

Integrated Pulse Coded Modulation Encoder (iPCMe)

100-Channel PCM Encoder

[PRODUCT OVERVIEW]

Integrated Pulse Coded Modulation Encoder (iPCMe)

The Integrated PCM Encoder (iPCMe) provides a significant number of data channels for remote sensing in a highly integrated configuration. With over 100 channels of input in a compact package, the iPCMe is designed as a low-cost solution for a broad range of telemetry applications. Every aspect of the design is intended to simplify integration and survive rugged launch environments — robust aluminum packaging, DB connectors on a single face, and a software PCM Matrix configuration tool that ensures data is packed efficiently into the PCM stream.



[CAPABILITIES]

Features & Applications

Key Features

◆ 100+ Channel Simultaneous Analog Sampling

Simultaneously samples 100 analog channels with greater than 15 bits of dynamic range, providing high-fidelity multi-channel data acquisition in a single unit.

◆ Fiber PCM Output

850 nm multimode fiber ground PCM output supports transmission distances up to 2 km over 50/125 μm fiber, eliminating copper cable mass and susceptibility to EMI.

◆ IRIG 106 Chapter 4 PCM

Outputs a fully IRIG 106 Ch.4 compliant PCM stream with optional minor frame CRC and optional RNRZ-L15 encoding for range telemetry compatibility.

◆ Integrated NTSC Video Multiplexing

Two NTSC video channels are multiplexed into a single JPEG 2000 video output, consolidating imagery data within the PCM stream.

◆ PCM Matrix Configuration Software

Included software tool provides a PCM matrix configuration interface for efficient channel packing, real-time data display, and unit health/status monitoring.

◆ Capture Link™ Interface

Supports Invocon's KIPS/WKIPS Capture Link™ interface for lethality assessment bandwidth sharing on the PCM stream.

◆ Single-Face Connector Layout

All DB connectors on the top face of the unit eliminate cable routing complexity during integration and reconfiguration.

Typical Applications

◆ Launch Vehicle Telemetry

Encodes and downlinks vehicle health, guidance, and payload data via PCM telemetry over fiber or copper.

◆ Range Instrumentation

Provides IRIG 106 Chapter 4 compliant PCM data to range ground systems for real-time monitoring and post-flight analysis.

◆ Lethality Assessment / KIPS

Shares PCM bandwidth with KIPS/WKIPS hit detection systems via Capture Link™ for integrated telemetry.

◆ Payload Data Acquisition

Acquires simultaneous 100-channel analog sensor data and up to 13 digital channels for payload instrumentation in space and avionics applications.

◆ GPS Timing Distribution

Redistributes GPS 1PPS across vehicle systems using the dedicated 1PPS input and distribution output.

[TECHNICAL DATA]

Key Specifications

SPECIFICATION	VALUE
ELECTRICAL	
Analog Input Channels	100 (simultaneous sampling, >15 bits dynamic range)
Digital Input Channels	13 (Discrete, UART, or SDLC; RS-422, LVDS, TTL, or RS-232)
Digital Output	4 (LVDS / RS422)
Video Channels	2x NTSC, MUXed to 1x JPEG 2000 output
PCM Output — Copper	RS-422 or LVDS
PCM Output — Fiber	850 nm multimode; up to 2 km over 50/125 µm fiber
PCM Standard	IRIG 106 Chapter 4; optional minor frame CRC; optional RNRZ-L15
Maximum Transmission Rate	12.5 MHz
GPS	Dedicated GPS 1PPS redistribution input
Smart Battery Interface	Dedicated input
Configuration Port	RS-232
MECHANICAL	
Size (L × W × H)	6.72 x 4.85 x 1.70 inches (not including connectors)
Weight	Nominal 3.1 lbs.
Case Material	6061 aluminum, Alodine coated
ENVIRONMENTAL	
Operating Temperature	-24° to 61°C (Acceptance Levels)