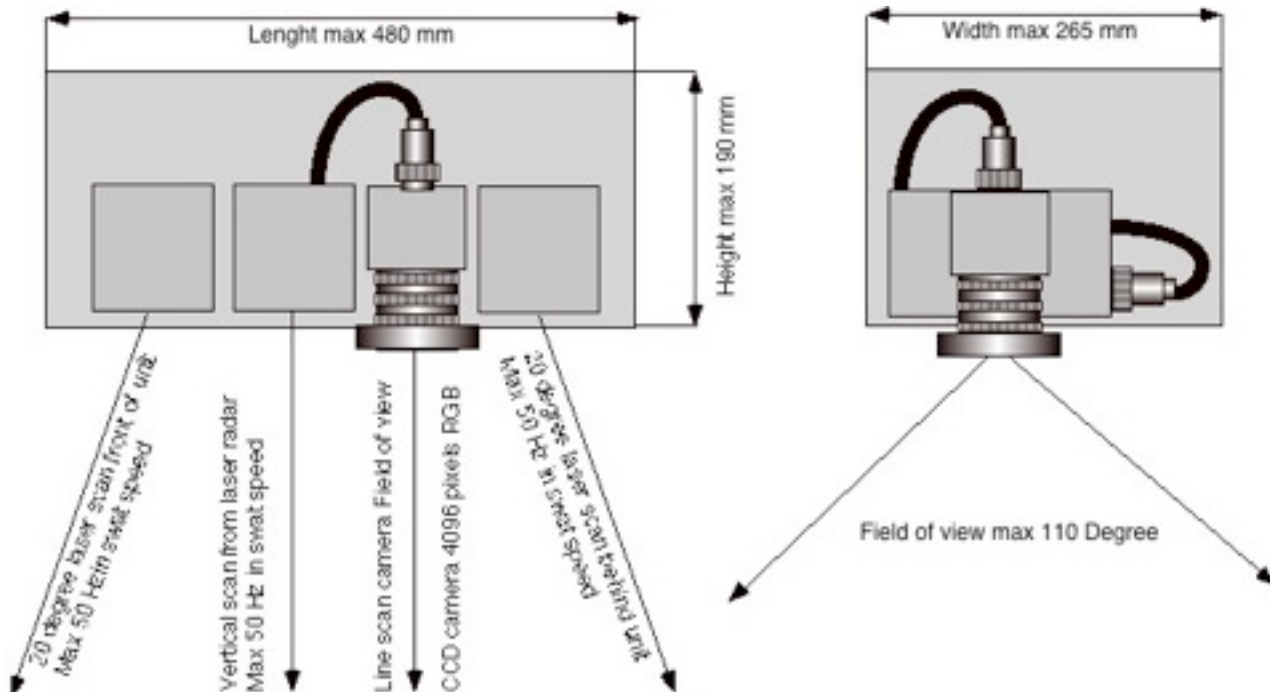


Tripple star laser radar system with synchronized camera

Preliminary data sheet



Laseroptronix Triple Star TS200 is a new unique laser radar and 3D camera for demanding applications in the range area up to 200 meter at very high speeds. The laser scanner have 3 separate scanners. One is aimed 20 degree front and one 20 degree back. One is vertically down.

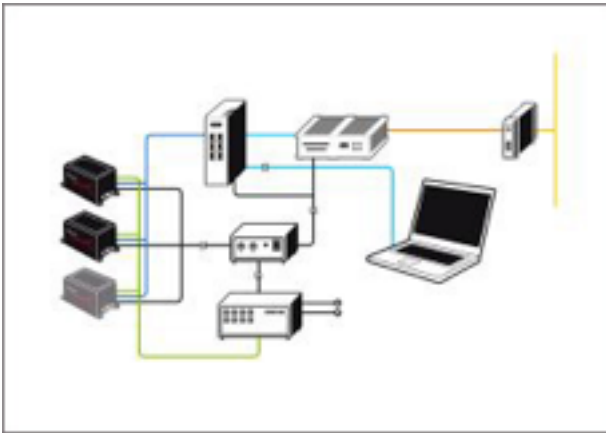
Swat scanning can be up to 50 Hz on each of the 3 units. Each scanner is also unique in having 4 separate laser sources that are angled 3 degree in motion direction. This separation in combination with 3 scanners gives an almost complete scan of earth with no missed areas. The 20 degree angle is defined to see through vegetation better as 3 angles see through better than just a vertical scan. If we scan city areas we can also collect 3D data on vertical walls and structures that is invisible for a vertical scanner. There is also a calibrated line scan camera with a 4096 pixels RGB array that overlaps with the vertical scanner and is aimed straight down.

Laser 3D data is combined with the line scan camera image data in a single computer file. This makes it easy to make 3D images and GIS data

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 46-70-7140470
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 E-mail info@laseroptronix.se
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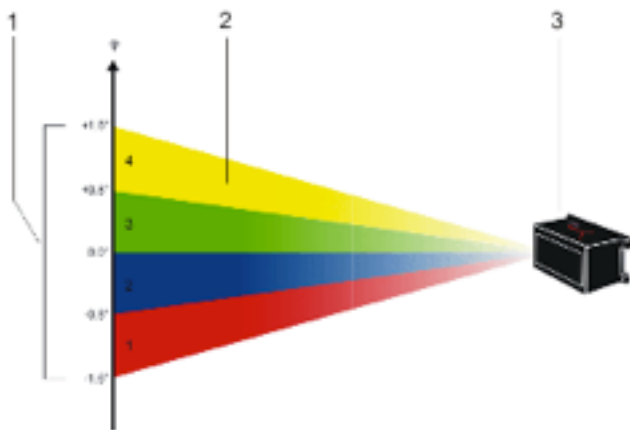
Telephone office
 187 40 Täby Sweden

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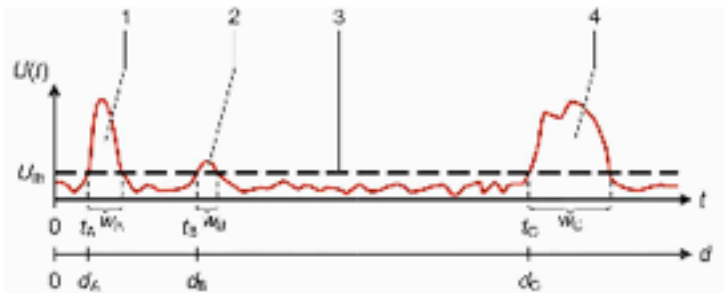


Principal layout with 3 scanners connected as one single scanner unit by a PC system and related software. All works by TCP/IP communication so all is very flexible.

Output data are time stamped and stored on a HD for post processing. Here GPS and gyro data can be added for correct GIS information

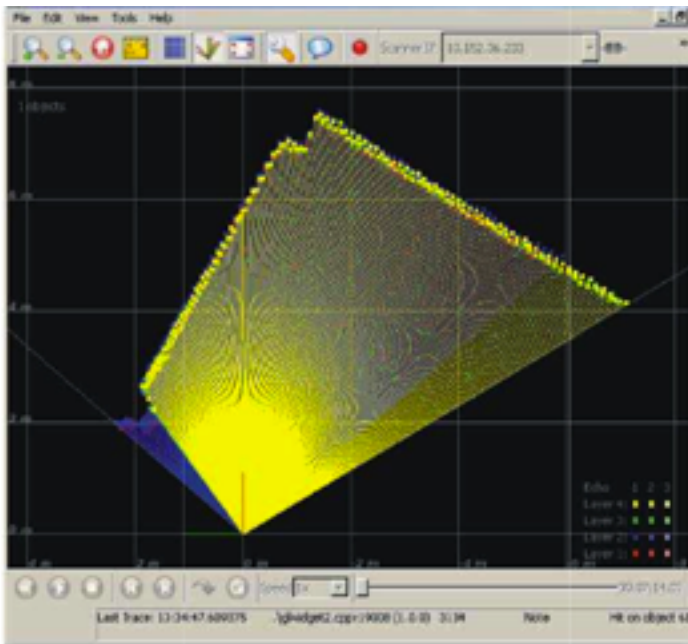


Each one of the 3 scanners have 4 separate laser beams like a fan that are scanned. This gives a better surface coverage that other solutions and smallest objects can be detected.



All laser pulses are analyzed and up top 3 reflexes can be calculated and is available in the data base. vegetation is here easy to define and measure. Each scanner gives min 136 000 readings per sec and when we have 3 of them min data rate is

then 408 000 readings per sec. When there is vegetation and other objects we can see up to 3 coordinates per sec. Then we can read as max value 1224 000 readings of 3 D coordinates per sec. Accuracy is about 4 cm per 3D voxel value

Tripple star laser radar system with synchronized camera

Test screen of the system can be viewed when operating. This makes it possible for operator to check all appears correct.

We use a PC screen for this check and all other settings before and after start up.

Software is based on Linux and made by Laseroptonix experts if laser radar.

When mission isn over the W-Lan can download all readings on an external PC or over Internet.

Service module accepts internet and web browser tests and check.



Line scan camera is a 4096x3 elements RGB camera that is calibrated with the centre laser scanner so all pixels in camera have a known position of the laser beam. This makes it easy to use data in standard GIS softwares. Speed can be up to 19000 lines per sec and all is stored and visible like a water fall display.

RGB is standard but when there is a need we have an optional 4 colour line scan camera with RGB + near IR

sensitivity in separate channels. Here we have 4 separate CCD arrays and a spectral mixing prism for best performance

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Tripple star laser radar system with synchronized camera

Laser class	1
Protection type (mounted)	IP69K (DIN EN 40050 (1993-05) / EN 60529 (1991-10) + A1 (2002-02);
Plugs (connected)	IP68
Operating temperature	-40 °C ... +85 °C
Dimensions (H x W x D)	max. 88 x 164,5 x 93,2 mm
Weight	< 1,000 g

14.1.2 Electric data

Supply voltage	12 V, 24 V nominal
Operating voltage	9 V ... 27 V
Overvoltage protection	2 h at 30 V, 2 min at 36 V
Polarity proof	up to 36 V permanently
Starting current	2 A for < 0.1 s at 12 V
Operating current	< 0.6 A at 12 V, medium output load (< 0.8 A at 12 V, max. output load)
Power consumption	< 7 W, medium output load (< 10 W, max. output load)

14.1.3 Miscellaneous

Working range	horizontal 85° (extended 110°)
Opening angle	vertical 3.2°
Detection range	from 0 m on
Measurement range	0.3 m ... 200.0 m in 0° direction
Range to target with 10% remission	50 m
Distance resolution	0.04 m
Repeat accuracy (1 σ)	0.1 m
Scan levels	4 parallel
Echoes per shot and measurement level	3
Scan frequency	12.5 Hz/25 Hz/50 Hz
Sender	pulsed laser diode
Wavelength	895 nm ... 915 nm
Horizontal divergence of the collimated beam	0.08°
Pulse duration	approx. 4.5 ns
Startup time	< 15 s (at room temperature)
Data interfaces	CAN, Ethernet 100 MBit/s