

# Micro Rain Radar MRR-*PRO*



- **Advanced processing hardware for Micro Rain Radar technique**
- **Vertical profiling of drop size distribution, rain rate and liquid water content**
- **Stand-alone system with completely integrated data evaluation**
- **Up to 254 height ranges**
- **Minimum height resolution 10 m**
- **Minimum averaging intervals 1 s**
- **Automatic melting layer detection**
- **Improved attenuation correction**
- **Convenient user interface**
- **Data protocols include NETCDF**
- **Web interface**

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Parameter	MRR-PRO
Range resolution	> 10 m
Operating frequency	24,23 GHz (K-band)
Sampling frequency	500 kHz
Number of range gates	min. 30 ... max. 254
Acquisition time for one set of spectra	≥ 1.6 ms
Time interval for averaged spectra	≥ 1 s
Velocity resolution	0.05 ... 6.00 m/s
Nyquist velocity range	12.3 ... 96.3 m/s
Duty cycle (net-sampling time in one averaging interval)	> 99%
Min. detectable radar reflectivity (z=1000 m, Δz=100 m, Δt=60 s)	- 8 dBZ

The newly developed hardware of the MRR-*PRO* combines the unique Micro Rain Radar technique of the MRR-2 and a high performance processing unit which significantly improves all operating parameters. The system allows precise measurements of the Doppler spectra caused by hydrometeors and yields the rain rate, liquid water content and drop size distribution for the liquid phase. All computations including automatic melting zone detection are integrated in the outdoor electronics. The system has been evolved to be a powerful stand-alone profiler for investigations of precipitation and cloud dynamics with very low installation and logistics effort.

The MRR-*PRO* can be easily installed virtually independent of site conditions. An optional heating for the offset antenna is available in order to avoid coverage by ice or snow. Adjustment of the system parameters by user via remote access link is possible. The system requires only very low maintenance and has been used for routine measurements even at adverse sites.

The software of MRR-*PRO* offers a convenient web-interface for system monitoring, data retrieval and file management. For integration to wide monitoring networks various data protocols e.g. NETCDF are implemented.

