PSxxx-90 Pulse Sensor

2D Laser Scanner

- Long range up to 300 m
- Small spot size
- High lateral resolution
- Fast scan rate
- Very high accuracy in range and angle
- Tough and robust housing, rate IP67
- Multi-echo evaluation technology
- Operating with rain and snow
- Real time Ethernet

PSxxx-90 Applications

PSxxx-90 is the backbone of the whole Triple-IN sensors portfolio, providing rapidly and efficiently accurate and detailed 3D data. PSxxx-90 is suitable for both indoor and outdoor applications, ensuring also goals achievement for existing systems integration.

Automation, profile detection, monitoring, surveying and safety in different fields are only some of the most suitable applications.

PSxxx-90 Technical Data

Sensor	PS300-90	PS250-90	PS100-90
Order No.	1300	1200	1000
WORKING RANGE			
Maximum Range @ R = 100%, lambertian Reflector (m)	300	250	170
Maximum Range @ R = 10%, lambertian Reflector (m)	95	80	45
Minimum Range (m)	2.1	1.8	0.6
ACCURACY DATA			
Resolution (mm)	1	1	1
Repeatability 1 σ @ strong signal (mm)	5	4	4
Repeatability 1 σ @ weak signal (mm)	15	15	15
Accuracy (systematic error) (mm)	≤ 4	≤ 4	≤ 4
SPOT PROPERTIES			
Divergence in scan direction (°)	0.095	0.076	0.04
Divergence in scan direction (mrad)	1.67	1.33	0.7
Divergence perpendicular to scan direction (°)	0.020	0.020	0.020
Divergence perpendicular to scan direction (mrad)	0.3	0.3	0.3
Spot close to the sensor window (mm)	12 x 16	12 x 16	12 x 16
Focusing distance (m)	45	45	45
SCAN AND PROFILE PROPERTIES			
Maximum Scan and Profile Angle	90°	90°	90°
Scan Mirror Type	4 Mirror Polygon	4 Mirror Polygon	4 Mirror Polygon
Maximum Scanning Duty Cycle	50%	50%	50%
OPERATIONAL MODES			
Normal Mode			
Beam Scan Angle Step (°)	0.09	0.09	0.09
Measurements in 90° Scan	1000	1000	1000
Scan Rate (Hz)	20	20	20
Scan Time @ 90° Scan (ms)	25	25	25
Gap between Spots in Scan (°)	Overlap 0.005	0.014	0.050
Fine Mode			
Beam Scan Angle Steps in Profile (°)	0.023	0.023	0.023
Measurements in 90° Scan	1000	1000	1000
Scan Rate (Hz)	20	20	20
Scan Time @ 90° Scan (ms)	25	25	25
Scans/Profile	4	4	4
Profile Rate (Hz)	5	5	5
Profile Time @ 90° Scan (ms)	200	200	200
Measurements in Profile	4000	4000	4000
Overlap of Spots in Scan (°)	0.072	0.053	0.017
Fast Mode			
Beam Scan Angle Step (°)	0.18	0.18	0.18
Measurements in 90° Scan	500	500	500
Scan Rate (Hz)	40	40	40
Scan Time @ 90° Scan (ms)	12.5	12.5	12.5
Gap between Spots in Scan (°)	0.085	0.104	0.140

Sensor	PS300-90	PS250-90	PS100-90
MULTI-ECHO EVALUATION			
Echoes evaluated	4	4	4
Selectable echoes	First or last	First or last	First or last
TARGET SURFACE TEMPERATURE			
Temperature Range	T < 500°C	T < 500°C	T < 500°C
LASER DATA			
Measurement Laser			
Measurement Laser Type	Pulse Laser Diode	Pulse Laser Diode	Pulse Laser Diode
Wave Length (nm)	905	905	905
Safety Class; EN 60825-1; 94,96,01	1M	1M	1
Measurement or Pulse Rate (kHz)	40	40	40
Red Laser Marker			
Red Laser Marker (indicate the spot)	DC Laser Diode	DC Laser Diode	DC Laser Diode
Wave Length (nm)	635-678	635-678	635-678
Safety Class; EN 60825-1; 94,96,01	2	2	2
INTERFACES			
Ethernet	UDP 100 Mb/s	UDP 100 Mb/s	UDP 100 Mb/s
RS232 for Sensor Programming	115 kBaud, 8n1	115 kBaud, 8n1	115 kBaud, 8n1
Discrete Switching Outputs	2; programmable	2; programmable	2; programmable
External Encoder Inputs	Incremental Encoder; A, B	Incremental Encoder; A, B	Incremental Encoder; A, B
POWER SUPPLY			
Power Voltage	24 VDC ± 5 VDC	24 VDC ± 5 VDC	24 VDC ± 5 VDC
Direct Power Supply	✓	✓	✓
POE Supply	✓	✓	✓
Power Consumption (W)	7	7	7
Start-up Time (s)	< 30	< 30	< 30
SENSOR PROTECTION			
Ingress Protection	IP67	IP67	IP67
Operating Temperature Range	-30°C to +50°C	-30°C to +50°C	-30°C to +50°C
Temperature Range for Storage	-30°C to + 80°C	-30°C to + 80°C	-30°C to + 80°C
Enclosure	Aluminum, Die Cast; Seawater resistant	Aluminum, Die Cast; Seawater resistant	Aluminum, Die Cast; Seawater resistant
Enclosure Finish	Powder coated	Powder coated	Powder coated
Front Screen	AR-coated glass	AR-coated glass	AR-coated glass
Function in strong Sunshine	Ambient light control	Ambient light control	Ambient light control
DIMENSIONS & WEIGHT			
Height x Width x Length (mm)	247 x 121 x 109	247 x 121 x 109	247 x 121 x 109
Weight (kg)	2.6	2.6	2.6

Options		PS300-90	PS250-90	PS100-90
Order No.	Description			
1001	Customized focusing distance	From 3 to < 45 m	From 3 to < 45 m	From 3 to < 45 m
1002	Enlarged beam divergence	up to 0.2°x0.2°	up to 0.09°x0.09°	None
1003	Spirit level, 0°-90° field of view	✓	✓	✓
1004	Spirit level, 45°-135° field of view	✓	✓	✓
1005	Spirit level, 90°-180° field of view	✓	✓	✓

Accessories for all versions	
Order No.	Description
1051	Window protection tube
1081	Developer kit for PSxxx-90
9051	Power Over Ethernet Injector in: 100-240 VAC out: 24 VDC
9052	Serial, Power and Multifunction cable, 5 m, 90°
9053	8 pin Ethernet data cable with POE support, 5 m, 90°
9061	8 pin Ethernet data cable with POE support, 10 m, 90°
9069	Triple-IN universal adapter for tribrach
9070	Center plug for tribrach
9071	Tribrach adapter
9072	Universal tribrach
9074	Sensor holder, sensor field of view: 45°-135°
9075	Sensor holder, sensor field of view: 90°-180°

PSxxx-90 HT – Special Versions

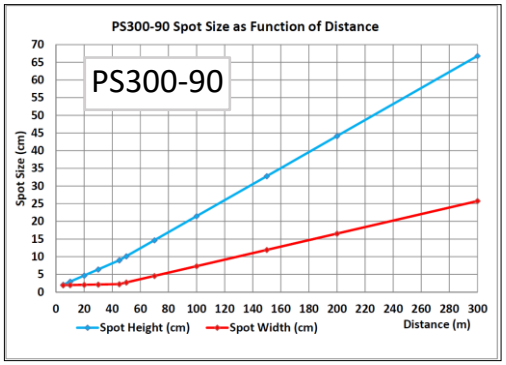
PSxxx-90 HT are special versions dedicated to High Temperature operating conditions.

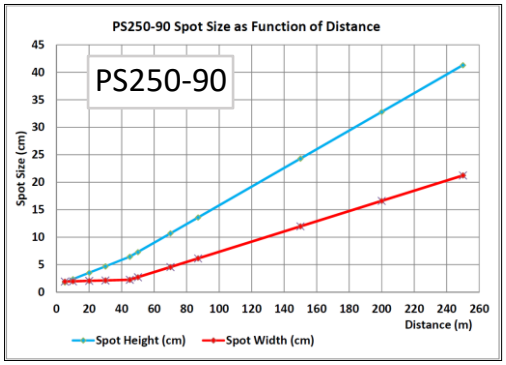
Technical data are based on standard PSxxx-90 sensors, with essential improvements to stand hard working conditions where temperature is extremely high, such as in steel industry.

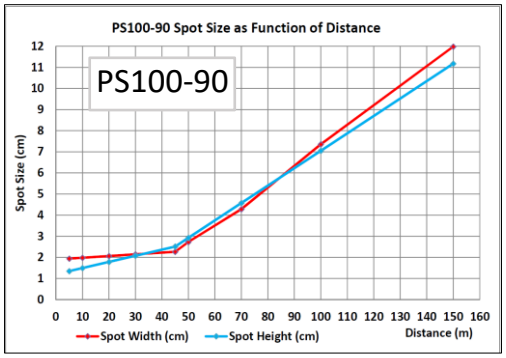
	PS250-90 HT	PS100-90 HT
Order No.	2700	2600
TARGET SURFACE TEMPERATURE		
Target Temperature Range	T ≤ 1200°C	T ≤ 1200°C
WORKING RANGE		
Maximum Range @ R = 100%, lambertian Reflector (m)	100	50
Maximum Range @ R = 10%, lambertian Reflector (m)	30	20
Minimum Range (m) Sensor must be protected!	2.5	1.8

PSxxx-90 Features as function of Target Distance

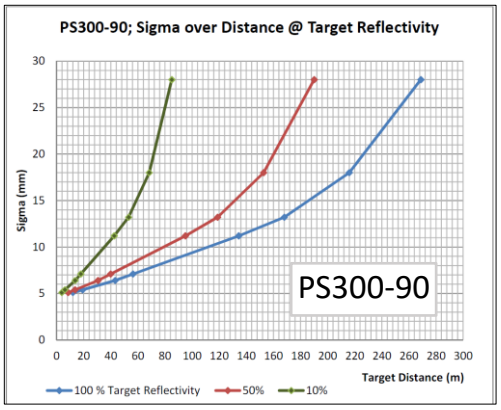
SPOT SIZE vs TARGET DISTANCE

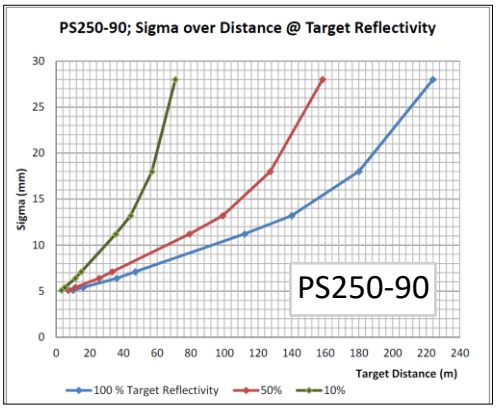


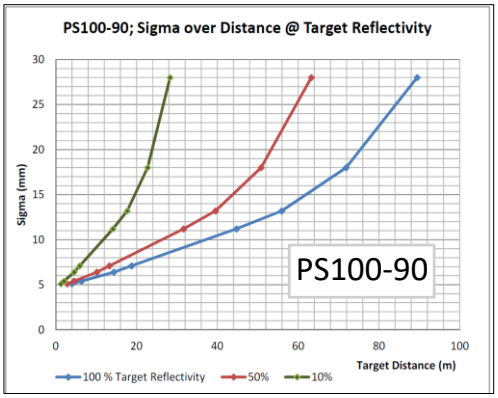


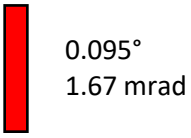
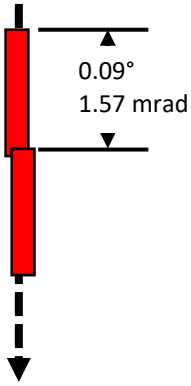
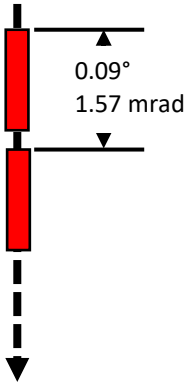
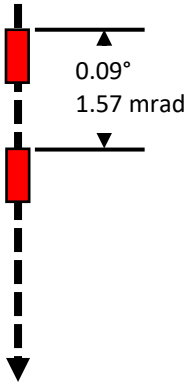
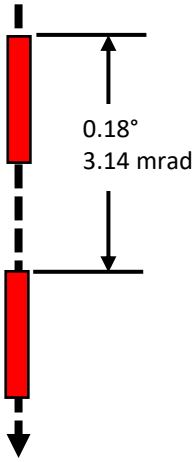


SIGMA vs TARGET DISTANCE

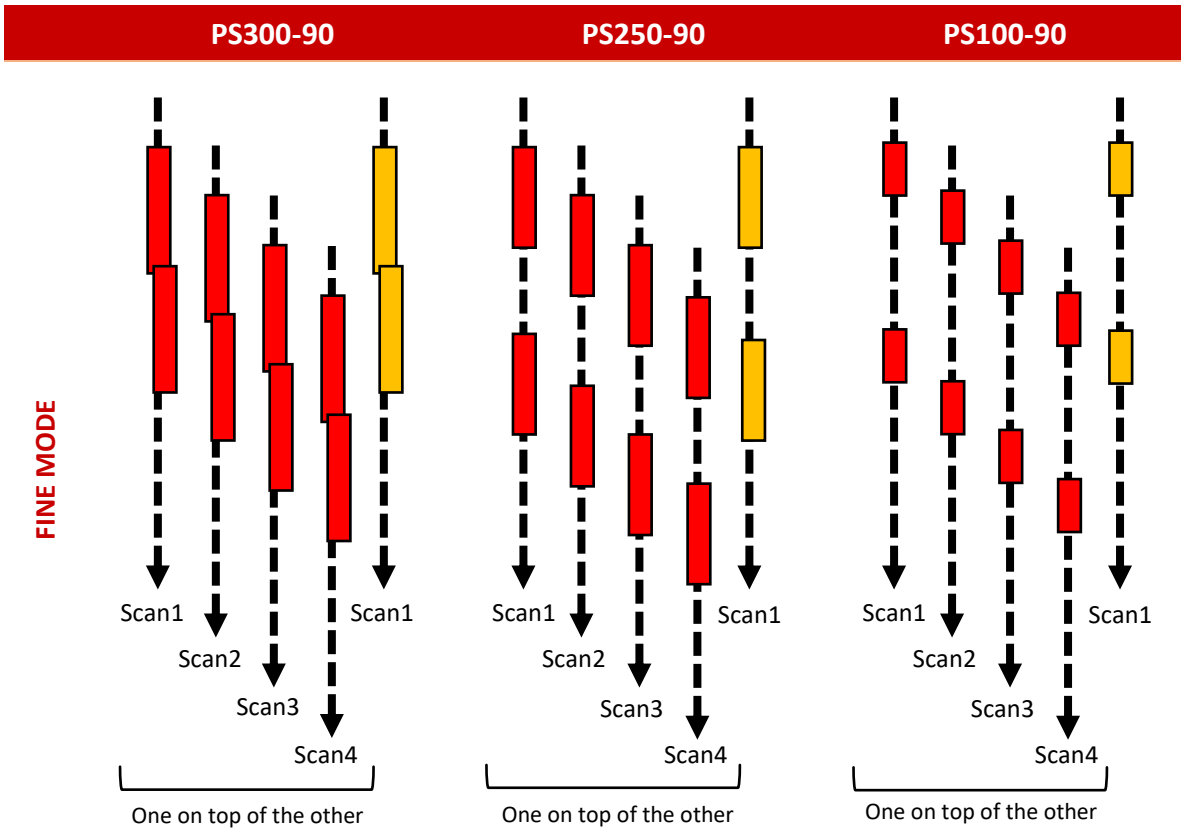




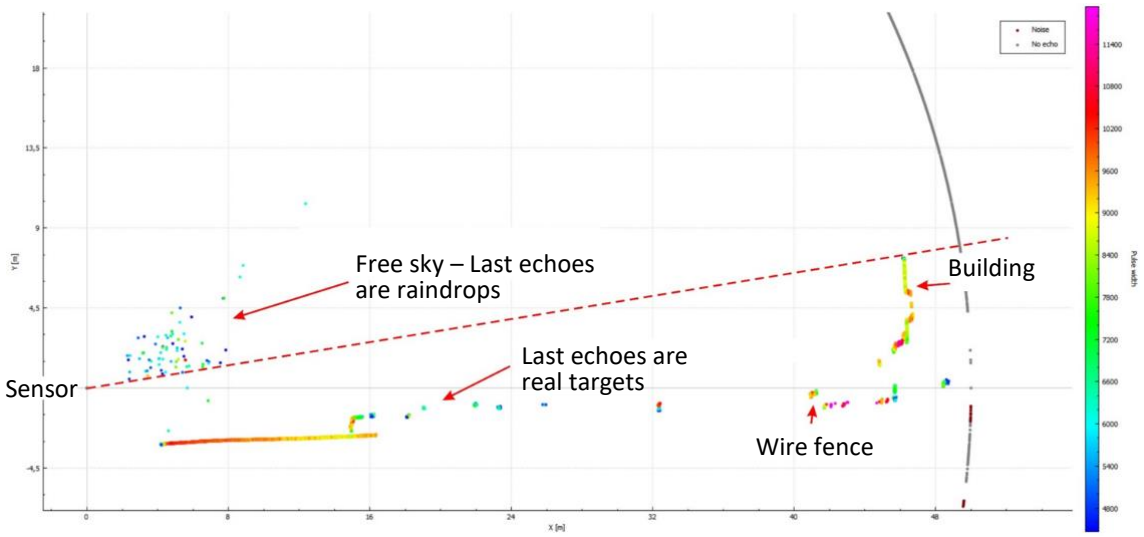


	PS300-90	PS250-90	PS100-90
SPOT SIZE	0.020° 0.3 mrad  0.095° 1.67 mrad	0.020° 0.3 mrad  0.076° 1.33 mrad	0.020° 0.3 mrad  0.040° 0.70 mrad
NORMAL MODE			
FAST MODE			

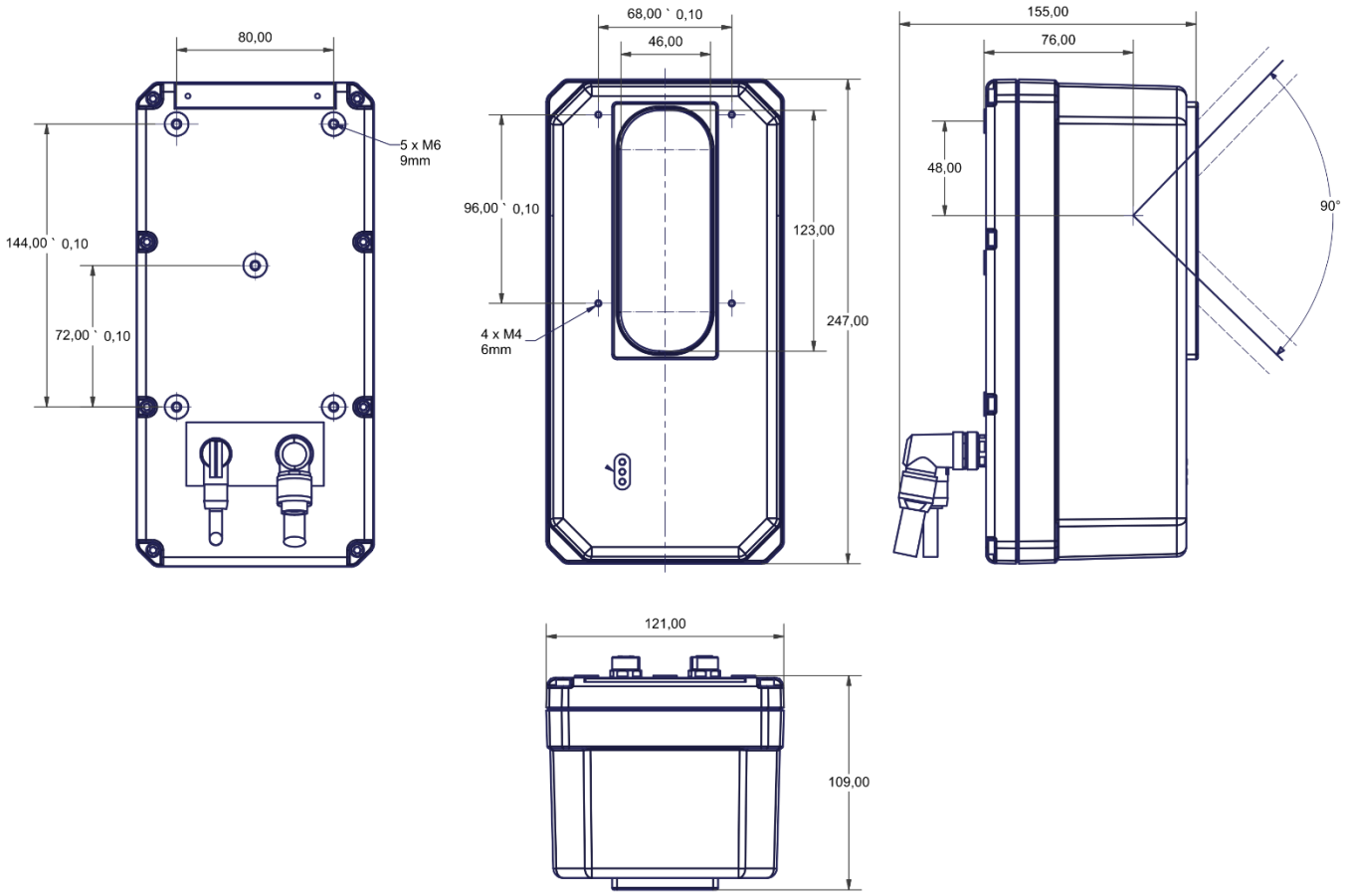
PSxxx-90 Spot Size and Scan Modes



PSxxx-90 Multi-echoes Evaluation



PSxxx-90 Dimensions Drawings



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