

SkySweep Technologies

Global Solutions for High Speed
HF/VHF/UHF DATA RADIO



SkySweep Data Radio System

Public Safety and Security (PSS)

Data Radio Variants for VHF and UHF

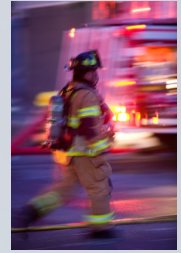
SkySweep VHF/UHF Base Stations

Base Station variants for Public Safety and Security (PSS)

The SkySweep VHF/UHF Base Stations offer data gateway services between the air interface (mobile stations) and IP-network data services.

The SkyDR-1 Base Station Data Radios variants provide:

- IP based interface between radio interface and fixed network
- E-mail routing between radio interface and fixed network
- Secure voice (available in 2012)



The SkyDR-1V/U BS Base Station VHF/UHF TRX Data Radio, 19-inch 3U:



The SkyDR-1V/U RBS Base Station VHF/UHF rugged TRX Data Radio, compact rugged aluminium enclosure:



Rack installation can contain several single SkySweep Base Station Data Radios for multichannel solutions:



The SkyRX1/2 MRX Base Stations are capable to receive single 12.5/20/25/50 kHz VHF/UHF channel bandwidths.

The MRX receiving Base Stations handle huge data load uplinks from mobile stations:



The SkySweep Base Station site supply system: SkySweep can provide a backup energy concept based on a small rugged Wind energy generator, solar cells, batteries or fuel cells. The power consumption of the SkySweep Base Station is very low and would consume around 2 Amperes/hour = 48 Ah/day. This means a simple and very cost effective backup for mains power shortages longer than a week. This advantage provides independent system operation under harsh conditions.



Wind generator with Solar panel,
diameter 1.5 m



Battery unit



SkySweep Base Station Data Radio

SkySweep VHF/UHF Mobile Stations

Mobile Station variants for Public Safety and Security (PSS)

The SkySweep VHF/UHF Mobile Stations offer various data services to be connected to other Mobile stations or to fixed IP network through a Base Station.

The SkyDR-1 VHF/UHF Mobile Station Data Radio variants provide:

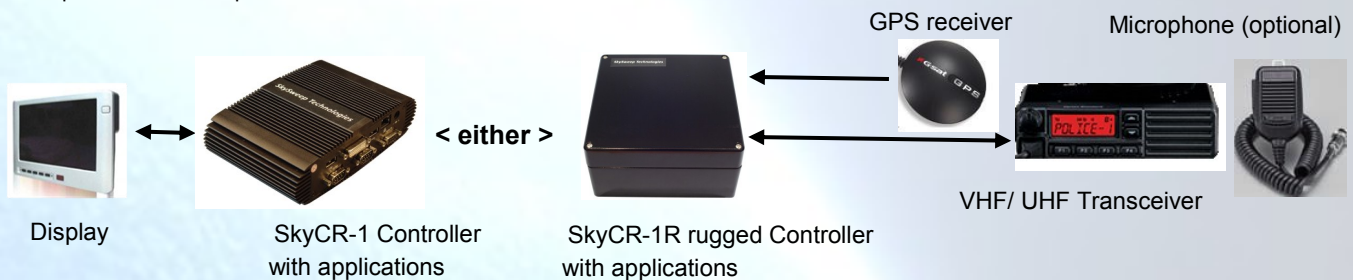
- GPS based tracking
- Telemetry, SCADA
- E-mail
- SMTP, POP 3 based data services
- Video (available in 2012)
- Customer specific data applications
- Instant Messaging (Chat) (available in 2012)
- Secure voice (available in 2012)



The SkyDR-1 V/U M Mobile Station Data Radio:

Entry solution: a typical setup of the SkyDR-1V/U M based Mobile Station contains a small size SkyCR-1 or rugged SkyCR-1R controller unit, display, GPS receiver, microphone (optional, if voice used) and an existing VHF/UHF transceiver unit.

A compatible TRX on request.



The SkyDR-1V/U RM Mobile Station rugged TRX VHF/UHF Data Radio, compact rugged aluminium enclosure, GPS-receiver:



The SkyDR-1V/U M19 Mobile Station TRX VHF/UHF Data Radio, 19-inch enclosure, GPS-receiver:



Example: SkySweep SkyDR-1V/U RM Mobile Station rugged TRX VHF/UHF Data Radio, compact rugged aluminium enclosure, GPS-receiver:



„Make use of the many VHF/UHF based Data Radio communication advantages.

Connect your data sources and services with less costs.“

See information about HF- Data Radio solutions in the Long Range information PDF.

SkyCR-1/CR-1R Controller unit

SkyCR-1/Sky CR-1R Controller unit

The Windows™ based **SkySweep SkyCR-1/SkyCR-1R rugged Controller unit** is a small sized controller unit for local stationary or mobile station use. The device has a passive cooling system and does not include any moving parts. It can be used with customer's existing (*) VHF/UHF transceivers *Compatible transceivers on request



SkyCR-1 Controller

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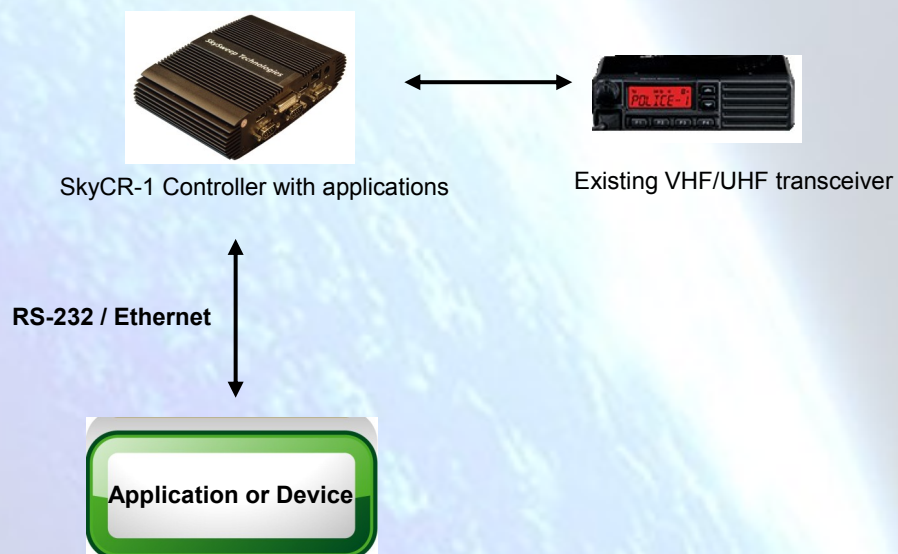


SkyCR-1R rugged Controller

The **SkyCR-1 / SkyCR-1R rugged controller** provides SkySweep applications such as E-Mail, GPS based tracking etc. The platform also supports customers specific Windows™ based applications. The controller is delivered configured and with installed software.

SkyCR-1/SkyCR-1R Data interface based on RS-232 and Ethernet interfaces

The **SkyCR-1/SkyCR-1R Controller** provides standard RS-232 and Ethernet (TCP/IP, UDP) interfaces allowing to smoothly connect different applications and devices.



Overview of the SkySweep Data Radio product variants for Public Safety and Security (PSS)

SkySweep VHF Data Radios and MRX Multichannel Receivers:

TRX Data Radios for VHF 12.5/20/25/50 kHz bandwidth channels:

- SkyDR-1VM > SkyCR-1/SkyCR-1R controller unit + GPS receiver, mounting kit to be used with existing or new VHF radio.
- SkyDR-1VM19 > Mobile Data Radio station, 19-inch enclosure, GPS-receiver.
- SkyDR-1VRM > Mobile rugged Data Radio station: compact rugged aluminium enclosure, GPS-receiver.
- SkyDR-1VBS > Base Station Data Radio, 19-inch enclosure.
- SkyDR-1VRBS > Base Station rugged Data Radio: compact rugged aluminium enclosure.
- SkyRX-1VBS > MRX-Multicarrier-RX Data Radio up to 25 kHz, 19-inch enclosure, receiving only (*).
- SkyRX-2VBS > MRX-Multicarrier-RX Data Radio up to 50 kHz, 19-inch enclosure, receiving only (*).

SkySweep UHF Data Radios and MRX Multichannel Receivers:

TRX Data Radios for UHF 12.5/20/25/50 kHz bandwidth channels:

- SkyDR-1UM > SkyCR-1 / SkyCR-1R controller unit + GPS receiver, mounting kit to be used with existing or new UHF radio.
 - SkyDR-1UM19 > Mobile Data Radio station, 19-inch enclosure, GPS-receiver.
 - SkyDR-1URM > Mobile rugged Data Radio station: compact rugged aluminium enclosure, GPS-receiver.
 - SkyDR-1UBS > Base Station Data Radio, 19-inch enclosure.
 - SkyDR-1URBS > Base Station rugged Data Radio: compact rugged aluminium enclosure.
 - SkyRX-1UBS > MRX-Multicarrier-RX Data Radio up to 25 kHz, 19-inch enclosure, receiving only (*).
 - SkyRX-2UBS > MRX-Multicarrier-RX Data Radio up to 50 kHz, 19-inch enclosure, receiving only (*).
- *MRX-Multicarrier-RX Data Radios available in 2012

HF TRX Data Radios:

„See about SkySweep HF (shortwave) Data Radio possibilities in our Long Range PDF information.“

SkyDR VHF/ UHF data radio hardware and applications related to PSS:

VHF TRX	VHF RX	TRX 12.5/20/25/50 kHz	RX 25 kHz	RX 50 kHz	19-inch	R-ALU	MS-MK	GPS	EM	MS	TR	DA	CA	Vi	CH	CR
SkyDR-1VM																
SkyDR-1VM19 / VRM					-VM19	-VRM										
SkyDR-1VBS / RBS					-VBS	-VRBS										
	SkyRX-1VBS															
	SkyRX-2VBS															
UHF TRX	UHF RX	TRX 12.5/20/25/50 kHz	RX 25 kHz	RX 50 kHz	19-inch	R-ALU	MS-MK	GPS	EM	MS	TR	DA	CA	Vi	CH	CR
SkyDR-1UM																
SkyDR-1UM19 / URM					-UM19	-URM										
SkyDR-1UBS / RBS					-UBS	-URBS										
	SkyRX-1UBS															
	SkyRX-2UBS															

Marked green = Currently available

Definition of available hardware and applications:

TRX 12.5/20/25/50 kHz	Supported TRX channel bandwidth	MS	Mail server
RX 25/50 kHz	Receiving channel bandwidth up to 25/50 kHz	TR	GPS based tracking
19-inch	19-inch enclosure	DA	Data Connection Service
R-ALU	compact rugged aluminium enclosure	CA	Customer own applications
MS-MK	Mobile Station mounting kit for vehicles	Vi	Video (available in 2012)
GPS	GPS receiver	CH	Instant messaging (Chat client) (available in 2012)
EM	Secure E-mail	CR	Secure voice (see additional PDF-information)

Product comparison table VHF and UHF Data Radios for Public Safety and Security (PSS)

SkySweep VHF and UHF Data Radio variants	Mobile Stations	Base Stations
TRX 12.5/20/25/50 kHz VHF/UHF channel spacing:	SkyDR-1V/U M / M19 SkyDR-1V/U RM	SkyDR-1V/U BS / RBS
MRX base station (up to 25 kHz, RX only)		SkyRX-1V/U BS
MRX base station (up to 50 kHz, RX only)		SkyRX-2V/U BS
System-features:		
STANAG 5066 v1.0/1.2 data transfer protocol:	Yes	Yes
CFTP / HMTP:	Yes	Yes
POP3:	Yes	Yes
SMTP:	Yes	Yes
Modems:		
SkyOFDM (VHF/UHF) up to 103 kbit/s (gross)/88.0 kbit/s (net):	Yes	Yes
Supported services:		
Point-to-point data transfer	Yes	Yes
Point-to-multipoint data transfer	Yes	Yes
STANAG 5066 compliant system	Yes	Yes
High capacity IP interface between base station and fixed network	No	Yes
E-mail routing between radio interface and fixed network	No	Yes
E-mail (group, individual)	Yes	Yes
GPS position and status report	Yes	Yes
Data modem services	Yes	Yes
TCP/IP data interface (client, server)	Yes	Yes
UDP data interface (client, server)	Yes	Yes
RS-232 data interface	Yes	Yes
STANAG 5066 subnet data interface	Yes	Yes
POP3 data interface	Yes	Yes
SMTP data interface	Yes	Yes
Other features:		
High Encryption AES, DES and customer specific encryption possible	Yes	Yes
API for customer specific applications	Yes	Yes
Automatic data rate change	Yes	Yes
External modem support	Yes	Yes
Data compression	Yes	Yes
Base Station handover	Yes	Yes
Advanced collision avoidance	Yes	Yes
Video (available in 2012)	Yes	Yes
Instant messaging (Chat Client) (available in 2012)	Yes	Yes
Secure voice (see additional PDF information)	Yes	Yes



Hardware specifications of SkySweep VHF and UHF Data Radios for Public Safety and Security

SkySweep Data Radio:		
Frequency band VHF:	134 - 174 MHz	
Frequency band UHF:	400 - 512 MHz	
Output power	25 W	
Max data rate in 12.5 kHz channel	20.1 kbit/s (gross) / 17.6 kbit/s (net)	
Max data rate in 25 kHz channel	40.2 kbit/s (gross) / 35.2 kbit/s (net)	
Max data rate in 50 kHz channel	100.5 kbit/s (gross) / 88.0 kbit/s (net)	
Transmission mode	16K0F3E, 11K0F3E	
Antenna impedance	50 Ω unbalanced (tuner off)	
Antenna connector	SO-239 (50 Ω)	
Power supply requirement	13.8V DC or 110/230 VAC \pm 15%	
Temperature range	-30 to + 60 $^{\circ}$ C	
Frequency stability	Less than \pm 2.5 ppm	
Channel spacing	12.5, 20, 25, 50 kHz	
Maximum deviation	\pm 5 kHz	
Conducted spurious emission	70 dB below carrier	
Sensitivity 12 dB SINAD	0.25 μ V	
Adjacent channel selectivity	75 / 65 dB	
Intermodulation	68 dB	
Spurious and image rejection	90 dB	
Standards and declarations:	CE EN 300 086-2 V1.1.1 EN 300 113-2 V1.4.1 EN 301 489-01 V1.8.1 EN 301 489-05 V1.3.1 EN 60065:2002	
Controller unit:	Sky CR-1 / SkyDR-1M / M19 / BS:	SkyDR-RM / RBS / SkyRX1/2:
Operating system	Windows™	Windows™
CPU	Intel® Atom™	Intel® Atom™
Memory	2 GB DDR SDRAM	2 GB DDR SDRAM
Storage	32 GB SSD disk	32 GB SSD disk
Display Interface	DVI-I, VGA with adapter	VGA
Data Interfaces	2 x RS-232 (Male connector) 3 x USB	4 x RS-232 1 x RS232/422/485 with Auto Flow control 7 x USB 2.0
Networking	1 x 1000 base T Ethernet WLAN	1 x 1000 base T Ethernet
Temperature range	-10 $^{\circ}$ C to + 50 $^{\circ}$ C; 0 % to 90 % non-condensing	-20 $^{\circ}$ C to 70 $^{\circ}$ C; 5 % to 95 % non-condensing
Power consumption	20 W	20 W
Cooling	Passive	Passive

Specifications of SkySweep VHF/UHF Data Radio enclosures for Public Safety and Security

SkyDR-1V/U M Mobile Station Data Radio solution (single units):

Entry solution:

SkyCR-1 or SkyCR-1R Data Radio controller unit + GPS receiver, mounting kit to be used with existing or new VHF/UHF radio.



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+



SkyCR-1 Controller

SkyCR-1R rugged Controller

existing VHF/UHF Radio

SkyCR-1 controller unit for indoor use (L x W x H)	110 x 170 x 47 mm ; Weight 1.2 kg
SkyCR-1R rugged controller unit for in-/outdoor use (L x W x H)	200 x 200 x 80 mm; Weight 2 kg

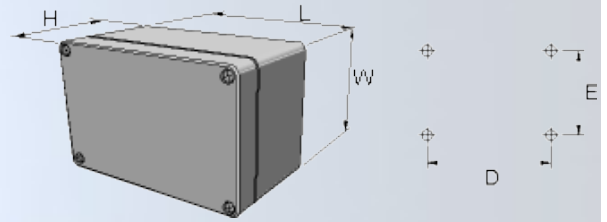
- SkyCR-1R: High quality rugged aluminium alloy, black powder coated RAL9005, EMC-gasket (-20° up to +50°C)
- SkyCR-1R: stainless steel Lid screws, waterproofed IP 66 /IP 67 EN 60529, external mounting brackets

SkyDR-1V/U RM / RBS rugged Station Data Radio:

RM (Rugged Mobile) :



RBS (Rugged Base Station) :



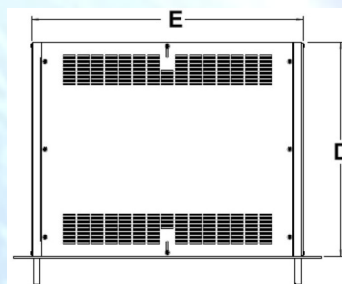
Compact rugged aluminium enclosure (L x W x H)	RM: 240 x 240 x 120 mm / RBS: 480 x 240 x 120 mm
Lid screw position	D: 220 mm / E: 220 mm
Weight	4.5 kg

- High quality rugged aluminium alloy
- black powder coated RAL9005
- EMC-gasket (-20° up to +50 °C)
- stainless steel Lid screws
- waterproofed IP 66 /IP 67 EN 60529
- external mounting brackets

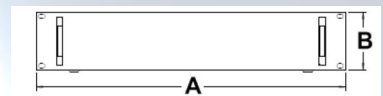
SkyDR-1V/U M19 / BS Data Radio:



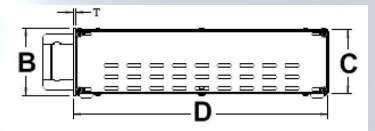
19 inch 3U top view:



front view:



side view:



19-inch 3U enclosure (E x D x C)	425 x 425 x 128 mm
Front Panel (A x B)	483 x 133 mm
Weight	10.8 kg

- Complies with IEC 297, EIA RS-310 C1977, DIN41494
- allows complete compatibility with all 19" standard equipment
- Powder coat finish preceded by 5 stage iron phosphate pretreatment
- High grade cold rolled steel
- Aluminum on front and rear panel
- Conforms to ASTM D610-01
- Conforms to ASTM B117

Various 19-inch rack mount options are available, ranging from one high speed data channel unit arrangements, to large scale multi channel installations.

SkySweep Technologies

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HF/VHF/UHF DATA RADIO



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