

PREVIEW[®] SENTRY[™] Sensor Specifications

PRECO Confidential

DESCRIPTION

PRECO Electronics designed the 24GHz Sentry radar for heavy-duty object detection and collision mitigation applications in medium and heavy-duty equipment industries including construction, mining, trucking, waste & recycling, utilities, ports, municipalities and military applications. The PreView Sentry radar is designed with the following objectives:

- Flush-mounted radar with programmable field of view (FOV) specific to the intended application. Maximizes blind-spot coverage while maintaining cost-effective solution. Adjustable FOV from 3M/10' to 30M/96' from the face of the sensor (range and width)
- Electrically and mechanically hardened to install on medium/heavy-duty equipment with no additional enclosure and/or power conditioning
- CAN-bus (SAE J1939) enabled – Radar reports target information or alerts via CAN messages

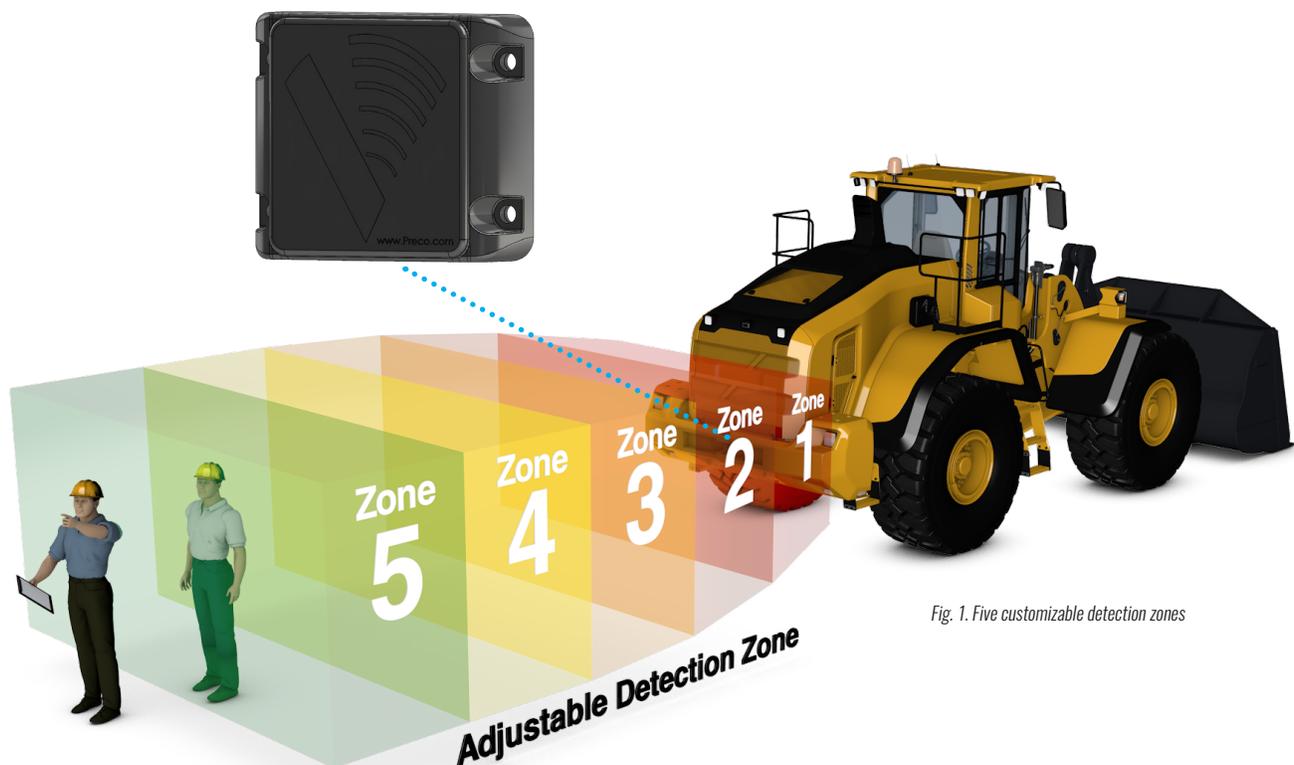


Fig. 1. Five customizable detection zones

*Approximate depiction of detection zone for illustration purpose

PREVIEW[®] SENTRY[™] Sensor Specifications

PRECO Confidential

APPLICATION

- Intended for use in medium and heavy-duty on and off road equipment
- Engineered to detect objects (including humans) in the vehicle's rear, side and/or front blind zones
- Flush mount design for optimized performance
- Adjustable and programmable FOV, allowing for flexible solutions for a wide range of vehicle types
- J1939 CAN-bus support enables data logging and telematics integration

FUNCTION DESCRIPTION

The PreView Sentry is a small, rugged, 24 GHz short range radar sensor (operating at 24.00 – 24.25GHz ISM band) designed by Preco Electronics for use in medium and heavy-duty equipment applications. It is approved for use in most countries in this frequency band.

It works in adverse weather conditions, has a wide operating temperature range, is sealed to meet IP69K, withstands high vibration and shock levels, and is maintenance free.

Using a frequency modulated transmit waveform, the PreView Sentry sensor measures radial range, speed and angle, reflectivity and other parameters of multiple stationary and moving targets simultaneously. This sensor has a wide horizontal field of view up to +/-75°, programmable up to 30M/98' (width and depth), and tracks up to 16 targets, providing comprehensive blind zone coverage.

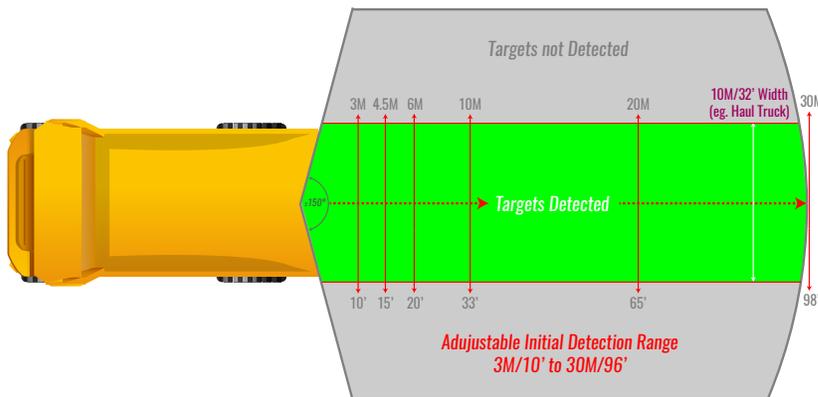


Fig. 2. FOV example 1: Oversized haul truck

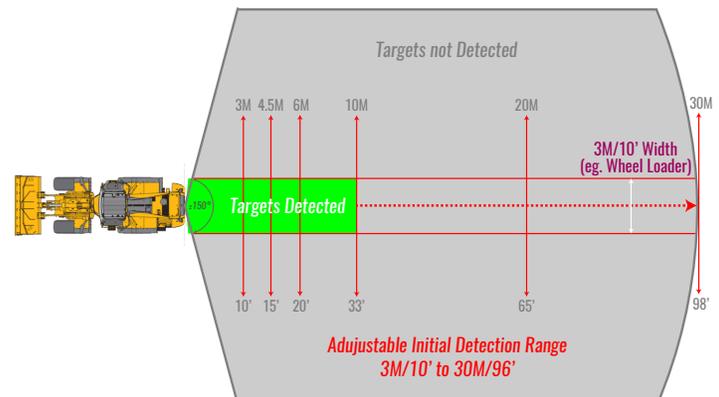


Fig. 3. FOV example 2: Wheel loader

ADVANTAGES

- Rugged design, engineered to operate in all weather conditions
- Customizable detection zone - range and width
- Provides the operator audible and visual in-cab active alerts
- Built-in sensor failure alert
- CAN bus communication protocol - used to communicate with in-cab display. Ability to report sensor data to a logging device or telematics applications
- Tracks up to 16 targets simultaneously
- Measures target distance, azimuth angle and velocity relative to sensor

PREVIEW[®] SENTRY[™]

Sensor Specifications

PRECO Confidential

MEASURING PERFORMANCE	
Programmable Range:	0-30M (0-98')
Programmable Width:	3M-8M (10'-26')
Range Accuracy:	0.3m (1')
Azimuth Field of View:	±75 degrees
Elevation Field of View:	±10 degrees
Angle Accuracy:	±2° @ ±10° FOV, ±5° @ ±30° FOV, ±10° @ ±75° FOV
Velocity Range:	± 9 meters/sec (± 20 mph)
Velocity Accuracy:	0.2 meter/sec (0.5 mph)
Target Resolution (Targets Merge):	1.4m for static targets
Target Update Rate:	120ms

OPERATING CONDITIONS	
Frequency:	24.00 - 24.25 GHz (ISM Band)
Bandwidth:	240MHz
Regulatory:	FCC Part 15.249
	EU ETSI EN300-440
	Narrowband 24GHz legal in most countries
Power Supply:	9 – 33VDC, Reverse polarity and over-voltage protected
Current:	<0.5A
Operating Temperature:	-40C to +85C (-40F to +185C)
Shock:	50G
Vibration:	25G, random, all three axis
Protection Rating:	IP69K

COMMUNICATIONS INTERFACE	
J1939 CAN Bus:	250Kbits/sec, unterminated, with 120 ohm resistor [default]. Supports up to 500Kbits/sec
	Supports up to 8 radars on a single J1939 bus (CAN-bus)
Alarm Output Interface	Switch to ground, sink up to 1 amp, over current protected

PREVIEW[®] SENTRY[™]

Sensor Specifications

PRECO Confidential

OPERATING MODES	
Detection Pattern	Adjustable
	Detection zone is optimized for human detection
Detection Time	300ms
Power On to Active Time	300ms

VEHICLE/HMI PHYSICAL INTERFACE	
Connector:	Deutsch DT06-08SA-E008
Mating Connector:	Deutsch DT04-08PA-CE01
Pin Definitions:	
Pin 1	Vehicle Power (+)
Pin 2	Vehicle Ground
Pin 3	J1939 (CAN) H
Pin 4	J1939 (CAN) L
Pin 5	Display Power (+)
Pin 6	Display Ground
Pin 7	Alarm Output
Pin 8	Input (Unused)

PHYSICAL CHARACTERISTICS	
Housing Material:	Polycarbonate radome
Dimensions:	4.90"W x 4.06"H x 1.28"D (12.5cm x 10.3cm x 3.3cm)
Weight:	1.1lb (0.5kg).
Mounting:	Four 0.22" (5.58mm) diameter mounting holes.