



ROTOSCAN RS4-4

Laser Scanner for safety at work and measurement



small

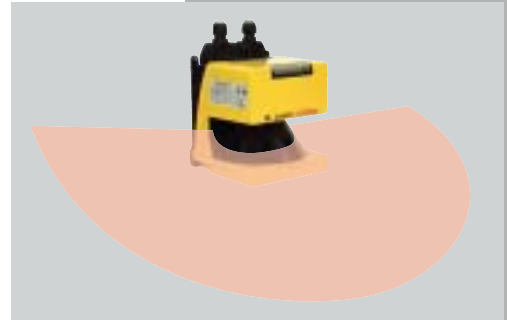
versatile

user-friendly



The ROTOSCAN RS4-4

The Leuze lumiflex RS4-4 is a non-contact optical area scanner. Similar to radar, it continuously scans a complete working field with an angle range of 190°. If a person or an object penetrates its protected field, a stop signal is generated. Due to its specification the unit complies with the requirements as per IEC 61496-3 Type 3 and has been type-approved by BIA (central institute for research and testing). The ROTOSCAN RS4-4 can therefore be used in safety-related applications.



The advantages

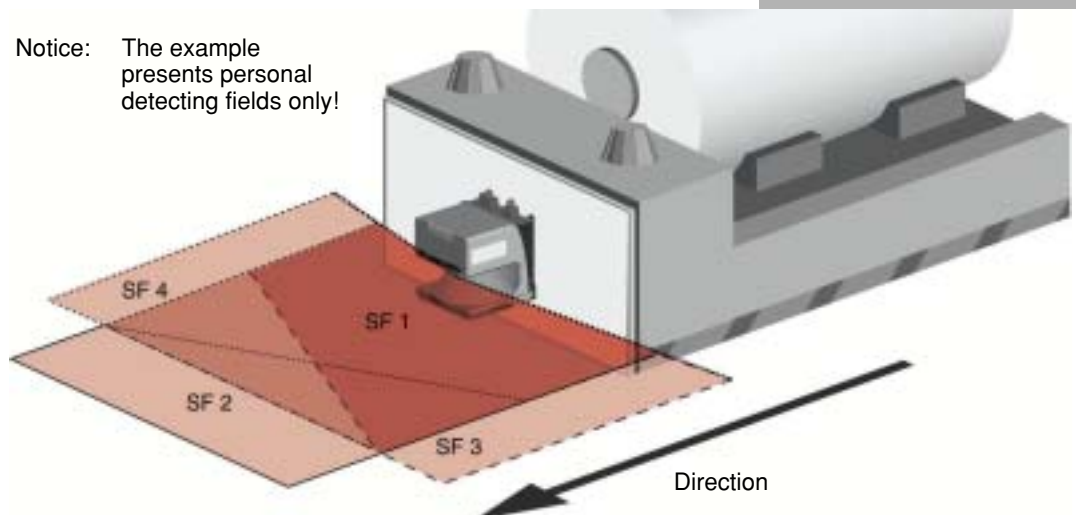
- **Safety category Type 3 in accordance with IEC 61496-3**
approved for used in personnel protection on robot working areas, conveying equipment, etc.
- **Very small design**
can be used even where limited space is available
- **High scanning speed at high resolution and low measurement error**
Very short reaction times for the detection of persons or objects with 0.36° resolution up to now unmatched measurement error of 81/98 mm
- **Field programming using PC and RS4soft**
Straightforward and rapid establishment of the required fields via RS232/422 PC interface, flexibility by means of support for Microsoft® Windows 95/98/2000/NT®



4 different field pairs each containing two programmable fields, one for safety, one for object sensing

4 m-radius for safety-related personnel protection task (Detection zone); 15 m-radius for object recognition, early warning, navigation (Warning field)

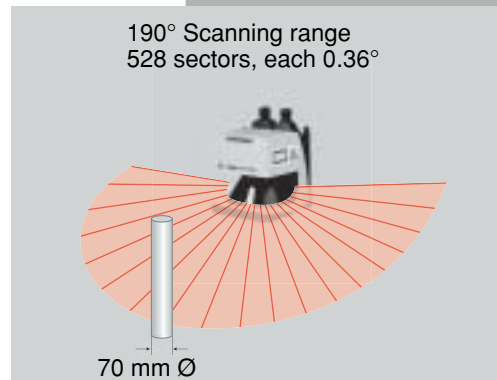
Notice: The example presents personal detecting fields only!





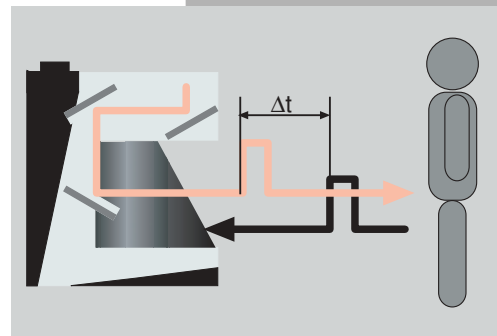
Functional Principle

Laser-scanners are optoelectronic devices that continuously monitor a surface, much like a radar system does. They use the diffuse light reflected by the surface of non-transparent objects which are located in their working range. If an object (person or obstacle) is detected in the working range, the device calculates its precise coordinates with regard to distance, size and position based on the travel time of the reflected light and the position of the object in the sector range. At the same time the device checks whether the detected object is located inside or outside a previously defined protection field.



Configuration and Measurement Principle

Light impulses from a laser diode are directed across the 190° scanning area with the help of a rotating mirror. The pulsed travel time procedure, serves as the measurement principle. The distance to a specific light-reflecting object is calculated based on the time difference between the transmittal and reception of a light impulse. The evaluation is virtually independent of the remission of the scanned object.



Concept

Due to its possible applications as an area sensor with a high response sensitivity and a high resolution capability, the device can be implemented for a wide range of tasks.



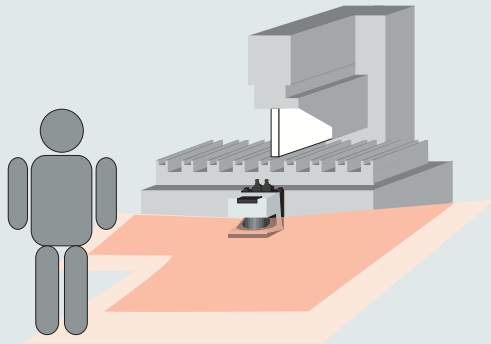
The ROTOSCAN RS4-4 is suited to perform personnel protection tasks on movable and stationary systems which necessitate safeguarding according to EN 954-1 up to category 3. In addition, it can be easily implemented for many other types of measurement tasks, including surfaces and volume measurement, position and contour determination, and protection control, among others.



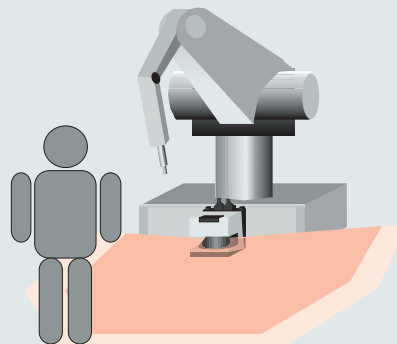
Areas of Application

Personnel Protection Functions

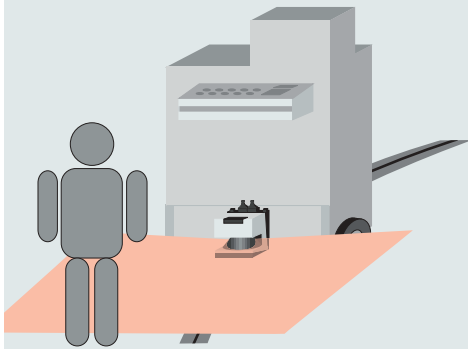
on stationary systems
– machining center



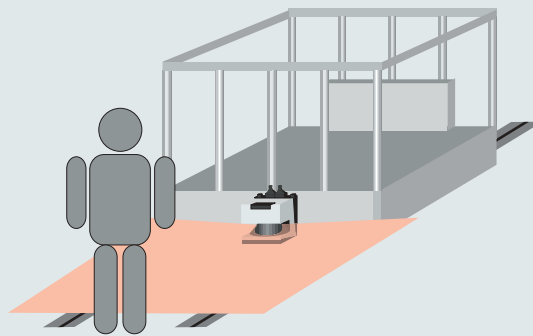
– robot working areas



on mobile systems
– AGV

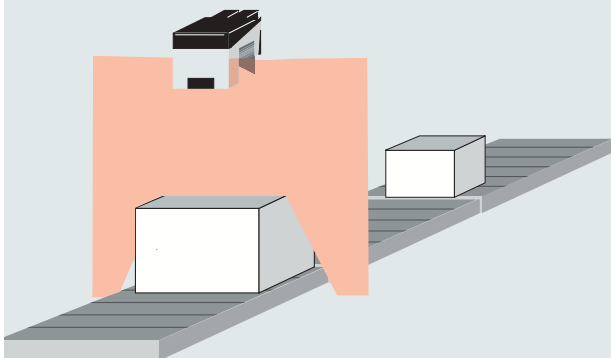


– shuttle cars

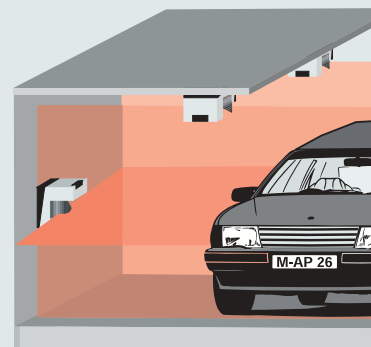


Measurement Tasks

Volume determination
– during package transport



Contour measurement
– automobiles in automatic car parks

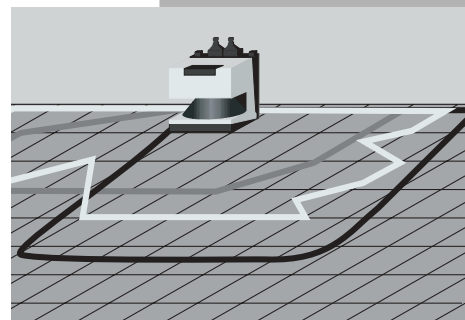
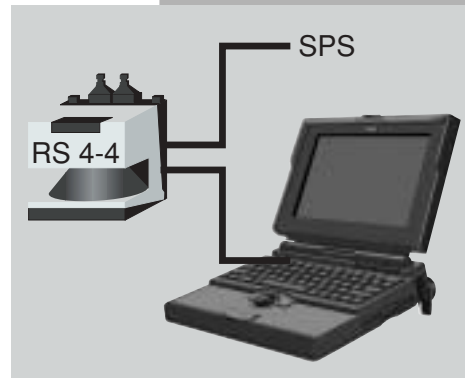


Discuss your application with us.

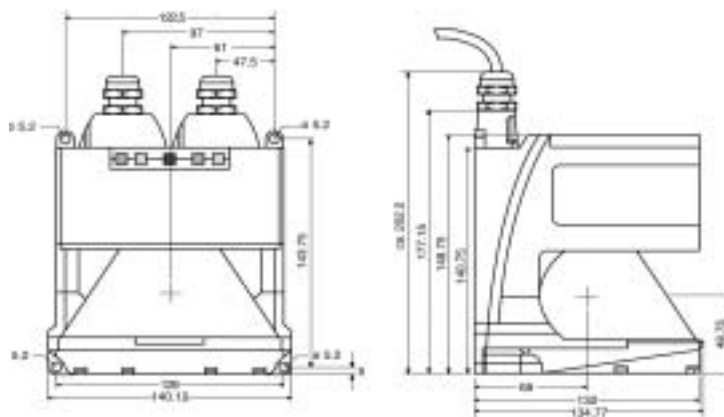
Operator Software RS4soft

In order to enable the device to be quickly and optimally adapted to the specific task requirements, communication software is provided with all delivered units. Rapid and convenient creation of the required protective fields by way of the RS 232/422 PC interface. The software will run on Microsoft Windows 95/98/2000/NT®. It is easy to manage and extremely convenient to operate. You have rapid access, with a wide range of functions at your disposal, for instance:

- Guided tour of the system by Wizard
 - Individual display of paired fields and measurement outlines
 - Automatic optimisation of the way the measured outline is displayed
 - Clear menu structure for the creation of application-specific detection zone and warning field outlines, extending as far as the detailed polygon
 - Modification of existing detection zones and warning fields can be precisely and rapidly effected just by a mouse click
 - Simple definition of the switching sequence of the detection zones and warning fields by means of a matrix
 - Flexible definition of the scanner's operating and start-up properties
 - Data transfer, saving and printing of data – all rapid and convenient
- ... and a whole lot more...



Important Technical Data



General Data	
Scanning range	190 °
Scanning rate	25 Scans / sec
Angle resolution	0.36 °
Operating voltage	24V DC, + 20 % / - 30 %
Transmitter	Laserdiode; Protection class 1
Interface	RS 232/422 optional
Lateral resolution	0.36°
Measurement error	81/98 mm at 4 m
Current consumption	300 mA

	Personnel protected field	Warning field	Measuring range
Scanning distance	to 4 m	to 15 m	to 50 m
Remission capability	min. 1.8 %	min. 20 %	min. 20 %
Response time	min. 80 ms	min. 80 ms	min. 40 ms
Object size	≥ 70 mm at 4 m	≥ 150 mm at 15 m	≥ 150 mm in 15 m
Output	2 x PNP, 250 mA (failsafe semiconductor outputs)	PNP-transistor, 100 mA	