salcom

Capabilities & Technology Overview

www.salcom.com

salcom, derived from Sea, Air, and Land Communication, is a pioneering force in New Zealand, excelling in the development, manufacturing, and supply of cutting-edge wireless and technical solutions. Our ISO 9001:2015 certification underscores our unwavering commitment to quality and durability in every product.

Our solutions transcend borders and industries, with applications in emergency services, healthcare, environmental monitoring, maritime operations, security, agricultural technology, and more. From intricate healthcare systems to sophisticated tsunami warning networks, Salcom empowers global progress with innovative technology.

At Salcom, we evolve in sync with technological advancements, constantly innovating to meet market and client demands. Our approach is rooted in proven methods and technology, ensuring robustness, reliability, and unmatched performance in every solution we deliver.

Our products are co-created with clients, designed, and manufactured in New Zealand. We take immense pride in our unparalleled customer service, delivering quality products that stand the test of time, exceeding expectations.

Salcom was founded over four decades ago as an independent offshoot of one of New Zealand's most iconic providers of telecommunications and electronic solutions. To this day, Salcom employs engineers who were involved with the founding of the electronics industry. Now operating as a stand-alone organization, our relationship with these organisations remain strong, and we participate in many projects across their distribution network.

Our R&D Engineering team boasts members from world leading telecommunication companies, ensuring we produce the best wireless technology solutions in the world. We are proud to manufacture our products in New Zealand, where quality and reliability are necessities, not luxuries. We have developed wireless solutions for projects around the globe, including:

- Nationwide satellite paging.
- Lighting systems for container ports.
- Tsunami warning systems for the Pacific Islands.
- Paging systems for Scott Base in Antarctica.
- Port entry lighting systems for Maritime Safety.

With a proven track record from years of working with wireless solutions, you can trust us to deliver on projects of any size.

Join us in shaping the future of communication and connectivity, where every solution reflects our dedication to surpassing standards and driving progress. Salcom represents a wealth of knowledge, expertise, energy, and a steadfast commitment to innovation and excellence.



Trevor Foster Head of Business Development and Marketing

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01

What we do

salcom excels in developing, manufacturing, and supplying cutting-edge wireless, communications, technical and value driven solutions for a variety of industries, including emergency services, healthcare, environmental, maritime, security, and agricultural sectors.

Our ISO 9001:2015 certification highlights our commitment to quality and durability.

We co-create our products with clients, ensuring they are fit for pupose, robust, reliable, and innovative.

Proudly designed and manufactured in New Zealand.



Your trusted partner in wireless solutions

Industry Sectors



Sectors

Salcom is an established leader in designing and manufacturing communication solutions for almost any industry with diverse needs and requirements. From Fire and Ambulance services, leisure and hospitality to marine, aeronautical, safety, along with complex hospital and healthcare needs, we have been providing solutions for over four decades. Our extensive capabilities and willingness to seek innovative solutions beyond the norm differentiate us, making us the go-to company for many industries.

Healthcare

Our proven and reliable critical message call points and telemetry systems are used globally in numerous healthcare applications. We support the healthcare industry with a solutions-oriented and value-added approach, engaging directly with selected integrators for custom designs utilizing our PCB technology to ensure secure and reliable message management.

Our flexible solutions enable the best performance in patient care, without locking you into a specific technology or brand. This allows for expansion and customization to suit your environment, ensuring optimal functionality and adaptability.

Emergency Services

The golden hour is critical for patient care in emergency situations. For over three decades, the Fire and Ambulance service throughout New Zealand have relied on Salcom to deliver the highest standards of technology and communications.

We utilize a range of technology solutions to maintain an independent network capable of handling numerous disasters and emergency situations. When a third-party technology network cannot be guaranteed, our connected solutions remain operational. We are proud to supply and support the architecture of our system, which includes satellite communication, proven voice and paging technology, and a system that operates 24/7, 365 days a year. Our specialized system and backup program ensure continuous and reliable service.

Sport

Timekeeping and officiating are crucial to any sporting event. With this in mind, we developed an interactive training and sport communication technology to enhance the performance of officials, promoting professionalism and creating an improved experience for athletes and spectators.

Notably, both mainstream and emerging sports have utilized this tool, demonstrating significant benefits at the 2023 Netball World Cup in South Africa. Widely adopted across many nations, we continue to explore future applications for this technology.











Value-Driven Solutions



Solutions

Our solutions utilize a combination of our in-house designed and manufactured hardware and software, packaged into comprehensive solutions. Salcom's depth of skill, combined with high-quality design and production systems, benefits both local and global communities through our direct and technology customer engagement programs.

We are accessible, committed, and eager to establish close, long-term partnerships aimed at facilitating and growing our customers' businesses and market positions.

value-driven solutions - examples

Control Master

Control Master is a cutting-edge core system architecture software meticulously crafted to streamline large operations, bolster control, and maximize efficiency. It provides a comprehensive tool set for seamlessly managing and monitoring critical lighting systems, empowering you to maintain operational ease and enhance productivity.

Its intuitive design allows for remote and desktop control of lighting and security systems, both on an individual and group basis. Control Master supports BYOD (Bring Your Own Device) maintenance management, enables simple user add-ons, and offers accurate imagery and locator capabilities.

All these features are integrated within a secure software system with controlled user access. Simple and highly effective.

Message Router

One major challenge in communication systems is ensuring that your message is delivered quickly and accurately, without the risk of duplication, ping-ponging, or corruption.

To address these common issues and safeguard against any potential catastrophes where critical communication is essential, we developed the Message Manager Router and Message Manager Plus+

For complex, large-scale installations, we recommend integrating the Message Manager Router with your system. This solution not only prevents message corruption or loss but also offers authentication features and support software for enhanced visibility of your system's performance.

POCSAG Interface Unit

In wet common areas and patient assist zones within rehabilitation centers, hospitals, nursing homes, and retirement villages, there is a demand for a high-quality, water/dust proof, and chlorine-resistant alert pendant transmitter that integrates seamlessly with multple call systems.

While many nurse and care call systems exist, few integrate traditional pendants easily. At Salcom, we addressed this with our agnostic POCSAG Interface Unit (SAP Unit).

This interface unit can receive any POCSAG-transmitted message and integrates seamlessly with installed systems by providing easily interpreted outputs.

This allows any POCSAG transmitter to integrate effortlessly with existing systems. Designed for flexibility, the system accommodates both small and large complexes using extension modules to meet diverse needs.











Solution Components



Components

From pioneering early solutions like our Man Overboard self-preservation alert systems for the marine industry to advanced ARCAL-supported technologies, satellite receivers, and the agnostic Poscag interface, our core product range has continuously evolved to meet the dynamic needs of communication.

Each component technology is meticulously designed to seamlessly integrate with one another, allowing for flexible combinations that can be tailored to provide partial or comprehensive solutions.

solution components - examples

20-62 Transmitters

The 20-62 transmitters are versatile, available in VHF or UHF, with user-programmable power output ranging from 50 milliwatts to 5 watts. Using programming software, each model can be tuned across its full frequency range without needing any hardware adjustments.

These transmitters offer dual functionality with a switchable built-in POCSAG encoder. Equipped with two serial ports and a mini-USB port, the device opens up expanded application possibilities

20-90 Transceivers

The 20-90 is a straightforward, easy-to-configure POCSAG paging transceiver featuring a high-sensitivity receiver paired with a 100mW transmitter. It operates within the frequency range of 140 - 176MHz (VHF variant) or 420 - 480MHz (UHF variant), decoding and encoding messages at 512, 1200, or 2400 baud rates, supporting both alphanumeric and numeric messages.

Key standout features of the 20-90 include Multiple message queuing, dual functionality as a Paging Transceiver, and as a Paging Receiver (configurable), allowing decoding of paging messages as needed.

Software

Our multi-software architecture is designed to enable fast development and adaptations without the hefty cost and time-consuming traditional approach of customization.

We provide appropriate APIs, outputs, and configurable templates that allow for both centralized control and BYOD deployments.

Many clients utilize our capabilities for applications such as security, lighting, health and safety, access control, AgriTech control, and traffic management.

PCB UHF Transmitter

Perfect for integrators and developers, the 20-86-5000 series is a small, high-specification, cost effective POCSAG paging transmitter printed circuit board which can be used on your own enclosure.

It has undergone testing and type approval as a bare printed circuit board, allowing for integration into other products without requiring further type approval testing.











Technology Engagement Program

Through our customer technology engagement program, we've collaborated extensively with clients to craft reliable, high-quality, and adaptable solutions tailored to their needs.

Our goal is to share emerging trends and innovative technology uses identified across various industries, discussing their merits and exploring opportunities to research, adapt, develop, and release (RADAR) new value-added solutions for our customers.

This collaborative approach enables effective exploration and discovery without the need for heavy customized development and investment.

Below, we highlight examples showcasing the effectiveness of our RADAR approach, demonstrating successful collaboration across non-competing industries.

Ports and Shipping

Salcom transmitters, receivers and associated equipment has been used to complete a number of projects at container ports and harbours, including, but not limited to:

- Communication paging systems for fishing vessels, both on-ship and from shore-to-ship;
- » Maritime Safety port entry lighting system;
- Reefer lighting system operation, Ports of Lyttelton and North Shore (Whangarei);
- Tower lighting operations at Ports of Tauranga, Nelson, Whangarei, Auckland and Napier;
- Alerts and paging systems on privately owned yachts and charter vessels;
- Health and Safety solutions for injury prevention, personal emergency alerts and vehicle control;







Viticulture

Salcom products can be used for a wide variety of applications that enhance the best practices of organizations active in viticulture and growing.

Soil sensing, pressure sensing, tank or vat fill levels as well as temperature monitoring can all be managed remotely via the use of appropriate sensors for the management of all conditions that are critical to the success of your operation.

Salcom capabilities and range of technologies and products, can be configured to suit a variety of viticulture and growing needs, reporting critical data back to the operational center, allowing greater accuracy and reliability in the management of the business.

technology engagement - examples

AgriTech

Salcom transmitters, repeaters, receivers and power amplifiers, along with a range of ancillary products, can be configured to suit a variety of agriculture and farming applications.

Whether tracking the spraying area of a paddock where precise communication is required, or for the remote control of pumps, valves and braking systems for remote crop irrigation, providing greater accuracy and reliability in farming applications.

Soil sensing, pressure sensing, tank or vat fill levels as well as temperature monitoring can all be managed remotely via the use of appropriate sensors.

Salcom has partnered with organizations in this area and continues developing more products for use in short, medium and long-range communication systems for agriculture management.

Satellite Paging

Salcom developed an Infill Paging system using satellite communications for use by emergency services, to provide paging coverage for hard to reach locations.

This is critical where there is limited, no coverage or for non reliable communications.

Tsunami Warning System

The tsunami warning system plays a role as one of the mechanisms used to provide alerts for tsunami threats, as well as disseminating weather warnings and emergency alerts.

The system can function as a public address system, which means authorities can swiftly communicate critical information to the public.

Salcom takes great pride in supporting the Niue community and extends heartfelt gratitude to the organizations that have collaborated on the Niue Tsunami Warning project.

Together, these partnerships ensure the safety and resilience of Niue's population in the face of natural disasters.





Alofi

Niue







Components

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Product Sheets

In this section, you will find detailed information on each core product, along with examples of applications and key features.

Our aim is to assist you in your creative thinking and technical evaluation, providing the information you need to make informed decisions



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Product Sheet **Pendant Transmitter – IP67** 20-86 Series

The 20-86 is an extremely small, high specification, key ring, or pendant paging transmitter capable of transmitting text directly to pocket pagers. Ideally suited to retail assistance, rest/care home emergency applications or duress environments.



20-86-0001

Product code 20-86-0015

Advanced Low Battery Indication (ALBI) Feature

salcom

If the RED indicator flashes **during transmission** this indicates low battery status



Solid RED indicator confirms Transmission being sent A low battery message can be sent to the **receiver or seperate receiver RIC/Code** with specific message of Low Battery



When paired with suitable transceiver the Green indicators can provide a visual confirmation the message was received by receptor

Key Features

- » UHF operation
- » Small, light & discrete
- » Internal cell battery
- » Stuck Button feature prevents the battery going flat if a button has been accidentally held on
- » Individually programmable buttons
- » Robust design for harsh environments and use
- » Ideal for near distance paging, assistance, duress or operation of lights or doors etc
- » Capable of operating on existing in-house paging systems
- » 1 or 5-button variants, each button individually configurable with its own 35-character message
- » Simple control solution
- » Dust and waterproof rated to IP67
- » Unique Advanced Low Battery Indication (ALBI) Feature

Applications

Using a pager, readable text messages can be sent directly to staff, security, administrators for a call to action or information purposes.

Combined with an appropriate relay output receiver, the 20-86 series can be used for a variety of remote-control applications such as lighting, alarms, retail, security, access control, alarm disablement, rest home emergency and duress purposes.

Programming

Messages for each button can be programmed with USB programming (sold separately) using a free downloadable configuration tool from our website. A factory programming service is also available.

Operation

A front panel LED is used to confirm a message is being sent and/or to indicate a flat battery. 20-86's has a receiver which can be used, with appropriate transceivers, to provide visual message received acknowledgments.

Product Sheet **Transmitter with Ethernet**20-62 Series

The 20-62 transmitters are available in VHF or UHF, with user-programmable power output ranging from 50 milliwatts to 5 watts. Using programming software, each model can be tuned across its full frequency range with no hardware adjustments.



Product code VHF: 20-62-0150

Key Features

- » Available in VHF or UHF bands
- » Supports NRZ and POCSAG transmissions
- » High VSWR tolerance
- » 100% duty cycle
- » Two RS232 serial ports
- » USB port
- » Four discrete switch inputs
- » In-built POCSAG encoder
- » Low voltage detection
- » RF output through standard SMA connector
- » CAP and pre-programmed message databases
- » CAP code import from CSV or Text file
- » 512, 1200 or 2400 Baud over-air
- » Message buffering
- » Periodic message option (watchdog)
- » Programmable switch de-bounce
- » Protocols: Specifications section

Product code UHF: 20-62-0450

Operation

The 20-62 transmitter offers dual functionality as both an NRZ and POCSAG transmitter, featuring a built-in POCSAG encoder. With two RS232 serial ports and a mini-USB port, the device provides expanded application possibilities and supports input/output expansion through external interfaces. Connectivity is further enhanced with I.P support via the TCP/IP interface.

The transmitter accommodates diverse paging transmissions through industry standard protocols such as Salcom proprietary protocol, Telocator Alphanumeric Protocol (TAP/PET/IXO), and Telocator Network Paging Protocol (TNPPv3.8). Notably, its independent port configuration allows seamless connection to multiple input devices.

Programming

An internal database with up to 1,000 CAP codes which can be uploaded using the configuration tool which allows the import of CSV or Text files. Configuration of the transmitter is performed via any of the communication ports using a Salcom Configuration Tool (Sacoto), which allows for the setting of all operational parameters.

Product Sheet Multi-Purpose Transmitter 20-85 Series

The 20-85 is a compact paging transmitter suitable for hand-held or wall mounted use. Each button on the unit can be programmed with a message. Pressing a button will transmit the message associated with that button to a pocket pager where it will display on the screen.

The units are available in VHF and UHF versions. Transmitters configured to send paging messages can be utilised in a wide variety of applications such as personal and commercial security, medical alert, paging in restaurants and bistros, and customer assistance in supermarkets or hardware stores.



Product code 20-85-0454

Advanced Low Battery Indication (ALBI) Feature

If the RED indicator flashes **during transmission** this indicates low battery status



Solid RED indicator confirms Transmission being sent



A low battery message can be sent to the **receiver or seperate receiver RIC/Code** with specific message of Low Battery



When paired with suitable transceiver the Green indicators provide a visual confirmation the message was received by receptor

Key Features

- » Available in VHF or UHF versions
- » Internal battery operation
- » Simple telecontrol solution
- » Capable of operating on existing in-house paging systems
- » Ideal for remote switching (lights/pumps etc.) when used with a 20-90 relay output receiver
- » Rugged & compact
- » Individually programmable buttons
- » Equipped with receive function
- » Unique Advanced Low Battery Indication (ALBI) Feature

Applications

The 20-85 can be programmed to send control instructions to specialised paging receivers capable of controlling relays. Using this product combination, the transmitter can be used for remote machinery control.

Programming

The transmitters can be programmed to suit application requirements using Salcom product support software and the accompanying programming adapter.

Operation

A front panel LED indicates when the transmitter is operating. Using two user-replaceable AA batteries this transmitter offers a life of up to 10,000 transmissions with a range of up to 1000 meters.

Product Sheet **Transceiver with Ethernet**20-90 Series

The 20-90 is a simple to configure POCSAG paging transceiver with a high sensitivity receiver combined with a 100mW transmitter. It operates over the frequency range of 140 - 176MHz (VHF variant) or 420 - 480MHz (UHF variant) decoding and encoding 512, 1200 or 2400 baud, alphanumeric or numeric messages. The 20-90 supports multiple message queuing and will queue up to four 73-character messages or more smaller messages.



Product code VHF: 20-90-0150 Product code UHF: 20-90-0450

Key Features

- » Supports Salcom relay control protocol to control two on-board relay, plus several "virtual outputs"
- » Users can page a pager using over 2,000,000 codes, select from four priority levels, and include an alphanumeric message
- » Supports batching of serially queued input messages
- » TCP/IP connectivity
- Outputs can remotely activate input or send periodic messages, also allowing for acknowledgment of message receipt
- » 5 user definable I/O configurable as input or outputs (two high current and three low current)
- » 2 clean-contact relay outputs
- » Can transmit the received signal strength of the last received message allowing the receiver positioning and system health to be monitored
- » FSK with NRZ Data
- » VHF 140-176MHz and UHF 420-480MHz options
- » Can generate regular watchdog messages to check serial and radio link integrity

Applications

- » Paging Transceiver: allowing both the encoding and decoding of paging messages.
- » Paging Receiver (only by configuration): allowing the decoding only of paging messages where desired.
- » Transmitter: With channel busy check function before transmissions.
- » Autonomous Store & Forward Paging Repeater with duplicate message reject.
- » Allows TCP/IP output for closed loop system monitoring of messages received.

Operation

- » Can be controlled via an RS232 serial interface or TCP/IP to provide numeric, alphanumeric and tone only POCSAG encoding.
- » Can be configured to automatically respond with checksum information of the last received message.
- » Uses an intelligent self-adjusting channel busy check to prevent message collision or corruption.
- » The receiver has two clean contacts rated at 1A 24V DC operation. LEDs indicate receiver operation and status.

Product Sheet

Pendant Transmitter - PCB

20-86-5000 Series

Aimed at integrators and developers , the 20-86-5000 series is a small, high specification, POCSAG paging transmitter printed circuit board, 20-86-9000 inherits from this range and the 20-86 series Pendant Transmitter range.





Product code 20-86-5000

Application Example



This example demonstrates how you can use the PCB in your own enclosure, or similar requirement

The 20-86-5000 PCB has the same functionality of transmission indication and the advanced low battery indicator firmware.

Key Features

- The transmitter is a small, low cost, high specification bare printed circuit board paging transmitter measuring 55.5mm x 32.5mm x 6.5mm with battery fitted
- » The 20-86 is a low power transmitter, when used with an external antenna a direct line of sight range of up to eight hundred meters can be expected. When used within buildings the range will be reduced depending upon the building.
- » It has been tested and type approved as a bare printed circuit board allowing integration into other products without further type approval testing being required.
- » Unique Advanced Low Battery Indication (ALBI) Feature

Operation

The 20-86 range of products can send text messages directly to paging receivers, providing simpler, lower cost systems since intermediate receivers and transmitters are not required for short range applications. Using an appropriate receiver the transmitter can also be used for a general remote control applications such as turning on lights, disabling alarms etc.

Powered by a standard CR2032 coin cell, the transmitter will operate for more than five thousand transmissions under normal conditions before the battery needs to be replaced.

Programming

20-86 transmitters support up to eight inputs, each of which can be programmed with up to a thirty five character message. Programming software is available for download from the Salcom website (www.salcom.com) or can be provided pre-programmed.

Product Sheet Power Amplifier – VHF

11-54 Series

Designed to extend the reach and coverage of paging and telemetry networks, the 11-54 VHF power amplifier delivers 25W of output power, all from a 3W input.





Product code 11-54-0000

Key Features

- » Operates over frequency range of 138-162MHz
- » Delivers 25W of output power from a 3W input
- » Providing a ±5MHz bandwidth, ensures a minimum output of 20 Watts
- » Operates satisfactorily down to 400mW
- » A 2dB 50 Ω input matching pad allows for connection to a wide range of driving devices
- » Will pass a receive signal with less than 1dB attenuation
- » 3 stage aerial filter attenuates all spurious emissions to less than -30dBm
- » Protected against accidental power connection reversal

Operation

The 11-54 power amplifier operates over the frequency range 138-162MHz and with 4-5 watts input it will deliver 25 Watts. It has a switching bandwidth of ±5MHz with 20 Watts minimum output. Field tuning to specific frequencies is possible using a tuning tool through access holes in the case.

The power sensor operates with a minimum of 3 watts input and switches both the power and aerial relays to reduce standby current. The 11-54 will operate satisfactorily with down to 400mW drive with the PTT connection grounded to constantly enable transmit mode.

A 2dB, 50Ω input matching pad allows for connection to a wide range of driving devices without the risk of instability caused by mismatching. In the receive mode it will pass a receive signal with less than 1dB attenuation. The 3-stage filter attenuates spurious emissions to less than -30dBm.

The 11-54 is protected against accidental power connection reversal.

Product Sheet Call-Point Paging Transmitters 20-86-9000 Series

Ideally suited to a variety of reception, retail assistance and control applications, the 20-86-9000 is a small, high specification, POCSAG paging transmitter utilising the 20-86-5000 paging transmitter printed circuit board. It is capable of transmitting text messages directly to pocket pagers.



Product code 20-86-9001



Advanced Low Battery Indication (ALBI) Feature

Solid RED indicator confirms Transmission being sent

If the RED indicator flashes during transmission this indicates low battery status



A low battery message can be sent to the receiver or seperate receiver RIC/Code with specific message of Low Battery

Key Features

- The 20-86-9000 range of products can send text messages directly to paging receivers, providing simpler, lower cost systems since intermediate receivers and transmitters are not required for short range applications
- Using an appropriate receiver, the 20-86 series » can also be used for a general remote control applications such as turning on lights, disabling alarms and more
- The 20-86-9000 fits the form factor of many » standard electrical face plates so that it can remain in keeping with the surrounding switch gear in cosmetically sensitive areas
- » The 20-86, while low-powered, achieves a direct line of sight range of up to eight hundred meters
- The 20-86-9000 comes with a default mounting » block, but if needed, it can be flush-mounted similarly to most electrical switch plates
- Unique Advanced Low Battery Indication (ALBI) » Feature

Programming

20-86-9000 series transmitter has one or two switch option, each of which can be programmed with up to a thirty five character message.

Programming software is available for download from the Salcom website (www.salcom.com)

Transmitter options

The 20-86-5000 transmitter PCB used in this product is a small low cost, high specification bare printed circuit board paging transmitter measuring 55.5mm x 32.5mm x 6.5mm with battery fitted.

It has been tested and type approved as a bare printed circuit board allowing integration into other products without further type approval testing being required.

Product Sheet Power Amplifier – UHF

11-99 Series

Aimed at increasing the range and distance of both paging and telemetry networks, the 11-99 UHF power amplifiers offer up to 25-Watt output from an input of only 3-Watts on a pre-tuned frequency and a minimum output of 20-Watts over the full switching bandwidth without retuning.





Product code 11-99-2000

Key Features

- » Operates over range 450-500MHz
- » With 4-5 watts input it will deliver 25 Watts
- » Ability to switch bandwidth without retuning
- » Will pass a receive signal with less than 2dB attenuation
- » The 3 stage aerial filter attenuates all spurious emissions to less than -30dBm
- » Receive mode can be disabled to utilise lower drive power
- » Protected against accidental power connection reversal

Operation

Aimed at increasing the range and distance of both paging and telemetry networks, the 11-99 UHF power amplifiers offer up to 25-Watt output from an input of only 3-Watts on a pre-tuned frequency and a minimum output of 20-Watts over the full switching bandwidth without retuning.

The power sense operates with a minimum of 1 watt input and switches both the power and aerial relays thus minimising current consumption when in receive mode. The 11-99 will operate satisfactorily with an input drive of 1W which will give approximately 10-Watts out.

A 2dB, 50Ω input matching pad in the amplifier allows for connection to a wide range of driving devices without the risk of instability. In receive mode, the 11-99 will pass a receive signal with less than 2dB attenuation.

A 3-stage output filter attenuates spurious emissions to less than -30dBm and is in-circuit when in the receive mode to reduce receiver interference from high-band UHF services.

Product Sheet **Paging Rack – VHF** 15-15-1150

Combining the versatile 20-62 transmitter and the 11-54 power amplifier into one convenient 19" Eurorack cabinet, the 15-15-1150 is a solution for any local area messaging requirement either using, or independent of, a network infrastructure.

Capability to initiate messages as free form via a serial port using common serial paging protocols or as pre-programmed messages using the four external switch inputs, the 15-15-1150 offers a high level of versatility for any application requiring moderate coverage.



Product code 15-15-1150

Key Features

- » Industry standard 19" rack
- » 25-Watts output
- » Four switch inputs with pre-programmed messages
- » The inbuilt 20-62-0150 provides all I/O functions, serial commands, and RF drive to the 25-Watt Power Amplifier
- » 13.8V operation
- » Manual test button
- » The inbuilt 11-54-0000 25-Watt power amplifier is used to increase the output power of the rack to 25-Watts
- » Supports multiple serial paging protocols
- » Simple, clean, robust design
- » Passive cooling technology with ventilation
- » Front panel indicators

Applications

- » Sensor monitoring and reporting
 - Water
 - Heat
 - Power
- Emergency Services messaging;
 - Fire, AmbulanceCivil Defence
 - Civil Defenc
 USAR
 - USAR
 - LandSARSurf Clubs
 - SUIT CIUDS
- » Industrial Machine monitoring
 - Local area messaging
 - Ports
 - HealthcareContainer depots
 - Judicial
 - Convention
 - Convention centers
 - Sport arenas

Product Sheet Input-Output Expansion Unit 20-03-0000

The 20-03-0000 is an I/O expander module which provides four relay outputs, and eight open drain I/O pins which also serve as inputs. I/O expander for the Salcom 20-62 transmitter or Salcom 20-90 transceiver.



Product code 20-03-0000

Capabilities

POCSAG Message Activation: Outputs can be activated by POCSAG messages embedded with Salcom Relay Protocol commands. Activation can be restricted to specific CAP code ranges or triggered by any message sent to a CAP code within the range.

Serial Data Control: Outputs can respond to specified text within the serial data.

Input-Triggered Messaging: Inputs can generate Salcom protocol POCSAG messages over a serial connection, which can be transmitted to a pager using a Salcom 20-90 transceiver or a Salcom 20-62 transmitter. Inputs can also be configured to send any ASCII text over the serial connection in response to an input change.

Key Features

- » I/O expander for the Salcom 20-62 transmitter or Salcom 20-90 transceiver
- » Bidirectional point-to-point control over serial or radio link
- » Expandable further by daisy chaining Salcom 20-03 units
- » Four relay outputs with normally open and normally closed contacts
- » Eight bidirectional inputs generate user defined serial messages for rising and/or falling edges
- » Input pins can be configured as additional open drain outputs
- » Compatible with Salcom message protocol
- » Flexible output activation options
- » Control over Ethernet using third party serial to Ethernet adapters
- » Provides Input and Output capabilities for PC's, PLC's, and micro controller projects
- » Can generate regular watchdog messages to check serial and radio link integrity



Specifications

Product Specifications

In this section, you will find detailed information on each core product, along with examples of applications and key features.

Our aim is to assist in your creative thinking and technical evaluation, providing the information you need to make informed decisions



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Pendant Transmitter – UHF 20–86 Series



Options	20-86-0001: Single button
	20-86-0015: Five buttons blue
	20-86-0005: Five buttons black
Frequency Range	440-470MHz - UHF
Frequency Selection	Via software
Power Supply	3V, CR2032 button cell
Battery Life	Approx. 5,000 transmissions
	Approx. 5 years standby
Battery Replacement	Battery door on rear case
Power Consumption	Standby: <0.5µA
	Transmit: 26mA
Transmit Power	10mW
Channel Spacing	25kHz,12.5kHz, 6.25kHz
Modulation	FSK with NRZ data
Deviation	±4.5kHz, ±2.3kHz, ±1.0kHz
Transmit Duty Cycle	Up to 20%; Maximum 30 seconds on time
Baud Rate	512, 1200, or 2400
Message Format	POCSAG; Alphanumeric or Numeric
Configuration Application	Sacoto (Salcom Configuration Tool software)
Programming Cable	20-51-0001 (USB)
Serial Port	9600, N, 8, 1; 3V TTL (accessible only when case open for
	programming)
Antenna	Internal antenna
Indicators	Red LED (centre): Solid = Transmitting, Rapid flashing =
	Low battery
	Green LED's (left and right): On = Received message or
	command
Environmental Protection	IP67
Operating Temperature	-10°C to +55°C (+14°F to +131°F)
Weight	30g with battery
Case Dimensions	72mm x 43mm x 15mm (L x W x H)
Case Material	ABS plastic
Case Flame Rating	UL94-HB
Screws	PH-00 driver
Screw torque	0.06 – 0.08N*m
Approvals	EN 301 489-2 V2.1.1 (2019-4)
	EN 300 224 V2.1.1, 2017-06

Transmitter - VHF/UHF 20-62 series



Options	20-62-0150: VHF Transmitter 20-62-0450: UHF Transmitter
Frequency Range	VHF: 140 - 174MHz UHF: 421.5 - 475MHz
Frequency Selection	User configurable
Power Supply	+13.8V typical (11 to 15 VDC range)
Power Consumption	Standby: 60mA (90mA when connected to Ethernet) Transmit: 1.0A @ 5W (typical)
Transmit Power	5W, 2W, 1W, 500mW, 250mW, 100mW, 50mW (Custom values on request)
Channel Spacing	5kHz, 6.25kHz, 10kHz, 12.5kHz, 20KHz, 25kHz
Modulation	FSK with NRZ data
Deviation	±2.25kHz or ±4.5kHz
Transmit Duty Cycle	100% (with adequate ventilation)
Baud Rates	512 or 1200
Message Format	POCSAG; Alphanumeric or Numeric
RF Connector	50Ω SMA
Configuration Application	Salcom Configuration Tool (Sacoto)
Programming Cable	Standard USB mini-B, RS232 (with adapter), or Ethernet
Serial Ports	RS232 / USB - 9600, N, 8, 1
Ethernet	TCP Client, TCP Server, UDP Client, or UDP Server. Static or DHCP addressing.
Serial Protocols	Salcom; TAP (PET/IXO); TNPP v3.8; TPP (half), TPP (full); ESPA 4.4.4; Match; Gent; GPS &; Pulse Count; SMS; Comp1; Comp2; VisiCAD; Morley; FENZ; Flex; Multitone (half); Multitone (Full). Also protocols compatible with: Ascom, Austco, Scope, Blick and Gaming
Trigger Inputs	Four switch inputs on RJ45 connector; internal pull-up
Other I/O	External Modulation (0 - 5V), PTT IN, PTT OUT (50mA max)
Connectors	SMA: RF Output; RJ-12 (6P6C): Two RS-232 serial ports; USB-mini: USB-2 serial; RJ-45 (8P8C): Inputs and Outputs; Network RJ-45: Ethernet; Pluggable Terminal Block: DC Power in
Power Connector	2-way pluggable terminal block, 5.08mm (0.2") pitch (supplied)
Environmental Protection	Not suitable for unprotected outdoor use. Should be protected from adverse environmental conditions
Operating Temperature	-20°C to +50°C (-4°F to 122°F)
Indicators	Power LED (Green) • Slow Flashing = Normal Operation Status LED (Red) • Rapid flashing = Transmitting • Slow flashing (3Hz for 7 secs) = Error Condition
Weight	320g
Enclosure Dimensions	130mm x 31mm x 125mm (W x H x D) (5.12 x 1.23 x 5.04 in)
Enclosure Material	Extruded aluminium
Colour	Bright Silver Anodised Aluminium
Approvals	EN 301 489-2 V2.1.1 (2019-4) EN 300 224 V2.1.1, 2017-06 FCC CFR47 Part 15, subpart A and B FCC CFR47 Part 90 & Part 2

Multi-Purpose Transmitter - VHF/UHF 20-85 series



Options	VHF: 20-85-0151: One button
	20-85-0154: Four buttons
	20-85-0158: Eight buttons
	UHF: 20-85-0451: One button
	20-85-0454: Four buttons
	20-85-0458: Eight buttons
Frequency Range	VHF: 140 – 174MHz
	UHF: 440 – 470MHz
Frequency Selection	Via software
Power Supply	Two AA Alkaline batteries (LR6)
Battery Life	Approx. 50,000 transmissions
	Approx. 5 years standby
Battery Replacement	Removal of rear case
Power Consumption	Standby: <0.5µA
	Transmit: 70mA
Transmit Power	50mW
Channel Spacing	25kHz,12.5kHz, or 6.25kHz
Modulation	FSK with NRZ data
Deviation	±4.5kHz, ±2.3kHz, or ±1.0kHz
Transmit Duty Cycle	Up to 20%; Maximum 30 seconds on time
Baud Rate	512, 1200, or 2400
Message Format	POCSAG, Alphanumeric or Numeric
Configuration Application	Sacoto (Salcom Configuration Tool software)
Programming Cable	20-51-0001 (USB)
Serial port	9600, N, 8, 1; 3V TTL
Antenna	Internal antenna; optional SMA
Environmental Protection	IP65
Operating Temperature	-10°C to +55°C (+14°F to 131°F)
Weight	170g with battery
Screws	PH-1 driver
Screw Torque	0.3 N*m
Case Material	ABS Plastic
Case Dimensions	118mm x 79mm x 26mm (L x W x H)
Case Flame Rating	UL94 V-0
Approvals	EN 301 489-2 V2.1.1 (2019-4) (Pending)
	EN 300 224 V2.1.1, 2017-06 (Pending)

Transceiver – VHF/UHF 20–90–Series



Options	VHF: 20-90-0150 - UHF: 20-90-0450
Frequency Range	VHF: 140 - 176MHz - UHF: 420 - 480MHz
Frequency Selection	User configurable
Transmit Power	10mW, 20mW, 50mW or 100mW
Transmit Duty Cycle	100%
Channel Width	6.25 kHz, 12.5 kHz, or 25 kHz
Deviation	±1.0kHz, ±2.3kHz or ±4.5KHz
Modulation	GFSK with NRZ data (POCSAG)
Over-air Baud Rates	512, 1200, 2400
Receive sensitivity	-123 dBm at 512 baud -118 dBm at 2400 baud
Relays	Two Relays on RJ45 connector; one SPDT, one SPST
Definable I/O	Five I/O pins user configurable as input or output
Open drain outputs	Up to two 500mA open drain outputs with resettable fuses on RJ45 Up to three 5mA current limited open drain outputs on RJ12
Inputs	Up to five active low inputs on open drain output pins.
Serial Port	RS-232 on RJ12 connector. 9600 baud, no parity, 8-bits, 1-stopbit
Data interfaces	RS-232 (with adapter) and Ethernet
Serial Protocols	Salcom, Scope, TNPP v3.8
Configuration Software	Salcom Configuration Tool (Sacoto)
RF Connector	50Ω SMA
Power Connector	DC power pluggable terminal block (provided)
Power Supply	+13.8V typical (10 to 15 VDC range)
Power Consumption	Standby: 45mA Transmit: 90mA Ethernet: +35mA when connected to Ethernet Relays: +20mA per energized relay
Environmental Protection	Not suitable for unprotected outdoor use. Must be protected from adverse environmental conditions.
Operating Temperature	-10°C to +55°C (+14°F to +131°F)
Indicators	Power LED (Green) Slow Flashing = Normal Operation Fast Flashing = low battery TX/Busy LED (Red) Flashing fast = Transmitting Solid on = Chanel busy
Weight	190g
Enclosure Dimensions	130mm x 68mm x 31mm (W x D x H)
Enclosure Material	Extruded aluminium
Colour	Bright silver anodised aluminium
Approvals	20-90-0150: * EN 301 489-2 V2.1.1 (2019-4) (Pending) * EN 300 224 V2.1.1, 2017-06 (Pending) * FCC CFR47 Part 15, subpart A and B * FCC CFR47 Part 90 20-90-0450 EN 301 489-2 V2.1.1 (2019-4) / EN 300 224 V2.1.1, 2017-06 * FCC CFR47 Part 15, subpart A and B * FCC CFR47 Part 15, subpart A and B * FCC CFR47 Part 90 * AS/NI75 47691:2000 + Amendment 1:2002

PCB Transmitter Board – UHF 20-86-5000 series



Frequency Range	440 – 470MHz UHF
Frequency Selection	Via software
Battery	3V, CR2032 button cell
Battery Life	Approx. 5,000 transmissions
	Approx. 5 years standby
External Power Supply	3.7 to 18 Volts (via onboard regulator)
	3 Volts (unregulated; external battery)
Power Consumption	Standby: <0.5µA
	Transmit: 26mA (no TX LED)
Transmit Power	10mW
Channel Spacing	25kHz, 12.5kHz, or 6.25kHz
Modulation	FSK with NRZ data
Deviation	±4.5kHz, ±2.3kHz, or ±1.0kHz
External Connections	Thru-hole pads or edge-of-board castellations
Inputs	Eight; user programmable
Received Indication Outputs	Two LED outputs; via 680 Ω resistor
Transmit Indication Output	TX LED; via 680Ω resistor
Transmit Duty Cycle	Up to 20%; Maximum 30 seconds on time
Baud Rates	512, 1200, or 2400
Message Format	POCSAG; Alphanumeric or Numeric
Configuration Application	Sacoto (Salcom Configuration Tool software)
Programming Cable	20-51-0001 (USB)
Serial Port	9600, N, 8, 1; 3V TTL
Antenna	External; connection via thru-hole pad or castellation
Environmental Protection	None, PCB must be housed in suitable enclosure
Operating Temperature	-10°C to + 55° C (+14°F to +131°F)
Weight	6g with battery
Board Dimensions	55.5mm x 32.5mm x 6.5mm (L x W x H)
Approvals	EN 301 489-2 V2.1.1 (2019-4)
	EN 300 224 V2.1.1, 2017-06

Technical Specification

Power Amplifier – VHF 11–54 series



Frequency Range	138-162MHz-VHF
Frequency Selection	Externally field tunable or Factory Preset option
Power Supply	+13.8V typical (11 to 15 VDC range)
Power Consumption	Standby: 4mA
	Normal Operation: 4A
	Maximum: 5A @ 25W output
Transmit Power	25 Watts @ 5W input
Transmit Duty Cycle	50% at 25 Watts
Power Input	PA Receiver Switching = 3W min
	PA Only = 0.4W min for 10W output typical
Switching Bandwidth	PA Receiver Switching = \pm 5MHz, 20W min with 4W input
	PA Only = ±5MHz, 20W min with 4W input
Transmit Enable	PA Receiver Switching = Power sense circuit operates
	relay
	PA Only = Ground PTT, 3mA source
Connectors	PTT: 2-way pluggable terminal block (supplied)
	Power: 2-way Pluggable terminal block (supplied)
Power Connector	2-way pluggable terminal block (supplied)
RF Connector	50 Ω BNC (both Input and Output)
Environmental Protection	Not suitable for outdoor use and should be protected
	from adverse environmental conditions
Operating Temperature	-10°C to +60°C (+14°F to +140°F)
Indicators	Power LED (Green)
	 Solid On = Normal Operation
	Status LED (Red)
	Off = Receive mode
	On = Iransmit mode
Weight	400g
Enclosure Dimensions	100mm x 130mm x 30mm (W x D x H)
Enclosure Material	Extruded aluminum
Colour	Matte Black
Type Approvals	AS 4295: 1995

Call-Point Paging Transmitters 20-86-9000 series



Options	20-86-9001: One momentary switch
	20-86-9002: Two momentary switches
Frequency Range	440-470MHz
Frequency Selection	Via software
Power Supply	3V, CR2032 button cell
Battery Life	Approx. 5,000 transmissions
	Approx. 5 years standby
Power Consumption	Standby: <0.5µA
	Transmit: 31mA
Transmit Power	10mW
Channel Spacing	25kHz,12.5kHz, or 6.25kHz
Modulation	FSK with NRZ data
Deviation	±4.5kHz, ±2.3kHz, or ±1.0kHz
Transmit Duty Cycle	Up to 20%; Maximum 30 seconds on time
Baud Rate	512, 1200, or 2400
Message Format	POCSAG; Alphanumeric or Numeric
Configuration Application	Sacoto (Salcom Configuration Tool software)
Programming Cable	20-51-0001 (USB)
Serial Port	9600, N, 8, 1; 3V TTL
Antenna	Internal antenna
Indicators	Red LED (center): Solid = Transmitting
	Rapid flashing = Low battery
Environmental Protection	Must be located to be protected from water
Operating Temperature	-10°C to + 55° C (+14°F to +131°F)
Weight	88g with battery
Case Dimensions	Enclosure: 103mm x 51mm x 43mm (L x W x H)
	"Worktop" footprint
	Switch height: 4mm
Enclosure Material	Polycarbonate (PC)
Approvals	20-86-9001
	» EN 301 489-2 V2.1.1 (2019-4)
	» EN 300 224 V2.1.1, 2017-06

Power Amplifier - UHF 11-99 series



Frequency Range	400-440MHz - UHF (Model No. 11-99-1000)
	450-500MHz - UHF (Model No. 11-99-2000)
Frequency Selection	Factory preset
Power Supply	+13.8V typical (11 to 15 VDC range)
Power Consumption	Standby: 4mA
	Normal Operation: 4.5A
	Maximum: 6A @ 25W output
Transmit Power	25W @ 4W input; 18W @ 2W Input; 10W @ 1W Input
	approx.
Transmit Duty Cycle	50% at 25 Watts; Maximum 1 minute on time
Switching Bandwidth	50MHz, 20 Watts minimum with 4 Watts input
Transmit Enable	Power sense circuit operates relay (1W min)
Receive Mode	50MHz, 20 Watts minimum with 4 Watts input
Power Connector	2-way pluggable terminal block (supplied)
RF Connector	50 Ω BNC (both Input and Output)
Environmental Protection	Not suitable for outdoor use and should be protected
	from adverse environmental conditions
Operating Temperature	-10°C to +60°C (+14°F to +140°F)
Indicators	Power LED (Green)
	 Solid On = Normal Operation
	Status LED (Red)
	Off = Receive mode
	 On = Transmit mode
Weight	400g
Enclosure Dimensions	100mm x 130mm x 30mm (W x D x H)
Enclosure Material	Extruded aluminium
Colour	Matte Black
Type Approvals	AS 4295: 1995 (RF) FCC CFR47 Part 90 (RF), Part 2 (RF)

Technical Specification

Paging Base 15-15-1150



Frequency Range	155 - 161MHz
Frequency Selection	Single channel, programmed via software
Power Supply	External 11 – 15 VDC @ 4.5 Amps (13.8 Volts typical)
Power Consumption	Standby: 80mA
	Transmit: 4 – 4.5 Amps @ 13.8Volts
Transmit Power	25 Watts @ 13.8 Volts
Channel Spacing	25KHz
Modulation	FSK with NRZ data (F1D)
Deviation	±4.5KHz or ±2.5KHz
Transmit Duty Cycle	Up to 50%; Maximum 30 seconds on time
Baud Rate	512, 1200, or 2400
Message Format	POCSAG, Alphanumeric or Numeric
Configuration Application	Sacoto (Salcom Configuration Tool software)
External Inputs	Four switch inputs on DB15
Serial Port	DB9 on rear panel (programming and serial protocols
Serial Port Data Rate	9600, N, 8, 1
Programming Software	Sacoto (set as 20-62 Transmitter)
Supported Serial Protocols	Salcom; TAP (PET/IXO); TNPP v3.8; TPP (half), TPP (full); ESPA 4.4.4; Match; Gent; GPS & Pulse Count; SMS; Comp1; Comp2; VisiCAD; Morley; FENZ; Flex; Mul-tone (half). Mul-tone (Full), also protocols compatible with: Ascom, Austco, Scope, Blick and Gaming
Antenna Connector	N-Type socket, 50Ω
Environmental Protection	Not suitable for unprotected outdoor use. Should be protected from adverse environmental conditions.
Operating Temperature	-10°C to +50°C
Weight	3.5Кд
Front panel	Power LED (Green), Transmit LED (Red), Manual test button
Rear panel	Power (4-pin MIC), Serial port (DB9F), External Inputs (DB15F), RF Out (N-Type, F)
Case Dimensions	485 x 44 x 280 (W x H x D)
Case Material	Steel and Aluminium
Colour	Black
Approvals	AS/NZS (pending)

Technical Specification Input / Output Expansion Module 20-03-0000



Power Supply	+13.8V typical (11 to 15 VDC range)
Power Consumption	Normal Operation: 15mA Relays: 20mA per energized relay
Configuration Application	Salcom Configuration Tool (Sacoto)
Programming Cable	12-45-0000 (RJ12 to DB9) Can be used with a USB to RS232 DB9 Serial Adapter Cable
Serial Port	2 ports, 9600, N, 8, 1; RS232
Serial Protocols	Salcom Relay protocol Salcom Message protocol ASCII strings to trigger outputs ASCII messages triggered by inputs Multiple units may be daisy chained for additional inputs or outputs, or to create a bi-directional link between inputs and outputs on separate units.
Relay Outputs	4 Relays with normally open and normally closed contacts 1A@4Vdc
Open Drain Outputs	Eight open drain outputs with 500mA resettable fuses (PTC). Selectable as 5mA current limited. Internal protection for inductive loads. Maximum voltage = supply voltage.
Inputs	8 inputs monitoring the open drain outputs. Open drain outputs have an internal pull-up to 3.3v (4k) and maybe pulled low externally.
Connectors	Two-way pluggable DC power connector Serial Port 1 (RS232) = RJ12 (6P6C) Serial Port 2 (RS232) = RJ12 (6P6C) Terminal block: 2 rows x 12 way, 3.81mm pitch. Two 12-way plugs with screw connections (supplied)
Environmental Protection	Not suitable for outdoor use and should be protected from adverse environmental conditions
Operating Temperature	-10°C to +50°C (+14°F to +122°F)
Indicators	Power LED (Green) Slow Flashing = Normal Operation Data LED (Red) On = Active Serial Data Flashing = Programming Mode
Weight	250g
Enclosure Dimensions	68mm x 150mm x 38mm (WxDxH)
Enclosure Material	Extruded aluminum
Colour	Matt Black
Compliance	EN 301 489-2 (V2.1.1, 2019-04)



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