

TPS-X

Modernization Suites for AN/TPS-Series Radars

featuring the TSS PHOENIX Processor



MODERNIZING WITH TSS VS. BUYING A NEW SYSTEM

Half the Cost. In Half the Time

TSS Solutions is a leader in modernizing and sustaining the AN/TPS series of tactical radars. The TSS Phoenix Digital Processor is common to all of our TPS-X Upgrade Suites.

When TSS modernizes your system with the suite of your choice, the antenna, tower, shelter, and site infrastructure you already own are

reconditioned, not replaced. With a common core built around the powerhouse Phoenix processor, TSS Solutions' modernization paths deliver the added capability and reliability you need in today's threat environment.

And we deliver it in 12-18 months at about half the cost of purchasing a new system.

PROCESSOR ONLY
TPS-X/A
TSS Phoenix Processor

ENTRY TIER
TPS-X/B
Solid-State Driver

BASELINE SUITE
TPS-X/C
All-Solid State Modernization

GROWTH PATH
TPS-X/D
Distributed Digital Array

One Common Core. 3 Entry Points

TSS Phoenix Processor

ZCU216 direct-RF front end with GPU processing; identical across all 4 options

OPUS C2™

TSS Solutions' common command-and-control + display; ASTERIX, ADS-B, multi-source fusion

Griffin H&M

Continuous health monitoring and predictive-maintenance analytics

Dual-Use Transponder

Mode S / Mode 5 IFF for allied interoperability

PHOENIX PROCESSOR

TPS-X/A

Included in every option below

TSS Phoenix Digital Processor replaces the legacy receiver/processor/extractor.

ENTRY TIER

TPS-X/B

Solid-State Driver

Retires the most acute obsolescence immediately.

The TSS Phoenix digital processor replaces the legacy receiver, signal processor and extractor. The legacy tube is retained.

- Klystron/twystron tube transmitter driven by the TSS 3 kW solid-state RF driver and frequency generator. Full ~2 MW-class peak power; legacy AN/TPS detection preserved.
- TSS Phoenix Processor: ZCU216 direct-RF front end with GPU signal and data processing; native 3D height on the existing stacked-beam feed.
- Antenna reconditioned; rotary joint with Mode S/ Mode 5; full 400 Hz to 60 Hz conversion.

BASELINE SUITE

TPS-X/C

All-Solid-State Modernization

Eliminates tube, easing maintenance burden.

TSS's solid-state amplifier bank replaces the twystron, feeding your existing antenna.

- A 32-module TSS GaN amplifier bank and combining network replace the twystron. The modulator, PFN, SF₆ tank, and oil tank are removed.
- The bank feeds the ULSA antenna and stacked-beam elevation feed. No antenna modification, so native 3D height-finding is preserved and 240 nm instrumented range is held.
- Waveform generation is entirely digital in the Phoenix exciter: long-pulse LFM, multi-chirp/NLFM and phase-coded waveforms with a short near-range fill pulse.
- Graceful degradation replaces a single-point-of-failure tube.

GROWTH PATH

TPS-X/D

Distributed 4D Digital Array

AESA-class evolution on hardware you already own.

Per-element amplification and per-element digital Tx/Rx on the same processing core.

- 36 GaN T/R modules, one per slotted waveguide, driven coherently by the PHOENIX MTS three-unit cluster — no single-point-of-failure tube.
- Digital beamforming on transmit and receive: an electronically steered pencil beam, up to 40 simultaneous beams, and full 4D processing (range, azimuth, elevation, Doppler).
- Graceful degradation at element level; roughly one element in 10 can be lost before operational power is affected; projected MTBF >5,000 hours against ~500 hours for the legacy tube chain.