



**SAAB**



SAAB VEHICLE ELECTRONICS

Another level of **rugged**

# When the going gets **tough**



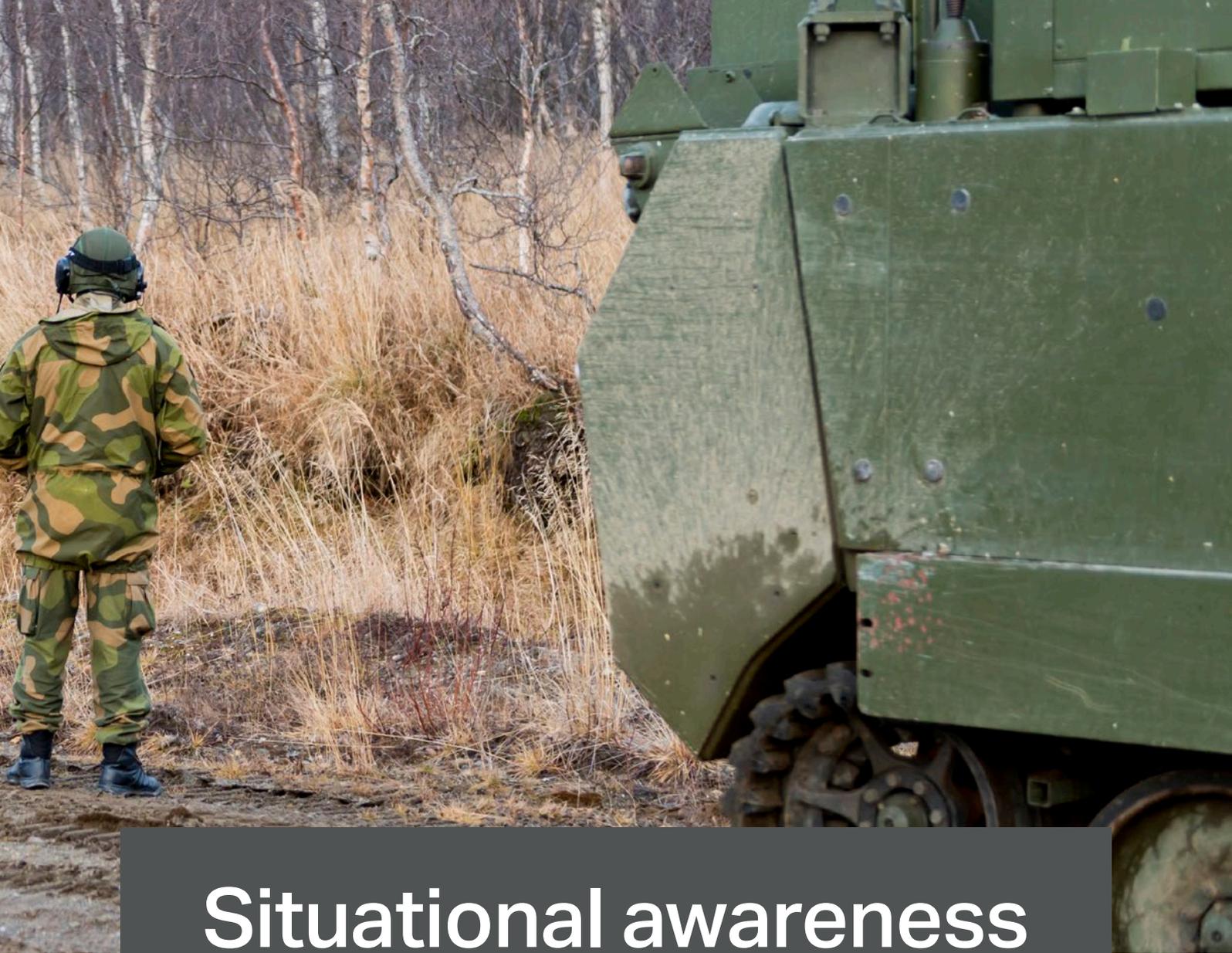
Saab Vetronics equipment does not need external dampening or to be suspended in wires to survive shocks inside a wheeled or tracked vehicle. Bolt it directly to the metal and it will survive, even directly attached to the gun-barrel of a grenade launcher thanks to its solid design.

All equipment is prepared for use in the most extreme environmental conditions, including vibration, shock, humidity, moisture, temperature and EMI.









# Situational awareness save lives

Situational awareness on the battlefield is essential to survive. Without a clear grasp of the tactical situation, a vehicle's weapon systems and armor are irrelevant.

At least as important as the tactical situation is the safety of anyone moving in the vicinity of the vehicle. Be it war or peace, no driver ever wants to risk hurting his fellow servicemen while manoeuvring. Camera systems enhancing the situational awareness of the driver add a layer of security when operating vehicles with poor lines of sight.

The imagery can also be used by mounted soldiers to obtain visuals on what is happening outside the vehicle – and beyond – before deploying.



# Tailored to **succeed**

Being a system integrator in military vehicle electronics, Saab's extensive product portfolio allow us to tailor a solution to suit your needs.

We have the experience and expertise to assist you, whether you want to upgrade a single component in an existing 4 x 4, or design a complete vehicle electronic system for a whole fleet of new APC:s.

Our philosophy in vehicle integration of Rugged Vetronics is quite simple. Every component and every function is based on a common, expandable and scalable architecture. Seamlessly integrated, all sub-systems and elements understand each other and share hardware and network structures.



The advantages are obvious: any kind of information can be directed to any user. So several users can share real-time information and you can also, for instance, show HUMS data, camera images and BMS data on the same screen.

The systems are modular and scaleable, so if for instance you need to upgrade computers, sensors or displays in the future, the same cabling and fixtures can be utilised saving time and money in the process.

# Get the big picture using a **small footprint**

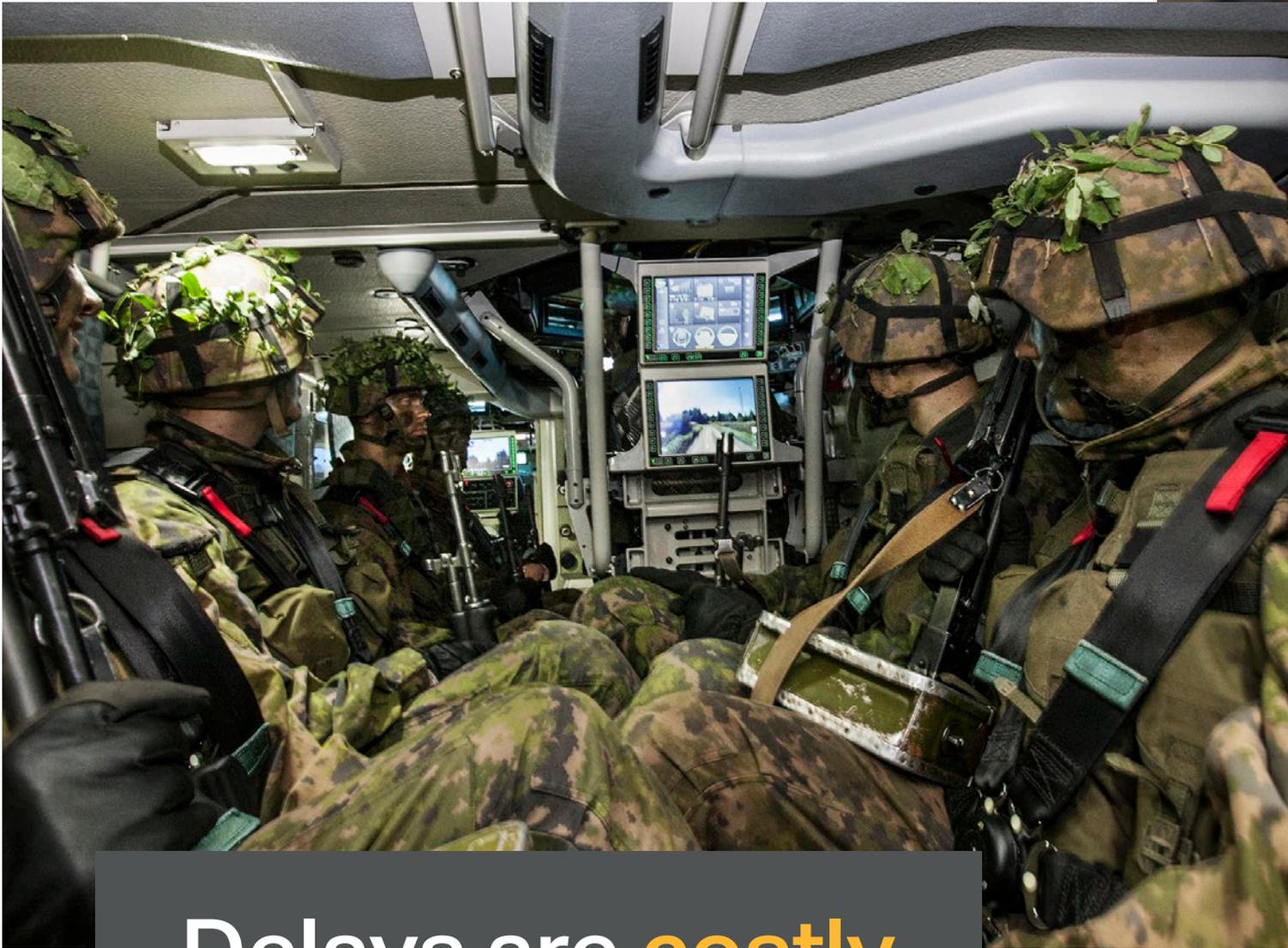
Combat vehicles are cramped, so all installed equipment needs to be efficient and flexible. As Saab Vetronic displays and systems do not rely on external dampening or cooling systems, they can be placed wherever needed, saving valuable space inside vehicles.

It is also possible to reduce the number of installed units as the flexible design allows information from other systems to be integrated and displayed on the same screen, eliminating the need for multiple displays.

The system can be split up with computers installed separately, to allow for the smallest possible display unit in the crew compartment.







# Delays are **costly** on the battlefield

Start up the system and the external video feed is instantly active, no need to boot. There is a very low latency between when the image is captured and it when it is displayed inside the vehicle, enabling high speed driving using only the video feed.

This offers a better situational image in poor weather or at night via infrared cameras.





# Emit nothing but information

Modern digital communications systems can be sensitive to interference of nearby electronic equipment. All Saab Vetronic equipment is heavily shielded and will not affect or degrade the performance of other systems installed in the vehicle, nor is it sensitive to external interference.

# Built **beyond** standards

The Saab military electronics product range is qualified according to applicable military standards including MIL-STD-810G and MIL-STD-461F to handle a wide range of operating and storage temperatures.

Being a systems integrator, we design all individual components to exceed Mil-specs in order to meet our committed system specs.



# Our products





Rapid and reliable information networks are essential for today's highly mobile and dynamic military operations. Vehicle-mounted information technology is changing the battlefield, providing capabilities vital for both force projection and force protection.

Saab offers a wide range of rugged vehicle electronics (Vetronics). Solutions that ensure that the harsh environmental requirements for battlefield use are met and that performance remains high, while keeping lifecycle costs to a minimum.

Whether your need is minimum space or maximum capability, Saab provides a rugged system that meets your exact application and secures your operational capabilities.

# Displays

Optionally the units can be configured to process Gigabit-streamed digital video input/output (part of Saab Video Distribution System (VDS). In stand-alone applications, by adding Internal GUI firmware, the presentation is controlled via onscreen menu selections, by use of the touchscreen and/or function keys.

In standard configuration it is designed to be connected to the Saab Rugged Vehicle Computer (RVC) via one single cable. The standard unit is equipped with one rear, straight-out connector (Computer port) type MIL-C-38999, series 3. Optionally, to gain access to additional interfaces, up to three rear connectors can be included facing straight out, upwards or downwards.



## Rugged Vehicle Display 6"

The Rugged Vehicle Display, RVD6, is a multifunction display unit (SAAB Core version). The unit is scalable to support different presentation modes: graphics (DVI-D) or video, video on graphics or video on video.



## Rugged Vehicle Display 6" - GVA

The Rugged Vehicle Display, RVD6, is a GVA compatible multifunction display with resistive touch panel developed for use in harsh environments according to MIL-STD-810 and MIL-STD-461.

The display has dual inputs, for both computer graphics (DVI-D) and digital video over Gigabit Ethernet by configurable protocols as DEF-STAN 00-82 or SAAB digital video distribution concept VDS, and can provide a graphical user interface for controls without power of external CPU.

The input channels from computer and video can be configured to be displayed individually or overlaid.



## Rugged Vehicle Display 10"

The Rugged Vehicle Display, RVD10, is a multifunction display unit. The unit is scalable to support different presentation modes: computer graphics (DVI-D), video or video on graphics. Optionally the unit can be configured to process Gigabit-streamed digital video input/ output (part of SAAB VDS-concept).

In stand-alone applications, via internal GUI firmware, the presentation is controlled via onscreen menu selections, by use of the touch screen and/or function keys.



## Rugged Vehicle Display 10" - GVA



The Rugged Vehicle Display, RVD10, is a GVA compatible multifunction display with resistive touch panel developed for use in harsh environments according to MIL-STD-810 and MIL-STD-461.

The display has dual inputs, for both computer graphics (DVI-D) and digital video over Gigabit Ethernet by configurable protocols as DEF-STAN 00-82 or SAAB digital video distribution concept VDS, and can provide a graphical user interface for controls without power of external CPU.

The input channels from computer and video can be configured to be displayed individually or overlaid.

## Rugged Vehicle Display 10" - GVA Wide



The Rugged Vehicle Display 10" Wide, RVD10-W, is a Full-HD, GVA compatible multifunction display with resistive multitouch panel developed for use in harsh environments according to MIL-STD-810 and MIL-STD-461.

The display has dual inputs, for both computer graphics (DVI-D) and digital video over Gigabit Ethernet by configurable protocols as DEF-STAN 00-82 or SAAB digital video distribution concept VDS, and can provide a graphical user interface for controls without power of external CPU.

The input channels from computer and video can be configured to be displayed individually or on a mixed screen.

## Rugged Vehicle Display 12" - Slim



The Rugged Vehicle Display, RVD10, is a multifunction display unit. The unit is scalable to support different presentation modes: computer graphics (DVI-D), video or video on graphics. Optionally the unit can be configured to process Gigabit-streamed digital video input/ output (part of SAAB VDS-concept).

In stand-alone applications, via internal GUI firmware, the presentation is controlled via onscreen menu selections, by use of the touch screen and/or function keys.

## Rugged Vehicle Display 15"



The Rugged Vehicle Display, RVD15, is a multifunction display unit (SAAB Core version). The unit is scalable to support different presentation modes: graphics (DVI-D) or video, video on graphics or video on video.

Optionally the unit can be configured to process Gigabit-streamed digital video input/ output (part of SAAB VDS-concept). In stand-alone applications, by adding Internal GUI firmware, the presentation is controlled via onscreen menu selections, by use of the touch screen and/or function keys.

# Display computers

The Rugged Display Computers from Saab are rugged high performance display computer units developed for use in military vehicles. The RDC family has a compact design with low weight and is designed for future functionality. The units are either semi-fixed in place using an optional docking station or permanently installed in the vehicle. With the docking station the unit becomes easy to change to/from a wearable unit to/from a fixed installed unit.



## Rugged Display & Computer Unit 4.3"

The Rugged Display & Computer unit, RDC4, is based on the PowerView 480 module from Murphy. The RDC4 integrates electronic engine, transmission and equipment information into an easy to read, full-colour display interface.



## Rugged Display & Computer Unit 7"

The Rugged Display & Computer unit, RDC7, is based on the PowerView 780 module from Murphy. The RDC7 integrates electronic engine, transmission and equipment information into an easy to read, full-colour display interface.



## Rugged Display Computer Unit 10"

The Rugged Display & Computer unit, RDC10, includes an Intel® Core™ i7 CPU-platform, a number of external interface ports and customized connector housing/ connector configuration.

The RDC is designed to comply with contemporary standards such as DEF STAN 23-09 GVA and STANAG 4754 NGVA.

# Computers

Compact, stackable, high-performance vehicle and fire control computers equipped with PC-compatible interfaces developed for use in military vehicles. They need no external cooling and are designed to provide high levels of performance and reliability in the toughest environments.



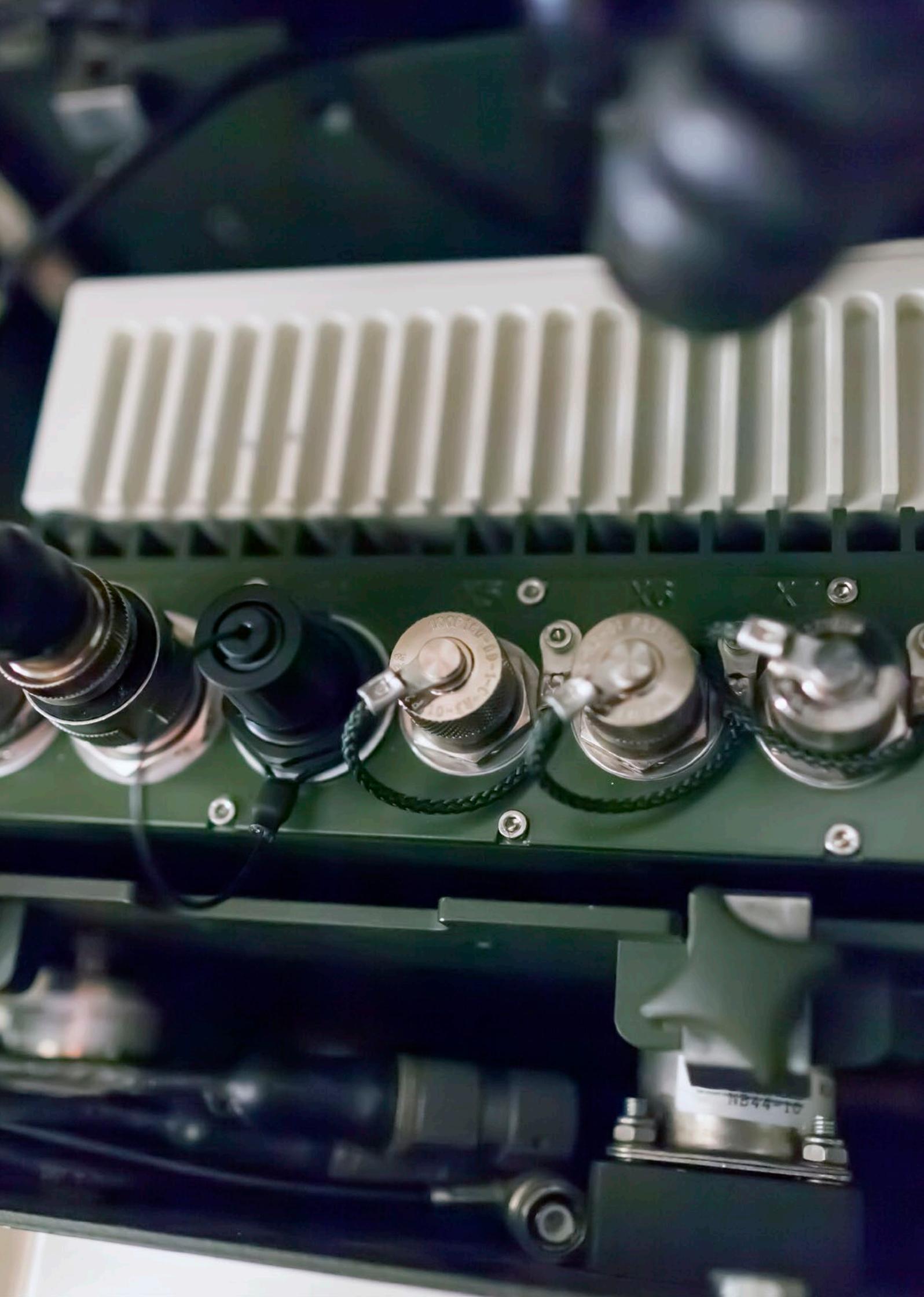
## Rugged Vehicle Computer - Embedded

The Rugged Vehicle Computer-Embedded, RVC-E, is a fully rugged, super compact and high performance computer unit developed for harsh environments in accordance to MIL-STD-810 and MIL-STD-461. The unit includes an NVIDIA® Jetson TX2-platform and is equipped with PC-compatible interface ports such as high resolution DVI-D, Ethernet, USB, CAN etc.



## Rugged Vehicle Computer

The Rugged Vehicle Computer, RVC, is a high performance computer unit developed for use in harsh environments. The unit is based on the latest RVC platform from SAAB and includes a 7th Generation Intel® Core™ / Xeon® - Single board computer platform. It is equipped with PC-compatible interface ports such as, DVI-D, Ethernet, USB etc. The RVC is designed to comply with contemporary standards such as DEF STAN 23-09 GVA and STANAG 4754 NGVA.



# Peripheral products

A range of rugged and compact products designed to enhance user capabilities, includes products such as keyboard, video and mouse switches, GPS equipment, USB hubs, portable memories, external CD/DVD units, smart card readers and flash discs.



## GPS Signal Receiver

The GPS Signal Receiver, GPSSR, is an active GPS antenna with integrated receiver, designed for use in military vehicle applications with high demands on mobility, function and to withstand harsh environmental demands.



## Rugged Vehicle Keyboard

The RKB is a rugged and compact computer keyboard with backlight, an integrated pointing device and standard "QWERTY" layout.

The RKB contains a pointing device which makes it possible to exclude an external pointing device. The keys are also, if chosen, back lighted in order to operate in darkness. The electronics is protected in a rugged, sealed housing. No external cooling is needed.



## Rugged Video to Ethernet Converter

The RVE is a compact converter platform that enables different video equipment to be connected to the SAAB video distribution system, VDS, DEF STAN 00-82 or a customer specified video distribution system over Ethernet such as GigE Vision with an extremely low latency.

The RVE is designed to comply with contemporary standards such as DEF STAN 23-09 GVA and STANAG 4754 NGVA.

The converter enables one or two DVI inputs, one RGB (VGA) input or up to four Composite PAL/NTSC inputs/outputs, combinations are also possible. These inputs can be combined with customizable overlays, be rescaled, deinterlaced, mixed, corrected etc. using the SAAB digital signal processing DiVA-core.



## Rugged Video Gateway

The Rugged Video Gateway, RVG, is a compact, high performance and low power unit including functions mainly for conversion of the Saab VDS Ethernet format to STANAG 4609 Ethernet format.



## Rugged DVI Repeater

The Rugged DVI/USB Repeater, RVR, is used for DVI and/or USB cable extension.

The unit is self-powered; it requires power supply from the vehicle, typically via adjacent computer or display unit. Typically one RVR supports up to 8 m cable length, but the unit can also be cascaded for even longer cables.



## Rugged Keyboard Video Mouse Switch

The RKVM is a fully rugged keyboard, video and mouse switch. The RKVM makes it possible to share one DVI-D display and two USB 2.0 ports between two computers.



## Rugged USB Hub

The RUH is a rugged and compact USB 2.0-Hub. The RUH includes one USB up-link port and four down-link ports.

When disconnected/ reconnected the RUH is automatically detected as a USB-HUB (hot-swap).

# Network components

Ethernet and network switches for copper and fibre communication, Discrete I/O Adapters, Security Computers, Routers and Rugged Storage Units.



## Rugged Ethernet Switch - RES8-12

The Rugged Ethernet Switch RES is a compact, high performance Ethernet switch platform designed for use in military combat vehicles. The unit can be configured with up to twelve GbE ports as well as two 10GbE optical fiber ports. Up to eight ports can be configured with power out. The RES is designed to comply with contemporary standards such as DEF STAN 23-09 GVA and STANAG 4754 NGVA.

The unit is a fully managed Layer 2+ Ethernet switch with powerful carrier networking software with optional advanced management features and layer 3 switching software.



## Rugged Ethernet Switch - RES16-28

The Rugged Ethernet Switch RES is a compact, high performance Ethernet switch designed for use in military combat vehicles. The unit is configured with up to 24 GbE ports and up to four 10GBASE optical fiber ports or power output on up to eight ports as option. The unit is a fully managed Layer 2+ Ethernet switch with powerful carrier networking software and several software options. The RES is designed to comply with contemporary standards such as DEF STAN 23-09 GVA and STANAG 4754 NGVA.



# Camera modules

This product group includes rugged and compact cameras for manual or automated applications, adapters for cameras and displays allowing legacy Analog video equipment to connect with Saab's video distribution system.



## Rugged Vehicle Display 6"

The Rugged Vehicle Display, RVD6, is a multifunction display unit (SAAB Core version). The unit is scalable to support different presentation modes: graphics (DVI-D) or video, video on graphics or video on video.



## Rugged Camera Module Infrared

The RKB is a rugged and compact computer keyboard with backlight, an integrated pointing device and standard "QWERTY" layout.

The RKB contains a pointing device which makes it possible to exclude an external pointing device. The keys are also, if chosen, back lighted in order to operate in darkness. The electronics is protected in a rugged, sealed housing. No external cooling is needed.



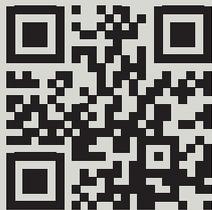
## Camera Module InfraRed - Hatch

The Camera Module, CM-IRH, is a compact thermal camera unit. It includes a VGA LWIR sensor module and digital processing blocks for video transmission and camera control over Ethernet according to the Saab Video Distribution System (VDS).





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and product details



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You can rely on Saab's thinking edge to deliver innovative, effective products and solutions that enhance your capabilities and deliver smarter outcomes.

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