

SkySweep Technologies

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



SkySweep Data Radio System Telemetry

Data Radio variants for VHF and UHF

SkySweep VHF/UHF Base Stations

Base Station variants for Telemetry

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

The SkyDR-1 Base Station telemetry Data Radios variants provides:

- IP based interface between radio interface and fixed network

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.

MRX receiving Base Stations handle huge data load uplinks from the mobile or stationary telemetry 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 VHF/UHF Mobile Stations

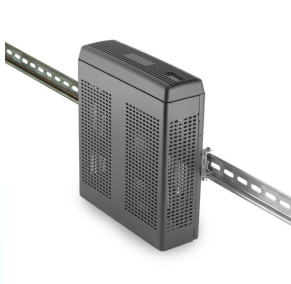
Mobile Station variants for Telemetry

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 Mobile or stationary telemetry Data Radios variants provides:

- Telemetry SCADA Data connection services
- Customer specific data applications

The SkyDR-1V/U MD Mobile Station 12.5kHz channel bandwidth TRX VHF/UHF Data Radio, compact DIN-RAIL enclosure:



DIN-RAIL mounting



Side view



Rear view

The SkyDR-1V/U RMD mobile or stationary rugged TRX VHF/UHF Data Radio, compact rugged aluminium enclosure:



The SkyDR-1V/U MD19 mobile or stationary TRX VHF/UHF Data Radio, 19inch enclosure, GPS-receiver:



Example: SkySweep SkyDR-1V/U RMD stationary station for telemetry data , rugged TRX VHF/UHF Data Radio, compact rugged aluminium enclosure:



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

Connect your data sources and services with less costs.“

Overview of the SkySweep Telemetry and SCADA Data Radio product variants

SkySweep VHF Data Radios and MRX Multichannel Receivers:

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

- SkyDR-1VMD > for 12.5kHz bandwidths >Stationary indoor use: **DIN-RAIL installation.**
- SkyDR-1VMD19 > Mobile or stationary Data Radio station, 19-inch enclosure.
- SkyDR-1VRMD > Mobile or Stationary use, rugged for outdoor or indoor, compact rugged aluminium enclosure.
- SkyDR-1VBS > Base Station Data Radio, 19-inch enclosure.
- SkyDR-1VRBS > Base Station 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-1UMD > for 12.5kHz bandwidths >stationary indoor use: **DIN-RAIL installation.**
 - SkyDR-1UMD19 > Mobile or stationary Data Radio station, 19inch enclosure.
 - SkyDR-1URMD > Mobile or Stationary use, rugged for outdoor or indoor, compact rugged aluminium enclosure.
 - SkyDR-1UBS > Base Station Data Radio, 19-inch enclosure.
 - SkyDR-1URBS > Base 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:

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

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

VHF TRX	VHF RX	TRX 12.5/20/25/50 kHz	RX 25	RX 50	19-inch	R-ALU	DIN-	DA
SkyDR-1VMD		12.5 kHz						
SkyDR-1VMD19 / RMD					-VMD19	-VRMD		
SkyDR-1VBS / RBS					-VBS	-VRBS		
	SkyRX-1VBS							
	SkyRX-2VBS							
UHF TRX	UHF RX	TRX 12.5/20/25/50 kHz	RX 25	RX 50	19-inch	R-ALU	DIN-	DA
SkyDR-1UMD		12.5 kHz						
SkyDR-1UMD19 / RMD					-UMD19	-URMD		
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	R-ALU	compact rugged aluminium enclosure
RX 25 kHz	Receiving channel bandwidth up to 25 kHz	DIN-RAIL	Stationary station with DIN-Rail mounting
RX 50 kHz	Receiving channel bandwidth up to 50 kHz	DA	Data Connction Service (M2M, etc.)
19-inch	19-inch enclosure		

Product comparison table VHF and UHF Data Radios for Telemetry and SCADA

SkySweep VHF and UHF Data Radio variants	Mobile Stations	Base Stations
TRX 12.5 khz channel spacing:	SkyDR-1V/U MD	
TRX 20/25/50 kHz VHF/UHF channel spacing:	SkyDR-1V/U MD19/RMD	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:		
Modems:		
SkyOFDM (VHF/UHF) up to 103 kbit/s (gross)/88.0 kbit/s (net):	Yes	Yes
Supported services for Telemetry:		
Point-to-point data transfer	Yes	Yes
Point-to-multipoint data transfer	Yes	Yes
High capacity IP interface between base station and fixed network	No	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
Other features for Telemetry:		
High Encryption AES, DES and customer specific encryption possible	Yes	Yes
API for customer 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



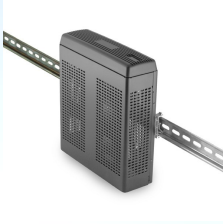
Hardware specifications of SkySweep VHF and UHF Data Radio for Telemetry and SCADA

SkySweep Data Radio:	
Frequency band VHF:	134 - 174 MHz
Frequency band UHF:	400 - 512 MHz
Output power	SkyDR-1MD: 5 W / SkyDR-1-MD19, RD, BS:25 W (adjustable)
Max data rate in 12.5 kHz channel (SkyDR-1MD: 12.5kHz only)	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	50 Ω
Power supply requirement	7.4 V DC \pm 20 %
Temperature range	-30 to + 60 $^{\circ}$ C
Frequency stability	Less than \pm 2.5 ppm
Channel spacing	12.5 kHz
Maximum deviation	\pm 5 kHz
Conducted spurious emission	65 dB below carrier
Sensitivity 12 dB SINAD	0.25 μ V typical
Adjacent channel selectivity	65 / 60dB 25 kHz / 12.5 kHz
Intermodulation	65 / 60dB 25 kHz / 12.5 kHz
Spurious and image rejection	65 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:	SkyDR-MD:	SkyDR-RMD / RBS / SkyRX1/2:	SkyDR-MD19 / BS / RBS:
Operating system	Windows™	Windows™	Windows™
CPU	Intel® Atom™	Intel® Atom™	Intel® Atom™
Memory	2 GB DDR SDRAM	2 GB DDR SDRAM	2 GB DDR SDRAM
Storage	32 GB SSD disk	32 GB SSD disk	32 GB SSD disk
Display Interface	VGA	VGA	DVI-I, VGA with adapter
Data Interfaces	1 x RS232/422/485 with Auto Flow control 3 x USB 1 x Parallel TTL level digital I/O port	4 x RS-232 1 x RS232/422/485 with Auto Flow control 7 x USB 2.0	2 x RS232/422/485 with Auto Flow control (Male connector) 3 x USB
Networking	1 x 1000 base T Ethernet	1 x 1000 base T Ethernet	1 x 1000 base T Ethernet WLAN
Temperature range	0 $^{\circ}$ C to +50 $^{\circ}$ C	-20 $^{\circ}$ C ~ 70 $^{\circ}$ C; 5 % ~ 95 % non-condensing	-10 $^{\circ}$ C to + 50 $^{\circ}$ C; 0 % - 90 % non condensing
Power consumption	20 W	20 W	20 W
Cooling	Passive	Passive	Passive

Specifications of SkySweep VHF/UHF Data Radio enclosures for Telemetry and SCADA

SkyDR-1V/U MD example DIN-RAIL and wall mount:



front view:



rear view:



Compact enclosure for indoor use (L x W x H)	192 x 210x 62 mm
Weight	2 kg

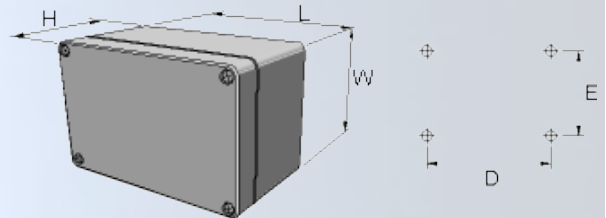
- Electro galvanized steel, outside: powder coat black
- Mounting options include: DIN-RAIL, Wall mount, VESA, flexible possibilities for mounting in vehicles

SkyDR-1V/U RMD / RBS rugged Data Radio:

RMD (Rugged Mobile) :



RBS (Rugged Base Station) :



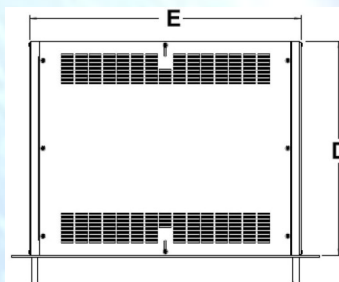
Compact rugged aluminium enclosure (L x W x H)	RMD: 240 x 240 x 120 mm / RBS: 480 x 240 x 120 mm
Lid screw position	D: 220 mm / E: 220 mm
Weight	4.5 kg ~ 6.5 kg

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

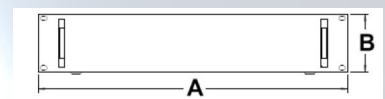
SkyDR-1V/U MD19 / BS Data Radio:



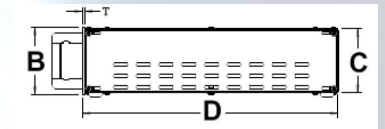
19-inch 3U top view:



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.

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