



# Selex ES

A Finmeccanica Company

Defence Communications Systems

## **SSR PLUS SOLDIER SYSTEM RADIO PLUS**

As a world leading supplier of personal soldier communications, Selex ES recognizes the unique and challenging environments in which the modern dismounted soldier operates.

Through a combination of expertise in battlefield soldier communications and key partnerships in major Soldier System modernisation programmes throughout the world, we understand the need for reliable, lightweight and highly capable networked battlefield communications.

### **SOLDIER MODERNISATION**

The Soldier System Radio (SSR) Plus has been developed to address the evolving requirements of the future soldier, building on the key design features of the Selex ES Personal Role Radio (PRR). Whilst maintaining simplicity and ease of use, the SSR Plus significantly enhances Soldier System functionality, features and performance in the Dismounted Close Combatant environment.

The SSR Plus supports both section and platoon level communications up to company level, providing essential voice and data communications, enhancing battlefield command and control and real time Situational Awareness.

The SSR Plus data interface can connect to a networked data device or Battle Management Network (BMN), providing connectivity to a range of Command & Control (C2) tools, including enhanced combat Situational Awareness, mission planning and friendly force tracking capabilities.

**Selex ES Soldier System Radios are versatile and capable of addressing multiple operational environments. Current users vary from high-intensity close combat infantry, through coalition peace-keeping and peace support operations, to specialist forces and armed law enforcement units.**

## VERSATILE PERFORMANCE

The enhanced network, capability and power options of SSR Plus give the radio the flexibility to be used in many system configurations, from a stand-alone radio to a fully integrated soldier system.

The SSR Plus is a lightweight radio that can be powered by either primary cells or rechargeable batteries, and has an operational duration of 24 hours.

### Designed for the battlefield

- Common radio solution
- Simplicity ease of use
- Size, weight and power – robust
- Power efficiency

### Common radio solution

The SSR Plus has been developed as a common radio solution. All soldiers have the same radio, each configured to meet the requirements of the communications network plan. Network planning tools aid the configuration and control of all radios.

### Advanced radio features

- Dual net capability
- Network enabled
- Integral GPS
- Range and coverage
- Automatic relay
- Priority voice interrupt
- Independent voice and data transmission
- Ease of use
- Security and encryption
- Lightweight and robust
- Dual wireless Press-to-Talk
- Vehicle Compatible

### Ease of use

Keeping the simplicity of operation established on the PRR has been a key target during the SSR Plus design and development. This has resulted in a radio with the minimum of controls, no lights or displays. The radio does not have any display or keyboard, simply rotary controls for volume and net selection.



## ADVANCED RADIO FEATURES

### Dual net capability

The SSR Plus supports dual net capability, thereby enabling the radio to operate on two nets simultaneously. This enables the infantry soldier to operate on his main operational net, whilst monitoring a second net. Simple intuitive controls allow for rapid switching between nets.

### Network enabled

The SSR Plus system design allows the radio to operate on up to 256 different networks (any 16 of which are selectable by the user on the radio). Each of the 256 available networks can support up to 32 full members and an unlimited number of listen-only members. This networking capability is self-generating, self-maintaining, self-healing and does not require the existence of any external infrastructure.

### Integral GPS

Situational Awareness is a key capability in the close combat environment. Integrated GPS enables the accurate and timely delivery of positional information to support development of the Own Forces operational picture.

### Range and coverage

Operating in the 350 to 400MHz and 400 to 450MHz radio band, the SSR Plus provides a communication range of greater than 2km. Where a greater communication range is required or where the communications environment is more complex, the SSR Plus can be set to automatic relay mode.

### Automatic relay

In this mode, the network identifies net members who are temporarily out of coverage and automatically retransmits voice and data messages to them. This provides the network with a self-healing capability when connectivity has been disrupted.

### Priority voice interrupt

On a busy channel, urgent voice messages are accommodated by using the voice interrupt feature, which allows a priority user to “interrupt” a talker. This facility can be enabled or disabled on each radio for each network. In effect this capability provides all the operational advantages of a duplex facility, without the inherent bandwidth and power overheads.

### Independent voice and data transmission

Future Soldier Systems place an increased demand on the radio for data services, yet the soldier must always have voice communications available. The SSR Plus addresses this with an independent voice and data capability that allows both the data and the voice traffic to be in operation together. An additional data capability ensures the rapid transfer of positional data, without detrimental effect on the main voice and data traffic.

The dual wireless Press-to-Talk enables the user to remotely key each radio network. It is easily affiliated by the user and provides the ability to communicate and function effectively simultaneously.



#### **Security and encryption**

Use of spread spectrum technologies, developed for PRR, coupled with a low transmit power density, ensures that the SSR Plus enjoys the benefits of minimising the probability of transmission detection and interception (Low Probability of Intercept and Low Probability of Detection). Additional security is provided by an inbuilt Advanced Encryption Standard (AES) capability, for both voice and data communications.

#### **Lightweight and robust**

The SSR Plus uses modern lightweight materials to deliver a significant size and weight benefit, when compared with conventional radio construction methods, whilst maintaining a robust product suitable for the harsh dismounted combat environment. The removable battery pack allows the weight of the radio to be reduced further for systems with a centralised power source.

#### **Vehicle compatible**

Vehicle-integrated SSR Plus provides essential network connectivity and interoperability between dismounted close combatants and supporting combat vehicles, whilst also enhancing network coverage through high gain vehicle antennas.

#### **Power systems**

The power efficiency of the SSR Plus combined with the long operational duration of the high capacity lithium ion based rechargeable battery pack ensures a low turnover of batteries for re-charging, again minimising support and maintenance costs.

#### **Cost-effective solution**

Developed to address the whole-life costs as well as acquisition costs of owning a highly capable radio system, the SSR Plus is a cost-effective route to major enhancement of operational capability. The overall cost of ownership is also kept to a minimum, through limiting support and maintenance costs.

#### **PROGRAMMING SOFTWARE AND TOOLS**

##### **Network Planning Tool**

A software application allows the Communications Planner to simply and effectively manage the network infrastructure, and to generate the radio configurations to fulfil the strategic operations at Company level. The tool is designed to operate on a PC platform under a Windows-based environment.

##### **Key Generation Tool**

A software application that enables the Communications Planner to generate the radio encryption keys required for a Com-Plan. The Key Generation Tool can be used separately from the Network Planning Tool or can be combined with it. It is designed to run on a PC platform under a Windows-based environment and is compatible with both Windows 2000 and Windows XP.

##### **Radio Loader**

A software application can take both the Radio Configuration Data, generated by the Network Planning Tool, and the Encryption Keys, generated by the Key Generation Tool, and pass it to the SSR Plus radio. The Radio Loader will run on a Windows Mobile 5 operating system and is expected to be hosted on a PDA (Personal Digital Assistant) or similar portable device.

## RADIO ACCESSORIES & AUDIO ANCILLARIES

### Ultralight headset

The SSR Plus supports the use of a number of different headset options, depending on the role and environment of the operator.

### Rechargeable Lithium Ion battery

A high capacity Lithium Ion-based rechargeable battery pack is provided to power the SSR Plus and the rest of the items in the man-worn system. This battery pack has been designed to be easily removable from the radio and to facilitate quick replacement when used in the field, or at night. The battery pack includes protection circuitry and state of art charge information that is passed to the radio via a separate interface on the battery pack. This battery pack provides up to 24 hours of normal operation, based on a 1:1:8 Transmit: Receive: Standby ratio, at 25 °C.

### AA battery carrier

The Day Battery, AA Carrier provides a means of using AA batteries in the SSR Plus radio as an alternative to the High Capacity Battery, Rechargeable. It will take six AA cells of any chemistry providing the combined cell voltage remains within the parameters specified in the technical specification.

### Short urban antenna

For urban operations or a more compact solution where maximum range is not required, the tactical short urban antenna provides approximately 70% of the range performance of the standard high gain antenna. Urban operations line of sight approximately 1.3km.

## TECHNICAL SPECIFICATIONS

Product ID	H4876
Operating frequency	350MHz - 400MHz 400MHz - 450MHz
Range	Over 2km line-of-sight in open terrain Automated relay can double the range
User channels	256 programmable profiles
Max users on a single network	32
Max power output	2W
Data interfaces	USB 2.0 or V24 Serial port interface
Battery types	Lithium rechargeable 6 x AA primary or secondary cells
Battery life	Up to 24 hours at ratio 1:1:8
Size and dimensions (excluding Antenna)	160mm x 68mm x 35mm
Weight (excluding battery pack)	300g
Modulation	Direct Sequence Spread Spectrum (DSSS)
Encryption	AES 256
Environmental	Mil-STD-810
EMC	Mil-STD-461

### Hearing protection

A range of hearing protection headsets is available for the SSR radio, providing integrated communications whilst protecting the soldiers hearing in high noise environments.

### In-The-Ear hearing protection

Selex ES In-The-Ear (ITE) provides state-of-the-art in-ear hearing protection headsets that combine integrated soldier radio communications and real time Situational Awareness. They ensure the highest quality of natural Situational Awareness and clarity of transmit/receive audio when operating in a high noise battlefield environment. The headset supports connection with the SSR radio. It is lightweight, robust and provides a dynamic addition to the modern soldier system.

### CTX multi-radio interface

The SSR Plus supports connection to the CTX intelligent dismantled close combatant multi-radio interface system. The CTX can be supplied with multiple headset options, including ITE. It provides the ability to connect to and monitor multiple command network radios simultaneously. It also connects the soldier to supporting vehicle and platform intercom systems.



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