

SkySweep Technologies

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



SkySweep Data Radio System
Military

Data Radio variants for HF/VHF/UHF

SkySweep HF/VHF/UHF Base Stations

Base Station variants for Military

The SkySweep HF/VHF/UHF Base Stations offer data gateway services between air interface (mobile stations) and IP-network data services. 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
- SkyDR-1HBS HF Base Station: STANAG (5066,4285, 4539) and MIL-STD-188-141 (ALE) compliant HF communication
- Secure voice (available in 2012)

The SkyDR-1H/V/U BS Base Station HF/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:



The SkyDR-1H RBS Base Station HF 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 Station are capable to receive single 12.5/20/25/50 kHz VHF/UHF channel bandwidths.

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



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 = 48Ah/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 HF/VHF/UHF Mobile Stations

Mobile Station variants for Military

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.

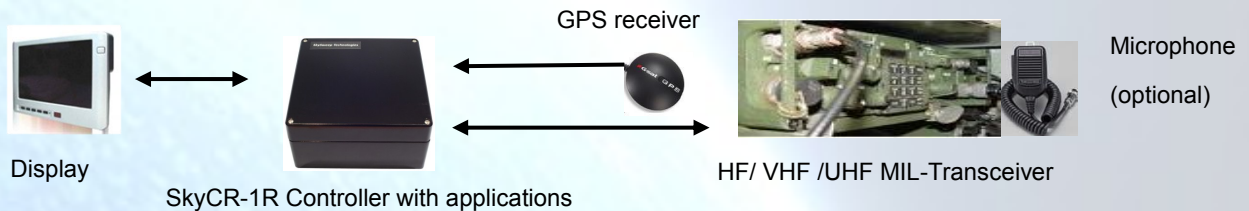
SkyDR-1 Mobile Station Data Radios variants provide:

- GPS based tracking
- Telemetry / SCADA
- Customer specific data applications
- E-mail
- SMTP / POP 3 based data services
- Customer specific data applications
- Video (available in 2012)
- Instant messaging (Chat Client) (available in 2012)
- SkyDR-1HRM HF Mobile Station: STANAG (5066,4285, 4539) and MIL-STD-188-141 (ALE) compliant HF communication
- Secure voice (available in 2012)

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

Entry solution: a typical setup of the SkyDR-1H/V/U M based Mobile Station contains a professional rugged small size SkyCR-1R controller unit, display, GPS receiver, microphone (optional, if voice used) and an existing HF/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-1H/V/U M19 Mobile Station TRX VHF/UHF Data Radio, 19-inch enclosure, GPS-receiver:



The SkyDR-1H RBS Mobile Station rugged TRX HF Data Radio, compact rugged aluminium enclosure, GPS-receiver:



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



SkyCR-1R Controller unit

SkyCR-1R ruggedized Controller unit

The Windows™ based **SkySweep SkyCR-1R Controller unit** is an professional rugged small sized controller unit for local stationary or mobile station use in extreme Military conditions. The device has a passive cooling system and does not include any moving parts. The enclosure is IP65 class protected. It can be used with customer's existing (*) HF/VHF/UHF transceivers.
*Compatible transceivers on request

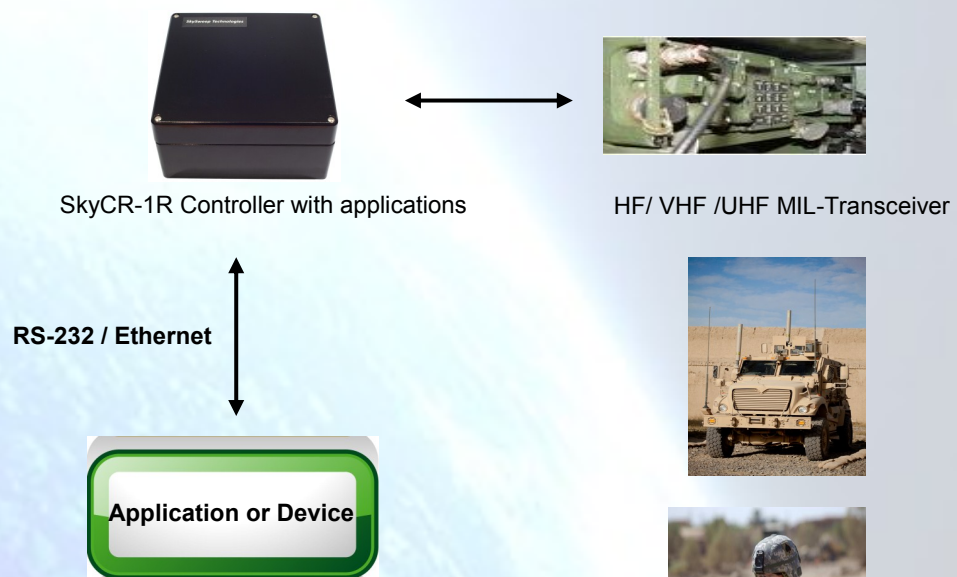


SkyCR-1R Controller

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

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

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



Expand world wide communication with HF

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

Connect your data sources and services with less costs.“

Overview of the SkySweep Data Radio product variants for Military

SkySweep VHF TRX Data Radios and Multichannel receivers for VHF 12.5/20/25/50 kHz bandwidth channels:

SkyDR-1VM > 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 TRX Data Radios and Multichannel receivers for UHF 12.5/20/25/50 kHz bandwidth channels:

TRX Data Radios for UHF 12.5/20/25/50 kHz bandwidth channels:
 SkyDR-1UM > 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 rugged Station 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:

SkyDR-1VM > SkyCR-1R controller unit + GPS receiver, mounting kit to be used with existing or new HF radio.
 SkyDR-1HM19 > Mobile HF Data Radio station in 19-inch enclosure, GPS-receiver.
 SkyDR-1HRM > Mobile rugged HF Data Radio station: compact rugged aluminium enclosure, GPS-receiver.
 SkyDR-1HBS > Base Station HF Data Radio in 19-inch enclosure.
 SkyDR-1HRBS > Base Station rugged HF Data Radio: compact rugged aluminium enclosure.

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															
HF TRX		TRX 1.6—30 MHz														CR
SkyDR-1HM19 / HRM					-HM19	-HRM										
SkyDR-1HBS / RBS					-HBS	-RBS										

Definition of available hardware and applications:

Marked = Currently available

TRX 12.5/20/25/50 kHz	Supported TRX channel bandwidth	MS	Mail server
RX 25 kHz / 50 kHz	Receiving channel bandwidth up to 25/50 kHz	TR	GPS based tracking
19-inch	19inch 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 Military HF/VHF/UHF Data Radios

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 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
SkySweep HF Data Radio variants	Mobile Station	Base Station
Frequency band 1.6 - 30 MHz	SkyDR-1HRM / M19	SkyDR-1HBS / RBS
Software-features:		
STANAG 5066 v1.0/1.2 data transfer protocol:	Yes	Yes
CFTP / HMTP:	Yes	Yes
POP3:	Yes	Yes
SMTP:	Yes	Yes
Modems available for VHF/UHF Data Radios:		
SkyOFDM (VHF/UHF) up to 103 kbit/s (gross)/88.0 kbit/s (net):	Yes	Yes
Modems available for HF Data Radios:		
SkyOFDM (HF) up to 9.6 kbit/s (net):	Yes	Yes
STANAG 4285 (up to 2.4 kbit/s):	Yes	Yes
STANAG 4539 (up to 2.4 kbit/s):	Yes	Yes
MIL-STD-188-110A/B:	Yes	Yes
MIL-STD-188-141A (ALE):	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
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 (VHF/UHF) (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 Military HF Data Radio

SkySweep Data Radio:

Frequency band	1.6 - 30 MHz
Output power	100 W
Max data rate	12.8 kbit/s (gross) / 9.6 kbit/s (net)
Transmission mode	USB
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	-10 to + 50 $^{\circ}$ C
Modulation system	DPSN modulation
Spurious emission	Less than -50 dB
Carrier suppression	More than 50 dB
Receive system	Triple conversion super-heterodyne system
Sensitivity 10 dB SINAD	Less than 0.16 μ V
Selectivity	More than 2.4 kHz/-6 dB Less than 3.6 kHz/-60 dB
Spurious and image rejection	More than 70 dB
Standards and declarations	CE ETSI 1999/5/EC FCC approved

Controller unit:	Sky CR-1 / SkyDR-1M19 / BS:	SkyDR-RM / RBS/ SkyRX1/2:
Operating system	Windows™	Windows™
CPU	Intel® Atom™	Intel® Atom™
Memory	2 GB DDR2-533	2 GB DDR3 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) 4 x USB	4 x RS-232 1 x RS232/422/485 with Auto Flow control 8 x USB 2.0
Networking	1 x 1000 base T Ethernet WLAN	1 x 1000 base T Ethernet
Temperature range	-10 to + 50 $^{\circ}$ C; 0 - 90% non-condensing	--20 ~ 70 $^{\circ}$ C; 5 ~ 95% non-condensing
Power consumption	20 W	20 W
Cooling	Passive	Passive

Hardware specifications of Military VHF and UHF Data Radios

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-1HBS:	SkyDR-1RM / RBS :
Operating system	Windows™	Windows™
CPU	Intel® Atom™ N270	Intel® Atom™ D525 dual-core processor 1.8 GHz/1MB L2 cache
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) 4 x USB	4 x RS-232 1 x RS232/422/485 with Auto Flow control 8 x USB 2.0
Networking	1 x 1000 base T Ethernet WLAN	1 x 1000 base T Ethernet
Temperature range	-10 to + 50 $^{\circ}$ C; 0 - 90% non-condensing	--20 ~ 70 $^{\circ}$ C; 0 ~ 95% non-condensing
Power consumption	20 W	20 W
Cooling	Passive	Passive

Specifications of SkySweep Military HF/ VHF/ UHF Data Radio enclosure

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

Entry Data Radio solution: SkyCR-1R controller unit + existing HF/ VHF or UHF radio, GPS receiver and mounting kit (brackets).

Existing radio can be used depending on the radio-model.



+



SkyCR-1R controller

Existing HF/ VHF or UHF Radio

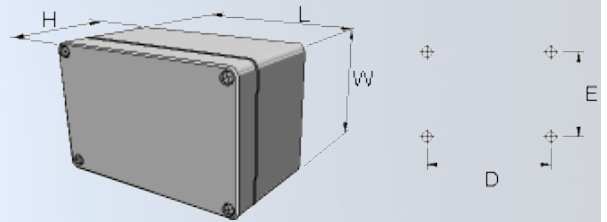
SkyCR-1R controller, rugged aluminium enclosure (L x W x H)	200 x 200 x 80 mm ; Weight 2 kg
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- High quality rugged aluminium alloy, black powder coated RAL9005, EMC-gasket (-20° up to +50 °C)
- stainless steel Lid screws, waterproofed IP 66 /IP 67 EN 60529, external mounting brackets

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

V/U RM (Rugged Mobile) :

HRM / RBS (Rugged Base Station) :

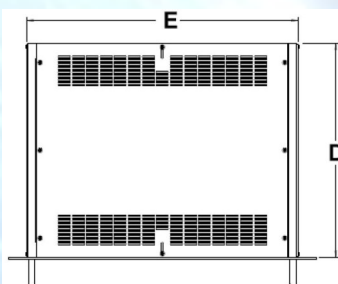


Compact rugged aluminium enclosure (L x W x H)	V/U RM: 240 x 240 x 120 mm / HRM/RBS: 480 x 240 x 120 mm
Lid screw position (D x E)	460 x 220 mm
Weight	4.5 ~ 6 kg

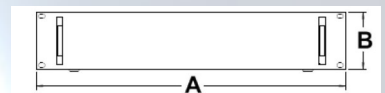
- High quality rugged aluminium alloy
- black powder coated RAL9005
- EMC-gasket (- 20° up to + 50 °C)
- stainless steel Lid screws
- waterproofed IP 66 /IP 67 EN 60529
- external mounting brackets

SkyDR-1V/U/H HM19 / BS Data Radio:

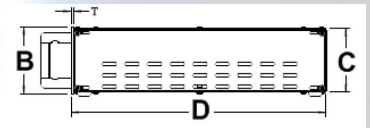
19-inch 3U top view:



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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