

RADAR DATA EXTRACTOR AND DIGITAL SCAN CONVERTER

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The LETVIS EXT/S is a high performance radar processor which transforms primary radar video outputs - from virtually any air surveillance radar - into high quality digital target reports or track messages suitable for integration into modern control centres. The LETVIS EXT/S is modular in design and can be configured in any combination of primary radar or weather extractor. The system is interfaced to a control and maintenance console to provide real-time PPI and weather information while providing complete system monitoring, maintenance and recording functions.

Components:

- Radar Data Extractor
- Digital Scan Converter
 - Weather channel processing
- Control and Maintenance software

Improved Surveillance Picture

The LETVIS EXT/S software includes a field proven and certified (ATS, CAA of Slovak Republic, and Armed Forces of Slovak Republic) Sensor Data Processor which dramatically reduces radar false plots from weather, bird flocks, road traffic, ground clutter and anomalous propagation. Additional data processing features include primary/secondary radar plot association, message filtering and coordinate transformations.

Format and Protocol Flexibility

The LETVIS EXT/S is designed with user configurable format and protocol capabilities providing for highly effective data translation and distribution functions. The product supports a multitude of protocols (e. g., synchronous, asynchronous, HDLC), electrical standards (e. g., RS-232C V.24, RS-422, ETHERNET 802.3) and ASTERIX message format. New formats can be added to meet customer needs.

Distribution and Integration of Data

In addition to providing data via traditional serial channels, target data is distributed using standard TCP/IP and UDP/IP communication protocol over an Ethernet local area network (LAN). This LAN based data is available for integration into local or remote ATC and C4I systems or cross-told to remote command and control centers. Data can be fused with other sensors using LETVIS MRT (Multi Radar Data Processing System) into a single, unified air picture. Fusing and sharing of data decreases the costs of operating autonomous overlapping systems or purchasing new systems. Additionally, refined data can also be output as reconstituted radar video based to support legacy video display systems.

Available in either single channel or redundant channel configurations, the LETVIS EXT/S is a stand-alone system in a rack mountable enclosure requiring only triggers, ARPs, ACPs and video signals to interface with radar. LETVIS EXT/S was employed for PSR digitization and upgrade in amount of more than 30 pcs of Czech or Russian production (RL4, RL-5, RP4, RP5, P18, 1RL128, P37, P19, PRV16, PRV 17, ST68 series).

Digital Scan Converter

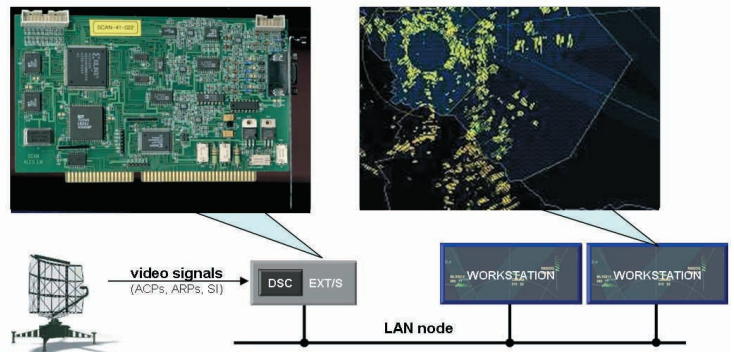
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DSC provides you with digital raw video information - synthetic video via LAN in special compression format.

The Digital Scan Converter (DSC) is intended for conversion of raw video information to digital form by primary radar video processing. The DSC is designed to accommodate scan rates and signal bandwidths of both short and long-range radars and utilize two video channels. After parallel A/D conversion of radar video signals the radar echoes parameters are determined by DSC. Output information is compressed and through LAN is distributed to RDD workstations by LETVIS RDD software. Single DSC provides information for all RDD workstations connected to the LAN. DSC software enables a remote control of video signal processing parameters. DSC is capable to process all information coming from radar meteor channel and to split it into 6 levels depending on input signal amplitude. Number of output levels is selectable whereas the update rate of meteor information depends on number of levels (N antenna revolutions is required for N levels).

DSC Characteristics

- Processing Channels: Parallel independent processing of two video channels with range-azimuth gating
- Radar Video Sampling: 8-bit A/D conversion; 0.25 to 10.0 MHz sample rate
- Range accuracy: selectable from 165 to 480m (7,5m step)
- No. of range quantum processed: 1600 (3200)
- Detection Capacity: Up to 2,000 detections per second
- Accommodation to a wide variety of radar types and site requirements
- Weather channel processing: 6 output levels of meteor channel
 - Reports real-time weather contours from primary radar video signals
 - Provides accurate mapping of ground clutter for optimal weather detection
 - Provides a local or remote display of weather data and controls for maintenance and fault monitoring



Radar Data Extractor

The Radar Data Extractor (RDX) extracts digital target information by primary radar video processing. The RDX is designed to accommodate scan rates and signal bandwidths of both short and long-range radars and utilize both normal and MTI video signals. After parallel A/D conversion of a radar's normal and MTI video signals, the RDX performs non-coherent integration and applies fixed and adaptive thresholds to maintain a constant false alarm rate. It detects targets via M-of-N sequential observer process derived from a rank-value back-ground-normalizer and high-resolution clutter map. This eliminates "splitting" a single range-extended target, and "merging" two targets occupying adjacent azimuth cells. All processing functions are fully configurable to satisfy specific customer needs.

In addition to providing high quality digital primary reports, the RDX will:

- Accept digitized beacon radar (SSR & MSSR) inputs and perform primary-secondary target correlation
- Reduce false alarms from ATC and Air Defense radars
- Output track data or track-filtered plot data
- Upgrade easily and integrate with a variety of systems for accurate, effective and rapid site optimization.

RDX Characteristics

- Processing Channels: Parallel independent processing of normal and MTI video with range-azimuth gating
- Radar Video Sampling: 10-bit A/D conversion; up to 20.0 MHz sample rate
- CFAR Processing: Ordered-statistic background normalize; range-varying threshold map; integral clutter map
- Detection Capacity: Up to 1,000 detections per second
- Adaptation processing: Automatic adaptation to environmental conditions
- Target Capacity: Up to 1,000 reports per scan
- Accuracy Performance: Range accuracy = 30m
- Azimuth accuracy = 0.2° (for 1.5° beamwidth)

