Custom-Fit Digital Video Recording Solutions

Application-specific DVRs now possible using DVR Express® Core and an Embedded Control PC

Overview

Being a peripheral device, the DVR Express® Core digital video recorder must be connected to a PC in order to be configured and operated. Although portable solutions exist, such as using a laptop or netbook for this task, there are often times that even a laptop is inconvenient and a smaller solution is required.

Single-board-computers (SBC) have continually evolved with the introduction of new processors, memory and peripheral controller technologies. These devices combine many necessary components of a PC into a compact, embedded device, many with industry-standard form-factors such as PCI-104. To create a small, standalone DVR solution, these devices can be used as the Control PC for a DVR Express® Core, and the hardware of the DVR Express® Core can be re-mounted to better suit the needs of the individual application.

An Example Customized DVR System for Two Cameras

An example system is detailed below. This system is designed to record uncompressed video from up to two cameras (in this example, Camera Link Base), while streaming live video to a separate receiver PC over a wireless network connection.
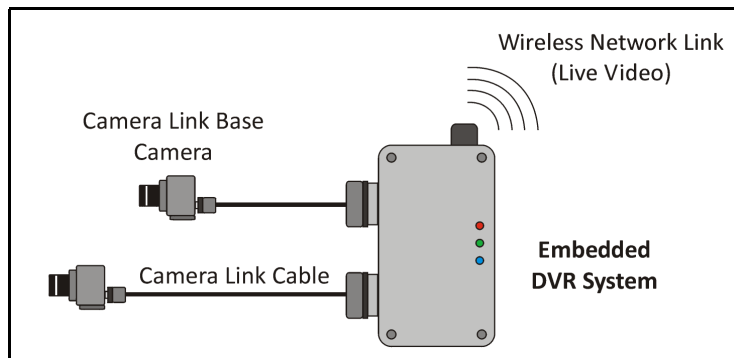

Figure 1: Overview of Example Customized DVR System

The internal view of the system is shown below in Figure 2. A single DVR Express® Core recorder board is paired with an Intel® Atom™-based PCI-104 single-board computer (iBT Technologies IB805). This SBC has two onboard SATA II ports; one for the operating system drive, the other to interface with the DVR Express® Core board (in place of the normal eSATA host connection). Only one solid state drive (SSD) is required to record the video data from the two cameras, because the combined data rate of the cameras does not exceed the write speed of the SSD. A wireless network adapter is connected to the SBC using an available USB 2.0 port.

A Windows operating system is installed on the SBC, and a custom software application is configured to start once the system has completed the boot process. The application was created using the **Core API SDK**, a C++ class library designed to allow programmers to exploit the full capabilities of the DVR Express® Core hardware. Upon initialization, the application starts streaming live video data over the wireless network link. A nearby PC is connected to the same wireless network, and runs another custom application to receive the video data.
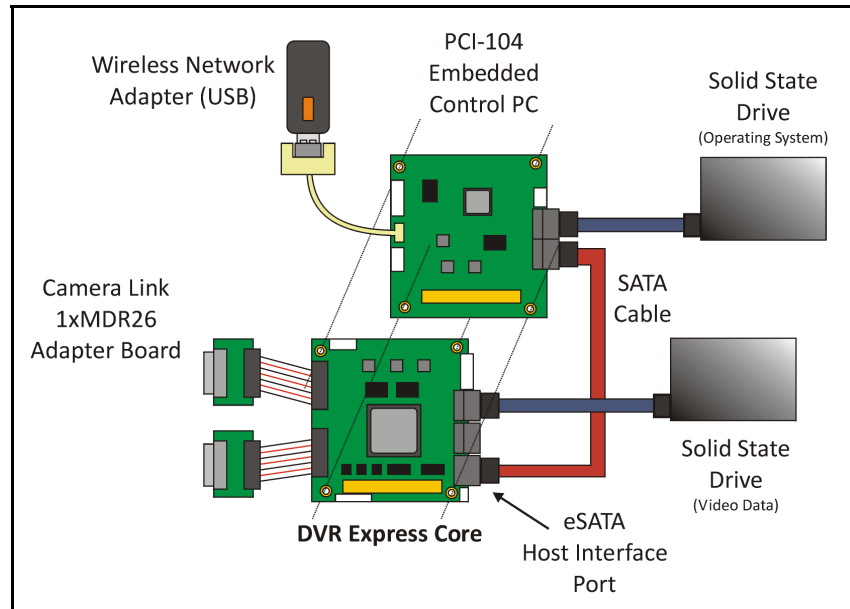
Figure 2: Internal Components of Embedded DVR System

Design Considerations

Several factors must be analyzed when designing a DVR system around the DVR Express® Core hardware. However, apart from the standard mechanical and environmental design considerations, the flexibility of the DVR Express Core and various camera interface modules should simplify the high-level design.

First, determine the number of cameras that need to be recorded by the system, then determine the number of DVR Express® Core modules required, based on the camera interface type.

Next, find a suitable Single Board Computer with enough available SATA ports to integrate the system around (one host SATA connection required per DVR Express® Core). Many newer SBCs have two SATA ports, and some have an option of an onboard flash-memory device to store the operating system (freeing both SATA ports for host connections).

For more information, contact IO Industries using the information below.