NORMANS Soldier System

MINIMUM WEIGHT
MAXIMUM CONTROL
NORMANS, your partner in effective close combat and improving the soldier’s role as effector and sensor.

Thales understands your need for integrated equipment and a Soldier System that enhances close combat capabilities.

10 years of development

20 per cent of the weight

40 per cent increased combat effectiveness
Thales Norway AS is one of Norway’s largest industrial centres of expertise for mission-critical information and telecommunications solutions and the principal supplier of military communication systems to the Norwegian Armed Forces. We have 200 highly qualified people on staff with a broad range of technical knowledge.

Thales Norway is a trusted partner of the Norwegian Defence Research Establishment. Thales Norway develops and delivers secure and rugged military information and communication solutions for mobile and stationary use. Thales Norway has supplied Norway, NATO and other countries with infrastructure systems and security solutions for decades.
Through the NORwegian Modular Arctic Network Soldier (NORMANS) programme, the Norwegian Defence Research Establishment (FFI) has developed a concept for future soldier systems. From 2000 to 2005, the focus was on concept design, defining a modular approach and content for soldiers and commanders. The concept was tested and refined from 2005 to 2008. The results are well documented by FFI and are impressive in terms of increasing combat efficiency and soldier safety.

NORMANS owes its success to the balanced collaboration between user communities, FFI and Industry. The primary design goal was to use optimised technology providing “just what soldiers need”.

**Incremental development since 2000**

NORMANS' was developed over 10 years, through research, a number of prototype stages, repeated field testing and several full-scale military exercises.
**THE CHALLENGE**

Combat effectiveness vs. weight and complexity of soldier systems

Soldier modernisation programmes have often focused on equipping soldiers with new technology in the simple belief that more information and functionality will result in a more effective soldier. Clearly, any equipment providing increased situational awareness, more accurate observation and target information, and enhanced communication and navigation will improve a soldier’s effectiveness. However, there is a trade-off between equipment load and combat effectiveness. The weight and power consumption of most equipment packages for Command & Control and Situational Awareness have typically been unacceptably high.

That something is “technologically possible” is probably the least important reason for adding functionality.
THE SOLUTION

The solution is a modular configuration in two levels – NORMANS Light and NORMANS Advanced, where users can add functionality as required. The NORMANS Soldier System is a digitised combat system for use at the platoon, group and squad levels.

**NORMANS Light** is a straightforward navigation and communication unit that increases the soldier’s situational awareness. The unit has a graphic display, providing the soldier with the relative positions of team members, observations, waypoints and predefined messages.

**NORMANS Advanced** is a system for commanders. It provides a constantly updated situation awareness picture, increasing control and strengthening the ability to command. The design focuses on mobility and ease of use. NORMANS Advanced includes an interactive planning tool where waypoints, areas, routes and other critical information are entered into the map and distributed to the soldiers.

- Where am I?
- Where am I going?
- Where is my team?
- Where is my enemy?
- What are my tasks?

- Fast mission planning
- Easily communicate orders
- Quick and accurate reporting
- Situational awareness
THE NORMANS SOLDIER SYSTEM

The NORMANS Soldier System facilitates communication within the squad using a special data transmission protocol, voice communications and a tactical messaging system.

All soldiers and commanders have soldier radios for intra-squad communications. The primary aim is to provide a very lightweight, cost effective and useful system to ensure that the functions it provides are worth the extra weight.

The NORMANS Soldier System allows each soldier to view his/her own position relative to the other soldiers in the squad, receive waypoints, view the direction to the next WP, receive and send pre-formatted text messages and receive and hand-off targets. The commander can also send and receive overlays and has map/air photograph functionality, advanced messaging (free text), increased SA and the ability to perform mission planning tasks.

The commander is connected to the higher echelons via his platoon radio, typically to a BMS located in a supporting vehicle.

NORMANS Light is a system intended to cover the vital functionality that every soldier needs. It is a small system that offers navigation, voice and data communication capacities sideways and up in the command chain.

The NORMANS Light system provides soldiers with:
- Own position in the centre of the display
- Relative position of team/section members
- Relative positions of enemy
- Easy targeting and observation
- Navigation to waypoints
- Predefined text messages and alarms

NORMANS Advanced is a system intended for dismounted commanders and team leaders as well as soldiers in need of advanced functionality, e.g. SF. It facilitates planning and navigation and provides voice and data communication sideways, up to the BMS, and down to the soldiers in the command chain.

In addition to NORMANS Light, the NORMANS Advanced system provides soldiers with:
- A digital map with blueforce tracking of own forces
- A more detailed operating picture
- More advanced messaging (free text) both up, sideways and down the command chain
- Tactical graphics (overlays)
- Mission planning at a tactical level
- Potential use of a wide range of sensors and the use of external information carriers
MINIMUM WEIGHT

NORMANS Light

NORMANS Light adds only about 300 grams to a soldier’s equipment. It is designed to run from the radio battery (where it is supported by the radio) or a central battery. Power consumption is around 0.3 watts.

External sensors, such as personal LRFs, warning sensors (CBRN, physiological etc.), or other navigation sensors (military GPS) can be added easily via an available port.

Primary functions are available in a graphical SA view, while the text-based Menu View allows the user to perform additional functions and change settings.

Features
- Weight with cables and connectors: 328 g
- Display: 2”, 128x128 pixel resolution, 4-level grayscale
- CPU: AVR32 (AT32UC3A0512) (64KB RAM, 512KB Flash)
- Additional memory: 1MB SPI Flash, 32KB SPI NVRAM
- Power input: 5-18 VDC

Interfaces
- USB, 2 x RS232, audio output
- Six buttons

Embedded sensors
- 3D Digital compass
- GPS w/Galileo support (external antenna)

Environment
- Enclosure: IP67
- Operating temp: -30°C..+50°C
- Storage temp: -40°C..+70°C
- EMC: MIL-STD-461E, MIL-STD-810F
- Power: 340 mW (active)

Radios integrated
- Harris RF-7800S (Norw. GFE)
- Thales ST@R Mille
- Thales MBITR Clear
- Selex PRR
MAXIMUM CONTROL

NORMANS Advanced

NORMANS Advanced weighs around 400 grams. In addition to an internal battery for autonomous operation, NORMANS Advanced is designed for a central battery solution, which adds around 500-600 grams. A typical Advanced system adds about 1 Kg to the soldier’s equipment. Power consumption is below 4 watts active and less than 1 watt idle.

Features
Dimensions: 100x156x35 mm
Weight: 440 g (incl. int. battery)
Display: 5”, 800x480 pixel resolution
CPU: ARM® Cortex™ A8
Mass memory: 8 GB + microSD slot
Memory: 512MB RAM
Non-volatile: 64 KB EEPROM
Power input: 5-28 VDC

Interfaces
USB 2.0 and USB OTG, Ethernet, RS232, RS422, RS485, S-Video output, headset, microphone, internal speaker, optional external active GPS antenna

Wireless
Bluetooth 2.1+EDR, WLAN 802.11G

Embedded sensors
GPS w/Galileo support, digital compass, 3D accelerometer, gyroscope, barometer, microphone, brightness sensor for display

Environment
Enclosure: IP66
Operating temp: -30°C..+50°C
Storage temp: -40°C..+70°C
EMC: MIL-STD-461E, MIL-STD-810F
Power: 4 W (active), 1 W (idle)

Radios integrated
Harris RF-7800S (Norw. GFE)
Kongsberg Handheld MH300 VHF
Thales ST@R Mille
Thales MBITR Clear
Selex PRR

1 Compass
2 Own position
3 Centre to
4 Status bar
5 Bearing, altitude and position
6 Zoom slider
7 Scale indicator
8 On screen buttons
**FIVE NATO DOMAINS**

NORwegian Modular Arctic Network Soldier (NORMANS).

The **NORMANS Digitized Perspective** addresses the five NATO defined Dis-mounted Close Combat (DCC) domains of lethality, mobility, survivability, sustainability and Command, Control, Communications, Computers and Information (C4I).

**Significant uplift in combat effectiveness and safety:**

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<thead>
<tr>
<th>SURVIVABILITY</th>
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<tr>
<td>■ Blue force tracking avoiding blue on blue</td>
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<td>■ Enemy updates</td>
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<td>■ Quicker medical response</td>
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<th>MOBILITY</th>
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<tr>
<td>■ Improved situational awareness (SA)</td>
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<td>■ Light and easy for the soldier to maneuver</td>
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<td>■ Navigation – right place at right time</td>
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<th>C4I</th>
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<tr>
<td>■ Improved planning on platoon and section level</td>
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<td>■ Enable soldiers to complete operations with impressive precision and efficiency</td>
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<td>■ Integration with existing and future C4I platforms</td>
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<th>SUSTAINABILITY</th>
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<td>■ Reducing cognitive burden and providing critical information distribution</td>
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<td>■ Increased understanding of the battle field</td>
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<td>■ Effective mission execution on all levels</td>
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<th>LETHALITY</th>
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<tbody>
<tr>
<td>■ Target hand off</td>
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<td>■ Sensor integration</td>
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<td>■ 40% increased combat effectiveness</td>
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ORGANISATION

Example organisation of a NORMANS Soldier System:

Each team soldiers are equipped with a NORMANS Light unit (NLU), the team leader carries a NORMANS Advanced unit (NAU). Blue Force Tracking (BFT) messages are sent directly within a team, BFT messages from other teams are aggregated via NAUs, and sent to the other teams and up to the Battle Management System (BMS), typically located in a vehicle.
NORMANS
Soldier System

Minimum Weight
Maximum Control

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