Version 1.0

ADVANCED PEOPLE SENSOR

APS-90-Lite

Assembly Instructions

Original Assembly Instructions

HAGL-120-00077

HELLA Aglaia People Sensing Technologies
people-sensing.com

Hella Aglaia

HELLA Aglaia Mobile Vision GmbH
Ullsteinstraße 140
12109 Berlin
Germany

Telephone: +49 30 2000429-0
Fax: +49 30 2000429-109
E-mail: support@people-sensing.com
Internet: www.people-sensing.com

SUPPLEMENTAL DIRECTIVES

Copyright Information

HELLA Aglaia Mobile Vision GmbH reserves the right to revise or replace this manual at any time and without prior notice. Make sure that you have the appropriate version of this manual for the installed firmware version of the device. If you have any questions, please contact HELLA Aglaia Mobile Vision GmbH.

HELLA Aglaia Mobile Vision GmbH does not guarantee the completeness, accuracy, or timeliness of the laws, guidelines, or regulations referred to or quoted, whether directly or indirectly, in this manual. It is the responsibility of the user to become familiar with the current laws, guidelines, and regulations that apply to their work.

HELLA Aglaia Mobile Vision GmbH reserves the right to modify the described devices (including the respective software) without prior notice, irrespective of the content of this manual. Unless expressly agreed upon in writing, HELLA Aglaia Mobile Vision GmbH is not obligated to notify the owner or user of the devices described in this manual (including the respective software) of any revisions, updates, or modifications without further request.

With regard to the APS-90-Lite, HELLA Aglaia Mobile Vision GmbH's liability is limited to the terms and conditions of purchase. The information provided in this manual is not a warranty or guarantee of any kind. Stipulations concerning the devices described in this manual are only deemed warranties if they are expressly referred to as such in writing and contain a description of the warranty's scope and the product covered by the warranty.

The product and company names mentioned in this manual may be protected trademarks of other manufacturers.

The information contained in this manual has been prepared by HELLA Aglaia Mobile Vision GmbH with great care using sources available to HELLA Aglaia Mobile Vision GmbH. However, HELLA Aglaia Mobile Vision GmbH shall not be responsible for any errors, incorrect or incorrectly compiled data, and any consequences resulting therefrom, irrespective of the legal basis, provided that HELLA Aglaia Mobile Vision GmbH's conduct amounts to no more than ordinary negligence.

The aforementioned exclusion of liability does not apply to damages resulting from injury to life, body, or health or to damages that are caused intentionally, by gross negligence on the part of HELLA Aglaia Mobile Vision GmbH, or by the violation of due diligence requirements in connection with the development, manufacture, and distribution of the products described in this manual.

This does not affect the liability regardless of negligence or fault pursuant to legal regulations such as the Product Liability Act.

TABLE OF CONTENTS

1 Overview. 6
2 General Information. 7
2.1 About this Document. 7
2.2 About the Manufacturer. 8
2.3 Limitation of Liability. 8
2.4 Scope of Delivery. 9
2.5 Use of the Advanced People Sensor. 9
2.6 Privacy of Data Statement. 10
3 Hardware. 11
3.1 Housing. 11
3.2 Ethernet Port on Device. 11
3.3 I/O Port on Device. 12
3.4 Status LED. 12
3.5 Factory Reset Button/Pin. 13
4 Technical Data. 14
4.1 Mechanical Data. 14
4.2 Hardware Interface Specifications. 14
4.2.1 Ethernet. 14
4.2.2 I/O Port. 15
4.3 Electrical Data. 16
4.4 Optical Data. 17
4.5 Environmental Conditions. 17
4.6 Product Labels. 18
5 Installation. 19
5.1 Requirements. 19
5.2 Wiring Examples. 21
5.2.1 Power Supply. 21
5.2.2 Digital Input With an IR-Sensor. 21
5.2.3 Digital Output With Potential-Free Contacts. 22

5.2.4 Digital Output With Buzzer 23
5.2.5 Digital Output With Relay 23
5.3 Multi Sensor Fusion 24
6 Cleaning and Maintenance 29
6.1 Cleaning 29
6.2 Maintenance 29
7 Disposal 30
8 Appendix 31
8.1 Ordering Information 31
8.2 Federal Communications Commission (FCC) Statement 32
9 Glossary and Abbreviations 33
10 Index 34

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.

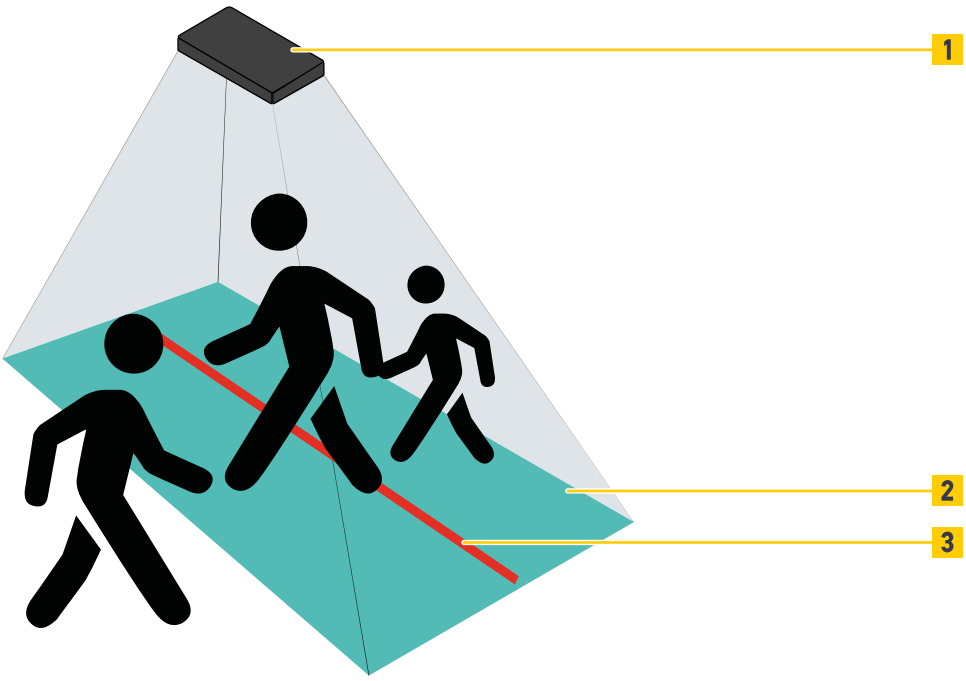


Fig. 1: People sensing

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 validation of the counting accuracy.

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.

Hardware Version

All information in this manual refers to hardware APS-90-Lite.

Modifications to the functionality which will be implemented through future hardware updates will be described 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.

Symbols

+	A superscript plus-sign after a word indicates a glossary entry for this word. To view the glossary entry click on the plus-sign.
	This symbol highlights useful tips and recommendations as well as information for efficient and trouble-free operation in a paragraph.

2.2 About the Manufacturer

Service Requests

Service requests regarding the device can be sent to the following email address:

support@people-sensing.com

You can also use our support center at: ➦ support.people-sensing.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.

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.
- Opening the device.
- Damage or removal of the "DO NOT OPEN DEVICE" label.
- Damage or removal of the seal.

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 device includes:

- The Advanced People Sensor.
- This manual as a digital version by download.
- The configuration 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 as the sole people detector for switching safety relevant equipment e.g. to close a door.
- Use with unauthorized modified firmware.
- Opening the device or use without housing.
- Use in unsuitable environments (e.g. use outdoors if the Advanced People Sensor is not specified for outdoor operations).

2.6 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 shows a static camera view image in the HMI. Therefore, people are usually not visible.

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.

It is possible to switch off or permanently disable the video streaming and recording functions. For more sensitive environments, we do also provide a firmware version where no people are visualized.

To prevent unauthorized access to the device, change the password for the admin user. Or better, create new users and delete the existing admin user.

To prevent unauthorized access to the device, you will be prompted to change the password of the admin user the first time you log in after the update. Or better, create new users and delete the existing admin user.

3 HARDWARE

3.1 Housing

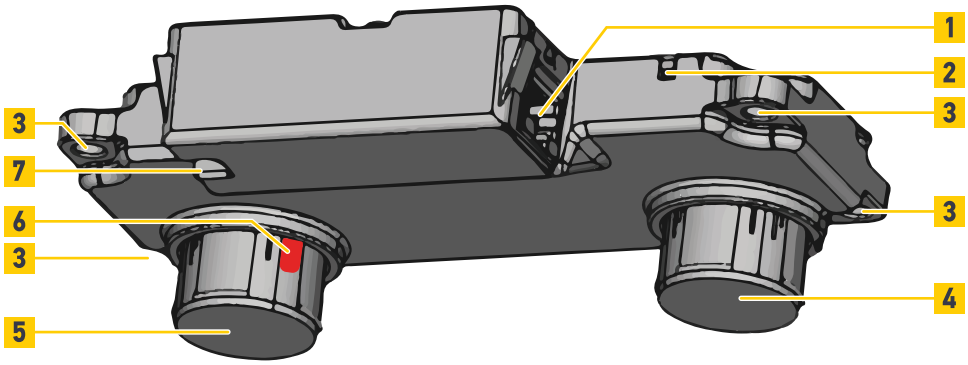


Fig. 2: Housing

1	Ethernet interface (RJ45), X2	2	Factory reset button
3	Fixing holes	4	Right HDR camera
5	Left HDR camera	6	Status LED
7	I/O interface (Mini-Fit-jr, 2x4), X1		

3.2 Ethernet Port on Device

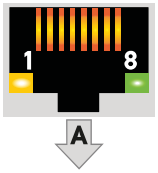


Fig. 3: RJ45 Ethernet interface ("A": optics orientation)

Pin no.	Name	Description
1	TxRx A +	Transmit/Receive A (positive polarity)
2	TxRx A –	Transmit/Receive A (negative polarity)
3	TxRx B +	Transmit/Receive B (positive polarity)
4	TxRx C +	Transmit/Receive C (positive polarity)
5	TxRx C –	Transmit/Receive C (negative polarity)
6	TxRx B –	Transmit/Receive B (negative polarity)
7	TxRx D +	Transmit/Receive D (positive polarity)
8	TxRx D –	Transmit/Receive D (negative polarity)

3.3 I/O Port on Device

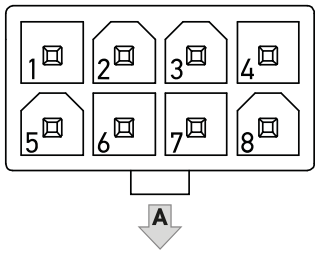


Fig. 4: Mini-Fit I/O Interface ("A": optics orientation)

Pin no.	Name	Description
1	PWR +	DC voltage supply + (12 ... 30 V)
2	IN1 +	Programmable input +, potential-free (typically used for a door contact)
3	IN2 +	Programmable input +, potential-free (typically used for a door contact)
4	OUT1 +	Programmable output +, potential-free
5	GND	DC voltage supply -
6	IN1 -	Programmable input -, potential-free (typically used for a door contact)
7	IN2 -	Programmable input -, potential-free (typically used for a door contact)
8	OUT1 -	Programmable output -, potential-free

3.4 Status LED

Status LED

Starting the device takes about 40 seconds. During this time the status LED is as follows:

- When the device starts the LED is illuminated in red for approximately 5 sec.
  When the device starts the LED is illuminated in red for approximately 10 sec.
- During the rest of the startup process the LED flashes green.
- While waiting for DHCP the LED is blinking in yellow. This overlays the green blinking of startup process.
- At end of startup the LED is illuminated in green for approximately 6 sec. Then off.

User interface is accessible approximately 10 sec later.

The status LED use different colors for signaling.

Color	Period	Description
red	10 s after power on	Start system
red	permanently	Error during boot process
green	blinking	Base system is starting
green	6 s during power on	IP address is assigned, sensor is ready to detect and count people. About 10 s later sensor is ready to be accessed by web interface.
green	permanently	LED is configured for system running
off	permanently	System is running.
blue	5 s while pushing reset button	Change to fallback mode when disengaging the reset button.
blue	1 s	LED is configured for signaling count events
yellow	blinking	Waiting for DHCP
yellow	5 s while pushing reset button	Factory reset
yellow	permanently	LED is configured for Fill Level

3.5 Factory Reset Button/Pin

The device must be powered for using the button.

On an APS-90-Lite press the button (Fig. 2 /2) gently with a pencil.

The device will change the LED illumination as feedback.

While the using the button/pin, the status changes every 5 seconds in the following sequence. Release the reset button or open the connection of the two pins to execute the option currently indicated by the LED.

- Fallback System while the LED will illuminate blue.
- Factory Reset while the LED will illuminate yellow.
- Nothing while the LED is off.

By the 'Factory Reset' all settings (including network settings) restored to the factory defaults. The device reboot. This reboot takes more time as a normal startup.

At the 'Fallback System' the device is started only with a basic emergency system in DHCP+ mode. The LED illuminated in red during the whole time. You could connect to a simple user interface, that allow you to:

- Update the firmware.
- Set the IP setting to use DHCP.
- Set the device to the factory default settings (factory reset).
- Display diagnosis data.
- Reboot the device.

4 TECHNICAL DATA

4.1 Mechanical Data

Category	Description
Dimensions	136.0 mm x 79.4 mm x 31.0 mm
Weight	250 g
Material	Aluminum / stainless steel

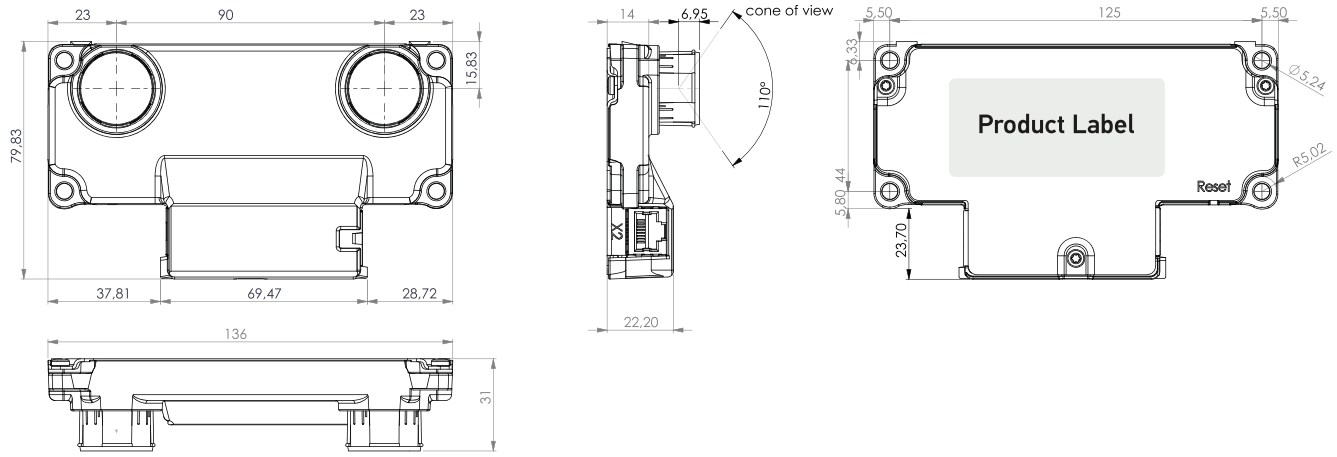


Fig. 5: APS-90-Lite dimensions

4.2 Hardware Interface Specifications

4.2.1 Ethernet

Characteristics

Gigabit Ethernet with twisted pair cables, known as 1000BASE-T, IEEE 802.3 Clause 40 (earlier known as IEEE 802.3ab).

This Gigabit Ethernet interface serves for the communication of the APS with other devices within an Ethernet network. The interface is also used for connecting a PC in order to configure the device.

Pin Allocation on Device

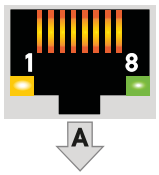


Fig. 6: RJ-45 Ethernet interface (arrow "A": optics orientation)

Pin no.	Name	Ethernet	PoE mode A	PoE mode B
1	TxRx A +	Transmit/Receive A (positive polarity)	DC +	
2	TxRx A –	Transmit/Receive A (negative polarity)	DC +	
3	TxRx B +	Transmit/Receive B (positive polarity)	DC –	
4	TxRx C +	Transmit/Receive C (positive polarity)		DC +
5	TxRx C –	Transmit/Receive C (negative polarity)		DC +
6	TxRx B –	Transmit/Receive B (negative polarity)	DC –	
7	TxRx D +	Transmit/Receive D (positive polarity)		DC –
8	TxRx D –	Transmit/Receive D (negative polarity)		DC –

4.2.2 I/O Port

Pin Allocation on Device

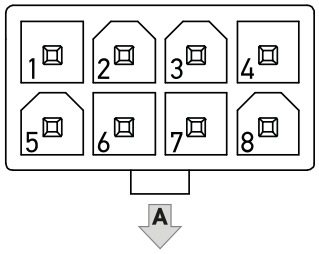


Fig. 7: Mini-Fit I/O Interface ("A": optics orientation)

Pin no.	Name	Description
1	PWR +	DC voltage supply + (12 ... 30 V)
2	IN0 +	Programmable input +, potential-free (typically used for a door contact)
3	IN1 +	Programmable input +, potential-free (typically used for a door contact)
4	OUT +	Programmable output +, potential-free
5	GND	DC voltage supply -
6	IN0 -	Programmable input -, potential-free (typically used for a door contact)
7	IN1 -	Programmable input -, potential-free (typically used for a door contact)
8	OUT -	Programmable output -, potential-free

	Description	Example
Connector	Mini-Fit Jr. Receptacle Housing, Dual Row, 8 Circuits, UL 94V-0, Natural	Molex: 39012085
Crimp terminal	Mini-Fit Female Crimp Terminal, Tin (Sn) over Copper (Cu) Plated Brass, 18-24 AWG, Reel	Molex: 39000038
Crimp tool	Hand Crimp Tool	Molex: 638190901

4.3 Electrical Data

Supply Voltage

Category	Description
Input voltage U_{nom}	24 V DC U_{min}: 12 V DC U_{max}: 30 V DC Protected against short-circuit and inverse polarity
Power consumption P_{IN}	approx. 4 W
Inrush current	I_{in} < 400 mA at 24 V DC after 10 ms

Ethernet

Category	Description
Transfer rate	100 / 1000 MBit/s
Cable length, maximum	100 m (328 ft)
Socket type (APS)	RJ-45

4.4 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 +
Base distance of cameras	90 mm (3.54 in)

4.5 Environmental Conditions

Category	Description
Operating temperature (ambient temperature housing)	20 °C to 70 °C (-4 °F to 158 °F)
Storage temperature (when device is switched off)	-40 to 85 °C (-40 to 185 °F)
Relative humidity (non-condensing)	95% .. 100% short-time maximum (relative)
Ingress protection (DIN IEC 60529)	IP30
Illuminance, minimum	3 lx

4.6 Product Labels

Identification Label

Fig. 8: Identification label

The identification plate contains the following information:

1	Manufacturer name	2	Production country
3	Production date	4	Serial number / MAC address
5	Certification markings (e.g. CE)	6	Preinstalled licenses
7	Software / Firmware version	8	Hardware model
9	Part number	10	Product name (e.g. APS-90-Lite)
11	Manufacturer logo		

Do Not Open Label

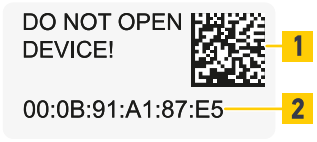


Fig. 9: Do Not Open Label

The small label with the warning "DO NOT OPEN DEVICE!" at the side of the device with data matrix code (Fig. 9 /1) provides the serial number/MAC address (Fig. 9 /2) and some production information in encoded form.

> ***Do Not Open***
>
> *Opening the device will void the warranty.*

After assembly, all devices are calibrated. Opening the device changes the assembly conditions so that the calibration is invalid.

During production it is possible that the lenses are positioned slightly off the center of the housing cutouts. This is intentional and does not influence the function or quality of the unit.

5 INSTALLATION

5.1 Requirements

Mounting Position

Consider the following requirements when selecting the mounting position:

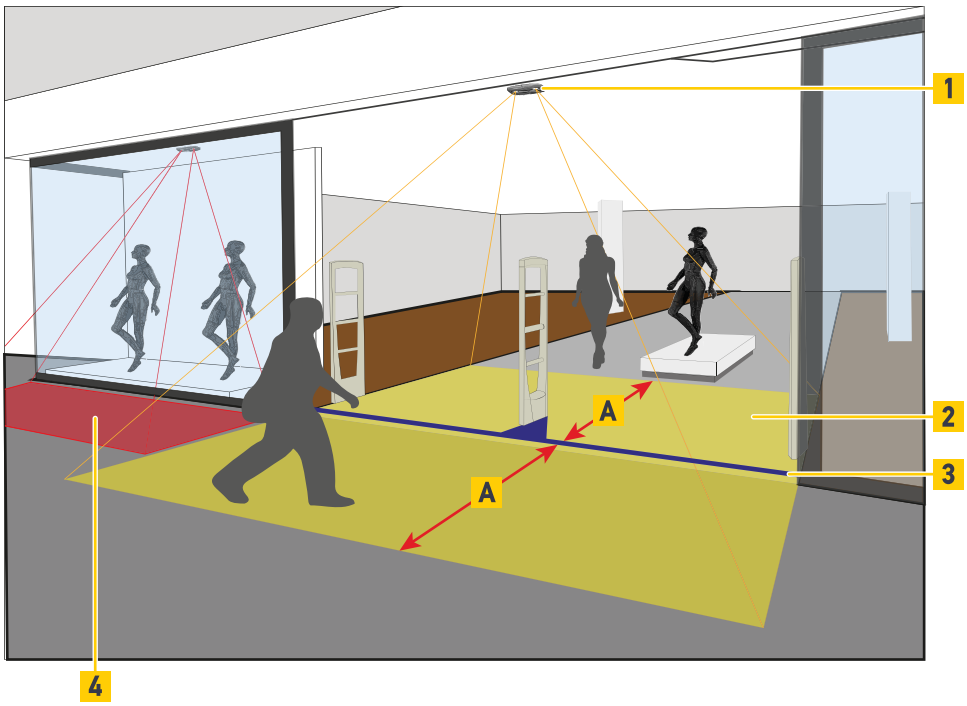


Fig. 10: Mounting position

- Ensure that the mounting position and the holder / protective housing provide sufficient stability.
- Ensure that the mounting position is in the right place:
  - As much as possible, the view between the device and people's heads should be unobstructed.
  - As much as possible, the monitored area (Fig. 10 /2) must be free of interfering objects.
  - The flow of persons in a monitored area should be through the center.
  - Place the device (Fig. 10 /1) above the end of the door swing area, because the counting lines must be set around that door swing area.

- Place the device at least 30 to 50 cm (11.8 to 19.7 in) away from a wall with sliding doors, because a minimum clearance of 30 to 50 cm (11.8 to 19.7 in) (Fig. 10 /A) must be observed between the counting lines (Fig. 10 /3) and the entrance for tracking people.
- For counting line applications there must not be any point of interest (Fig. 10 /4) in the counting area, i.e. no place where people are encouraged to linger (sales counter, coat stands, info stands, etc.), because tracking may be lost e.g. due to persons bending down or interacting with objects

- Ensure that there are no sight restrictions.

  If the view in the visual range is impaired, the obstructed area can be defined.
- Ensure that the area is sufficiently illuminated.

Mounting Parameters

Category	Description
Mounting height	2.0 ... 4.0 m (6.6 ...13.1 ft)
Mounting pitch angle α	-45° ... 0 ... 45°
Mounting yaw angle β	-45° ... 0 ... 45°
Distance from the door, optimal	30 ... 50 cm (11.8 ... 19.7 in)
Lateral alignment	centered in the passage area

Consider the following parameters when positioning the device:

The device has an integrated tilt measurement, therefore there is no need to use an extra angle measuring device. The pitch (Fig. 11 /α) and yaw (Fig. 11 /β) angles allow values up to 45°. Keep in mind that this maximum angle value is not very useful, because at the camera edges you will see up to the horizon and small people may be obstructed by bigger people. 30° is a more realistic suggestion as a useful maximum.

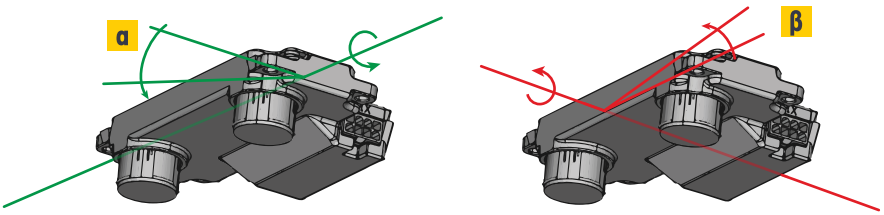


Fig. 11: Mounting position (angles)

The reference plane for the mounting height is the floor directly beneath the device. The device can approximate measure it's own mounting height, if there is a big enough visible floor area . Be prepared to use a distance measuring device as backup. Measure the mounting height from the base to the optics.

Table 1: Monitored Area

Installation height		Width (X)		Depth (Z)	
[m]	[ft]	[m]	[ft]	[m]	[ft]
2.00	6.56	1.85	6.07	1.60	5.25
3.00	9.84	3.90	12.80	3.30	10.83
4.00	13.12	6.00	19.69	5.05	16.57
5.00	16.40	8.00	26.25	6.80	22.31
6.00	19.69	8.00	26.25	8.00	26.25

5.2 Wiring Examples

5.2.1 Power Supply

The following example shows a wiring diagram for the power supply.

Observe the following electrical limit values:

U_{max} = 30 VDC

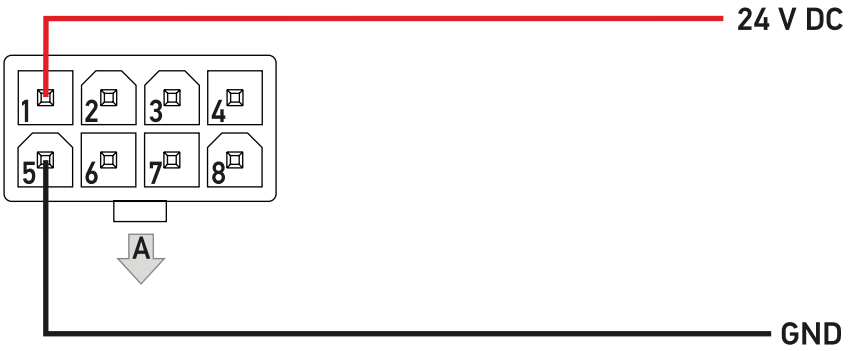


Fig. 12: Power supply

5.2.2 Digital Input With an IR-Sensor

The following example shows a wiring diagram with an infrared sensor as digital input.

Observe the following electrical limit values:

I_{max} = 100 mA

U_{max} = 30 VDC

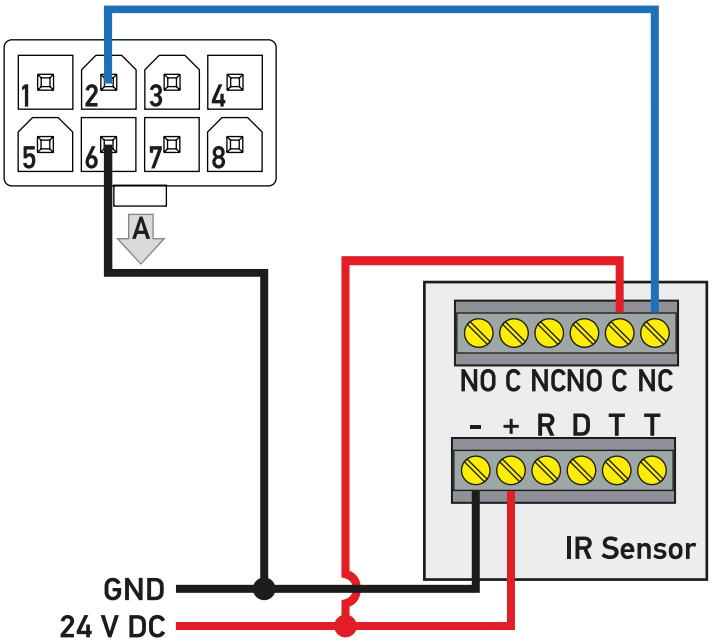


Fig. 13: Digital input with an IR sensor at IN1

5.2.3 Digital Output With Potential-Free Contacts

The following examples shows wiring diagrams for the potential-free digital output contacts.

Observe the following electrical limit values:

I_{max} = *100 mA*

U_{max} = *30 VDC*

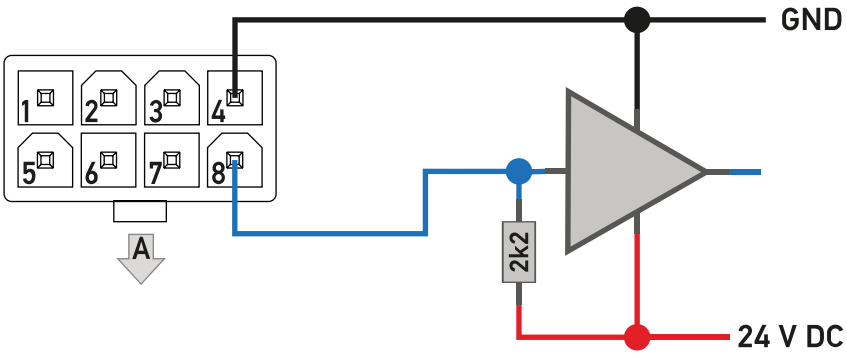


Fig. 14: Digital output with potential-free contacts at OUT1

5.2.4 Digital Output With Buzzer

The following examples shows wiring diagrams for the potential-free digital output contacts.

Observe the following electrical limit values:

I_{max} = 100 mA

U_{max} = 30 VDC

Fig. 15: APS-180 Digital output with buzzer at OUT1

5.2.5 Digital Output With Relay

The following examples shows wiring diagrams for the potential-free digital output contacts.

Observe the following electrical limit values:

I_{max} = 100 mA

U_{max} = 30 VDC

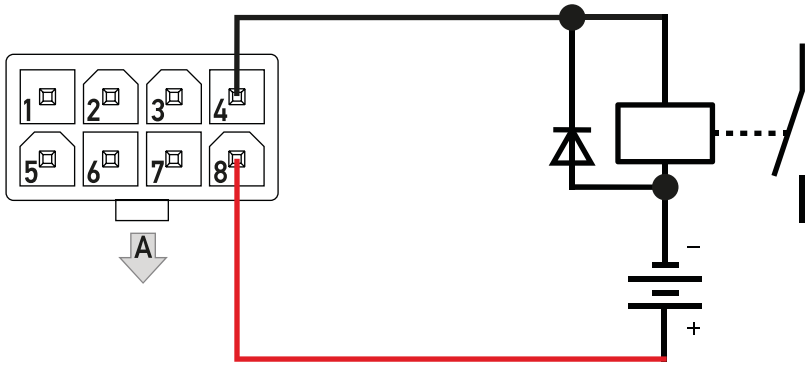


Fig. 16: Digital output with relay at OUT1

5.3 Multi Sensor Fusion

Up to 10 sensors can be merged to monitor large areas.

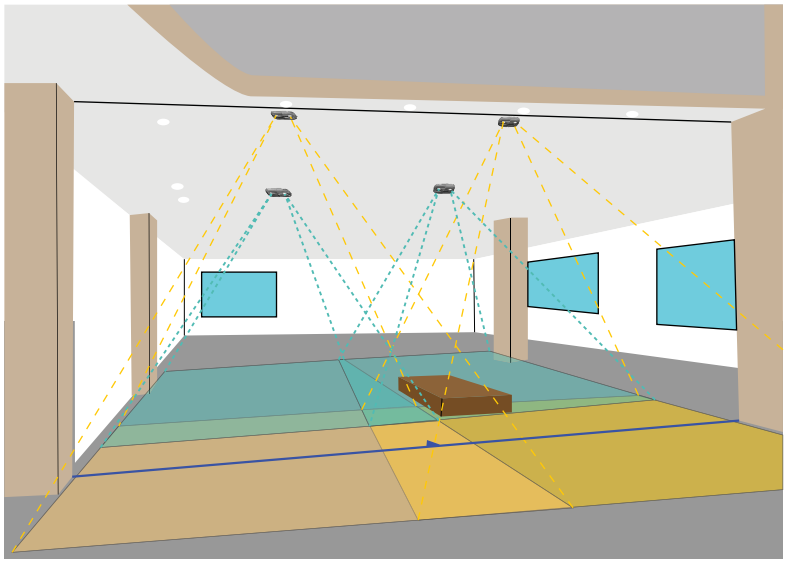


Fig. 17: Fusion of 4 sensors

In this sensor array it is possible to define up to 10 counting lines and up to 8 monitored zones.

Fusing sensors means one device is defined as fusion host (Fig. 18 /H). The other devices are defined as fusion clients (Fig. 18 /C).

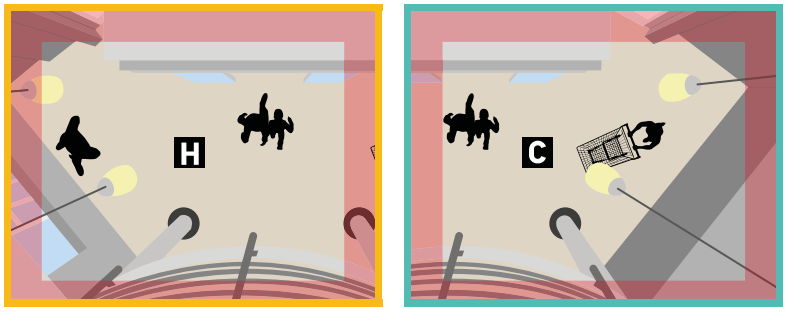


Fig. 18: View of host device and client device

Requirements

- For the selection of the installation site it is important that the monitored areas of the individual devices overlap by at least 100 cm or 3.3 ft (Fig. 19 /1).
- DNS + Service Discovery is available in the network.
- All devices have activated DNS-SD + and SSH.

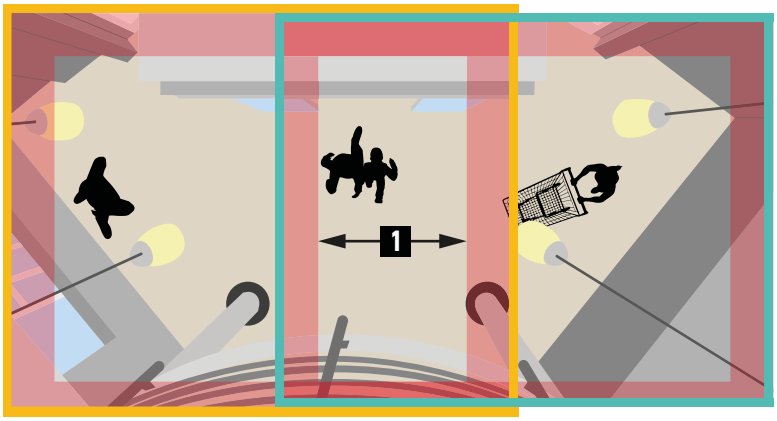


Fig. 19: Overlapping of areas

Installation

To perform a Multi Sensor Fusion proceed as follows:

Installation of all devices

1. Calculate the position of the devices.
2. Install the devices.
3. Configure the devices with the installation height and the pitch and yaw angle.
4. Configure the floor area of the devices.
5. Activate DNS-SD and SSH for all devices.

Basic Configuration Fusion Host

Configuring the host

1. Configure one device as fusion host.
2. Scan for client devices.
   ➡ List of all devices in the network are shown.
3. Select all client devices.

Basic Configuration Fusion Clients

Configuring the clients

1. Configure a client device as fusion client.
2. Scan for fusion host device.
   ➡ List of all host devices is shown.
3. Select the host device.
   ➡ The status of the connection changes to [working].
4. Repeat for all other clients.

Automatic Configuration

The automatic configuration determines the positions and arrangement of the devices in relation to each other.

The automatic configuration has 2 modes:

Random Motion	Preferred mode. A great number of people are walking through the area. This variant can take place during normal operation, but it takes longer. The time depends on the number of people.
Controlled Path	A few people walk on defined paths through the area. This variant is faster, but it needs an empty area. The walking people have to stay 2 s or more in the overlapping areas of the devices. The path depends on the array (➥ Examples for Controlled Path on page 26).

1. Select the fusion host device.
   ➡ The status of the client devices has changed to [unconfigured].
2. Start Automatic Configuration.
   ➡ When the configuration is finished the status of the fusion clients changes to [configured].
3. Configure the counting lines and monitored zones.

Examples for Controlled Path

Start in one direction, turn around and repeat till the status of the fusion client devices is configured. Stay 2 s or longer in the overlapping areas (0).

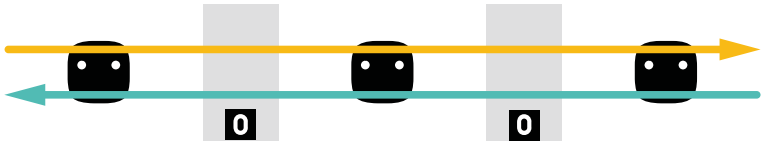


Fig. 20: Straight line

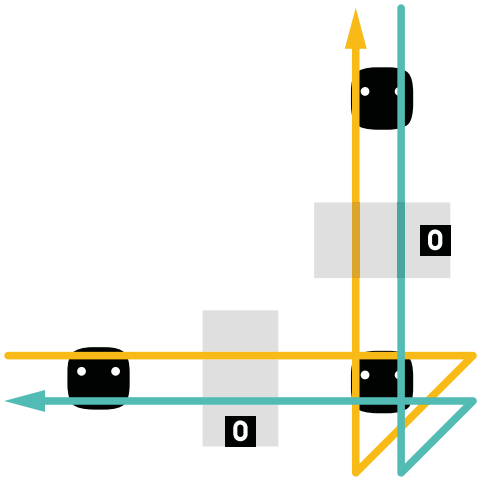


Fig. 21: Around a corner

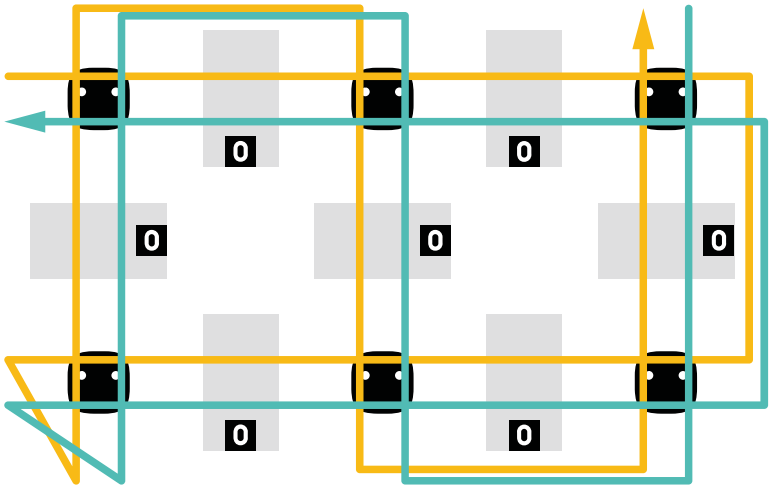


Fig. 22: Multiple overlaps parallel lines

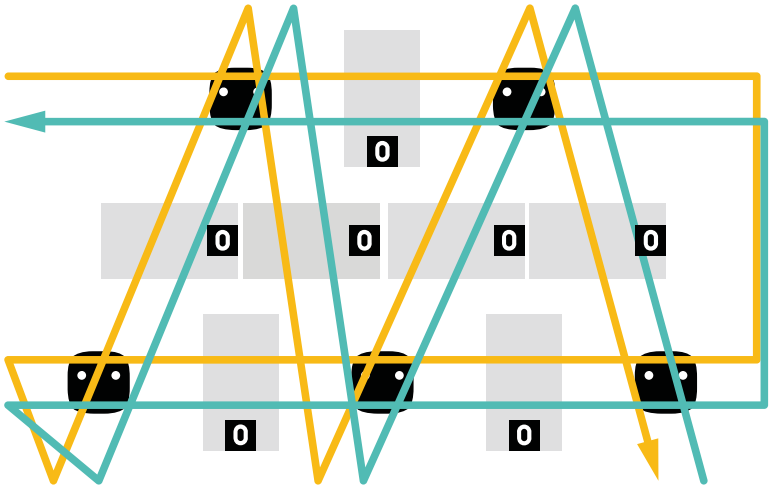


Fig. 23: Multiple overlaps staggered lines

6 CLEANING AND MAINTENANCE

6.1 Cleaning

Material:

- 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.

6.2 Maintenance

The device does not require any preventive maintenance.

7 DISPOSAL

After decommissioning, the product shall be recycled as electronic waste in an environmentally safe way. In the European Union, the WEEE Directive 2012/19/EU applies. In Germany, HELLA Aglaia is registered at stiftung ear [+] (WEEE registration number DE 96736612). 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**.

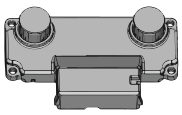
8 APPENDIX

8.1 Ordering Information

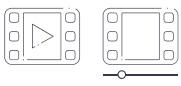
The device and the accessories listed can be ordered from HELLA Aglaia using the following order numbers.

> ***Contact***
>
> *Please contact HELLA Aglaia for other versions and accessory parts.*
>
> *info@people-sensing.com*
>
> *www.people-sensing.com*

Product

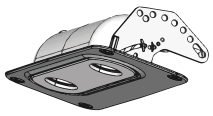
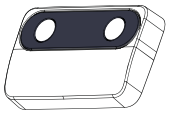
Product	Description	Order no.	
APS-90-Lite	Advanced People Sensor for ceiling heights from 2.0 m - 4.00 m (78.74 in - 157.48 in) with digital inputs and output	013.936-017	

Software Options

Option	Description	Order no.	
Object Classification	Separate count values e.g. for adults, children, groups and shopping carts.	921.700-13B	
Zone Monitoring	Amount of people in visible areas and alarming in case of amount, dwell or distances.	921.700-14B	
Object List	Actual and/or historical list of detected objects with location, height and other parameters sent via Push Services (SOAP/XML).	921.700-11B	
Video Recording	Synchronous recording of tracking, counting and zone monitoring data inside the sensor. Streaming of video data.	921.700-17B (included in the scope of delivery for some devices)	

Accessories

The APS-90-Lite is mechanically identical to the APS-B. Therefore, the accessories of the APS-B can also be used for the APS-90-Lite.

Accessory	Description	Order no.	
APS-B variable mounting kit	Installation kit for recessed mounting with adjustable angle between 0 and 90 degree	226.169-107	
APS-B flush mounting kit	Installation kit for flush mounting	226.169-007	
APS-B surface mounting kit	Installation kit for surface mounting	226.169-207	
APS-B connection cable 2m (6.5 feet)	Assembled 8-pin cable with connector	226.172-007	

8.2 Federal Communications Commission (FCC) Statement

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.

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 compliance, a shielded Ethernet cable shall be used for connection. Any changes or modifications of the device not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

9 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 +.
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
DNS-SD	**D**omain **N**ame **S**ystem-**S**ervice **D**iscovery DNS Service Discovery is a way of using standard DNS programming interfaces, servers, and packet formats to browse the network for services.
HDR	**H**igh-**D**ynamic-**R**ange imaging Technique used in imaging to reproduce a greater dynamic range of luminosity.
stiftung ear	**stiftung e**lektro-**a**ltgeräte **r**egister (stiftung ear) is a foundation under civil law and was originally founded in 2004 by producers and associations of the electrical and electronic sector as a 'Joint body' for producers according to german Electrical and Electronic Equipment Act.

10 INDEX

A

Abbreviations. 33
About
  Document. 7
  Manufacturer. 8
Accessories. 32
Angle of view. 17
Appendix. 31

C

Cleaning. 29
Connectors. 16
Copyright information. 3

D

Digital Input. 21
Digital Output. 22, 23
Dimensions
  APS-90-Lite. 14
Disposal. 30

E

Electrical data. 16
Environmental conditions. 17
Ethernet. 14, 16
  Characteristics. 14
  Electrical data. 16
  Interface. 15
  RJ45. 11
  Socket. 16
  Transfer rate. 16
Ethernet port. 11
  Localization. 11

F

Factory Reset. 13
Fallback mode. 13
Fixing points
  Localization. 11

G

General information. 7
Glossary. 33

H

Hardware. 7, 11
  Ethernet. 11
  Housing. 11
  I/O port. 12
Hardware interface. 14
Hardware version. 7
Housing. 11
Humidity. 17

I

I/O port. 12
  Pin allocation. 12
I/O Port
  Connectors. 16
  Crimp Tools. 16
  Localization. 11
Ingress Protection. 17
Installation. 19, 25
Intended use. 9
Interface
  Ethernet. 11, 15
  I/O port. 12
  I/O Port. 11, 15
  Pin allocation. 15

L

Label
  Do not open. 18
  Product identification. 18
Limitation of liability. 8
Localization
  Fixing points. 11
  Status LED. 11

M

Maintenance. 29
Manufacturer. 8
Mechanical data. 14
Mini-Fit-jr, 2x4. . . . . 11, 12, 15
Mounting
  Requirements. 19
Mounting parameters. 20
Mounting position. 19
Multi Sensor Fusion. 24

N

Non intended use. 9
Notes. 7

O

Optical data. 17
Ordering information. 31
Overview. 6

P

People counting. 6
People sensing. 6
Pin allocation. 15
Privacy of Data Statement. 10
Product. 31
Product labels. 18

R

Requirements. 19, 25
Reset button. 13
Reset pin. 13
Resolution. 17
RJ45. 11

S

Safety information. 7
Scope of delivery. 9
Service. 8
Socket
  Mini-Fit-jr, 2x4. . . . . 11, 12, 15
  RJ45. 11
Software options. 31
Specifications. 14
Status LED
  Colors. 13
  Localization. 11
  Start up illumination. 12
Supply voltage. 16
Support. 8
Symbols. 8
System integrator. 7

T

Target group. 7
Technical data. 14
Temperature. 17
Ticket System. 8

W

Warranty information. 8
Waste. 30
Wiring Examples. 21

CONTACT US

DRIVING SOFTWARE INNOVATION

HELLA Aglaia Mobile Vision GmbH
A member of the HELLA group
Ullsteinstraße 140
12109 Berlin / Germany

phone +49 (0) 30 2000 429-625
fax +49 (0) 30 2000 429-149
mail info@people-sensing.com
www.people-sensing.com