ibeoNEXT

Solid State LiDAR

A MILESTONE ON THE WAY TO FULLY
AUTONOMOUS DRIVING

ibeo automotive

PIONEERING THE FUTURE OF MOBILITY

Ibeo has always been a pioneer. When Ibeo was founded in 1998, it was one of the first companies worldwide which started the development of LiDAR sensors for automotive applications. The next big milestone was to bring Ibeo's LiDAR technology into automotive serial production.

With the new ibeoNEXT Solid State LiDAR, Ibeo expands its position as a technology leader in the field of LiDAR sensors. With its high resolution, wide detection range and vertical angle as well as mass production capabilitites, the development of this solid state LiDAR is a milestone on the way to fully autonomous driving.
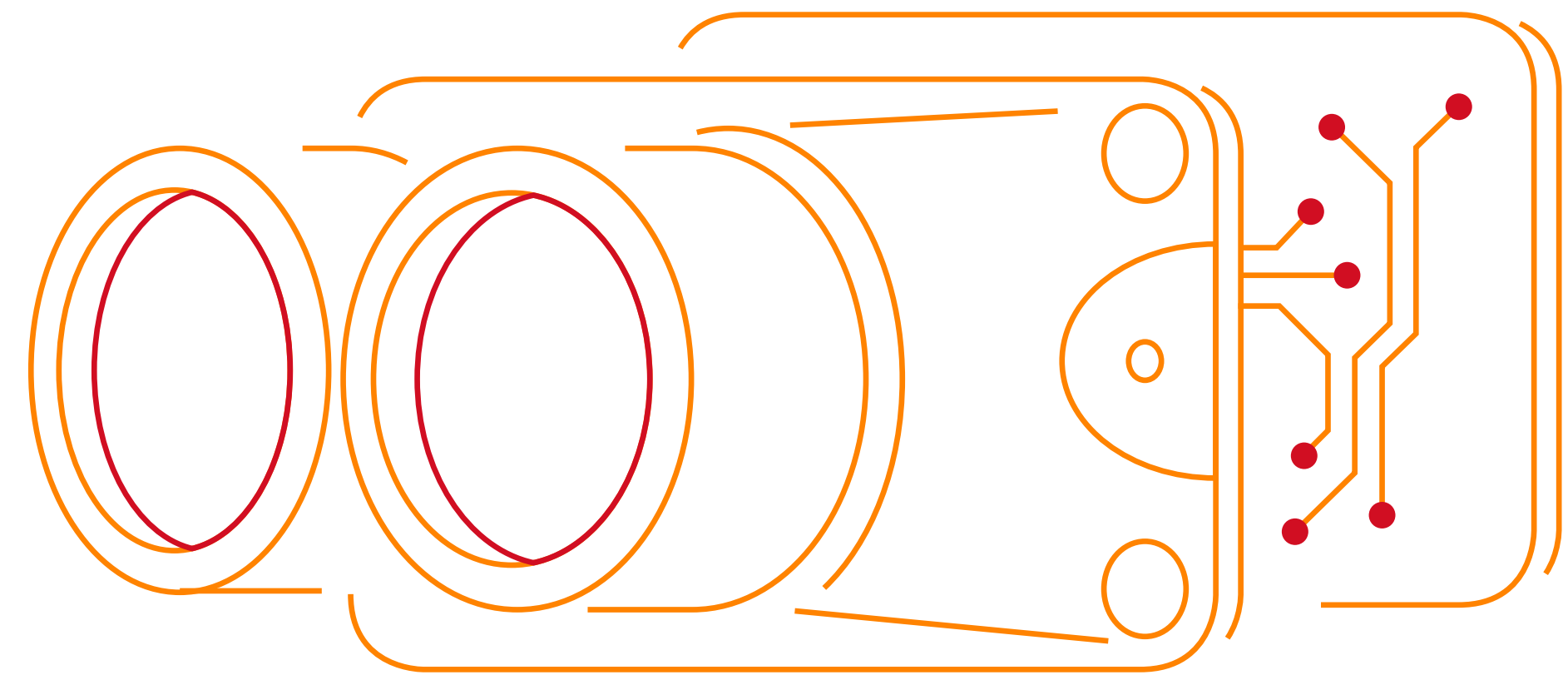
NOT JUST ANOTHER SOLID STATE LIDAR – IT'S SEQUENTIAL FLASHING!

The ibeoNEXT sensor consists of a transceiver and receiver unit with 80 rows per 128 columns.

The sensor uses the technology of sequential flashing, which means that the environment is scanned row by row. For every scan, each row is illuminated multiple hundred times. Therefore, each scan consists of thousands of measurements. In addition, rows can be activated in every sequence, depending on the need of the automated driving function.
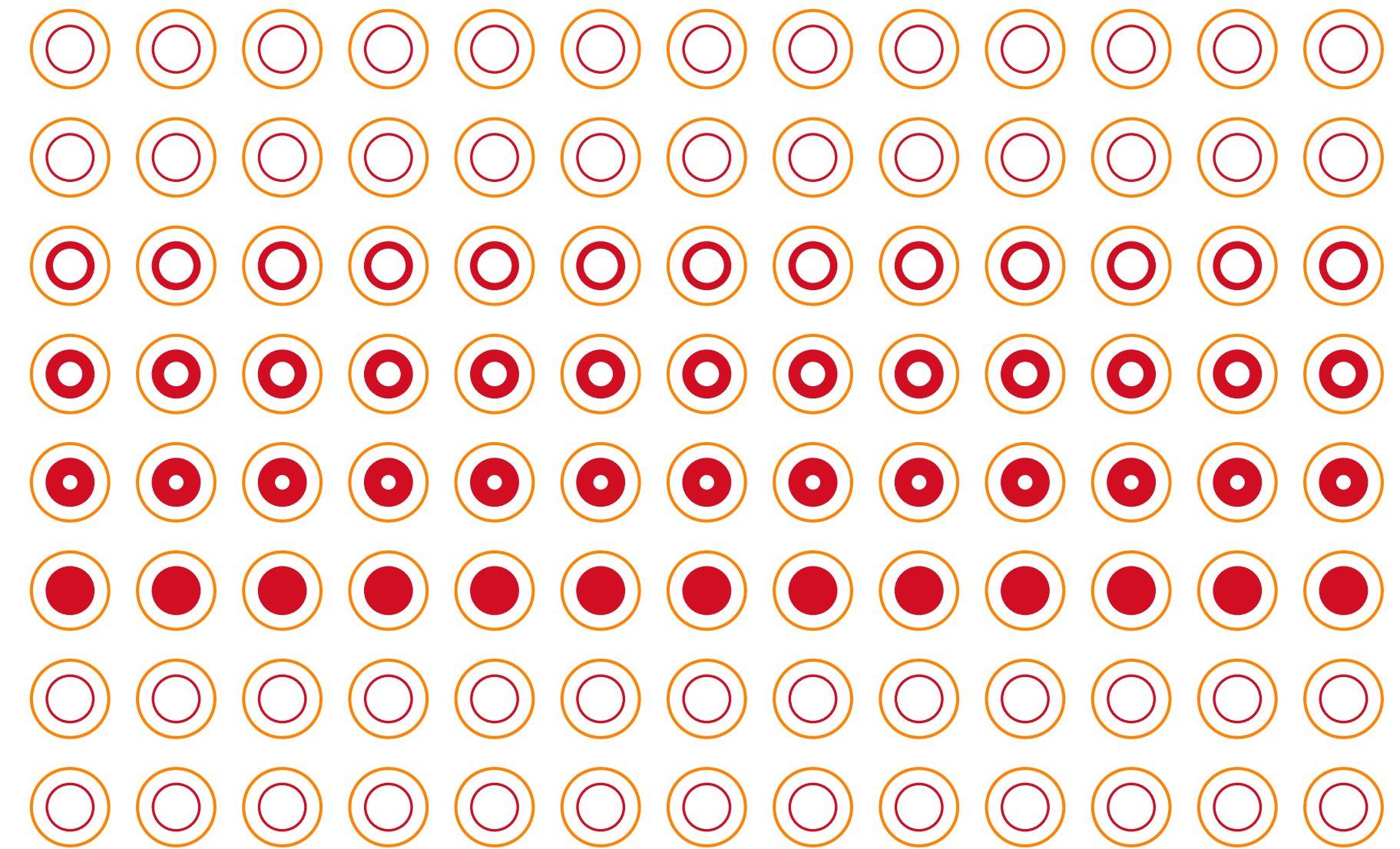
The base of this technology are three ASICs:

❱ Transceiver (VCSEL): 10,240 lasers

❱ Driver: 25 Hz, full image

❱ Receiver (SPAD): 10,240 pixels

THE TECHNOLOGICAL ADVANTAGES

Due to the sequential flashing technology, the ibeoNEXT scores with small dimensions and a light weight. In fact, the sensor is smaller than a credit card – because size matters!

53,98 mm

0000 4940 2986 7600

85,6 mm

40 mm
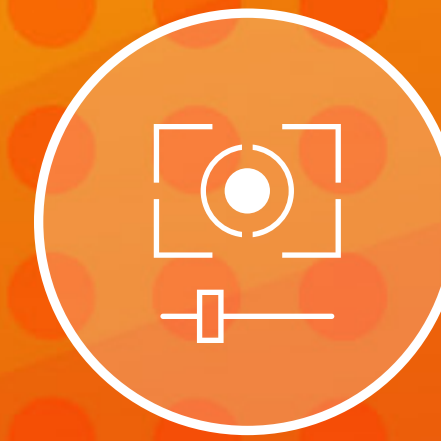
70 mm
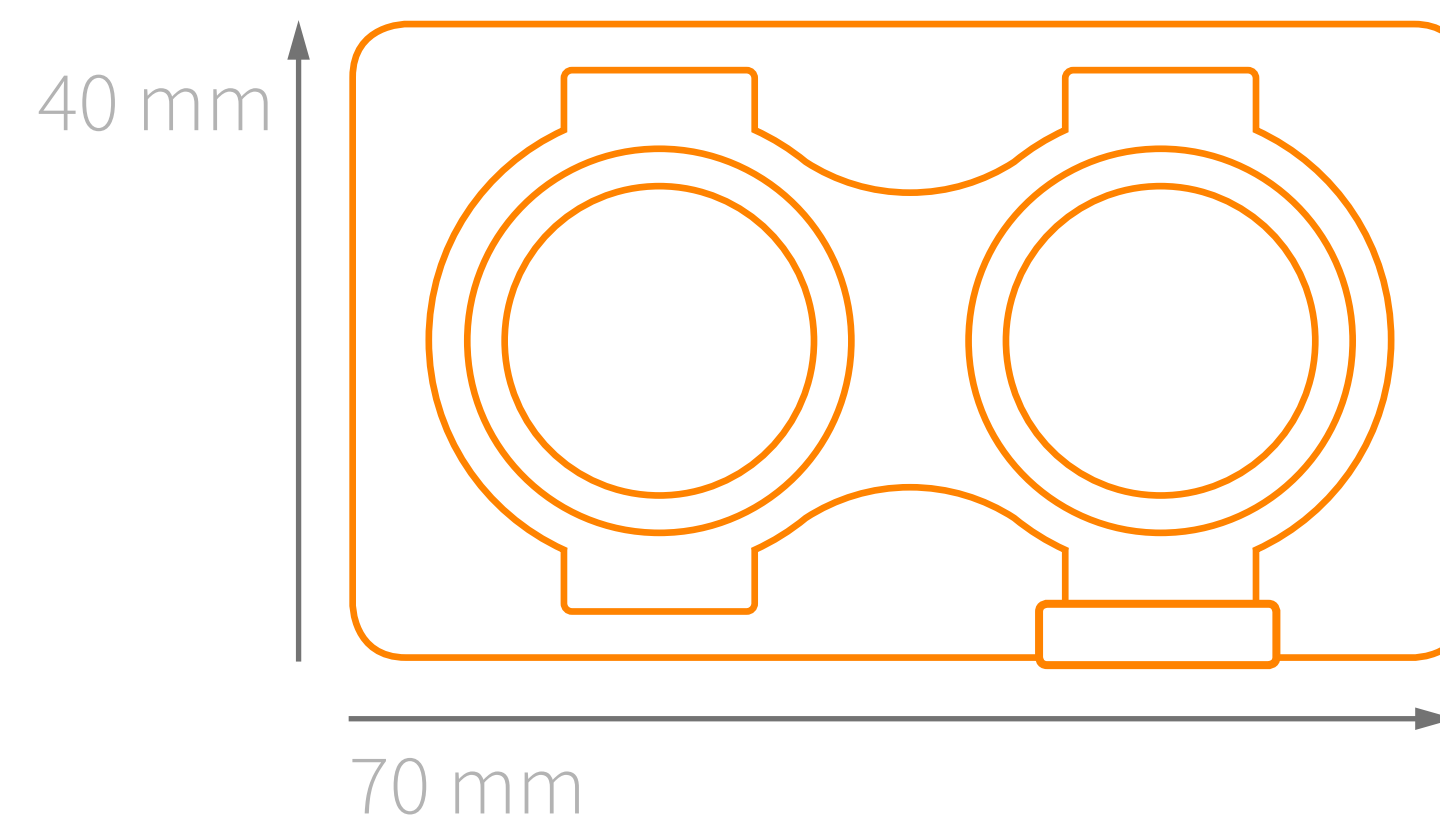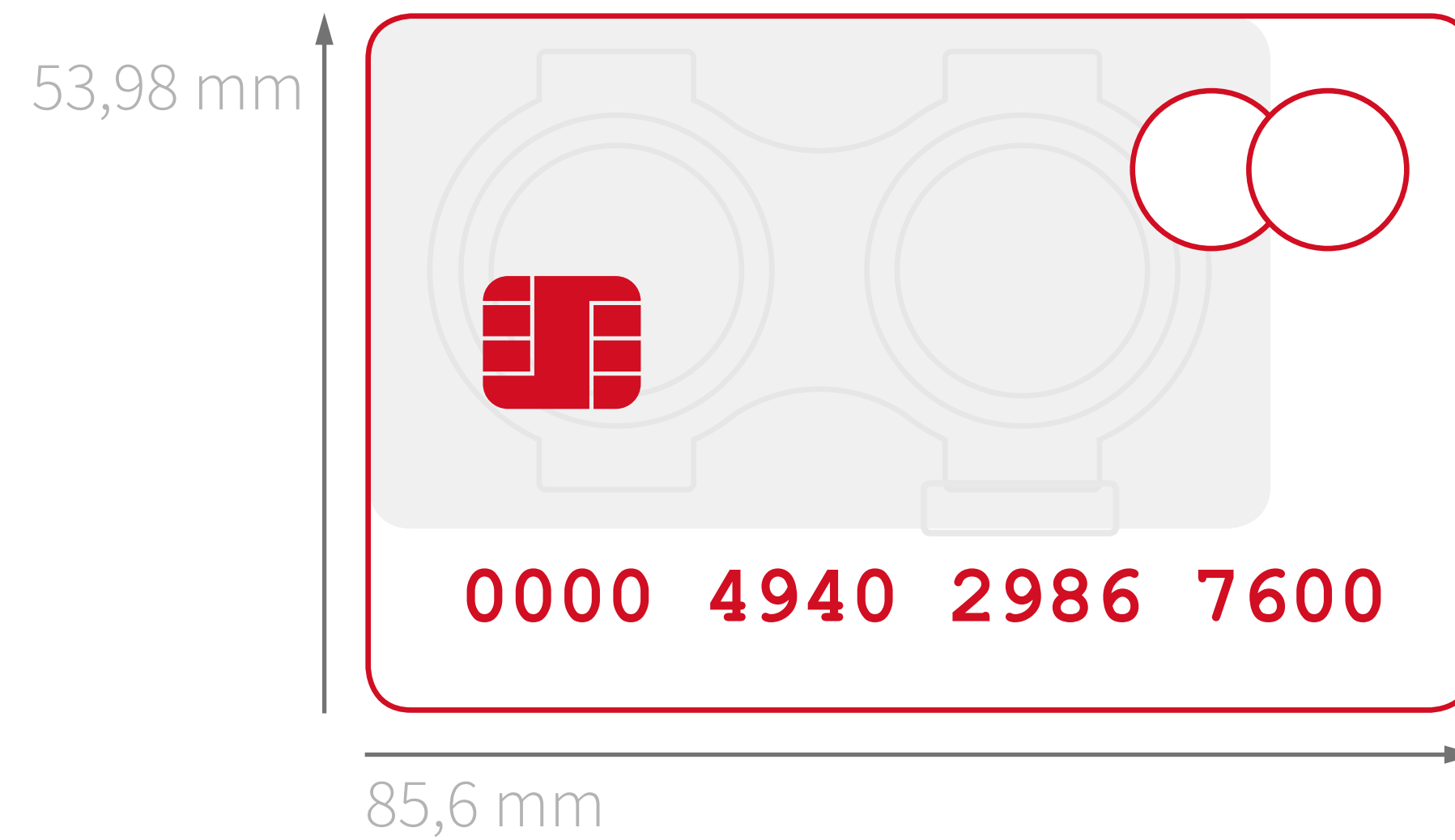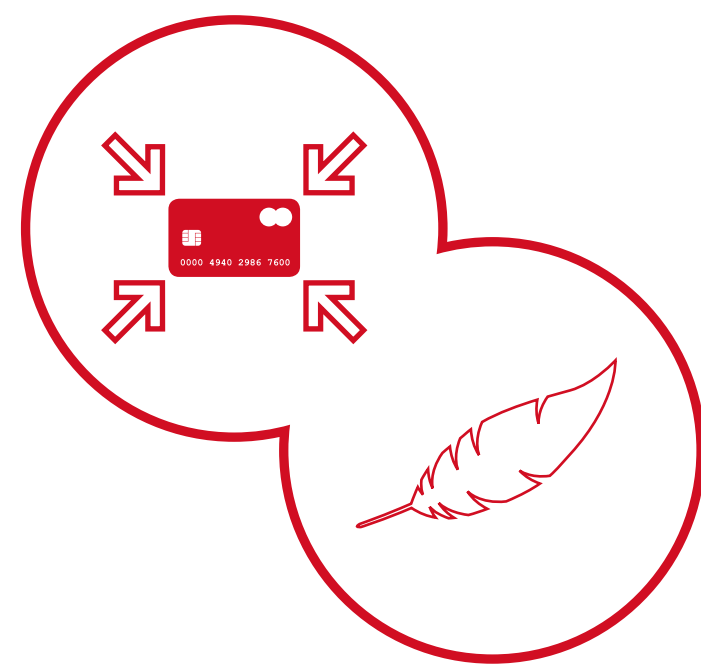
THE TECHNOLOGICAL ADVANTAGES

no moving parts at all

variable scan frequency

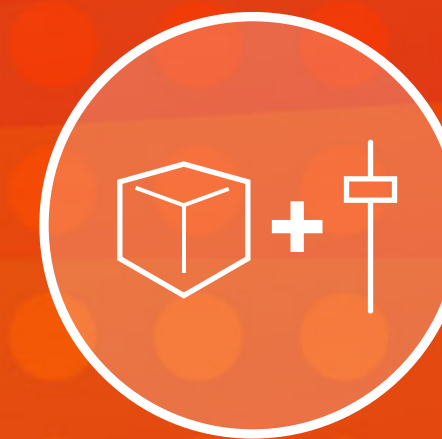long range (e.g. + 250 m)

variable focus areas

same core components
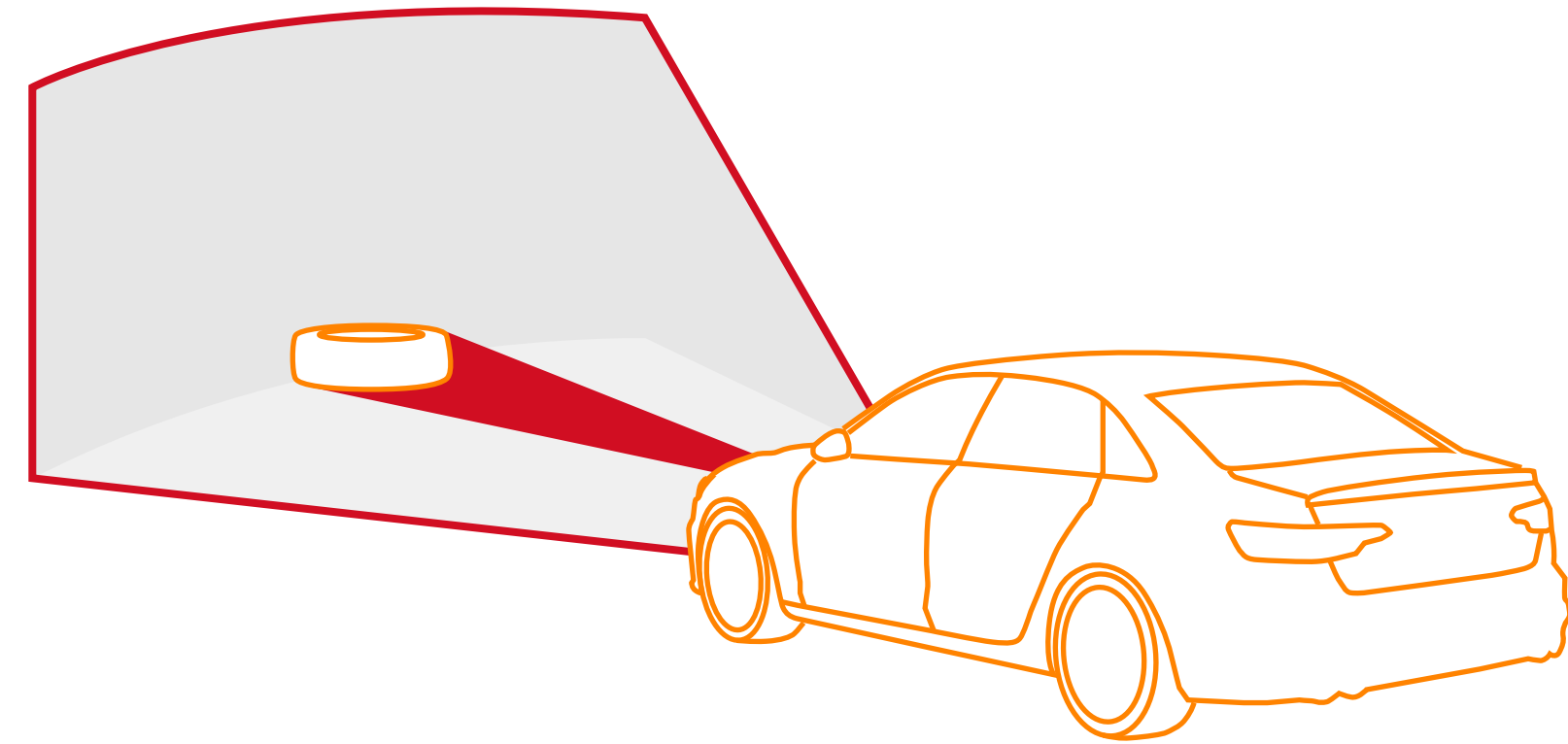with modular optics for
variable fields of view

0.07°

0.04°

high vertical and
horizontal resolution

4D output:
3D point cloud & intensity image

ENABLER FOR AUTONOMOUS DRIVING FROM LEVEL 3 TO 5

Highway pilot: Detection of objects that are 20 cm in size from a distance of 130 meters.
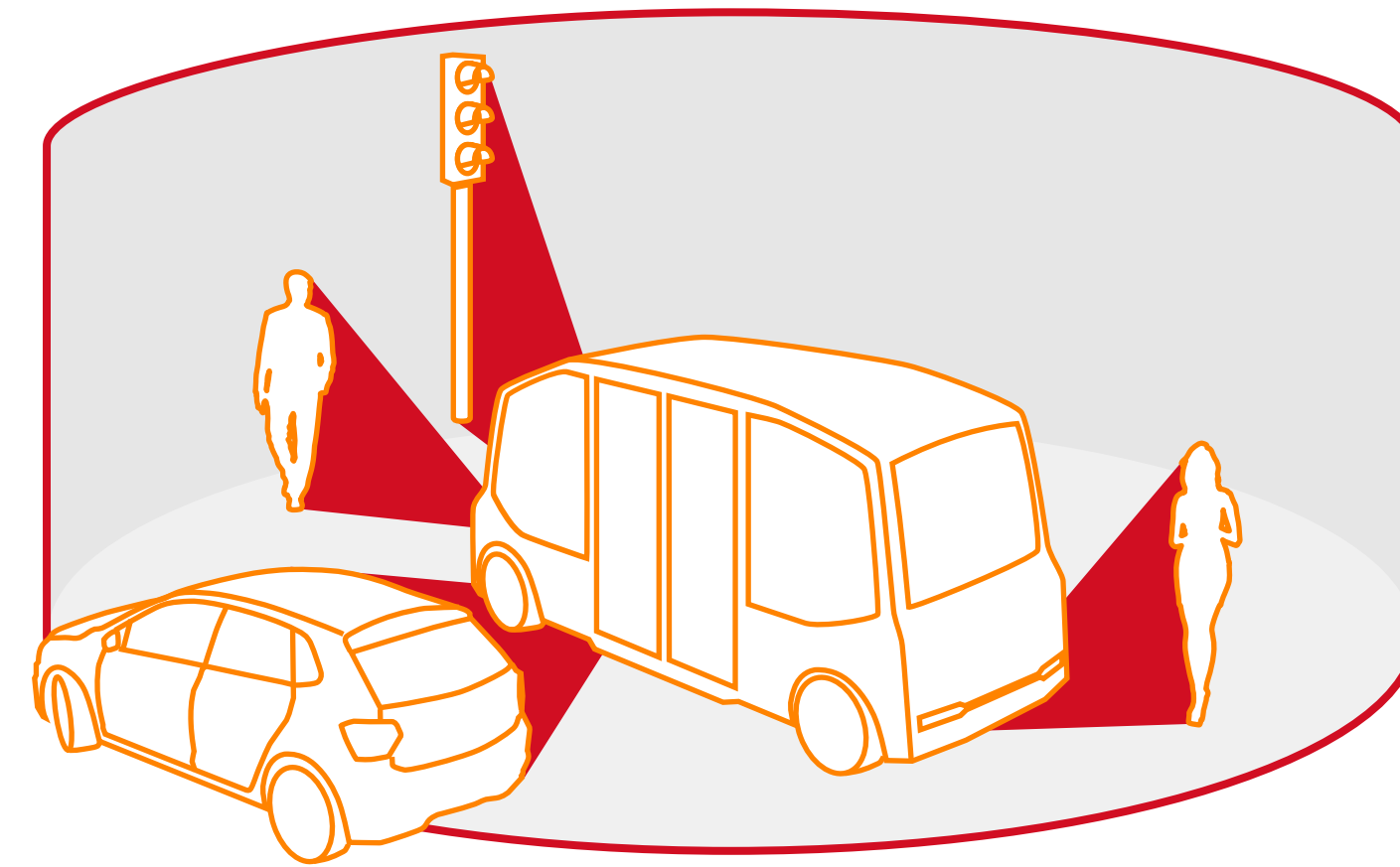
Complex traffic scenarios: Detection that covers a 360° field of view by mounting various sensors around the vehicle.
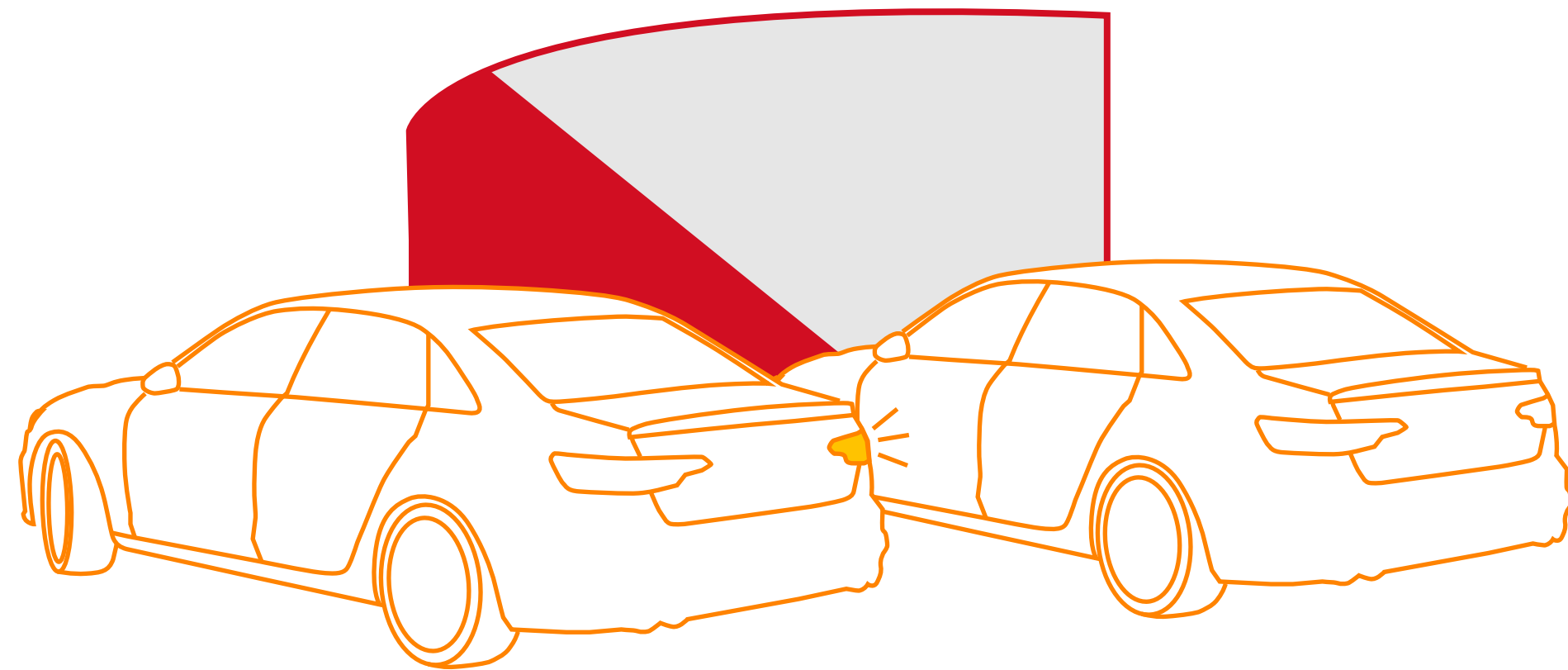
Cutting-in vehicles: Precise object shape detection with a wide horizontal field of view up to 60°.

Overhanging load: Precise detection through 3D modelling of the environment and a high angular resolution up to 0.1°.

THE ibeoNEXT FUSION SYSTEM FOR YOUR USE CASE

The ibeoNEXT Fusion System for environmental perception consists of two main components: The LiDAR sensors and the electronic control unit (ECU).
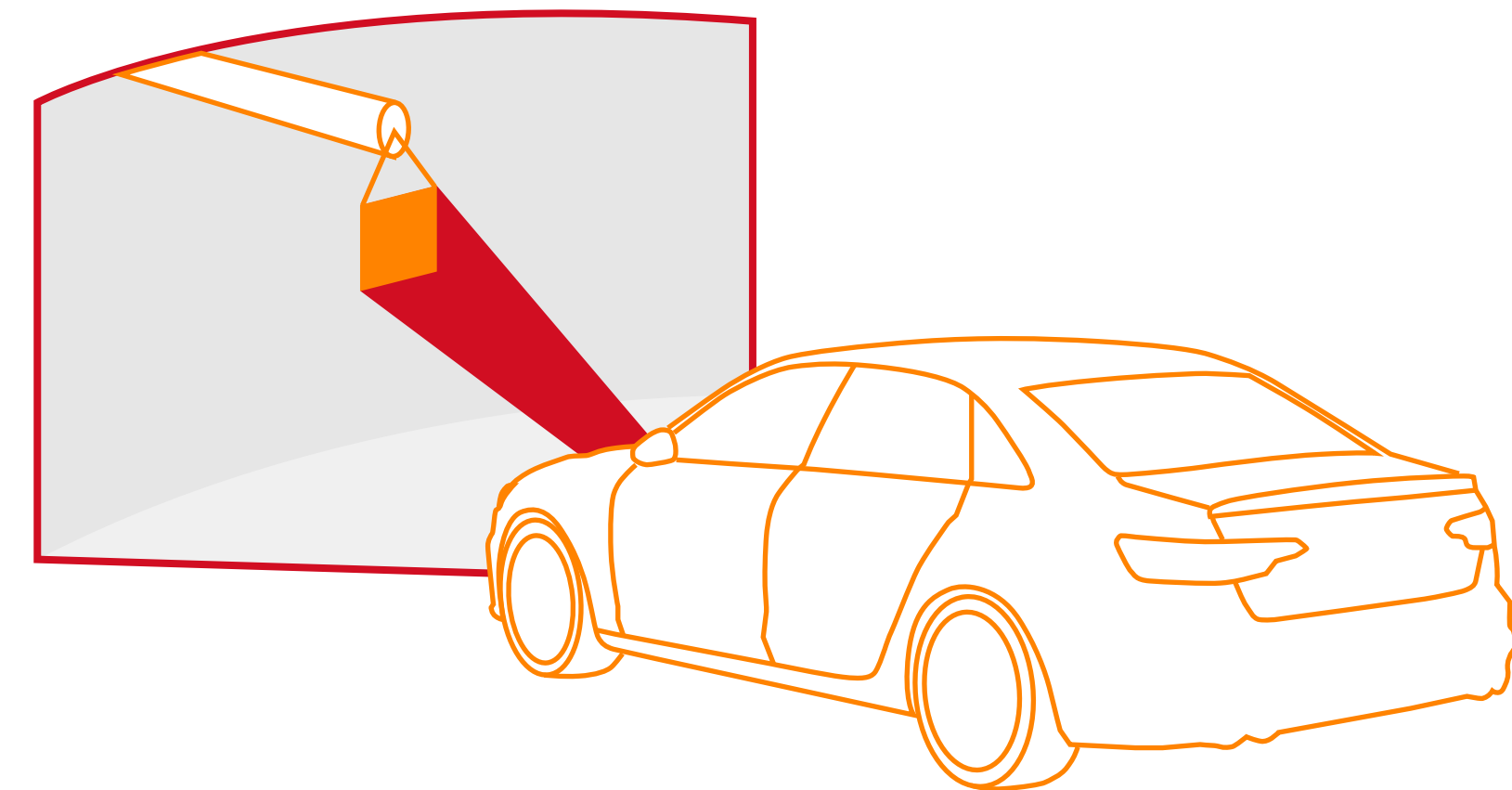
The sensors are available with a 11.2°, 32° or 60° optic. They can be installed or mounted in any preferred way – depending on your use case. The sensor functionality is not limited to the application shown in this example.

The ECU includes our proprietary perception software to process the data. Via the visualization software, the integrated point cloud, the intensity image and the 3D object tracking are displayed.

Traffic situation

60° optic

11.2° optic

60° optic

ECU
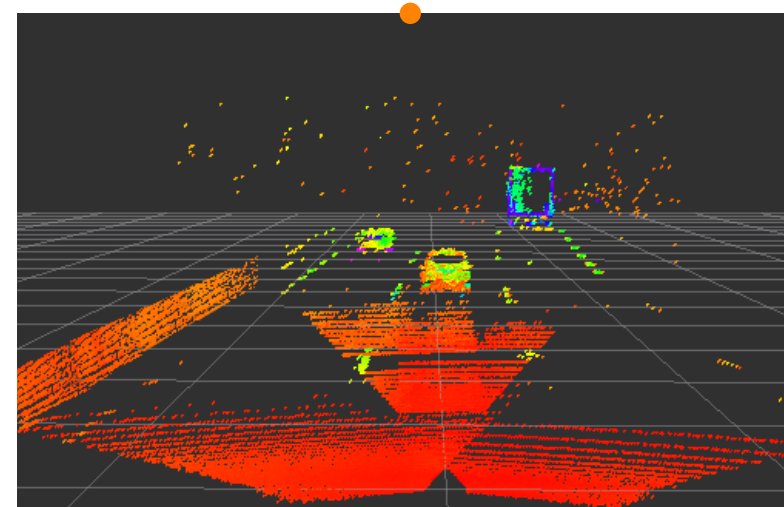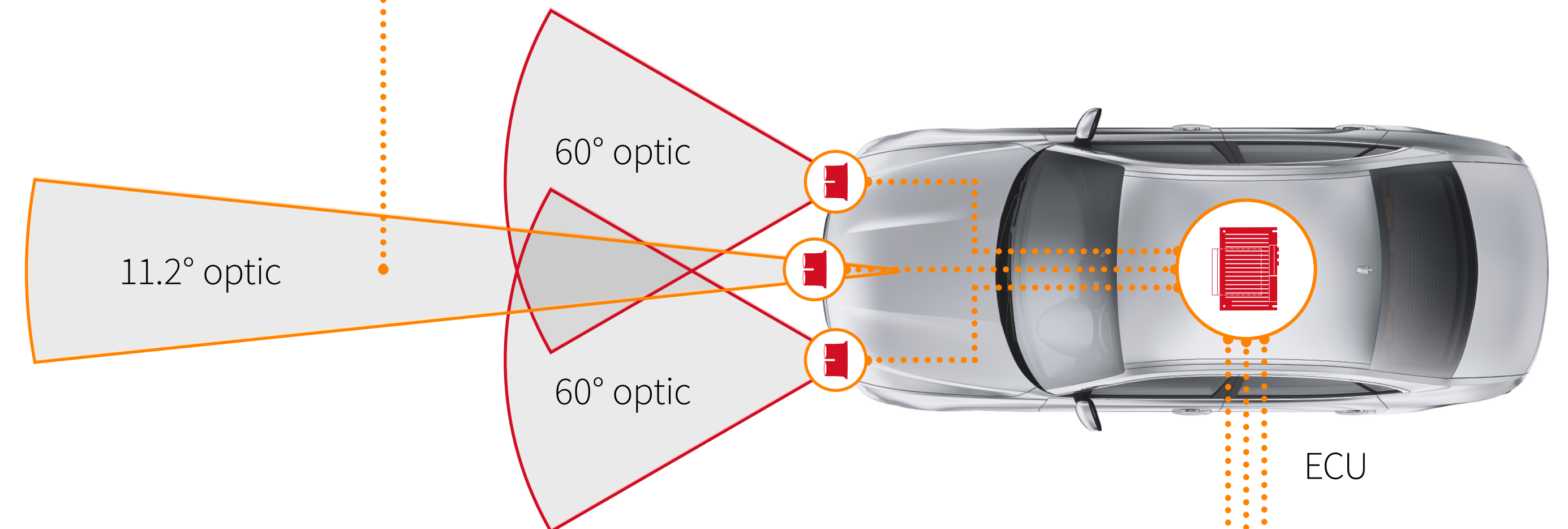
Integrated point cloud

Intensity image
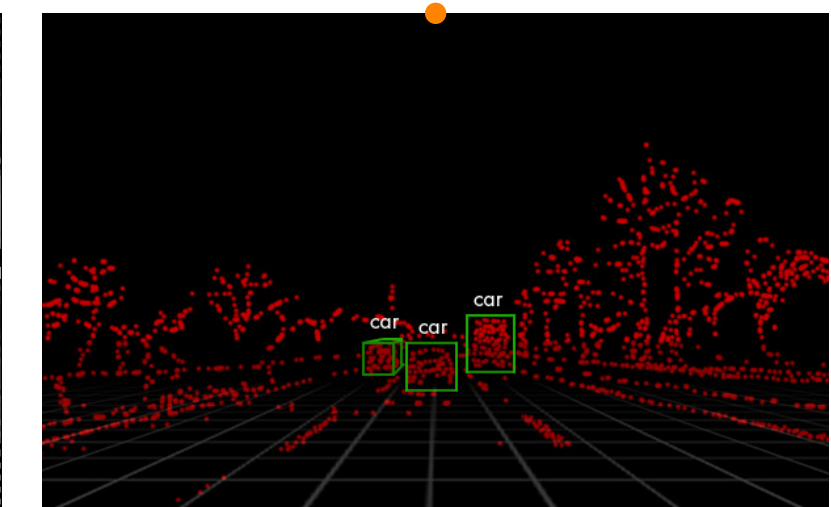
3D object tracking

IBEO – A STRONG PARTNER AT YOUR SIDE

Worldwide technology leader in the field of LiDAR sensors, associated products, and software tools

400+ employees at the locations in Hamburg (Germany), Eindhoven (Netherlands) and Detroit (USA) Coming soon: Beijing (China)

Experience in developing LiDAR sensors for use in automotive since 1998

One of the TOP 100 most innovative companies in Germany

Strong partnership with ZF. Production site in Brest (France) already set up

Ibeo brought the Valeo SCALA® in cooperation with the French supplier Valeo into series production

ibeo
automotive

Ibeo Automotive Systems GmbH

Merkurring 60-62
22143 Hamburg
Germany

+49 40 298 676 – 0
info@ibeo-as.com
www.ibeo-as.com

TECHNICAL DATA

TECHNOLOGY / LASER / OPTICAL			
Technology	Direct time of flight - 4D Solid State LiDAR output of 3D distance and 1D echo intensity information (including confidence value)		
Laser class	CLASS 1 laser product according to DIN EN 60825-1:2015-07		
Wave length	885 nm		
Range (10% remission)	Long range: 140 m	Mid range: 70 m	Short range: 50 m
Range (pedestrian)	Long range: 200 m	Mid range: 80 m	Short range: 50 m
Range (car)	Long range: 250 m	Mid range: 90 m	Short range: 70 m
MEASUREMENT / SCAN PATTERN			
Resolution (horizontal x vertical)	128 x 80 px (uniform)		
Field of view (horizontal x vertical)	Long range: 11.2° x 5.6° (7*)	Mid range: 32° x 16° (20*)	Short range: 60° x 30° (37.5*)
Angular resolution (horizontal x vertical)	Long range: 0.09° (0.04°)** x 0.07°	Mid range: 0.25° (0.125°)** x 0.20°	Short range: 0.47° (0.23)** x 0.38°
Maximum range	Programmable (typical Long range: 260 m / Mid range: 100 m / Short range: 80 m)		
Scan pattern	Pure-electronic sequential row scan 128 channels in parallel		
Measurement principle	Full-digital signal processing of time of flight raw histograms (no thresholds)		
Multi-echo capability	Up to 3 echos per pixel (allow high-performance measurement in challenging environmental conditions, e.g. rain and dust)		
Update rate	Fully programmable, typical 25 Hz		
Operating temperature range	-40° C to 85° C		
MECHANICAL / ELECTRICAL			
Supply voltage	12 V / 24 V		
Power consumption	10 W (typical), < 15 W (maximum)		
Dimensions (W x D x H)	108 x 102 x 83 mm		
Protection class	IP6K9K		
Weight	780 g		
DATA I / O			
Point cloud output	100Base-T Ethernet		
Configuration and control	Ethernet		

*non-uniform resolution   **interlaced

This information has been put together with greatest care. However, any performance data given in this leaflet is subject to compliance with certain surrounding conditions and hence may vary from case to case. Further, we reserve the right to make changes at any time without notice. We strongly recommend (i) reconfirmation with Ibeo Automotive whether this information is still fully valid, before using it for final designs and (ii) to verify performance data taking into account the actual surrounding conditions. Ibeo Automotive takes no responsibility for any consequences due to non-compliance with these recommendations. (Subject to change without notice – 2020-03)