

HDX[®]-III Hydrometeorological radar

Active X-Band Dual Polarized Doppler Radar

HDX[®]-III (Solid-State Power Amplifier-based radfar) X-band weather radar has been specially designed for hydro-meteorological applications. Owing to its simultaneous dual polarization capability, it provides quantitative precipitation measurements filtered from non-meteorological echoes and offer an accuracy level equivalent to 11,000 rain gauges installed within a 60 km radius.

Associated with ZPHI[®] software, it reaches much better accuracy than legacy S- and C-band radars traditionally used by national meteorology offices.

HDX[®]-III is perfectly suited for:

- Local applications such as catchment areas subject to flash floods;
- Gap-filling of weather radar networks in vulnerable areas;
- Precipitation measurements in areas with strong ground clutter such as urban or mountainous areas;
- Monitoring airport's meteorological environment.



ADVANTAGES : Compact and easy to install - Low infrastructure cost - High sensitivity.

SOLID-STATE POWER AMPLIFIER TRANSMITTER : Compared with magnetron-based transmitters, SSPA-based transmitter, delivering much less power of longer width, exhibits higher longevity and reliability, thus reducing maintenance tasks. Moreover, adequate waveform scheme mitigates blind-range issue and special processing patented by NOVIMET makes this configuration performing quite closely to the magnetron configuration in terms of detection threshold.

RADOMELESS / RADOME CONFIGURATION : Standard configuration of HDX[®] III radar is radomeless. This makes it immune to attenuation / extinction due to wet radome being showered by rain. In this configuration, **HDX[®] III** is equipped with an offset-type parabolic antenna characterized by side-lobes as low as -30 dB. In addition, the radar is sealed to outdoor aggressions (sand dust, insects...) with air-conditioned inner electronics for better reliability. However, to adapt to environments subject to very severe weather or atmospheric constraints, **HDX[®] IIIR** is also proposed, equipped with radome and center-fed antenna.

Technical specifications

| | HDX® III | HDX® IIIR |
|--------------------------|---|---|
| Radome | | |
| Type | None | 'A' Sandwich |
| Panel configuration | - | Pseudo-randomized |
| Diameter | - | 3.7 m typ. |
| Antenna | | |
| Type | Offset | Center fed |
| Polarization | H&V | H&V |
| Diameter | 1.50 m | 1.80 m (2.40 m opt.) |
| Beam width @ 3dB | 1.5° | 1.3° |
| Antenna Gain | 40.5 dBi | 41.5 dBi |
| Side Lobes | ≤ -30 dB | ≤ -23 dB |
| Elevation angles | -5° to +70° | -5° to +90° |
| Scan rate in az. | 3.33 rpm max. | 6 rpm max. |
| Transmitter | | |
| Type | SSPA | SSPA |
| Frequency | 9300-9500 MHz | 9300-9500 MHz |
| Peak power | 2 x 200 W or 2 x 400 W | 2 x 200 W or 2 x 400 W |
| Pulse Width | 0.5 µs to 93 µs | 0.5 µs to 93 µs |
| Pulse waveform | OFM (optimized non-linear) LFM (linear) Single pulse | OFM (optimized non-linear) LFM (linear) Single pulse |
| Max. duty cycle | 10% | 10% |
| PRF | 100 to 3000 Hz | 100 to 3000 Hz |
| Polarization mode | STAR (simult. H & V) H-transmit-mode V-transmit-mode | STAR (simult. H & V) H-transmit-mode V-transmit-mode |
| Receiver | | |
| Intermediate Freq. | 200 MHz | 200 MHz |
| Noise figure | < 3 dB | < 3 dB |
| Dynamic | ≥ 90 dB | ≥ 90 dB |
| Signal processing | | |
| Processing mode | PPP, Multilag, FFT/DFT | PPP, Multilag, FFT/DFT |
| SNR improvement | 5 to 7 dB (patented) | 5 to 7 dB (patented) |
| Clutter filter | IIR or DFT mode | IIR or DFT mode |
| De-aliasing dual-PRF | 2:3, 3:4, 4:5 | 2:3, 3:4, 4:5 |
| Processed moments | Z, ZDR, PHI _{DP} , RHO _{HV} , VEL, SPWI, KDP, CPA, LDR (H- or V-mode) | Z, ZDR, PHI _{DP} , RHO _{HV} , VEL, SPWI, KDP, CPA, LDR (H- or V-mode) |
| Environment | | |
| Max. wind speed | 144 km/h (operation) 180 km/h (gust) | 240 km/h |
| Operating temperature | -10°C to +55°C | -40°C to +65°C |