



6086N2

V2.0

SET TOP BOX **6086N²** VIA C3 SERIES
GCT-ALLWELL TECHNOLOGY, INC.



User's Guide

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Features

Specification	Metallic 6086N² / STB 6086N² / STB6086N²-CF
Main Processor	VIA Eden 667 MHz VIA Ezra 800-933 MHz series processor (Future Model)
Memory	-64 MB SDRAM, 3.3V SDRAM support only -Two 168-pin DIMM socket -Max of 512 MB with 256Mb SDRAM technology, support PC100/133 SDRAM -Non-Parity
Graphics Processor (on board)	-VIA CyberPro 5005 - Graphics Accelerator - Multi format Alpha blending -64 bit DRAM interface optimized for SGRAM 512 x 32 up to 4MB -2x ITU-BT656, ITU-BT601 8bit video input interface, one from EM8400 (VP-A), one from DVBS (VP-B) -6 on chip DACS provide simultaneous S-Video, composite and RGB/SCART output or simultaneous VGA and TV output (S-Video and composite or RGB/SCART) - 3 Video windows plus PIP -Color key, Chroma key, DirectDraw & Mpeg-1 playback -NTSC 640 x 480 @ 60 Hz, -PAL 800x600/720x540/640x480 @ 50Hz
North Bridge	-VIA VT8601A PLE133 -Support PC100/133 SDRAM -Support up to 5 PCI master
South Bridge	-VIA VT82C686B -PC99 Compliant PCI-to-ISA Bridge -Integrated super I/O -Ultra DMA 33/66/100 master mode PCI-EIDE Controller -USB x 2 -Serial port x 2 (internal) -FDD Controller -Integrated keyboard controller with PS2 mouse -M-System DOC2000 socket supports + Foot print support TSOP 16M/32Mx2 -DiskOnModule support
LAN communications	- Two Realtek RTL8100B 10/100 Mb PCI - Supports Home Gateway

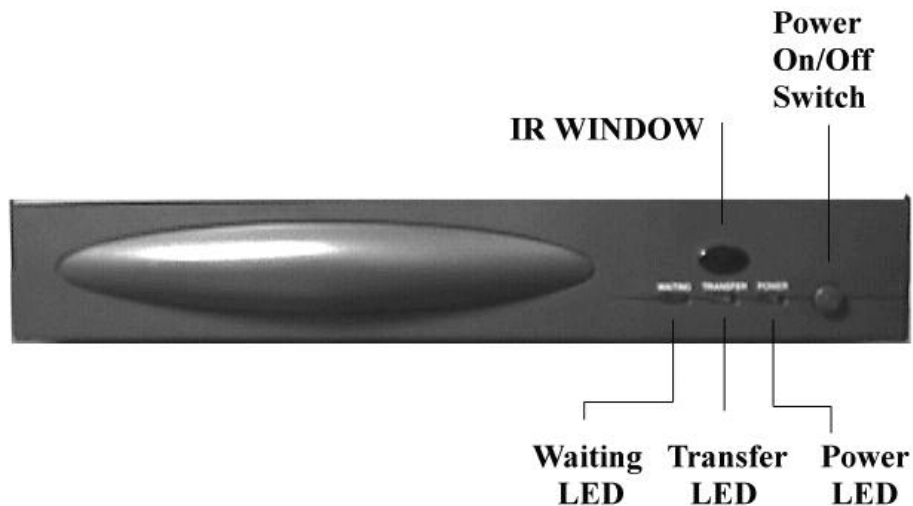
IR Interface	Yes
Audio/Video Switch (Optional) for SCART	-STV6412A audio/video switch matrix -I ² C control
Audio Codec	-VIA VT1611A audio codec with 3D -AC97 2.1 compliant codec -Legacy audio SBPRO compatible
Drive Bay	2 x 3.5" device (Metallic6086N2 model)
OnBoard IDE	2 x Ultra DMA33
Floppy Disk Connector	Desktop type
Microphone Board	Two 6.1mm phone jacks
BIOS	-Award BIOS with APM -DIP 2Mb flash w/ boot block supported -Power management support APM1.2, ACPI
Box Dimension	430mm x 320mm x 80mm (WxDxH, Metallic6086N² model) 340mm x 274mm x 60 mm (WxDxH, STB6086N² model)
Power Supply	ATX 77W; 5V, 12V, 100-264 V auto switching
Software Supported	Microsoft Win95, Win 98, NT, WinCE, RTOS QNX, Citrix, Linux
Rear Panel	-D-sub 15 pin VGA connector -Dual Stacked SCART connector (European) -CBVS composite out (RCA jack yellow) -Audio out port (RCA jack white, red) -S-Video (4-pins DIN) -SPDIF output (RCA jack orange) -Two LAN ports (RJ-45) -Dual stacked USB port -6-pin mini DIN connector in PS/2 keyboard and PS/2 mouse, require auto detection between IR K/B -3.5mm mini phone jack x 1 for microphone input
Board Form Factor	-Dimension 220mm x 242mm -4 layer PCB, 6 mil minimum trace width and spacing -All components in primary side
DVD ROM (optional)	support EIDE DVD ROM
Riser Card	Support two 3.3V PCI slots (Metallic 6086N² Model) Support one 3.3V PCI slot (STB 6086N² Model)

MPEG-2 Decoder (Optional on Riser card)	<ul style="list-style-type: none"> -Sigma Designs EM8400 MPEG-2 video decoder -Embedded 80 mips RISC-Core -Full compliant with ISO 13818-2 main profile at main level MPEG-2 -CCIR 656 supported resolution of 720x480 at 30 fps(NTSC) and 720x576 at 25 fps (PAL) -Support ISO 11172 MPEG-1 data stream -SPDIF output
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FRONT PANEL.

Technical Specification

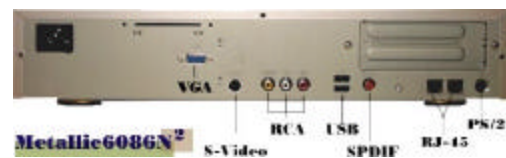
After plugging in the STB, two LED lights on the front of the STB will turn on. The green light labeled **Power** comes on immediately, indicating that the STB is receiving power. The yellow light labeled **Transfer** indicates that the STB has made a connection. This yellow light will blink anytime the STB is downloading. The 3rd LED is can be programmed through GPIO address.



The Infrared Sensor does not light up. It receives signals from the Remote Control and Keyboard. Always make sure that there is a clear path between the Remote Control and the Infrared Sensor devices to ensure that the STB signals are unobstructed.

REAR PANEL.

Technical Specification

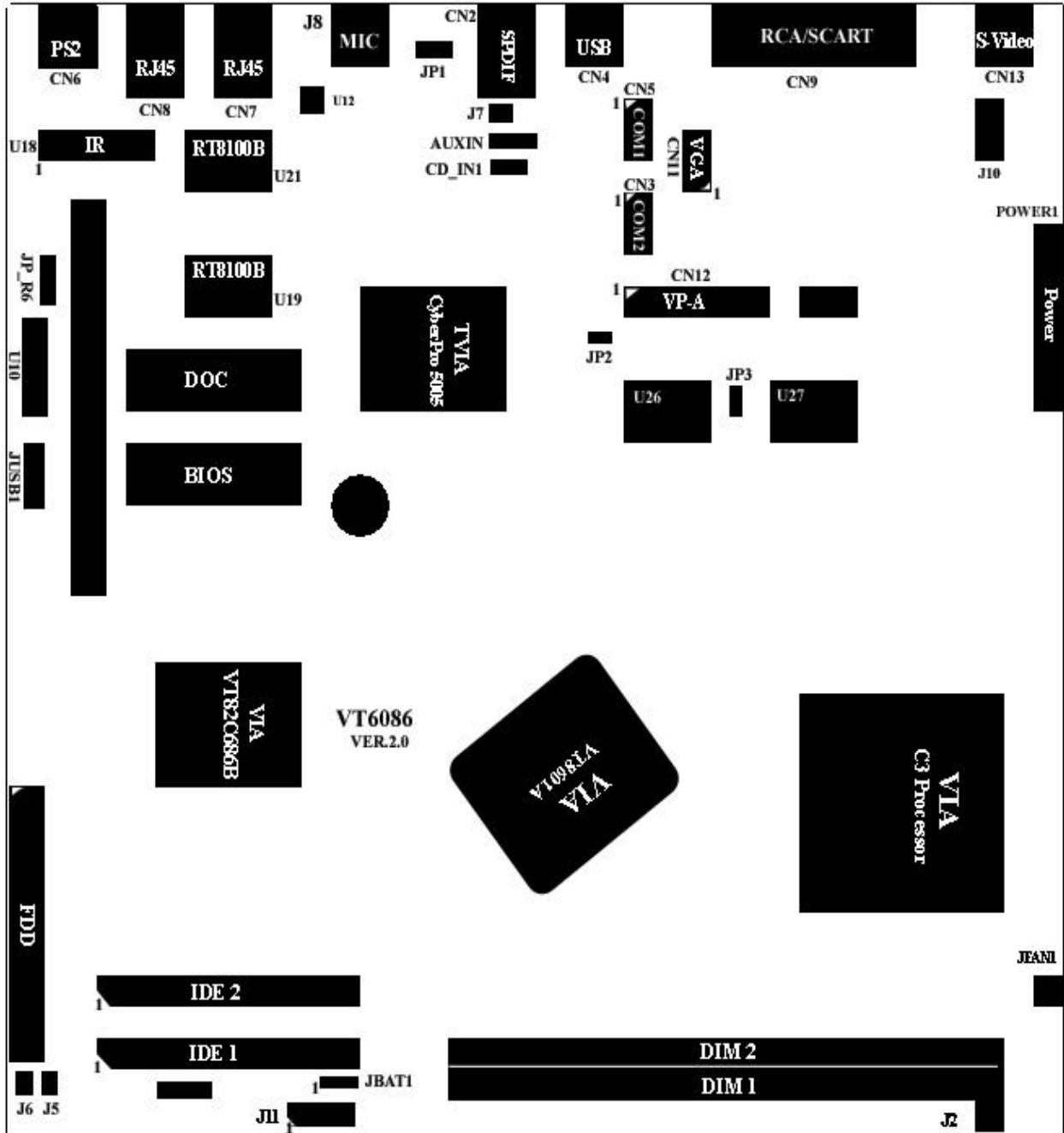


IMPORTANT

- Do not expose the STB to water or operate in a damp environment.
- Do not use the power cord with an outlet or extension cord that does not allow both prongs to be fully inserted.
- Do not overload power outlets.
- Do not place the STB in direct sunlight or near a heat source.
- Do not allow anything to rest on or roll over the power cord.
- Unplug STB during a lightning storm.
- Do not put or allow anything to fall into the STB unit.
- Do not place anything on top of the STB unit, especially:
 - Liquid (drinks, etc.)
 - Flammable items (clothes, papers, etc.)

Any object that may obstruct airflow through the vents (Books, magazines, other electrical components, such as a VCR, etc.)

Board Diagram



Major Components

U14: Semtech SC1164 CPU DC/DC PWM IC

U1: VIA C3 EBGA CPU

DIMM1 and DIMM2: DIMM Socket support PC-133

U23: ST STV6412 Audio/Video Switch Matrix

U2: VIA VT8601

U25: IGS CyberPro 5005 VGA (Building TV OUT)

U13: TPA122 Op Amp for Audio Output

U12: VIA VT1611A AC97 Codec

U8: ICS 9248DF-39 Clock Generator

U17/U18: IR keyboard controller

U15/U16: RS-232 Buffer

U29: VIA VT82C686B

U10: DOC address Decoder

U19/U21: Realtek RTL8100/8100B LAN control Chip

U11: BIOS

U9: DOC

SL1: The PCI and PCI Riser

U26/U27: VGA Memory

Jumpers description

IR Controller

Resistor on RN88	PS/2 Keyboard/Mouse
Resistor removed from RN88	PS/2 and IR Keyboard/Mouse

Note: Both DIP and SMD IR keyboard controller IC was layouted in the board.

Be sure the IR firmware version match with your remote ir keyboard controller

J2 External SMI switch (Reservation Purpose for engineering testOnly)

Open	Disable
Close	Enable

JBAT1 CMOS Clear Jumper

Pin 1-2	Normal Operation
Pin 2-3	Clear CMOS

Connectors description

CN13 S-Video Connector

Pin 1	GND
Pin 2	GND
Pin 3	Chrominance
Pin 4	Luminance

Note: The CN13 include a Luminance and Chrominance signals for general TV system which support better video quality than CVBS (composite) CN14.

The CN14 is RCA Jack Connector.

POWER1 Power Supply Connector

Pin 1	VCC
Pin 2	VCC
Pin 3	+12 V
Pin 4	-12 V
Pin 5	GND
Pin 6	GND
Pin 7	5VSB
Pin 8	PS-ON

Note: There is no powergood signal from the power supply. The on-board U24 LP3470 will generate the powergood signal to the reset circuit of MB6086.

JFAN1 CPU Fan Connector

Pin 1	CPUFAN1
Pin 2	+12 V
Pin 3	GND

Note: The CPUFAN1 is a input pin to motherboard which supports the CPU Fan speed detect.

There is no FAN on/off control for the CPU FAN

CN9 Dual Scart Video/Audio Input/Output Connector(Note: The RCA and SCART is mutually exclusive)

Program the U23 video/audio switch to RGB signal to SCART connector

JP2 CRT/TV Select

Pin 1-2	CRT
Pin 2-3	TV

JP3 TV Mode select

Pin 1-2	NTSC
Pin 2-3	PAL

CN12 VIP input

CN12 is a 26 pin connector provides the Video input to the VIA 8601

Pin 1	GND	Pin 2	D0
Pin 3	GND	Pin 4	D1
Pin 5	GND	Pin 6	D2
Pin 7	NC	Pin 8	D3
Pin 9	NC	Pin 10	D4
Pin 11	Pixel Vertical Clock	Pin 12	D5
Pin 13	NC	Pin 14	D6
Pin 15	GND	Pin 16	D7
Pin 17	GND	Pin 18	Pixel Clock
Pin 19	GND	Pin 20	Pixel Horizontal Clock
Pin 21	GND	Pin 22	NC
Pin 23	NC	Pin 24	NC
Pin 25	NC	Pin 26	GND

CN4 USB Connector (Real Side)

Pin 1	VCC	Pin 1	VCC
Pin 2	USB-	Pin 2	USB-
Pin 3	USB+	Pin 3	USB+
Pin 4	GND	Pin 4	GND

CN1 Front Panel Connector

Pin 1	IRDAT (KBIRRX)	Pin 2	PWRBT
Pin 3	IGGND	Pin 4	GND
Pin 5	IRVCC	Pin 6	Reset
Pin 7	LINKLED Pull-high to 330 ohm	Pin 8	LINK (GPIO pin)
Pin 9	HDDLED Pull-high to 330 ohm	Pin 10	HDDLED: connected to IDE1 & IDE2 Pin 39
Pin 11	PWRLED Pull-high to 330 ohm	Pin 12	GND

There are three LEDs on the STB6086/iDVD6086's Front Panel. Their colors are green, yellow and red. They are connected to Pin12, Pin10 and Pin 8 separately. Pin12 is dedicate for Power LED and Pin10 is for IDE LED. Only Pin8 can be used as general purpose.

CN2 SPDIF Out Connector (Optional)

Inner	SPDIF
Outer	GND

The CN10 is designed for AC5.1 application.

J7 SPDIF Out Link Cable Connector (Optional)

Inner	SPDIF
Outer	GND

The J7 is designed for AC5.1 application. The input is from riser card(EM84XX).

J5/J6 Power connector for IDE CF Card/Microphone /DiskOnModule (DOM)

Pin 1	VCC
Pin 2	GND

J1 I2C and IR Control Interface

Pin 1	GND
Pin 2	VCC
Pin 3	I2C DATA
Pin 4	I2C Clock
Pin 5	IRRX
Pin 6	IRTX

Note: The Pin1~Pin4 can be used as I2C access bus via I2C tooling.

The Pin5~Pin6 are reserved to be IRDA signals.

CN5: COM1

Pin 1	DCD	Pin 2	RXD
Pin 3	TXD	Pin 4	DTR
Pin 5	GND	Pin 6	DSR
Pin 7	RTS	Pin 8	CTS
Pin 9	RI	Pin 10	VCC

The regular COM port is D-type 9 pin connector which doesn't has the Pin10.

The Pin10 was connector to VCC via a inductor L53.

The TTL-Level COM port is available with the following Engineer change.

	RS232 Level (+12V/-12V)	TTL-Level (5V)
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U16	HT6571/GD75232/RS-232 Buffer	NC
RN85	NC	0 ohm resistor network
RN86	Nc	0 ohm resistor network

CN3: COM2

Pin 1	DCD	Pin 2	RXD
Pin 3	TXD	Pin 4	DTR
Pin 5	GND	Pin 6	DSR
Pin 7	RTS	Pin 8	CTS
Pin 9	RI	Pin 10	VCC

The regular COM port is D-type 9 pin connector which doesn't has the Pin10.

The Pin10 was connector to VCC via a inductor L44.

The TTL-Level COM port is available with the following Engineer change.

	RS232 Level (+12V/-12V)	TTL-Level (5V)
U18	HT6571/GD75232/RS-232 Buffer	NC
RN81	NC	0 ohm resistor network
RN83	Nc	0 ohm resistor network

CN6: PS/2 Keyboard and Mouse Connector

Pin 1	Keyboard Data
Pin 2	Mouse Data
Pin 3	GND
Pin 4	VCC
Pin 5	Keyboard Clock
Pin 6	Mouse Clock

Note: The Keyboard and Mouse are implemented into a 6pin mini-dip connector.

The PS2 keyboard can be connected directly to CN6 to work properly. However PS2 mouse can't be connected to CN6 to work. An external Y-cable is needed for PS2 mouse connection.

With Y-cable connection, the user can use the PS2 keyboard and mouse at the same time.

JP_R6: Modem-Wakup Interface

Pin 1	5VSB
Pin 2	GND
Pin 3	RI#

CN4 USB Connector (Front Side, Internal Connector)

Pin 1	VCC	Pin 2	VCC
Pin 3	USB-	Pin 4	USB-

Pin 5	USB+	Pin 6	USB+
Pin 7	GND (signal)	Pin 8	GND (signal)
Pin 9	GND (cable shield)	Pin 10	GND (cable shield)

An USB internal cable is needed for USB devices connection.

JP1: Microphone Input connector

Pin 1	Mic_In1
Pin 2	Mic_In2
Pin 3	GND

FDD1: Floppy Interface

IDE1: Primary IDE interface

Must use power Cable for it.

IDE2: Secondary IDE interface

Must use power Cable for it.

CD_IN1: CD-ROM Audio Input Connector

Pin 1	GND_CD
Pin 2	CD_R
Pin 3	GND_CD
Pin 4	CD_L

Note: The GND_CD is not connected to real ground directly.

AUXIN: Auxiliary Audio Input Connector

Pin 1	GND
Pin 2	AUX_R
Pin 3	GND
Pin 4	AUX_L
Pin 5	GND
Pin 6	CVBS (From EM84XX)

CN7: LAN 1 Connector (With Transformer 1:1)

There are two LAN ports on this mainboard, U19 is the 1'st LAN 10-base-T type connector.

CN8: LAN 2 Connector (With Transformer 1:1)

There are two LAN ports on this mainboard, U21 is the 2'nd LAN 10-base-T type connector. .