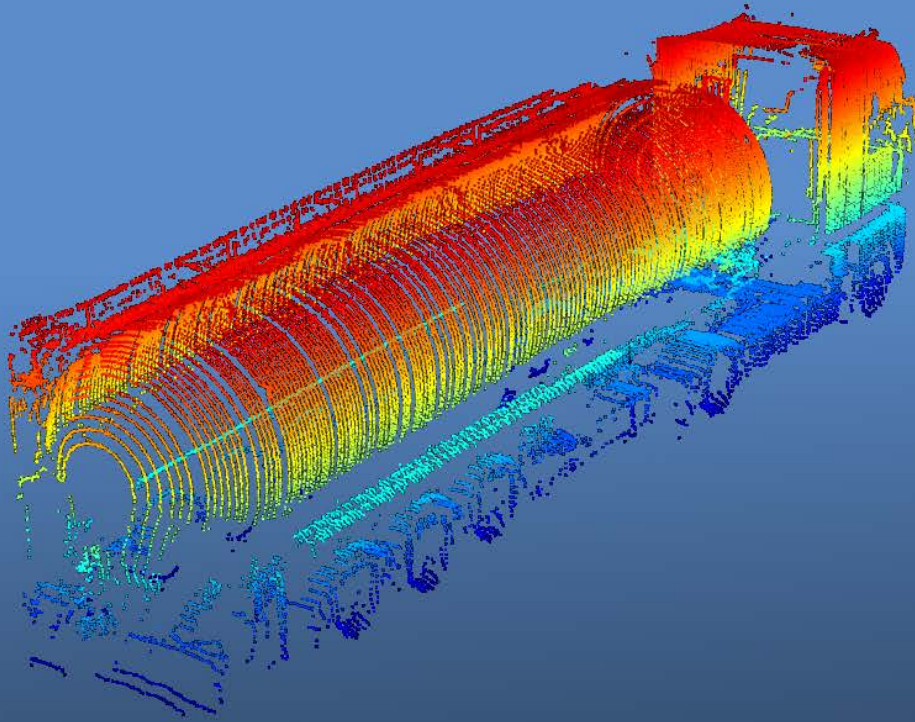


comark

The HeArt of Traffic Detection

3D VEHICLE SCANNING

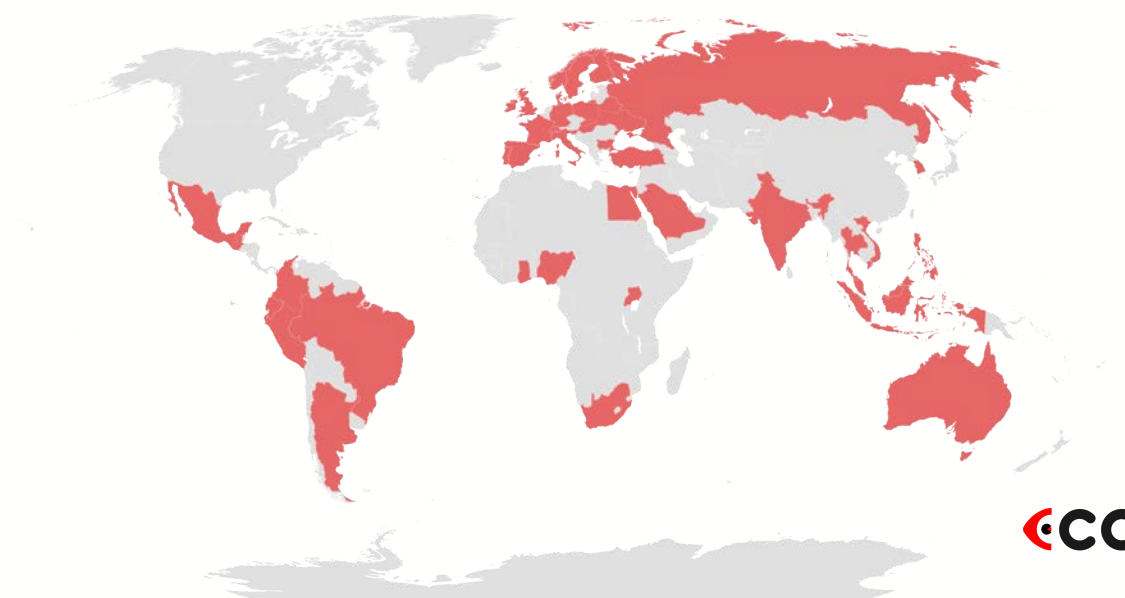


Company Profile

Founded in 1994, Comark is a company specialized in the field of traffic monitoring and parking systems. We take care of the design, development and manufacturing of products for the road traffic, parking areas and cycling lanes market.

To meet the highest standards of quality, Comark is certified ISO9001.

Nowadays Comark is present in over 45 countries, across 6 continents with a well-developed sales network.



 **comark**

3D Vehicle Scanning

Profiler 3 Lasers

Profiler TT or LT

Profiler LTT

Profiler CO

Accessories



 **comark**

PROFILER

3D Profiler 3 Laser Scanners



3D vehicle dimensions measurement

The 3D profiling system can provide a high resolution 3D file of the vehicles and measure them in height, width and length.

The system is composed of 3 LSR2001 laser scanners: two are installed on the left and right sides of a gantry, the third one is installed on a side pole (or on a second gantry).

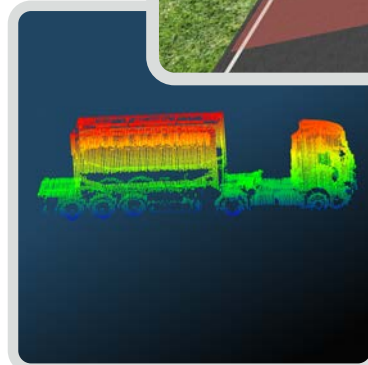
The first two lasers scan continuously both sides and the top of the vehicle, while the third one detects the position and movement. The result is a very accurate detection of: length, 3D shape, height, width, speed, profile and vehicle class.

The system is based on LSR2001 laser scanner, which has a scan angle of 96° with high definition. (274 measurements in 96° with an angular resolution of 0.35°).

One of the three LSR2001 sensors used in the profiling system acts as a master unit and combines the information given by the other two to create an accurate 3D profile of the vehicle.

The system provides a fully detailed "point cloud" 3D image, which can be used for further vehicle analysis. Thanks to the use of 3 laser scanners it is possible to have the complete profile of both sides and top of each vehicle.

The front laser scanner provides the vehicle position in real time, permitting a high precision length measuring, even in stop & go condition.



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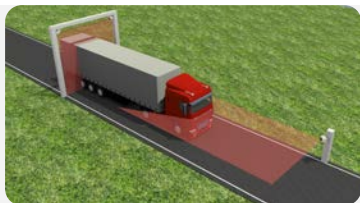
PROFILER

3D Profiler 3 Laser Scanners



3D vehicle dimensions measurement

Technology	Laser scanner (Lidar)
Emitted Light	905 nm not visible
Laser class	Class 1
Scan angle	96°
Scan period	16 ms
Transmission power	16 dB each sensor
Communication line	Ethernet
Power consumption	< 18 W
Power supply	12 ÷ 28 Vdc
Number of Lasers	3
Protection	IP65
Temperature range	LSR2001: -20°C ÷ +50°C LSR2001T: -40°C ÷ +60°C



- 3D Vehicle profile
- Single gantry
- Both vehicle sides
- Counting
- Speed
- Length
- Height
- Width
- Stop & Go
- Free Flow
- Trigger for cameras

ACCESSORIES

- Mounting Brackets
- Environmental Protections
- Stainless Steel Casing
- Router
- CO1010 Control Unit

APPLICATIONS

- Harbour trucks' analysis
- Custom borders vehicle analysis
- Traffic monitoring (ITS)
- Vehicle profiling
- Toll
- WIM
- Vehicle classification
- Trigger for cameras

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PROFILER TT or LT

3D Profiler 2 Laser scanners single gantry



Vehicle height & width measurement

The 3D profiling system can provide a high resolution 3D file of the vehicles and measure them in height, width and length.

The system is composed of 2 LSR2001 laser scanners which has a scan angle of 96° with high definition. (274 measurements in 96° with an angular resolution of 0.35°), installed on a single gantry, and it can be delivered in 2 different versions:

- TT (transversal - transversal)
- LT (longitudinal - transversal)

PROFILER TT version is composed by 2 LSR2001 Laser scanners, installed on the left and right top sides of the lane. The system is able to deliver a high accuracy width and height measurement of each vehicle.

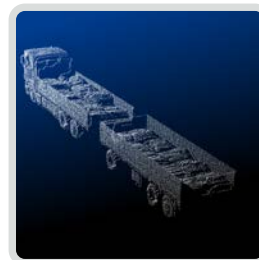
PROFILER LT version is also composed by 2 LSR2001 Laser scanners, installed one on the side (left or right) of the lane, and the second LSR2001 above the lane in central position. The system is able to deliver a high accuracy height and length measurement of each vehicle.

The system provides a fully detailed "point cloud" 3D image, which can be used for further vehicle analysis.

Both versions can be easily placed on a single gantry, making it ideal for those applications in which a reduced infrastructure installation is required. They are also suitable for applications with free flow traffic condition.



PROFILER TT



PROFILER LT

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PROFILER TT or LT

3D Profiler 2 Laser scanners single gantry



Vehicle height & width measurement

Technology	Laser scanner
Emitted Light	905 nm not visible
Laser class	Class 1
Scan angle	96°
Scan period	16 ms
Transmission power	16 dB each sensor
Communication line	Ethernet
Power consumption	< 15 W
Power supply	12 ÷ 28 Vdc
Number of Lasers	2
Protection	IP65
Temperature range	LSR2001: -20°C ÷ +50°C LSR2001T: -40°C ÷ +60°C



PROFILER LT

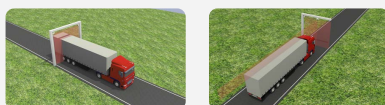


PROFILER TT

ACCESSORIES

- Mounting Brackets
- Environmental Protections
- Stainless Steel Casing
- Router
- CO1010 Control Unit

PROFILER TT PROFILER LT



3D Vehicle profile	✓	✓
Single gantry	✓	✓
Both vehicle sides	✓	○
Counting	✓	✓
Speed	○	✓
Length	○	✓
Height	✓	✓
Width	✓	✓
Stop & Go	✓	✓
Free Flow	✓	✓
Trigger for cameras	✓	✓

APPLICATIONS

- Harbour trucks' analysis
- Custom borders vehicle analysis
- Traffic monitoring (ITS)
- Vehicle profiling
- Toll
- WIM
- Vehicle classification
- Trigger for cameras

✓ Feasible
 ○ Not Feasible
 ✓ Feasible with limitations

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PROFILER LTT

3D Profiler Single Gantry 3 Laser Scanners



3D vehicle measurement with single gantry installation

The 3D profiling system can provide a high resolution 3D file of the vehicles and measure them in height, width and length.

The system is composed of 3 LSR2001 laser scanners installed on the same gantry, two of them on the left and right sides, and the third one above the lane in center position.

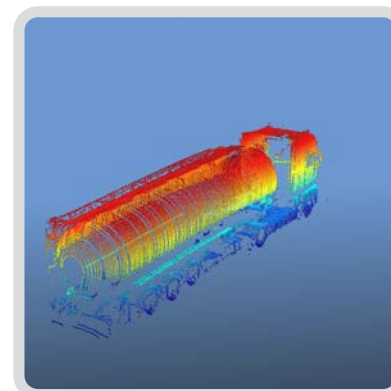
The first two lasers continuously scan both sides and the top of the vehicle, while the third one detects the position and movement. The result is a very accurate detection of: length, 3D shape, height, width, speed, profile and vehicle class.

The LSR2001 laser scanner has a scan angle of 96° with high definition. (274 measurements in 96° with an angular resolution of 0.35°).

One of the three LSR2001 sensors used in the profiling system acts as a master unit and combines the information given by the other two to create an accurate 3D profile of the vehicle.

The system provides a fully detailed "point cloud" 3D image, which can be used for further vehicle analysis. Thanks to the use of 3 laser scanners it is possible to have the complete profile of both sides and top of each vehicle.

The front laser scanner provides the vehicle position in real time, permitting a high precision length measuring, even in stop & go condition.



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PROFILER LTT

3D Profiler Single Gantry 3 Laser Scanners



3D vehicle measurement with single gantry installation

Technology	Laser scanner
Emitted Light	905 nm not visible
Laser class	Class 1
Scan angle	96°
Scan period	16 ms
Transmission power	16 dB each sensor
Communication line	Ethernet
Power consumption	< 18 W
Power supply	12 ÷ 28 Vdc
Number of planes	3
Protection	IP65
Temperature range	LSR2001: -20°C ÷ +50°C LSR2001T: -40°C ÷ +60°C



- 3D Vehicle profile
- Single gantry
- Both vehicle sides
- Counting
- Speed
- Length
- Height
- Width
- Stop & Go
- Free Flow
- Trigger for cameras

ACCESSORIES

- Mounting Brackets
- Environmental Protections
- Stainless Steel Casing
- Router
- CO1010 Control Unit

APPLICATIONS

- Harbour trucks' analysis
- Custom borders vehicle analysis
- Traffic monitoring (ITS)
- Vehicle profiling
- Toll
- WIM
- Vehicle classification
- Trigger for cameras

Feasible

Not Feasible

Feasible with limitations

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PROFILER CO

Control Unit for Profiler series

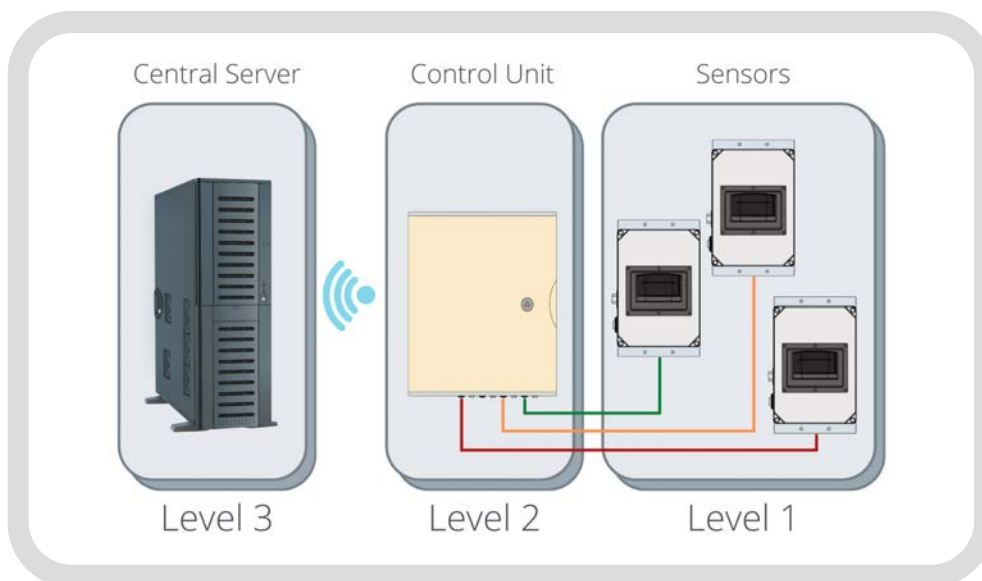
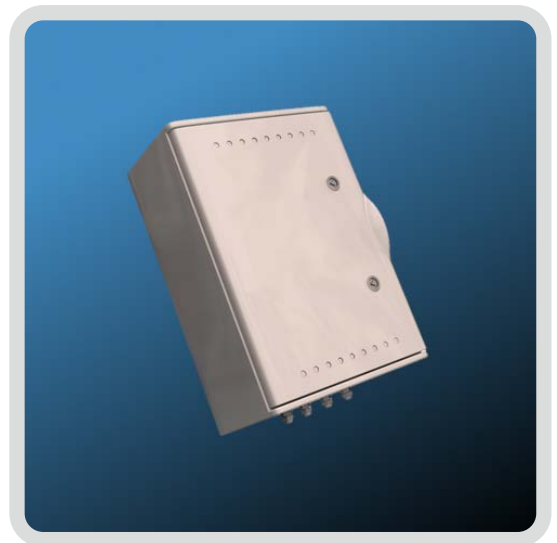


Data aggregation and communication with central software

PROFILER-CO Control unit has been specifically designed to house the power supply and power line protection hardware for each PROFILER system.

PROFILER-CO is composed by:

- External cabinet
- Power supply
- Power line protection
- 3G/4G Router (optional)



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PROFILER Summary

	3 LASERS	2 LASERS TT	2 LASERS LT	3 LASERS LTT
				
3D Vehicle profile	✓	✓	✓	✓
Single gantry	○	✓	✓	✓
Both vehicle sides	✓	✓	○	✓
Counting	✓	✓	✓	✓
Speed	✓	○	✓	✓
Length	✓	○	✓	✓
Height	✓	✓	✓	✓
Width	✓	✓	⊗	✓
Stop & Go	✓	✓	⊗	⊗
Multiple vehicles	○	✓	✓	✓
Trigger for cameras	✓	✓	✓	✓

✓ Feasible

○ Not Feasible

⊗ Feasible with limitations

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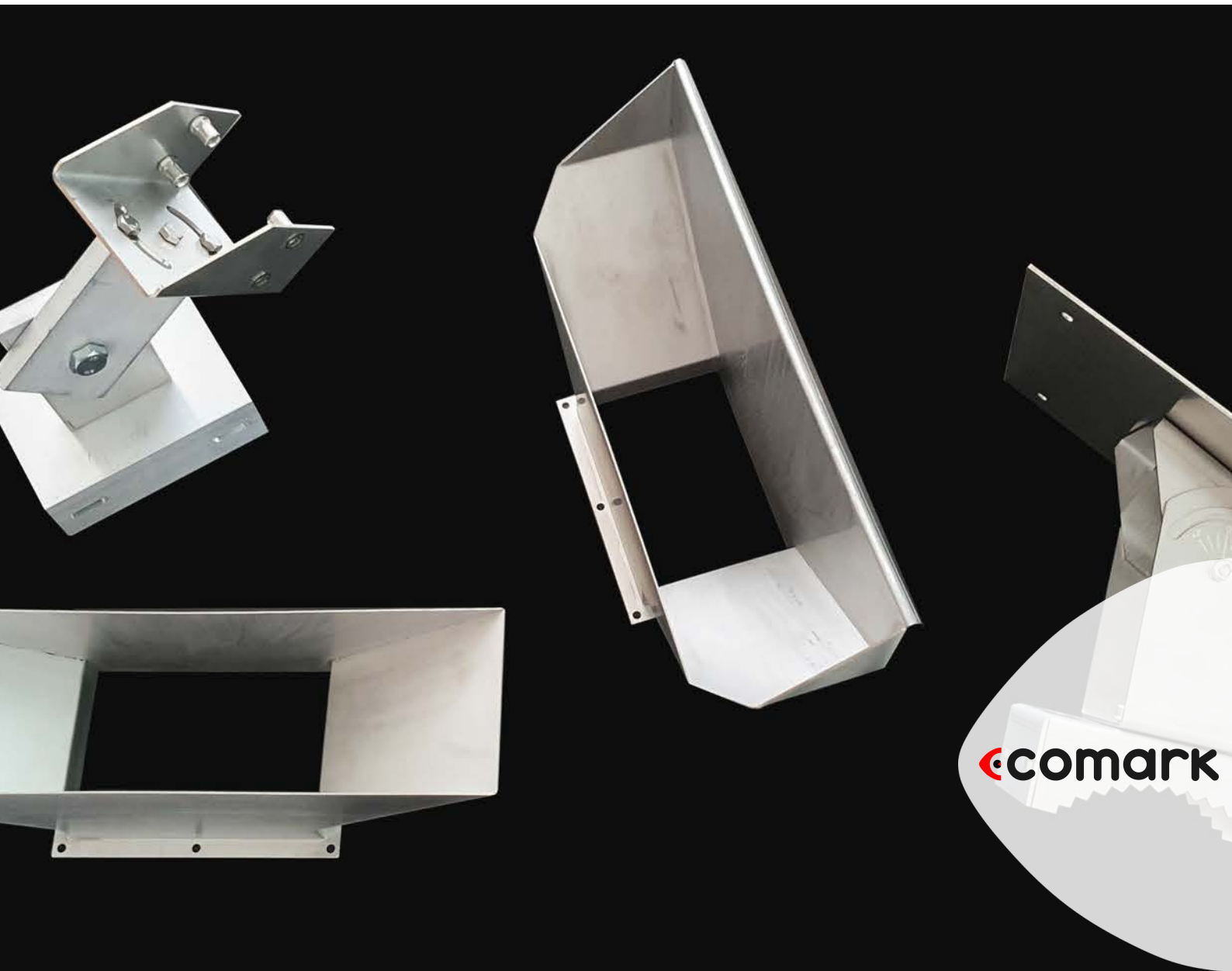
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Accessories

Sensor Mounting Brackets
Environmental Protections



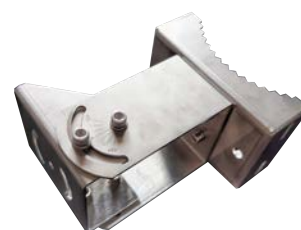
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MOUNTING BRACKETS



BR TYPE 2

Suitable for all profiler laser detectors



BR TYPE 4

Bracket with fine-tuning. Suitable for all profiler laser detectors



CK01

Environmental Protection Standard down-heading laser detectors



CK01-2

Environmental Protection snow for front-heading laser detectors



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