# IRMA 6<sup>R2</sup>

ר בעב בעב

A new standard for future-proof, Automatic Passenger Counting and object recognition



reddot award 2019

FEATURES



# PRECISE + FAST

.....

- High-tech sensor to differentiate and count people and objects (adults, children, bicycles, wheelchairs) based on 3D data and AI algorithms
- Simultaneous detection of the direction of movement of passengers boarding and alighting (even with low door heights and crowds)
- Latest generation 4-core processor, AI processor, graphics processor, digital signal processor
- Real-time transfer of highly accurate raw data to the on-board computer, a server or to the Cloud (IoT-capable)

# USER-FRIENDLY + ADAPTABLE

- Plug&Play: Straightforward installation with an integrated mounting system and few configuration parameters
- Simple commissioning of the sensor through import/export of the configuration
- Customer-specific accessories and a large choice of cables for different installation requirements
- Intuitive, secure, multilingual web interface for installation and service

# SECURE

- Role-based user management
- Secure firmware and firmware updates through signing
- Event logging even in the case of power outages for troubleshooting and security incidents

# **MULTI-FUNCTIONAL + ROBUST**

- Independent of ambient light due to active illumination with laser-based VCSEL technology
- Self-diagnosis: Sensor status displayed via LEDs, web interface and log queries for quick troubleshooting
- Automation of updates, configuration and commissioning thanks to comprehensive API

#### FUTURE-PROOF

- Latest hardware with long-term availability and maximum computing power for durable operation in public transport
- Flexible sensor platform for future expansions and new features



#### APPLICATIONS

- Passenger load detection in real-time
- Effective passenger distribution
- Demand-based control of fleet use

.....

- Vehicle design according to passenger requirements
- Cost reduction thanks to optimisation of routes

#### TECHNOLOGY



IRMA sensors work according to the time-of-flight principle. The sensors measure the distance to objects based on the time of flight. This produces meaningful 3D data, which can be evaluated reliably and fully automatically.

- Precise revenue sharing based on the transport service provided
- Comparison of passenger volume with ticket sales
- Transmission of the passenger load detection to traffic control systems or rescue services for emergency purposes

### TECHNICAL DATA

| Dimensions (W $\times$ H $\times$ L, mm)     | M12: 211±2 × 62 × 32.3*<br>RJ45: 192 × 62 × 50.2*   |
|--|---|
| Housing                                      | Die-cast aluminium housing,<br>optical openings made from<br>polycarbonate  |
| Protection class                             | M12: IP65<br>RJ45: IP20 (optionally IP41)*  |
| Interface / connection M1                    | <ul> <li>Ethernet M12 D-coded, 100 Mbit/s,<br/>IO M12 B-coded</li> <li>Power M12 A-coded</li> <li>Ethernet P1/5 100 Mbit/s</li> </ul> |
|  | IO, Power: Terminals  |
| Type approvals                               | EN50155, ECE, CE, EN50121-3-2,<br>EN45545-2, EMV-06   |
| Vehicle integration /<br>system architecture | ITxPT, IBIS-IP (VDV 301),<br>QIP, UIP retrofit  |
| Power supply                                 | 24 V <sub>oc</sub><br>POE (according to IEEE 802.3af:<br>type 1, class 0)*  |
| Weight                                       | 471 – 501 g   |
| Pixels                                       | 76,800 pixels   |
| MTBF   | 1.24 x 10 <sup>6</sup> h  |
| Required outdoor lighting                    | 0 lux   |
| Installation height                          | 1.8 to 2.5 m  |
| Counting accuracy                            | up to 99%*  |
| Inputs/outputs                               | 1 each*   |

\* see product data sheet