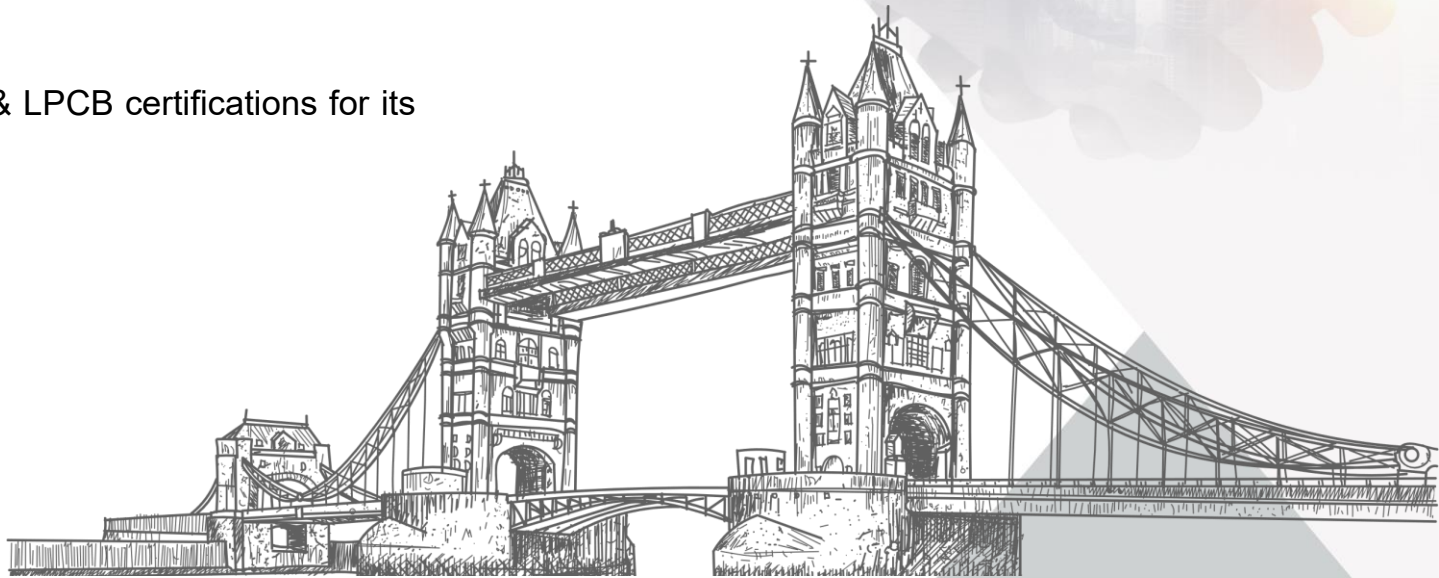




Crafting Innovation

WHO ARE WE ?

- ▶ **Headquarters in London, UK.**
- ▶ Began with a humble beginning in 1998.
- ▶ The main markets serviced are Europe, the Middle East, Africa and Asia.
- ▶ Our dedicated quality assurance team operate a quality management system certified by ISO.
- ▶ NORDEN has UL, CE, FCC, ROHS, Intertek (ETL), CPR & LPCB certifications for its different products.
- ▶ Winner of the Network Middle East Award in 2016 & 2017.



NORDEN GLOBAL FOOTPRINTS



PRODUCT RANGE

- BMS Cable
- Industrial Cable
- Fire Resistant Cable
- Data Centre Solution
- Fibre System

- Copper System
- Coaxial Cables
- MPO/MTP Solutions
- Instrumentation & Audio Cables

- Surveillance Systems
- Public Address Systems

- Access Control Systems
- Exit Sign Lights
- UPS Systems



The background of the slide is a dark, monochromatic photograph of a barbed wire fence. The fence is composed of several strands of twisted metal wire, with sharp barbs at regular intervals. The fence runs diagonally across the frame from the bottom left towards the top right. In the background, behind the fence, there are silhouettes of people, possibly soldiers or security personnel, standing in a field. The overall atmosphere is somber and industrial.

NORDEN'S

DEFENCE SURVEILLANCE SOLUTION

DEFENCE SECURITY OVERVIEW

A defence surveillance system is critical for national security, designed to detect, identify, track, and respond to potential threats across national boundaries. By integrating advanced technologies such as high-resolution cameras, thermal imaging, ANPR, and 360-degree radar, this solution aims to secure defence areas effectively, ensuring continuous protection in challenging environments.

OUR UNIQUENESS



Wide Product Range

Offers a comprehensive range of cameras, analytics, and software



Cybersecurity Certified

Our products meet high cybersecurity standards, ensuring surveillance data is secured



NDAA Compliant

We comply with NDAA, ensuring secure products



Intelligent Integration Capabilities

Seamlessly integrate with other systems and technologies



Proven Track Record

History of delivering reliable and effective surveillance solutions, backed by satisfied customers

DEFENCE SECURITY: A NATIONAL PRIORITY



National Security: Preventing illegal immigration, smuggling, and trafficking.



Economic Stability: Safeguarding economic interests by preventing unauthorized trade and smuggling.



International Relations: Upholding international laws and agreements.

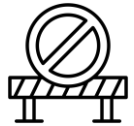


Public Safety: Ensuring the safety and security of citizens.

CHALLENGES FACED



Unauthorized Access



Illegal Crossings



Safety Risks



Rapid Response

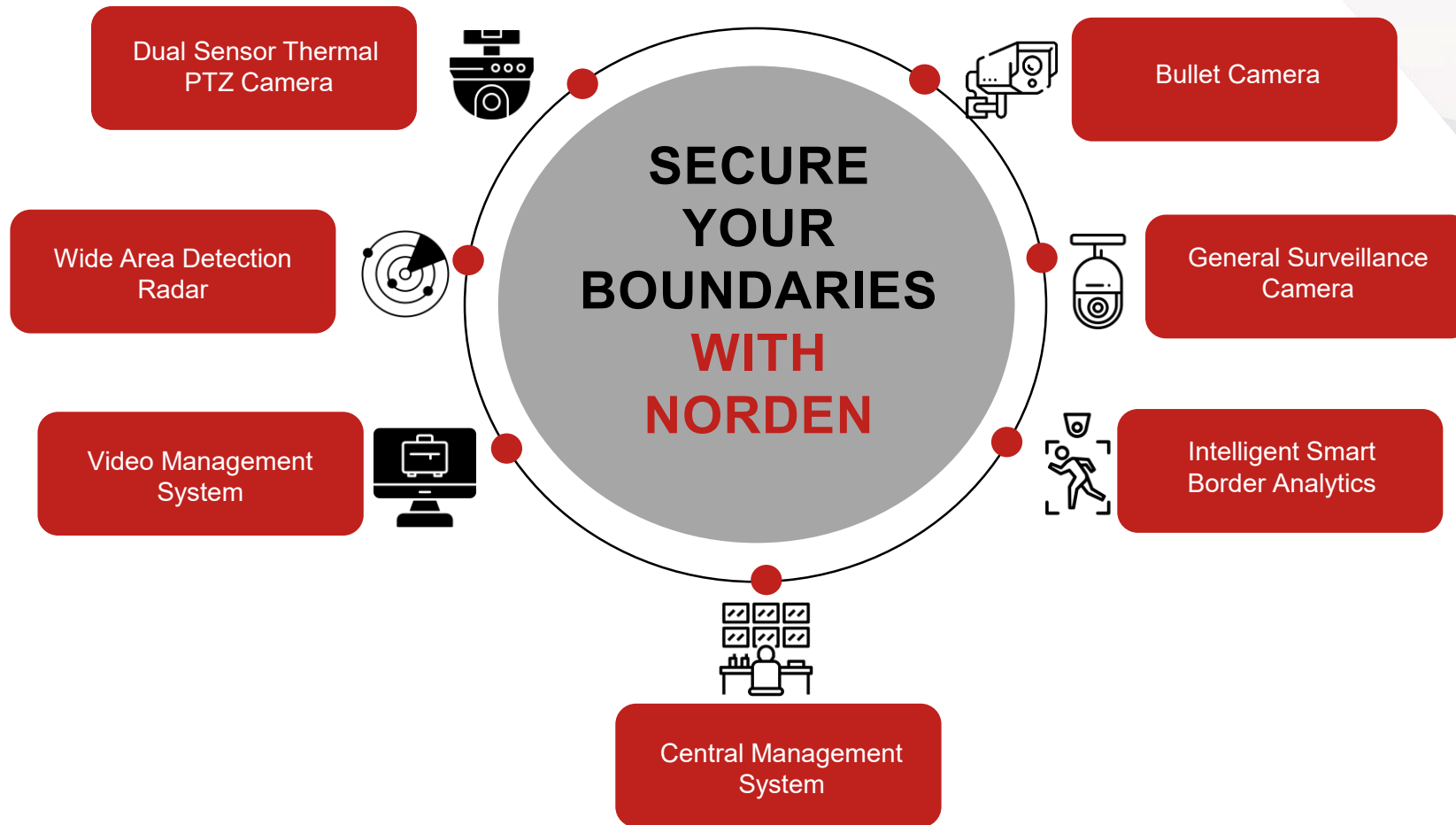


Situational Awareness



Isolated Areas

MAJOR SOLUTIONS FROM NORDEN FOR DEFENCE SURVEILLANCE CHALLENGES



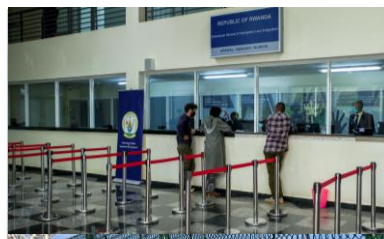
AREAS WHERE SURVEILLANCE SOLUTION CAN BE APPLIED



Checkpoints



Critical Infrastructure



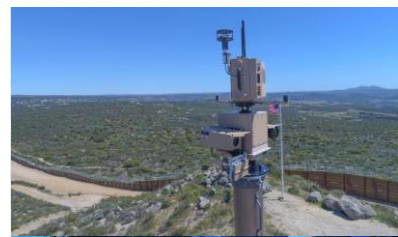
Indoor Office



Vehicle Surveillance



Border Gates & Barriers



Surveillance Towers



Border Patrol

LEVERAGING ADVANCED CAMERA TECHNOLOGIES

Real-time Monitoring

Cameras provide continuous surveillance, enabling immediate detection and response to security threats.

Remote Access

Remote access capabilities allow for centralized monitoring and management of surveillance systems.

High-Resolution Imaging

Advanced cameras offer high-resolution images for clear identification and analysis of individuals and objects.

Wide-Area Coverage

Strategic camera placement ensures comprehensive coverage of critical border areas.

CHECKPOINTS

Vehicle and Personnel Access Control

ANPR Cameras: Identifies and verifies military and authorized vehicles entering secure zones.

Entry Point Monitoring

Dome Cameras: Provides detailed visual coverage at base entry/exit gates.

Identity Verification

Dual Sensor Bullet Cameras: Captures high-definition images of personnel for authentication.

Automated Threat Detection

Integrates with base security systems to flag unauthorized entries or suspicious behavior.



AUTOMATIC NUMBER PLATE RECOGNITION

CHALLENGES

Vehicle Identification: Tracking unauthorized vehicles at the border.

Traffic Control: High volume traffic demands efficient monitoring.

Quick Detection: Need to quickly identify suspicious vehicles.

Controlled Access: Securing restricted areas effectively.

Difficulty in Enforcing Traffic Regulations: Challenges in Identifying offenders and vehicles involved in traffic violations

NORDEN SOLUTION

Automated Plate Reading: Identifies unauthorized vehicles instantly

Data Logging: Tracks vehicle entries and exits for analysis.

Access Management: Ensures only authorized vehicles entry.

Real-time Alerts: Implement real-time alerts for unauthorized or flagged vehicles to enable immediate action.



CRITICAL INFRASTRUCTURE



Perimeter Protection and Intrusion Alerts

Perimeter Surveillance Radar: Detects movement in restricted areas around command centers and radar stations.

Low-Visibility Threat Detection

Dual Sensor Thermal PTZ Cameras: Monitors in fog, rain, or at night to detect potential threats.

Critical Equipment Monitoring

Secures assets like radar arrays, communication systems, and power supplies.

Rapid Threat Response

Provides real-time alerts and tracking for any detected anomalies



PERIMETER SURVEILLANCE RADAR

CHALLENGES

Wide-Area Monitoring: Essential for extensive land borders.

Movement Tracking: Auto-tracking of moving threats across large zones.

Coverage Over Uneven Terrain:: Detection consistency can be affected by hills, forests, and rugged landscapes, creating blind spots.

Real-Time Alerts: Needed for immediate response to detected threats.

NORDEN SOLUTION

600m Range Coverage: Detects threats from long distances.

Terrain-Adaptive Calibration: Adaptable to various terrains, optimizing performance and minimizing blind spots.

Smart Target Classification: intelligent analytics to distinguish between humans, vehicles, and animals,

Quick Alerts: Real-time notifications for immediate action.



SURVEILLANCE TOWERS

Long-Range Perimeter Monitoring

Perimeter Surveillance Radar — Detects distant or low-visibility intrusions around airstrips or docks.

Night and All-Weather Surveillance

Dual Sensor Thermal PTZ Cameras — Tracks movements even in low-visibility conditions.

Monitoring Airstrip or Dock Activities

Provides continuous oversight of aircraft or naval vessel operations.

Automated Threat Tracking

Automatically follows potential threats, enhancing situational awareness.



BORDER GATES & BARRIERS

Vehicle and Cargo Inspection

ANPR Cameras: Screens vehicles for identification and clearance at base gates.

Thermal Scanning for Covert Threats

Dual Sensor Thermal PTZ Cameras: Detects hidden personnel or objects in vehicles.

Perimeter Breach Detection

Alerts security teams to unauthorized access attempts.

Monitoring Restricted Zones

Ensures no unauthorized personnel or vehicles enter sensitive areas



EXTENDED THERMAL DETECTION SYSTEM



CHALLENGES

Low-Light Surveillance: Monitoring in dark or foggy conditions.

Long-Range Detection: Identifying threats at a distance.

Signal Obstruction: Need for accurate movement tracking

Target Differentiation: Distinguishing between vehicles, and personnel.

High-Risk Area Coverage: Ensuring effective surveillance of sensitive zones

NORDEN SOLUTION

Wide Range Coverage: Detects threats from long distances.

Multi-Target Detection: Differentiates between vehicles, and personnel, providing critical insights.

Quick Alerts: Real-time notifications for immediate action.

Heat Detection: Identify individuals or objects by their heat signature, regardless of darkness or adverse weather conditions



INDOOR OFFICE

Access Control and Monitoring

Dome Cameras: Covers entryways to operations rooms, preventing unauthorized access.

Activity Logging and Evidence Collection

Ensures all movements and interactions within secure offices are recorded.

Incident Response Coordination

Supports real-time communication with patrols and external units.



BORDER PATROL

Real-Time Officer Monitoring

Body-Worn Cameras: Provides live video feeds from patrol officers to the command center.

Incident Documentation and Evidence

Captures interactions with potential intruders, ensuring accountability and evidence collection.

Enhanced Situational Awareness

Enables command centers to see what patrols see, aiding in decision-making and rapid response.

Night and Low-Light Patrol Support

Records clear footage even in low-visibility conditions, crucial for nighttime patrols.



VEHICLE SURVEILLANCE

360-Degree Mobile Surveillance

Vehicle PTZ Cameras: pan-tilt-zoom coverage for large area monitoring around patrol vehicles.

Threat Detection and Tracking

Detects and tracks threats or unauthorized personnel near sensitive areas.

Enhanced Night and Low-Light Operation

Equipped with infrared (IR) or thermal capabilities to ensure clear visibility in low-light conditions.

Real-Time Command Center Integration

Transmits live feeds to the command center for coordinated response.



USE CASES

Military Bases: Use ANPR cameras, wide-area detection radars, and dual-sensor PTZ cameras for monitoring perimeters, identifying vehicles, and maintaining security.

Naval Vessels: Employ wide-area detection radars and dual-sensor PTZ cameras for surveillance and monitoring both within the vessel and in surrounding waters.

Airports and Hangars: Track vehicles and monitor runways using ANPR cameras, wide-area detection radars, and dual-sensor PTZ cameras.

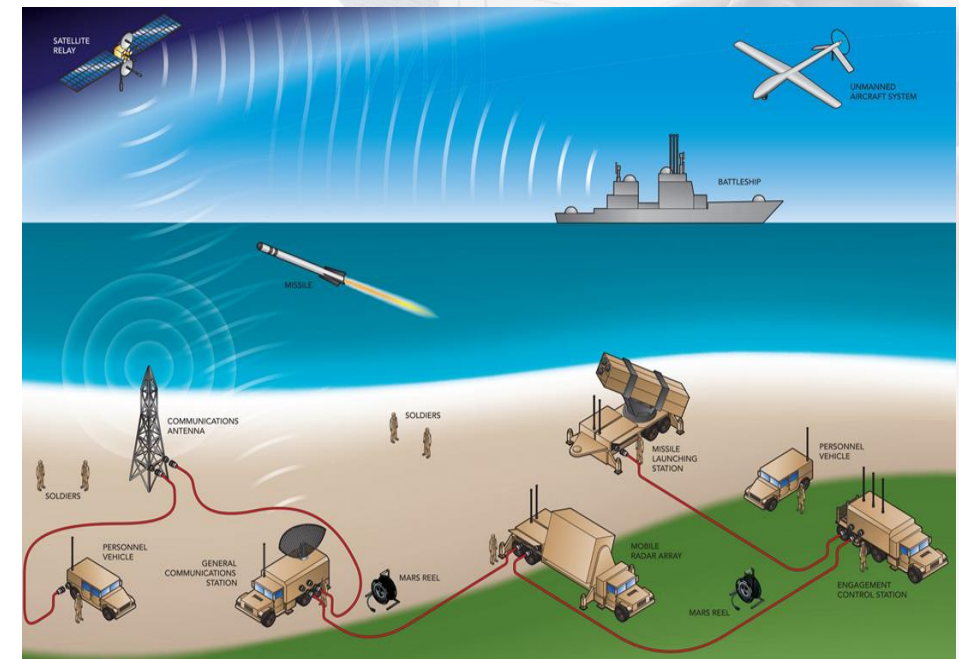
Command Centres: Function as central hubs for coordination and monitoring, using advanced surveillance systems to oversee operations.

Field Operations: Maintain situational awareness with wide-area detection radars and dual-sensor PTZ cameras.



ROLE OF DATA CABLE IN DEFENCE OPERATION

- **Real-Time Communication:** Facilitates real-time communication between command centres, field units, naval ships, aircraft, and remote bases.
- **Critical Communication:** Ensures uninterrupted data exchange through high-speed data transfer for voice, video, and mission-critical updates for decision-making during high-pressure scenarios.
- **Support for Advanced Systems:** Enables reliable data transmission for automated defence systems, including missile guidance, robotics, and unmanned vehicles, powers high-bandwidth systems such as radar, surveillance drones, and satellite communication systems for real-time intelligence.
- **Scalable and High-Performance Networks:** Provides the high-speed connectivity required for bandwidth-intensive tasks like high-resolution video streaming, 3D mapping, and live intelligence sharing.
- **Disaster Recovery and Continuity:** Ensures network redundancy and operational integrity for quick recovery during infrastructure failures, natural disasters, cyberattacks, or combat damage.



CHALLENGES

- **Electromagnetic Interference (EMI)** : Defence operations often have high EMI from radars, power grids, and electronic equipment. EMI can lead to signal degradation, posing risks for real-time operations.
- **Harsh Environmental Conditions** : Deployment in extreme environments such as deserts, mountains, and underwater locations, with challenges like temperature fluctuations, moisture, salinity, high humidity, and water ingress in tropical or marine operations.
- **Physical Damage and Durability** : Exposure to heavy vibrations, rodent attacks, and accidental damage from heavy machinery. Risk of cuts or breaks during combat situations or in high-movement zones.
- **Demand for High Bandwidth** : Defence networks must handle a massive amount of real-time data for situational awareness and strategic planning..
- **Fire and Power Risks** : Defence environments often have high power loads, increasing the risk of electrical fires and overheating. Cable systems need to ensure reliability under such conditions.

FIBRE SOLUTIONS

HIGH SPEED , LONG – DISTANCE FIBRE OPTIC CABLES

- ▶ Norden's fibre optic cables enable secure, real-time communication over long distances, even in high-EMI environments. They offer exceptional versatility in single mode and multimode variants with loose tube or tight buffer constructions.
- ▶ Ideal for maintaining critical connectivity between command centres, bases, and remote units, especially when EMI from machinery, radars, or other electronic equipment poses a challenge.

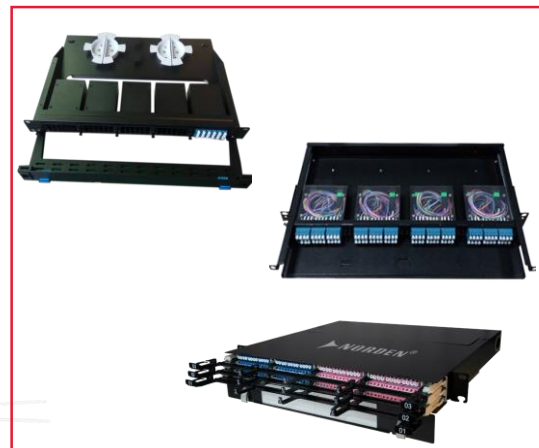
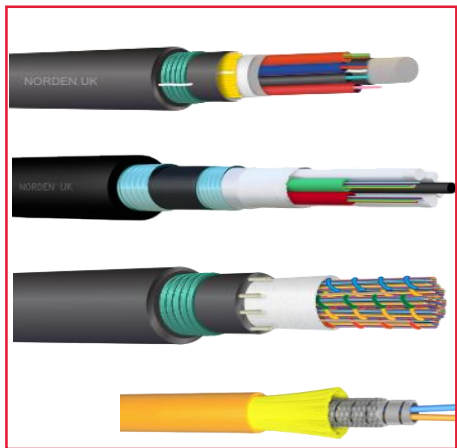
RUGGEDIZED AND ARMoured CABLES FOR HARSH ENVIRONMENTS

- ▶ Norden offers ruggedized and armored cables designed to withstand abrasions, cuts, and environmental hazards, ensuring reliable communication in harsh or remote locations.
- ▶ For critical areas prone to fire or extreme weather, Fire-Resistant/Flame-Retardant Double Jacket Multi-Loose Tube Cables, Double Armoured Triple Jacketed External Cables, and Triple Jacket Armoured External Cables deliver enhanced safety and durability. These solutions are essential for defence applications such as field deployments, remote operations, and installations in hostile terrain.

FIBRE SOLUTIONS

HIGH DENSITY SOLUTIONS FOR OPTIMIZED SPACE MANAGEMENT

- ▶ Products like Ribbon Fibre Optic Cables and Hybrid High-Density Modular Fixed Panels ensure compact, organized installations, while High-Density Rack Mount Fibre Patch Panels and Fibre Optic Distribution Frames allow for easy management and scalability.
- ▶ MTP/MPO Trunk & Ribbon Trunk Cables and Pre-Terminated Fibre Cables with Multi-Core LC/SC Connectors provide quick and seamless network deployment. These solutions are crucial for ensuring rapid scalability and efficient space use in mission-critical defence operations, particularly in high-pressure environments..



COPPER SOLUTIONS

COPPER CABLES FOR POWER AND COMMUNICATION

- ▶ Norden provides copper cables that support Power over Ethernet (PoE), ensuring reliable internal communication and power transmission within command posts, vehicles, and local units which is critical in military operations.
- ▶ Norden's armoured copper cables (single-armoured, double-armoured, double-jacketed, and heat & oil-resistant rated) are built to withstand extreme conditions, including abrasions, cuts, and environmental hazards. These cables ensure reliable communication in military installations and field operations, providing durability in environments prone to physical damage and harsh weather.

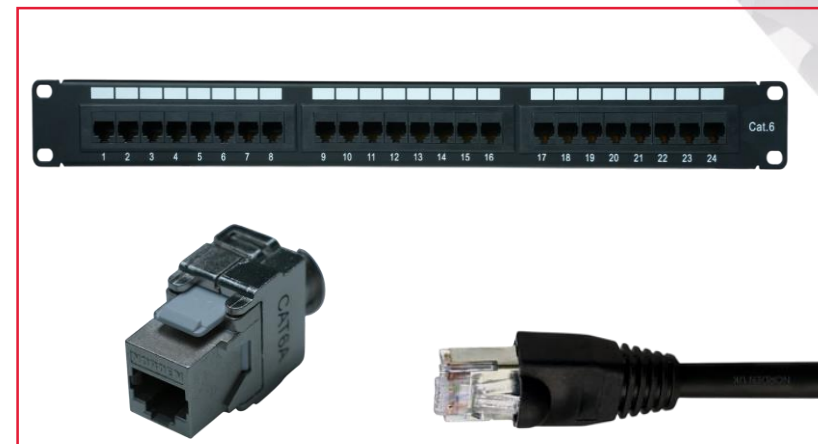
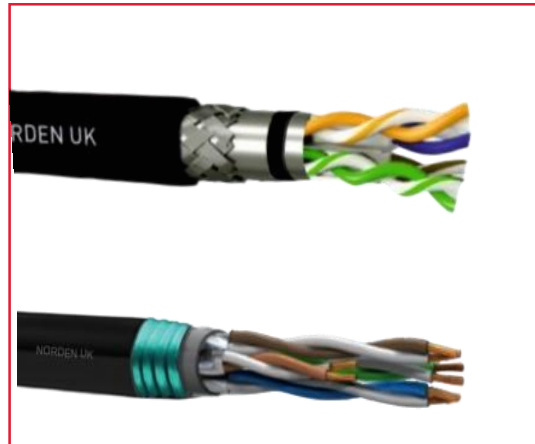
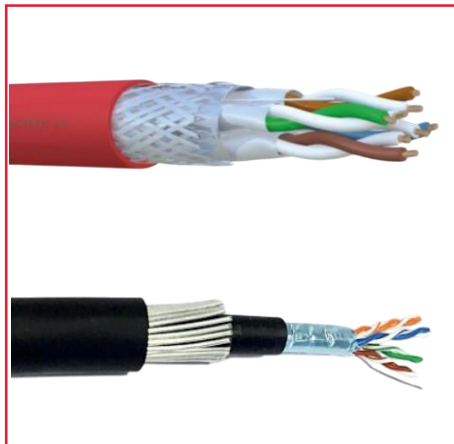
ELECTROMAGNETIC INTERFERENCE (EMI) PROTECTION

- ▶ EMI from sources like radars, power grids, and electronic equipment can significantly degrade signal quality, posing risks to real-time communication and data integrity. Norden's shielded copper cables (Category 6, 6a, and 8) are specifically engineered to combat EMI, ensuring stable, uninterrupted communication in high-EMI environments.

COPPER SOLUTIONS

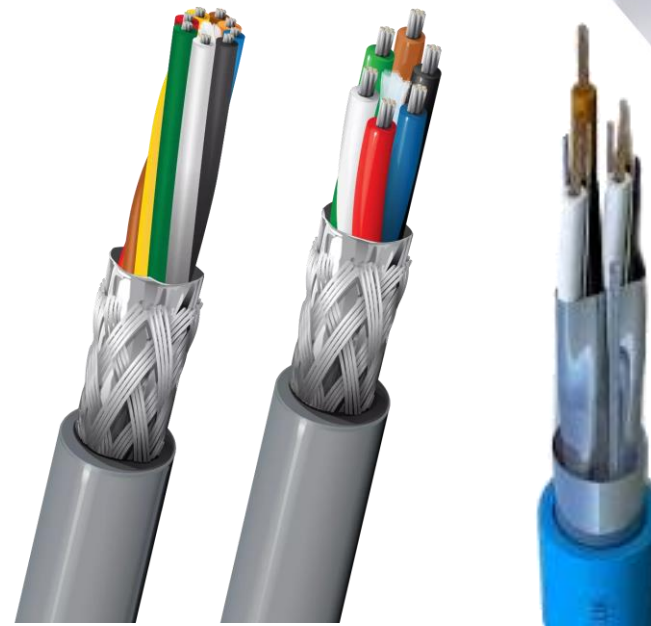
ELECTROMAGNETIC INTERFERENCE (EMI) PROTECTION

- ▶ Norden offers a comprehensive range of shielded cable accessories, including shielded patch panels, keystone, patch cords, and specialized product like External Patch Cords with waterproof shields. These accessories are designed for quick installation and secure connections while offering protection against environmental hazards, ensuring seamless communication in demanding defence scenarios..



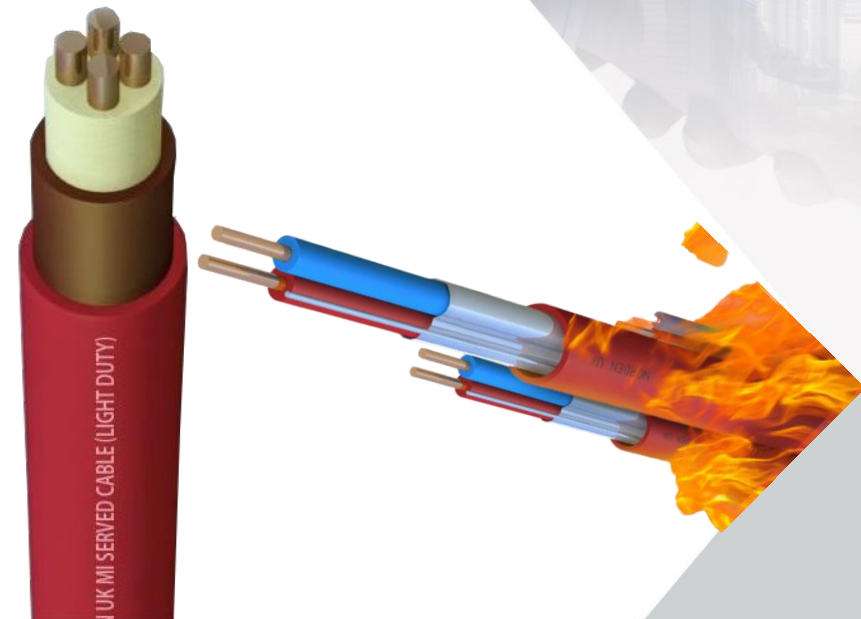
INDUSTRIAL & CONTROL CABLES SOLUTIONS

- ▶ **Norden Control Cables** ensure accurate and reliable transmission of control signals between various military systems, such as communication devices, radar, and weapon systems for smooth functioning of automated systems.
- ▶ **Shielded Multiconductor and Multipair cables** offer multiple data transmission pathways, supporting complex defense systems with various devices, and preserving the integrity of sensitive signals in communication systems.
- ▶ **BUS cables** facilitate communication between various defense systems, such as avionics, control systems, and sensors, ensuring synchronized operations. Bus cables support complex networks, reducing wiring complexity and ensuring efficient data flow in mission-critical systems.



FIRE & SAFETY CABLES

- ▶ Norden **Fire-Resistant Cables** withstand high temperatures ensure the signal continuity / integrity to communication systems during a fire, maintaining critical operations in areas such as military bases, communication centers, and vehicles.
- ▶ Norden **MICC cables** offer enhanced protection against physical damage, fire, and electromagnetic interference. Used in command centers, weapon systems, and aerospace applications, they provide secure and reliable data and power transmission in harsh environments, including military installations and naval vessels..
- ▶ Norden **Fire Alarm Cables** are used in military facilities, bunkers, ammunition storage areas, and other sensitive installations to ensure early detection and response to fire hazards. These cables are integral to fire detection systems in buildings, defense bases, and transport vehicles, protecting personnel and assets.



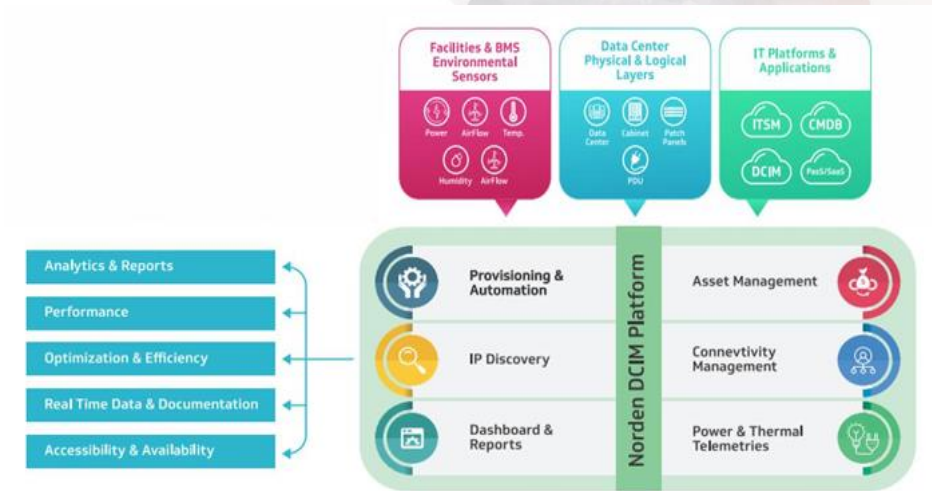
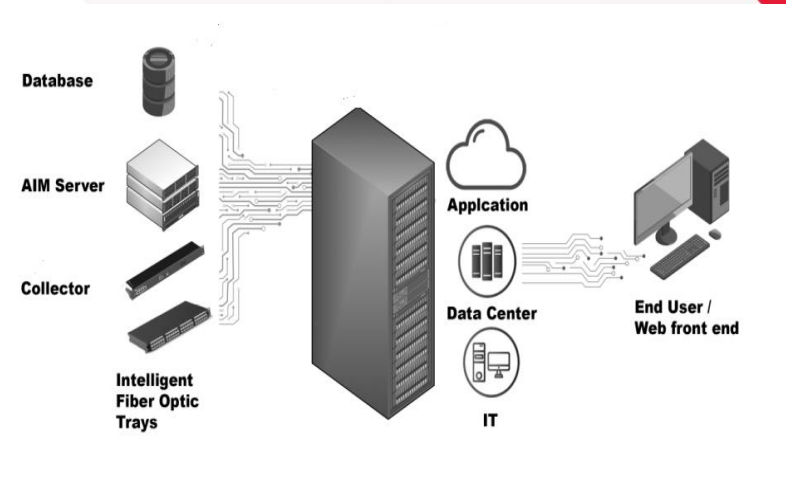
INTELLIGENT PDU

- ▶ Norden Intelligent PDUs ensure continuous power distribution and monitoring for critical defence systems like command centers, data hubs, and surveillance networks, enhancing uptime and energy efficiency while reducing operational costs.
- ▶ With a screw-free hot swap design for quick module replacements and the flexibility to upgrade firmware or switch from monitored to switched PDUs, these units adapt to evolving defence needs in mission-critical environments.
- ▶ With a range of outlet combinations and plug types (IEC C13, C19, Shuko, UK, NEMA, IEC 60309), Norden PDUs are tailored to power a wide array of military equipment, from mobile units to remote installations, ensuring seamless integration across defence systems.



INTELLIGENT AIM SOLUTION

- Norden Intelligent Solutions, a combination of hardware and software powered by CPID technology, offer robust monitoring and management of physical layer connectivity.
- Applications in Defence Systems :
 - Monitoring of physical network infrastructure guarantees uninterrupted connectivity between cabinets and devices in command centers and data hubs , vital for mission-critical data processing and communication.
 - Automated patching and LAN equipment discovery improve reliability and reduce response times for real-time defense operations.
 - Asset management tools simplify network documentation and troubleshooting, even in challenging or remote environments.
 - Alarms, alerts, and detailed reports enhance decision-making and system resilience in demanding defense settings.



OVERVIEW

Public Address (PA) systems designed for defence applications need to meet stringent requirements for reliability, clarity, and security due to their critical roles in communication within military bases, ships, command centres, and field operations



CHALLENGES

- **Ruggedized Equipment:**
Use of weatherproof, vibration-resistant, and tamper-proof designs.
- **Backup Systems:**
Incorporating redundant power and communication lines.
- **Acoustic Modeling:**
Conducting site-specific studies to optimize sound coverage and clarity.
- **Integration:**
Seamless connection with other defense communication systems.
- **Encryption:**
Advanced encryption protocols for secure communication.
- **Standard Compliance:**
Ensuring all equipment meets military-grade specifications.

OBJECTIVE

An IP Based PAGA(Public Address and General Alarm) system in defense environments is a robust communication solution designed to handle critical alerts, announcements, and emergency notifications in highly secure and challenging conditions

ADVANTAGE

- ▶ **Reliable Communication Over Long Distances**
- ▶ **Real-Time Emergency Alerts**
- ▶ **Scalability and Flexibility**
- ▶ **Centralized Control and Monitoring**
- ▶ **High Audio Clarity**
- ▶ **Integration with Other Systems**



USE CASES

Military Bases: For announcements, drills, and emergency alerts.

Naval Vessels: Internal communication and emergency systems on ships.

Airports and Hangars: For coordination and safety announcements.

Command Centres: Centralized communication hubs for large installations.

Field Operations: Portable PA systems for on-ground deployments



NORDEN IP-BASED PA SOLUTIONS

IP PoE Horn Speaker

NVS-IP100043SP

- 10W power-rated
- Max SPL: 120dB
- Supports SIP Protocol
- Supports both PoE and PoE+
- IP66 Protection
- Waterproof microphone with dynamic volume adjustment



IP Wall Mount Video Intercom Terminal

NVS-IP100024IC

- Built-in 10W speaker and microphone
- Built-in 50W digital amplifier
- HD wide-angle camera
- Waterproof ratio of IP66
- Supports SIP and ONVIF protocols



IP-Based Remote Paging Mic with Video Intercom

NVS-IP100026PM

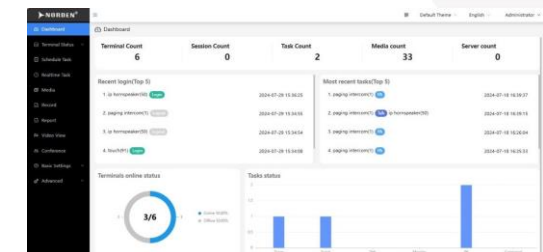
- 10.2" TFT LCD touch screen and 13MP HD camera
- Built-in 3W speaker and unidirectional condenser microphone
- Built-in intelligent face recognition chip
- Supports pre-recording and file broadcasting function
- 1 Relay input and output interface



IP-Based PA & Intercom Server Software

NVS-IP100001SW

- Map up to 1000 devices and infinity zones
- Schedule jobs like alarm, intercom, broadcast and timing program
- Unlimited zone creation and management
- Support SIP trunk integration with Asterisk, AVAYA, Cisco, 3CX etc
- Support Web GUI management interface



THANK YOU

www.nordencommunication.com