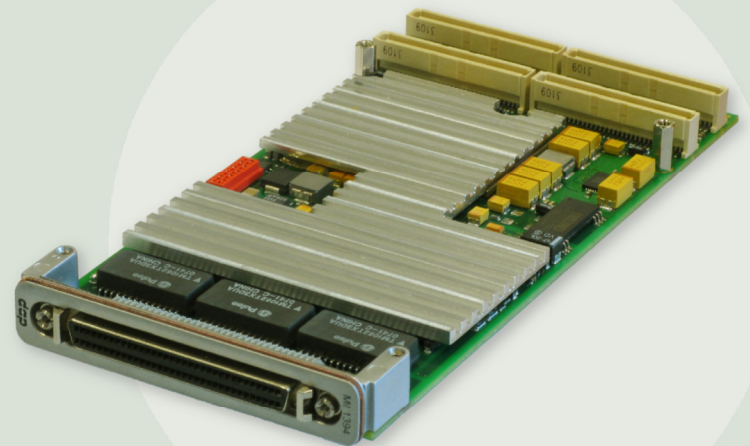




ADVANCED I/O SOLUTIONS

FIRETRAC



## PRODUCT OVERVIEW:

**FireTrac™** complements DapTechnology's successful **FireSpy®** and Mil1394OHCI host adapter product lines. It clearly is the next generation Mil1394 (SAE AS5643) data processing, simulation and testing solution.

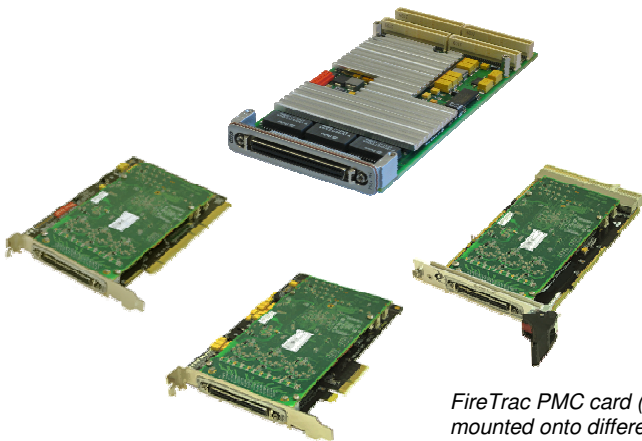
DapTechnology has seen an increasing demand for more streamlined hardware systems for the processing of AS5643 (and generic 1394) data streams. Customers get increasingly involved in monitoring the actual data content rather than the 1394 layer. And for simulation purposes, they require advanced error insertion capabilities that can only be accomplished with non-off-the-shelf Link Layer implementations. IRIG time-stamping of monitored events on the bus is a typical requirement.

**FireTrac™** is the answer for this market need. It is designed to natively (not just as an add-on protocol) support Mil1394 (SAE AS5643). Besides the standard IEEE1394 features, **FireTrac™** has been architected to provide hardware level support for Mil1394 (SAE AS5643) which reduces host processor burden, specifically for packet encapsulation, data extraction, receive/transmit STOF offsets, etc. As a key example, **FireTrac™** handles Mil1394 transmission timing entirely in hardware therefore making it a lot more accurate. It is important to understand that **FireTrac™** is a dedicated and optimized solution for the processing of AS5643 type traffic. Support for this protocol is embedded in the hardware and not just in a software layer, as is provided with other solutions that rely on COTS OHCI chipsets.

Another key element is **FireTrac™**'s customization capability. *Personality Profiles* allow the solution to be adapted for use in embedded systems which typically have limited resources, and/or with powerful host processors that can utilize even the fully featured profile. Additionally, **FireTrac™** is supported on a variety of operating systems.

### Key Features

- IEEE 1394b-2002
- SAE AS5643 and Mil1394 enhancements
- S200b, S400b transfer rates
- PMC form factor with carrier cards (PCI, PCIe, cPCI, cPCIe, etc...)
- PCI-X 2.0a Host Interface
- IRIG B122 and IEEE1344
- Support for:
  - Windows™ XP and Windows™ 7 (32-bits and 64-bits)
  - Linux
  - VxWorks
  - LabView (RT)
  - SGI IRIX
- 9 active transformer coupled FireWire ports (adapter cable)
- C/C++ API



*FireTrac PMC card (top) and mounted onto different carrier cards (PCI, PCIe, cPCI)*

## Software & Personality Profiles:

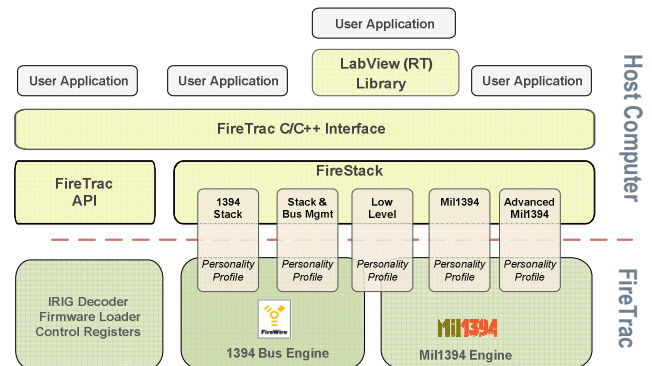
**FireTrac™** uses a combination of 1394 and Mil1394 support in hardware, as well as a robust, well designed 1394 software Stack (**FireStack®**) running on a host computer. Interfacing to this stack can be done via an API that offers C/C++ interfaces on multiple platforms and a LabVIEW interface on Windows. Currently, DapTechnology supports Windows, VxWorks, Linux, IRIX and NI-LabView (RT) platforms.

An essential feature of **FireTrac™** is its thin software and firmware layer. In order to be usable in embedded designs having limited resources, great emphasis was given to keep the footprint and host system resource utilization fairly small. And, in order to optimize and streamline performance, the individual features and functions of **FireTrac™** are grouped into so-called *Personality Profiles*. These profiles may be purchased separately so that the user may configure their system based on individual requirements.

The following profiles are available:

- Low-Level API Profile
- 1394 Software Stack Profile
- 1394 Software Stack + Bus Management Profile
- Mil1394 Bus Interface Profile
- Advanced Mil1394 Bus Interface Profile (pending)

For detailed features and components of these profiles see the last page and/or the online products page.



## AN “ENABLING” Mil1394 SOLUTION:

**FireTrac™** provides a very universal approach to dealing with Mil1394 (AS5643) type of traffic. It is uniquely suited for SAE AS5643 level Data Extraction and Analysis (RX) but also Data Generation and Device Simulation (TX). Together with its customers, DapTechnology has identified a wide range of applications with a few usage models prevailing.

**Mil1394**

For this reason DapTechnology has decided to create dedicated solutions based on the **FireTrac™** platform. Such application-centric solutions are focused on very specific tasks and, due to their very clearly defined requirements, DapTechnology is able to even further optimize the firmware and software architecture.

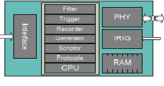


Examples for such “customized” solutions are:

- Data Recorders (single/multi-channel, with/without Stealth, ...)
- System Simulators (multi-streams generator, error injection, ...)
- System Monitors (Health, Data Extraction, ...)

## POSITIONING OF FIRETRAC:

At first sight the new **FireTrac™** might appear as a solution positioned right in-between the **FireSpy®** product line and DapTechnology's series of Mil1394 (SAE AS5643) compatible OHCI - host adapter cards (as well as other implementations using the OHCI technology). While this is not entirely wrong, it needs to be pointed out that **FireTrac™** is more than just a marriage of both.

**FireTrac™** has been designed from the ground up to provide extended features and functionality in areas that are difficult to accomplish with COTS OHCI Link Layer devices (precise timing, ...) without having the data analysis overhead of the FireSpy® architecture. The table below is intended to show the strengths of **FireTrac™** (middle) relative to the other two product groups:

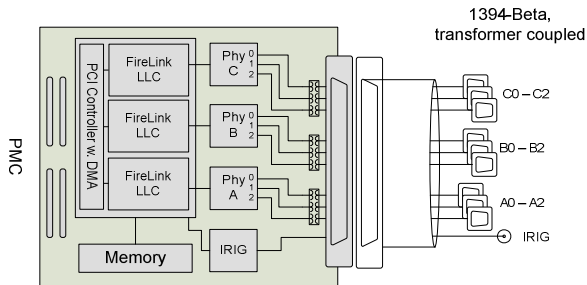
	<b>FireSpy</b>	<b>FireTrac</b>	<b>Mil1394 I/O</b>
<div> <div></div> Superior  <div></div> Average  <div></div> Limited </div>			
<b>Mil1394 - Physical Layer</b>			
Active Transformers	Model Dependent	Yes	Yes
38999 Connectors	With Adapter Cable	With Adapter Cable	With Adapter Cable on PMC version
<b>Mil1394 - Transmit</b>			
Protocol Encapsulation	Host / Embedded SW	Software / Hardware	Software
Transmission Mechanism	Embedded Software	Enhanced OHCI	OHCI
STOF Offset Timing	Hardware	Hardware	Software
TX Offset Accuracy	Hardware	Hardware	Software, OS Latency
Configurable TX streams (OHCI Contexts)	limited	Enhanced OHCI	Software
Linked & Looped	Embedded Software	Enhanced OHCI	Software
Automated Packet Manipulation			
Data Manipulation			
VPC Generation	Hardware	Hardware	Software
Data Origination			
On-Board Memory	Yes	(pending)	-
Host Memory	-	Yes	Yes
<b>Mil1394 - Receive</b>			
Protocol Encapsulation	Host / Embedded SW	Software / Hardware	Software
Reception Mechanism	Recorder / Sign. Extract.	Enhanced OHCI	OHCI
Channel filtering	Hardware, limited	Hardware	Hardware, limited
MessageID filtering	Hardware, limited	Hardware	Software
Configurable RX Streams (OHCI Contexts)	-	Enhanced OHCI	OHCI
Frame Synchronization			
RX STOF packets	Hardware	Hardware	Software
External Sync Signal	Hardware	Hardware	-
Internal Clock	Hardware	Hardware	Software
VPC Verification			
skip incorrect packet	-	Hardware	Software
mark incorrect packet	Software	Hardware	Software
ignore incorrect packet	-	Hardware	Software
Timestamping			
1394 Timebase	Cycle Time	Cycle Time	Cycle Time
AS5643 Timebase	Frame Offset	Frame Offset + Number	-
IRIG-B Input Timebase	Model Dependent	Yes	-
Free Running	Hardware Clock	Hardware Clock	Software, OS Latency
Automated Packet Manipulation			
Data Destination			
On-Board Memory	Yes	(pending)	-
Host Memory	-	Yes	-
Automated Data Extraction			
Signal Extractor	Hardware, limited	-	-

Apart from its standard IEEE1394 features, **FireTrac™** has been architected to provide hardware level support for Mil1394 (SAE AS5643) which reduces host processor burden, specifically for packet encapsulation, data extraction, receive/transmit STOF offsets, etc...It is important to understand that **FireTrac™** is a dedicated and optimized solution for processing of AS5643-type traffic with support for the AS5643 protocol embedded within the hardware, as opposed to just a software layer implementation which is typically provided with other solutions relying on COTS OHCI chipsets.

# MAIN FEATURE SUMMARY:

## General:

- IEEE 1394b-2002 compliant
- Supported Speeds: S200B, S400B
- 3 independent bus channels (FireLink, PHY, transformers)
- Field-upgradable
- PCI Specification 3.0 compliant
- PCI-X 2.0a, Mode-1, Decode-C latency, 100MHz, 64-bit data
- 66MHz PCI mode indication supported (M66EN)
- DMA Transfer (sustained 3x 400Mb/s 1394 bus traffic at max bus load)
- IRIG B122 and IEEE1344
- Abstraction Layers for Operating System (OSAL) and Link (LAL)



## Personality Profiles

- Run-time configurable and licensable
- Configurable packing for small footprints (optional)
- Allows to design a customized and changeable feature set
- Provide streamlined functionality (see table for details)
- Support for IEEE1394 and Mil1394 (SAE AS5643)
- Please contact DapTechnology for requirements with high level protocols (SBP2, IIDC, AVC, IP, ....)

Features	Profiles					
	PF0: All	PF1: Low-Level API	PF2: 1394 API	PF3: Bus-Management	PF4: Mil1394	PF5: Advanced Mil1394 (pending)
Asynchronous Receive	Y	Y	Y	Y	Y	Y
Asynchronous Transmit	Y	Y	Y	Y	Y	Y
Phy Packets	Y	Y	Y	Y	Y	Y
Phy Registers	Y	Y	Y	Y	Y	Y
SelfID Data	Y	Y	Y	Y	Y	Y
Bus-Reset Detection	Y	Y	Y	Y	Y	Y
Inbound Transactions	Y		Y	Y		
Outbound Transactions	Y		Y	Y		
Isochronous Transmission	Y		Y	Y		
Isochronous Reception	Y		Y	Y		
Cycle Master	Y			Y		
IRM	Y			Y		
Bus Manager (pending)	Y			Y		
Mil1394 Frame Synchronization	Y				Y	Y
Mil1394 Transmission	Y				Y	Y
Mil1394 Reception	Y				Y	Y
Advanced Mil1394 Features	Y					Y

# SPECIFICATION:

- Dimensions:** PMC form factor, 15 x 74 x 154 mm
- Weight:** 130g
- Operating Range:** 0 – 70 C
- Power Requirements:** 7 Watts (max.)
- Compliance:** FCC Class A
- Connections:** 64-bit PMC connector configuration, Off-board connector (high density) for transformer coupled 1394b ports

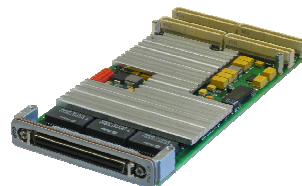
**Indicators:** -

**Switches:** -

**Package Content:** FireTrac FT3460bT PMC card, Optional 3-foot fan-out cable allowing 9 bus connections (Beta) and IRIG input (PMC3CH3FMBM-IRIG)

**Product warranty:** 12 months limited warranty

**Part Number:**

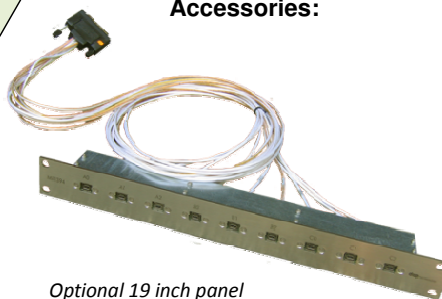


FireTrac FT3460bT-PMC

**FT3460bT-OPT1-OPT2-OPT3-OPT4-[OPT5]**

- OPT1:** PMC – no Carrier Card  
(Carrier Card) PCI – PCI (64bit) Carrier  
PCle – PCI Express Carrier  
CPCI – CompactPCI Carrier  
CPCle – CompactPCI Express Carrier
- OPT2:** WIN – Windows (XP(64), 7(64))  
(Operat. System) VXX – VxWorks™  
LIN – Linux  
IRIX – SGI IRIX  
LVRT – LabVIEW(RT)
- OPT3:** PF0 – (PF3 + PF5)  
(Person. Profiles) PF1 – Low Level  
PF2 – SW Stack  
PF3 – SW Stack & Bus Mgmt.  
PF4 – Mil1394  
PF5 – Advanced Mil1394 (pending)
- OPT4:** (only applicable for VxWorks OS)  
(SBC) – Single Board Computer type  
(please contact DapTechnology)
- [OPT5]:** HSS – HW/SW Ext. Warranty  
HS – HW Ext. Warranty  
SS – SW Ext. Warranty

## Accessories:



Optional 19 inch panel  
PMC3CH5F19FP

- **PMC3CH5F19FP-IS:**  
3-Channel/9-Port Off-board cable (5 feet) to 19" panel with 1394b(female) (or 38999) connectors and IRIG and Sync Inputs
- **PMC3CH5F19FP:**  
3-Channel/9-Port Off-board cable (5-feet) to 19" panel with 1394b(female) (or 38999)
- **PMC3CH6FMBM**  
3-Channel/9-Port Off-board cable (6 feet) with bilingual male termination
- **PMC3CH20FNT**  
3-Channel/9-Port Off-board cable (20 feet) without termination

Please check our [website](#) for pictures of cables and accessories and contact Dap directly for other cable requirements.

## CONTACT INFORMATION:

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