**Features & Benefits**

- Long range fiber-optic sensor
  - 16 Km (10 mi) for perimeter applications
  - 48 Km (30 mi) for buried pipeline protection
- Accurate location of intrusion attempts
  - 8 m (25 ft.) for perimeter applications
  - 30 m (100 ft.) for buried pipeline
- Accurate ranging of simultaneous intrusions
- Mixed perimeter applications with a single processor - fence, walls
- Sensor cable continues to operate up to the point of a cut
- No outdoor power or communications infrastructure required
- EMI and lightning immune
- Integrates with SMS and PSIM platforms
- No electronics or grounding points required in the field
- Accurate locating for directing CCTV and/or response forces
- 100% operational after a single cable cut when used in redundant-loop configuration
- Field components intrinsically safe
- Invisible and undetectable as a buried sensor in pipeline applications
- Software configurable detection zones
- Easy to install and maintain
- Economy-of-scale value

**Description**

FiberLR’s advanced fiber-optic technology provides up to 16 Km (10 mi.) of perimeter protection when installed on fences or mounted on a wall. For protection of buried pipelines against Third-Party Interferences (TPI), FiberLR provides up to 48 Km (30 mi.) of protection.

Fiber LR accurately locates intrusions even when there are multiple simultaneous intrusions and even in the presence of background environmental noise that would overwhelm the location capability of other sensors.

FiberLR’s resilient design allows detection to continue right up to the point of a cut in the sensor cable. When installed in the redundant-loop configuration FiberLR protects the full perimeter even after a cable cut.
DETECTION AND RANGING OF SIMULTANEOUS INTRUSIONS
FiberLR is designed specifically to detect multiple simultaneous events. The full length of the cable is continuously analyzed and disturbances at different locations are reported independently.

CUT IMMUNITY
When FiberLR is installed in a redundant-loop configuration and the sensor cable is cut, it continues to monitor the full perimeter from each end.

DETECTION SETTINGS
The advanced detection algorithm incorporates thresholds, spatial parameters and timing parameters. Detection settings include alarm threshold, disturbance threshold, event life persistence, and duration threshold.

FIBERLR FOR FENCES
FiberLR can be used on most types of metallic fences including chain-link, welded mesh, and expanded metal. A single pass of sensor cable provides protection for fences up to 3 m (10 ft.) in height. FiberLR may also be used on palisade-style fences depending on the specific characteristics of the fence. For fence applications FiberLR provides protection on up to 16 km (10 mi.) of sensor cable in either the linear or redundant-loop configurations. For planning purposes allow for 12.5% extra sensor cable compared to the fence length for service loops, extra coverage at brace and corner posts, and zone isolation loops.

The FiberLR sensor cable can be mounted on swinging gates to provide gate protection. In some situations the sensor cable can also be mounted on sliding gates with the aid of flexible cable carrier to support the moving cable section.
FiberLR detects and accurately locates multiple simultaneous intrusions

FIBERLR FOR PIPELINE PROTECTION
FiberLR is ideal for protecting pipelines from Third-Party Interference (TPI). A single FiberLR sensor unit can provide protection over up to 48 km (30 mi.) of sensor cable buried beside the pipeline to be protected. FiberLR detects manual or machine digging whether from intruders intent on damaging or tapping the pipeline or those accidentally digging near the pipeline’s location. The FiberLR sensor cable is intrinsically safe for explosive atmospheres and completely immune to all forms of electromagnetic energy from radio communications, radar, electrical power transmission equipment, and lightning.

For surface pipelines the sensor cable is directly attached to the pipeline and detects any attempts to drill into or dismantle the pipeline.

ALARM DISPLAY AND 3RD-PARTY INTEGRATION
Several options are available for alarm display and integration to 3rd-party systems. Customers requiring a single display dedicated to monitoring the perimeter protected by FiberLR have the option of using the alarm display built-in to the FiberLR software. Senstar’s StarNet-1000 system provides enhanced capabilities for those requiring multiple workstations and/or multiple maps and/or management of additional security equipment.

Senstar’s ultraLink system integration components are used to integrate FiberLR to 3rd-party systems. The ultraLink Network Manager Service provides an IP-based interface that is common to Senstar’s other industry-leading sensors including the OmniTrax buried RF cable sensor, XField electrostatic sensor, ultraWave microwave unit, and the FlexPS block-sensing fence sensor. Contact Senstar for a current list of integrations between the Network Manager Service and leading SMS/PSIM solutions. FiberLR can be configured to report alarm locations in both down-cable distance and GPS coordinates. FiberLR alarms and status can also be presented on relays or open-collector outputs using ultraLink I/O modules.
SENSOR UNIT
Main features:
• Provides intrusion detection for long perimeters from a central location
• Localization of intrusion and software assignment of detection zones
• Redundant bi-directional dual receiver operation provides industry leading resilience to cut or damaged cable
• Central adjustment of all sensor parameters over long distances
• Simple integration to Security Management and CCTV systems

SPECIFICATIONS
Sensor Length:
• Perimeter protection – up to 16 km (10 mi.) in mixed media - fence or wall configuration
• Pipeline protection – up to 48 km (30 mi.)

Detection zones:
• Software assignable
• Recommended maximum of 30/km for perimeter protection and 10/km for pipeline protection

Detection performance:
Perimeter application (fence or wall)
• Detection accuracy: 8 m (25 ft.)
• Detection resolution: 45 m (150 ft.); minimum separation for two disturbances to be reported separately
• Pd: 95%
• FAR: less than 1 / Km / month typical
• NAR: site dependent

Buried pipeline application
• Detection accuracy: 30 m (100 ft.)
• Detection resolution: 100 m (330 ft.); minimum separation for two disturbances to be reported separately
• Pd: 95% against Third-Party Interference (digging, tapping)
• FAR: less than 1 / Km / month typical
• NAR: site dependent

Cut cable detection:
• Operation: as specified up to the cable cut
• Accuracy of cut location: 30 m (100’)

Optical:
• Laser classification: Class IIIb, Laser wavelength: 1550 nm
• Connector type: FC / APC

Environmental (sensor unit):
• Operating temperature: +10° C to +35° C (50°F to 95°F)
• Humidity: 20% to 80% non-condensing

Energy consumption:
• Voltage, frequency: 100 - 240 VAC, 50 / 60 Hz
• Power: 325 watts maximum

Mechanical:
• Style: standard 19” rack mount
• Dimensions: processor unit 4U, controller unit 3U, splice enclosure 1U, total 8U
• Weight: 48 Kg (105 lbs.) total

User programmable parameters:
• Alarm threshold
• Duration threshold
• Disturbance life
• Event life

FIBER OPTIC SENSOR CABLE
Cable installation:
• Fence – attach cable to fence fabric with cable ties
• Wall – attach cable to wall top with cable fasteners
• Pipeline protection – direct-bury cable

Cable construction:
• Loose tube for fence and pipeline, tight buffered for wall
• Black UV-stabilized med density PE jacket

Optical fiber:
• Single mode
• 0.25 dB / Km typical @ 1550 nm, optical loss or better

Fiber count:
• 18 total in loose tube construction, 8 in tight buffered

Outside diameter:
• Loose tube construction: 11.1mm (0.44 in.), tight buffer construction: 6.3mm (0.25 in.)

Weight:
• Loose tube construction: 93 kg/km (62 lb/kft), tight buffer construction: 27 kg/km (18.3 lb/kft)

Marking:
• Sequentially meter marked

Cable mounting ties:
• UV-resistant
• Stainless steel optional

Environmental:
• Temperature: -40° C to +70° C
• Humidity: no restriction

<table>
<thead>
<tr>
<th>PART DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLR1CA18000 Fiber optic sensor/lead cable for fence applications and pipeline protection applications, 18 fibers. Per meter (3.28 ft.)</td>
</tr>
<tr>
<td>FLR1CA08000 Fiber optic sensor/lead cable for wall applications, 8 fibers. Per meter (3.28 ft.)</td>
</tr>
<tr>
<td>FLR1FG01xxz FiberLR Sensor Unit for fence and wall applications Provides up to xx.z km of detection processing (e.g., FLR1FG01015 provides 1.5 km of detection)</td>
</tr>
<tr>
<td>FLR1FG02xxz FiberLR Sensor Unit for pipeline protection applications. Provides up to xx.z km of detection processing (e.g., FLR1FG02160 provides 16 km of detection)</td>
</tr>
<tr>
<td>FLR1MA0411 End module, single</td>
</tr>
<tr>
<td>FLR1MA0412 End module, double</td>
</tr>
<tr>
<td>FLR1MA0422 Start module, double</td>
</tr>
<tr>
<td>FLR1MA0432 Start / end module, double</td>
</tr>
<tr>
<td>B0296 Combo 15 inch LCD monitor / keyboard / mouse, rack-mount, space saver requiring only 1 RU, black</td>
</tr>
<tr>
<td>FLR1MA0100 1U splice tray - rack mount</td>
</tr>
<tr>
<td>FLR1MA0200 Outdoor splice enclosure - 3 port</td>
</tr>
<tr>
<td>FLR1KT0100 Splice consumables kit</td>
</tr>
<tr>
<td>FLR1MA0300 Buried vault for buried cable splices, 100 x 75 x 45 cm</td>
</tr>
<tr>
<td>GH0916 UV-resistant cable ties, 1000</td>
</tr>
<tr>
<td>FLR1KT0200 Split conduit assembly, 60cm., with 2 hose clamps</td>
</tr>
</tbody>
</table>

Specifications are subject to change without prior notice.