

RadarEye® system

Sets with 7" and 12" Monitor

System manual

No. SM0974110 A 03

08/2013

English



Set with 7" Monitor



Set with 12" Monitor



Safety

is Warning sign that identifies a specific concern or instruction. Please make sure that all are read, understood and followed.



In order to guarantee safe operation, read this manual before using this equipment. Failure to follow the safety instructions in this manual can result in serious injury or death. Please store this manual in a safe location.

- Do not open the equipment's enclosure. This can cause damage, short-circuiting or electrical shocks that could lead to serious injury or death.
- Do not expose the equipment to extreme temperatures. This can cause deformation of the enclosure or damage to internal components.
- Repairs may only be undertaken by the manufacturer.
- The equipment must be assembled as shown in this manual.
- The equipment is to be used with side view mirrors or cameras to ensure safe operation.
- The equipment is not an alternative to safe driving practices.
- If this equipment is used improperly on the vehicle it could lead to serious injury or death.

This installation manual describes the functions of the equipment, outlines the connection options and explains how to put the equipment into operation. We recommend that you keep this manual in a safe place for reference purposes.

If you have any questions or issues concerning the operation of this equipment, consult the relevant section in the manual or contact the Orlaco Products BV Service department.

All data subject to change without prior notice. The camera/Monitor systems from Orlaco comply with the latest CE, ADR and EMC-directive regulations. All products are manufactured in accordance with the ISO 9001 quality management system, ISO/TS 16949 quality automotive, ISO 14001 environmental management systems, where applicable.

RadarEye® System



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1. Introduction

RadarEye® System

- May save lives.
- Prevent vehicle damage due to backing accidents.
- In-Cab Display Unit.
- Audible tones that increase in rate as objects become closer.
- Rugged Design, shockproof and waterproof housing.
- Radar technology itself is very weather resistant (compared to ultrasound).
- Speed of detection.
- Modern radar technology.
- Radar is more sensitive to approaching objects than outgoing objects as a result of its intelligent signal processing.



WARNING

The Equipment will not identify objects if the radar's sensor is blocked.

As such, do not block the radar's sensor with objects. Please routinely clean the radar's sensor to prevent accumulation of mud, dirt and other substances. Please make sure the radar antenna is aligned properly as this is critical to the successful operation of the system.

The RadarEye® System is designed to detect objects in zones obscured from the operator's view. The pulsed-timedomain radar systems detect stationary as well as moving objects in a desired coverage area as long as the vehicle is moving (engine on is enough movement to also detect stationary objects). The system is ideal for on-road and off-highway commercial vehicles, forklifts and other industrial vehicles.

Utilizing the ability to network multiple sensors and Orlaco cameras together with a single Orlaco Monitor, see figure 2, systems may be designed to provide necessary detection around large vehicles.

The radar is plug-and-play and sends messages over the CAN bus containing information of the targets. The radar is providing distance information. Below 0,3 meter the distance information is less accurate.

2. RadarEye® sets

The Orlaco RadarEye® is always a complete system consisting of a camera, monitor, Sensors, cables and connection and mounting parts.

2.1. Monitor 7"/12" RLED/LEDD CAN SRD 6 and Monitor 7" RLED CAN SRD 4 CAM 7-4

The 7" monitor is supplied with a 6m power cable open wired and a 6m video cable with 7p connector. The 7" LEDD monitor is a built-in monitor (in a Double DIN slot). The 7" RLED and 12" RLED version are delivered with an adjustable mounting bracket, see figure 1. The 7" RLED CAN monitor is suitable to use with CAN protocols.

Connections to the monitor:
Red wire = Power input: 18...30V/DC
White wire = Power input: 0V

2.2. Interface 0256010

CAN (Controller Area Network) is a two-wire differential serial communication protocol for real-time control. The "bus" must be composed of a Twisted Pair cable having a standard 120Ω characteristic impedance.

From the monitor the 7p video cable enters the interface which separates the CAN wires from the video wires.

The interface has two outputs: 5p to the Sensor (master) and a 4p to the camera, see figure 2.



Figure 1



Figure 2

2.3. Cables

The connection between the Interface and the Sensors is done with cables with twisted pair and power wires for the Sensors. These cables with molded M12 connectors are available in different lengths, see figure 3.

Connection between the Interface and first Sensor is done with the cable with a green color marking (cable type D). The connection between a Master Sensor and a Slave Sensor is done with the cable with red color marking (cable type K). The difference between the green and the red cable is the number of connections. In the green marked cable 4 wires are connected and in the red marked cable 5 wires are connected, the extra connection is for communication between Master and Slave Sensor.

For the camera connection the Orlaco (Uni or Dynamic) 4p cables are used.



Figure 3

2.4 SRD sensor CAN Horizontal 0004310 and SRD sensor CAN Vertical 0004320

The SRD sensor CAN Horizontal is one Sensor, article No. 0004310 (freq.=24 GHz) with a theoretical detection angle of 70° horizontal. The SRD sensor CAN Vertical is one Sensor, article No. 0004320 (freq.=24 GHz) with a theoretical detection angle of 11° vertical.

Sensitivity is less outside 70 degrees, but signal level is still high enough for accurate detection until 90 degrees. The vertical detection zone is 11°.

When installing the Sensor CAN Horizontal; the orientation of the antenna must be horizontal. The milling lines at the surface of the Sensor indicate the antenna position and need to be in line with the horizon. When installing the Sensor CAN Vertical; the orientation of the antenna must be vertical. For mounting four M4 Vibration dampers are included, see figure 4.



Figure 4



Figure 5

2.5 Terminator 0350110

The CAN bus must be terminated at both ends by a 120-ohm resistor placed across CAN_H and CAN_L so that reflections of signals are avoided.

Therefore the terminator is supplied in the sets and the main terminator activated in the monitor (Default via OSD settings), see figure 5.

2.6. Mounting brackets 0401330 and 0401320

To mount the Sensors there are two mounting brackets available. Article No. 0401330 is a bracket to be used to mount one Sensor and is applied for corner rear mounting. Article No. 0401320 is the bracket used to mount two Sensors (master/slave) for center rear mounting, see figure 6.

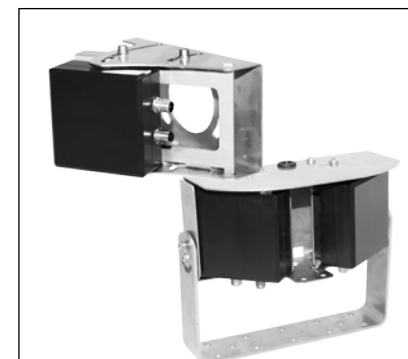


Figure 6

3. Interface Box with Ext. speaker CAN/SRD/camera 0504820

The monitor has an internal buzzer for the audible warning. Optional the 0504820 is available which features an external speaker.

From the monitor the 7p video cable enters the interface which separates the CAN wires from the video wires.

The 0504820 interface has three outputs: 5p to the Sensor (master), 4p to the camera and a 6p connection for the external speaker, which is included.

The 0504820 interface also features external outputs: These signals are RS232 en RS485 stop indications output and an possibility to connect an external indicator (for example tower light). This external device is switched via a relays in the 0504820, see figure 7.



Figure 7



**ORLACO PRESENTS THE
RADAR SIGNAL AVAILABLE,
BUT WILL NOT BE LIABLE IF
IT IS USED TO INTERVENE IN
THE MACHINE.**

4. Explanation of the Set types and available parts:

4.1. Set Article No. 0403100 Set SRD Center Rear.

which consists of 2 wide beam Sensors (70° beam width, 11° beam height) that work together to guard a wide area, see figure 8.

RadarEye set center rear, system overview

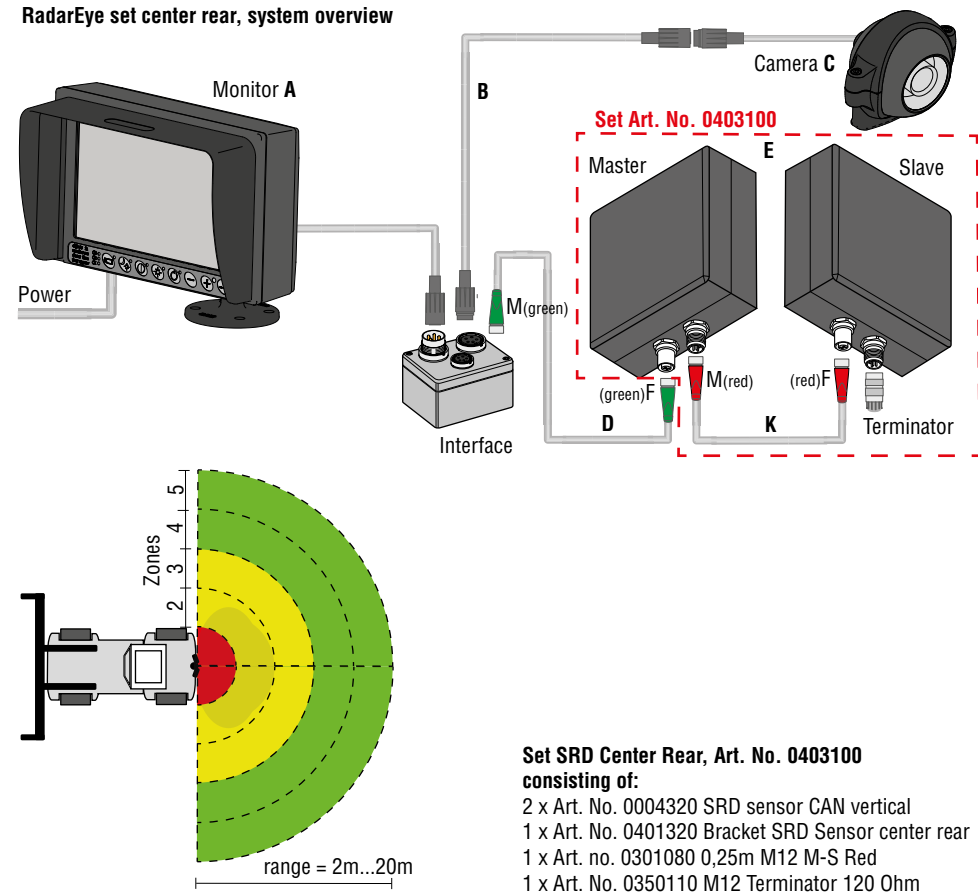


Figure 8

Cables D

Other Sensors
Male/Female Connectors
M12 **Green** 5p Connectors
4 wires in use



Cables K

Master/Slave Sensors
Male/Female Connectors
M12 **Red** 5p Connectors
5 wires in use



Explanation

A - Monitor
B - Camera Cable
C - Camera
D - Radar Cable
E - Radar Set, center rear
K - Radar connecting cable

4.2. Set Article No. 0403120 Set SRD Corner Rear.

which consists of 2 wide beam Sensors (70° beam width, 11° beam height) that work together to guard a rectangular area, see figure 9.

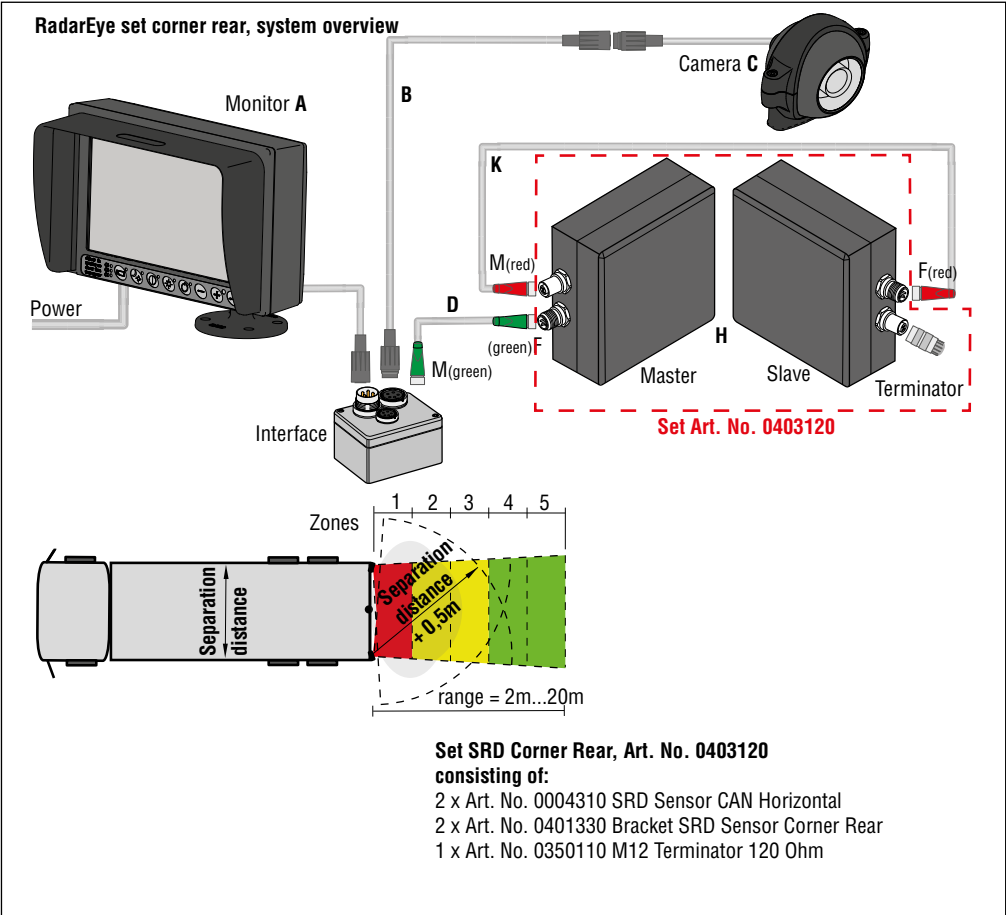


Figure 9

Cables D

Other Sensors

Male/Female Connectors

M12 **Green** 5p Connectors

4 wires in use

Cables K

Master/Slave Sensors

Male/Female Connectors

M12 **Red** 5p Connectors

5 wires in use

Explanation

A - Monitor

B - Camera Cable

C - Camera

D - Radar Cable

H - Radar Set, corner rear

K - Radar connecting cable

4.3. Available parts

For cameras and cable between interface and camera: See catalog HE, OT and FA on www.orlaco.com

0208871	Monitor 7" RLED CAN SRD R6
0209110	Monitor 7" RLED CAN SRD 4 CAM 7-4
0208371	Monitor 7" LEDD CAN SRD 6
0411300	Set Monitor 12" RLED CAN SRD R6
0004310	SRD sensor CAN Horizontal
0004320	SRD sensor CAN Vertical
	Pick one of the below Interfaces
0256010	Interface box CAN/SRD/camera
0504820	Interface Box with Ext. speaker CAN/SRD/camera
0401330	Bracket SRD sensor Corner rear
0401320	Bracket SRD sensor Center rear
0350110	M12 terminator 120 Ohm
	Pick one of the below cables type D
0301151	Cable 2m M12 Green
0301051	Cable 5m M12 Green
0301061	Cable 10m M12 Green
0301071	Cable 15m M12 Green
0301121	Cable 20m M12 Green
0301131	Cable 25m M12 Green
0301141	Cable 30m M12 Green
	Pick one of the below cables type K
0301081	Cable 0,25m M12 Master - Slave Red
0301021	Cable 1m M12 Master - Slave Red
0301031	Cable 4m M12 Master - Slave Red
0301041	Cable 8m M12 Master - Slave Red
0301091	Cable 16m M12 Master - Slave Red

5. Specifications and dimensions

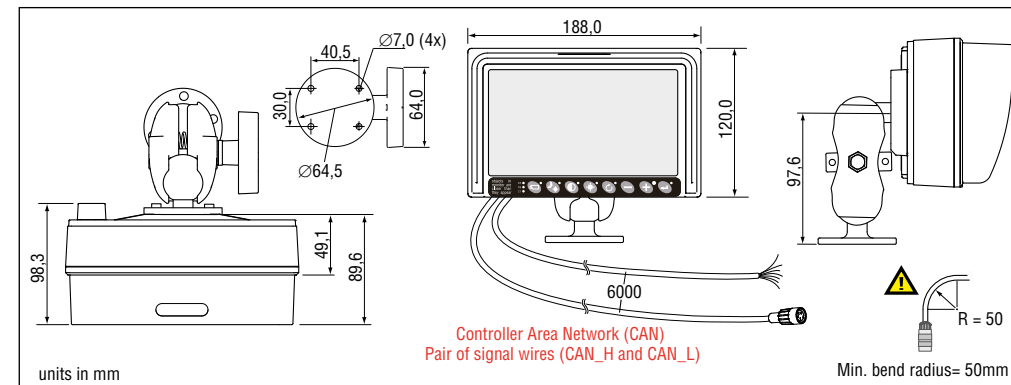
Type	Automotive 7inch TFT liquid crystal display module LED backlight.
Resolution	WVGA 800xRGBx480 pixels.
Viewing	70° horizontal and 60° vertical (@ CR≥10).
LED Life Time	30000 Hrs.
Typical performance	Center luminance of white: 600cd/m2, Contrast ratio 650:1, Response time 5 ms (Tr).
Software menu	Full On-Screen-Display (OSD) functionality in 8 languages: English, Dutch, German, French, Italian, Polish, Spanish, Swedish.
ABC mode	Improved Auto Brightness Control (ABC) including one-touch day/night setting and adjustable minimum and maximum levels for automatic control.
Operating temperature	-40°C ..+85°C.
Storage temperature	-40°C ..+125°C.
Electrical	
Input voltage range	12...60V +/-10%.
Power consumption	Max 12W (only for the monitor, total power consumption depending on cameras and other peripherals).
Protection	>70V overvoltageprotection, <10V undervoltageprotection, protected against loaddumps, spikes and surges, reverse polarity on all wiring.
Power-output	Nominal 2A +/-10% for powering cameras and other peripherals.
Video input	1Vtt, 75Ω, Pal 50 Hz, 4,43MHz color sub carr. NTSC 60 Hz, 3,58MHz color sub carr.
Mechanical	
Surface	Hard coating (3H), with AG LR (Low Reflection) polarizer.
Housing	Color Black, material: aluminium & high impact automotive synthetic thermoplastic polymer.
Shock constancy	Shock and vibration resistant for usage on trucks, cranes, fork-lifts, maritime applications, machinery. Random vibration test 15,3Grms at frequency: 24 to 2000, PSD (g²/Hz) 0,04 to 0,10.
Ingress protection	IP67 according IEC 60529 (dust tight, immersion in water up to 1m for 30 min).
Truck use	Withstand all fluids and materials used in and around trucks like: ammonia solution 5%, ethanol 80-100%, isopropanol 5-10%, soapy water (min. 50% soap per volume), alkaline degreasing compounds(used in high pressure washing equipment).
Certification	
Quality & environment	Units are manufactured by Orlaco in the Netherlands; ISO 9001, ISO14001, ISO-TS16949.
Approvals	Approvals in compliance with all relevant EMC- and Automotive directives. Certificates available upon request. This device complies with Part 15 of the FCC Rules. Operation is subject to the following conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Green Passport	All materials are compliant to Green Passport requirements according IMO resolution MEPC.197(62) as adopted on 15 July 2011 (Maritime sector: International Maritime Organization concerning the functions of the Marine Environment Protection Committee).

5.1. Monitor 7" RLED CAN SRD R6

Article number: 0208871

Cables / Connectors	6m power cable open wired, 6m video cable with 7p molded M16 female connector; Art. no.:8976330
Bracket	A clamping user-adjustable mounting bracket is supplied. Art. No. : 2015510

Dimensions



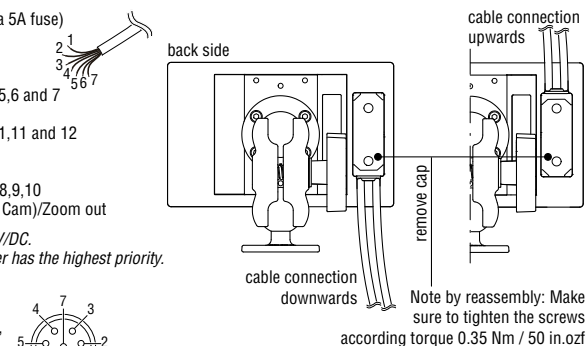
Electrical connections

- Connections to the monitor: (Secure the power input with a 5A fuse)
- 1 = Red = Power input: 12...60V/DC
 - 2 = White = Power input: 0V
 - 3 = Blue = Cam No. 1 activated at 7...60V/DC*
+ Activation Radar on sensor direction 5,6 and 7
 - 4 = Brown = Cam No. 2 activated at 7...60V/DC*
+ Activation Radar on sensor direction 1,11 and 12
 - 5 = White/Yellow = Cam No. 3 activated at 7...60V/DC*
 - 6 = Grey = Cam No. 4 activated at 7...60V/DC*
+ Blocking sensor directions 2,3,4 and 8,9,10
 - 7 = Yellow = Quad view, Parking Brake (only Front Cam)/Zoom out

*Triggers camera >7V/DC and returns to non triggered <5V/DC.
If multiple cameras are triggered the highest camera number has the highest priority.

Front side 7p molded female connector:

- 1 = Coax core = Video in
- 2 = Coax shielding = Video GND
- 3 = Red = Power output: equal to "Power input"
- 4 = Black = Power output: 0V
- 5 = Orange = CAN-L
- 6 = Yellow = CAN-H
- 7 = Grey = N.C.



5.2. Monitor 7" RLED CAN SRD 4 CAM 7-4

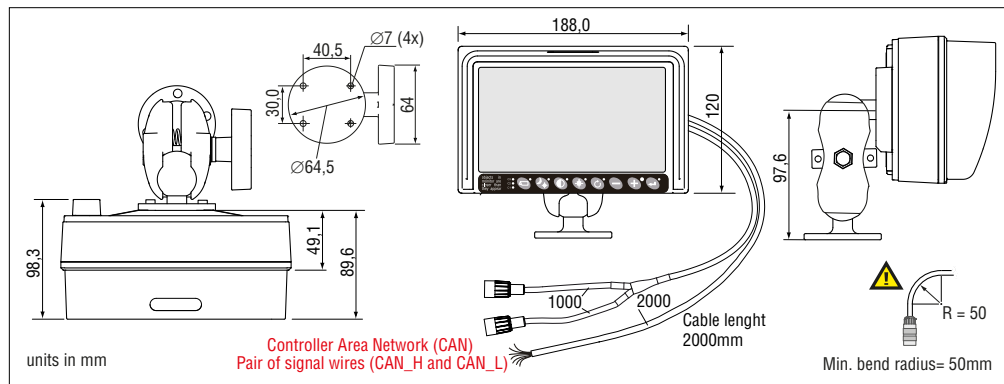
Article number: 0209110

Cables / Connectors 2m multicable (power) open wired, 2m Y-cable (video) with molded 7p female connector and molded 4p female connector. Art. no.: 8976750

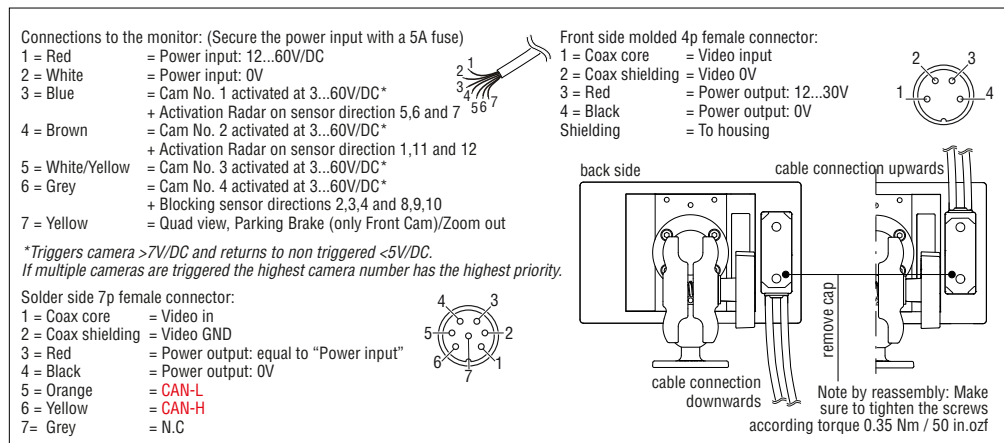
Bracket A clamping user-adjustable mounting bracket is supplied. Art. No. : 2015510

Weight 1,9kg (LCD, bracket, cables and connectors)

Dimensions



Electrical connections



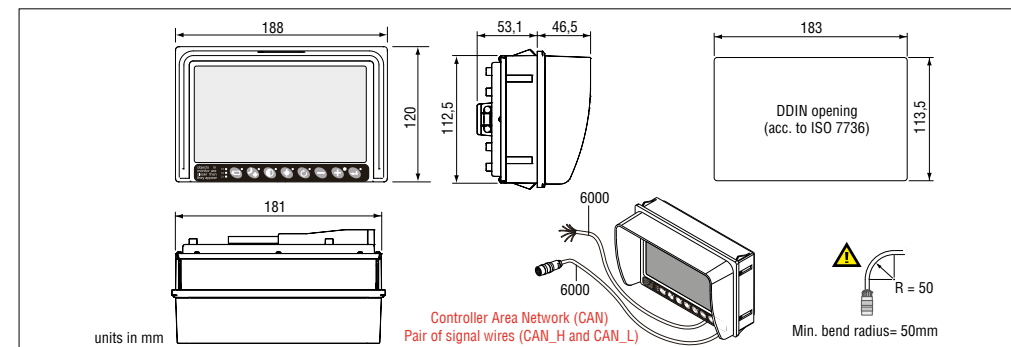
5.3. Monitor 7" LEDD CAN SRD 6

Article number: 0208371

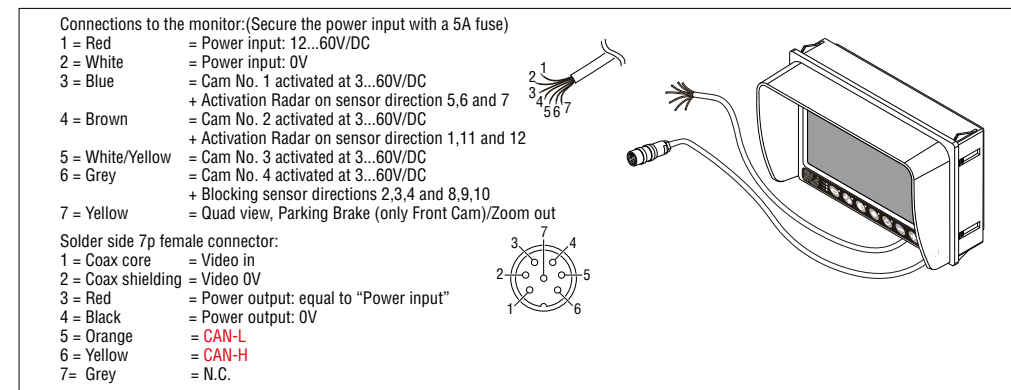
Cables / Connectors Cable LEDD 6m serial (power) open wired, 6m multicable (video) with 7p female IP67 PG7 AU connector. Art. No.: 8975180

Weight 1,2kg (monitor, cables and connector)

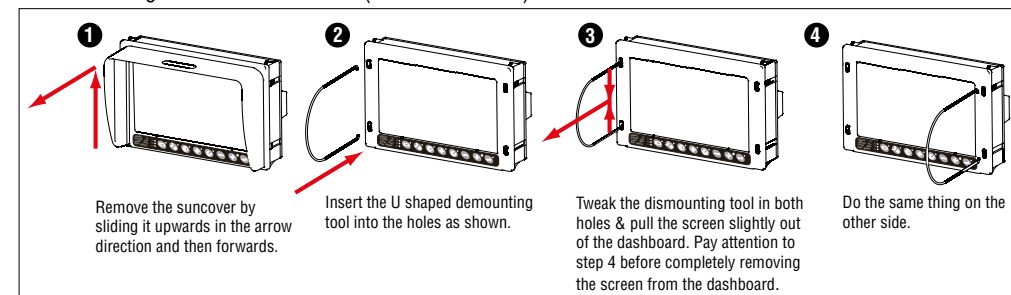
Dimensions



Electrical connections



Disassembling of the LEDD monitor (from dashboard)



5.4. Set Monitor 12" Set Monitor 12" RLED CAN SRD R6

Set Article number: 0411300

Monitor	Article No. 0207930 Monitor 12" RLED CAN SRD
Cable	Article No. 0304830 Cable monitor 6 ow b7
Bracket	Article No. 2015600 Adjustable Bracket 190mm
Mounting material	Article No. 0910310 Set Mounting Material Adjustable Bracket

General

Weight	2,81 kg, including cable and bracket.
Type	Automotive 12,1inch TFT-LCD module with a white LED backlight.
Resolution	XGA 1024 x R.G.B. x 768 pixels.
Viewing	80° horizontal and 70° vertical (@ CR≥10).
LED live time	30.000 Hrs.
Typical performance	Center luminance of white: 500cd/m2, Contrast ratio 700:1, Response time 5ms (Tr).
Software menu	Full On-Screen-Display (OSD) functionality in 12 languages: English, Dutch, German, French, Italian, Polish, Portuguese, Spanish, Swedish, Finnish, Danish and Norwegian.
ABC mode	Improved Auto Brightness Control (ABC) including one-touch day/night setting and adjustable minimum and maximum levels for automatic control.
Operating temperature	-40°C...+85°C.

Electrical

Input voltage range	12...30V.
Power consumption	12W@24V.
Protection:	>30V overvoltage protection, <10V undervoltage protection, protected against load dumps, spikes and surges, reverse polarity on all wiring.
Power-output:	12V, for powering cameras and other peripherals. Output current 2A max.
Video input	1Vtt, 75Ω, Pal 50 Hz, 4,43MHz color sub carr. NTSC 60 Hz, 3,58MHz color sub carr.

Mechanical

Surface	Hard coating (3H), with AG LR (Low Reflection) polarizer.
Housing	Color Black, material: aluminium & high impact automotive synthetic thermoplastic polymer.
Protection	IP67 according IEC60529. dust-tight and protected against the effects of temporary immersion in water up to 1 m under water for 30 minutes.
Temperature/humidity test	According IEC60068-2-1/2/3/14/30/38.

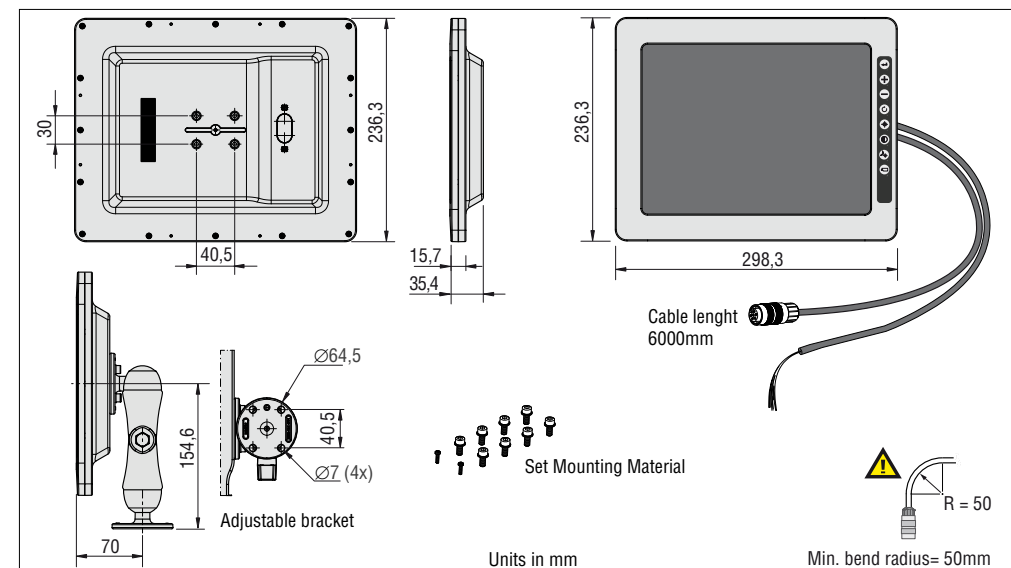
Certification

Quality & environment	Units are manufactured by Orlaco in the Netherlands; ISO 9001: 2000, ISO14001: 2004.
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Each product is delivered with a User manual, Installation/System manual.

Article number: 0411300

Dimensions



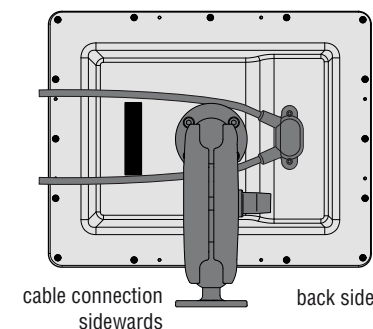
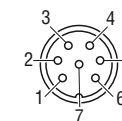
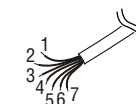
Electrical connections

Connections to the monitor: (Secure the power input with a 5A fuse)

- 1 = Red = Power input: 12...30V
- 2 = White = Power input: 0V
- 3 = Blue = Cam No. 1 activated at 12...30V
- 4 = Brown = Cam No. 2 activated at 12...30V
- 5 = White/Yellow = Cam No. 3 activated at 12...30V
- 6 = Grey = Aux 1 activated at 12...30V
- 7 = Yellow = Blocking sensor directions 2,3,4 and 8,9,10
- Shielding to GND = Aux 2 activated at 12...30V

Solder side 7p female connector:

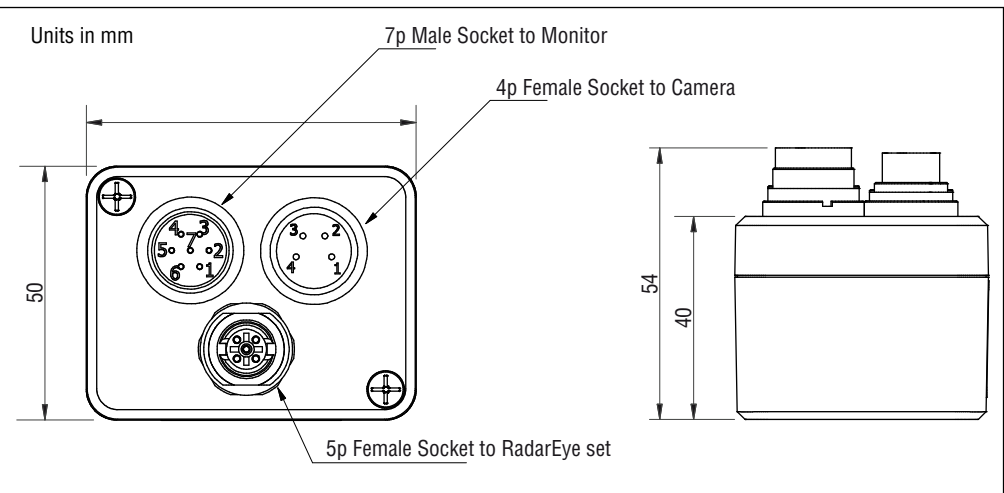
- 1 = Coax core = video 1 input
- 2 = Coax shielding = video 0V
- 3 = Red = Power output: 12V
- 4 = Black = Power output: 0V
- 5 = Orange = CAN-L
- 6 = Yellow = CAN-H
- 7 = Grey = Video 2 input
- Shielding to housing



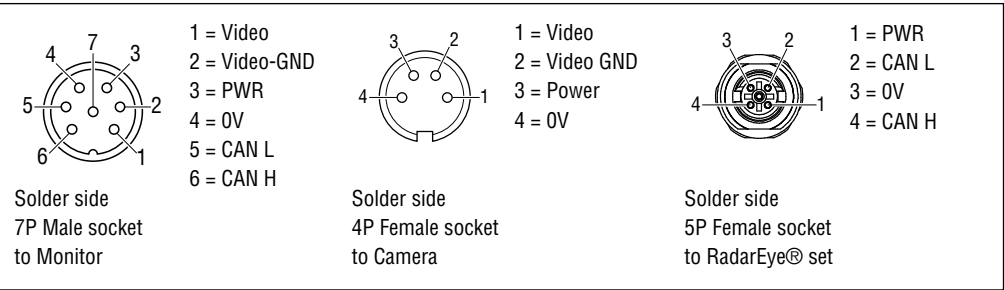
5.5. Interface box CAN/SRD/camera

Article number	0256010
General	Interface is designed to connect the Orlaco RadarEye® sets to a Camera and a Monitor.
Color	Grey RAL7032.
Protection	Water and Dustproof IP 66 according to IEC 60529.
Operating temperature	-40°C to +75°C.
Weight	176gr.
Connectors	7P Male Socket to Monitor, 4p Female Socket to Camera, 5p Female Socket to RadarEye® set.

Dimensions



Electrical connections



5.6. SRD sensor CAN Horizontal

Article number: 0004310 0004320
Antenna position Horizontal Vertical
Connectors position Side Top or bottom

Electrical
Supply voltage 8 to 16V (protected against reverse polarity).
Supply current 120mA (typ.).
Frequency ISM Band 24.000 GHz ... 24.250 GHz (USA, EU Member states and EFTA countries)

Preset the unit to:

UK 24.150 GHz ... 24.250 GHz (high band)
France 24.000 GHz ... 24.150 GHz (Low band)
Japan 24.050 GHz ... 24.250 GHz

Please consult Orlaco before using this radar in other areas.

Max. transmit power 20dBm (EIRP) ETSI 300 / 440 compliant with 250MHz bandwidth.
Detection area 2m ... 20m, divided in 5 equally sized segments.
Separation distance 1m ... 4m (configurable), mounting distance between radar units in case of Corner Rear setup.
Sensitivity Ability to detect a person of average child size. Moving object sensitivity (0 – 100, 50 is the current sensitivity). Non-moving object sensitivity (0 – 100, 50 is the current sensitivity).
Obstacle reaction delay 50ms.
Output hold time 500ms.

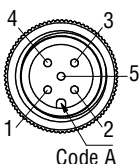
Mechanical
Mounting For mounting four M4 Vibration dampers are included.
Resolution +/- 20cm.
Housing Waterproof and vibration proof.
Weight 0,60kg.
Operating temperature -40°C...+85°C.
Communication Monitor and radar communicate with the data link layer to transmit and receive CAN messages. Communication speed: 250kbps. Each radar unit will send 1 message each 50ms (20 times per second). Fully Compliant with CAN Standard rev 2.0 A and rev 2.0 B. ISO16845 certified.

Certification
Frequency Communication standards: ETSI(Europe) and FCC(USA).

Electrical connections

Cable M12 Green

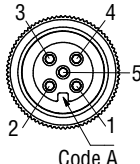
- 1 = Red = Power
- 2 = Blue = Can-L
- 3 = Black = Power 0V
- 4 = Blue/White = Can-H
- 5 = Orange = N.C.



Front side connector molded M12 5p male

Cable M12 Master-Slave Red

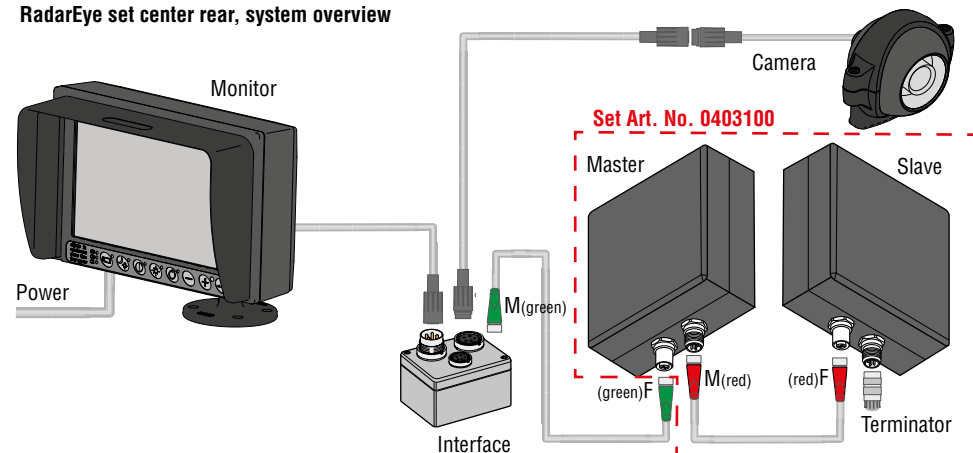
- 1 = Red = Power
- 2 = Blue = Can-L
- 3 = Black = Power 0V
- 4 = Blue/White = Can-H
- 5 = Orange = M/S Communication



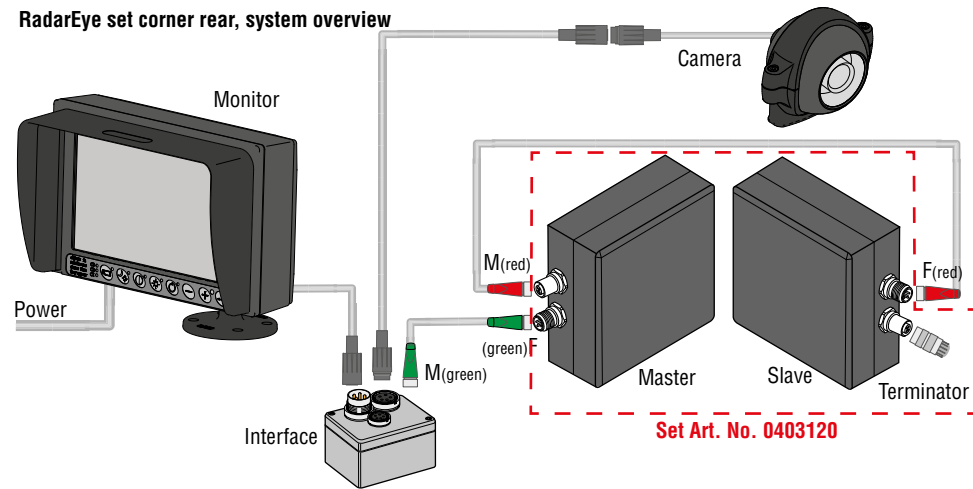
Front side connector molded M12 5p female

Example Sets installation

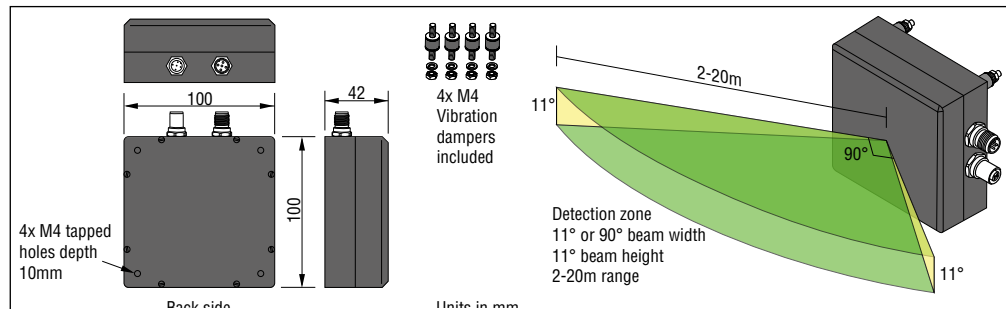
RadarEye set center rear, system overview



RadarEye set corner rear, system overview



Dimensions



5.7. Bracket SRD Sensor Center Rear

Article number: 0401320

Stainless steel, fully adjustable with mounting position for camera.

Dimensions Bracket center rear.

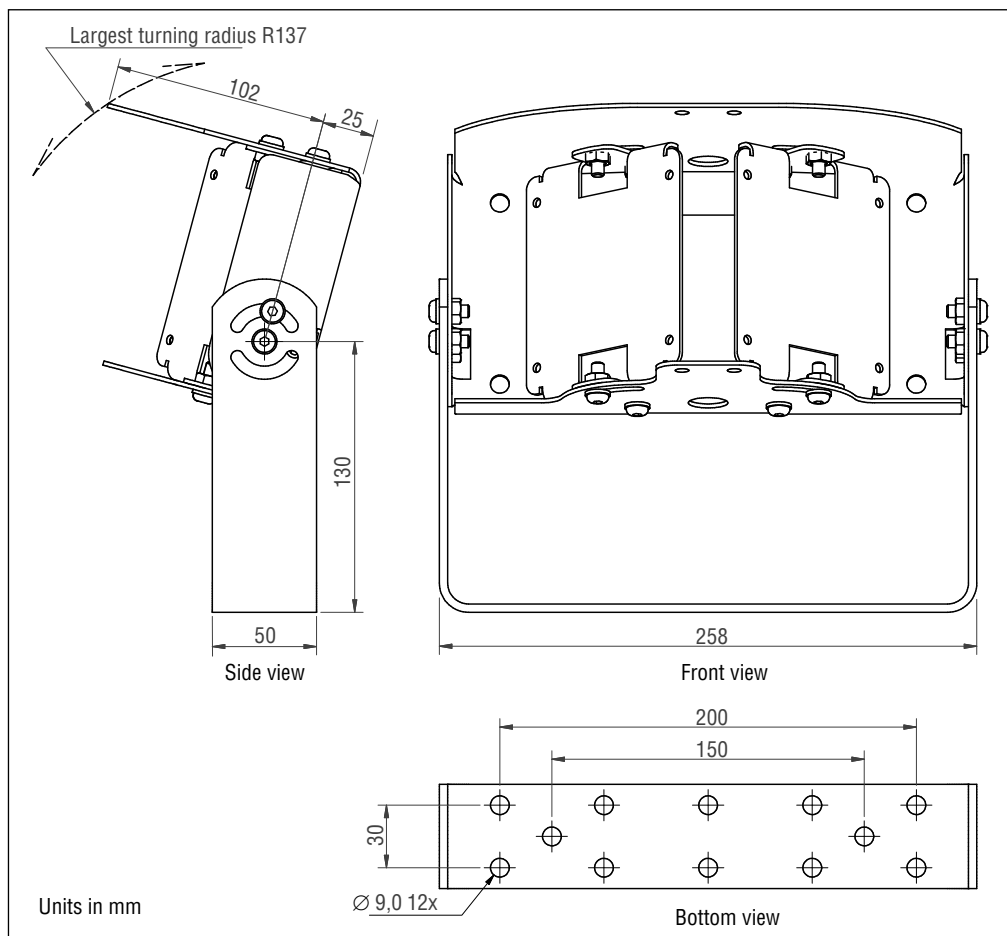


Figure 10

5.8. Bracket SRD Sensor Corner Rear

Article number: 0401330

Stainless steel, fully adjustable.

Dimensions Bracket corner rear, 0° position and 45° position.

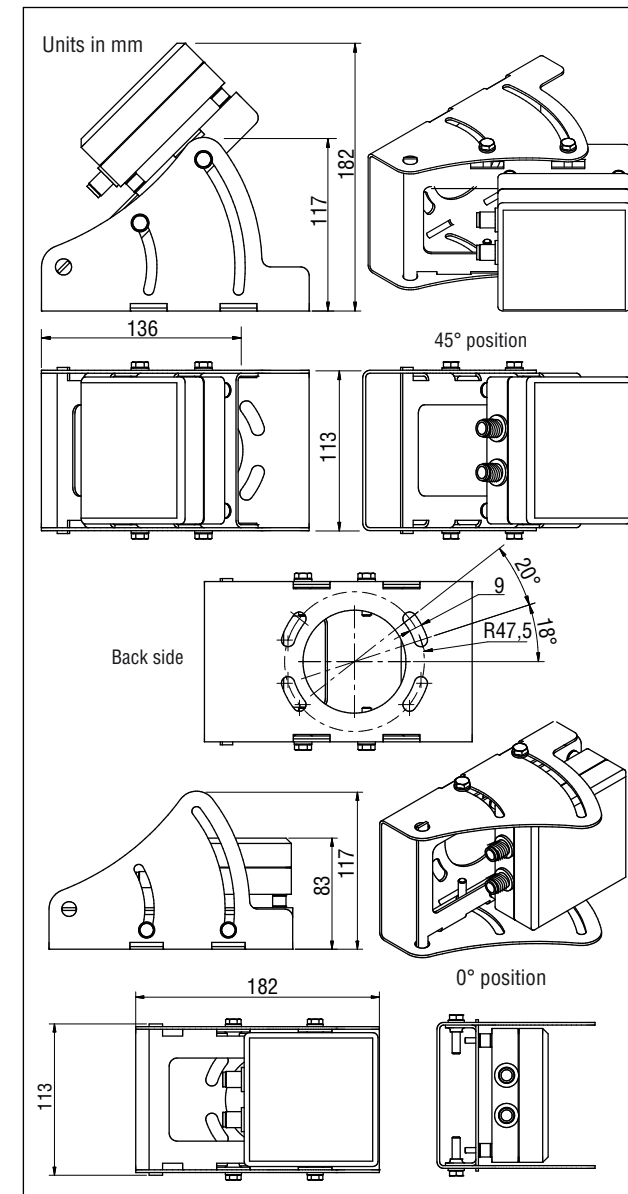


Figure 11

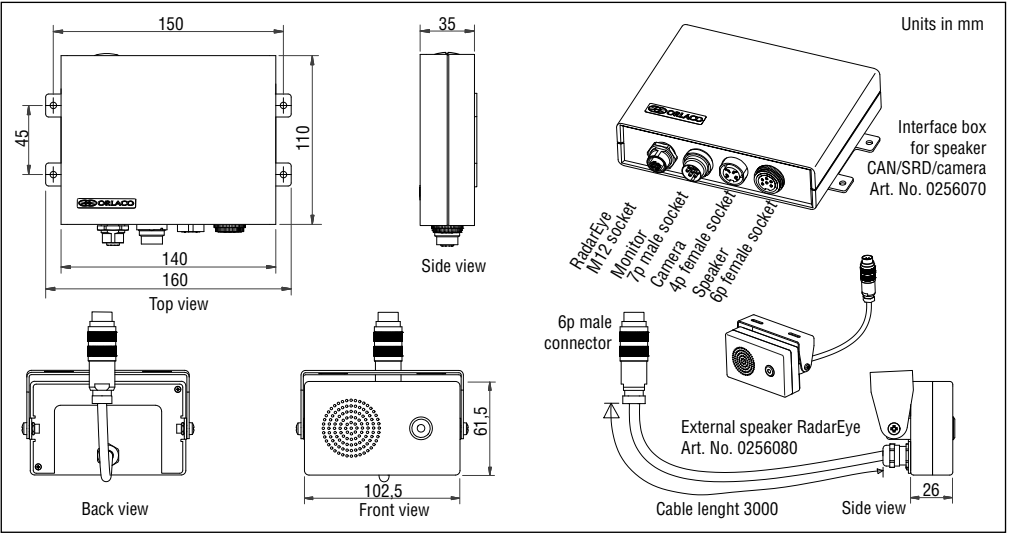
5.9. Interface Box with Ext. speaker CAN/SRD/camera

Article number: 0504820

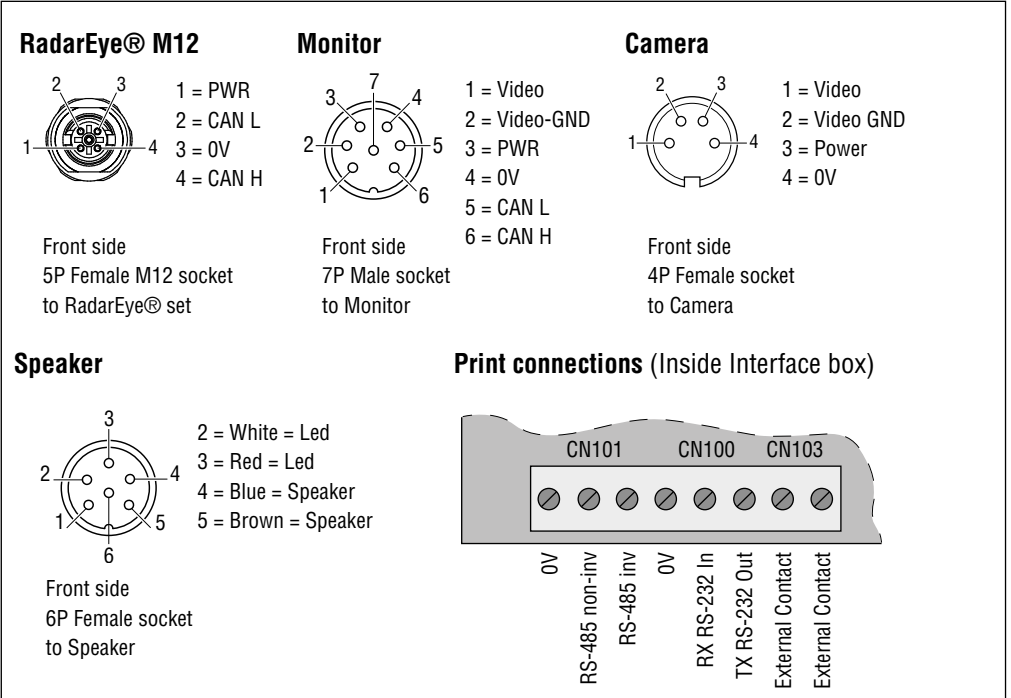
- General** Interface box, (Art. No. 0256070)
Interface is designed to connect the Orlaco RadarEye® sets to a camera, monitor and external speaker.
- Housing** Dimensions 140 x 110 x 35 mm
- Input/output** External output 10A Resistive/24V max. NO contact.
Externe output 10A secured.
RS232, RS485.
- Connectors** 7p male socket to monitor, 4p female socket to camera, 5p female socket to RadarEye® set, 6p female socket to speaker.
- Weight** 176gr.
- Cable** **Speaker**, (Art. No. 0256080)
3m cable, Art. No. 1220900 with 6p male connector, mounted on back side of speaker.
- Housing** Dimensions 101 x 60 x 26 mm.
- Bracket** Adjustable stainless steel bracket.
- Sound pressure speaker** 85dB(+3dB) distance 1m.
- Speaker box alarm light** LED, color red.

Article number: 0504820

Dimensions



Electrical connections



6. Guidelines for mounting the Sensors

The Sensors should be installed in such a way that the possible targets are observed in good order.

The advised position of the Sensors in the “Corner Rear setup” is that both Sensors are mounted at the corners of the vehicle. With the available brackets 0401330 (Bracket Sensor Center Rear) the Sensor can be tilted to the middle. With a width between the Sensors of 2750mm, 30 degrees tilted to the middle.

In the “center rear setup” the Sensor are mounted next to each other in the middle of the vehicle. Each Sensor tilted approximately 15 degrees tilted to the outside of the vehicle. The available bracket 0401320 (Bracket Sensor Center Rear) can be used to tilt the Sensors to the required angle. To prevent that the radar beam touches the ground (and detects the ground) the Sensor(s) are mounted at the vehicle tilted up- or downwards. This tilting angle is depending on the center of the mounting height of the Sensor and the selected detection range the Sensor(s).

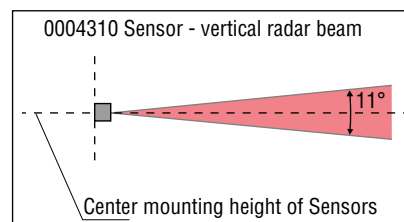


Figure 12

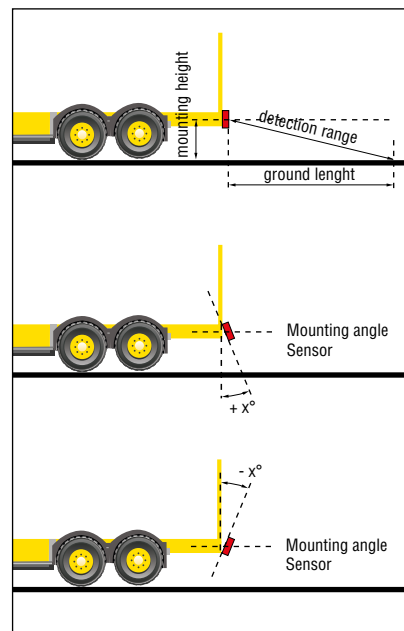


Figure 13



The radar should **NOT** be blocked by anything; this could also mean the metal structure of the truck itself! The module should be aligned when installed so that it can 'look' freely.

It is **NOT** advised to paint the Sensor. Some paints contain small metal parts. The module is equipped with a plastic radome to have a minimum loss for the waves transmitted.

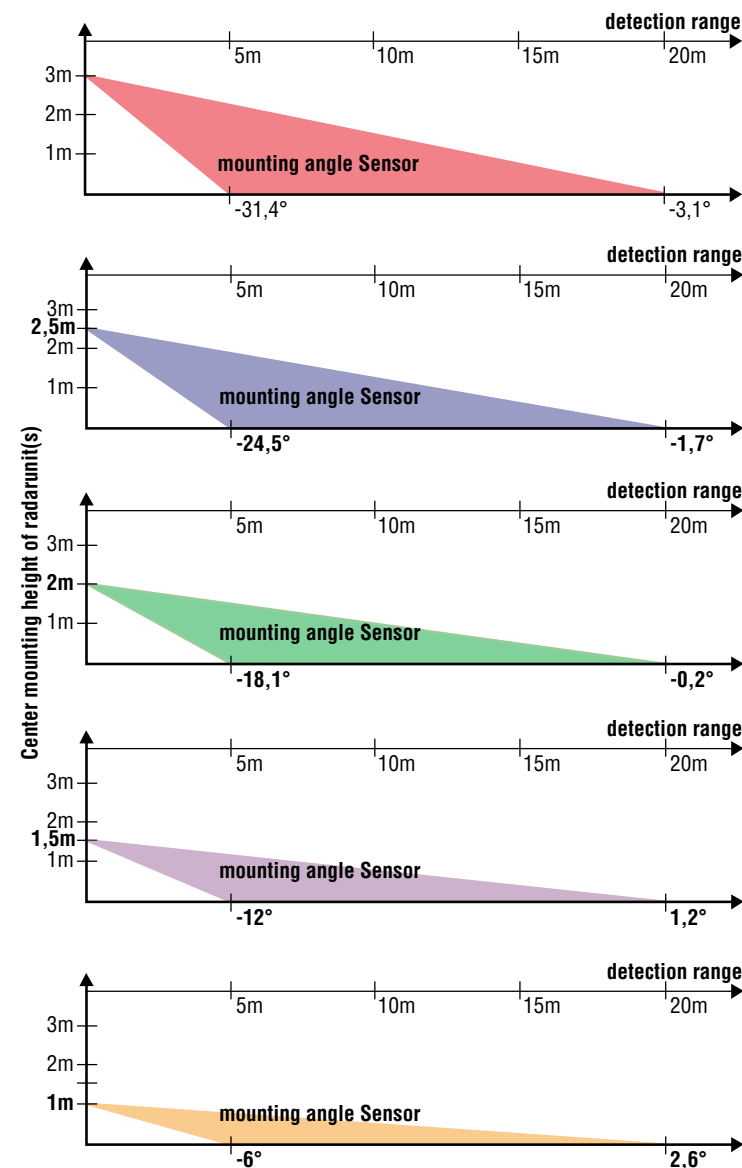
Below graph gives an indication of the vertical tilting angle with the variables of mounting height and detection range.

Example 1:

Installation of the corner rear set at a vehicle at 1,0m mounting height and detection range 6m: 4 degrees tilted downwards and 30 degrees tilted to the middle. Tolerance +/- 2 degrees.

Example 2:

Installation of the center rear set at a vehicle at 2,6m height and detection range 15m: 10 degrees tilted downwards and Sensor approximately 15 degrees tilted to the outside. Tolerance +/- 2 degrees.



7. Disposal

Disassembly, removal and disposal. Local regulations for dealing with waste must be followed when disposing of disassembled components or entire Sensors.

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8. General terms and conditions

Orlaco Products BV is not liable for damage resulting from inadequate servicing, incorrect usage or alterations made to the equipment without informing the manufacturer in writing.

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Orlaco reserves the right to make changes to components at any time without informing customers beforehand or directly. All dimensions given are for commercial purposes.

For information regarding repairs that is not covered in this manual, please contact the Orlaco Products BV service department.

This manual has been prepared with all due care and attention. However, Orlaco Products BV cannot be held responsible for any errors in this manual or any consequences thereof.

9. Release notes

- R1-0** First issue, August 2013
- R1-1** Name Radar changed to SRD, October 2013
- R1-2** Multiple text changes, March 2014
- R1-3** Chapter 5, Specs changed, April 2015
- R1-4** Monitor Art. no. 0208871; cable changed, August 2016
- A 01** Speaker socket pin layout changed, page 23, March 2017
- A 02** Cable 2m added, chapter 4.3., April 2017
- A 03** Art. numbers changed, chapter 4.3., June 2017

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A 01 Speaker socket pin layout changed, page 23, March 2017

A 02 Cable 2m added, chapter 4.3., April 2017

A 03 Art. numbers changed, chapter 4.3., June 2017

[illegible]

Orlaco is a Manufacturing company that specializes in making cameras and monitor systems for commercial vehicles, fork-lift trucks, cranes, off shore and maritime.

Our objective is to design and produce camera systems for the professional market that improve the drivers' view and increase operating efficiency.

At our facility in Barneveld we locate our design, manufacturing, warehousing and service department.

Vision is our mission®. Orlaco therefore deploys the development, manufacture, supply and service of camera and Monitor systems that will improve safety and efficiency of all vehicles, machinery and vessels. Our systems give the end user a view on each blind spot and will create comfort and improved working conditions. Our active approach will support market demands and innovations and will lead to enthusiastic ambassadors in the market; our customers.

For more information: www.orlaco.com

