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ALPHI TECHNOLOGY CORPORATION

PDCATS

Embedded Module

Precision Data Collection and Timing System

Features

- Data Acquisition & Interfaces:
- Extended PCI & LAN for control and data download
- Taps for USB, synchronous serial, asynchronous serial, and analog signals
- High-impedance LAN taps for non-intrusive network monitoring
- Precision Timing & GPS Integration:
- GPS-based Time-Space Position Information (TSPI) logging
- 100 ns resolution, 1 PPM drift (when GPS unlocked), 2 µs accuracy (GPS locked)
- Storage & Logging:
- 120GB+ solid-state storage, expandable
- Simultaneous logging and real-time data download
- Power & Battery System:
    - Rechargeable, replaceable battery (8+ hours runtime)
    - External power input: 18–35V DC, max 4A
    - Auto-recharging when connected to external power
- Environmental & Durability:
    - Waterproof, ruggedized enclosure
    - MIL-STD-810G compliance for temperature, vibration, shock, and dust resistance
- Status & Remote Monitoring:
- Power-good LED and built-in test (BIT) indicator
- Remote status console with LAN connectivity
- Displays battery life, data storage status, module activity, and configuration
- Maintainability & Customization:
- Modular design for repairability
- Field Programmable Gate Arrays (FPGA) - Altera-based
- Firmware and device drivers provided

Block Diagram and Operational Overview

The **Precision Data Collection and Timing System (PDCATS)** is a **stand-alone module** designed for **high-precision data acquisition and timing synchronization**. It communicates with a control computer via **Extended PCI and LAN**, integrates **GPS-based precision timing**, and captures data from **multiple digital and analog sources**. The system ensures accurate **time-stamped logging** with internal **solid-state storage** and supports real-time data downloads while logging.

Applications

This is an ideal solution for:

- **Military & Defense** – Tactical data collection, battlefield telemetry, and secure network monitoring
- **Industrial & Test Systems** – High-precision data logging for automated testing and control
- **Aerospace & Avionics** – GPS time-tagged data for flight testing and *vehicle tracking*
- ***Cybersecurity & Network Analysis*** – Passive LAN data capture for forensic analysis

Available Software Drivers

- C library dll's
- Linux® drivers
- Windows® drivers

Mechanical

Parameter	Specification
Shock	MIL-STD-810G (516.6, Proc. IV)
Vibration	MIL-STD-810G (514.6)
Humidity	MIL-STD-810G (507.5)
Blowing Rain, Sand & Dust	MIL-STD-810G (506.5, 510.5)

Operating Environment

- Operating temperature Industrial: -40ºC to +85ºC
- Airflow requirement: 5CFM
- Humidity: 5 to 90% (non-cond)
- Altitude: 0 to 10,000 feet

Ordering Information

PDCATS-01	: Precision Data Collection and Timing System Module, Industrial Temp: -40ºC to +85
PDCATS-Console:	Remote Status Console
PDCATS-Cable:	Full Cable Set (Extended PCI, LAN, GPS,