Real-time MPEG4 Industrial Video Server
IVS-255 series

ICP DAS

Product Features

- CPU: Intel xScale PXA-255 CPU @ 400 Mhz
- OS: Embedded Linux 2.4.19
- Low power consumption, no fan inside
- Hardware watch dog protection mechanism
- Support 4-CH MPEG4 video and 4-CH audio real-time encoding
- Support 1-CH real-time audio out
- ActiveX Control SDK for AP developing
- Ready for integration with InduSoft Web Studio

Introduction

The IVS-255 is a high performance standalone video server, based on **Intel xScale PXA-255 CPU, 400Mhz**, and embedded Linux OS. It could simultaneously perform **4Ch real-time MPEG4 video encoding**, **4 CH ADPCM Audio encoding**, and, **1 CH Audio play-out**. IVS-255 transmits all Audio/Video streaming data through Ethernet. The rugged hardware design, low power consumption, and fan-less features make it especially suitable for industrial field application.

Support 4 Channel MPEG4 Video Encoding

IVS-255 receives video signals from standard **NTSC or PAL CCD camera, and, encodes them into MPEG4 streams**. The encoding is performed by dedicate ASIC, so, it is real-time performance. When using CIF (320*240 or 352*288) mode, IVS-255 could support up to 4 cameras, and, produce 4 independent streams. If one of the 4 channels needs full VGA or D1 resolution, the other 3 will be turned off. The switching between 4 CIF and 1 D1 is on the fly. That means user could make switching without rebooting IVS-255.

Support Bi-directional Audio

IVS-255 provides **bi-directional audio** functions. For audio input, it receives up to 4 analog audio input signals, and, encodes them into **ADPCM streams**. The 4 channels devote to 4 video input channels individually. So, if some video channel is disabled, the corresponding audio also becomes inactive.
For audio output function, IVS-255 receives **MP3-like stream** from remote client via Ethernet. Then, it decodes and renders it. The audio stream from client is generated by client ocx provided by IVS-255 SDK. IVS-255 supports one channel audio output.

## Streaming on Ethernet

IVS-255 generates video and audio stream and transmits them to client via Ethernet with **UDP** protocol. The using of UDP has some reasons. First UDP is faster then TCP, thus, has better real-time performance than TCP. Second, UDP consume less CPU resource then TCP.

To delivery multimedia streams on Ethernet is a complicated effort. It needs to take care a lot of jobs such as buffering, packaging and un-packaging, frame losing detection etc. Fortunately, IVS-255 and its co-working software component already did these jobs for you.
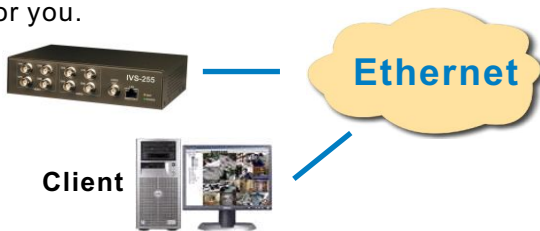
PTZ Control

For those who want to use PTZ camera, IVS-255 provides a RS-232 port to sending PTZ commands. Since, the PTZ protocol is different from one maker to the other. IVS-255 didn't define any PTZ command inside but providing a set of RS-232 send/receive software functions. These functions are part of SDK software component.

Hardware Watch Dog

Designed on PXA-255, IVS-255 implements the hardware WDT function of its CPU. The working theory is that client must periodically send WDT notifying signal to IVS-255. If not, the IVS-255 will reboot itself and restore to the initial statue to wait connection from client. This mechanism can protect IVS-255 from mal-function due to communication error or any other un-expected conditions.

When it occurs, the SDK software component will generate a ServerDown event to notify client AP.

Embedded Linux

The software inside IVS-255 is based on embedded Linux. The kernel version is 2.4.19 and root file system is jffs2. For advanced user, who knows Linux very well, can design his own AP inside.

Real-time MPEG4 Industrial Video Server
IVS-255 series

Software Support

When looking for an industrial field product, the software supporting is always a key concern, especially for those who choose IVS-255 as part of their system. IVS-255 has rich software resource ready and there will be more and more in the future. Among them, the SDK, System Developer Kit, is the most important and is the basis of all others.

SDK

IVS-255 provides SDK (System Developer Kit) for system developers to build their own application quickly and easily. The SDK includes Client side ActiveX Controls (for windows 2000/XP), users manual and programming guides, and examples of VC++, and VB.

InduSoft Web Studio integration Package

IVS-255 provides integration package for InduSoft Web Studio Software. The InduSoft Web Studio is a HMI/SCADA tool. With this package, control engineer could add multimedia remote monitoring function their HMI/SCADA system.
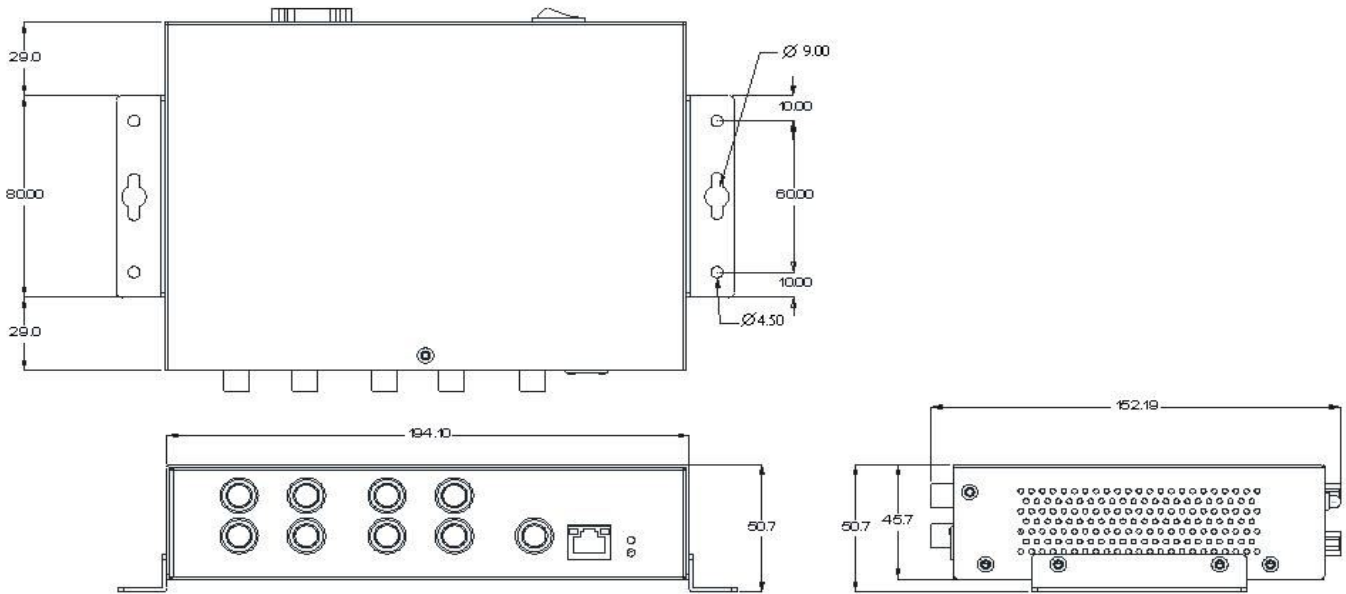
Specifications

CPU	IntelRXScaleRPXA-255@400 MHz	Memory	SDRAM: 32 MB, Flash: 16 MB
Power	Require power input: 12 V DC Power Consumption: 5W	Ethernet	Number of (Channels): 1 Bit Rate: 10/100 Mbps
Video Encode	Number of Channels: 4 Input video type: NTSC / PAL Compression type: MPEG4 ISO/IEC 14496-2, SOP @LEVEL3 Performance: NTSC 320x240 @ 120fps, PAL 352x288@100fps		
Audio Encode	Number of Channels: 4 Sample Rate: 8 KHz, Mono Audio compression type: ADPCM	Audio out	Number of (Channels): 1 Audio stream format: MP3 like Sample Rate: 44.1 KHz, Mono
RS232	Number of Channels: 1 Connector: DB9 male		
Operation temperature	-15 ℃ ~(+) 65 ℃		
Storage temperature	-40 ℃ ~(+) 85 ℃		
Certification	EMI,CE / FCC / VCCI		

Dimension

Front and Rear Panel Overview
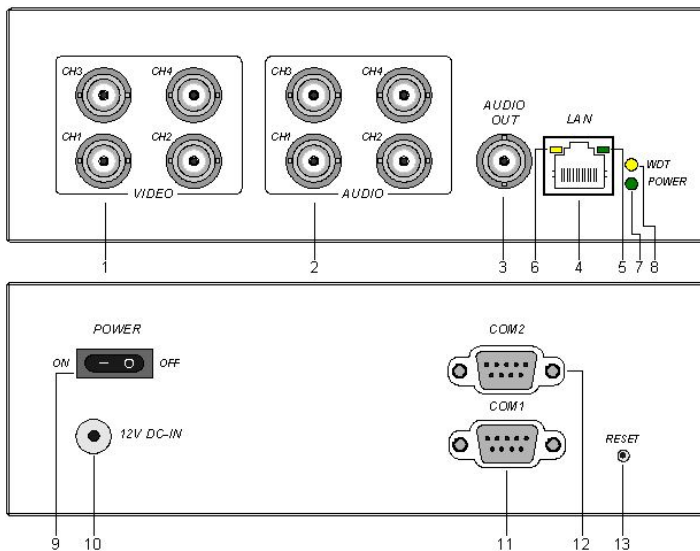
1. Video BNC connectors
2. Audio BNC connectors
3. Audio out BNC connector
4. RS45 Ethernet connector, 10/100 Base T
5. LED indicator, device power on
6. LED indicator, network link
7. Power LED
8. WDT LED, slow blinking when standby, fast blinking when linked
9. Power on-off switch
10. DC-12V power input
11. COM1, for debug console
12. COM2, general purpose Rs232 Reset button, to reboot IVS-255

Ordering Information

IVS-255: Real-time MPEG4 Industrial Video Server