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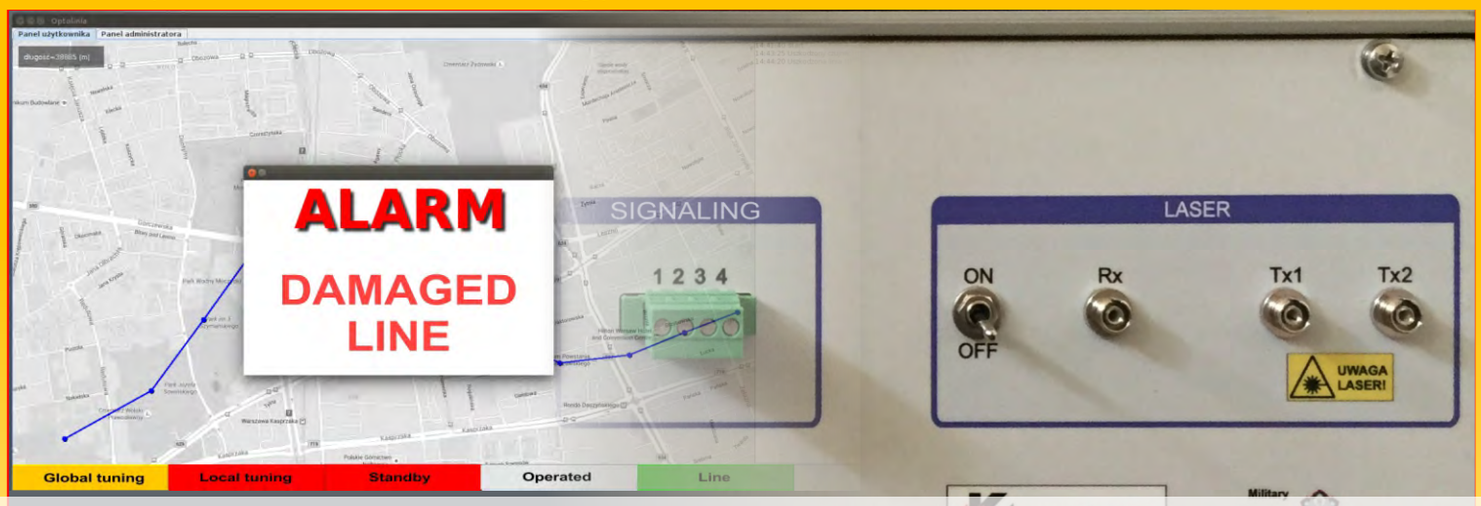

Securelight-1LP Fiber Optic Interference Sensor

Fiber Optic Interference Sensor Securelight-1LP is a system which allows detection and location of mechanical disorders influencing on the sensor part of the system.

Sensor system is built on the basis of two Mach - Zehnder interferometers using the same optical fibers but with the opposite direction of light propagation. Interference sensor is based on 3 fibers of single mode optical fiber.

There are two sections of optical fibers in the system. Section sensitive to external disturbances consist of optical fibers which are arms of the interferometer and transceiver fibers transmitting output signals from the interferometers and ensuring transmission of power to optical interferometers.

External disturbances are located and alarm is generated based on analysis of interference contrast and by appropriate signal processing.

In addition, the system through the use of appropriate modulation of the power emission, automatically adapts to environmental changes affecting its sensitive part providing automatic compensation for low-frequency background signals.

Interference sensor system is able to monitor zones up to 49 kilometers long and to locate a place of disturbances with accuracy to several meters by dividing the protected zone into smaller safety zones. There is also a possibility to configure location of detection zones.

FEATURES

- **Monitoring of integrity several kilometers long fiber optic transmission line.**
- **Generating alarm signals and locating an area where external disturbances occurred.**
- **High security of transmitted data in the supervised transmission channel.**
- **Ease of installation and troubleshooting.**
- **Perimeter security of extensive facilities.**
- **Protection of pipelines.**
- **Border Protection**

1ST Industrial Security Certificate
License MSWiA #: B-008/2006

NCAGE 1167H
TRAC 5126-2426-1823

ZSJZ

PCA Polskie Centrum Akredytacji – Certyfikacja Systemów Zarządzania AC 057 QMS

ISO 9001:2008
AQAP 2110:2009
AQAP 2210:2006
ICP #: 529/W/2014

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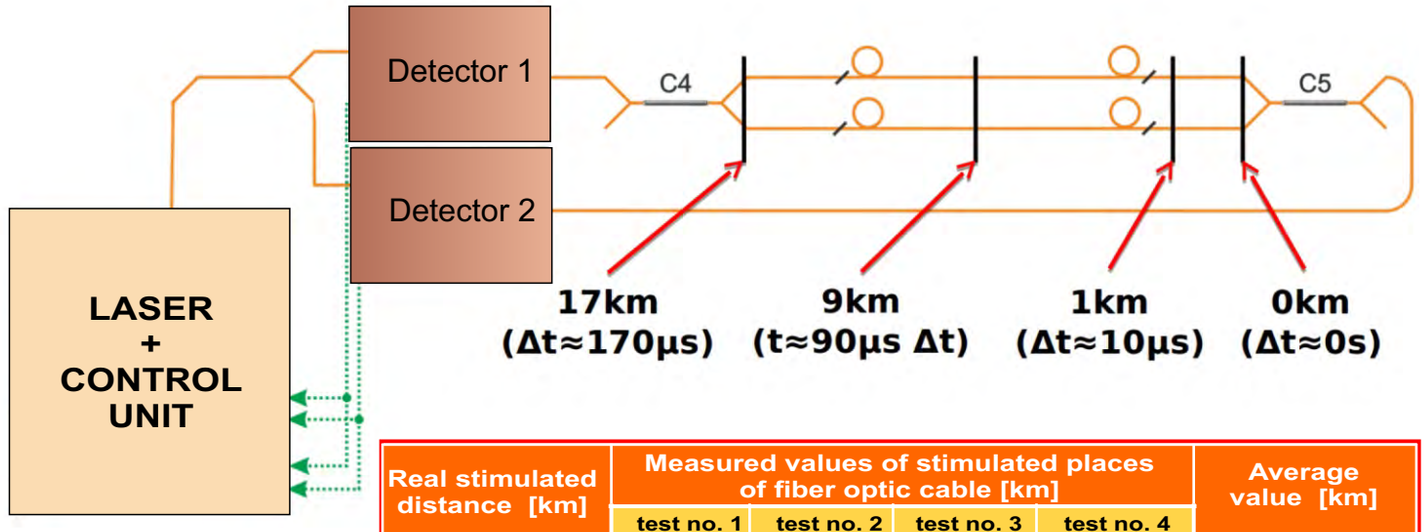


Real stimulated distance [km]	Measured values of stimulated places of fiber optic cable [km]				Average value [km]
	test no. 1	test no. 2	test no. 3	test no. 4	
17	17,5674	17,5030	17,4292	17,1396	17,4098
9	9,0884	9,0278	8,6209	7,4570	8,5485
1	1,2359	1,3797	0,4012	2,3279	1,3361
0	0,0511	0,1382	0,0511	0,0227	0,0657

Results of initial measurements of location of the disorder

Proper analysis of data consists of several phases:

- calculation of cross-correlation and its normalization
- determination of disruption location from correlation
- verification if the location is within a specified range
- verification if level of correlation exceeds defined value
- verification of correlation shape in interference location

Calculated location of disruption is subject to statistical analysis after fulfilling all conditions.

Interferometric sensor features simplicity of installation and maintenance of communication track damage due to possibility to use standard fiber optic cables. Therefore, it is possible to restore the system to function quickly in case of a failure on the line.

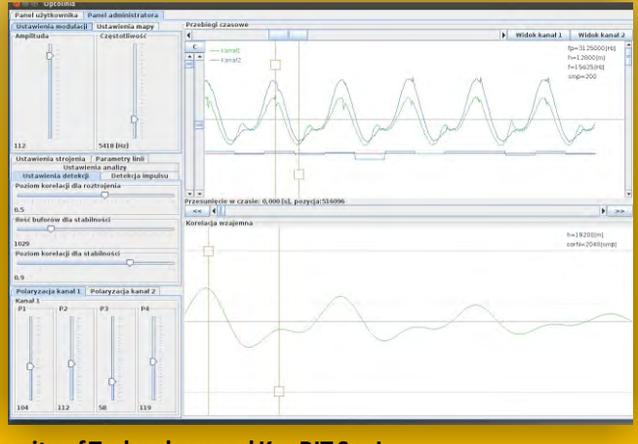
The interference sensor may be used as a module for monitoring the integrity of a telecommunication lines. It ensures high security of transferred data in the supervised transmission channel due to the usage of sensitive fibers for the transmission.

The security system based on the interference sensor can be integrated with maps visualizing location of an alarm.

The software of the system offers features, such as: visualization of system operation and configuration of its parameters.

View of the Securelight-1LP device

View of the Securelight-1LP software



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