IRVINE SENSORS®

CORPORATION

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T-Scan
In Work!

EXPERIENCE THE DIFFERENCE ISC TECHNOLOGY MAKES

T-Scan is a low cost, HIGH VOLUME, LIDAR module with integrated visible light camera Intended for the Intelligent Transportation (ITS) applications

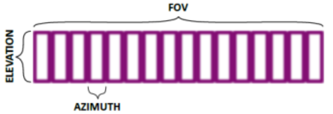
- The T-Scan operates at eye-safe wavelengths which provides it with orders of magnitude better eye safety comparted to typical IR sensors
- This results in lower cost and longer range
- Orderable in many fields of view configurations from 3 degrees to 95 degrees to support a broad range of applications
- Visible Light Camera (optional)
- Ethernet Power over Ethernet (POE), Optional CAN connectivity available
- 12-120 Hz Frame Rate
- 12-24VDC Input
- -40 to 85 C Operation
- Available in various weatherproof enclosure options operable in stand-alone systems

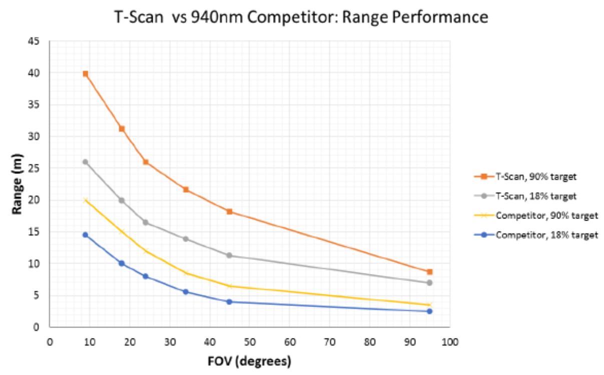
Availability 4Q18, typically 12-16 weeks ARO*
Call for pricing.

Market(s):
ITS Roadway Toll, Perimeter, Automation & Robotics

Table 1: Pixel IFOV for Standard FOV options

FOV (deg)	Azimuth (deg)	Elevation (deg)
3	0.2	0.5
9	0.6	1.5
18	1.1	3.0
24	1.5	4.0
34	2.1	5.7
45	2.8	7.5
95	5.9	15.9





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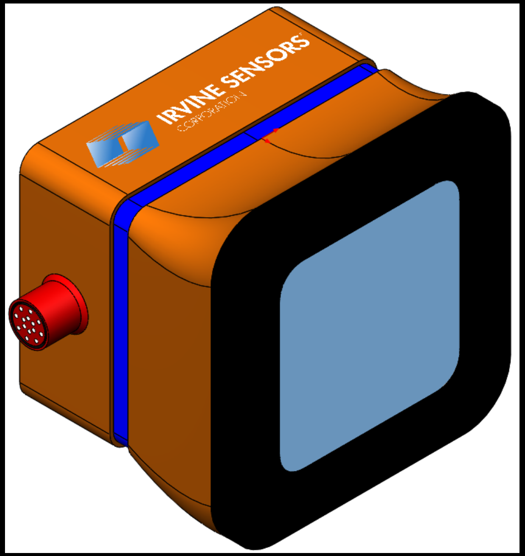
NEW!

EXPERIENCE THE DIFFERENCE ISC TECHNOLOGY MAKES



Market(s):
ITS Roadway Toll, Perimeter, Small Marine, Rail
Small Logistic(s) Delivery Vehicles
Automation & Robotics

Longer range larger field of view greatly improves all traffic understanding approaching intersections, marine, and medium size drones

Larger FOV

- Solid State Laser Range ~1 KM
- Lidar Field of Regard (FOR) 24 degrees
- Reliable in all weather
- (Optional) Combined Camera selections
  - Visible and Thermal
- Vehicle Counting, Speed Measurement, Recording Options
- Traffic Flow Monitoring
- Stop Bar Detection
- Waterproof IP67 Connector & Design
- Reliable in all weather
- Low Power 35W (with heater)
- IP addressable

Availability 2Q19, typically 12-16 weeks ARO*
Call for Pricing.

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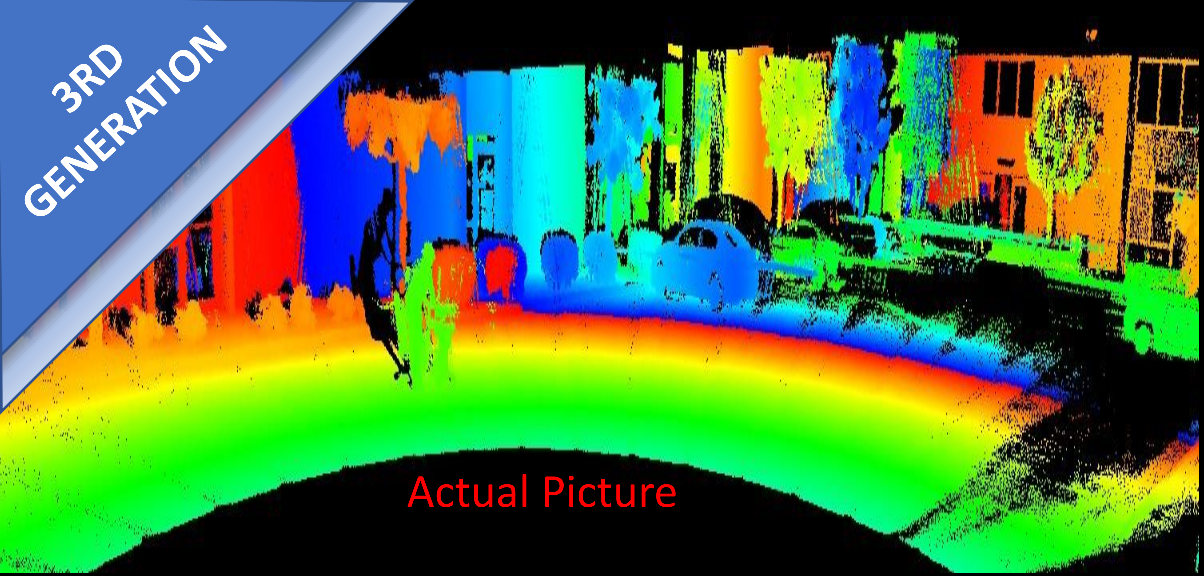
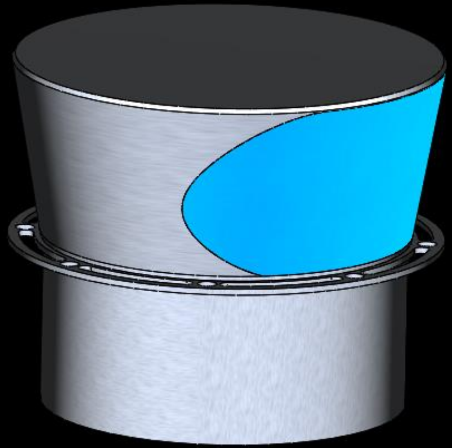


Actual Picture



3D ALERT™

EXPERIENCE THE DIFFERENCE ISC TECHNOLOGY MAKES

Spinner Family

Product Models	3D ALERT 0.5	3D ALERT 1.0	3D ALERT 2.0	
Purpose	Transportation Mapping Defense	Security Defense Medium Marine	Security Defense Large Marine	Units
Wavelength	1550	1550	1550	nm
Horizontal FOV	360	360	360	degrees
Mechanism	Spinner	Spinner	Spinner	
Frame Update Rate	10	2	0.5	Hz
IFOV	0.09	0.09	0.09	Degrees
Vertical FOV	40	20	20	degrees (per tube) NOTE: Two Tubes Max)
Range	420	1020	2350	10% Reflectivity @1 sq. meter
Range	610	1500	3280	50% Reflectivity @1 sq. meter
Range	700	1800	3780	80% Reflectivity @3 sq. meter
Range Resolution	10	10	10	cm
Dimensions	Overall: 320 mm High Above the first surface: 150 mm High Below Bolting Surface 130 mm high Width: 300 mm			
Integrated camera	HD 2MP*	HD 2MP + 30x Optical zoom	Optional	NOTE: Camera selection(s) are optional & customer dependent
Power	39	39	39	(W) @ 12/24VDC
Laser	40	100	350	uj
Interface	Gigabit	Gigabit	Gigabit	Ethernet
Qty 1 Price*	CALL	CALL	CALL	
Availability	CALL	CALL	CALL	

Details, pricing, and availability details subject to change without notice

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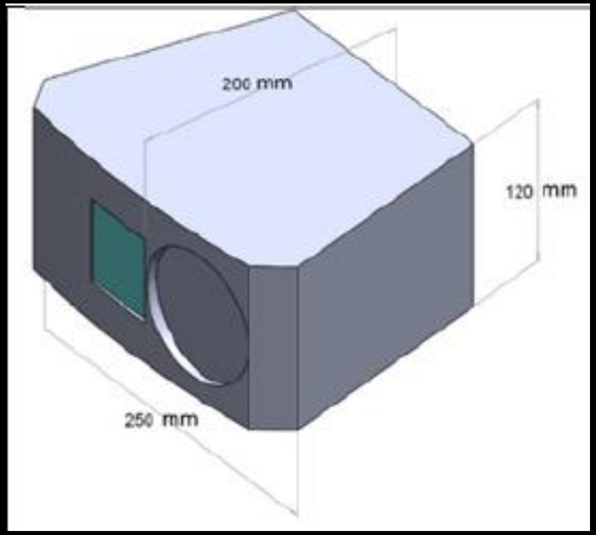

Range > 300 M to n Km at 10% Reflectivity
No rotational or moving parts,Spinner Mirror optional for larger FOV
Frame Rate: 16 Hz
Wavelength 1550 nm
Power 200 W
Weight 2 KG
Field of Regard: 60x40
IFOV 0.2 degrees

Availability ~4Q19, typically 12-16 weeks ARO*
Call for Pricing.

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Market(s):
Security & Surveillance
Level 4 & 5 Autonomous Vehicles

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Use Case

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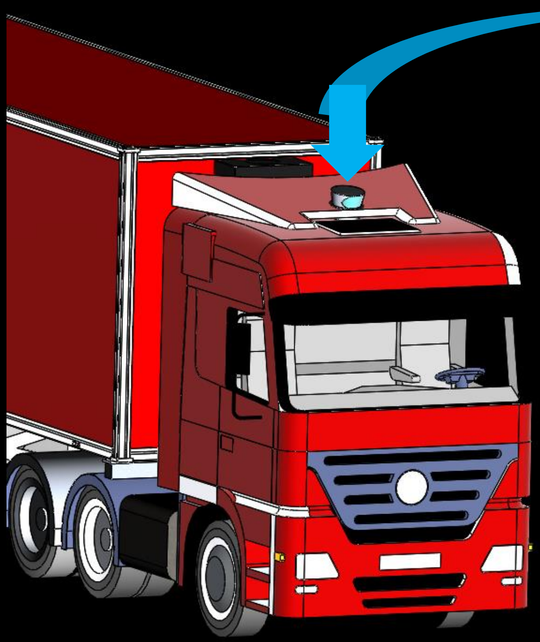

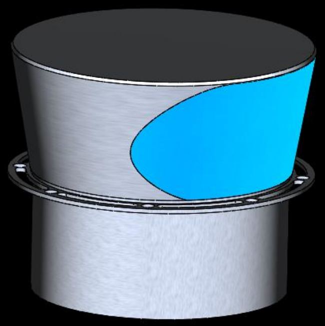

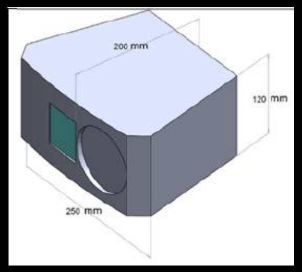

Market(s):
Transportation, Logistic(s) Delivery, Automation
Mining

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Use Case

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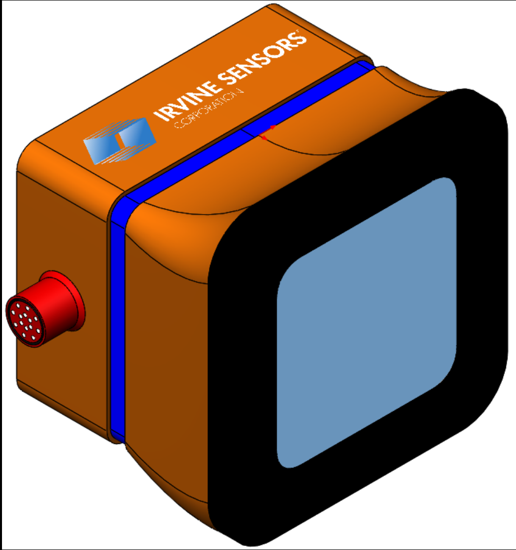

Long Range makes it ideal for Market(s):

Transportation, RAIL, Construction, Mining, Logistic(s) & Security

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Use Case!

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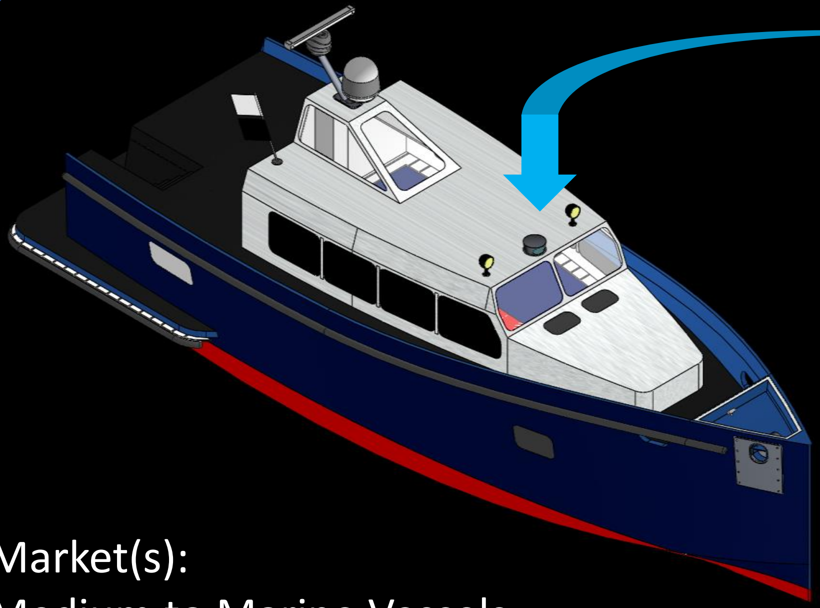
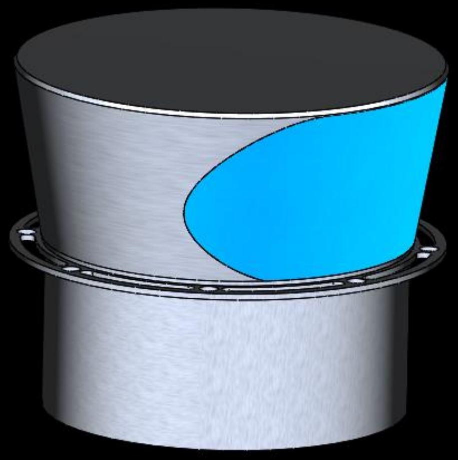
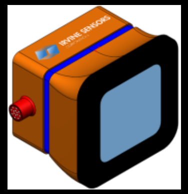




Market(s):
Medium to Marine Vessels

Small Vessels may use:



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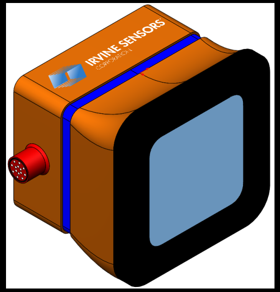
TECHNOLOGY READINESS LEVELS

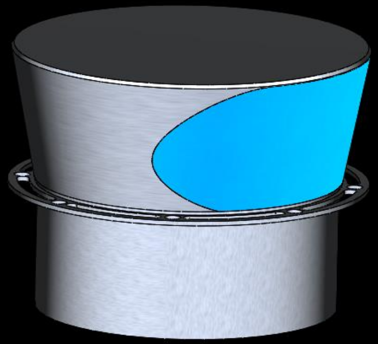
ISC Short range non visible wavelength and eye safe

ISC LONG RANGE Lidars are @1550 nm wavelength (eye safe) at 10% reflectivity

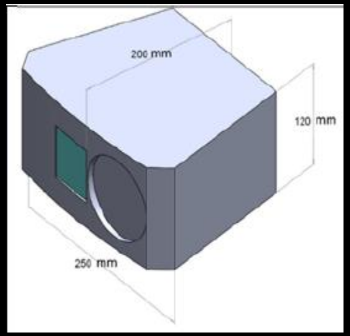
RANGE ~100 M



RANGE ~1 KM



RANGE ~300 – ~2KM



RANGE ~300 – ~2KM

Note: Discontinued designs are demonstrable at TRL 6-7

Expected TRL 6 to 7 Date
CALL

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CALL

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Definition of the TECHNOLOGY READINESS LEVELS

Level	Readiness Levels	Description
1	Basic principles observed and reported	Lowest level of technology readiness. Scientific research begins to be translated into applied research and development. Examples might include paper studies of a technology's basic properties.
2	Technology concept and/or application formulated.	Invention begins. Once basic principles are observed, practical applications can be invented. Applications are speculative and there may be no proof or detailed analysis to support the assumptions. Examples are limited to analytic studies.
3	Analytical and experimental critical function and/or characteristic proof of concept.	Active research and development is initiated. This includes analytical studies and laboratory studies to physically validate analytical predictions of separate elements of the technology. Examples include components that are not yet integrated or representative.
4	Component and/or breadboard validation in laboratory environment	Basic technological components are integrated to establish that they will work together. This is relatively "low fidelity" compared to the eventual system. Examples include integration of "ad hoc" hardware in the laboratory.
5	Component and/or breadboard validation in relevant environment.	Fidelity of breadboard technology increases significantly. The basic technological components are integrated with reasonably realistic supporting elements so it can be tested in a simulated environment. Examples include "high fidelity" laboratory integration of components.
6	System/subsystem model or prototype demonstration in a relevant environment	Representative model or prototype system, which is well beyond that of TRL 5, is tested in a relevant environment. Represents a major step up in a technology's demonstrated readiness. Examples include testing a prototype in a highfidelity laboratory environment or in simulated operational environment.
7	System prototype demonstration in an operational environment.	Prototype near, or at, planned operational system. Represents a major step up from TRL 6, requiring demonstration of an actual system prototype in an operational environment such as an aircraft, vehicle, or space. Examples include testing the prototype in a test bed aircraft.
8	Actual system completed and qualified through test and demonstration.	Technology has been proven to work in its final form and under expected conditions. In almost all cases, this TRL represents the end of true system development. Examples include developmental test and evaluation of the system in its intended weapon system to determine if it meets design specifications.
9	Actual system proven through successful mission operations.	Actual application of the technology in its final form and under mission conditions, such as those encountered in operational test and evaluation. Examples include using the system under operational mission conditions