

# RadarRanger® Anti Collision Devices

1. Radar Scanner CRAT20-11/11  
normal beam angle, long range, moving targets
2. Radar Scanner CRAT20-70/11  
wide beam angle, short range, moving targets
3. Radar Scanner CRAT20-11/11ST  
normal beam angle, long range, moving + stationary targets
4. Radar Scanner CRAT20-11/11ST60m  
normal beam angle, very long range, moving + stationary targets
5. Radar Scanner CRAT20-70/11ST  
wide beam angle, short range, moving + stationary targets
6. Radar Scanner CRAT20-5/14ST  
narrow beam angle, long range, moving + stationary targets
7. Radar Scanner CRAT20-5/14ST60m  
narrow beam angle, very long range, moving + stationary targets
8. Radar Scanner CRAT20-3,5/15ST *in preparation*  
very narrow beam angle, long range, moving + stationary targets
9. Radar Scanner CRAF20-11/11ST-Master/Slave  
field characteristic, moving + stationary targets
10. Radar Barrier CRAS80-11/11



Preliminary data sheet

  
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## Description

The RadarRanger scanners and barriers are FMCW-Radar and works in the frequency range from 24,000 - 24,250 GHz. This frequency range is valid for almost all countries worldwide. For UK, France, and USA, Canada it is different. We fulfill also this requirements, please ask us.

The different antenna characteristics are:

- 11°x11° ( $\pm 5,5^\circ$ ) horizontal and vertical
- 70°x11° ( $\pm 35,0^\circ$ ) horizontal and ( $\pm 5,5^\circ$ ) vertical
- 5°x14° ( $\pm 2,5^\circ$ ) horizontal and ( $\pm 7,0^\circ$ ) vertical
- 3,5°x15° ( $\pm 1,75^\circ$ ) horizontal and ( $\pm 7,5^\circ$ ) vertical *in preparation*

The devices are able to detect objects within distances from 25m, 40m, 60m and up to 100m, with different target sizes.

We differentiate between devices which can detect only moving targets and devices which can detect moving and stationary targets.

Object detections will be reported by open-collector-outputs. All units have up to 3 outputs which can be used for example as slow down or stop features. The 3 outputs are allocated at a 5-pin RSF4 standard connector.

With a Configuration Box and a software the sensors can programmed to the needed values of each application.

The devices were especially developed for the anti-collision and start up protection in the field of fast moving marine port cranes, as there were Straddle Carrier, RTGC, RMGC, ARMG, STS and OHBC cranes in steel mills.

- Vantages:
- high operating distance
  - insensibility against environmental conditions
  - wide temperatur range
  - high class of protection
  - heavy duty enclosure

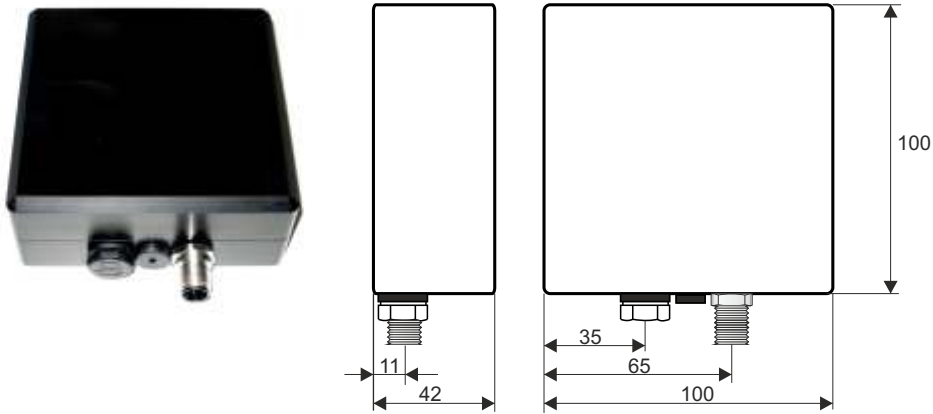
Special brackets from the accessories program are helpful for easy mounting.

For the re-fitting of existing equipment we sell an interface box with different input voltages and galvanically isolated outputs.

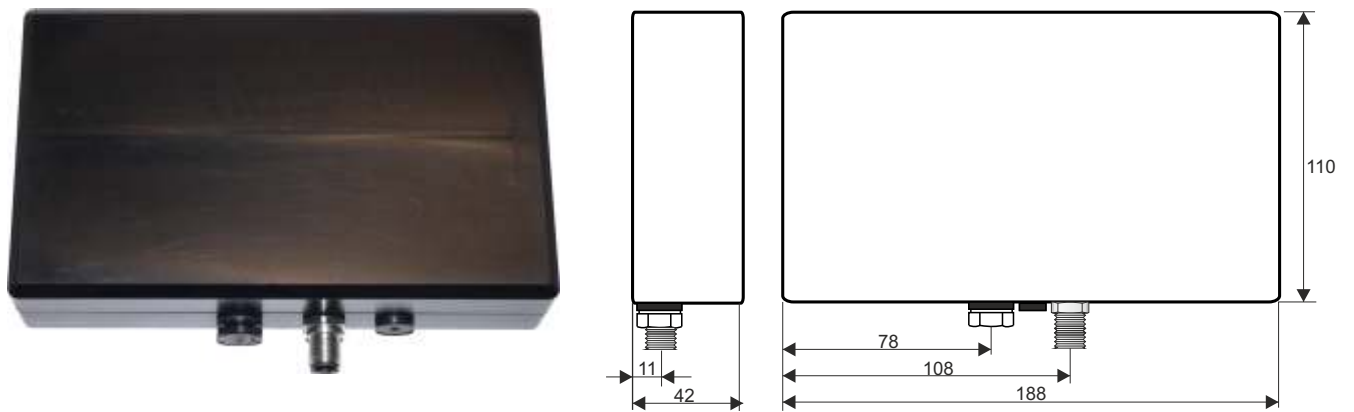
Because of their physical properties, radar scanner devices must NOT be used for PERSONAL SAFETY or EMERGENCY OFF functions.

## Dimensions

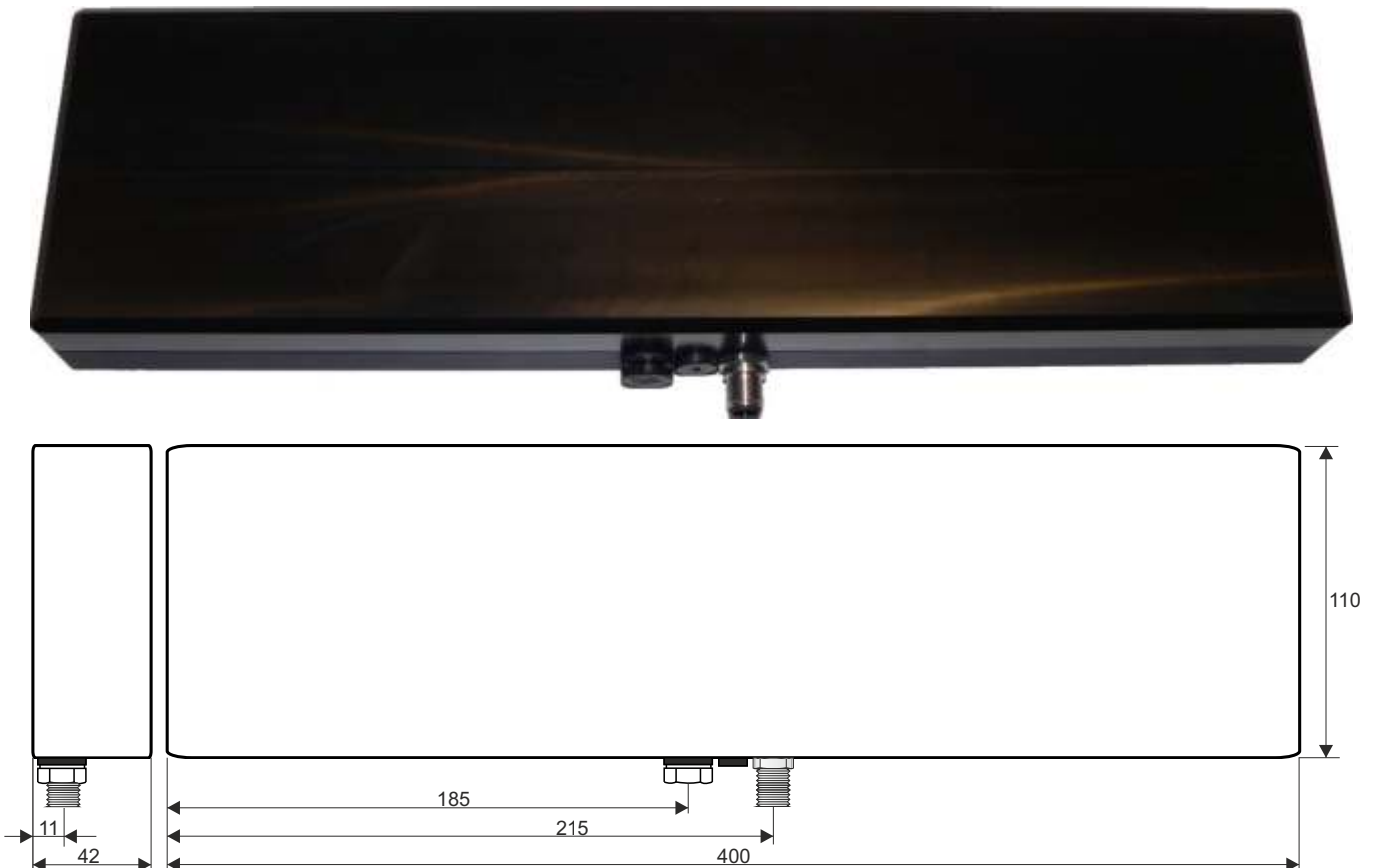
### CRAT20-11x11, CRAT20-70x11, Master/Slave devices and barriers



### CRAT20-5x14 devices



### CRAT20-3,5x15 device



# 1. Specification CRAT20-11/11

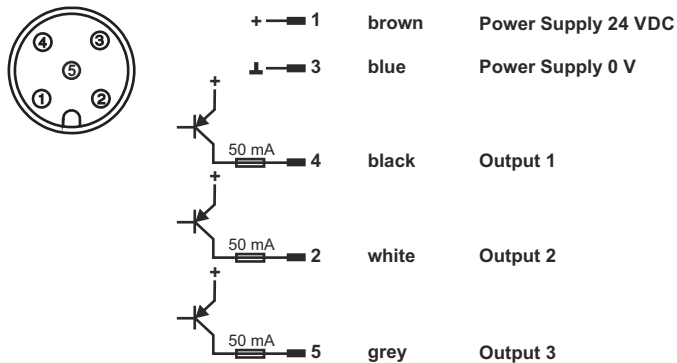
## Mechanical Design:

<b>Weight</b>	approx. 0,62 kg
<b>Material</b>	Lower Housing Section: ALg, black anodized Housing Cover: POM-Plastic black colored
<b>Protection Class</b>	IP 67
<b>Housing Dimensions</b>	100 x 100 x 42 mm
<b>Mounting Drillings/Housing Back Side</b>	4 X M4-Tread, 10mm deep, quadratically arranged: 82 x 82 mm

## Electrical Design:

<b>Supply Voltage</b>	10 - 30VDC
<b>Current Consumption</b>	typ. 135 mA, plus current for the Open-Collector-Outputs
<b>Output</b>	3 Open-Collector-Outputs with each 50mA
<b>Connection</b>	5-pin Connector M12x1, RSF4 compatible
<b>Sending Frequency</b>	24.000 .... 24.250 GHz
<b>Transmitting Power</b>	< 20dBm (EIRP) max.
<b>Antenna Characteristics</b>	11° (±5,5°) vertical und horizontal
<b>Distance Detection</b>	0,2m .... Threshold (in 1m steps from 2 - 40m adjustable) - target size 2mx2m - a minimum speed from 3m/min is required
<b>Response Time</b>	< 50 ms
<b>Hold Time of the Outputs</b>	ca. 0,1 .... 1 sec depending of Object Dimensions
<b>Readiness delay after power on</b>	approx. 1 sec
<b>Operating Temperature</b>	-40 .... +85 °C
<b>Storage Temperature</b>	-40 .... +85 °C

## Connection Diagramm:

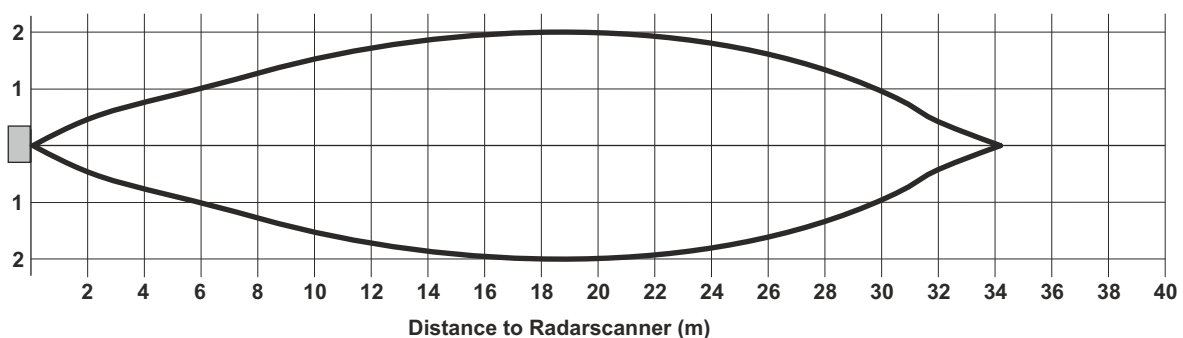


## Standard Conformity:

- Radio Standard ETSI EN 300440
- EMV-Testing ETSI EN301 489-3 particular EN 55022, EN/IEC 61000-4-3, EN/IEC 61000-4-6, EN/IEC 61000-4-4, EN/IEC 61000-4-2, EN/IEC 61000-4-5, EN/IEC 61000-4-11
- Safety Testing EN 60950-1

## Typical Antenna Characteristics/ Beam Pattern:

- 11x11 horizontal and vertical equal
- sensitivity 20dB,
- target: metal plate 50x50cm



## 2. Specification CRAT20-70/11

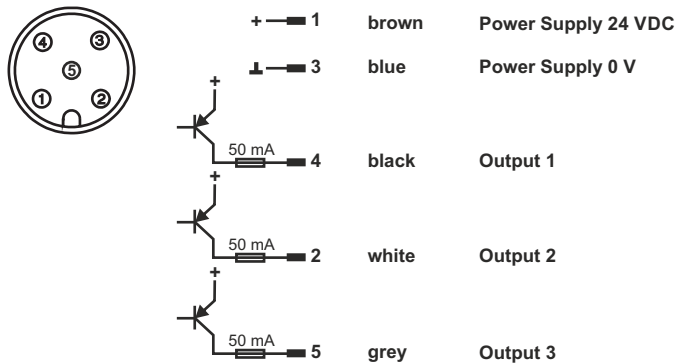
### Mechanical Design:

<b>Weight</b>	approx. 0,62 kg
<b>Material</b>	Lower Housing Section: ALg, black anodized Housing Cover: POM-Plastic black colored
<b>Protection Class</b>	IP 67
<b>Housing Dimensions</b>	100 x 100 x 42 mm
<b>Mounting Drillings/Housing Back Side</b>	4 X M4-Tread, 10mm deep, quadratically arranged: 82 x 82 mm

### Electrical Design:

<b>Supply Voltage</b>	10 - 30 VDC
<b>Current Consumption</b>	typ. 135 mA, plus current for the Open-Collector-Outputs
<b>Output</b>	3 Open-Collector-Outputs with each 50mA
<b>Connection</b>	5-pin Connector M12x1, RSF4 compatible
<b>Sending Frequency</b>	24.000 .... 24.250 GHz
<b>Transmitting Power</b>	< 20dBm (EIRP) max.
<b>Antenna Characteristics</b>	70° (±35°) horizontal and 11° (±5,5°) vertical
<b>Distance Detection</b>	0,2m .... Threshold (in 1m steps from 2 - 25m adjustable) - target size 2mx2m - a minimum speed from 3m/min is required
<b>Response Time</b>	< 50 ms
<b>Hold Time of the Outputs</b>	ca. 0,1 .... 1 sec depending of Object Dimensions
<b>Readiness delay after power on</b>	approx. 1 sec
<b>Operating Temperature</b>	-40 .... +85 °C
<b>Storage Temperature</b>	-40 .... +85 °C

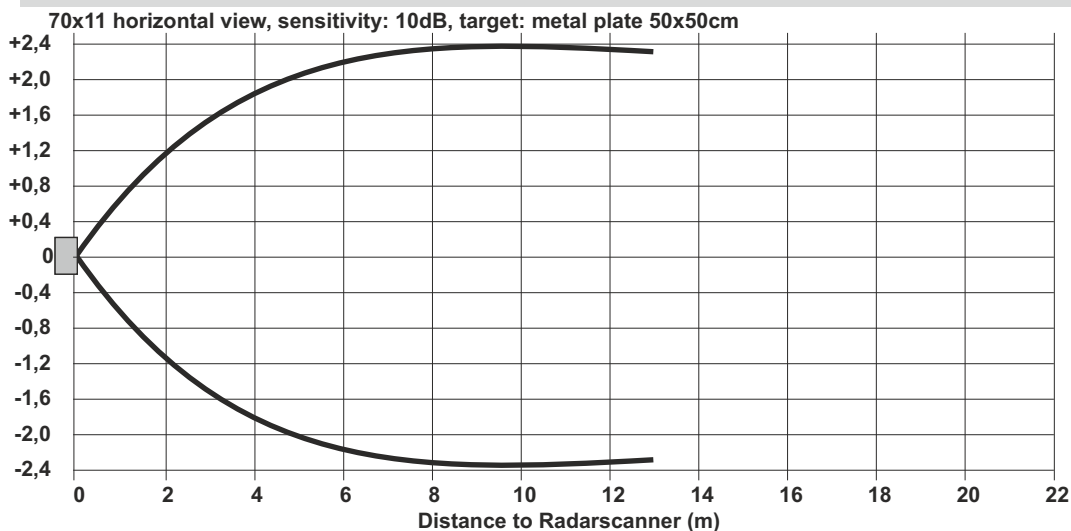
### Connection Diagramm:



### Standard Conformity:

- Radio Standard ETSI EN 300440
- EMV-Testing ETSI EN301 489-3  
particular EN 55022,  
EN/IEC 61000-4-3, EN/IEC 61000-4-6,  
EN/IEC 61000-4-4, EN/IEC 61000-4-2,  
EN/IEC 61000-4-5, EN/IEC 61000-4-11
- Safety Testing EN 60950-1

### Typical Antenna Characteristics/ Beam Pattern:



### 3. Specification CRAT20-11/11ST

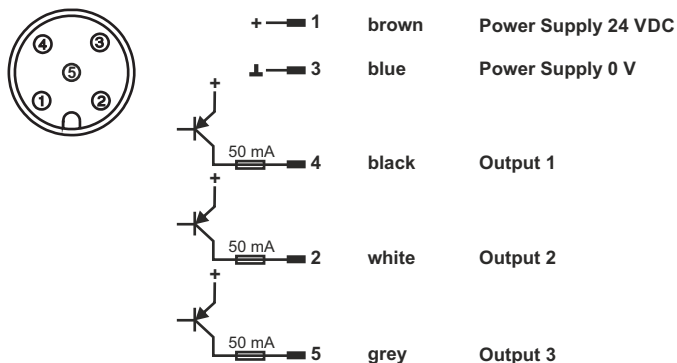
#### Mechanical Design:

<b>Weight</b>	approx. 0,62 kg
<b>Material</b>	Lower Housing Section: ALg, black anodized Housing Cover: POM-Plastic black colored
<b>Protection Class</b>	IP 67
<b>Housing Dimensions</b>	100 x 100 x 42 mm
<b>Mounting Drillings/Housing Back Side</b>	4 X M4-Tread, 10mm deep, quadratically arranged: 82 x 82 mm

#### Electrical Design:

<b>Supply Voltage</b>	10 - 30 VDC
<b>Current Consumption</b>	typ. 145 mA, plus current for the Open-Collector-Outputs
<b>Output</b>	3 Open-Collector-Outputs with each 50mA
<b>Connection</b>	5-pin Connector M12x1, RSF4 compatible
<b>Sending Frequency</b>	24.000 .... 24.250 GHz
<b>Transmitting Power</b>	< 20dBm (EIRP) max.
<b>Antenna Characteristics</b>	11° (+/-5,5°) vertical und horizontal
<b>Distance Detection</b>	up to 40m (in 1m steps from 4 - 40m adjustable) target 2mx2m 0 - 1m will not be evaluated, 1 - 4m minimum speed less 1cm/sec (0,6m/min) required 4 -40m works also with stationary targets
<b>Response Time</b>	< 70 ms
<b>Hold Time of the Outputs</b>	ca. 0,1 .... 1 sec depending of Object Dimensions
<b>Readiness delay after power on</b>	approx. 1 sec
<b>Operating Temperature</b>	-40 .... +85 °C
<b>Storage Temperature</b>	-40 .... +85 °C

#### Connection Diagramm:

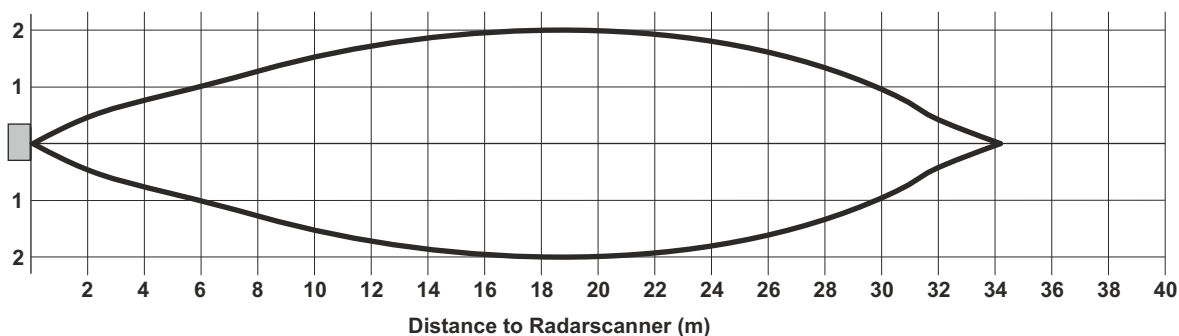


#### Standard Conformity:

- Radio Standard ETSI EN 300440
- EMV-Testing ETSI EN301 489-3 particular EN 55022, EN/IEC 61000-4-3, EN/IEC 61000-4-6, EN/IEC 61000-4-4, EN/IEC 61000-4-2, EN/IEC 61000-4-5, EN/IEC 61000-4-11
- Safety Testing EN 60950-1

#### Typical Antenna Characteristics/ Beam Pattern:

- 11x11 horizontal and vertical equal (m)
- sensitivity: 20dB
- target: metal plate 50x50cm



## 4. Specification CRAT20-11/11ST60m

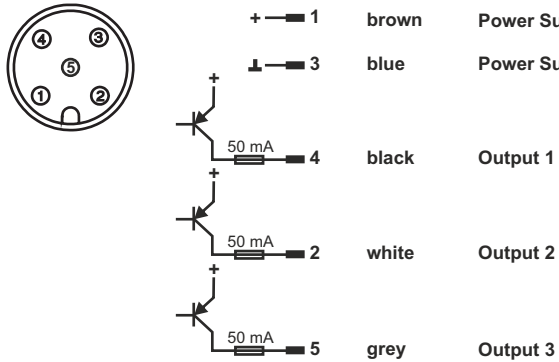
### Mechanical Design:

<b>Weight</b>	approx. 0,62 kg
<b>Material</b>	Lower Housing Section: ALg, black anodized Housing Cover: POM-Plastic black colored
<b>Protection Class</b>	IP 67
<b>Housing Dimensions</b>	100 x 100 x 42 mm
<b>Mounting Drillings/Housing Back Side</b>	4 X M4-Tread, 10mm deep, quadratically arranged: 82 x 82 mm

### Electrical Design:

<b>Supply Voltage</b>	10 - 30 VDC
<b>Current Consumption</b>	typ. 150 mA, plus current for the Open-Collector-Outputs
<b>Output</b>	3 Open-Collector-Outputs with each 50mA
<b>Connection</b>	5-pin Connector M12x1, RSF4 compatible
<b>Sending Frequency</b>	24.000 .... 24.250 GHz
<b>Transmitting Power</b>	< 20dBm (EIRP) max.
<b>Antenna Characteristics</b>	11° (+/-5,5°) vertical und horizontal
<b>Distance Detection</b>	up to 60m (in 1m steps from 6 - 60m adjustable) target 2,5mx2,5m 0 - 1m will not be evaluated, 1 - 6m minimum speed less 1cm/sec (0,6m/min) required 6 -60m works also with stationary targets
<b>Response Time</b>	< 70 ms
<b>Hold Time of the Outputs</b>	ca. 0,1 .... 1 sec depending of Object Dimensions
<b>Readiness delay after power on</b>	approx. 1 sec
<b>Operating Temperature</b>	-40 .... +85 °C
<b>Storage Temperature</b>	-40 .... +85 °C

### Connection Diagramm:

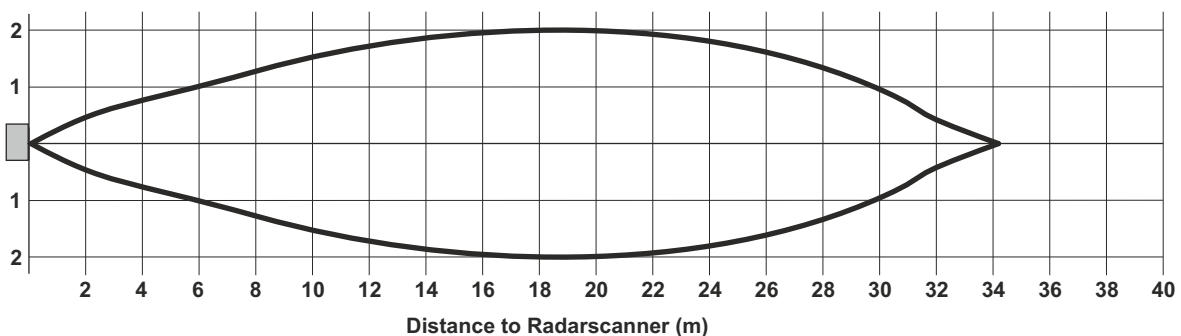


### Standard Conformity:

- Radio Standard ETSI EN 300440
- EMV-Testing ETSI EN301 489-3  
particular EN 55022,  
EN/IEC 61000-4-3, EN/IEC 61000-4-6,  
EN/IEC 61000-4-4, EN/IEC 61000-4-2,  
EN/IEC 61000-4-5, EN/IEC 61000-4-11
- Safety Testing EN 60950-1

### Typical Antenna Characteristics/ Beam Pattern:

- 11x11 horizontal and vertical equal (m)
- sensitivity: 20dB
- target: metal plate 50x50cm



## 5. Specification CRAT20-70/11ST

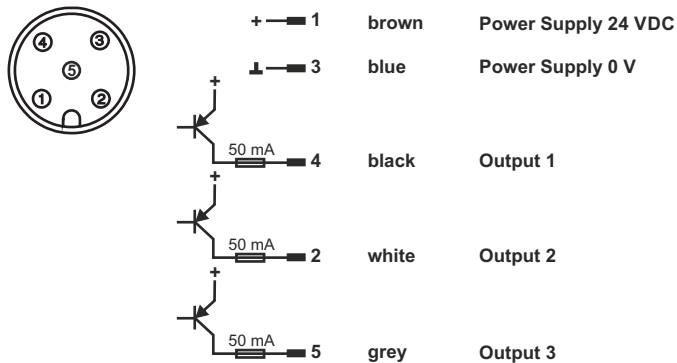
### Mechanical Design:

<b>Weight</b>	approx. 0,62 kg
<b>Material</b>	Lower Housing Section: ALg, black anodized Housing Cover: POM-Plastic black colored
<b>Protection Class</b>	IP 67
<b>Housing Dimensions</b>	100 x 100 x 42 mm
<b>Mounting Drillings/Housing Back Side</b>	4 X M4-Tread, 10mm deep, quadratically arranged: 82 x 82 mm

### Electrical Design:

<b>Supply Voltage</b>	10 - 30 VDC
<b>Current Consumption</b>	typ. 145 mA, plus current for the Open-Collector-Outputs
<b>Output</b>	3 Open-Collector-Outputs with each 50mA
<b>Connection</b>	5-pin Connector M12x1, RSF4 compatible
<b>Sending Frequency</b>	24.000 .... 24.250 GHz
<b>Transmitting Power</b>	< 20dBm (EIRP) max.
<b>Antenna Characteristics</b>	70° (±35°) horizontal and 11° (±5,5°) vertical
<b>Distance Detection</b>	up to 25m (in 1m steps from 1-25m adjustable) target 1,5mx1,5m 0 - 1m will not be evaluated, 1 - 4m minimum speed less 1cm/sec (0,6m/min) required 4 -25m works also with stationary targets
<b>Response Time</b>	< 70 ms
<b>Hold Time of the Outputs</b>	ca. 0,1 .... 1 sec depending of Object Dimensions
<b>Readiness delay after power on</b>	approx. 1 sec
<b>Operating Temperature</b>	-40 .... +85 °C
<b>Storage Temperature</b>	-40 .... +85 °C

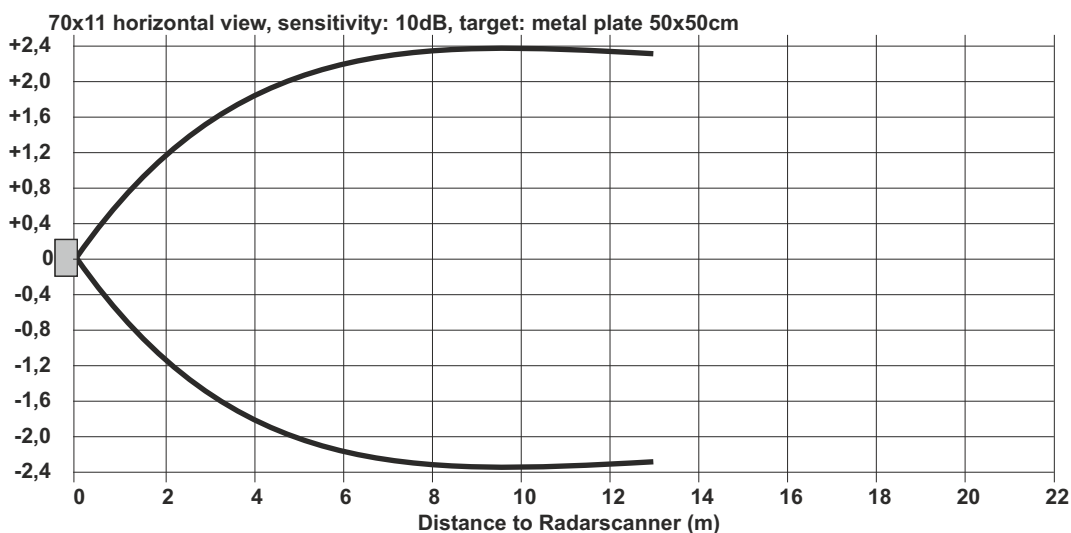
### Connection Diagramm:



### Standard Conformity:

- Radio Standard ETSI EN 300440
- EMV-Testing ETSI EN301 489-3  
particular EN 55022,  
EN/IEC 61000-4-3, EN/IEC 61000-4-6,  
EN/IEC 61000-4-4, EN/IEC 61000-4-2,  
EN/IEC 61000-4-5, EN/IEC 61000-4-11
- Safety Testing EN 60950-1

### Typical Antenna Characteristics/ Beam Pattern:





## 6. Specification CRAT20-5/14ST

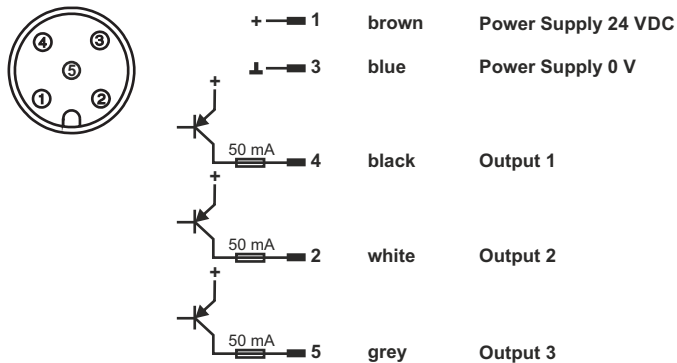
### Mechanical Design:

<b>Weight</b>	approx. 1,00 kg
<b>Material</b>	Lower Housing Section: ALg, black anodized Housing Cover: POM-Plastic black colored
<b>Protection Class</b>	IP 67
<b>Housing Dimensions</b>	188 x 110 x 42 mm
<b>Mounting Drillings/Housing Back Side</b>	4 X M4-Tread, 10mm deep, rectangular arranged: 170 x 92 mm

### Electrical Design:

<b>Supply Voltage</b>	10 - 30 VDC
<b>Current Consumption</b>	typ. 140 mA, plus current for the Open-Collector-Outputs
<b>Output</b>	3 Open-Collector-Outputs with each 50mA
<b>Connection</b>	5-pin Connector M12x1, RSF4 compatible
<b>Sending Frequency</b>	24.000 .... 24.250 GHz
<b>Transmitting Power</b>	< 20dBm (EIRP) max.
<b>Antenna Characteristics</b>	5° ( $\pm 2,5^\circ$ ) horizontal and 14° ( $\pm 7^\circ$ ) vertical
<b>Distance Detection</b>	up to 40m (in 1m steps from 4 - 40m adjustable) target 2mx2m 0 - 1m will not be evaluated, 1 - 4m minimum speed less 1cm/sec (0,6m/min) required 4 -40m works also with stationary targets
<b>Response Time</b>	< 70 ms
<b>Hold Time of the Outputs</b>	ca. 0,1 .... 1 sec depending on Object Dimensions
<b>Readiness delay after power on</b>	approx. 1 sec
<b>Operating Temperature</b>	-40 .... +85 °C
<b>Storage Temperature</b>	-40 .... +85 °C

### Connection Diagramm:

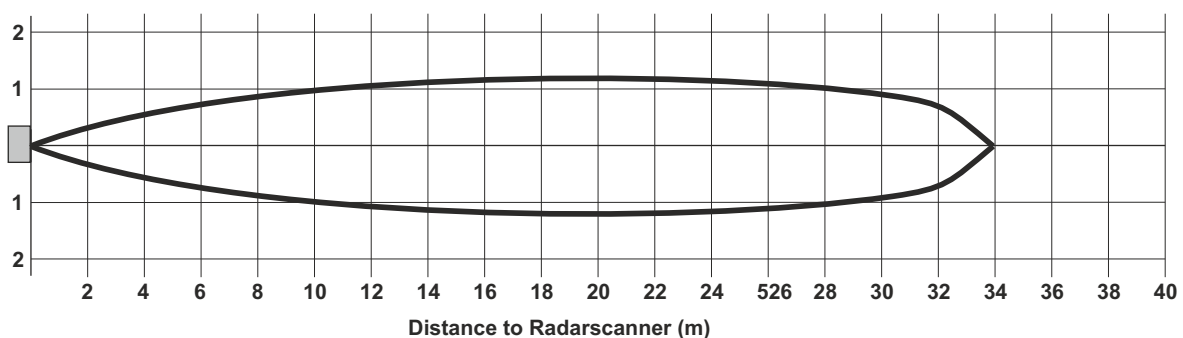


### Standard Conformity:

- Radio Standard ETSI EN 300440
- EMV-Testing ETSI EN301 489-3  
particular EN 55022,  
EN/IEC 61000-4-3, EN/IEC 61000-4-6,  
EN/IEC 61000-4-4, EN/IEC 61000-4-2,  
EN/IEC 61000-4-5, EN/IEC 61000-4-11
- Safety Testing EN 60950-1

### Typical Antenna Characteristics/ Beam Pattern:

- 5° horizontal view
- sensitivity 20dB,
- target corner reflector 500mm



## 7. Specification CRAT20-5/14ST60m

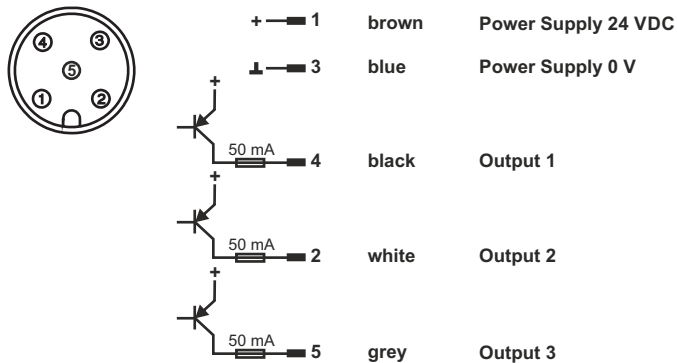
### Mechanical Design:

<b>Weight</b>	approx. 1,00 kg
<b>Material</b>	Lower Housing Section: ALg, black anodized Housing Cover: POM-Plastic black colored
<b>Protection Class</b>	IP 67
<b>Housing Dimensions</b>	188 x 110 x 42 mm
<b>Mounting Drillings/Housing Back Side</b>	4 X M4-Tread, 10mm deep, rectangular arranged: 170 x 92 mm

### Electrical Design:

<b>Supply Voltage</b>	10 - 30 VDC
<b>Current Consumption</b>	typ. 150 mA, plus current for the Open-Collector-Outputs
<b>Output</b>	3 Open-Collector-Outputs with each 50mA
<b>Connection</b>	5-pin Connector M12x1, RSF4 compatible
<b>Sending Frequency</b>	24.000 .... 24.250 GHz
<b>Transmitting Power</b>	< 20dBm (EIRP) max.
<b>Antenna Characteristics</b>	5° ( $\pm 2,5^\circ$ ) horizontal and 14° ( $\pm 7^\circ$ ) vertical
<b>Distance Detection</b>	up to 60m (in 1m steps from 6 - 60m adjustable) target 2mx2m 0 - 1m will not be evaluated, 1 - 6m minimum speed less 1cm/sec (0,6m/min) required 4 -60m works also with stationary targets
<b>Response Time</b>	< 70 ms
<b>Hold Time of the Outputs</b>	ca. 0,1 .... 1 sec depending on Object Dimensions
<b>Readiness delay after power on</b>	approx. 1 sec
<b>Operating Temperature</b>	-40 .... +85 °C
<b>Storage Temperature</b>	-40 .... +85 °C

### Connection Diagramm:

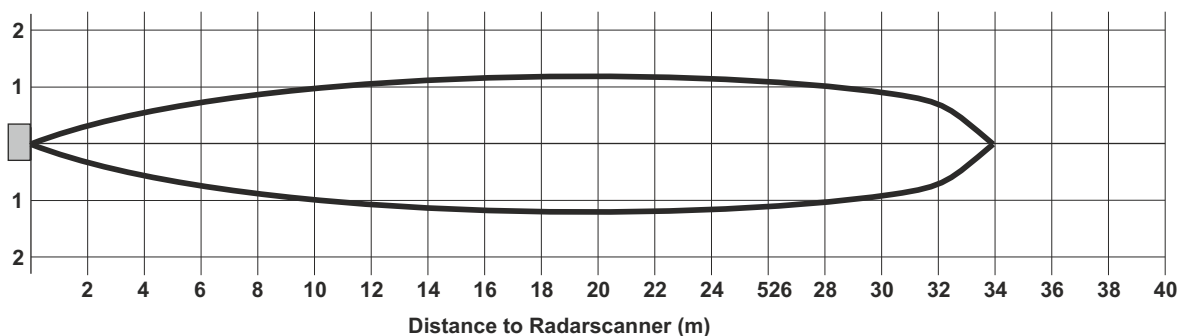


### Standard Conformity:

- Radio Standard ETSI EN 300440
- EMV-Testing ETSI EN301 489-3 particular EN 55022, EN/IEC 61000-4-3, EN/IEC 61000-4-6, EN/IEC 61000-4-4, EN/IEC 61000-4-2, EN/IEC 61000-4-5, EN/IEC 61000-4-11
- Safety Testing EN 60950-1

### Typical Antenna Characteristics/ Beam Pattern:

- 5° horizontal view
- sensitivity 20dB,
- target corner reflector 500mm



## 8. Specification CRAT20-3,5/15ST

*in preparation*

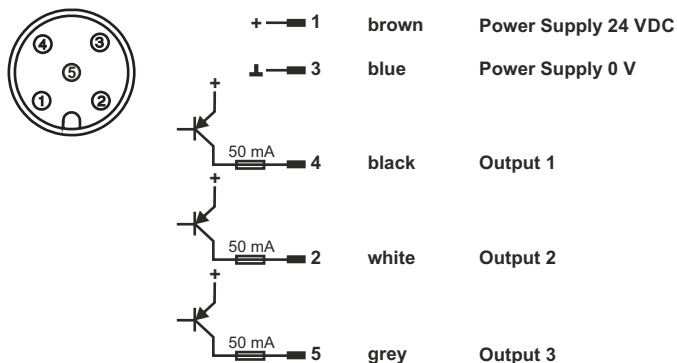
### Mechanical Design:

<b>Weight</b>	approx. 1,75 kg
<b>Material</b>	Lower Housing Section: ALg, black anodized Housing Cover: POM-Plastic black colored
<b>Protection Class</b>	IP 67
<b>Housing Dimensions</b>	400 x 110 x 42 mm
<b>Mounting Drillings/Housing Back Side</b>	4 X M4-Tread, 10mm deep, rectangular arranged: 382 x 92 mm

### Electrical Design:

<b>Supply Voltage</b>	10 - 30 VDC
<b>Current Consumption</b>	typ. 135 mA, plus current for the Open-Collector-Outputs
<b>Output</b>	3 Open-Collector-Outputs with each 50mA
<b>Connection</b>	5-pin Connector M12x1, RSF4 compatible
<b>Sending Frequency</b>	24.000 .... 24.250 GHz
<b>Transmitting Power</b>	< 20dBm (EIRP) max.
<b>Antenna Characteristics</b>	3,5° ( $\pm 1,75^\circ$ ) horizontal and 15° ( $\pm 7,5^\circ$ ) vertical
<b>Distance Detection</b>	up to 40m (in 1m steps from 4 - 40m adjustable) target 2mx2m 0 - 1m will not be evaluated, 1 - 4m minimum speed less 1cm/sec (0,6m/min) required 4 -40m works also with stationary targets
<b>Response Time</b>	< 70 ms
<b>Hold Time of the Outputs</b>	ca. 0,1 .... 1 sec depending of Object Dimensions
<b>Readiness delay after power on</b>	approx. 1 sec
<b>Operating Temperature</b>	-40 .... +85 °C
<b>Storage Temperature</b>	-40 .... +85 °C

### Connection Diagramm:

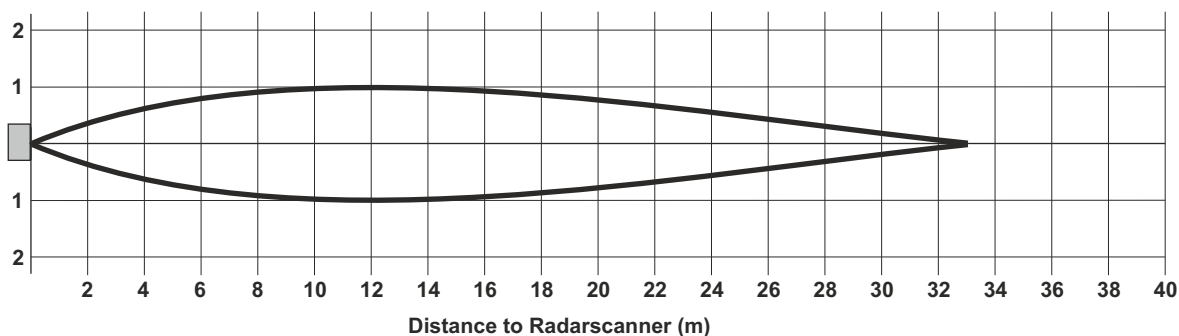


### Standard Conformity:

- Radio Standard ETSI EN 300440
- EMV-Testing ETSI EN301 489-3  
particular EN 55022,  
EN/IEC 61000-4-3, EN/IEC 61000-4-6,  
EN/IEC 61000-4-4, EN/IEC 61000-4-2,  
EN/IEC 61000-4-5, EN/IEC 61000-4-11
- Safety Testing EN 60950-1

### Typical Antenna Characteristics/ Beam Pattern:

- 3,5° horizontal view
- sensitivity 20dB,
- target: metal plate 50x50cm



## 9. Specification CRAT20-11/11STMaster/Slave

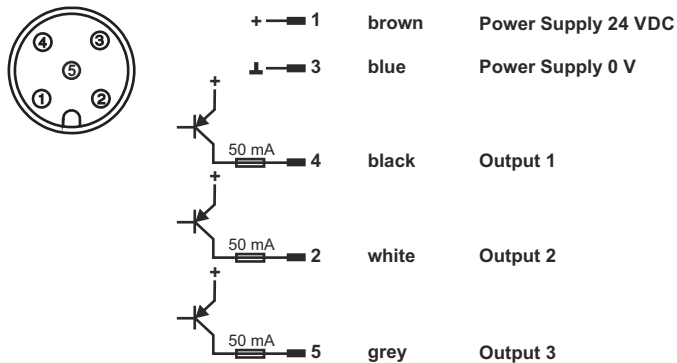
### Mechanical Design:

<b>Weight</b>	each with 650 g for Master and Slave
<b>Material</b>	Lower Housing Section: ALg, black anodized Housing Cover: POM-Plastic black colored
<b>Protection Class</b>	IP 67
<b>Housing Dimensions</b>	100 x 100 x 42 mm
<b>Mounting Drillings/Housing Back Side</b>	4 X M4-Tread, 10mm deep, quadratically arranged: 82 x 82 mm

### Electrical Design:

<b>Supply Voltage</b>	10 - 30 VDC, Slave will be powered by the Master
<b>Current Consumption</b>	typ. 350 mA, plus current for the Open-Collector-Outputs
<b>Output</b>	3 Open-Collector-Outputs with each 50mA
<b>Connection</b>	5-pin Connector M12x1, RSF4 compatible
<b>Sending Frequency</b>	24.000 .... 24.250 GHz
<b>Transmitting Power</b>	< 20dBm (EIRP) max.
<b>Antenna Characteristics</b>	11° (+/-5,5°) vertical und horizontal
<b>Distance Detection</b>	up to 15m, target corner reflektor 325mm Field characteristic accordingly to the distance between Master and Slave and the maximum distance from 15m
<b>Response Time</b>	< 70 ms
<b>Hold Time of the Outputs</b>	ca. 0,1 .... 1 sec depending of Object Dimensions
<b>Readiness delay after power on</b>	approx. 1 sec
<b>Operating Temperature</b>	-40 .... +85 °C
<b>Storage Temperature</b>	-40 .... +85 °C

### Connection Diagramm:

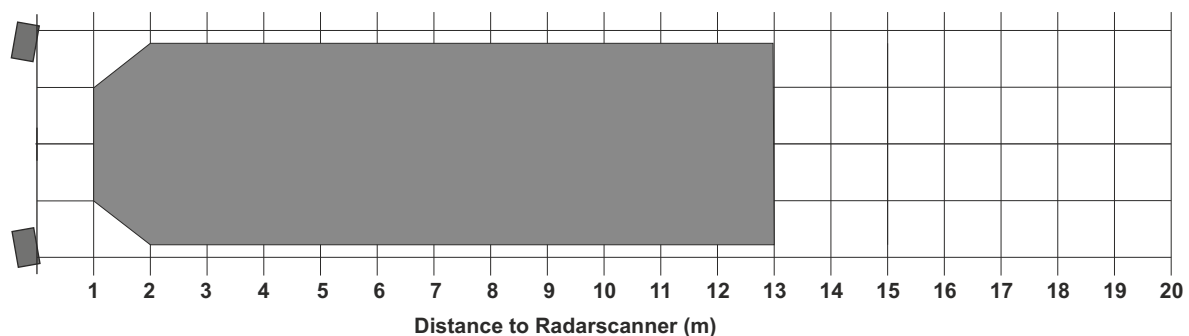


### Standard Conformity:

- Radio Standard ETSI EN 300440
- EMV-Testing ETSI EN301 489-3  
particular EN 55022,  
EN/IEC 61000-4-3, EN/IEC 61000-4-6,  
EN/IEC 61000-4-4, EN/IEC 61000-4-2,  
EN/IEC 61000-4-5, EN/IEC 61000-4-11
- Safety Testing EN 60950-1

### Typical Antenna Characteristics/ Beam Pattern:

- 11x11 horizontal view
- sensitivity: 20dB
- target: corner reflector 325mm



## 10. Specification RadarRanger Barrier CRAT80-11/11

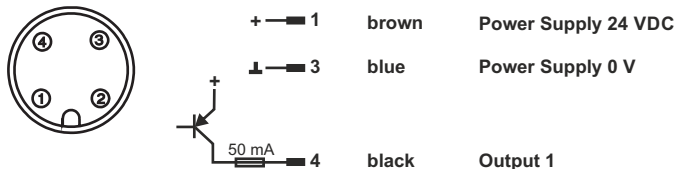
### Mechanical Design:

<b>Weight</b>	approx. 600 g, for each unit
<b>Material</b>	Lower Housing Section: ALg, black anodized Housing Cover: POM-Plastic black colored
<b>Protection Class</b>	IP 67
<b>Housing Dimensions</b>	100 x 100 x 42 mm
<b>Mounting Drillings/Housing Back Side</b>	4 X M4-Tread, 10mm deep, quadratically arranged: 82 x 82 mm

### Electrical Design:

<b>Supply Voltage</b>	10 - 30 VDC
<b>Current Consumption</b>	typ. 130 mA, plus current for the Open-Collector-Output,
<b>Output</b>	1 Open-Collector-Outputs with 50mA
<b>Connection</b>	3-pin Connector M12x1, RSF4 compatible
<b>Sending Frequency</b>	24.000 .... 24.250 GHz
<b>Transmitting Power</b>	< 20dBm (EIRP) max.
<b>Antenna Characteristics</b>	11° (+/-5,5°) vertical und horizontal
<b>Operating Distance</b>	15m up to 80m
<b>Obstacle Sensitivity</b>	Metal plate 10x10cm up to 8m in front of the radar units Metal plate 30x30cm up to 20m in front of the radar units Metal plate 50x50cm in the mid at 80m
<b>Response Time</b>	< 70 ms
<b>Hold Time of the Outputs</b>	ca. 0,1 .... 1 sec depending of Object Dimensions
<b>Readiness delay after power on</b>	approx. 2 sec
<b>Operating Temperature</b>	-40 .... +85 °C
<b>Storage Temperature</b>	-40 .... +85 °C

### Connection Diagramm:



### Standard Conformity:

- Radio Standard ETSI EN 300440
- EMV-Testing ETSI EN301 489-3 particular EN 55022, EN/IEC 61000-4-3, EN/IEC 61000-4-6, EN/IEC 61000-4-4, EN/IEC 61000-4-2, EN/IEC 61000-4-5, EN/IEC 61000-4-11
- Safety Testing EN 60950-1

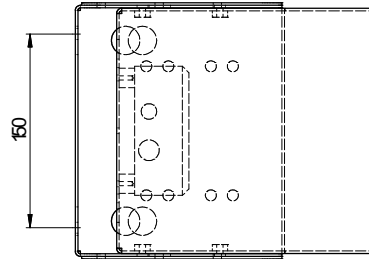
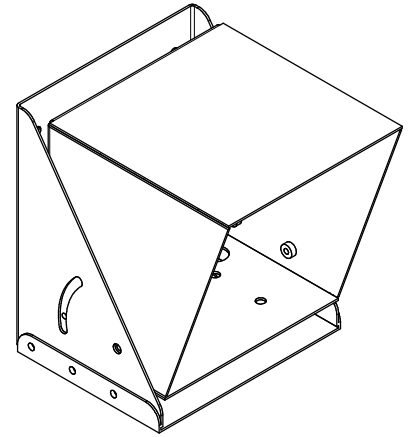
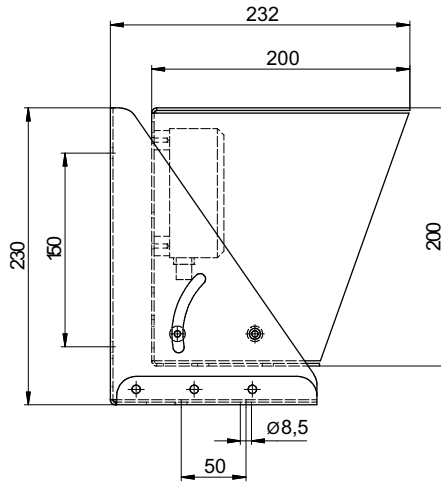
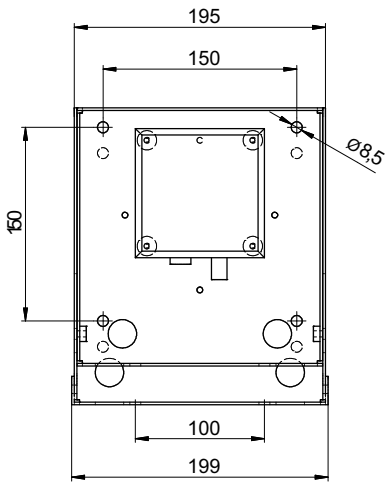
### Functional description:

After power on both radar units will contact his "partner" on the other side, by searching the frequency. After finding each other the units will setting up adaptive parameters. This process will take up to 2 sec, afterwards the open-collector-output on each unit will be set to high.

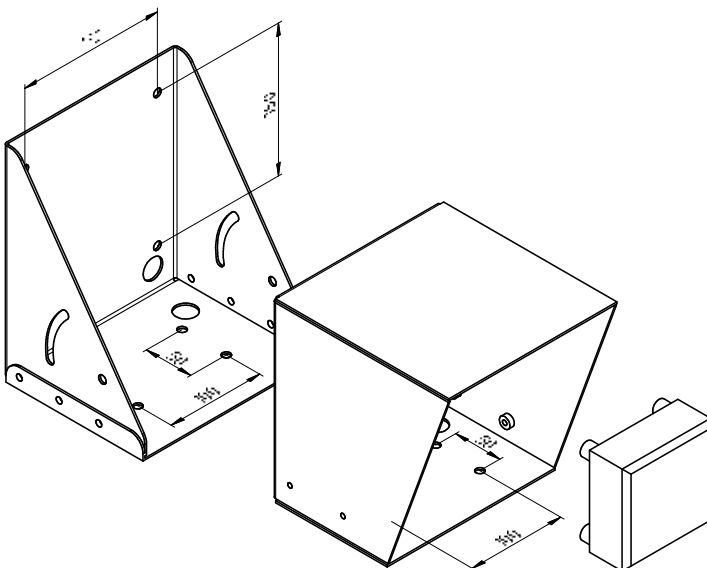
In the situation that an obstacle break in between the radar units the outputs will set to low. For the processing in the PLC, please use a AND function. Depending on their physical properties is can happen that one system lose the output without any obstacle, but never both.

# Accessories

## Standard Dome and Support Bracket for 11x11, 70x11 devices and barrier:



Material: 1.4301  
Material press nuts: stainless steel  
Material thickness: 2mm  
Weight: approx 4,6Kg



2x protective sleeve

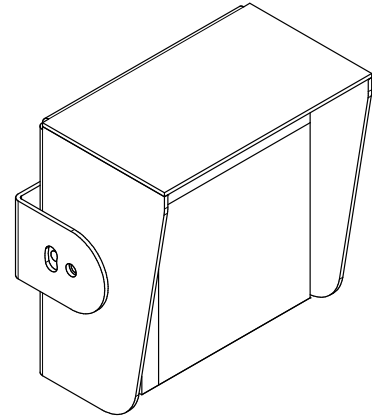
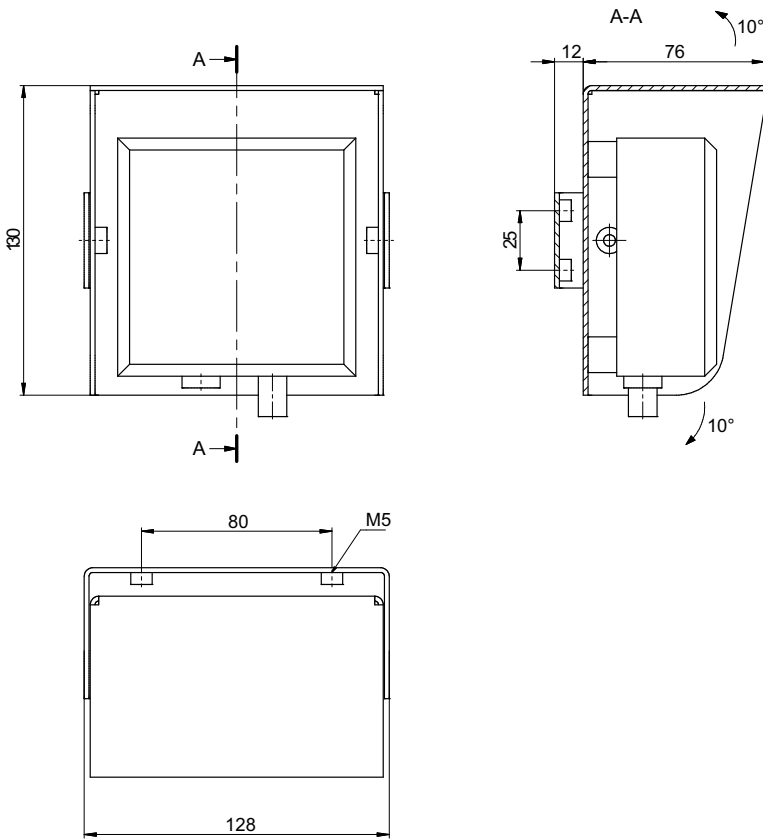


4x stud mounts

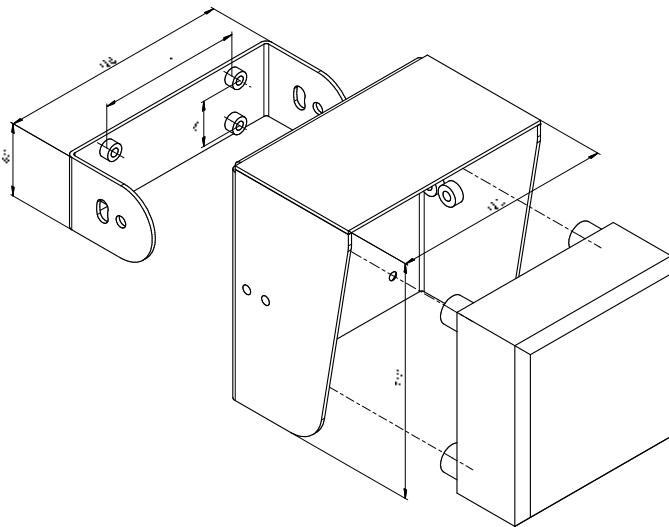


all needed screws for each bracket are included in the delivery

**Small-Sized Bracket for 11x11 and 70x11 devices and barriers:**



Material: 1.4301  
Material press nuts: stainless steel  
Material thickness: 2mm  
Weight: approx 0,8Kg

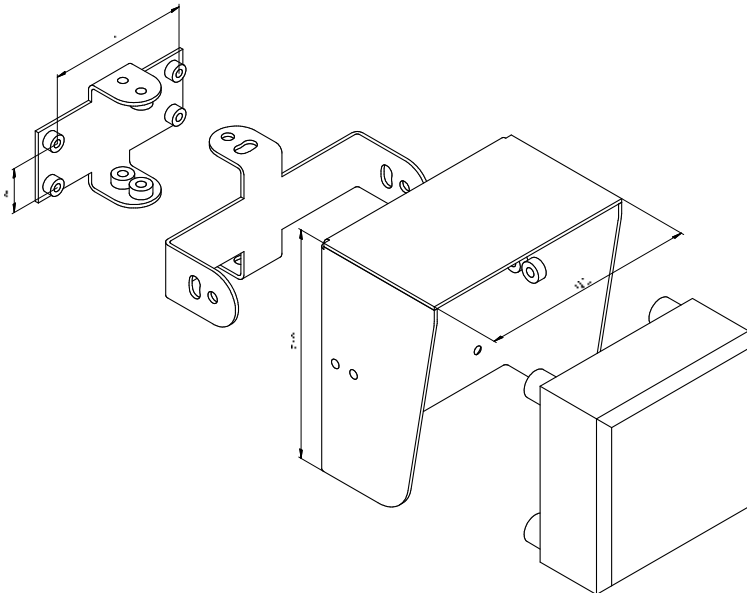
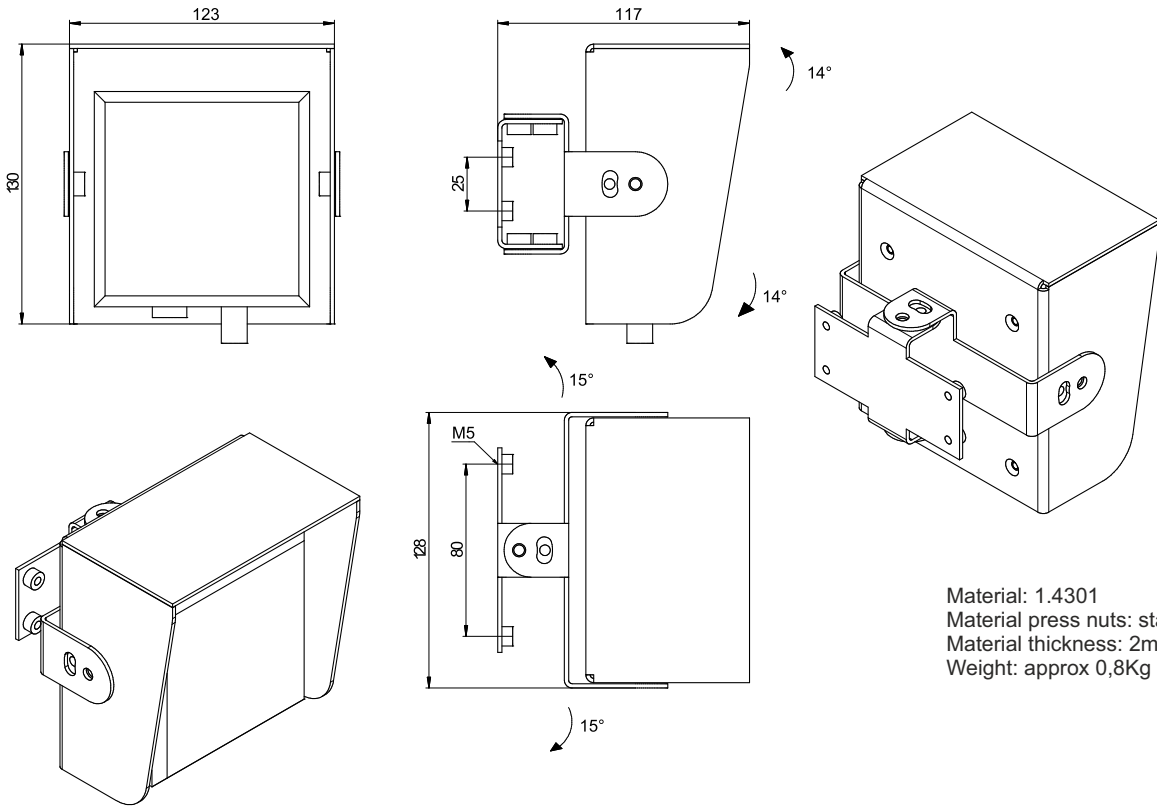


4x stud mounts



all needed screws for each bracket are included in the delivery

**Small Sized Bracket with horizontal support for Master/Slave devices:**



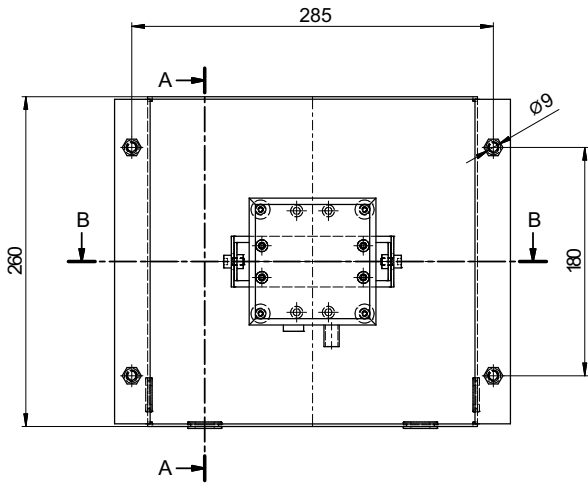
4x stud mounts



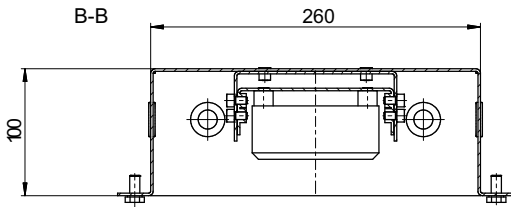
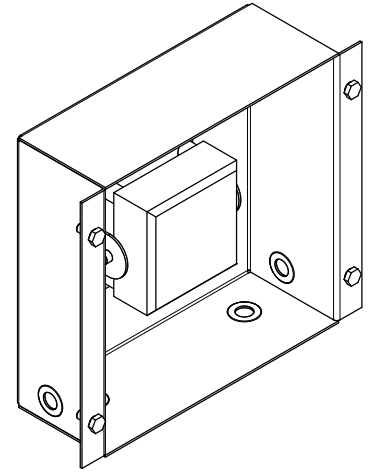
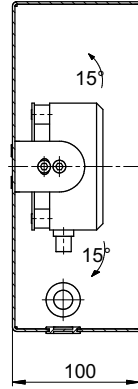
all needed screws for each bracket are included in the delivery



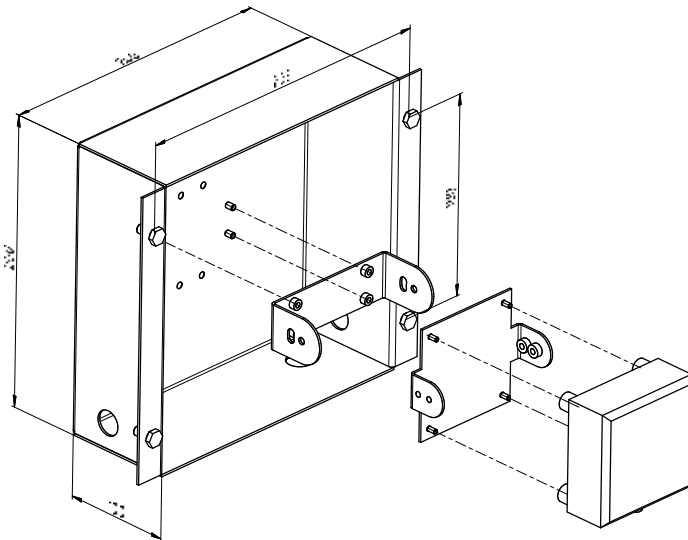
**Wheel Guard Bracket for 11x11 and 70x11 devices:**



A-A



Material: 1.4301  
 Material press nuts: stainless steel  
 Material thickness: 2mm  
 Weight: approx 3,2Kg



4x protective sleeve

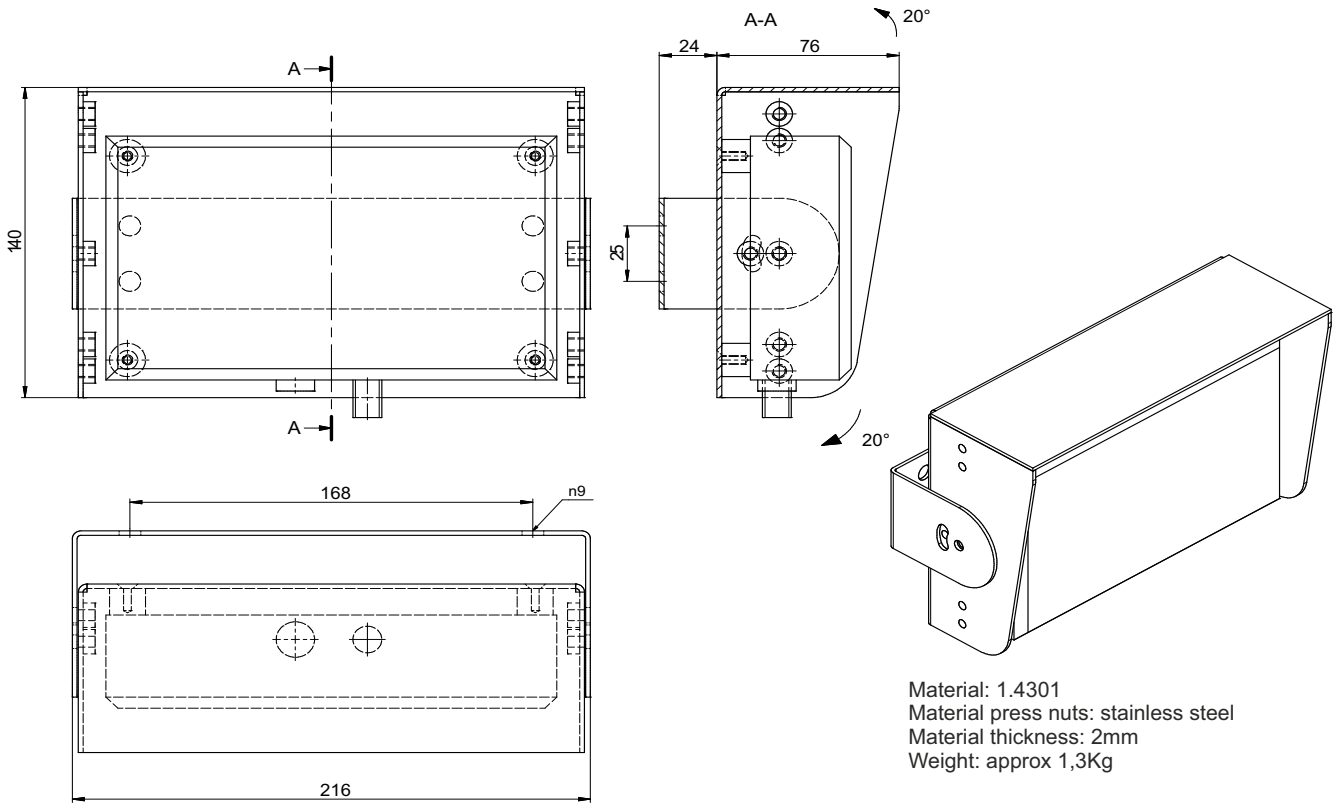


4x stud mounts

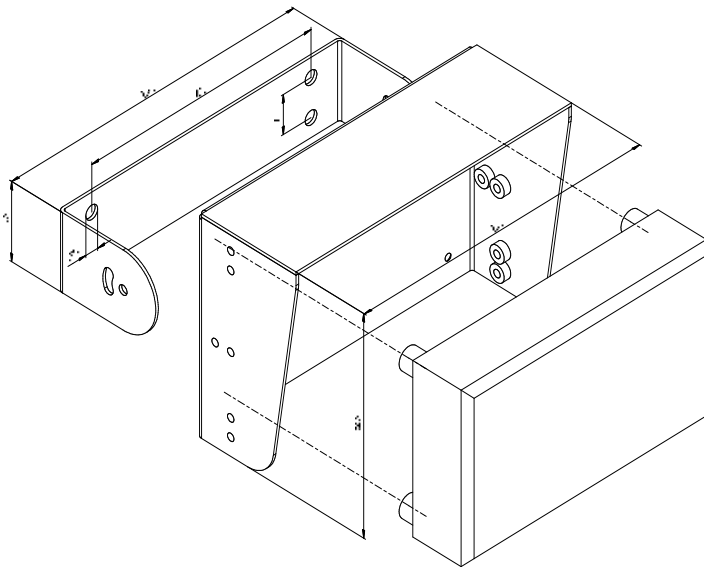


all needed screws for each bracket are included in the delivery

**Standard Bracket for 5x14 devices:**



Material: 1.4301  
Material press nuts: stainless steel  
Material thickness: 2mm  
Weight: approx 1,3Kg

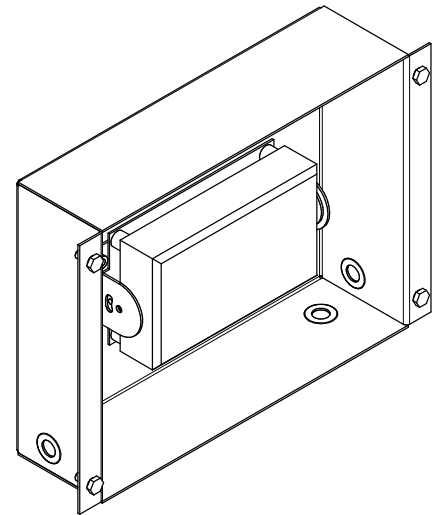
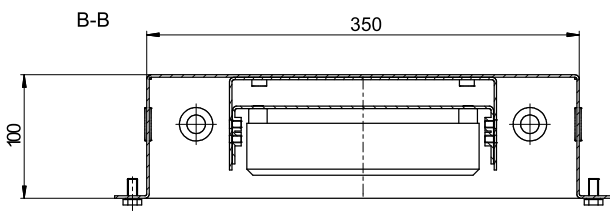
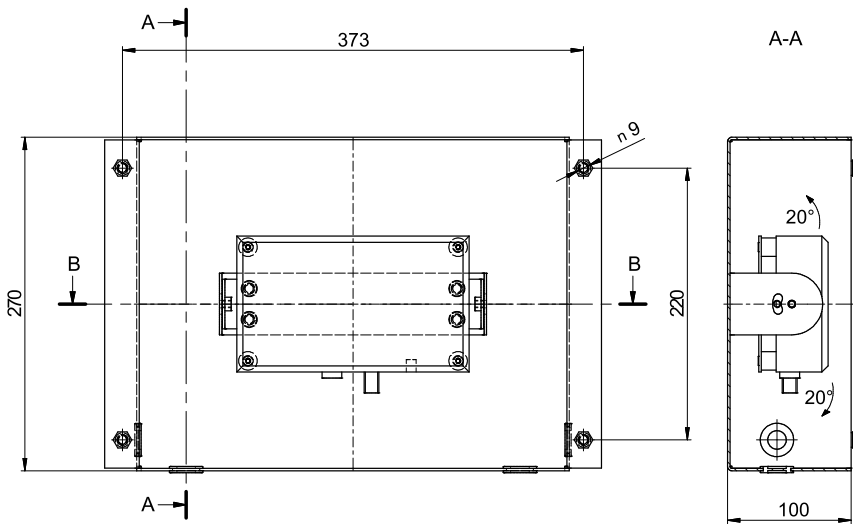


4x stud mounts and

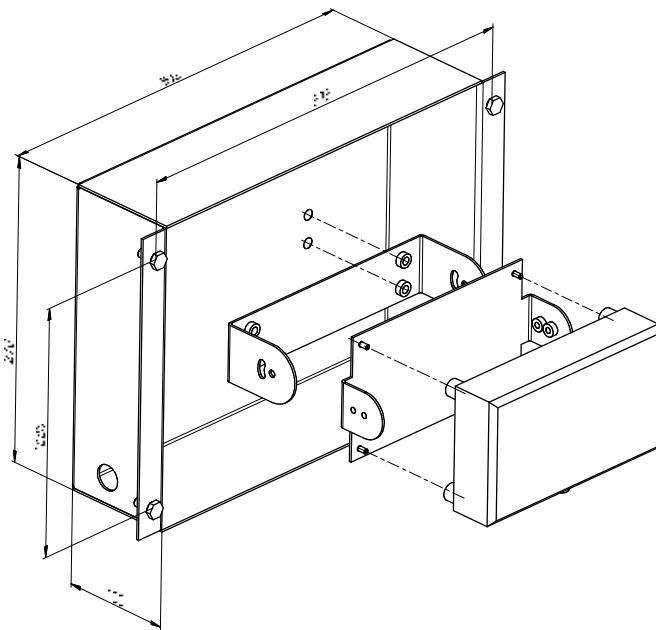


all needed screws for each bracket are included in the delivery

**Wheel Guard Bracket for 5x14 devices:**



Material: 1.4301  
 Material press nuts: stainless steel  
 Material thickness: 2mm  
 Weight: approx 1,3Kg



4x protective sleeve



4x stud mounts



all needed screws for each bracket are included in the delivery

### Cordsets for Scanner Type:

4/5-pin straight plug with LED different cable length, please inquire



4/5-pin straight plug without LED different cable length, please inquire



### Cordsets for Barrier Type:

3-pin straight plug with LED different cable length, please inquire



3-pin straight plug without LED different cable length, please inquire



### Commissioning Tool 1 (all plug connectors)

RadarRanger



Part 1

Part 5



Part 3

Part 2

Part 7

Part 10

Supply Cable

Commisioning Tool 1

- Part 1 = Cordset male/female 0,3m PUR
- Part 2 = T-Splitter
- Part 3 = Cordset male/female 2,0m PUR
- Part 5 = Signal-Tower with 3 LED connector
- Part 7 = Bracket1 for Signal-Tower
- Part 10 = Flat Magnet



### Configuration Box:

for programming the RadarRanger Scanner types, incl. Software, Limosa connector for Radar connection  
SUB-D 9-pin connector for connection to RS232 PC



### Corner-Reflector:

for use in applications with small or not accurately defined targets and basic alignment of all systems. Available as 325mm and 500mm edge length..



### Laser Alignment System:

for easy and optimally alignment for all radar system

!!Attention, please use only pointer with parallel laser beam

**!!The Laserpointer is not in the scope of delivery**

