

ITI Limited
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27, **A.K.Nayak Marg**, Fort, Mumbai – 400001(M.S)
Email:mumbai_ro@itilttd.co.in

**NOTICE INVITING EOI FOR SELECTION OF SYSTEM INTEGRATOR/Partner for SITC of OFC
INTRUSION DETECTION SYSTEM for Defence**

Ref: ITI/ROM/OFC/19-20 Dated: 11.04.2019

ITI is undertaking System Integration projects for various customers on revenue sharing basis. Towards these business activities, ITI invites sealed Expressions of Interest (EOI) from eligible System Integrators (SI) /supplier as consortium partner. The scope of work: Supply, Installation, Commissioning of **OFC INTRUSION DETECTION SYSTEM** for this EOI

The SI/Partner should work with ITI for addressing the Tender and implementing the project in the event of ITI winning the contract.

Due Date for Submission of EOI on or before **25.04.2019**

1	Technical Bid	EOI Document fees Rs 1000/ Cash /DD in name of ITI Limited
1(i).	Eligibility of SI	
	a	The SI should have minimum 3 years experience in OFC IntrusionDetection/IT/Networking/Surveillance/Geo fencing business in India.
	b	The bidder should have successfully supplied and installed LAN system Integration works/CCTV Surveillance System/OFC Intrusion Detection for various Govt/Corporate Bodies.
	c	Should have turnover of at least Rs. 40.0 Crore for the last 3 financial years ended on 31.03.2018 including associate company .
	d	Should not have been blacklisted by any government organization in India
	e	Must have their own offices in India for services and support and service Centers in Mumbai and documentary evidence to be provided.
	f	The SI should be either OEM Manufacturer or Authorized System Integrator of Manufacturer for doing network deployment. The vendor should enclose Authorization Certificate from OEM Manufacturer to participate in the Tender. The Manufacturer of the product (OEM) should be ISO 9001:2008 process certified., Po copies of 05 crs should be attached.
	g	The SI should have 05 Trained & Skilled Engineer to do required integration. Vendor should have in-house skilled team who will do the installation, configuration, integration and support. For installation of Passive Components, Vendor may outsource installation work to an OEM certified contractor, having the trained and skilled manpower required For carrying out such work.
	h	The SI should have Capabilities for Multiple Technologies like Wireless, LAN/WAN, WiFi/Security surveillance and Structured Cabling. With Related PO copies with satisfactory completion certificates/work ongoing should be attached within last 03 years
	i	The SI will be responsible to provide Integration & Service – Support for the Networking Components like WAN/WiFi & Active Component. The SI should have expertise on both Passive and Active Network Infrastructure Components
	j	The SI should have required Tools to do network integration.
1(ii)		
	SI need to submit the following:	Company Profile

	a	Certificate of Incorporation
	b	Audited Annual Report for last 3 years
	c	GST Registration Certificate/
	d	ISO Certificates
	e	PAN Number/Income Tax return copy for the assessment for the last Three years
	f	Funding Plan for the projects (Banker's solvency certificate)
	g	Undertaking to work with ITI as per EOI/Tender terms and conditions including Warranty & post-warranty services and implementing the project in the event of ITI winning the contract.
	h	Undertaking (on Letterhead) to submit Tender fee- EMD Rs 1367900 /-, Security Deposit/PBG as per tender conditions.
	i	Undertaking to obtain support letter from OEMs in favor of ITI/Customer as per ITI
	j	Manpower details to be furnished
	k	Undertaking to obtain relevant statutory licenses, copyrights etc., for operational activities
	l	To submit Power of attorney authorizing the person signing the bid for this EOI
	m	Support center details to be furnished
2	n	Consolidated Margin being Offered (Covering the – Supply, Installation, Wiring & Commissioning including Warranty Support as per tender) in percentage (%) to ITI excluding Taxes. (to be submitted separately in sealed cover). Please also refer note 10 below
	Financial Bid	Consolidated Margin being Offered (Covering the – Supply, Installation, Wiring & Commissioning including Warranty Support as per tender) in percentage (%) to ITI excluding Taxes. (to be submitted separately in sealed cover). Please also refer note 10 below

Note:

1. The financial bid (Indicating the Margin Clearly) and Technical Bid shall be placed in separate sealed envelopes only, super scribed with words "Technical Bid". & "**Financial Bid**". Both the bids are to be placed in a separate sealed cover mentioning, "DON'T OPEN BEFORE 15.30 hrs **25.04.2019**".
2. The BID will be rejected, if the margin is not offered and offered margin is not mentioned in a separate sealed cover.
3. Technical bid will be opened 15.30 hrs **25.04.2019**".
4. Financial Bid opening will be done after the evaluation of Technical bid (Only for technically qualified bidder).
5. Bid should be valid for a period of 180 days from the date of opening of bid.
6. The bidders who have not fulfilled the commitments made in our earlier EOIs need not apply.
7. Conditional offers are liable for rejection.
8. For details of the scope of the work, may contact Manager Mktg 022 22019684
9. ITI personnel will be involved with the implementation Team in each location.
10. Payment to the successful bidder shall be made after deducting the offered margin to ITI, operational expenses payable to customer and the statutory taxes payable to the Govt. (Penalties if any levied by the customer will be passed on to the successful bidder).
11. Clause by clause compliance of EOI with references to supporting documents.
12. Successful bidder has to sign consortium agreement covering the terms and conditions of the customer.

ITI Limited reserves the right to accept or reject in part or full any or all the EOIs without assigning any reasons therefore and without incurring any liability to the respondents.

The EOI may be sent in a sealed cover marked "EOI for selection of System Integrator for SITC of **OFCINTRUSION DETECTION SYSTEM** for Defence . on revenue share basis so as to reach the following address on or before 15.00 hrs **25.04.2019**".

Mrs. Kusum Bakshi
The Chief Regional Manager –Marketing
Regional Office, ITI Limited, Old National Insurance Building,
1st Floor,27,A.K.,Nayak Marg, Fort, Mumbai – 400001
Telephone: 022-22019684, 22019699 Fax:022-22019795
Email Id: mumbai_ro@itild.co.in

Sl No.	Technical Specification	
	Detection Accuracy	1-10m
2.	Maximum Coverage	1 Okm
3.	Fiber Optic Sensor	Single Mode conforming ITU-T G.652 or ITU-T G.654 or ITU-T G.655
4.	Fiber Count	<=6
5.	Sensing Distance	
a.	Moving Pedestrian	Within 1-5m from the BFO
b.	Moving Car	Within 5-20m from the BFO
	Moving Truck	Within 50-80m from the BFO
d.	Moving Heavy Tracked Vehicle	Within 200-300m from the BFO
	Underground activities	Within 20-100m from the BFO
	Animals	Within 1-5m from the BFO
	Cable Cut Detection	Within 50m from the cut location
6.	Detection Probability	<ul style="list-style-type: none"> • Intruders attempting to bypass the wall by climbing, scaling, or leaning against it shall be 95% with a 95% confidence factor • Intruders attempting to cross above or under the buried cable by walking, running, driving, or diggings shall be 95% with a 95% confidence factor
7.	Networking	Gigabit Ethernet
8.	Sensor Cable Operating Temperature	0 -20C to 70°C

9.	Controller Operating Temperature	0 to 50°C
10.	Sensor Cable Operating relative humidity	0 to 100% (condensing)
11.	Controller Operating relative humidity	0 to 90% (condensing)
12.	Power Consumption	<400W
13.	Voltage Input	Single Phase 230V AC, 50Hz
14.	Sensor Configuration	<ul style="list-style-type: none"> • In loop or Straight Line above ground • Buried • Buried as well as above ground
15.	Alarm metadata output	<ul style="list-style-type: none"> • Event Co-ordinates • Location on Map • Event Type

		<ul style="list-style-type: none"> • Time Stamp • Confusion Matrix
16.	Monitoring Centre and Alarm Processing Unit	19" rack
17.	Protocol	TCP/IP
18.	API	Should be made available for custom development
19.	Virtual Zone Facility	Facility of Virtual Zones of at least 25 zones/km with provision of creating different sensitivity for each zones

PART 1 GENERAL

1.1 System Summary

The contractor shall install a Buried Fibre Optic (BFO) based Perimeter Intrusion Detection Sensor system (PIDS) at R&DE (E) designated site. The system shall detect and accurately locate intruders within a specific location that attempt to excavate or intrude.

The detection sensors shall consist of fiber optic cable. The cable shall connect to an alarm processing unit (APU) that detects and locates attempted intrusions by analysing the changes in reflected light in the sensor cables.

The system shall be capable of being integrated into the facility's Control Monitoring Centre and integrate to 3rd party command and control by software.

1.2 Qualifications

- A. The manufacturer of the system shall have a minimum of five (5) years' experience in the field of PIDS.

1.3 Warranty

- A. The product shall be under warranty for a minimum of two years from the date of purchase.
- B. The supplier shall make available replacement components, parts or assemblies for a minimum of 7 years from the date of purchase.

1.4 References

- A. Abbreviations and acronyms: The following acronyms and abbreviations are used in this document:

- 1 . PIDS: Perimeter Intrusion Detection System
- 2 APU: Alarm Processing Unit
- 3 MTBF: Mean Time between Failures
- 4 MTTR: Mean Time to Replace
- 5 OTDR: Optical Time-Domain Reflectometer
- 6 Pd: Probability of Detection

PART 2 PRODUCTS

2.1 Intrusion Detection System

- A. The contractor shall supply a fiber optic based Perimeter Intrusion detection system which can be buried and/or laid at designated site.
- B. The system shall be capable to detect wall climbing, scaling, or ladder-based intrusion attempts.
- C. The buried system shall be capable to detect running, walking, crawling, and digging, trenching or excavating based intrusion attempts in open areas.
- D. The system shall detect and locate digging, movement in the immediate vicinity or attempts to intrusion.

2.2 Mechanical Requirements

- A. Sensor cable:
 - 1. The sensor cable will be of a single mode fiber optic cable.
 - 2. The sensor will be capable of being mounted buried or above ground near or around perimeter wall.
 - 3. The sensor cable shall be all dielectric for buried applications. In cases where the cable is above ground and attached to the perimeter wall, the cable can have metal armoring.
 - 4. The sensor cable shall have a minimum bend radius no greater than 15 cm (6.0 inches).
 - 5. The sensor cable shall be capable to be installed adjacent to the perimeter wall or attached to it.
 - 6. The sensor cable shall not require a cable conduit to be installed along the area to protect it.
 - 7. The sensor cable shall include additional, unused fibers (≥ 6) for use by other equipment (such as for data or video communications).
- B. Sensor unit headend equipment:
 - 1. The system shall not require any active devices or processor modules to be installed outdoors.
 - 2. The system shall be capable to monitor and detect with a frequency bandwidth from 3Hz to 500 kHz.
 - 3. The system shall be capable of varying the physical sensitivity of the fiber optic cable by deliberate selection of the different number of zones in the cable.

4. All active components shall be rack-mountable in an indoor, equipment room environment.
5. All active components shall be capable to work in a non-temperature controlled environment.
6. The indoor system components shall be designed for standard 19-inch wide rack.
7. The system shall provide the option for a slide-out monitor and keyboard that enables local console access to the system.
8. The system shall include a fiber optic patch for interfacing the sensor cable to the processor and controller modules.

2.3 Environmental Requirements

- A. The sensor cables shall withstand operation in temperatures from -20°C to 70°C and a relative humidity of 0 to 100% (condensing) without performance degradation.
- B. The sensor unit components shall be designed for indoor use and meet the following requirements
 1. Temperature:
 - a. Operating: 0°C to 50°C
 - b. Storage: -20°C to 70°C
 2. Humidity:
 - a. Operating: 0% to 90% (relative, non-condensing)
 - b. Shipping and storage: 0% to 90% (relative, non-condensing)

2.4 Reliability and Maintenance Requirements

- A. Sensor cables: The sensor cables shall provide a nominal service life of 20 years, excluding certain environmental forces or external influences viz, floods, external means of digging and tampering of the BFO cable.
- B. Sensor unit:
 1. The sensor unit modules shall have a predicted mean time between failures (MTBF) of greater than 87,000 hours.
 2. The sensor unit shall be capable of performing internal self-diagnostic tests of the internal circuitry, cable continuity, and detection processing.
 3. The sensor unit software shall be field-upgradeable, either locally via a USB connection or over the network.

2.5 Electrical Requirements

- A. Each sensor unit shall meet the following electrical requirements:
 - 1. Input power: 100 to 240 VAC, 50 Hz
 - 2. Power consumption: Less than 400W
- B. Backup power: The sensor unit shall be capable of being powered from a third* party uninterruptible power supply (UPS) or standby generator.
- C. The sensor cable shall include non-conductive elements.
- D. The sensor cable shall be completely immune to all forms of electromagnetic energy from radio communications, radar, electrical power transmission equipment and lightning
- E. The system shall not require any outdoor power or grounding connections.

2.6 Detection Capabilities

- A. The sensor shall consist of a single mode fiber optic cable that is installed adjacent to the perimeter wall (buried or on the wall) along the full length to be protected.
- B. The system shall be able to detect and locate interference over a cable distance of up to 10 km.
- C. The sensor unit shall have the following detection capabilities:
 - 1. Process the signal from the sensor cable to detect intruders attempting to dig, trench, drill, or otherwise interfere.
 - 2. Process the signal from the sensor cable to detect intruders digging within the vicinity of the perimeter wall.
 - 3. Locate the position of a detected intrusion within 1-10m depending on ground conditions and cable installation, or less, at least 95% of the time.
 - 4. Detect multiple simultaneous intrusions, when each intrusion attempt is separated by a sensor cable distance not greater than 50 m.
 - 5. Be capable of detecting and locating a sensor cable cut to within 50 m.
 - 6. Utilize adaptive algorithms in the detection process to optimally discriminate between actual intrusions and environmental activity.
- D. Intrusion detection performance:
 - 1. The probability of detection (Pd) for typical interference shall be 95% with a 95% confidence factor, when the system is installed in accordance with the manufacturer's directions and for approved installations.
 - 2. False alarm rate: The maximum rate for alarms generated shall be less than 10 per year.
 - 3. Nuisance (environmental) alarms:

- a. The system when calibrated according to manufacturer's guidelines shall not suffer nuisance alarms from any of the following sources:

- 1. Temperature changes

- 2. Sunrise/sunset
 - 3. Acoustic or magnetic effects
 - 4. Snow
 - 5. Fog
 - 6. Wind
 - 7. Rain and hail
 - 8. Sandstorms
 - 9. Seismic vibration caused by nearby vehicular traffic

- b. The system shall utilize advanced processing and ambient compensation to minimize the probability of nuisance alarms from the following sources:

- 1. Motion of nearby objects or vegetation

- 2. Motion of surface or ground water

- 4. Time to detection:

- a. The system shall be capable of generating an alarm within 2 second from the onset of an attempted breach that involves an aggressive contact with the ground.
 - b. Other detected intrusion attempts shall be reported no later than 5 seconds.

2.7 Cable cut response

- A. The system shall be capable of detecting and locating a sensor cable cut.
- B. The cut location shall be determined and reported with an absolute accuracy of equal to or less than 50 meters.

2.8 Installation and Configuration Capabilities

- A. The system shall have the following characteristics, as a minimum:
 - 1. The sensor cable shall be capable of being buried directly underground or on the perimeter wall without needing to be put in a conduit.
 - 2. The system shall support the use of non-sensing, "lead-in" cable as long as the total length of the cable does not exceed 10 km.

- B. The system shall support the following configuration and calibration features:
 - 1. A Windows-based graphical user interface (GUI), accessible locally or via Windows Remote Desktop.
 - 2. Configuration and calibration settings shall be capable of being stored in a computer file for record keeping purposes and available for reuse when configuring additional or replacement processors.

2.9 Networking Capabilities

- A. Network manager tools: The system's network management software shall provide the following tools to facilitate system commissioning and troubleshooting:
 - 1. System status tool that provides a visual display of the status of the system
 - 2. System event log tool that provides a searchable log of system events.
- B. The processors shall support an Ethernet RJ-45 connector as a physical media option for communication with the integrated sensor network.
- C. Network management:
 - 1. The system's network management software shall provide a TCP/IP-based interface for communicating alarm, status, and configuration data to and from security management systems. The system supplier shall furnish complete documentation of this interface to facilitate integration with centralized control center.

2.10 Event Management

- A. The system shall provide a local PC-based operator interface with graphical alarm annunciation at the sensor unit.
- B. The system shall provide access to the following information and functionality when in a local or networked configuration:
 - a. A map based image depicting the protected site with a schematic perimeter overlay.
 - b. Hardware monitoring and control
 - c. Event detection and alarm generation (including flashing notification message, location marker, and audible alert)
 - d. Basic alarm management
 - e. Event and alarm logging with time and location stamp
 - f. Confusion matrix/probability of classification

- g. Detection zone definition and configuration
- h. Adjustment of detection parameters

C. The system shall support the following alarm management functions:

1. Maintain complete information of all alarms for 24 hours or until the alarm is cleared.
2. Alarms shall be cleared by authorized local or remote operator or automatically in 24 hours after alarm generation.
3. Until cleared, the alarm information shall be compiled in a scrollable multicolumn table.
4. The maintained information shall include
 - a. Time label alarm accrued
 - b. Time label it was acknowledged
 - c. Time label it was cleared
 - d. Event duration
 - e. Event status
 - f. Event strength
 - g. Event location
 - h. Event reason/type
 - i. Confusion matrix/probability of classification
5. Operator shall be able to
 - a. Select any of the alarms from the list
 - b. Choose a reason for the alarm from the options menu
 - c. Enter text notes regarding the cause of the alarm and the mitigation measures
 - d. Clear the alarm
6. Operator notes as well as the alarm clearing event shall be recorded in the event log.
7. All the alarm handling should also be made possible through software.
8. Alarm location Format:
 - a. The primary format of the alarm location shall be the linear position along the sensor cable.

- b. It shall be possible to express the alarm location in either meters or feet.
- c. It shall also be possible to provide alarm location formats including:
 - 1. Software-defined zones

Dt.

2. Latitude and Longitude (GPS) coordinates.

9. Event logging:

- a. The system shall maintain and display an event log, including alarms, system notifications, and user actions.
- b. The logs shall be periodically saved to the hard drive.
- c. A new set of log files shall be generated every 24 hours at midnight,

2.11 Access Control

- A. The system shall require the entry of a valid password at start-up and shutdown.
- B. The system shall divide user access into to three security levels:
 - 1 . Operator level for routine operation
 2. Supervisor/Maintenance level for advanced system monitoring, configuration, and troubleshooting
 3. Installer level for advanced configuration and troubleshooting.

PART 3 EXECUTION

3.1 Site Assessment

- A. Before installation begins, the installation contractor shall visit the R&DE (E) designated site and provide a report documenting the satisfactory operation of the system regarding the site conditions.

3.2 System Installation

- A. The installation contractor shall install the system in accordance with the manufacturer's recommended procedures as defined in the manufacturer's documentation for the system.

3.3 System Calibration

- A. The installation contractor shall calibrate the system in accordance with the manufacturer's recommended procedures as defined in the manufacturer's Product Guide.
- B. The installation contractor shall submit to the owner the calibration and configuration settings for the system.

3.4 Training

- A. The installation contractor or vendor shall train the owner's maintenance personnel in setting up the system, calibration and system maintenance procedures as given in the manufacturer's product documentation. The training duration should be at least of 7 days for 5 maintenance personnel.

3.5 Documentation

- A. The contractor shall supply the following documents in soft as well as hard copies (2 sets).
 - 1 . COC of the sensors and Main Controller.
 - 2 Installation Guide
 - 3 Operators Manual
 - 4 Technical Manual
 - 5 Configuration and Tuning Guide
 - 6 Software manual along with example codes

1. Visual Inspection

- a. All the items will be verified for no external damages by visual inspection.
- b. Individual parts will be verified for availability against list of deliverables.

2. Certificate of Compliance

Certificate of compliance would be issued by the vendor for EMI/EMC, environmental (Operating Temperature, Relative Humidity etc.) and maintainability (MTBF and MTTR) Compliance.

3. Factory Acceptance Test

R&DE (E) nominated representatives (2-3) will be visiting the OEM factory premises for conducting of Factory Acceptance Tests. Vendor has to make all suitable arrangements for the same. FAT document will be handed over to the vendor at suitable time.

4. Live Demo

Vendor has to demonstrate the full functionality of the system which is already deployed. He should make arrangement of a live demo at any such location where the system is already installed and fully functional.

5. Functional Tests

Vendor has to demonstrate the working and functionality of the system at R&DE (E) premises or any other location designated by the inspection authority as per

No.	Test parameter	Method	Pass Criteria
	Input Voltage	1 phase 230V, 50Hz AC supply will be provided from a DG Set. The terminal voltage at the Main Controller to be checked with the help of calibrated voltmeter.	1 Phase 190-250V AC, 50Hz \pm 2%
2.	power Consumption	To be checked with the help of calibrated voltmeter and ammeter when the	Less than 400W

tests defines as follows:

		complete system is in operation.	
3.	Time for Detection	Simulated intrusion in form of human being will be made at various locations (min, mid and max distance from the Main Controller end). Time for detection will be checked by stop watch	Should be less than 2secs
4.	Multiple Simultaneous Intrusion Detection	Multiple simulated intrusion in form of human being will be made at various locations (min, mid and max distance from the Main Controller end). Time for detection will be checked by stop watch along with the number of intrusions shown by the system.	Should be equal to the number of intrusions

5.	Accuracy of event detection	<p>Pedestrian approaching the cable area</p> <ul style="list-style-type: none"> • Hand-held digging in the area near the cable • Light Vehicle approaching the cable area • Heavy Vehicle approaching the cable area 	<p>Alarm with event "PEDESTRIAN" and a mark on the GUI map of the cable with a location accuracy less than 5mtrs.</p> <p>Alarm with event "DIGGING" and a mark on the GUI map of the cable with a location accuracy less than 20mtrs.</p> <p>Alarm with event "VEHICLE" and a mark on the GUI map of the cable with a location accuracy less than 10mtrs.</p> <p>Alarm with event "VEHICLE" and a mark on the GUI map of</p>
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			the cable with a location accuracy less than 50mtrs.
6.	Event Classification	<ul style="list-style-type: none"> • Pedestrian approaching the cable area • Hand-held digging in the area near the cable • Vehicle approaching the cable area • Animals crossing 	<p>Alarm with event "PEDESTRIAN" with classification probability and a mark on the GUI map of the cable.</p> <p>Alarm with event "DIGGING" with classification probability and a mark on the GUI map of the cable.</p> <p>Alarm with event "VEHICLE" with classification probability and a mark on the GUI map of the cable.</p> <p>Alarm with event "ANIMAL" with classification probability and a mark on the GUI map of</p> <ul style="list-style-type: none"> • the cable

7.	Alarm Information	<p>Time label alarm accrued</p> <ul style="list-style-type: none"> • Time label it was acknowledged <p>Time label it was cleared</p> <p>Event duration</p> <p>Event status</p> <p>Event strength</p> <ul style="list-style-type: none"> • Event location • Event reason • Confusion Matrix 	
8.	Alarm Format	<p>Linear position along the sensor cable</p> <p>It shall be possible to</p>	

		<p>express the alarm location in either meters or feet</p> <p>It shall be possible to provide alarm location formats including:</p> <p>Software-defined zones</p> <p>Latitude and Longitude (GPS) coordinates</p>	
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9.	Event Log	Alarms, system notifications, and user actions.	
10.	Access Control	Valid password at start-up and shutdown Three security levels Operator level Supervisor/Maintenance level Installer level	•
11.	Virtual Zones	Should be possible to create at least 25 zones/km Should be possible to create different sensitivity for different zones simultaneously	

Compliance for Technical Specification

No.	Technical Specification		Response of Vendor (Complied/ Not Com lied)	Remarks
	Detection Accuracy	1-10m		
2.	Maximum Coverage	1 Okm		
3.	Fiber Optic Sensor	Single Mode conforming ITU-T G.652 or ITU-T G.654 or ITU-T G.655		
4.	Fiber Count	<=6		
5.	Classification			
a.	Moving Pedestrian	1-5m		
b.	Moving Car	5-20m		
c.	Moving Truck	50-80m		
d.	Moving Heavy Tracked Vehicle	200-300m		
	Underground activities	20-100m		
	Animals	1-5m		
g.	Cable Cut Detection	Within 50m		

6.	Detection Probability	<ul style="list-style-type: none"> Intruders attempting to bypass the wall by climbing, scaling, or leaning against it shall be with a confidence factor Intruders attempting to cross above or under the buried cable by walking, running, driving, or digging shall be 95% with a 95% confidence factor 		
7.	Networking	Gigabit Ethernet		
8.	Sensor Cable Operating Temperature	-20°C to 70°C		
9.	Controller Operating	0°C to 50°C		

Compliance for Technical Specification

	Temperature			
10.	Sensor Cable Operating relative humidity	0 to 100% (condensing)		
11.	Controller Operating relative humidity	0 to 90% (condensing)		
12.	Power Consumption	<400W		
13.	Voltage Input	Single Phase 230V AC, 50Hz		
14.	Sensor Configuration	<ul style="list-style-type: none"> In loop or Straight Line above ground Buried Buried as well as above ground 		

15.	Alarm metadata output	<ul style="list-style-type: none"> • Event Co-ordinates • Location on Map • Event Type • Time Stamp • Confusion Matrix 		
16.	Monitoring Centre and Alarm Processing Unit	1 9" rack		
17.	Protocol			
18.	API	Should be made available for custom development		
19.	Virtual Zone Facility	Facility of Virtual Zones of at least 25zones/km with provision of creating different sensitivity for each zones		

List of Deliverables for Buried Fiber Optic based Intrusion Detection System

Sl.NO	Deliverable Items	Qty
1	Buried Fibre Optic based Intrusion Detection System	1Set
a	Main Controller for Intrusion detection and classification	
b	Atleast 12core Fiber Optic Sensor Cable	10 km
	Controller Software	1 Qty
d	Misc items for complete system installation like patch cords, end terminations, etc	2 Sets
	Documentation - Technical Manual (1 Hard and I Soft Copy)	2 Nos
	Documentation - User Manual (1 Hard and I Soft Copy)	2 Nos

