

# *SkySweep Technologies*

Dedicated Solutions for High Speed  
HF/VHF/UHF DIGITAL RADIO



***SkySweep Digital Radio System***  
**VHF/UHF IP Data Radios**

Safety & Security

The SkySweep IP radio system (SkyIPR) is a high speed (up to 915 kbit/s) IP over VHF/UHF radio solution. The products are based on the state-of-art new generation radio technology which provides TDD time division duplex transmission and OFDM modulation. The SkyIPR enables a fluent use of IP based applications over VHF/UHF radio networks. The SkySweep IP radio high speed data solution revolutionises the way in which today's mission critical networks can transmit data. What's more, it answers the needs of end users and network operators as well.

With SkySweep IP radios professional users will be able to access services and features previously available only via commercial non mission critical networks. With the emergence of mission critical data new operational models can be developed and user organisations can achieve new levels of effectiveness.

Network operators will appreciate the boost that SkyIPR solutions will bring to their network's data capabilities. These solutions can take advantage of high data speeds, guaranteed data delivery times, high availability, utmost reliability and uncompromising security. Commercial off the shelf solutions simply can't match them.

In the SkyIPR solutions, leading edge, high speed data technology is complemented by advanced third party applications that take advantage of faster, mission-critical data. SkySweep's SkyIPR can bring to life what previously has been out of reach, enabling completely new data services, such as remote video recognition and fast checking of identities using biometric recognition. For example, existing vehicle location systems already transmit vehicle locations to the central AVL system via the radio network, so that central command and control >

personel can have the advantage of knowing where each vehicle is at any given moment. A SkySweep IP radio (SkyIPR) solution can make it possible to share location information effectively, in real time with the field forces. This can significantly improve the overall situational awareness.

SkySweep IP radio (SkyIPR) for complete mobility  
With secure connectivity and mobility of SkySweep solutions users can stay online and updated at all times. Mission critical data may be related to situational awareness to the event at hand or to a reading from a sensing system. Whatever the case, users can receive data according to their specific situation and even according to their specific radio network and devices. The higher bandwidth goes far beyond delivering more of the same information. It provides field operatives with entirely new types of information such as surveillance camera feed or patient monitoring data.

Another significant benefit is the wide area coverage in stark contrast to coverage within urban areas that some technologies provide. The SkySweep IP radio system (SkyIPR) solutions can be utilised wherever voice coverage is already in use, typically in existing PMR networks. Voice communication cannot be bettered when a critical situation calls for split-second action but most field work is not like that. Complementary of a dispatcher having to issue all the instructions and information associated with a routine task verbally, SkyIPR uses IP over VHF/UHF data and messaging to assign tasks, provide access to databases, to all the information needed by field operatives and to enable them to submit reports without having to return to headquarters. This two-way SkySweep IP radio system (SkyIPR) communication process can be tailored to fit each organisation's operational needs and legal requirements.

The SkySweep IP Data Radio latest embedded platform technologies supports customer specific based IP applications which can be connected to other mobile stations or to fixed IP network.

Three examples of the system key benefits:

- **Cost efficient system:** The system is based on the IP network architecture and high coverage IP base stations.
- **Security:** The system is based on AES encryption and is able to utilize VPNs and other high end security solutions.
- **Low power consumption:** The SkyIPR transmitter are switched on only, when there is something to send. The system can be powered independently by solar energy or a very small fuel cell. Long battery based operating times are ideal for emergency systems, etc. There are no control channels needing continuous transmit power.



The SkySweep IP Data Radio (SkyIPR) allows users to enjoy uninterrupted access to simultaneous IP data services from their vehicles or mobile devices, and many more of such solutions. In previous data solutions relying on TETRA or other PMR (professional mobile radio) networks, the need for voice and data services to alternate limited any operational setup that depended on constant access to both voice and data. With the SkySweep system solution it makes sense to equip vehicles with the SkySweep IP Data Radio (SkyIPR) alongside existing TETRA, P25, DMR, Analog systems. This provides parallel, always on connections for voice over existing PMR networks and for data over the state-of-the-art SkySweep IP Data Radios.



In today's modern times permanent access to information and data is established more and more as a standard.

Unfortunately it is not technically possible in existing VHF/UHF PMR radio networks to directly request the mobile communication network via the Internet and to integrate processes in it, like for example, to monitor or control systems. The connection must always be established directly at the terminal. This type of communication is often simply very difficult to implement.

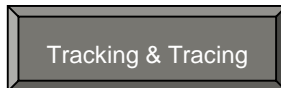
With the SkySweep IP Data Radio (SkyIPR) we have a simple solution for the problem: a permanent fixed address is assigned to a SkyIPR terminal, like for example a router, a RTU or a PDA. This is directly accessible without restrictions via a secured access to the customer server. In this way connected terminals can be integrated in the existing process very simply without any additional configuration. It is also possible to have direct communication between the SkyIPR mobile or stationary terminals in every direction.

Examples of services:

- secure customer specific data connections
- customer own applications can be installed on the SkyIPR VHF/UHF IP data radio which provide latest embedded technologies.

Examples of use:

- IP transmissions to Base Station sites
- remote monitoring like heart monitor, alarms
- access control & video surveillance
- critical messaging
- remote reading of RFID data / biometric data
- remote monitoring of traffic control systems
- database queries
- vehicle tracking



Customer benefits:

- Simple: connection of your devices or databases with SkySweep IP Data Radio (SkyIPR)
- Safe: integrated firewall feature, secure encrypted transmissions
- Low priced: use of the inexpensive and existing VHF/UHF frequencies of your own or your trunking network operator
- SkyIPR provides the ideal communication solution for a wide range of critical applications
- Simplex channel operation - easy utilization of existing simplex channels. No need for duplex channels

For video surveillance operation an independent secure and highly available Data-communication is indispensable!

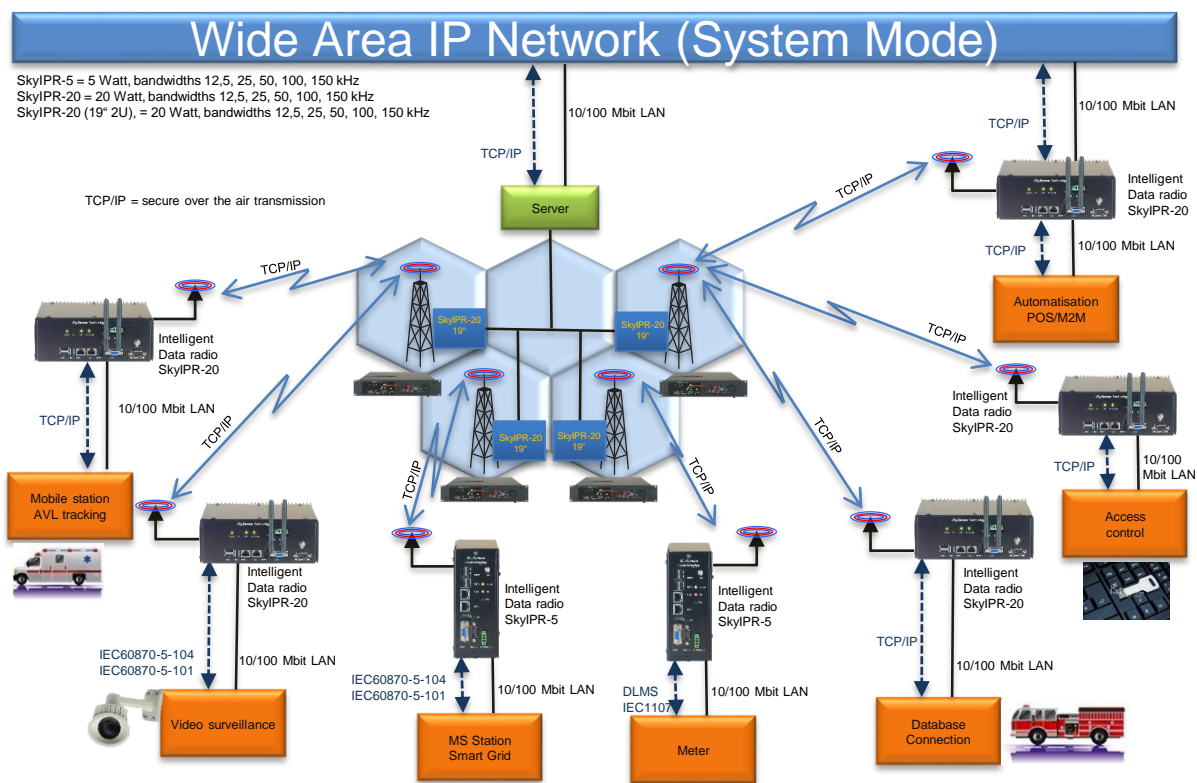
As an example, a first reaction force vehicle which arrives first at the event location can transmit video signals to the dispatcher control room. Next dispatcher decisions for example e.g.to increase reaction forces can be evaluated in a much more effective and precise way.



The IP camera which can be located on a helmet, jacket, etc can stream video to the control vehicle which is equipped with a SkyIPR-20 WLAN which can provide also a local hotspot. IP video data is transmitted via a SkyIPR based VHF/UHF radio channel to control room or the headquarter. A combining server is connected with IP to the workstation and dispatcher location.

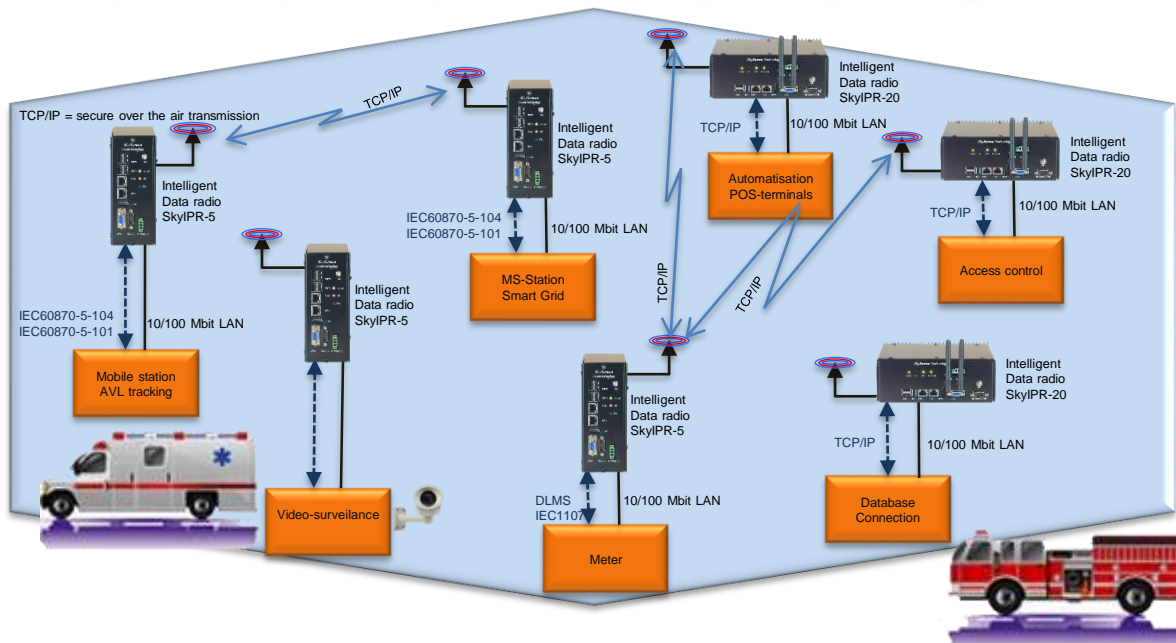
The SkySweep IP radio system (SkyIPR) based video services offer enormous capabilities but it is not designed for streaming huge video signals continuously. Example: instead of transmitting huge data loads with less important content, the video application could provide advanced recognition technologies like automatic recognition and target to the moment of action and variation in front of the cameras.

When there is a change in the picture - the picture has changed or action is going on, the video signal will be transmitted. Important video content can be stored also for later analysis. The video system can be based on just one single camera up to hundreds of cameras.



The SkySweep IP Data Radio is transporter of IP data services to be connected to other Stations P2P (point-to-point) or P2MP (point-to-multipoint) or routing IP to fixed IP network through a IP capable Base Station.

# Wide Area IP Network (Direct Mode)



In direct mode the SkyIPR stations communicate directly with each other without any base station infrastructure. The SkyIPR stations need to stay within coverage of each other. The direct mode is often used in situations where no coverage of the base station network infrastructure is available.

## SkySweep IP Data Radios

The SkySweep IP Data Radio (SkyIPR) stations provide very cost efficient digital data communication and high coverage solutions on VHF to UHF frequency bands.

SkyIPR variants (bandwidths 12.5, 25, 50, 100, 150 kHz)	TX-power	DIN-RAIL	19"	Horiz	WLAN	Vi	COM	DA	TR
SkyIPR-5	5 Watt								
SkyIPR-20	20 Watt								
SkyIPR-20 19" 2U	20 Watt								

Explanations of abbreviations	
DIN-RAIL	DIN RAIL vertical clip mounting
19"	19 inch enclosure
Horiz	Horizontal enclosure mount possibility
WiFi / WLAN	Wireless LAN with 2 x diversity antennas
Vi	Video service capability (IP based applications)
CA	Customer own TCP/IP applications (email etc.)
COM	Data connection support RS232 / 422 / 485
TR	Tracking service capabilities (IP based applications)

Available SkyIPR VHF & UHF frequency ranges for order	
F1.1	68-88 MHz
F2.1	136-174 MHz
F5.1	378-470 MHz

Other frequencies by request

See about the SkyIPR device specs in the separate available datasheets.

Note: SkyIPR data radio specifications might be subject to change due to product innovation and improvements without prior notice.

# *SkySweep Technologies*

## Dedicated Solutions for High Speed HF/VHF/UHF DIGITAL RADIO

### About SkySweep Technologies Oy

Operating World Wide the SkySweep Technologies provides HF/VHF/UHF digital voice and data radios, IP based data radios, controllers, high speed modems, protocols and applications.

Customers include Military, Embassies, public safety, transport companies, telecommunications operators, utilities, international aid organizations, oil and gas companies and security organizations. SkySweep digital radios are optimized for performance in harsh environments, supporting TCP/IP, STANAG5066, serial data and customer applications.

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**If you have any questions about our products,  
please do not hesitate to contact us:**

Global Sales:  
E-Mail: [sales@skysweep.com](mailto:sales@skysweep.com)  
Tel: +358 10 3465185  
Web: [www.skysweep.com](http://www.skysweep.com)

Mail: SkySweep Technologies Oy  
P.O. Box 6  
02661 Espoo - Finland  
Street-Address: Linnoitustie 4