Technology

- ✓ Ethernet
- ✓ USB
- ✓ CAN
- ✓ LONWorks
- ✓ RS-485
- ✓ BACnet

Overview

Networking and communications are the integral part of any embedded system. A network lets you to establish the digital communication among various embedded devices and with backend systems. The communication mode could be wired and wireless.

Expertise

Aftek has wide expertise in wired as well as wireless modes of communication supporting various standard and custom protocols. Following are few key factors which are considered while designing for a communication mode:

- ✓ Protocol selection
- ✓ Communication device and media selection
- ✓ Designing of schematic and PCB layout
- ✓ Protocol conversion for standard as well as custom protocols

Following is a summary of Aftek's expertise:

Ethernet

- ✓ Ethernet is the most widely-installed local area network technology, specified in a standard, IEEE 802.3.in a standard, IEEE 802.3.
- ✓ Aftek has experience in developing 10BASE-T / 100BASE-T Ethernet based devices
- ✓ Expertise with host interfaces like MII, RMII, SNI
- ✓ PHY chips from vendors like National Semiconductor, Realtek, SMSC, Micrel, Broadcom etc.
- ✓ External MAC controllers based on interfaces like PCI, Memory Bus
- ✓ Building LAN as well as WAN networks with Ethernet devices

USB

Universal Serial Bus (USB) is commonly used in consumer devices and provides plug and play capabilities

- ✓ Aftek has experience of interfacing with USB 1.0, USB 2.0 devices / hosts with full speed and high speed
- ✓ Interfacing of USB OTG compliant interfaces
- ✓ External USB host and device controllers like NXP, Promise
- ✓ On-chip host and device controllers of TI DaVinci, FreeScale i.MX, Marvell PXA, Intel IXP, Samsung S3C, Atmel AT91FR series processors

CAN

Controller Area Network (CAN) is a high performance communication protocol for serial data communication. It is widely used in automobile industry. Other application areas include manufacturing, aerospace, agriculture industries etc.

- ✓ Aftek has expertise in interfacing with external CAN controllers based on SPI and Memory Bus and controllers with basic CAN (125 kbps baud-rate) and full CAN (1 Mbps baud-rate) support
- ✓ Implementation of CAN on devices and enable them to communicate with other CAN devices on the bus
- ✓ Providing communication gateway between various CAN application layer standards like J1939 and CANopen
- ✓ Developing protocol converters for providing seamless interoperability of CAN devices with devices based on protocols such as Modbus and BACnet

About Aftek

Aftek Limited is a full spectrum technology services company from India. Over last 20 years Aftek has gained significant exposure to variety of technologies. Rich technological capabilities, focused investments in Research & Development and industry exposure enables us to reach beyond the basic IT services to design and deliver projects, products and implement end-to-end solutions to customers in variety of industries. Our service spectrum covers key services as Hardware Development, Firmware Development, Embedded Systems, Application Development, Application Maintenance and Testing Services.

LONWorks

Local Operating Network is widely used in advanced control-networking systems, industrial, commercial and residential communication gateways.

- ✓ Aftek has experience of developing a TP/FT transceiver of data rate up to 78 kbps with up to 62 network variables (SNVTs)
- ✓ Implementation of LON on devices and enable them to communicate with other external devices through CAN bus
- ✓ Developing protocol converters for providing seamless interoperability between Modbus based devices and LON devices

RS-485

RS485 is a multi-point communications network with up to 32 nodes on a single differential bus and supports data rate up to 1 Mbps and distance up to 1 km.

- ✓ Aftek has expertise in developing RS-485 networks as per ANSI standards TIA/EIA-422-B and TIA/EIA-485-A
- ✓ Experience of developing RS-485 repeaters to extend the node count beyond 32
- ✓ Experience of developing RS-485 physical layer so as to support Modbus and multi-master protocols
- ✓ Developing Modbus slave and master devices that support RTU and ASCII modes
- ✓ Interfacing with various third party devices (energy meters, smartcard readers) which support Modbus
- ✓ Implementation of custom protocol on RS-485 bus that supports peer-to-peer communication, in which either of the two devices can initiate a communication

BACnet

BACnet is a data communications protocol for Building Automation and Control Networks. It is widely used for applications such as heating, ventilating, air-conditioning control, lighting control, access control and fire detection systems and associated equipments.

- ✓ Aftek has experience of developing BACnet server systems which are completely compatible with 3rd party software like Cimetric BACnet Explorer and Visual Test Shell
- ✓ Developing protocol converters for providing seamless interoperability of BACnet with devices based on common protocols like Modbus, LONWorks as well as custom protocols

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