CHALLENGE. SOLUTION. SUCCESS.

High-quality radio technology for real-time wireless data communication

21
PRODUCT CATALOGUE

SATEL

Mission-Critical Connectivity

SOLVING YOUR CHALLENGES

SATEL is a trusted wireless technology expert and innovator who develops and sells high quality connectivity solutions.

Our solutions are used in a wide range of industrial applications enabling secure, mission-critical connections. All SATEL products are designed and manufactured in Finland.

Reliable connections, protected business

SATEL technology is easy and fast to implement and use with low life cycle costs. Our solutions are expandable, customizable, flexible and secure.

You get added value from our services. We offer network design and technical support, and we have a wide distributor network at your service.

Expertise
High quality
Easy implementation
Independence

Operational security
Low life cycle costs
Service and support
Global distribution network

SUSTAINABILITY AS A CORE VALUE

SATEL is committed to carrying out its business in a sustainable way. Our radio technology is designed, manufactured and tested in Finland. We have a long tradition of environmentally friendly practices, and we perform highly in ESG (Environmental, Social and Governance) criteria.

SATEL radio technology can be used in various mission-critical applications such as SCADA, machine control, smart farming, ITS, autonomous vehicles, GNSS, offshore, environmental monitoring and Industrial Internet. Mission-critical nature of these applications calls for very tight requirements for connectivity, reliability, accuracy and security. Many of the applications that use radio modems make operations safer and more sustainable.

APPLICATIONS

SATEL's technology is used globally in a wide range of industrial applications that require the utmost reliability and security. The application possibilities are numerous.

UTILITIES

Utility systems require a highly reliable monitoring and controlling network. Malfunctions should be pinpointed quickly and even restored remotely. SATEL offers comprehensive solutions that are easy to implement and expand. SATEL radio technology is currently being used e.g. in power distribution, advanced metering infrastructure, windmills, waterworks, sewer networks, district heating and gas pipelines.

In utility communications, real-time wireless monitoring and remote access add efficiency and support interference-free operation, cut reaction times and minimize the environmental impact, for example water losses.

ENVIRONMENTAL MONITORING

Wireless radio technology is one key aspect in Environmental Monitoring. It brings safety, operability and control. With SATEL's solutions you can monitor weather conditions and get information for example in flood, fire or drought situation.
They provide real-time information of environmental conditions without additional costs and with a minimum supervision.

ITS

Intelligent Transport Systems are improving travel experience everywhere, and operational communication is a major factor in this. Private radio data network ensures the functionality of these applications. SATEL's radio technology is used in in public transport e.g. in traffic light and traffic sign control, real-time passenger information systems and automatic vehicle location.

In ITS radio technology contributes to making transportation more efficient, environmentally friendly and safe. The results can be seen in reduced driving times, less fuel consumption and less CO_2 emissions.

OEM

SATEL have produced a range of OEM radio modules for system manufacturers to integrate into customer solutions. They are secure, customizable and flexible in mounting options. SATEL's solutions are widely compatible and also support other manufacturers' radio protocols.

MACHINE CONTROL

Machine control is used to accurately position machinery based on GNSS systems and 3D design models. Several machine control systems use the Real-Time Kinematic (RTK) to improve positioning accuracy for streamlining the different construction site workflows.

SATEL's radio technology is used worldwide in machine control. Our technology is perfect for mission-critical operations. It is a safe way to ensure availability even in areas with limited coverage or no coverage at all.

In machine control operations become more efficient and safer. Environmental impact is manifested in lower fuel consumption, longer machine lifecycle and, for example, in precision farming more accurate seed, fertilizer and pesticide use.

THE HEART OF THE SATEL XPRS SOLUTION

SATEL XPRS IP radio router is an excellent choice for data transfer for mission-critical applications requiring long range and the benefits of the privately owned networks.

The IP radio router provides high availability connections with device and routing protection. The SATEL XPRS solution utilizes the interoperability of the radio routers with other communications technologies, as well as technology switchovers.

IP RADIO ROUTER

SATEL XPRS IP radio router is suitable for both serial and IP data networking in UHF frequencies. It provides a reliable data connectivity for applications that require stability, high availability and long range. It supports low latency networking and has easy remote management with intuitive user interface.

The product consists of two separate modules, a radio unit and central unit. The radio unit alone can be used as a serial data radio router and as a repeater in packet routing networks. When central unit is added to the radio unit, full TCP/IP functionality is obtained. Advanced features, such as adaptive modulation and radio parameters, cyber security features, monitoring and management, protocol routing and conversion functionality provide a complete digital solution that takes into account all data transfer scenarios.

Radio and central unit w display
YF0220

Radio and central unit w/o display
YF0210

Radio unit only
YF0200

	XT 5R			XT 5RC
Model / Type identification	SATELLAR RU-Q / TA-26			SATELLAR RU-Q / TA-26
SATEL order code with display	YF0200			YF0210 YF0220
Frequency MHz	360–405			
	400–445			
Modulations	2, 4, 8, 16, 32, 64 QAM			
Tuning range	45 MHz			
Channel width	12.5 kHz / 25 kHz			
Data speed radio (max.)	60.5 kbps @ 12.5 kHz (64QAM) 121 kbps @ 25 kHz (64QAM) Max. coded			
RX sensitivity (BER 10E-6)	Air speed	Channel width	Modulation	Sensitivity (10E-6)
	121 kbps	25 kHz	64QAM	-98 dBm
	60.5 kbps	12.5 kHz	64QAM	-100 dBm
	80.6 kbps	25 kHz	16QAM	-105 dBm
	40.3 kbps	12.5 kHz	16QAM	-106 dBm
	40.3 kbps	25 kHz	4QAM	-111 dBm
	20.2 kbps	12.5 kHz	4QAM	-113 dBm
TX power (nominal)	37 dBm (5 W) mean: average 30 dBm (1 W), max 32 dBm (1.5 W) PEP: average 37 dBm (5 W), max 38 dBm (6.6 W)			
Interface	RS-232, -422 / -485			RS-232, -422 / -485, USB, Ethernet
Operating voltage range	+12.5 ... +25 Vdc (-15% / +20%)			
Power consumption without display TX / RX with display TX / RX	14.4 W / 3.8 W			15.8 W / 5.2 W 16.4 W / 5.8 W

Long range	**VLAN**	**Unicast Broadcast**	**Bridge mode**	**NETCO**	**Cyber security**
Redundant routing	**SNMP monitoring**	**Radio data up to 230 kbps**	**Interoper-ability**	**UHF**	
Firewall	**Protocol conversions**	**IEC-104/101, DNP3, Modbus TCP/RTU**	**Serial over IP**	**0.1-5 W TX-power**	

SATEL XPRS OPTIMUM IP RADIO ROUTER

SATEL XPRS Optimum IP radio router works as a cost-efficient core for the SATEL XPRS solution. It enables secure, reliable and private UHF wireless communication for modern IP networks. We have optimized its feature set to make it even more economical, but you can also order additional features according to your needs.

SATEL XPRS OPTIMUM

Model / Type identification	SATELLAR RU-Q / TA-26
SATEL order code	YF0410 with encryption support YF0415 without encryption support
Frequency MHz	360–405 400–445
Tuning range	45 MHz
Channel width	12.5 kHz / 25 kHz (programmable)
TX power (nominal)	37 dBm (5 W) mean: average 30 dBm (1 W), max 32 dBm (1.5 W) PEP: average 37 dBm (5 W), max 38 dBm (6.6 W)
Modulations	Modulations 2, 4, 8, 16 QAM

RX sensitivity (BER 10E-6)	Air speed	Channel width	Modulation	Sensitivity (10E-6)
	40.3 kbps	25 kHz	4QAM	-111 dBm
	20.2 kbps	12.5 kHz	4QAM	-113 dBm
	80.6 kbps	25 kHz	16QAM	-105 dBm
	40.3 kbps	12.5 kHz	16QAM	-106 dBm

Interface	RS-232, -422 / -485, USB, Ethernet
Operating voltage range	+12.5 ... +25 Vdc (-15% / +20%)
Power consumption TX / RX	15.8 W / 5.2 W

FEATURES

Included	Order separately	Explanation
Routed mode Bridge broadcast mode Transparent mode for serial	Proxy ARP	IP routing to remote networks in the same LAN or IP address range
Firewall (iptables, ebtables)	NMS to Modbus	Diagnostics with Modbus protocol
SSH access	Application routing	DNP3 IP to serial, Modbus TCP to Modbus RTU, Serial IP, UDP/TCP Proxy, Sinaut S7, custom protocol etc.
VLAN support	IEC104/IEC101 conversion	Protocol master is using IEC 60870-5-104 RTUs operate on IEC 60870-5-101
Encryption AES128, AES256	Redundant routing	IP routing table enhancement: Automatic route selection VRRP and other related features for high availability
Link specific modulation (Each remote can operate on separate modulation)	Adaptive modulation	Radio interface automatically adapts to SNR level
SNMPv1, 2, 3	Upgrade 16QAM to 32QAM	To achieve higher radio bit rate, up to 101 kbps
USB diagnostics port	Upgrade 16QAM to 64QAM	To achieve higher radio bit rate, up to 121 kbps
	Upgrade 32QAM to 64QAM	To achieve higher radio bit rate, up to 121 kbps

0.1-5 W TX-power	Inter-operatibility	Unicast Broadcast	VLAN	Bridge mode	SNMP monitoring	Firewall
Spectral efficient	Long range	Cyber-secure	NETCO	Remote configuration	Cost-effective	UHF

Contact us to inquire other cellular router options: **info@satel.com**
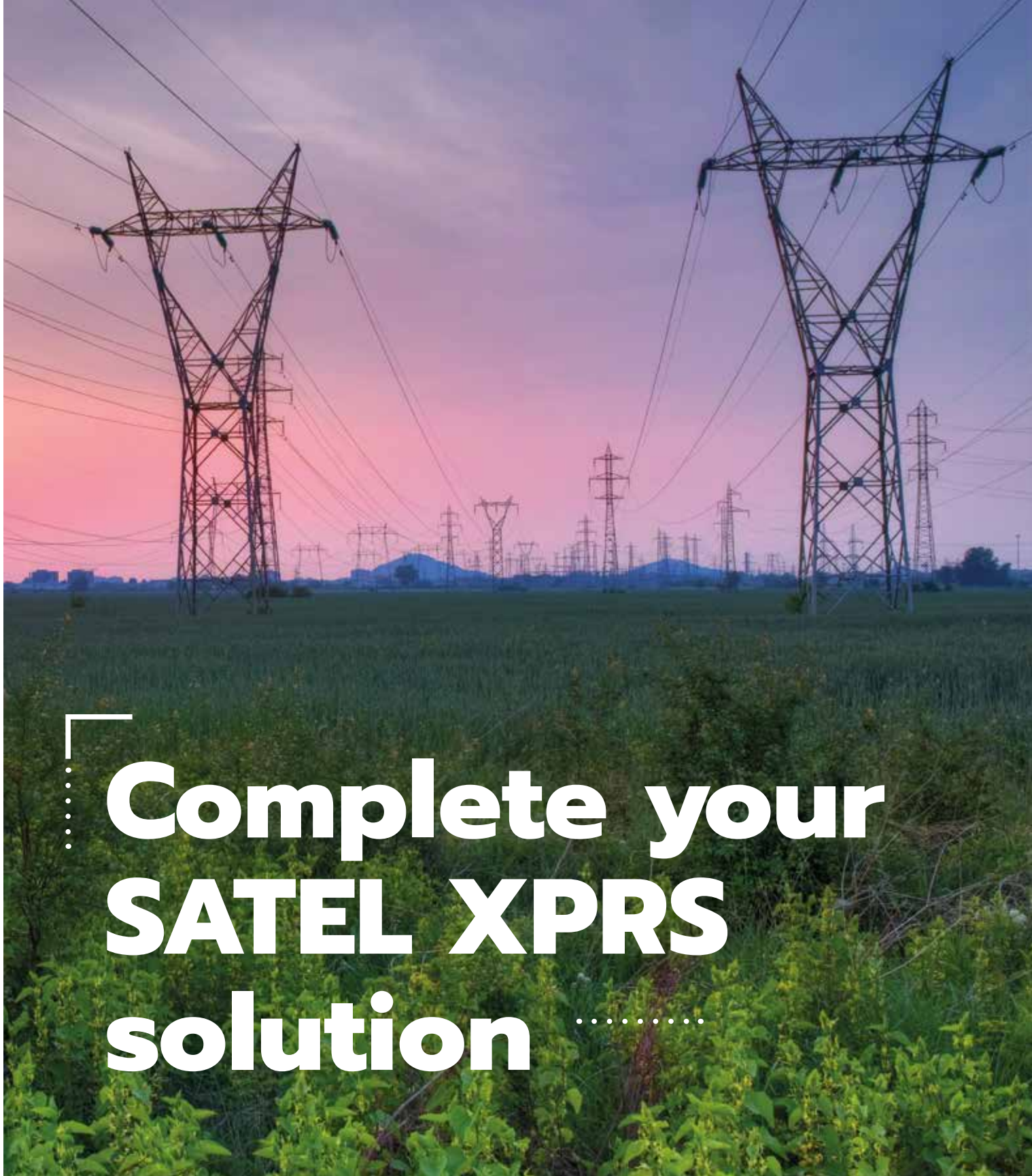
Complete your SATEL XPRS solution

BENEFIT FROM THE USE OF MULTIPLE TECHNOLOGIES

The SATEL XPRS solution takes your mission-critical communications to the next level. Varying system requirements such as different investment profiles and increasing redundancy and performance are met by the SATEL XPRS solution with wireless cellular routers.

Co-operation of adjacent technologies adds even more reliability, predictability and security to your mission-critical connectivity.

SATEL-GW600

SATEL order code	YG0600
Cellular technologies	LTE, HSPA+, HSPA, UMTS, EDGE, GPRS, GSM
Interfaces	Dual SIM, Quad Ethernet ports, RS-232 and RS-485 serial ports, Digital inputs for event detection
Cyber security	For example IPsec and OpenVPN
Special features	Protocol conversions, Relay contact options, Interface connectivity monitoring

The versatile 2G/3G/LTE wireless router is suitable for a variety of industrial deployments. The compact structure makes it excellent for M2M applications like SCADA, telemetry and intelligent traffic systems. The router supports the following radio access technologies: LTE, HSPA+, HSPA, UMTS, EDGE, GPRS and GSM.

- Dual SIM
- Quad Ethernet ports
- SMS commands
- RS-232 and RS-485 serial ports
- Digital inputs for event detection
- Relay contact options
- Extended list of routing protocols
- Security features
- Protocol conversions
- Centralised management and monitoring

SATEL-GW120

SATEL order code SATEL-GW100 without WiFi SATEL-GW120 with WiFi	YG0100 YG0120
Cellular technologies	LTE, HSPA+, HSPA, UMTS, EDGE, GPRS, GSM
Interfaces	Dual SIM, 2.4 GHz WiFi, Dual Ethernet ports
Cyber security	For example IPsec and OpenVPN

The small and robust 2G/3G/LTE router with WiFi option is perfect for M2M applications like remote monitoring and control. It offers a new entry point for 2G/3G/LTE data applications and supports the following radio access technologies: LTE, HSPA+, HSPA, UMTS, EDGE, GPRS and GSM.

- Dual SIM
- 2.4GHz WiFi
- Dual Ethernet
- Extended list of routing protocols
- Security features
- GPS receiver
- SMS management
- Active power conditioning
- Centralised management and monitoring

In case WiFi is not needed, a good choice is SATEL-GW100. It has all the same functions than SATEL-GW120 except WiFi.

Contact us for other cellular router options!

FRONT PANEL

REAR PANEL

RACK

SATEL-EASy+

The SATEL-EASy+ product family has an improved LCD display for easy configuration, an improved MCU capacity and variable physical interfaces available. It is compatible with SATELLINE-EASy and -M3-TR4 based radios as well as with SATELLINE-3AS NMS modems. The first product variant is for 400 MHz frequency band and with 1W output power.

HW

- New generation mechanics
- Operating voltage +7 … +27.5 Vdc (-15 % / +20 %)
- Improved LCD display
- Improved MCU capacity
- Variable physical interfaces (D15, RJ45, USB, IO's) *)

FW

- NMS Protocol Compatibility (With routing, diagnostics and packet filters)
- ETH & TCP/IP Connectivity *)
- BT/BLE Connectivity *)
- DRM Feature support (IP networking, Cyber security) *)
- FW Over-The-Air Update *)

SW/DM

- Legacy support for SATEL NMS PC Software
- SATEL NETCO NMS (Configuration + Monitoring)
- SATEL NETCO DEVICE, mobile version *)

THE FOLLOWING SOFTWARE ARE SUPPORTED:

- SATEL NETCO DEVICE
  (Configuration and reprogramming)
- SATEL CONFIGURATION MANAGER
  (Configuration and reprogramming)
- SATEL NETCO DESIGN (Network configuration)
- SATELLINE SaTerm (Network configuration, testing and reprogramming)
- SATEL NMS PC (Network configuration, monitoring and diagnostics)
- SATEL NETCO NMS *) (Network configuration, monitoring and diagnostics)
- SATEL NETCO DEVICE, mobile version *) (Configuration over BT)

THE FOLLOWING VARIANTS ARE COMING NEXT:

Variant with USB, ETH and BT interface

- For transmitting and receiving data and modem configuration

Variant for 320 … 380 MHz frequency band

- With/without LCD user interface, with function buttons and AES encryption support
- Excellent choice for GNSS industry in Asia and utility business in the Middle East

SATEL-EASY+	
SATEL order code	YM6010 SATEL-EASy+ (with AES) YM6015 SATEL-EASy+ YM6050 SATEL-EASy+ (with display and AES) YM6055 SATEL-EASy+ (with display)
Frequency	403 … 473 MHz
Tuning range	70 MHz
Channel width	12.5 / 20 / 25 kHz programmable
RX sensitivity	-116 dBm @ 12.5 kHz (4FSK) / -112 dBm @ 25 kHz (4FSK) -106 dBm @ 25 kHz (16FSK)
TX power (max.)	1W
Interface	RS-232, -422, -485 (default)
Operating voltage range	+7 … +27.5 Vdc (-15% / +20%)
Power consumption TX / RX	< 6.0 W / < 1.4 W
Data speed (max.) radio / serial	28800 bps / 115200 bps

*) Ask availability from SATEL.

SOLUTIONS FOR THE TOUGHEST PLACES

SATEL-EASy Pro+ is a new IP67 classified UHF radio modem with a high 35 W power transmitter, wide 70 MHz tuning range (403 ... 473 MHz) in one hardware and selectable channel spacing.

First version of SATEL-EASy Pro+ is equipped with one antenna port and one data port (RS232 by default, RS485/-422 data ports optional), second version with an option for diversity reception (double antenna port) which improves the reception quality and dual serial port capability supporting simultaneous data (RS232 by default, RS485/-422 data ports optional) and diagnostics output.

Supported AES256 (AES128 by default) encryption on radio channel increases the data security. Due to the high transmitting power, connection distances more than 80 kilometres can be covered in favourable conditions.

SATEL-EASy Pro+

SATEL order code	TBD
Frequency	403 … 473 MHz
Tuning range	70 MHz
Channel width	12.5 / 20 / 25 kHz
RX sensitivity	-112 dB
TX power (max.)	35 W
Interface	RS-232, RS-485, RS-422
Operating voltage range	+10.6 … +25 Vdc (-15% / +20%)
Power consumption	Charging: 7.4 W Charging + RX: 8.4 W Charging + TX: 13.2 W @ 1 W RF Device OFF: 0.46 W RX: 1.32 W TX: 5.8 W @ 1 W RF
Data speed (max.) radio / serial	28800 bps / 115200 bps

DEFYING ALL CHALLENGES

SATEL Compact-Proof is particularly well suited for outdoor use (land surveying, for instance) under varying weather conditions.

The lithium-ion battery provides a long-lasting performance and plenty of operating hours. The operating time in +25°C is more than 15 h.

SATEL Compact-Proof

SATEL order code	YM6570 / YM6573 (with battery) YM6571 / YM6574 (w/o battery)
Frequency	330… 420 / 403...473 MHz
Tuning range	90 / 70 MHz
Channel width	12.5 / 20 / 25 kHz programmable
RX sensitivity	-114 dBm
TX power (max.)	1 W
Interface	RS-232
Operating voltage range	+10.6 … +13.3 Vdc (-15% / +20%)
Power consumption TX / RX When idle (no charging and modem off)	7 W / 1.2 W 6 mW
Data speed (max.) radio / serial	19200 bps / 38400 bps

LICENCE FREE RADIO MODEM

SATEL Compact-Proof (869 MHz)

SATEL order code	YM6575 with battery YM6576 w/o battery
Frequency	869.4125 … 869.6375 MHz (865 … 867 MHz for India)
Channel width	25 kHz
RX sensitivity	-111 dBm
TX power (max.)	500 mW (1 W for India)
Interface	RS-232
Operating voltage range	+10.6 … +13.3 Vdc (-15% / +20%)
Power consumption TX / RX	TX 3.8 W (869 MHz) / 7 W (865 MHz) / RX 1.2 W
Data speed (max.) radio / serial	19200 bps / 38400 bps

BATTERY for SATEL Compact-Proof

Capacity and type	7.2 V, 8700 mAh, Li-Ion	
Charging current (max.)	1.6 A	
Charging time (empty to full)	5.5 h @ + 25 °C	
Charging voltage	+9... + 16 Vdc	
Max. time of operation	+ 60 °C (1 W)	13.8 h
	+ 60°C (50% TX / RX ratio 1 W)	22.2 h
	- 20 °C (1 W)	10.5 h
	- 20 °C (50 % TX / RX ratio 1 W)	16.9 h
	- 20 °C RX	44 h

*) In -20 °C operational times can decrease 40 %.

**) Due to the Li-Ion battery technology capacity will slightly decrease after each cycle affecting directly to the operation times.

IP67 RADIO MODEMS

SATELLINE-EASy Pro

SATEL order code	YM6803
Frequency MHz	403 … 473 MHz
Tuning range	70 MHz
Channel width kHz	12.5 / 20 / 25 kHz programmable
RX sensitivity	-114 dBm
TX power (max.)	35 W (25 W as an order option)
Interface	RS-232
Operating voltage range	+10.6 … +13.3 Vdc (-15% / +20%)
Power consumption TX / RX	120 W / 1.8 W
Data speed (max.) radio / serial	19200 bps / 38400 bps

IP69K RADIO MODEMS

SATEL EASy-Proof

SATEL order code	YM6580 / YM6480 YM6585 / YM6485 (with AES)
Frequency	330 ... 420 / 403 … 473 MHz
Tuning range	90 / 70 MHz
Channel width	12.5 / 20 / 25 kHz programmable
RX sensitivity	-114 dBm
TX power (max.)	1 W
Interface	RS-232
Operating voltage range	+7 ... +25 Vdc (-15% / +20%)
Power consumption TX / RX	7 W / 1.2 W
Data speed (max.) radio / serial	19200 bps / 38400 bps
Note	Interface connector: Deutsch DT04-6P-CL09

SATEL Proof-TR4+ / -TR9

SATEL order code	YM6577 SATEL Proof-TR4+ with AES YM6578 SATEL Proof-TR4+ w/o AES YM6587 SATEL Proof-TR9
Frequency	403 … 473 / 902 …928 MHz
Channel width	12.5 / 20 / 25 kHz @ TR4
Spreading method	Frequency hopping @ TR9
RX sensitivity	-118 … -105 dBm
TX power (max.)	1 W
Interface	RS-232 (TD, RD lines)
Operating voltage range	+7 ... +27.5 Vdc (-15% / +20%)
Power consumption TX / RX	7 / 1.2 W (typical)
Data speed (max.) radio / serial	28800 bps / 115200 bps @ TR4 115200 bps / 115200 bps @ TR9

SATELLINE-EASy Pro

SATEL EASy-Proof
SATEL Proof-TR4+ / -TR9
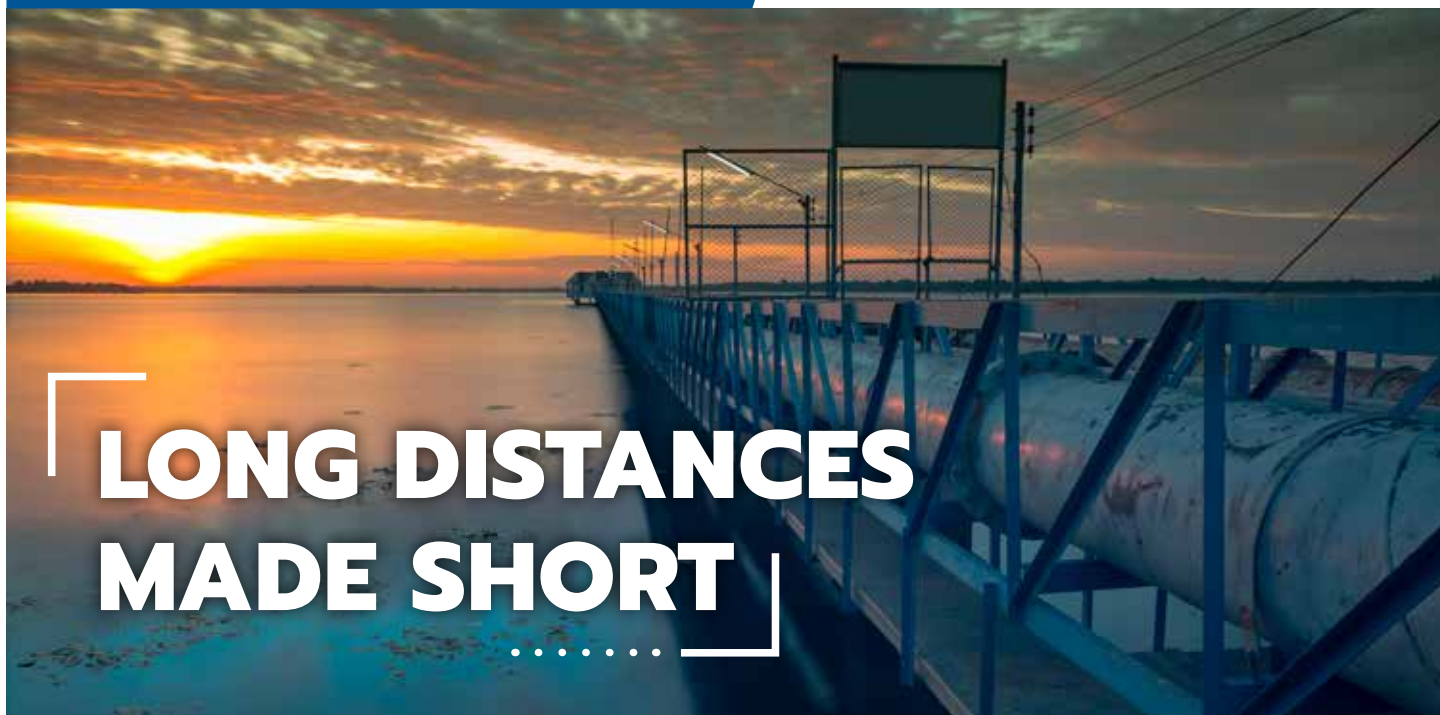
LONG DISTANCES MADE SHORT

NETWORK MANAGEMENT SYSTEM

SATEL NMS software can be used to set up a new radio modem network or modify an existing one. It is also an excellent tool for monitoring the condition of the radio network, and by setting different alarm levels it enables immediate reactions.

- Graphical tool for designing a radio network
- Enhanced reliability through advance indication of anticipated faults and failures
- Reduced configuration and maintenance costs through remote configuration
- Flexibility in adapting to customer protocols and applications

SATELLINE-3AS VHF

SATEL order code SATELLINE-3AS VHF SATELLINE-3ASd VHF SATELLINE-3AS VHF C SATELLINE-3ASd VHF C	YM5000 YM5010 (with display) YM5020 (with cooling part) YM5030 (with display and cooling part)
Frequency	135…174 MHz
Tuning range	135…155, 138…160,155…174 MHz
Channel width	12.5 / 25 fixed kHz
RX sensitivity	-115 dBm
TX power (max.)	5 W
Interface	RS-232, -422, -485
Operating voltage range	+10.6 … +25 Vdc (-15% / +20%)
Power consumption TX / RX	6.6 W @ 1 W, 22 W @ 5 W / 1.7 W
Data speed (max.) radio / serial	19200 bps / 38400 bps

YM5000   **YM5010**   **YM5020**   **YM5030**

THE WORLD IS OPEN

UHF RADIO MODEM

SATELLINE-EASy

SATEL order code	YM6500 / YM6505 YM6510 / YM6515 (with AES) YM6550 / YM6555 (with display) YM6560 / YM6565 (with display and AES)
Frequency	330 ... 420 / 403 ... 473 MHz
Tuning range	90 / 70 MHz
Channel width	12.5 / 20 / 25 kHz programmable
RX sensitivity	-114 dBm
TX power (max.)	1 W
Interface	Port1: RS-232 fixed Port2: RS-232 / -422
Operating voltage range	+3.5 ... +7.5 / +7 ... +25 Vdc (-15% / +20%)
Power consumption TX / RX	7 W / 1.2 W
Data speed (max.) radio / serial	19200 bps / 38400 bps

YM6500/ YM6505
YM6510/ YM6515

YM6550/ YM6555
YM6560/ YM6565

LICENCE FREE RADIO MODEM

SATELLINE-EASy 869

SATEL order code SATELLINE-EASy 869 SATELLINE-EASy 869	YM6501 YM6551 (with display)
Frequency	869.4000 ... 870.0000 MHz (865 ... 867 MHz for India)
Channel width	25 kHz
RX sensitivity	-111 dBm
TX power (max.)	500 mW (1 W for India)
Interface	RS-232, -422
Operating voltage range	+7 ... +25 Vdc (-15% / +20%)
Power consumption TX / RX	TX 3.8 W (869 MHz)/7 W (865 MHz)/RX 1.2 W
Data speed (max.) radio / serial	19200 bps / 38400 bps

YM6501

YM6551

COMPACT AND COMPATIBLE

SATEL has a wide range of OEM radio modules for system manufacturers to integrate into customer solutions. They are secure, customizable and flexible in mounting options. SATEL's solutions are widely compatible and also support other manufacturers' radio protocols.

The latest addition to SATEL radio modules is the SATEL GO radio module family. SATEL GO modules introduce new revolutionary features: one to three frequencies in the same small module and more practical interfaces. The design is compact and the integration easy.

SATEL-TR49 SnapOn

SATEL-TR49 SnapOn fits to a standard PCIe bus. This makes it compatible with millions of equipment already in the market, and the integration is easy. If there is Mini PCIe bus, it can replace other technologies such as cellular and LoRa. Ideal for real-time IoT applications!

- Ultra-compact design
- Easy integration and deployment
- Possibility of power over USB (max 500 mW, more with extra input)
- Robust mounting and interfaces

SATEL order code	YM8600 region all, with AES YM8605 region all, without AES YM8610 region US/CA, with AES YM8615 region US/CA, w/o AES
Frequency	410 ... 475 / 902 ... 928 MHz
Channel width	12.5 / 25 kHz @ 400 MHz
Spreading method	Frequency hopping @ 900 MHz
RX sensitivity	-120 dBm @ 400 MHz -109 dBm @ 900 MHz
TX power (max.)	1 W
Interface	CMOS / UART
Operating voltage	+3.3 Vdc +/-9%
Power consumption TX / RX	4.5 – 4.8 W / 400 mW @ 400 MHz 4.0 W / 400 mW @ 900 MHz
Data speed (max.) radio / serial	19200 bps (115200 bps @ 900 MHz) / 115200 bps

SATEL-TR49

SATEL order code	YM8490 region all, with AES YM8495 region all, without AES YM8500 region US/CA, with AES YM8505 region US/CA, without AES YM8510 region Australia, with AES YM8515 region Australia, without AES YM8520 region New-Zealand, with AES YM8525 region New-Zealand, without AES
Frequency	410 … 475 / 902 … 928 MHz
Channel width	12.5 / 20 / 25 kHz @ 400 MHz
Spreading method	Frequency hopping @ 900 MHz
RX sensitivity	-120 dBm @ 400 MHz -109 dBm @ 900 MHz
TX power (max.)	1 W
Interface	CMOS / UART
Operating voltage range	+3.7 ... +5.5 Vdc
Power consumption TX / RX	4.8 W (TX 1 W) / 440 mW (RX) @ 400 MHZ 4.1 W (TX 1 W) / 440 mW (RX) @ 900 MHz
Data speed (max.) radio / serial	19200 bps (115200 bps @ 900 MHz) / 115200 bps

Ask availability from SATEL for the modules with region limitations.

GO RADIO MODULES

Ask availability from SATEL for the modules with region limitations.

SATEL-R4+

SATEL order code	YM7490 with AES YM7495 w/o AES YM7491 DTE connector at TOP YM7496 w/o AES, DTE connector on TOP
Frequency	403 … 473 MHz
Tuning range	70 MHz
Channel width	12.5 / 20 / 25 kHz programmable
RX sensitivity	-115 dBm
Interface	CMOS-UART
Operating voltage range	+3.8 … +5.5 Vdc
Power consumption RX	0.86 W
Data speed (max.) radio / serial	28800 bps / 115200 bps

SATEL-TR4+

SATEL order code	YM7470 with AES YM7475 w/o AES YM7480 DTE connector at TOP YM7485 w/o AES, DTE connector on TOP
Frequency	403 … 473 MHz
Tuning range	70 MHz
Channel width	12.5 / 20 / 25 kHz programmable
RX sensitivity / TX power (max)	-115 dBm / 1 W
Interface	CMOS-UART
Operating voltage range	+3.8 … +5.5 Vdc
Power consumption TX / RX	4.8 W / 0.89 W
Data speed (max.) radio / serial	28800 bps / 115200 bps

SATEL-TR489

SATEL order code	YM8810 region all YM8815 w/o AES, region all YM8820 region US/CA YM8825 w/o AES, region US/ CA
Frequency	403 … 473 MHz / 856 … 876 MHz / 902 … 928 MHz
Tuning range	70 MHz / 20 MHz / frequency hopping spread spectrum
Channel width	12.5, 20, 50 kHz / 25, 50 kHz / 7 user selectable hopping bands
RX sensitivity / TX power (max.)	-113 dBm / -112 dBm / -108 dBm 1 W / 0.5 or 1 W / 1 W
Interface	CMOS-UART
Operating voltage range	+3.8 … +5.5 Vdc
Power consumption TX / RX/	TX / RX 4.7 W / 0.73 W
Data speed (max.) radio / serial	19200 bps / 115200 bps (902 … 928 MHz 115200 bps radio and serial)

SATEL-TR300

SATEL order code	TBD
Frequency	320 ... 380 MHz
Tuning range	60 MHz
Channel width	6.25 / 12.5 / 25 kHz programmable
RX sensitivity / TX power (max.)	-115 dBm / 1 W
Interface	CMOS-UART
Operating voltage range	+3.8 … +5.5 Vdc
Data speed (max.) radio / serial	28800 bps / 115200 bps

SATEL-R4+

RECEIVER ONLY

SATEL-TR4+

TRANSCEIVER WITH 16FSK MODULATION

SATEL-TR489

LICENCE FREE

SATEL-TR300

LICENCED

RADIO MODULES

SATELLINE-M3-TR9

SATEL order code	YM7900 region all YM7905 DTE TOP/U.FL same side YM7910 region US/CA YM7915 region AU
Frequency	902 … 928 MHz
Spreading method	Frequency hopping
RX sensitivity / TX power (max.)	-109 dBm / 1 W
Interface	CMOS-UART
Operating voltage range	+3.5 ... +5.5 Vdc
Power consumption TX / RX	3.2 W / 0.3 W
Data speed (max.) radio / serial	115200 bps

SATELLINE-M3-R9

SATEL order code	YM7950
Frequency	902 … 928 MHz
Spreading method	Frequency hopping
RX sensitivity / TX power (max.)	-109 dBm
Interface	CMOS-UART
Operating voltage range	+3.5 ... +5.5 Vdc
Power consumption TX / RX	0.3 W
Data speed (max.) radio / serial	115200 bps

SATELLINE-M3-TR9

FREQUENCY HOPPING TRANSCEIVER MODULE

SATELLINE-M3-R9

FREQUENCY HOPPING RECEIVER MODULE

CUSTOMIZED RADIO MODEMS

SATELLINE-M3 VHF

SATEL order code	YM6000
Frequency	135…174 MHz
Tuning range	135…155, 138…160, 155…174 MHz
Channel width	12.5 / 25 fixed kHz
RX sensitivity / TX power (max.)	-115 dBm / 1 W
Interface	RS-232, -422, -485
Operating voltage range	+10.6 ... +25 Vdc (-15% / +20%)
Power consumption TX / RX	6.6 W / 1.7 W
Data speed (max.) radio / serial	19200 / 38400 bps

Examples of the customized radio modems.
Ask your local SATEL distributor about the various options.

SATELLINE-M3-TR1

SATEL order code	YM6300 / YM6305 YM6310 / YM6315 (with AES)
Frequency	330 … 420 / 403...473 MHz
Tuning range	90 / 70 MHz
Channel width	12.5 / 20 / 25 kHz programmable
RX sensitivity / TX power (max.)	-114 dBm / 1 W
Interface	RS-232, -422, LVTTL, TTL
Operating voltage range	+3.5 … +7.5 / +7 ... +25 Vdc (-15% / +20%)
Power consumption TX / RX	3 W @ 0.5 W, 7 W@ 1 W / 1.2 W
Data speed (max.) radio / serial	19200 / 38400 bps

SATELLINE-M3-TR1 869

SATEL order code	YM6301
Frequency	869.4000 … 870.0000 MHz (865 … 867 MHz for India)
Tuning range	0.25 MHz (2 MHz India)
Channel width	25 fixed kHz
RX sensitivity / TX power (max.)	-111 dBm/ 0.5 W (1 W for India)
Interface	RS-232, -422, LVTTL, TTL
Operating voltage range	+7 ... +25 Vdc (-15% / +20%)
Power consumption TX / RX	3.8 W / 1.2 W
Data speed (max.) radio /serial	19200 bps / 38400 bps

SATELLINK I/O CONVERTERS

*Extension module for
I-LINK100 and I-LINK 100 MB

SATEL I-LINK 100

SATEL I-LINK 200

SATEL I-LINK 300

	SATEL order code	Digital I/Os	Analog I/Os 4-20 mA	Connectors, switches
SATEL I-LINK 100	YI0007	4	2	Screw conn. / D15m / D15f / DIP
SATEL I-LINK 100 MB	YI0017	4	2	Screw conn. / D15m / D15f / DIP
SATEL I-LINK 200*	YI0009	4	2	Screw conn. / D15m / D15f / DIP.
SATEL I-LINK 300*	YI0010	6	-	Screw conn. / D15m / D15f / DIP

Software —Ready, steady, go!

SOFTWARE

	SATEL NETCO DEVICE	SATEL NETCO DESIGN	SATEL NETCO NMS **	SATEL Configuration Manager	SATELLINE SaTerm	SATEL NMS PC	SATEL NETCO Mobile	Free Channel Scan Monitor
SATEL Proof-TR4+	**			✓	*			
SATEL Proof-TR9	**			✓	*			
SATEL-EASy+		✓	✓	✓	✓			
SATEL-EASy Pro+		✓	✓	✓	✓			
SATEL EASy-Proof	**			✓				✓
SATEL Compact-Proof	**			✓				✓
SATEL Compact-Proof 869	**			✓				
SATELLINE-EASy								
SATELLINE-EASy Pro	**			✓				✓
SATELLINE-EASy 869	**			✓				
SATELLINE-3AS VHF		✓	✓		✓			
SATEL XPRS IP Radio	✓	✓	✓					
SATEL XPRS Radio	✓							
SATEL-TR4+				✓	*			
SATEL-R4+				✓	*			
SATEL-TR49	**			✓	*			
SATEL-TR489	**			✓	*			
SATEL-TR49 SnapOn	**			✓	*			
SATELLINE-M3-TR9	**			✓	*			
SATELLINE-M3-R9	**			✓				
SATELLINE-M3-TR1				✓				✓
SATELLINE-M3-TR1 869	**			✓				
SATELLINE-M3 VHF	✓		✓		✓			✓

*) SL Command support only   **) Ask for availability

SATEL NETCO DEVICE

SATEL NETCO DEVICE is a software for configuring and updating a device. The configuration parameters can be read and written from/to the locally connected, powered device. The device configuration can be also created/saved/explored from/to a file without device connection.

The most common use case for which the SATEL NETCO DEVICE is optimized for is editing existing parameters in a SATEL radio product using local connection, such as serial interface.

SATEL NETCO DESIGN

SATEL NETCO DESIGN is an intuitive and user-friendly network configuration software for network design and management. The software supports configuration of the Routing Setup and NMS Routing Setup modes for SATEL-EASy+ product family and configuration of the XPRS radio family.

The user interface of the product is web browser-based and can therefore be used both locally and remotely. Design with graphical user interface for easy optimizing network design and deployment in a few simple steps, with local and remote connection to SATEL radios.

SATEL NETCO NMS

SATEL NETCO NMS is an intuitive and user-friendly network configuration software for network design and management with radio network monitoring option. The software supports configuration of the Routing Setup and NMS Routing Setup modes for SATEL-EASy+ product family and configuration of the XPRS radio family.

The user interface of the product is web browser-based and can therefore be used both locally and remotely. Design with graphical user interface for easy optimizing network design and deployment in a few simple steps, with local and remote connection to SATEL radios.

SATELLINE SaTerm

SATELLINE SaTerm is a terminal software for configuring the Routing Setup mode and for configuring and testing the radios. Routing Setup refers to Message Routing feature for SATEL-EASy+ and SATELLINE-EASy family radio modems, where messages can be automatically routed over the radio network to correct recipient terminal. This SW can assist in tests procedures and configuration for the radios via terminal interface with SL command support.

SATEL NMS PC

SATEL NMS PC is a software for creating and managing SATEL-EASy+ and SATELLINE-3AS VHF product families for NMS Routing networks with radio network monitoring option. NMS Routing refers to NMS Message Routing feature, where messages can be automatically routed over the radio network to correct recipient terminal, monitoring and diagnostics included for the radio network. Graphical design of topology for NMS Message Routing, remote modification of settings, online storing and trending of field data with programmable alarm triggers.

SATEL Configuration Manager

SATEL Configuration Manager is a software for SATEL radio device configuration and reprogramming. The parameters can be read and written from/to the connected, powered device. The program file can be saved into a separate file to be used to other devices.

The most common use case for which the SATEL Configuration Manager is optimized for is editing existing parameters in a SATEL radio product using locally connected product over a serial interface.

SATEL NETCO Mobile

SATEL NETCO Mobile allows easy-to-use configuring of the SATEL Compact-4BT radio modem via Bluetooth connection. RSSI (Received Signal Strength Indicator) monitor and battery status and charging monitor of SATEL Compact-4BT radio modem included.

FCS Monitor

Free Channel Scan Monitor program can be used for setting the FCS parameters and for loading them to modems and for monitoring the channels for noise or interference. FCS feature supported in SATELLINE-EASy radio modem family.

Additional information can be found: www.satel.com/products/software/

For more information, please contact SATEL or local distributor: www.satel.com/where-to-buy/

Antennas & cables

Antennas

- Half Wave Antennas for frequencies 400 ... 470 MHz for short distances
- Quarter Wave Antennas for frequencies 400 ... 470 MHz and 869 MHz for short distances
- Helix Antennas for frequencies 400 ... 470 MHz for short distances
- Directional Antennas for frequencies 330 ... 470 MHz, 869 MHz and 135 ... 174 / 218 ... 238 MHz for long distances
- Omnidirectional Antennas for frequencies 330 ... 470 MHz, 869 MHz and 135 ... 174 / 218 ... 238 MHz for long distances.

Cables

- CRF-1 RG58 lenght 1 meter with TNC male / TNC female -connectors
- CRF-5F RG58 lenght 5 meter with TNC male / TNC female -connectors or CRF-5M TNC male / TNC male -connectors
- ECOFLEX10 low loss (0.9 dB / 10 m) cable for cable lengths up to 20 meter with N or TNC -connectors.
- ECOFLEX15 low loss (0.6 dB / 10 m) cable for cable lengths over 20 meter with N -connectors.

We can also offer a wide range of interface and power cables, for example:

- CRS-2M length 2 meter, includes power supply wires, with D15 / D9 male or CRS-2F female -connectors
- CRS-PB length 2 meter, includes power supply wires, with D15 / D9 male -connectors for RS-485 interface
- CRS-35W 8-pin 2 m cable ODU 8-pin male / D9 female
- C-P-35W 2m Power cable 2 m, ODU 4-pin male / 4 mm lab plugs
- DC / RS232 Cable 1 m, M12 / D9 female / 2.1 mm DC jack male

Please contact your local distributor to get more information regarding cable types.

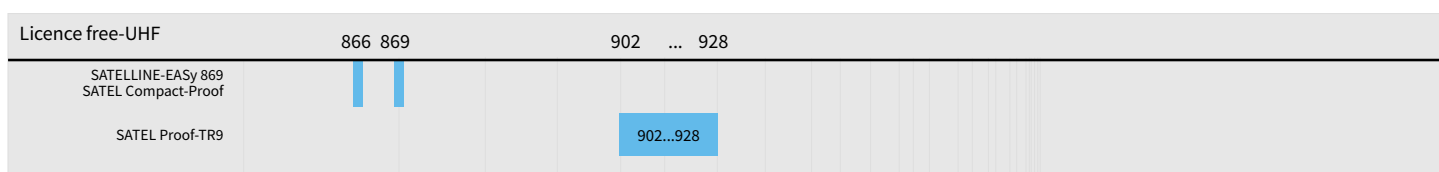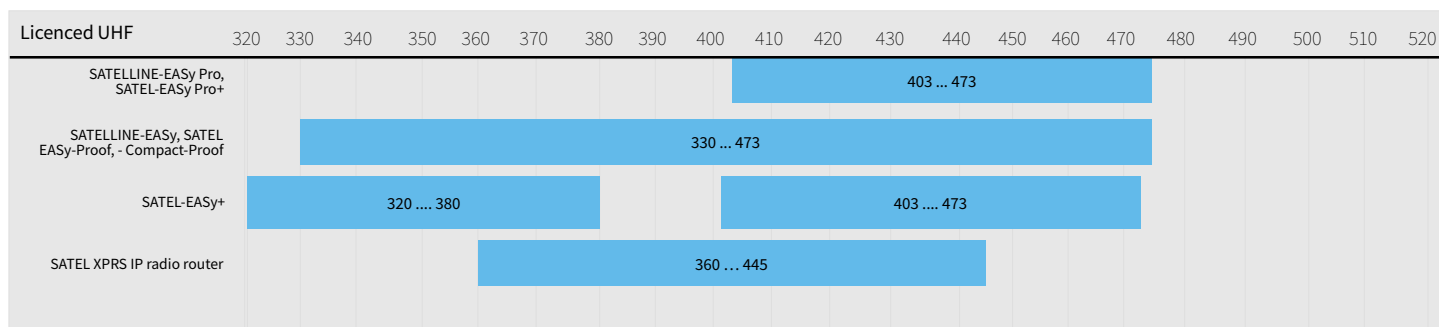# Selection guide

1) SATEL XPRS IP radio
2) Check product details

	SATEL XPRS radio	SATELLINE-3AS VHF	SATELLINE-M3 VHF	SATELLINE-EASy	SATEL-EASy+	SATEL-EASy Pro+	SATELLINE-EASy Pro	SATEL Compact-Proof	SATEL EASy-Proof	SATELLINE-M3-TR1	SATEL-R4+	SATEL-TR4+	SATEL-TR489	SATEL-TR49	SATEL-TR300	SATEL-TR49 SnapOn	SATEL Proof-TR4+, -TR9	SATELLINE-M3-TR9	SATELLINE-M3-R9	SATELLINE-EASy 869	SATELLINE-M3-TR1 869	SATEL I-LINK
Frequency range																						
UHF	•			•	•	•	•		•	•	•	•			•							
VHF		•	•																			
UHF & Licence free								2)					•	•		•	•	•	•	•	•	
Interfaces																						
RS-232	•	•	•	•	•	•	•	•	•	•							•			•	•	•
RS-422	•	•	•	•	•				•											•	•	
RS-485	•	•	•		•															•	•	
TTL / LV-TTL										•										•	•	
CMOS-UART										•		•	•	•	•	•		•	•			
Ethernet	1)				•																	
USB	1)				•																	
Digital / Analog I/O																						•
Bluetooth					•																	
Tuning range																						
≤ 2 MHz																				2)	2)	
20 MHz		2)	2)										•									
45 MHz	•						2)															
65 MHz														•	2)	•						
70 / 90 MHz			•		2)		•	2)	•	•	2)	2)	2)				•					
FHSS													•	•			•	•	•			
Channel width kHz																						
Fixed (12.5 or 20 or 25)		•	•																	2)	2)	
Programmable (12.5 / 20 / 25)				•	•		•	•	•	•							•					
Programmable (12.5 / 25)	•											•		•	2)	•						
Programmable (12.5 / 25)(50)													•									
FHSS													•	•			•	•	•			
Max. TX power																						
500 mW																				•	•	
1 W			•	•	•			•	•		•	•	•	•	•	•	•					
5 W	•	•																				
35 W						•	•															
Operating voltage range																						
+3.3 Vdc +/- 9%																•						
+3.5 ... +5.5 Vdc																		•	•			
+3.7 … +5.5 Vdc															•							
+3.8 ... +5.5 Vdc										•	•	•		•								
+3.5 … +7.5 / +7 … +25 Vdc (-15% / +20%)				•					•													
+7 ... +25 Vdc (-15% / +20%)								•												•	•	
+7 ... +27.5 Vdc (-15% / +20%)					•												•					
+10.6 … +13.3 Vdc (-15% / +20%)							•	•														
+10.6 ... +25 Vdc (-15% / +20%)		•	•			•																
+12.5 ... +25 Vdc (-15% / +20%)	•																					
Battery								•														
Housing																						
Aluminium IP44		•		•																•		
Aluminium IP52	•																					
Aluminium IP67						•	•	•														
Aluminium IP69K									•													
Sheet metal aluminium / Stainless steel			•						•												•	•
Module: PCB card only										•	•	•	•	•	•	•	•	•	•			
Interface connector																						
RJ-45	1)				2)																	
D9	•																					
D15		•	•	•	2)					•										•	•	•
ODU 8 pin						•	•	•														
26 pin header / 26 pin strip										•												
USB					2)											•						
1.27 mm pitch socket											•	•	•	•	•			•	•			
Deutsch DT04-6P-CL09									•								•					
Screw connector																						•
COMPATIBILITY																						
Accessories																						
SATEL I–LINK 100, 200, 300	•	•	•	•	•	•	•	•	•											•	•	
Model or variant w. display	•	•		•	•	•	•	•												•		

Size / Weight

Size / Weight	Product	Size / Weight	Product
130 x 77 x 77 mm / 940 g	SATEL XPRS	89 x 49 x 10 mm / 50 g	SATELLINE-M3-TR1, SATELLINE-M3-TR1 869
176 x 95 x 42 mm / <500 g	SATEL-EASy Proof, SATEL Proof-TR4+/TR9	114 x 61 x 22 mm / 265 g	SATELLINE-M3 VHF
187 x 84 x 50 mm / 850 g	SATEL Compact-Proof	57 x 36 x 6.9 mm / 20 g	SATEL-TR4+, SATEL-TR49, SATEL-TR489, SATEL-R4+
189 x 138 x 71mm / 1420 g	SATELLINE-EASy Pro, SATEL-EASy Pro+	57 x 36 x 6.7 mm / 20 g	SATELLINE-M3-TR9, SATELLINE-M3-R9
139 x 67 x 29 mm / <350 g	SATELLINE-EASy, EASy 869, 3AS VHF, SATEL-EASy+	51 x 30 x 4.75 mm / 10 g	SATEL-TR49 SnapOn

Available frequencies for SATEL radio modems

Licenced UHF

| | 320 | 330 | 340 | 350 | 360 | 370 | 380 | 390 | 400 | 410 | 420 | 430 | 440 | 450 | 460 | 470 | 480 | 490 | 500 | 510 | 520 |

SATELLINE-EASy Pro, SATEL-EASy Pro+ — 403 ... 473

SATELLINE-EASy, SATEL EASy-Proof, - Compact-Proof — 330 ... 473

SATEL-EASy+ — 320 .... 380 / 403 473

SATEL XPRS IP radio router — 360 … 445

Licence free-UHF

| | 866 | 869 | | 902 | ... | 928 |

SATELLINE-EASy 869 SATEL Compact-Proof

SATEL Proof-TR9 — 902...928

Licenced VHF

| | 130 | 140 | 150 | 160 | 170 | 180 | 190 |

SATELLINE-3AS VHF — 135...174

Channel width and data speed

Channel width	Max. air data speed			Max. serial data speed
	12.5 kHz	20 kHz	25 kHz	
SATEL XPRS IP radio router	60.5 kbps (QAM)		121 kbps (QAM)	256 kbps
SATELLINE-EASy Pro	9600 bps	9600 bps	19200 bps	38400 bps
SATELLINE-EASy	9600 bps	9600 bps	19200 bps	38400 bps
SATEL EASy-Proof	9600 bps	9600 bps	19200 bps	38400 bps
SATEL Compact-Proof	9600 bps	9600 bps	19200 bps	38400 bps
SATELLINE-3AS VHF	9600 bps	9600 bps	19200 bps	38400 bps
SATEL Compact-Proof 869			19200 bps	38400 bps
SATELLINE-EASy 869			19200 bps	38400 bps

Protocols

SATEL radio modems are compatible with all commonly used industrial protocols. Here are some examples of the protocols: ANSI, CACTUS, COMLI, DNP 3.0 Serial & IP, 4 Exoline, HostLink, IEC 60870-5-101, IEC 60870-5-104, IEC 61850, Mewtocol, Modbus ASCII, Modbus RTU, Modbus TCP, Modbus RTU over TCP, Profibus DP, R-com, RP-570, RP-571, SATELLINK, S-bus, Siemens 3946 (R), SNMP, NTP, Ethernet/IP, SATEL NMS, Rockwell DF etc.

Ask for more information from your local distributor.

Disclaimer

IMPORTANT

Distributors

ALBANIA
See Croatia

AUSTRALIA
ROJONE PTY LIMITED
+61 2 9829 1555
warren@rojone.com.au
www.rojone.com.au
Rojone is serving Australia and New Zealand

AUSTRIA
See Germany

BELGIUM
See The Netherlands

BOSNIA AND HERZEGOVINA
See Croatia

BRAZIL
SATELRADIO COMUNICAÇAO
+55 11 3090 4094
botelho@satelradio.com.br
www.satelradio.com.br

TECHTON RADIO MODEM
+55 15 99106 3505
jaimilton@techtonradiomodem.com.br
www.techtonradiomodem.com.br

CAMBODIA
See South East Asia

CANADA
MDA CONTROLS INC.
+1 905 845 3666
orit.altman@mdacontrols.com
www.mdacontrols.com

CHILE
METCOM LIMITADA
+56 2 2335 3812
gailrybertt@metcomchile.cl
www.metcomchile.cl

CHINA P.R.
SATEL CHINA CO., LTD
+86 20 8251 4925
info@satel.cn
www.satel.cn

CROATIA
ADRINET D.O.O.
+358 1 8886 884
adrinet@adrinet.hr
www.adrinet.hr
Adrinet is serving Croatia, Albania, Macedonia, Serbia and Bosnia and Herzegovina.

CZECH REPUBLIC
CONTROLTECH S.R.O.
+420 321 7420 11
info@controltech.cz
www.controltech.cz
ControlTech s.r.o. is serving Czech Republic and Slovak Republic

DENMARK
COMSYSTEM A/S
+45 49 139 693
salg@comsystem.dk
www.comsystem.dk

EGYPT
I.C.E.E.S
+20 2 2267 0427
info@icees-eg.com
www.icees-eg.com

ESTONIA
ALARMTEC AS
+372 6 511 500
alarmtec@alarmtec.ee
www.alarmtec.ee
Alarmtec AS is serving Estonia, Latvia and Lithuania.

FRANCE
COMATIS
+33 1 3930 2900
info02@comatis.com
www.comatis.com
COMATIS is serving France and Northern Africa countries excluding Egypt

GERMANY
WELOTEC GMBH
+49 2554 9130 00
info@welotec.com
www.satel.de
Welotec is serving Germany and Austria

GREECE
INTELLIGENT AUTOMATION CONTROL SYSTEM SA.
+302 310 515 495
info@controlsystem.gr
www.iacs.gr

HUNGARY
CONTROLTECH S.R.O.
+36 23 445 900
info@controltechhungary.hu
www.controltechhungary.hu

ICELAND
NAUST MARINE HF
+354 414 8080
haraldur@naust.is
www.naust.is

INDIA
LOTUS WIRELESS
+91 891 276 1678
info@lotuswireless.com
www.lotuswireless.com

INDONESIA
PT. INZAN PERMATA
+62 21 875 2727
sales@inzanpermata.com
www.inzanpermata.co.id

IRELAND
SIGMA WIRELESS COMMUNICATIONS LTD
+353 1 814 2100
pkinna@sigma.ie
www.sigmawireless.com
Sigma Wireless Communications Ltd is serving Ireland and Northern Ireland.

ISRAEL
ARROWMID GROUP LTD
+972 36 247 080
info@arrowmid.com
www.arrowmid.com

ITALY
SARTELCO SISTEMI S.R.L.
+39 039 629 051
sistemi@sartelco.it
www.sartelco.com

KAZAKHSTAN
AUTOMATION AND TECHNOLOGIES-SERVICE LTD
+7 727 277 4949
info@automation-trade.com
www.automation-trade.com

KOREA
THOMAS TRADING CO., LTD.
+82 31 467 8554
system@thomas.co.kr
www.thomas.co.kr

LATIN AMERICA-CARIBBEAN
SOLARES FLORIDA CORP
Tel +1-305-592 0593
isolares@solaresflorida.com
www.solaresflorida.com
Solares Florida is serving part of the Latin America and Caribbean countries.

LAOS
See South East Asia

LATVIA, LITHUANIA
See Estonia

LUXEMBOURG
See The Netherlands

MACEDONIA
See Croatia

MALAYSIA
DIGISELECT (M) SDN BHD
+6 03 5614 3167
enquiry@dgselect.com
www.dgselect.com

MEXICO
ROSSBACH DE MÉXICO, S.A. DE C.V.
+52 1 555 147 0547
ventas@rossbach.com.mx
www.rossbach.com.mx

MIDDLE EAST
EASY WORLD AUTOMATION LLC
+971 4 447 1137
sales@eworldme.com
www.eworldme.com/en

SAUDI TELECOMMUNICATION
+966 13 820 0477
mansour@stpest.com
www.stpest.com
Saudi Telecommunication & Power is serving Saudi Arabia, Kuwait, UAE, Bahrain, Qatar and Oman.

MONTENEGRO
See Slovenia

THE NETHERLANDS
SATEL BENELUX B.V.
+31 255 820 009
info@satelbv.nl
www.satelbv.nl
SATEL Benelux is serving The Netherlands, Belgium and Luxembourg

NEW ZEALAND
See Australia

NORTHERN AFRICA
See France

NORWAY
SATEL NORGE AS
+47 69 27 70 40
produktinfo@satel.no
www.satel.no

PERU
MOR SRL
+51 1 222 6185
info@morslr.com
www.morsrl.com

PHILIPPINES
See South East Asia

POLAND
ASTOR MISSION CRITICAL SP. Z O.O.
+48 60 178 3744
satel@astor.com.pl
www.astor.com.pl

PORTUGAL
See Spain

RUSSIA
SATEL-RUSSIA
+7 495 760 1772
A.Samokhin@satel-russia.com
www.satel-russia.com

SERBIA
See Slovenia

SINGAPORE
See South East Asia

SLOVAK REPUBLIK
See Czech Republic

SLOVENIA
METRONIK D.O.O
+386 1 514 0800
info@metronik.si
www.metronik.si
METRONIK d.o.o is serving Slovenia, Serbia and Montenegro

SOUTH AFRICA
CSTREAM
+27 12 664 4515
info-cs@cstream.co.za
www.cstream.co.za
cStream serves Africa, excluding Northern Africa and Egypt.

SPAIN
SATEL IBERIA
+34 91 636 22 81
info@satel-iberia.com
www.satel-iberia.com
SATEL IBERIA is serving Spain and Portugal.

SWEDEN
INDUO AB
+46 8 659 43 00
info@induo.com
www.induo.com

SWITZERLAND
SATEL SWITZERLAND TUNCELLI CCS
+41 21 729 59 83
ctuncelli@satelch.com
www.satelch.com

SOUTH EAST ASIA
SATEL OY IN S.E.A.
+66 899 276 966
janne.kankaanpaa@satel.com
www.satel.com
SATEL Sales Manager Mr. Janne Kankaanpaa serves S.E.A. region (Philippines, Singapore, Kambodzha, Laos, plus other S.E.A. countries).

TAIWAN
ENVIRONMENTAL SCIENCE & ENG'N CORP.
+886 2 2963 4300
sales@esne.com.tw
www.esne.com.tw

THAILAND
ENOVA INTEGRATION CO LTD
+662 961 0799
noppachai@enovagroup.net
www.enovagroup.net

TURKEY
BILKO AS
+90 212 320 1383
bilko@bilko-automation.com
www.bilko-automation.com

UKRAINE
CJSC NEW TECHNOLOGIES
+8 044 499 77 15
satel@ntech.kiev.ua
www.ntech.kiev.ua

UNITED KINGDOM
SADERET LTD
+44 1624 880366
andy@saderet.co.uk
www.saderet.co.uk

XL SYSTEMS LTD
+44 1883 622 778
sales@xls.co.uk
www.xls.co.uk

UNITED STATES
SATEL U.S.A.
+1 408 973 1740
info@satelusa.com
www.satelusa.com

ONYX NETWORKS TEXAS LLC
+1 832 924 0125
sergio.martinez@onyxnetworks.us
www.onyxnetworks.us

URUGUAY
AEROMARINE S.A.
+598 2 916 6456
mjn@aeromarine.com.uy
www.aeromarine.com.uy

VIETNAM
TRIEUHA TELECOMMUNICATIONS
+84 4 3572 0699
tuanav@gmail.com
www.trieuha.com

Contact us

SATEL

SATEL, Meriniitynkatu 17
P.O.Box 142, FI-24101 Salo
FINLAND
Tel. +358 2 777 7800
info@satel.com

Follow us

Australian Representatives
ROJONE, PTY LTD.

Tel: 02 9829 1555
E: sales@rojone.com.au
www.rojone.com.au

ROJONE
PTY. LTD.

Visit: www.satel.com