



MAS BULLETIN

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MW 08 - Multi-Beam Air and Surface Surveillance Radar

Background. Signaal of the Netherlands has developed and is marketing the MW 08, a 3-D radar to be used for short to medium range surveillance, target acquisition, and tracking.

Description. MW 08 is a fully automatic detecting and tracking radar. It is designed to counter threats from aircraft and low flying antiship missiles. It can also deal with the high level missile threat.

Functional Aspects. MW 08 operates in the 5-cm band using one antenna for both transmitting and receiving (see Figure 1). The antenna is an array, consisting of 8 stripline antennas. The received radar energy is processed by 8 receiver channels. These channels come together in the beam forming network, in which 8 virtual beams are formed. From this beam pattern, 6 beams are used for the elevation coverage of 0-70 degrees.

MW 08's output signals of the beam former are further handled by FFT and plot processors for target speed information, clutter rejection, and jamming suppression. A general purpose computer handles target track initiation, and tracking. Tracking data are transferred to the command and control systems with 3-D target information for fastest possible lockon.

PERFORMANCE DATA

Maximum free-space, single-scan detection range, at 80% probability of detection

0.1 m ² target SW 3	17 km
1 m ² target SW 1	27 km
2 m ² target SW 1	32 km
Target speed	up to Mach 4

Resolution	
In bearing	2°
In range	90 m

Tracking accuracy	
In bearing	0.25°
In range	40 m
In elevation	1.2°

Tracking capacity	
Air targets	20 (basic configuration)
Surface targets	8 (basic configuration)
Surface targets	2 (gun-fire control accuracy)

ECCM and anticlutter facilities:

- Fully coherent chain
- Broadband frequency operation with the possibility of agility from burst to burst
- High RF power output
- Automatic RF and PRF selection
- Very low antenna side lobes, both on transmission and reception
- 3-D radar featuring six reception pencil beams
- Doppler FFT processing
- Pulse compression
- Automatic thresholding of clutter and jamming
- Automatic setting of radar parameters such as AGC and STC
- Sector emission capability

TECHNICAL DATA

Transmitting/receiving antenna	
Type	stripline array
Number of striplines	8
Polarization	horizontal
Horizontal beamwidth	2°
Elevation coverage	70°
Number of pencil beams	6
Vertical width of pencil beams	12°
Side-lobe level (azimuth)	-40 db rms

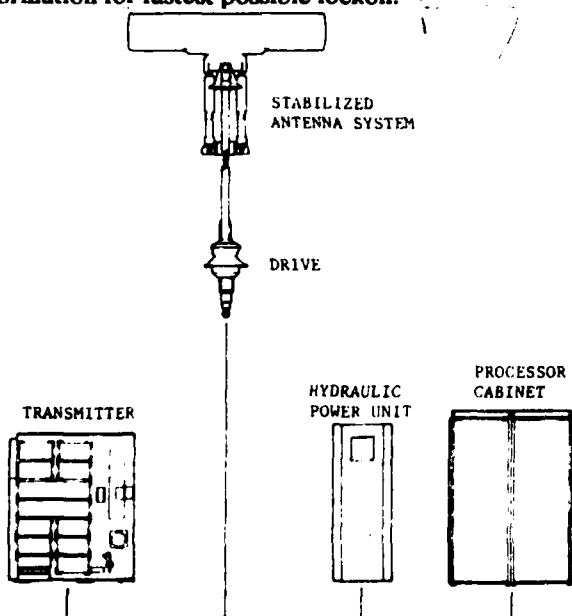


Figure 1. The functional aspects of the MW 80.

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Antenna platform

Rotation speed 27 rpm
 Roll range $\pm 30^\circ$
 Pitch range $\pm 12^\circ$
 Stabilization hydraulic

Transmitter

Type coherent/TWT/pulse compression
 Peak power 50 kw
 RF frequency G-band
 Transmission modes Fixed frequency, frequency agility over burst, sector scan

Receivers and processors

Noise figure 4.5 db
 Compressed pulse length 0.6 μ s
 Beam formation by FFT
 STC automatic
 Video processing doppler FFT, plot and track processing

DIMENSIONS AND WEIGHTS

	Width	Height	Depth	Weight
	mm	mm	mm	kg
Antenna system	2488	1160	---	430
Drive				90
Transmitter	1470	1846	658	700
Processor cabinet	1192	1925	768	450
Hydraulic power unit	650	1900	850	450
Heat exchanger	180	225	814	48
Waveguide drier	670	687	650	83

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POWER REQUIREMENTS

Main equipment	440V	60 Hz	3 phase	9 kVA
	115V	60 Hz	3 phase	14 kVA
Anti-condensation heating	115V	60 Hz	1 phase	0.8 kVA
Anti-ice heating	115V	60 Hz	3 phase	1.5 kVA
Ship's cooling water	14 liters/min (max. temp. 9°C)			

ENVIRONMENTAL CONDITIONS

Ambient temperatures above deck -30° to $+55^\circ$ C
 below deck 0° to $+50^\circ$ C
 Relative humidity up to 80% at 40° C

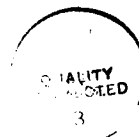
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