol address Manually or dynamically assigned in the network
JSON	**J**ava**S**cript **O**bject **N**otation Used by the APS REST interface.
Lux	Unit of illuminance.
MAC address	**M**edia **A**ccess **C**ontrol address

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	Unique hardware address of a network device.
MQTT	**M**essage **Q**ueuing **T**elemetry **T**ransport ISO standard 20922 publish-subscribe-based messaging protocol
NTLM	**NT L**AN **M**anager Security protocol for authentification at http proxy
NTP	**N**etwork **T**ime **P**rotocol Protocol for the synchronization of time and date settings
OSD	**O**ptical **S**elf **D**iagnosis Software function for checking the visual range
PoE	**P**ower **o**ver **E**thernet Procedures for powering network devices over the eight-wire Ethernet cable
Push service	Sending data from the APS to a data server (the connection is established by the APS)
RAS	**R**emote **A**ccess **S**ervice Web service to remote access sensors
RTSP	**R**eal **T**ime **S**treaming **P**rotocol Typically used for Video Streaming
SOAP	**S**imple **O**bject **A**ccess **P**rotocol Network protocol for exchanging data between systems and implementing remote procedure calls
TCP	**T**ransmission **C**ontrol **P**rotocol One of the core data transfer protocols of the Internet Protocol suite and with ordered data transfer
UDP	**U**ser **D**atagram **P**rotocol One of the core data transfer protocols of the Internet Protocol suite
UTC	**U**niversal **T**ime **C**oordinated Coordinated Universal Time is the main time standard by which the world regulates clocks and time.
VPN	**V**irtual **P**rivate **N**etwork Technology using the Internet to connect computers to isolated remote computer networks that would otherwise be inaccessible
WebSocket	Protocol providing full-duplex communication between web browsers and web servers. This is used by the web browser user interface of the device.
WiFi or Wi-Fi	**W**ireless-**Fi**delity Commercial name for wireless local area network.
WLAN	**W**ireless **L**ocal **A**rea **N**etwork Wireless network typical at 2.4 or 5 gigahertz radio bands.
XML	E**x**tensible **M**arkup **L**anguage

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Defines a set of rules for encoding documents in a format that is both human-readable and machine-readable. XML has been employed as the base language for communication protocols.

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