

Radar Phased Array Antenna Training System – Add-On to 8097-1 and 8097-2 8112507 (8097-60)

FESTO

LabVolt Series

Datasheet



Table of Contents

General Description _____	2
List of Equipment _____	2
Manual _____	2
Table of Contents of the Manual(s) _____	2
Equipment Description _____	3

General Description

The Radar Phased Array Antenna Training System is specifically designed to be used with the complete, pulse radar system that can be implemented with the Basic Radar Training System and the Radar Processor/Display (Models 8097-1 and 8097-2, respectively). The training system includes a phased array antenna, a beam-steering control module, the necessary cables, and a comprehensive student manual that deals with the principles of electronically steered antennas.

Beam steering in the Radar Phased Array Antenna Training System is achieved using a microwave switch coupled to a Rotman lens and microstrip tapered slot array antennas. Beam steering control can be manual, continuous or radar PRF dependent. Scan speeds of up to 1080 scans/min can be achieved, thereby allowing the PPI display (sector scan) of the radar system to be refreshed at much higher rates than with a conventional mechanically rotated parabolic antenna. Targets can thus be followed in near real time.



The Radar Phased Array Antenna Trainer is fully compatible with the Radar Training System. It allows sector-scan operation with no antenna motion.

List of Equipment

Qty	Description	Model number
1	Phased Array Antenna _____	581966 (9612-00)
1	Phased Array Antenna Controller _____	581968 (9613-00)
1	Accessories for 8096-6 _____	581987 (9690-E0)

Manual

Description	Manual number
The Phased Array Antenna (Student Manual) _____	580428 (38547-00)

Table of Contents of the Manual(s)

- The Phased Array Antenna (Student Manual) (580428 (38547-00))**
- 1-1 Familiarization with the Phased Array Antenna

- 1-2 The True Time-Delay Rotman Lens
- 1-3 The Switching Matrix
- 2-1 Beamwidth Measurement
- 2-2 Radiation Pattern Measurement
- 2-3 Angular Separation Measurement
- 2-4 Phased Array Antenna Gain Measurement
- 2-5 Maximum Scan Angle Measurement
- 2-6 Target Bearing Estimation
- 2-7 Target Speed Estimation

Equipment Description

Phased Array Antenna 581966 (9612-00)



The Phased Array Antenna is specifically designed to be used with the Radar Training System. It allows an horizontal sector to be scanned (azimuthal scanning) without any antenna motion. The antenna can be tilted 90° to demonstrate elevation scanning. The Phased Array Antenna consists of a microwave switch coupled to a Rotman lens and microstrip tapered slot array antennas. A built-in circulator allows simultaneous transmission and reception.

Specifications

Parameter	Value
Scan Width	±35°
Number of Beams	16
Horizontal Beam Width	5 to 6°
Gain	20 to 22 dBi
RF Input and Output Impedance	50 Ω
Control Input	TTL
Physical Characteristics	
Dimensions (H x W x D)	450 x 370 x 490 mm (17.7 x 14.6 x 19.3 in)
Net Weight	7.5 kg (16.5 lb)

Phased Array Antenna Controller 581968 (9613-00)



The Phased Array Antenna Controller is used for beam steering control of the Phased Array Antenna (PAA), Model 9612. It allows the PAA to be operated in the following three different scan modes: manual, continuous, and PRF locked (radar PRF dependent). The beam sequence (i.e., the order in which the beams are scanned) can be either linear or pseudo-random, or consists of even-numbered beams only (skips over every second

beam). A 3-digit display on the front panel of the Phased Array Antenna Controller indicates the number of the selected beam, the angular position of the beam or the scan speed.

Specifications

Parameter	Value
Scan Mode	Manual, Continuous, and PRF Locked
Scan Speed (Continuous Scan Mode)	Selectable, 54, 90, 135, 270, 540, 810, and 1080 scans/min
Beam Sequence	Incremental, Pseudo-Random, and Even
Trigger Inputs	TTL
Azimuth Output	10-bit TTL
Control Output	TTL
Physical Characteristics	
Dimensions (H x W x D)	112 x 330 x 300 mm (4.4 x 13.0 x 11.8 in)
Net Weight	3.2 kg (7.1 lb)

Accessories for 8096-6 581987 (9690-E0)

The Accessories for 8096-6 set contains two short SMA cables with built-in passive limiters, two low-loss long SMA cables, a 30 dB SMA attenuator, a DB25 cable, and a microwave absorbing pen.

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