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Monitoring unmanned weather stations with the UC-7420

2009-12-24

Location / Country : Taiwan

Product Solutions:



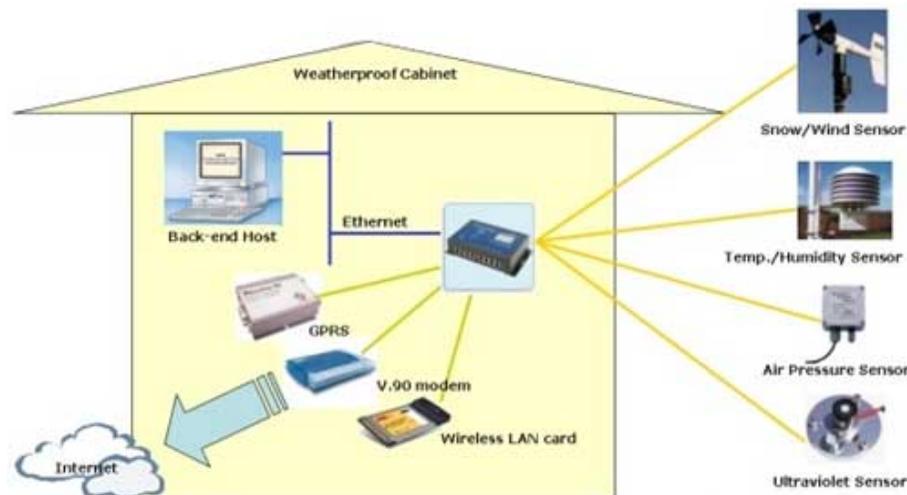
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Introduction

Project Introduction

Unmanned weather stations play an essential role in the effort to analyze and predict the world's ever-changing weather patterns. The unmanned stations collect and store large amounts of weather data and then download the data at regular intervals to a back-end host for analysis and long-term storage. The computing device housed in the weather station must be robust enough to work continuously for long periods of time while exposed to a wide range of temperatures. It should also be able to collect readings from various sensors that use different data transmission protocols, and have the capability to store large amounts of data.



Moxa Solution

Protocol Conversion and Front-end Data Processing

The data collected by a typical unmanned weather station includes temperature, rainfall and snow accumulation, air pressure, humidity, and ultraviolet intensity. One of the tasks that the UC-7420 unit must handle is protocol conversion, since there is no guarantee that the devices collecting the weather data all use the same protocol. In addition, the UC-7420 can be used to do preliminary data processing before downloading data to the central computer. MOXA's UC-7420 is ideally suited for these tasks, since the user can easily embed a C program that is

Feedback

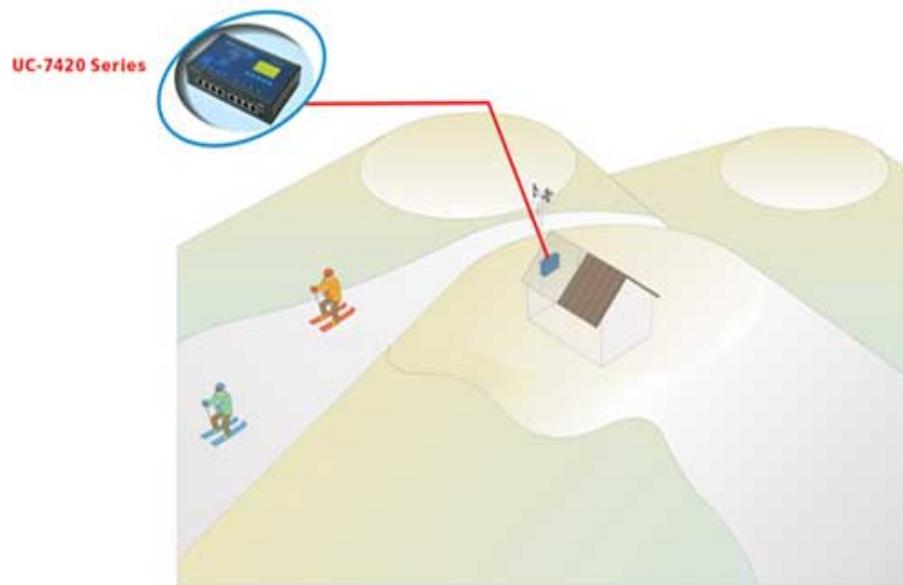
custom written for the devices used at the station. If future changes involve adding or removing devices, the programmer simply needs to modify the C code, recompile it, and then download the executable program over the network to the UC-7420 unit.

Connecting to the Network and the Internet

In addition to being programmable, the UC-7420 also offers users an array of connection options. To begin with, data entering the serial ports from attached sensors can be processed and then forwarded through one or both of the dual Ethernet ports to the LAN. One of the serial ports can also be connected to a V.90 or GPRS modem for PPP connections, and a PCMCIA port is available for installing a wireless LAN card for 802.11b/g networks. By including multiple connection options in the UC-7420's design, users gain the flexibility needed to connect from virtually anywhere. Combinations of connection types can also be used to provide redundancy. For example, if unavoidable network problems cause an interruption in service, the user can connect by modem.

CompactFlash Storage Space

One of the dilemmas faced when creating a "small" computer is how to provide users with adequate storage space. For unmanned applications, it is best if the storage device does not contain moving parts. Although hard drives may seem to last forever for day-to-day use, we cannot make this assumption for continuous use at remote locations. The UC-7420 overcomes this problem by providing a CompactFlash slot. If needed, flash memory cards with storage capacity of up to several gigabytes can be used to store data until it is convenient to transfer the data to a central computer.



Why Moxa

- No fan, no hard drive design for longer MTBF
- CompactFlash slot for adding gigabytes of storage space
- Multiple connection options for greater networking versatility
- Programmability gives system integrators infinite possibilities
- Maintenance personnel can monitor from a remote location

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