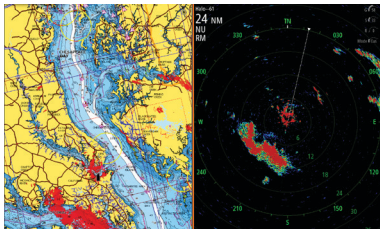
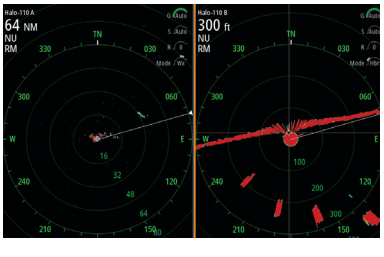
Simrad HALO™-3/4/6 Pulse Compression Radar

Combining the best characteristics of traditional pulse and FMCW broadband radar systems, Simrad Halo™ Radar uses Pulse Compression technology to provide an unprecedented mix of long and short detection range, high target definition, and minimal clutter in an affordable package for commercial operators. Solid State technology means minimal warm-up time and maximum ocean-going reliability, while compliance with upcoming Low Emission standards makes Halo Radar safe to run in ports and harbours.

Main Features

- True 48/64/72nm range with 3/4/6-foot open array antenna
- Beam Sharpening with Target Separation Control
- Compatible exclusively with Simrad NSS evo2 and NSO evo2 multifunction displays
- Dual Range operation
- Advanced signal processing with Custom, Harbour, Offshore, Weather, and Bird-finder modes
- High-speed 48RPM operation
- InstantOn™, ready in 16-25 seconds from power-on, instant from standby
- MARPA target tracking, up to 10 targets (20 with dual range)
- Low electromagnetic emissions and radiation
- Low power consumption with 12/24V operation
- High reliability with solid-state electronics (no magnetron) and brushless motor
- Ethernet connectivity





Technical specifications overleaf.

Technical Specifications

RADAR	
Radar Antenna Width	3′ **(HALO-3)** 4′ **(HALO-4)** 6′ **(HALO-6)**
Radar Technology	Solid-state X-Band transceiver with Pulse Compression technology
Radar Features	Automatic Harbour, Offshore, Weather, and Bird modes, Custom manual mode, MARPA, Dual Range, InstantON, Low power draw, Low electromagnetic emissions
Radar Transmitter Frequency	Synthesized - X-Band 9.410–9.495GHz
Radar Peak Power Output	25W ±10% under any transmit condition (up to 10% duty cycle max)
Radar Transmitter	Solid-state module – at least 10 years or 10,000 hours lifetime
Radar Pulse Length/Pulse Repetition Frequency (PRF)	Pulse length: 0.04µsec; Chirp length: 2-96µsec; Chirp Bandwidth: 2-32MHz; Up to 1 pulse and 5 chirps in a burst with burst repetition rate of 500-2000Hz. Range and mode dependent. Effective Pulse Compression Ratio less than 150 in all modes.
Radar Duplexer	Circulator and Isolator
Radar Mixer	MIC front-end
Radar IF Amplifier Bandwidth	40MHz max (narrower bandwidths defined by signal processing)
Antenna Instrumented Range	100m / 300ft to 48nm **(HALO-3)** 100m / 300ft to 64nm **(HALO-4)** 100m / 300ft to 72nm **(HALO-6)**
Antenna Plane of Polarization	Horizontal
Antenna Horizontal Beam Width	2.4° ±10% (-3dB width), 2.1/1.9/1.6° with Beam Sharpening mode enabled (Low/Med/High) **(HALO-3)** 1.8° ±10% (-3dB width), 1.6/1.4/1.2° with Beam Sharpening mode enabled (Low/Med/High) **(HALO-4)** 1.2° ±10% (-3dB width), 1.1/0.9/0.8° with Beam Sharpening mode enabled (Low/Med/High) **(HALO-6)**
Antenna Vertical Beam Width	25° +20% (-3dB width)
Antenna Side Lobe Level	Below -23dB max (within ±10°) Below -30dB max (outside ±10°)
Antenna Relative Wind Velocity	36m/sec (70 knots) at 48rpm
Antenna Rotation Speed	Approx. 24-48RPM (min 20RPM at 70 knots)
Antenna Output Power	25W peak
Antenna Receiver Noise Figure	5dB (average) at front-end input
Antenna Motor	Brushless with solid-state commutation, electromagnetic braking for parking

TECHNICAL/ENVIRONMENTAL	
Operating Temperature	-25° to +55°C
Relative Humidity	+40°C, 93% RH
Vibration	2-100Hz and 20G, 100,000 cycles
Water Resistance	IPX6
Test Standard(s)	IEC60945-4
Type of Emission	Digital Pulse Emissions compliant to SM1541-4 (including -40dB/dec future design objectives) Radiation Safe Distance: 100W/m2 (Occupational) at 0m - touch anywhere; 10W m2 (Public) measured at 0.28m/0.92ft. FCC CFR47 Part 2.1091 calculated public safe distance is 0.80m/2.6ft. (less than the swing circle of the antenna with either method).
Type Certifications	FCC ID: RAYHALO IC ID: 4697A-HALO R&TTE: [PENDING]
Product Height	448mm
Product Diameter (Swing Circle)	1,068mm / 3.5′ **(HALO-3)** 1,372mm / 4.5′ **(HALO-4)** 1,980mm / 6.5′ **(HALO-6)**
Product Weight	**(HALO-3)** Unpacked System: 26.8kg / 59lb ±10% Pedestal: 18.75kg / 41.5lb ±10% Antenna 3ft: 4.1kg / 9.0lb ±10% RI-12: 1.6kg / 3.5lb ±10% 20m (33ft) Cable: 2.3kg / 5.0lb ±10% **(HALO-4)** Unpacked System: 27.6kg / 60.8lb ±10% Pedestal: 18.75kg / 41.5lb ±10% Antenna 4ft: 4.9kg / 10.8lb ±10% RI-12: 1.6kg / 3.5lb ±10% 20m (33ft) Cable: 2.3kg / 5.0lb ±10% **(HALO-6)** Unpacked System: 29.2kg / 64.3lb ±10% Pedestal: 18.75kg / 41.5lb ±10% Antenna 6ft: 6.5kg / 14.3lb ±10% RI-12: 1.6kg / 3.5lb±10% 20m (33ft) Cable: 2.3kg / 5.0lb±10%
POWER	
Power Consumption	150W (peak in 70kt winds), 40W (average with zero wind velocity), 6.5W (standby)
Power Supply (Supply Voltage)	10.8V – 31.2V DC (12/24 Volt DC systems)
Power-up Time	16-25 seconds from power off to transmit
COMMUNICATION	
Included Cable Length (Antenna to Interface Box)	20m (65′)
Maximum Cable Length (Antenna to Interface Box)	30m (98′)
Communication Protocol (Interface Box to MFD)	Ethernet 10/100 BaseT, NMEA2000/NMEA0183

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