

MMR-116

Mini Meteorological Radar

Mini Meteorological Radar MMR-116 is a unique X-band weather radar with large functionality integrated into the small device sold for favorable price. The radar provides real time insight to weather situation and is capable to detect precipitation 10 dBZ at distance 200 km.

**High sensitivity
up to 200 km**



**Large amount
of functionality
integrated into small
device**



**Real time insight to
weather situation**



**Fully automatic
operation without
servicing staff**



**Low weight and small
dimensions**



**User-friendly graphic
interface according
to customer's
requirements**

MMR-116 answers the increasing demand for water management tools and hazardous meteorological phenomena detection. Watershed management, global warming adaptation strategies, flood protection, operational weather forecast, military and civil defense actions or aviation safety are supported by this radar. The combination of its size and low price implies wide use in the water management,

tourism, media, transport, military, civil defense, aviation and agriculture.

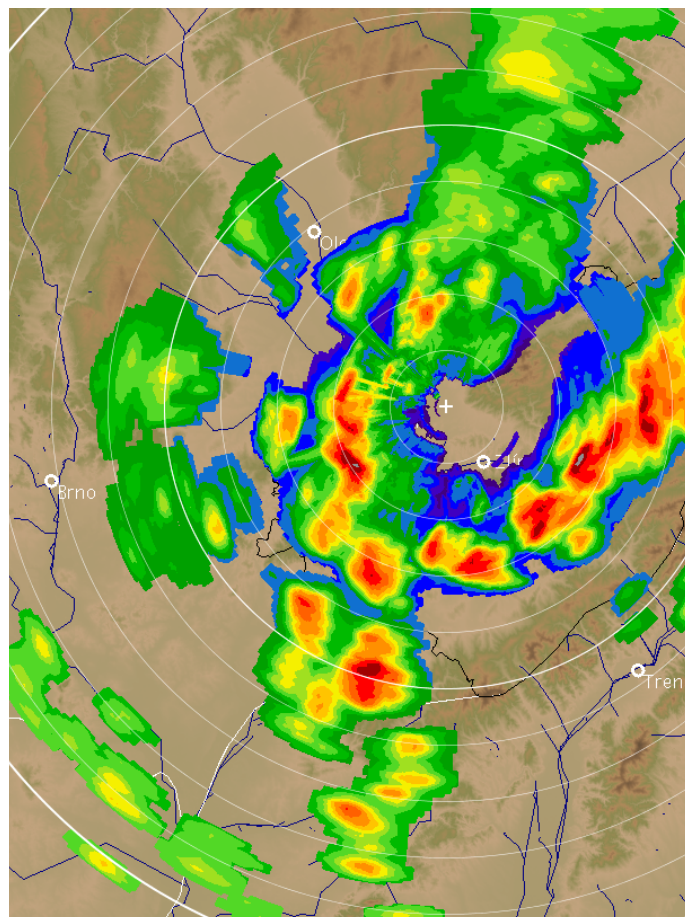
MMR-116 is exceptionally powerful radar approaching the performance of the big radars. Its capabilities allow the design of efficient small radar networks which have important advantages compared to the single radar with long range.

MMR-116 comes with the IMS4 Radar Studio Software displaying meteorological spatial data in user-friendly graphic form.



MMR-116 Mini Meteorological Radar provides:

- programmable scan of echoes from the radar range (including but not limited to full 3D volume scan, PPI scan, RHI scan);
- data transformation into spatial matrix;
- input data processing;
- data distribution to customer graphic workstation.



ColumnMax product (immediate maximum at a given location) from the storm front in the Czech Republic on 21.6.2018

IMS4 Radar Studio Software

The data processing is based on web server architecture and therefore all products are available over HTTP interface and easily accessible to any user using web browser. The access to the web interface is secured by encrypted (https) protocol, and protected by password. The data processing software takes the earth curvature and atmospheric refraction into account. During the data processing, the non-meteorological data, like ground clutters, are removed (filtered) in final visualization products:

- BUFR, GRIB, HDF5, OPERA ODIM, UF data formats
- Image export to GIF, GeoTiff, PNG, JPG
- TITAN compatibility (www.ral.ucar.edu)

IMS4 Radar Studio Basic License - Standard meteorological products [MIS:IMS.Radar]

- PPI (Plan Position Indicator) one radar elevation
- CAPPI (Constant Altitude PPI) horizontal cross section
- RHI (Range Height Indicator) vertical cross section
- Echo Tops heights of cloud tops
- Composite Reflectivity (Column max) maximas in columns
- VIL (Vertically Integrated Liquid Water) column sums

Hydrological products [MIS:RADAR.HYDRO]

- QPE (Quantitative Precipitation Estimate)
- Rainfall Accumulation
- River basin statistics

Composite products from multiple radars [MIS:RADAR.COMPOSITE]

- Generation of the composite products from the heterogenous radar networks

Nowcasting [MIS:RADAR.NOWC]

- Storm cell identification and nowcasting (MIS:RADAR.NOWC.TI)
- TREC (Tracking radar echoes by correlation) nowcasting up to 2 h including QPE (MIS:RADAR.NOWC.TREC)

IMS4 Maps Map Server [OGC Web Services]

- Zoomable maps with layers
- Integration of Openly Licensed Maps for Offline use
- Radar product layers
- OGC Web Map Service

Low emitted power enables the device to comply with standards for operation in settled areas (towns, airports, highways, ports, etc.). Despite the low emitted power the radar is able to monitor small precipitation up to distance of 200 km.

MMR-116 can complete “white spots” in existing large radar network or a complete network of MMRs can be established in areas with no radar coverage. Small size and low weight enables easy installation and operation.

Technical specification

Height	1630 mm
Width	1310 x 1310 mm
Weight	125 kg
Antenna	parabolic, diameter 1160 mm
Antenna elevation	-1 to +90°, angle span
Antenna scanning speed	0 to 15 rpm
Transmitter tube	magnetron
Receiver sensitivity	-113 dBm 10 dBZ at 200 km
Modulator type	solid-state
Dynamic range	90 dB
Operating frequency range	9 410 MHz (X-band)
Half power beam width	1.8°
Polarization	horizontal
Antenna gain	40 dBi typical
Transmitter power peak	40 kW
Raw data resolution	32 bit
RF pulse width	2 µs
Pulse repetition frequency	250 Hz
Maximum range	200 km
Radial resolution	600 m
Consumption	250 W
Data update rate	3D full scan 1 min (depending on configuration)
Data transfer	TCP/IP (LAN, private networks, internet, etc.)
Operating temperature range	-40 °C to +60 °C without AC

