

SEADAR-F

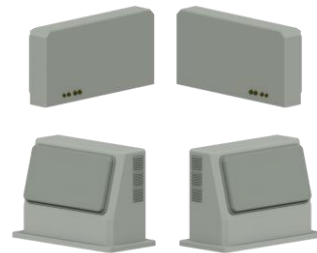
4 Fixed Digital AESA Faces, 4D, S Band MFR

SEADAR-F is the most compact version of the SEADAR 4D Multifunction Radars family, all based on 4 fixed faces of advanced Digital AESA antennas. SEADAR-F is a 4D (i.e. 4 Dimensions) radar, since, beside the range and the azimuth, it is able to measure instantaneously also the elevation and the speed of the detected targets. SEADAR-F works in S Band, the best frequency band for Search Radars.

Each digital AESA Face (Digital Antenna Unit; DAU) is composed of 4 standard Virtualabs modules, called VBR. A VBR is a digital AESA “tiles” composed, in turn, of 16 transmitting-receiving elements. The digital VBRs utilize Gallium Nitrate technology (GaN) to generate the RF radiated power.



VBR Module



Above deck DAUs

SEADAR-F has been designed by exploiting the most advanced radar processing to cope with the present and future very demanding naval search radars requirements. The exploitation of the most advanced technologies allowed to make SEADAR-F not only a superior performance but also a very cost-effective system. Beside the absence of any mechanical rotation and only digital interconnections, many are the operational advantages of a radar using fixed digital AESA faces instead of the rotating one.

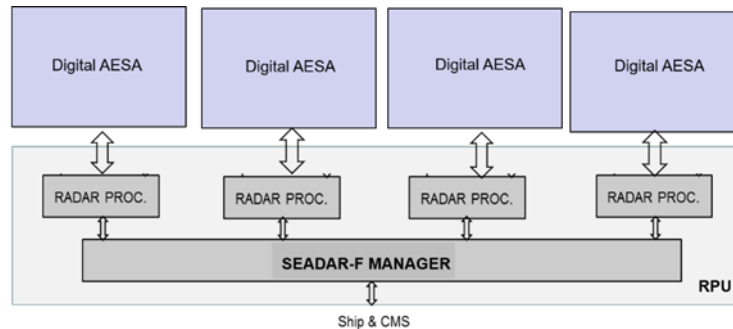
The advanced digital array, based on System on Chips (SoC) Technology, allows to perform the Digital Beam Forming (DBF), both in TX and RX, and allows to get a very high dynamic range. The 4 Fixed Faces allows to get a high number of pulses in the Time on Target that permits to make accurate Spectral Analysis and very good Clutter Cancellation.

The smart organization of the digital AESA control and the many available processing functions (pulse compression, MTI, FFTs, CFAR, Plots extractor, TWS, Monopulse Single targets Tracking, Drones detection and Identification, etc.) allow to consider SEADAR-F as a very powerful software-controlled Surveillance Radar.

Beside the Search Functions, thanks to the azimuth and elevation monopulse architecture, SEADAR-F implements also a very accurate single targets tracking (Tracking And Search, TAS Function) with a precision such to allow an accurate targets designation and also a direct anti-ship artillery control.

The solid-state Digital Antenna Units, the absence of mechanical rotation, the absence of analogic Beam Forming Network, the all-digital processing and the low number of parts-count allow SEADAR-F to get an MTBCF of more than 3000 hours. This means that, beside the very high availability, a very simplified low-cost logistic support will be required.

The low power consumption of the digital AESA Faces allows a very simple air cooling and the digital interconnections between the digital AESA Faces and the Radar Processing Unit (no waveguide, no rotary joints) make the SEADAR-F installation very simple.



SEADAR-F (four faces) Block diagram

Key Features

Radar Type:	4D, 4 Fixed Faces Search Radar
Faces Architecture:	Digital AESA, Monopulse
Frequency:	S Band
Instrumental Range:	up to 150 Km (programmable)
Min. Range:	0.2 – 5 Km (depending on radar mode)
3D Angle coverage:	360° Az. x near to 70°El. (programmable)
Number of TWS tracks:	>500 (programmable)
Antenna Scan Periods:	2, Fast and Slow, interlaced (programmable)
Accurate target tracking:	TAS Function
ECCMs:	Many available
Graceful degradation:	yes
Each Digital Array Face dimension:	1320x900x630 mm (WxHxD)
Low weight:	240 Kg (above deck); 35 Kg (under deck)
Low power consumption:	5 KVA (4 Digital ESA + DPU)
Cooling:	Forced Air



Total SEADAR-F System



Console (Option)