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Simplifying System Integration™

# 73M1822/73M1922
# MicroDAA Software Architecture

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# 1   Introduction

## 1.1   General

The Teridian Semiconductor 73M1822 MicroDAA$^{TM}$ is the world's first single-package silicon DAA for data/fax modem and voice applications.  It provides a serial MAFE (Modem Analog Front End) interface to popular DSP/host processors to implement a globally compliant low-cost soft modem solution.

The 73M1822 MicroDAA can be packaged in a two-chip configuration as the 73M1922 chip set, which consists of a 73M1902 host side chip and a 73M1912 line side chip.  The MicroDAA integrates all codec and DAA functions required to achieve reliable PSTN connection worldwide.

## 1.2   Purpose and Scope

The 73M1x22 software provides the necessary system and user interfaces for use of the 73M1822 or 73M1922 as a soft modem or fax.  The scope of this document includes discussion of the software's architecture as well as general discussion of the functions and interfaces for various modules within the overall system.

# 2 Software Architecture Overview

The software provides a framework by which a user can leverage the features of the chipset for a specific purpose. The software architecture is designed to be modular and as hardware and operating system independent as possible.

Figure 1 illustrates the basic architecture model for a 73M1x22 system. The model is intended to be independent of processor and operating system.
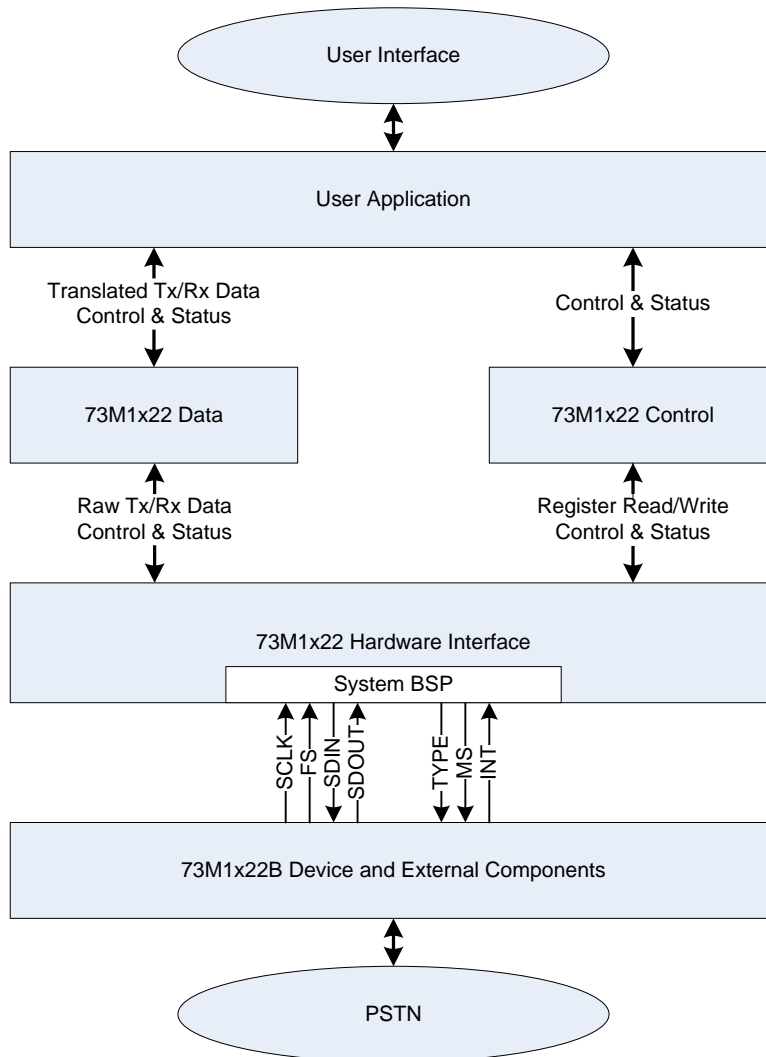


**Figure 1: System Architecture**

The main user interface of the software will be determined by the end user application needs. The software will have access to the 73M1x22 device via the system's specific BSP and through the interrupt service routine (ISR) triggered by the hardware interrupt signal.

# 3   Software Modules

## 3.1   User Application

The User Application module provides the interfacing with end user as well as maintaining the proper control over the flow of events in the system.
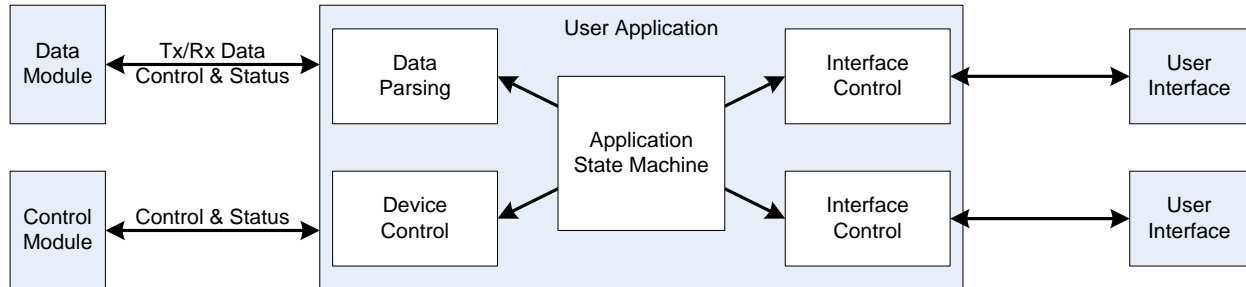


**Figure 2: User Application Block Diagram**

See the *78M1822/73M1922 Modem CTL Application User Guide* for an example of a user application.

## 3.2   73M1x22 Data Module

The 73M1x22 Data Module is responsible for providing the proper translation of data samples from the 73M1x22 (as transferred over the MAFE interface and through the 73M1x22 Hardware Interface module) into a usable form for the User Application Module.  Different applications may require different variations of the 72M1x22 Data Module (i.e. high or low speed fax or modem).
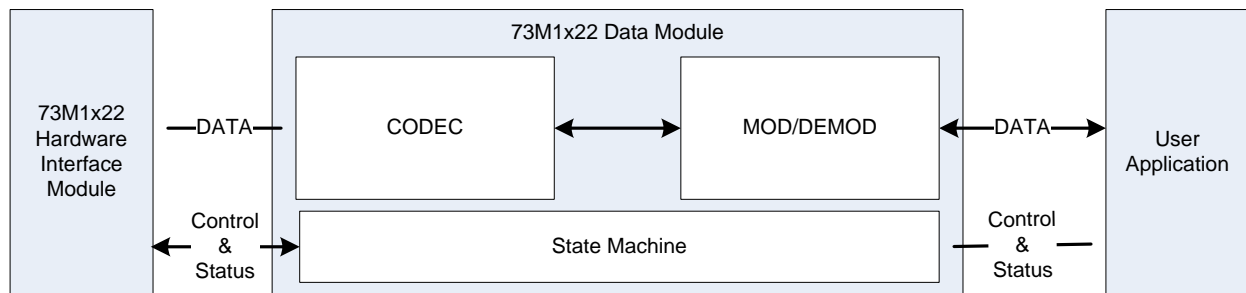


**Figure 3: 73M1x22 Data Module Block Diagram**

## 3.3   73M1x22 Control Module

The 73M1x22 Control Module is responsible for the monitoring of the 73M1x22 device status and providing the proper register settings to the 73M1x22.  It will set the register settings as needed to achieve the proper device state as dictated by the User Application.   It will also monitor and report the device status to the user application as required.
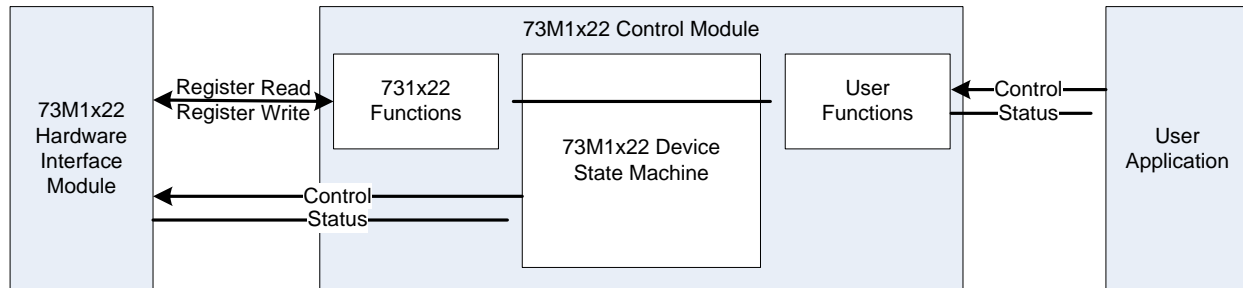


**Figure 4: 73M1x22 Control Module Block Diagram**

See the *73M1822/73M1922 Control Module User Guide*.

## 3.4   73M1x22 Hardware Module

The 73M1x22 Hardware Interface Module is responsible for providing the proper control and translation of the MAFE interface and other hardware signals to/from the 73M1x22 device into a usable form for the 73M1x22 Data Module and the 73M1x22 Control Module.

The module is responsible for:

- Controlling the MAFE interface timing and formats.
- Formatting the incoming MAFE transactions and forwarding them to the appropriate module.
- Formatting and multiplexing the outgoing MAFE data and control transactions.
- Controlling 73M1x22 device reset signals.
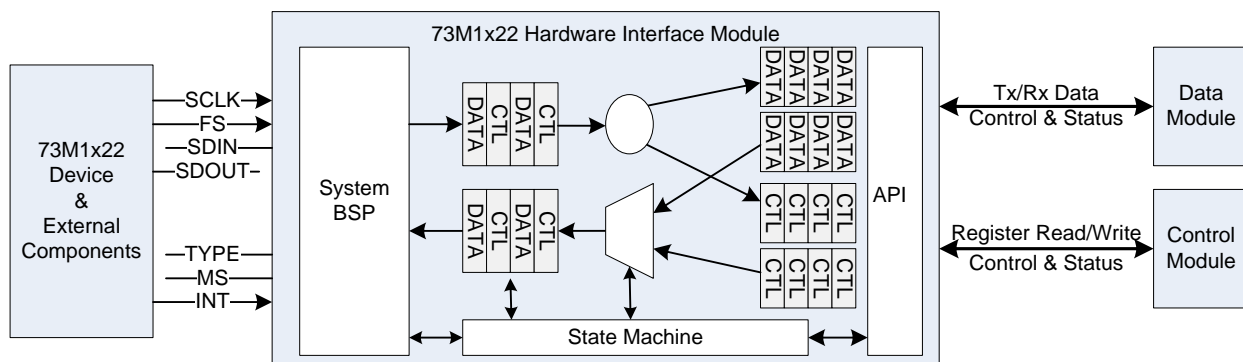- Relaying incoming interrupts.



**Figure 5: 73M1x22 Hardware Interface Module Block Diagram**

See the *73M1822/73M1922 Hardware Module for SMDK412 User Guide* for an example of a hardware module.

# 4    Related Documentation

The following 73M1x22 documents are available from Teridian Semiconductor Corporation:

*73M1822/73M1922 Data Sheet*
*73M1822/73M1922 Layout Guidelines*
*73M1x22 Worldwide Design Guide*
*73M1822/73M1922 Control Module User Guide*
*73M1822/73M1922 Hardware Module for SMDK412 User Guide*
*73M1822/73M1922 Modem API User Guide*
*73M1822/73M1922 Modem CTL Application User Guide*
*73M1822/73M1922 MicroDAA Software Architecture*

# 5    Contact Information

For more information about Teridian Semiconductor products or to check the availability of the 73M1822 and 73M1922, contact us at:

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## Revision History

| Revision | Date | Description |
|---|---|---|
| 1.0 | 12/23/2009 | First publication. |