

CDP

COMBINED DATA PROCESSOR



The Telephonics Combined Data Processor (CDP) is the ideal solution for complex shipboard as well as other ATC and air defense radar environments requiring both primary and secondary radar detection. The CDP merges the field-proven processing of the BTE-2000[®], which provides target reporting of the SSR environment, STE-2000[®], which provides extraction and tracking of the primary radar targets, and fusion processing into one compact VME chassis.

CORRELATION AND FUSION

The CDP provides enhanced data integrity by fusing correlated and uncorrelated tracks from other radar sensors with its own track data. The Fusion Processor cross-correlates primary and secondary target data received from the search and beacon trackers. By using target position, track attributes and history data, the resulting output is optimized to reduce the likelihood of false correlation.

OPERATOR INTERFACE

The integral Keypad-Display unit allows access to operation parameters and environmental status. Remote access to this information

is also available to support Remote Maintenance Monitoring terminal operation.

DESIGNED FOR THE FUTURE

To enable Air Traffic Controllers to manage the increased traffic density in the future, the CDP exploits powerful single board computers with sophisticated processing algorithms. This combination enables the CDP to process large amounts of target data and minimize false target reporting.

In addition, the CDP's open-architecture design features commercial-off-the-shelf (COTS) products that operate on a standard VME bus. These modules can be easily upgraded and expanded to keep pace with increasing demands for enhanced tracking performance.

INTERFACES

The CDP features a robust variety of output interfaces including serial RS-232, 10/100Base-T Ethernet, and Real Time Reflective Memory. The CDP's modular design easily accommodates additional interface requirements.

COMPLEMENTARY PRODUCTS

Although both extractors, the BTE-2000 and STE-2000, operate in conjunction with our Fusion Processor as the CDP, they may also function independently as

stand-alone units to support an individual sensor. With over 20 years of experience and ongoing involvement in projects such as AN/TPX-42A, MTRACS, and US Customs C³I, you can trust Telephonics' expertise in multi-sensor radar correlation and tracking technology.

SYSTEM FEATURES

Primary (Search) Radar

- Distribution Free (DF)
Quantizer: CFAR quantizer is independent of signal/clutter statistics with adaptive sensitivity feedback from scan-to-scan clutter maps.
- Sliding Window Detector: M out of N windows and parameters independently optimize azimuth resolution and target detection for Log or normal video.
- Clutter Maps: Clutter maps used for automatic and manual sensitivity control of DF quantizer and sliding window detector. Azimuth correlation algorithm used for CFAR.
- Scan-to-Scan Correlation and Tracking: Fixed land clutter echo filters, automatic Kalman tracking, velocity filtering, manual track initiation, and feedback clutter mapping. Site selectable performance parameters based on radar type and site configuration.

Secondary (Beacon) Radar

- Target detection Feedback Processing: Fully utilizes a combination of range, code, azimuth,

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and target history data to optimize target detection and reporting accuracy.

- **Multipath Processing:** Eliminates false target reflections (range and/or azimuth) due to reflected replies in range and azimuth, as well as multiple returns created from wide video returns.
- **Target Code Repair:** Recognizes nonvalidated or garbled codes and uses target history to repair code data.
- **Dynamic Azimuth Centroiding:** Eliminates "azimuth stitching" problems normally associated with scan-to-scan tracks.
- **Closely Spaced Reply Extraction:** Separates up to 6 replies separated by 2.54 μ s
- **Dynamic Range and Azimuth Correlation:** Recognizes transponders operating outside ICAO limits and dynamically optimizes position reporting for those transponders.

Fusion Processing:

- Improves target availability and reporting accuracy by fusing target data from multiple sensors.
- Provides automatic channel switchover

SYSTEM SPECIFICATIONS

General Characteristics

- Table Top or Standard 19" Rack Mounted
- Size: 19.22"H x 19"W x 20.5"D;
48.8 cm X 48.3 cm X 52.1 cm
- Weight: 100 lbs., 45.5 kilos
- Input Power: 120/230 VAC
47-63 Hz/single phase
350 Watts maximum

SSR Processor Performance

- Range Accuracy: 1/128 nmi (1σ)
- Azimuth Accuracy: 0.176° (1σ)
- Code Validation: 95% at 5 hits/mode 98% at 11 hits/mode
- Code Accuracy: 99%
- False Target: <1/scan
- Range Resolution: 0.037 nmi (225 ft.)
- Probability of Detection: >99.8%

PSR Processor Performance

- Range Accuracy: 1/32 nmi (1σ)
- Azimuth Accuracy: 0.15° (1σ)
- Probability Detection: >90% at 10dB S/N and Pfa = 10-6, (Swerling #2)
- False Target: <5/scan in receiver noise
<10/scan in clutter
- Range Resolution: <1/16 nmi, XMIT PW = 600 ns

Target Environment

- 2,000 aircraft/scan
- 64 aircraft/sweep
- 20,000 replies/s Beacon Fruit
- 0.70 Beacon Round Reliability
- 0-250 nmi Surveillance Range

Reliability/Maintainability

- MTBF = >7500 hrs
- MTTR = <10 minutes
- Service Life = >10 years
- Display/Keypad: 80 character readout to support maintenance function
- Comprehensive BIT/BITE

Specifications subject to change without prior notice.

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