



Features

- 250 kW klystron transmitter with low-maintenance solidstate modulator
- Vaisala lightweight, semi-yoke style pedestal
- 1° beamwidth low side lobe antenna
- Built around RVP900™ and IRIS™ software
- Image rejection > 80 dB (> 100dB with Vaisala waveguide filters)
- Built-in automatic calibration (optional)
- Feed forward control loop to allow extremely fast and precise antenna movement
- Fully programmable scanning
- Dynamic range >99 dB (2μs pulse)
- Wide dynamic range digital IF receiver (optional)

Vaisala Weather Radar WRK100 is a single polarization radar that uses a coherent klystron transmitter.

Modular System Design

The modular system design consists of a high performance antenna/ pedestal and a double cabinet that contains the transmitter, receiver, power supplies, dehydrator, processor and polarization waveguide assembly.

The components have been engineered and tested for long life and low maintenance in even the most harsh environments.

Remote Operation

Comprehensive remote control, BITE and active monitoring features allow radar maintenance to be coordinated from a central facility to reduce repair time and ensure data availability..

The detailed level of fault reporting allows maintenance personnel to accurately assess any problem before traveling to radar sites.

Upgrade Options

WRK100 can be upgraded to dual polarization. The upgrade options are:

- Dual polarization waveguide structures installed in the factory but taken into use later with software installations carried out at the site.
- On-site upgrade, including software upgrades and the installing dual polarization waveguide structures.

Technical Data

Transmitter

Transmitter tube	Klystron VKC8387
Frequency range	5.6 ... 5.65 GHz
Peak power	250 kW
Average power	max 550 W
Duty cycle	0.0022
Pulse widths	Typical 0.5, 0.8, 1.0, 2.0, max 5.0 μ s
Pulse repetition frequency	250 ... 2125 Hz
Modulator	Solid state
Phase stability	<0.1 degrms

Antenna and Pedestal

Operating temperature	-40 ... +55 °C
Operating humidity	0 ... 95 % non-condensing
Storage temperature	-50 ... +60 °C
Total weight (4.5 m antenna and pedestal)	1520 kg
Operating altitude/Ambient pressure	Up to 3000 m Up to 700 hPA

Antenna

Type	Center-fed parabolic reflector
Reflector diameter	4.5 m
Gain (typical)	45 dB
Beam width	< 1.0°
Peak side lobes at main polarization planes	< -28 dB
Weight (4.5 m reflector)	620 kg

Pedestal

Type	Semi-yoke elevation over azimuth
Angle span software limits	-2 ... 108°
Maximum scan rate	40 degrees/second
Acceleration	20 degrees/second ²
Position accuracy	< 0.1°
Motors	Brushless AC servo
Weight	900 kg

Signal Processing

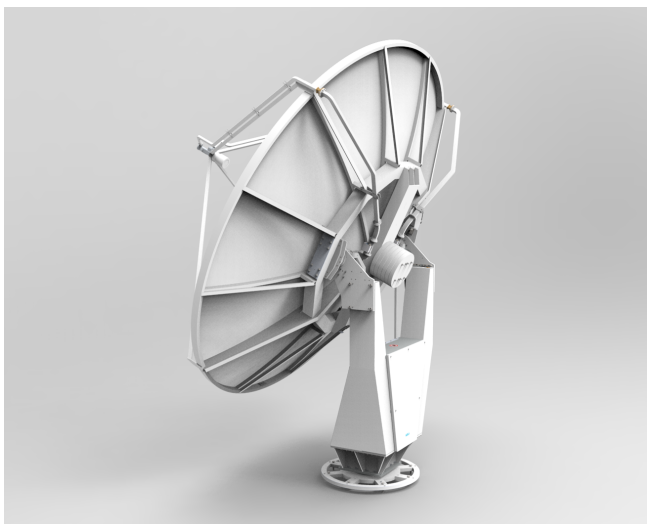
Signal processor	Vaisala RVP900
Azimuth averaging	2 ... 1024 pulses
Clutter filters	IIR, fixed, and adaptive width GMAP >55 dB rejection
Data outputs (8 and 16 bit)	Ah/v, Azdr, CCOR, CSP, CSR, dBt, dBZ, dBZt, LOG, R, SNR, SQI, T, V, VC, W, Z, ZC,Zh, Zv
Dual PRF velocity de-aliasing	2:3, 3:4, or 4:5 for 2X, 3X, or 4X de-aliasing
High sensitivity Rhv STARmode processing	> 3 dB improvement detection gain
IF digitizing	16 bits, 100 MHz in 5 channels
Number of range bins	Up to 4200
Optional data outputs	I/Q
Processing modes	PPP, FFT/DFT, Random Phase 2nd trip filtering/recovery
Range resolution	N*15 m
Range dealiasing by random phase	

System Specifications

Input power	Voltage: 3-phase 230/400 VAC \pm 10 % 50- 60 Hz \pm 5 % Site mains supply fuses: min 25 A
Pedestal	1050 W (max.) / 200 W (typical)
Radar cabinet	Max. 8720 W with UPS Max. 7850 without UPS
Phase stability	< 0.1° rms
Maximum RhoHV	> 0.99

Options

Radome	Typical 6.7 m, foam core sandwich, random panel
Dual pol ready	Factory prepared antenna and pedestal for dual polarization.
Automatic calibration	
Forward and reverse transmitted power monitoring	
Wide dynamic range receiver	> 115 dB



Radars Receiver

Type	Dual stage downconverter and digitizer
Noise figure	< 2 dB
Dynamic range	> 99 dB (2 microsecond pulse), (option > 115 dB)
Image rejection	> 80 dB > 100 dB with waveguide filters
Tuning range	5.5 ... 5.7 GHz
1st intermediate frequency	442 MHz
2nd intermediate frequency	60 MHz

Radars Controller

Type	Vaisala RCP8 with IRIS Radar
Scan modes	PPI, RHI, Volume, Sector, Manual, Rapid Scan
Local display	Real time, Ascope, BITE, products

Radars Cabinet

Dimensions (w x h x d)	1400 x 1800 x 1300 mm
Total height	1890 mm ¹⁾
Weight	977 kg
Cooling	Equipment rack: air-conditioned Transmitter: forced air
Operating temperature	+5 ... +40 °C +15 ... +25 °C recommended
Operating humidity	0 ... 95 % RH, non-condensing
Storage temperature	-50 °C...+50 °C without oil -10 ... +50 °C with oil
Operating altitude/ Ambient pressure	Up to 3000 m Up to 700 hPA

¹⁾ The total height includes the pedestal protection unit and cabinet legs.





Features

- 250 kW klystron transmitter with low-maintenance solid-state modulator
- Vaisala lightweight, semi-yoke style pedestal
- 1° beamwidth low side lobe antenna
- Feed forward control loop to allow extremely fast and precise antenna movement
- Built around RVP900™ and IRIS™ software
- Remote control and monitoring
- Image rejection > 80 dB (> 100 dB with Vaisala waveguide filters)
- Dynamic range > 99 dB (2 μs pulse)
- Optional built-in automatic dual-channel calibration

Vaisala Weather Radar WRK200 is a dual-polarization C-band radar that uses a coherent klystron transmitter.

Dual-polarization

- Precision horizontal and vertical beam matching
- > 35 dB integrated cross-polarization isolation
- Dual-channel digital IF receiver

Dual-polarization radars send vertically and horizontally polarized microwaves to measure the parameters needed for analyzing the target shape and improving data quality.

Targets are identified as, for example, rain, hail, or snow, using sophisticated data processing techniques.

Enhanced reflectivity

Enhanced reflectivity is a signal processing technique that improves the detection capabilities of a dual-polarization radar.

The technique uses echo power estimation to improve the detectivity of weak signals over a long range.

Enhanced reflectivity is exclusive to Vaisala dual-polarization radars and RVP900™.

HydroClass™

Vaisala Hydrometeor Classification (HydroClass) software makes optimal use of dual-channel measurements to detect the types of scatterers present in

the atmosphere, such as rain, hail, snow, graupel, and even non-meteorological targets such as insects, chaff, and sea clutter.

The benefit is improved data quality and more accurate warnings for hazardous weather such as hail.

Attenuation Correction

Attenuation by intervening heavy precipitation has been a long-standing concern with weather radars, especially in tropical environments where heavy rain is common.

Dual-polarization radars meet this challenge by performing accurate, real-time attenuation corrections.

Technical Data

Transmitter

Transmitter tube	Klystron VKC8387
Frequency range	5.6 ... 5.65 GHz
Peak power	250 kW
Average power	max. 550 W
Duty cycle	0.0022
Pulse widths	Typical 0.5, 0.8, 1.0, 2.0, max. 5.0 μ s
Pulse repetition frequency	250 ... 2125 Hz
Modulator	Solid state
Phase stability	<0.1 degrms

Antenna and Pedestal

Total weight (4.5 m antenna and pedestal)	1530 kg
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Antenna

Type	Center-fed parabolic reflector
Reflector diameter	4.5 m
Gain (typical)	45 dB
Beam width	< 1.0°
Difference between H and V beam widths	< 0.1° (<0.2 dB difference in gain)
Peak sidelobes at main polarization planes	< -29 dB
Integrated cross-pol isolation	< -35 dB
Cross-pol isolation at main polarization planes	< -36 dB
H/V alignment (squint angle)	< 0.1°
Weight (reflector with counterweight plate)	620 kg

Pedestal

Type	Semi-yoke elevation over azimuth
Angle span software limits	-2 ... 108°
Maximum scan rate (azimuth and elevation)	40 degrees/second (6.67 rpm)
Acceleration	20 degrees/second ²
Position accuracy	< 0.1°
Motors	Brushless AC servo
Weight	910 kg

Signal processing

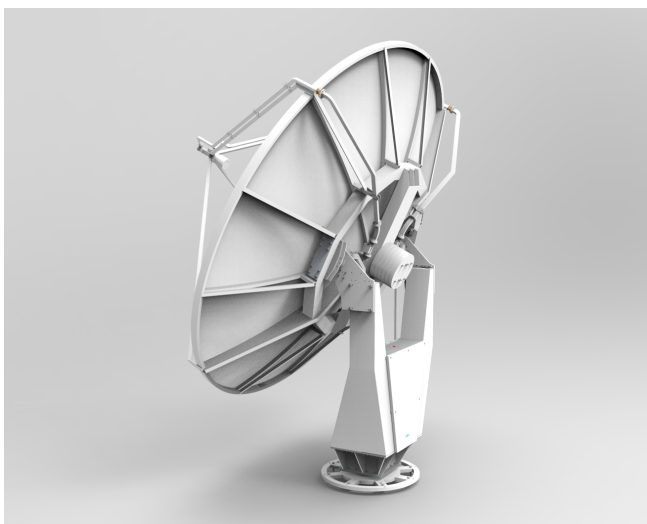
Signal processor	Vaisala RVP900
Azimuth averaging	2 ... 1024 pulses
Clutter filters	IIR, fixed, and adaptive width GMAP > 55 dB rejection
Data outputs (8 and 16 bit)	Ah/v, Azdr, CCOR, CSP, CSR, dBT, dBZ, dBZt, KDP, LDR, LOG, PHIH/V, PHIDP, PMI, R, RHOHV, SNR, SQI, T, V, VC, W, Z, ZC, ZDR,ZDRc,Zh, Zv, Zhv
Dual PRF velocity de-aliasing	2:3, 3:4, or 4:5 for 2X, 3X, or 4X de-aliasing
High sensitivity Zhv STAR mode processing	> 3 dB improvement detection gain
IF digitizing	16 bits, 100 MHz in 5 channels
Number of range bins	Up to 8168 per channel
Optional data outputs	HCLASS, I/Q
Processing modes	PPP, FFT/DFT, Random Phase 2nd trip filtering/recovery
Range resolution	N*22 m
Range de-aliasing by random phase	

System specifications

Input power	Voltage: 3-phase 230/400 VAC \pm 10 % 50- 60 Hz \pm 5 % Site mains supply fuses: min 25 A
Pedestal	1050 W (max.) / 200 W (typical)
Radar cabinet	Max. 8720 W with UPS Max. 7850 without UPS
Phase stability	< 0.1° rms
Maximum RhoHV	> 0.99

Options

Radome	Typical 6.7 m, foam core sandwich, random panel
Automatic calibration	
Forward and reverse transmitted power monitoring	
Wide dynamic range receiver	> 115 dB



Radar receiver

Type	Dual-stage, dual-channel IF downconverter and digitizer
Noise figure	< 2 dB
Dynamic range	> 99 dB (2 μ s pulse) (option > 115 dB)
Image rejection	> 80 dB > 100 dB with waveguide filters
Tuning range	5.5 ... 5.7 GHz
1st intermediate frequency	442 MHz
2nd intermediate frequency	60 MHz

Radar Controller

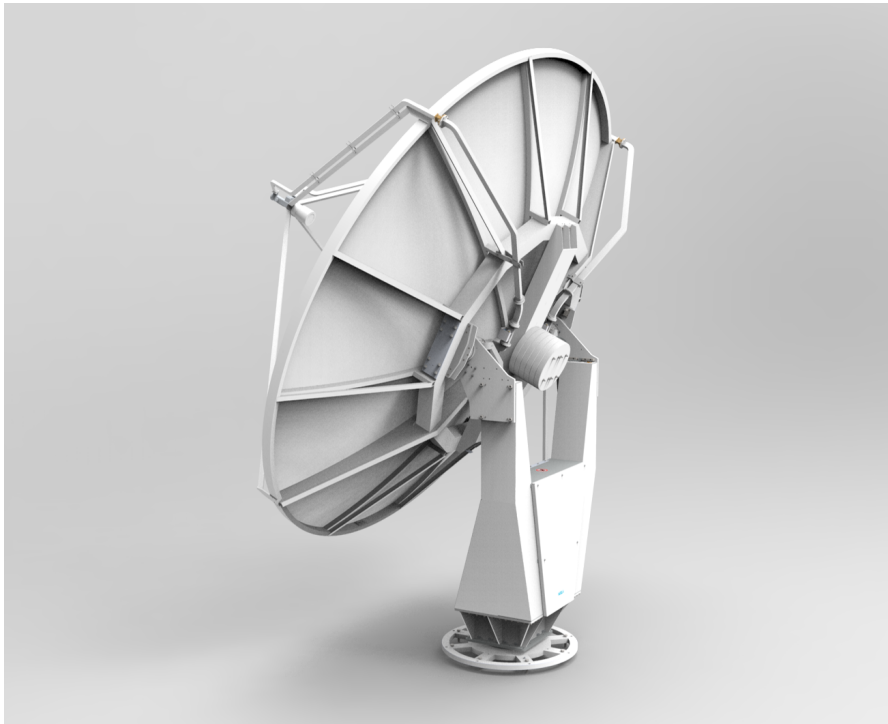
Type	Vaisala RCP8 with IRIS Radar
Scan modes	PPI, RHI, Volume, Sector, Manual, Rapid Scan
Local display	Real time, Ascope, BITE, products

Radar cabinet

Dimensions (w × h × d)	1400 × 1800 × 1300 mm
Total height	1890 mm ¹⁾
Weight	977 kg
Cooling	Equipment rack: air-conditioned Transmitter: forced air
Operating temperature	+5 ... +40 °C +15 ... +25 °C recommended
Operating humidity	0 ... 95 %RH, non-condensing
Storage temperature	-50...+50 °C without oil -10 ... +50 °C with oil
Operating altitude/ Ambient pressure	Up to 3000 m Up to 700 hPA

¹⁾ The total height includes the cabinet protection unit and cabinet legs.





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- Vaisala lightweight, semi-yoke style pedestal
- 1° beamwidth low side lobe antenna
- Built around RVP900™ and IRIS™ software
- Image rejection > 80 dB (> 100 dB with Vaisala waveguide filters)
- Built-in automatic calibration (optional)
- Fully programmable scanning
- Dynamic range > 99 dB (2 μs pulse)
- Wide dynamic range digital IF receiver (optional)

Vaisala Weather Radar WRM100 is a single-polarization C-band radar that uses a magnetron transmitter.

Modular System Design

The modular system design consists of a high performance antenna/pedestal and a single cabinet that contains the transmitter, receiver, power supplies, dehydrator, processor, and polarization waveguide assembly.

The components have been engineered and tested for long life and low maintenance in even the most harsh environments.

Remote Operation

Comprehensive remote control, BITE, and active monitoring features allow radar maintenance to be coordinated from a central facility to reduce repair time and ensure data availability.

The detailed level of fault reporting allows maintenance personnel to accurately assess any problem before traveling to radar sites.

Upgrade Options

WRM100 can be upgraded to dual-polarization. The upgrade options are:

- Dual-polarization waveguide structures installed in the factory but taken into use later with software installations carried out at the site.
- On-site upgrade, including software upgrades and the installing dual-polarization waveguide structures.

Technical Data

Transmitter

Transmitter tube	Coaxial magnetron VMC-2033A
Modulator type	Solid-state, utilizing IGBT technology
Frequency range	5.5 ... 5.7 GHz
Peak power	250 kW
Pulse widths	0.5, 0.8, 1.0, or 2.0 μ s.
Duty cycle	0.12 %
Phase stability	< 0.5° rms
Pulse Repetition Frequency	50 ... 2400 Hz
Average Power	300 W, 0.0012 duty cycle
Modes	STAR or LDR
Dimensions (W × H × D)	483 × 622 × 920 mm
Weight	76 kg (typical configuration)

Antenna and Pedestal

Total weight (4.5 m antenna and pedestal)	1520 kg
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Antenna

Type	Center-fed parabolic reflector
Reflector diameter	4.5 m
Gain (typical)	45 dB
Beam width	< 1.0°
Difference between H and V beam widths	< 0.1° (<0.2 dB difference in gain)
Peak sidelobes at main polarization planes	< -29 dB
Cross-pol isolation at main polarization planes	< -36 dB
Weight (reflector with counterweight plate)	620 kg

Pedestal

Type	Semi-yoke elevation over azimuth
Angle span software limits	-2 ... 108°
Maximum scan rate (azimuth and elevation)	40 degrees/second (6.67 rpm)
Acceleration	20 degrees/second ²
Position accuracy	< 0.1°
Motors	Brushless AC servo
Weight	900 kg

Signal processing

Signal processor	Vaisala RVP900
Azimuth averaging	2 ... 1024 pulses
Clutter filters	IIR, fixed, and adaptive width GMAP > 50 dB rejection
Data outputs (8 and 16 bit)	Ah/v, Azdr, CCOR, CSP, CSR, dBT, dBZ, dBZt, LOG, R, SNR, SQI, T, V, VC, W, Z, ZC,Zh, Zv
Dual PRF velocity de-aliasing	2:3, 3:4, or 4:5 for 2X, 3X, or 4X de-aliasing
High sensitivity Rhv STARmode processing	> 3 dB improvement detection gain
IF digitizing	16 bits, 100 MHz in 5 channels
Number of range bins	Up to 8168 per channel
Optional data outputs	I/Q
Processing modes	PPP, FFT/DFT, Random Phase 2nd trip filtering/recovery
Range resolution	N*15 m
Range de-aliasing by random phase	

System Specifications

Input power	Voltage: 3-phase 230/400 VAC \pm 10 % 50-60 Hz \pm 5 % Site mains supply fuses: min 16 A
Pedestal	Max. 1050 W Typical 200 W
Radar cabinet ¹⁾	Max. 2500 W Typical 2000 W 2)
Phase stability	< 0.5° rms
Maximum RhoHV	> 0.99

¹⁾ Includes cabinet cooler power consumption.

²⁾ Ambient temperature +22 °C, RH 50 %.

Options

Radome	Typical 6.7 m, foam core sandwich, random panel
Dual pol ready	Factory prepared antenna and pedestal for dual polarization.
Automatic calibration	
Forward and reverse transmitted power monitoring	
Wide dynamic range receiver	> 115 dB



Radar Receiver

Type	Dual-stage downconverter and digitizer
Noise figure	< 2 dB
Dynamic range	> 99 dB (2 μ s pulse) (option > 115 dB)
Image rejection	> 80 dB > 100 dB with waveguide filters
Tuning range	5.5 ... 5.7 GHz
1st intermediate frequency	442 MHz
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Radar Controller

Type	Vaisala RCP8 with IRIS Radar
Scan modes	PPI, RHI, Volume, Sector, Manual, Rapid Scan
Local display	Real time, Ascope, BITE, products

Radar Cabinet

Dimensions (W × H × D)	600 × 1800 × 1150 mm
Total height	1890 mm ¹⁾
Weight	380 kg
Cooling	Air-conditioned
Operating temperature	+10 ... + 40 °C
Recommended operating temperature	+15 ... + 25 °C
Operating humidity	0 ... 95 % RH, non-condensing
Storage temperature	-50 ... +50 °C
Operating altitude/ Ambient pressure	Up to 3000 m Up to 700 hPa

¹⁾ The total height includes the cabinet protection unit and cabinet legs.

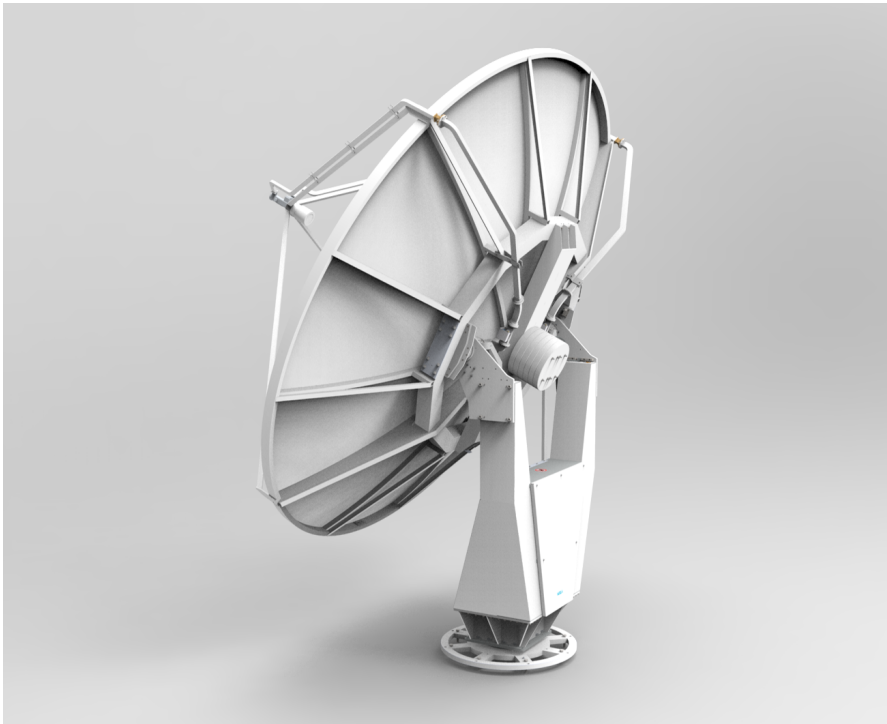


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- 1° beamwidth low side lobe antenna
- Modular single cabinet design containing transmitter, receiver, controller, processor, dehydrator, polarization waveguide assembly
- Built around RVP900™ and IRIS™ software
- Remote control and monitoring
- Image rejection > 80 dB (> 100 dB with Vaisala waveguide filters)
- Optional built-in automatic dual-channel calibration

Vaisala Weather Radar WRM200 is a dual-polarization C-band radar that uses a magnetron transmitter.

Dual-polarization

- Precision horizontal and vertical beam matching
- > 35 dB integrated cross-polarization isolation
- Enhanced reflectivity processing in STAR mode

Dual-polarization radars send vertically and horizontally polarized microwaves to measure the parameters needed for analyzing the target shape and improving data quality.

Targets are identified as, for example, rain, hail, or snow, using sophisticated data processing techniques.

HydroClass™

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Maximum RhoHV	> 0.99

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²⁾ Ambient temperature +22 °C, RH 50 %.

Options

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