Newsletter

July Newsletter 2023

Welcome to the July 2023 edition of the OPTOKON newsletter. For those of us in the Western hemisphere, summer is now upon us and is the time many of our readers take their annual vacation to recharge their batteries.

In this newsletter, we feature the new test and training center for the Czech Army and NATO, which is located at OPTOKON headquarters and on a similar theme, news of the recent allied army conference held in Lipník in the Czech Republic. There is also an article on the new computer platform, the PMC-15 panel mount computer.

There is an extensive range of new products released in the last quarter along with details of recent and forthcoming exhibitions where OPTOKON products will be on display and available for demonstration.

As always, we appreciate your interest and support in OPTOKON. We hope you enjoy reading this edition of our newsletter and look forward to your continuing support.

New products:

LMSW-E33 in desert color

HMA

25 years of experience you can trust

OPTOKON stands out as one of the earliest manufacturers of Expanded Beam Connectors on the world market

In this issue

Recent Exhibitions

IDEF International Defense Industry Fair
25.7.2023 - 28.7.2023, Istanbul, Turkey

Defence and Security Industry Association of the Czech Republic (DSIA)- Defence Innovation: Getting the Edge on the Market and in the Battlefield
20. 4. 2023 v hotel Don Giovanni, Prague, Czech Republic

Konference Spojovacího vojska 2022
15. 06. 2022 - 16. 06. 2022
Lipník nad Bečvou, Czech Republic

OPTOKON Forthcoming Exhibitions
Security Exhibition + Conference 2023
30.8.2023 - 1.9.2023
International Convention & Exhibition Centre,
14 Darling Drive, Sydney, Australia,
On 30.7.23, Jiří Štefl, the General Director of the OPTOKON Group, will be giving a short presentation of OPTOKON in the Thinkers Theatre at the Exhibition. This will be Session 7.

ECOC 2023
2.10.2023 - 4.10.2023, SEC, Glasgow, Scotland
OPTOKON Stand 744

FUTURE FORCES INTERNATIONAL EXHIBITION
16.10.2024 - 18.10.2024
PVA EXPO PRAHA, Beranových 667, 190 00
Prague 9 – Letňany, Czech Republic

EDEX 2023
4.12.2023 - 7.12.2023
Egypt International Exhibition Centre
El/Moshir Tantawy Axis,
Cario Governate 4440301, Egypt

Company News

New test and training center for the Czech Army and NATO in OPTOKON

A new test and training center for army solutions will be operational at OPTOKON starting from July 1, 2023. Access to the fully air-conditioned facility will be restricted to authorized individuals, and it will be connected to the central protection desk.

The center will feature an EMC chamber, enabling the verification of EMC characteristics for individual components and the entire solution. Additionally, there will be a designated room for storing and creating certified classified materials, as well as for conducting meetings.

The testing and training workplace will facilitate the verification of functional units through short-term and long-term tests. In addition to functional testing, penetration tests will be conducted to assess the solution's resilience against cyber-attacks.

An essential aspect of the center will be its training and education environment, providing both theoretical preparation and practical skills training. Thanks to a high-speed internet connection, training can be delivered in hybrid or purely online formats.

The center's advantageous location, advanced technological equipment, and convenient proximity to major airports (Prague / Brno / Vienna) make it suitable for customers from the Czech Republic and abroad. Accommodation options within 200 meters of the training center are also available.

Military Testing and Training Laboratory Competence Center

OPTOKON NATO supplier code: 1583G

Company News
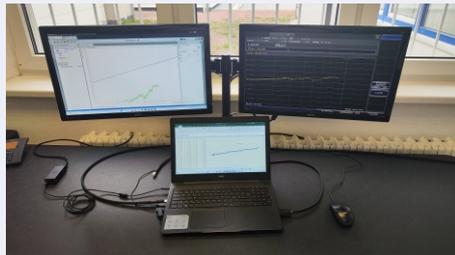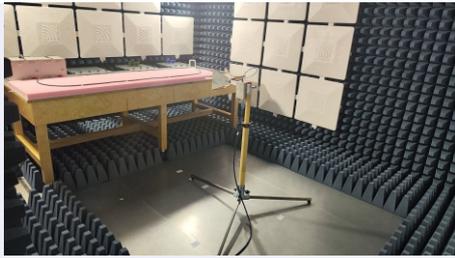
OPTOKON EMC chamber

Conference of the Allied Army in Lípnik, Czech Republic

From June 7th- 8th, 2023, the 7th Conference of the Joint Forces took place in Lipník n. Bečvou. The primary objectives of the conference were to showcase the latest technologies, foster knowledge exchange, and establish international cooperation.

The Agency of Communication and Information Systems, in cooperation with the Czech branch of the AFCEA under the auspices of the Section of Communication and Information Systems of the Ministry of Defense, opened the two-day meeting of members of the Army of the Czech Republic with representatives of defense industry companies. On the second day of the conference, representatives of the academic sphere and selected students were also invited to participate.

The conference commenced with opening remarks and welcoming speeches by General Petr Šnajdárek and Ing. Thomas Muller, the Director of the ICT Division at OPTOKON and President of the ČP AFCEA. This was followed by lectures, practical demonstrations, and discussions.

OPTOKON, as a partner of the event, presented its new solution: the KIM1 communication and information module for company task grouping. Additionally, a live demonstration of the FOTAS system, which utilizes an optical cable for perimeter protection, was showcased. As part of our partnership with Fidelis Cybersecurity, we also presented comprehensive protection against cyber-attacks for OPTOKON military products and solutions.

Company News

LEMO assembly line certification
George Štefl presents a brief article on the LEMO assembly line certification for staff at OPTOKON.

Assembly line worker certification is specialized training designed to help staff increase their knowledge and proficiency in their assembly line positions. This certification is obtained directly through LEMO. The main goal of the certification is to ensure that assembly line staff have the skills necessary to work efficiently and safely on the production line. By obtaining this certification, an OPTOKON assembly line worker demonstrates their competency and commitment to their job, which can help them stand out from other applicants when looking for employment or promotion.

Additionally, having this certification can provide staff with access to higher-paying jobs or more advanced positions within the company since they have already demonstrated a certain level of proficiency in the field.

To ensure that assembly line workers are properly certified, it is important to regularly review and update the qualifications required for each position. Additionally, also provide training opportunities to ensure that all employees have the necessary skills to perform their job duties safely and efficiently.

In addition to assembly line worker certification, there is also maintenance technician certification, a certification program that provides individuals with the knowledge and skills to become proficient in the maintenance of industrial equipment. The program covers topics such as safety, electrical systems, mechanical systems, and troubleshooting. The certification is designed for those who are interested in becoming a maintenance technician or working in a related field.

FOTAS - FIBER OPTIC-BASED SECURITY SYSTEM
Optical fiber-based distributed sensor

OPTOKON FOTAS is technology based on analyzing signals in a fiber optic cable, which changes the characteristics based on the vibration in its area. One segment of this technology is capable of detecting noise and vibration at distances of up to 100 km.

Large perimeter protection
- e.g., state borders, airport areas, military bases, drinking water sources, railroads, highways, pipelines, etc.

Detection of failure and sabotage on long lines:
- gas and oil pipelines, EHV lines, railroads, highways.

Monitoring the movement of vehicles along the sensor cable
- e.g., determining the position of a train in real-time.

Unusual situation detection
- events such as an emergency brake used on a train, an accident on a highway, or detection of traffic jams.

Main features – Detect-Prevent-Respond:
- Control of large areas
- Electronic or power failure in the field
- Manual adjustment of the settings for each detection zone
- All major components are duplicated with the implementation of continuous self-testing
- Detects any activity in the protected area
- The system is insensitive to electromagnetic fields

Company News

ADVANTAGES:
- Easy to install: lay the cable in a trench or along a fence
- Does not need any special cable as the sensing element is a conventional single-mode fiber optic cable – however, better results might be achieved using a special type of cable, designed solely for monitoring purposes
- Do not require cutting the cable, the installation of joints, or welding of fibers in each detection zone
- Option to use an underground cable sensor in any type of soil
- Does not require power wiring along the perimeter of the protected area

FOTAS is an acoustic sensor based on fiber optic infrastructure that can be easily distributed in various terrains. FOTAS keeps fences and borders secure and sends early threat warnings. Laser beams emitted by the laser source travel the entire system providing information while flowing through the fiber optic cable. Laser beams coming back to FOTAS are analyzed by computer software. Noises and unrelated data are eliminated through the software. Finally, FOTAS AI classifies the alarms.

Actions that create vibration can be watched live on the system. Noisy areas can be isolated and deactivated at the request of the user. All alarms are received and reported over the web interface, which can be stored and exported.

FOTAS is a proven early warning security system that can detect third-party intervention, illegal crossing attempts and unauthorized excavations along a line spanning several to thousands of kilometers.

The FOTAS fiber monitoring system includes several devices, single or dual channels, and is designed for various cable lengths:

S-10
Single Channel / 10 km
Our go to product for a cost-effective solution in small scale security and monitoring projects. Fast, reliable and easy to install.

S-50
Single Channel / 50 km
The product for the long pipelines, big facilities and energy cables which need protection and monitoring spanning thousands of kilometers.

D-5
Dual Channel / 5 km
If you are in need of a small, cut resilient and cost-effective solution for your small scale project; we recommend you to check out this double channel solution for security and monitoring.

D-30
Dual Channel / 30 km
A solution for middle scale projects to provide monitoring and security; including industrial and military facilities, cities and data-centers. The dual channel is what gives this product the cut resiliency.

D-50
Dual Channel / 50 km
D-50 providing the solution you need for perimeter security and monitoring that spans thousands of kilometers which also has cut resiliency
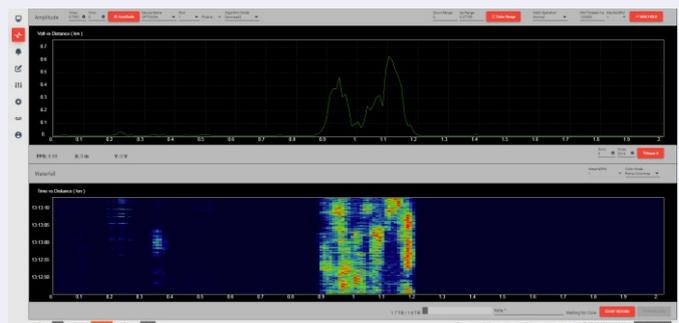
Company News

OUR GLOBAL EXPERIENCE IN FIBER ACOUSTIC SENSING

Finished Projects:
- Angola
- Brazil
- Czech
- India
- Israel
- Kenya
- Mexico
- Romania
- Türkiye

Projects in Progress:
- Australia
- Gabon
- Italy
- Nigeria
- South Africa
- Tunisia

Projects in Plan:
- Kingdom of Saudi Arabia
- Malaysia
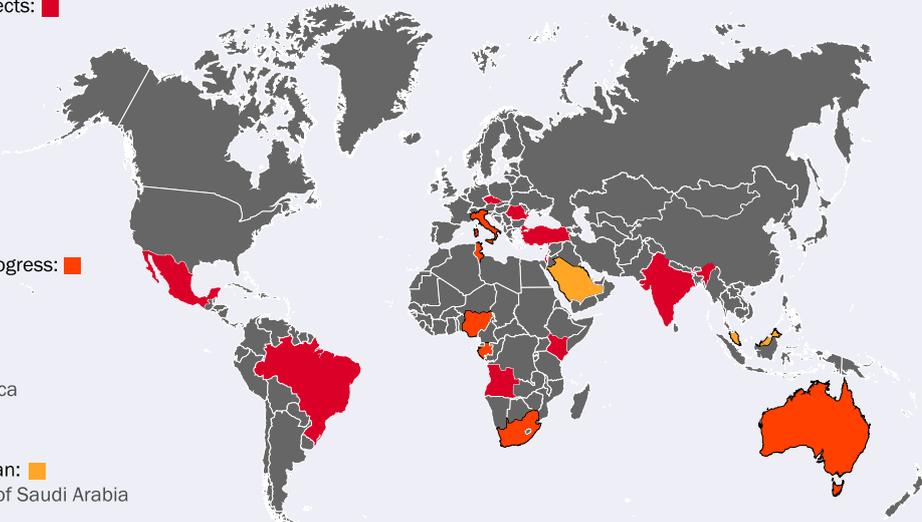
OPTTA:

The device operates on the principle of a distributed fiber sensor and can detect violations and signals caused by mechanical and acoustic affecting the fiber optic cable.

All these signals are transmitted to the control center where they are evaluated for whether they are harmless due to meteorological phenomena, such as wind, rain, or natural interventions caused by animals or if they are a direct disturbance of the monitored object or perimeter.

A powerful computer platform is required for these and similar applications as large data processing and evaluation, image recognition and various types of signals are involved.

For field use, mobile devices also need to be resistant to various climatic and mechanical influences.

The OPTOKON OPTTA-PP62X high-performance computer platform is designed for processing large amounts of data:

The OPTTA-PP62X is a fully ruggedized mission computer for state of the art combat vehicles and field communication nodes. It features a state of the art Intel® Xeon® Scalable Processor CPU and NVIDIA® GPU high-performance parallel processing, HD full-motion video capture and encoding, and complete sensor integration and data fusion. The OPTTA-PP62X provides unparalleled capability in a SWaP optimized system.

The OPTTA-PP62X integrates maximum computing and networking throughput and enables deep learning and artificial intelligence capability through the use of neural networks. OPTOKON's advanced thermal management engineering ensures survival in extreme operating conditions.

OPTTA-PP62X

Ruggedized AI server for FOTAS
- 2x Intel® Xeon® Silver 4316 @ 2.30 GHz
- Up to 4 TB DDR4 RAM, Up to 8 removable SSD
- 2x 1G Ethernet routed ports
- nVidia graphics card RTX™ A4000

FOTAS Interogator

AICP-X64

Artificial Intelligence Computing Platform for FOTAS
- Intel® Xeon® Processor
- 64 GB ECC RDIMM
- nVidia RTX™ 4000

The OPTTA-PP62X is a fully ruggedized system, built to exceed the harshest military specifications including shock and vibration, dust and water ingress, and EMI/EMC.

All these parameters predetermine the OPTTA device for solving AI – artificial intelligence tasks, deployment in C4ISR / EB systems - battlefield digitization.

The digitization of the battlefield is the current trend in the development of advanced armies, especially those of NATO member states. The digitization of the battlefield interconnects weapons that are implemented based on computer-controlled systems.

Company News

OPTTA Cybersecurity

The basic pillar of the OPTTA platform is a secure functionality of the environment for running applications and services of defence and security systems.

Functionality is based on robust and high-performance hardware, while security is based on a well-designed architecture supported by reliable software that guarantees the cyber resilience of the resulting solution. Here, both prevention itself and active detection and rapid and automatic response to cyber security incidents are important.

OPTOKON, a.s. is a long-term partner of Fidelis Cybersecurity. The common solution is a system in which all traffic of virtualized operating systems of the OPTTA platform is described in metadata, which is subsequently analyzed and evaluated in the operations centers.

Security audits can then be performed on the OPTTA platform before and after each operation, thereby minimizing future incidents. Both technically, technologically and process-wise. In addition, the system can be monitored during the operation itself. In fact, it can be expected that the systems of security forces will be much more likely to be attacked by targeted attacks through cyberspace than through conventional attacks.

However, cyber resilience is not a task of one development cycle, but a system of continuous improvement, refinement and testing. This makes long-term cooperation with key technology companies all the more crucial, which not only increases the technological lead over the competition, but also increases the competence of OPTOKON, a.s. representatives and thus the added value of the delivered solution.

Penetration tests are also becoming a standard part of development, primarily to identify and subsequently remove security weaknesses, but also to use their output as input for further development and optimization, e.g. monitoring potential points of attack. The system needs to be prepared not only for possible attacks from the outside, but also for attacks from the inside.

Functionality, reliability and operational and cyber security are now inseparable elements of the LMCP® platform.

OPTOKON LMCP-28H-NG®

The Fidelis specialist is presenting Cybersecurity software in OPTOKON's LMCP®

Company News

LMCP® platform for reliable but secure operation of applications and services
## OPTOKON Supervisor System OSS
OPTOKON Secure System OSC

OPTOKON, a.s. is a long-standing supplier of ruggedized server platforms Land Mobile Computing Platform (LMCP-7®, LMCP-28®), as well as ruggedized network elements and other products for use in military field conditions (field phones, optical-metal converters, etc.). In addition to the requirements for functionality and high reliability, more and more attention is being paid to security, early detection and subsequent rapid response to operational or cyber incidents in our own development and implemented projects.

The basic element of a secure environment is a clearly defined architecture. This includes both the entire software superstructure (virtual environment, operating systems, etc.) and individual early detection and response applications developed in cooperation with OPTOKON, a.s. partners.

Similarly to the selection of hardware elements, the software components used are subject to an initial analysis from the perspective of operational and cyber security in order to exclude or substantially eliminate possible future incidents. The operational states of the operating systems and the applications running on them are continuously monitored and the resulting metadata describing these states can then be archived for future state analysis, either for runtime optimization or by traversing potentially dangerous states. Furthermore, they can be used, for example, as a source for automated algorithms generating security audits.
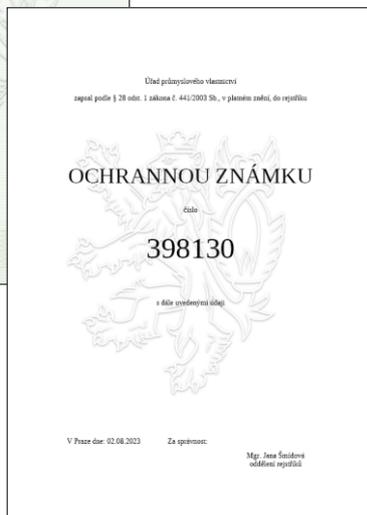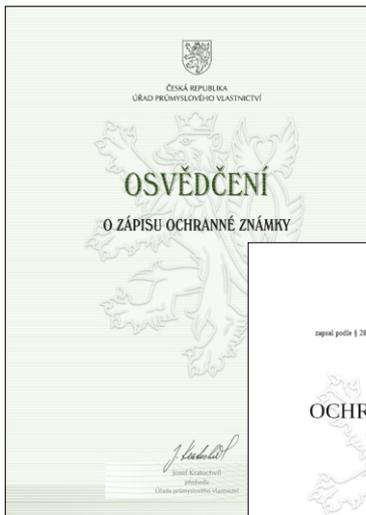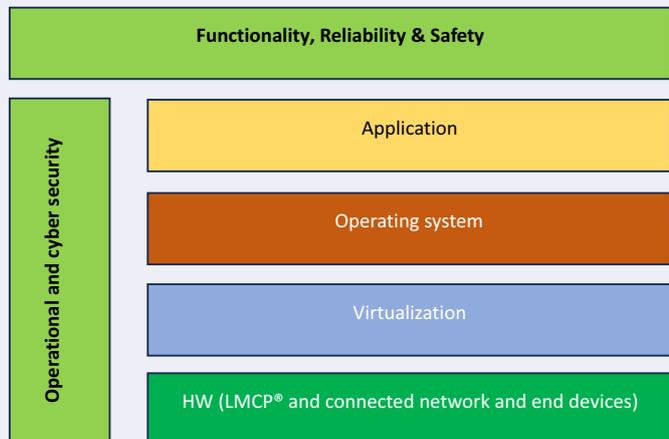
Trademark registration for LMCP®

Company News

OPTOKON expands the production of connectors for demanding applications

OPTOKON has been offering special HMA optical connectors based on Expanded Beam Technology for more than 25 years. The use of this technology means our HMA connectors offer superior transmission characteristics during many pairing cycles. The excellent optical performance remains unchanged even under mechanical stress, environmental influences and harsh ambient conditions. As there is no direct contact between the contact ends, the Expanded Beam joints are relatively insensitive to contamination. Under normal conditions, there is almost no need for cleaning every 5000 pairing cycles. This ensures reliable and undamaged transmission.

The OPTOKON HMA Expanded Beam connector series in accordance with the MIL-DTL-83526 specification is designed for harsh environment applications such as military tactical communications, avionics, offshore systems, outside broadcasts, mining, heavy industry connections, and petrochemical applications and plants. The innovative design ensures the ability for deployment in the toughest environments where high performance and complete reliability are critical. By benefiting from expanded beam technology, the precision optical alignment system provides immunity against water (IP 68), mud, dust oil and other contaminants.
The HMA Hermaphroditic coupling eliminates the need for adaptors and male and female mating halves. Hermaphroditic housings allow for rapid deployment, creating low loss Single mode and Multimode daisy chained links in a variety of platforms ranging from simplex fiber to eight fibers - and with a new design of up to 16 fibers.

HMA - the most popular connector used in military applications worldwide

The OPTOKON HMA is ideally suited for environmental extremities where low maintenance and quick repairs are required. The HMA connectors are available in three basic types:

HMA-M
mini HMA connector

HMA-J
medium-size HMA connector

HMA-S
large-size HMA connector

- Expanded Beam Technology
- Water immersion Up to 20 m
- 25 000 Mating cycles
- Temperature range –60 °C to +85 °C

Company News

While the HMA-M and HMA-J are designed for termination for up to 4 fibers, Multimode or Single mode, the HMA-S can accept up to 8 optical fibers for high-speed signals and additionally copper wires for control data transmission and powering remote optoelectronic devices.

There are two basic modifications of the HMA connectors: the HMA plug type – designed for terminations on tactical cable and the HMA bulkhead, designed for installation into panels, vehicles, and communication systems. For example, tactical cables with expanded beam HMA plug connectors enable a rapid connection between headquarters and subaltern points in field conditions. The flexible 2 – 6 fiber 6 mm outer diameter optical cables have a high crush and strain relief resistance and a rugged field repairable connector design.

HMA-S3x special hybrid connector, HMA-S style – 2x FO + 3x Cu contacts:

HMA-S3S   2x FO + 3x Cu contact (socket)
HMA-S3P   2x FO + 3x Cu contact (pin)

The non-contact design of the optical surfaces in expanded beam connectors provides an insertion loss of less than 0.7 dB for multimode and less than 1.0 dB for single mode. However, the optical performance of expanded beam connectors is consistent throughout the product life and the likelihood of product failure at a critical point is greatly reduced.

HMA-JF connector   ferrule HMA connector

The HMA-JF connector has been developed for applications where the lowest insertion loss is required. The OPTOKON HMA-JF connector complements the existing and wide range of harsh environment products and uses 1.25 mm ferrules, already industry proven in both single mode and multimode applications. The HMA-JF ideally

suits long-distance applications where excellent transmission parameters are desired. The unique design of the HMA-JF allows users to ensure the high performance of Small Form Factor optical connectors in field conditions. The coupling sleeves are removable by using a special tool for easy cleaning and ferrule end face inspection.

Rapid deployment and 'daisy chaining' is achieved with hermaphroditic designs, eliminating the need for adaptors or male and female mating halves. Hermaphroditic interconnection; facilitates the expansion of cable distances by inserting standard cable harnesses. The HMA-JF is IP68 rated and fully sealed.

Company News

HMD3-17 modular connector, MIL-DTL-D38999 standard
FIBER OPTIC EXPANDED BEAM TERMINI

The OPTOKON D38999 Series III derived Expanded Beam fiber optic connectors are designed for use in the most demanding civil and military electronic equipment interface applications. The connector features the generic MIL-DTL-38999 Series III tri-start thread and a one-turn self-locking anti-vibration coupling mechanism making it ideal for use in vehicles, aircraft, and naval environments. Plug and receptacle connectors are available with straight or 90˚ back-shell options and a choice of shell materials including Aluminum alloy (Zinc Cobalt, Olive drab), Aluminum alloy (electroless Nickel plated), Nickel Aluminum Bronze (shot blast, non-reflective) and Stainless Steel (passivated). Receptacle connectors are available with jam-nut or square-flange mounting and strain relief for zip cords or tactical cables.

The terminated ferrules are simply terminated with an Expanded Beam socket and removably fixed in the body of the connector.

OPTOKON D38999 Series III Expanded Beam connectors offer high performance, flexibility, and cost-effectiveness.

- Size 17 Shell: 8 or 16 Optical or Cooper Channels
- Single mode or Multimode fiber optic expanded beam termini
- According to ARINC845 expanded beam specification
- Low insertion loss / high return loss
- Aluminum, nickel aluminum bronze or stainless steel shell options
- Copper / optical hybrids
- IP67

Technical performance for expanded beam connectors

Fiber Optic	Expanded Beam Performance		Physical Contact
Contact Type	Expanded Beam		PC / APC
Insertion loss	<1.0 dB (SM) / <0.7 dB (MM)		≤ 0.5 dB
Return loss	≥ 35 (SM)		> 45 dB (SM) / > 35 dB (MM)
Mating cycles	25,000		1,000
Cleaning	Every 5,000 mating cycles		Before each mating cycle
Temperature range*	−60 °C to +85 °C		−25 °C to +75 °C
Fiber types	Multimode 50/125 µm Single mode 9/125 µm		Multimode 50/125 µm Single mode 9/125 µm
Water immersion	Up to 20 m		Up to 5 m

*) Conditioned by cable type

Fist worldwide supplier of HMA tester to military

OPTOKON HMA & Hybrid Tester

OFT-920 Ruggedized Optical Test Set

- Expanded Beam and ferrule technology harsh environmental connectors
- Ruggedized aluminium case
- Multimode (MM) and/or single mode (SM) applications
- Simultaneous testing of all 2/4 fibers
- Internal memory
- Displayed units: dBm, dB
- High dynamic range
- Various light sources combinations
- Built-in charger, battery status indicator
- Easy to use with menu navigation

Download datasheet

- Connectors and cables for extreme temperatures ranging from -60°C to +85°C
- Fiber optic and hybrid cables
- Tactical military cables
- Variety cable drum

OPTOKON CABLE DRUMS

Download datasheet

BBD-500NR

RBD-200

RBD-BF
Backpack cable drum with removable cable reel

New Products

HC-HMA-S hybrid cable
2x FO + 3x Cu wires

The OPTOKON HC-HMA-S hybrid cable is based on Highly durable flexible cable terminated with HMA-S hybrid fiber optic Expanded Beam and copper wires connectors. It is designed for applications where there is a requirement data communication by fiber optic and at the same time is needed power supply for connected devices. Suitable for military tactical systems, FTTA applications, CCTV systems or for connections of movable devices.

The hybrid cable includes two optical fibers suite able for high volume data transmission, high definition video signals and other high speed communication systems. Three copper wires of AWG 16 size might be used for power supplying of remote site, connection of control serial interface etc. Flexible cable design allows connection of moving devices like robots, while maintaining a reliable connection.

The datasheet can be downloaded here

LMSW-E33
Ruggedized 1/10 Gigabit Ethernet Layer 2/3 Managed PoE Switch

2x 1/10G WAN, FO HMA or RJ-45
8 or 24x LAN 10/100/1000Base-T, PoE

The OPTOKON® LMSW-E33 ruggedized switch based on Cisco® Embedded Service Switch (ESS) 3300 extends switching capabilities to mobile and embedded networks that operate in extreme environments. The flexible, compact form factor of the switch, powered by Cisco IOS® Software, provides highly secure data, voice, and video communications to stationary and mobile network nodes, making it ideal for use in harsh environmental conditions. 10G fiber optic ports are terminated with HMA "Expanded Beam" connectors, which allows interconnection of the nodes of tactical network by the help of cables with optical fibers. The used "Expanded Beam" technology preservers all advantages of signals transmission through the optical lines in field harsh environmental conditions.

The switch supports a variety of management functions, including Web UI, MIB, SmartPort, SNMP, syslog, DHCP server, SPAN session The switch is able to fit all the common 24 V DC power systems. The switch operates in wide operating temperature range -40 to +70°C. The switch can operate as standalone device or in addition the 19" brackets allow switch installation into 19" rack. Two switches can be connected on the side and mounted in a 19 "rack.

For more detailed information contact our sales department SALES@OPTOKON.COM