Intermec

Service
Instruction Manual

CV60
Data Collection PC

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Contents

1 General Information

This chapter of the manual explains the purpose of the CV60, contains the mechanical and electrical specifications of the computer, and has a glossary of terms and abbreviations used throughout the manual.

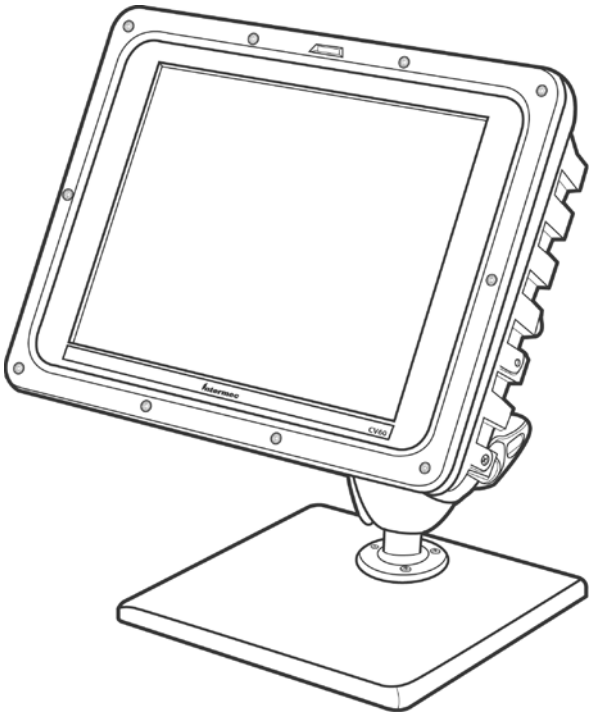
Refer to the following pages for the data collection computer specifications.

INTRODUCTION

This service instruction book (SIB) contains the theory of operation, maintenance procedures, and diagrams and parts lists for the Intermec® CV60 computer (PN 245-232-001). The CV60 Data Collection PC is shown below. Refer to the following pages for the mobile computer specifications.

PURPOSE OF EQUIPMENT

The CV60 Data Collection PC is a rugged PC computing device consisting of a 12.1-inch color, SVGA LCD display with touch screen for data input and menu navigation. Communication options include connectivity through two RS-232 serial ports, USB (host), and Ethernet Wireless network connectivity is enabled through multiple LAN radio options.



CV60 Data Collection PC

Additional information about the computer, its capabilities, and how the computer is set-up and used can be found in the *CV60 Data Collection PC User's Guide* (PN 961-054-033).

Commonly Used Abbreviations

Abbreviation	Meaning	Comments
A	Ampere	Unit of measurement of electrical current.
ac	Alternating Current	Current that periodically changes magnitude and direction of flow.
ASCII	Abbreviation for American Standard Code for Information Interchange.	A text file containing only characters from the ASCII character set is called an ASCII file.
ATA	Abbreviation for Advanced Technology Attachment.	The interface standard for PC Card hard-disk cards.
aux	Auxiliary (backup)	
bus	The information pathway between components of a computer.	Address and data bus communicate between the microprocessor and RAM.
BIOS	Acronym for Basic Input Output System	BIOS controls the communications between the microprocessor and peripheral devices, such as keyboard and video adapter.
CCFT	Cold Cathode Fluorescent Tube	White LCD backlight
cm	Centimeters	
CMOS		Complementary Metal-Oxide Semiconductor
CPU	Central Processing Unit	Circuit which contains a microprocessor. Can also designate the microprocessor itself.
dc	Direct Current	Current which always flows in the same direction.
DRAM	Abbreviation for Dynamic Random-Access Memory.	A computer's RAM is usually made up entirely of DRAM chips. Because DRAM chips cannot store an electrical charge indefinitely, the computer continually refreshes each DRAM chip.
DIN	Abbreviation for Deutsche Industrie Normenausschuss.	Standard industry connector for scanners and keyboards.
DIMM	Dual-In-Line-Memory-Module	A small circuit board containing DRAM chips that connects to the system board.
DMA	Direct Memory Access	A DMA channel allows data transfer between RAM and a device, without microprocessor intervention.

Abbreviation	Meaning	Comments
EPROM	Erasable Programmable Read Only Memory	Medium for permanent storage of operating program.
EPP	Enhanced Parallel Port	A parallel port design that provides improved bidirectional data transmission. Devices designed for the EPP standard include network or SCSI adapters.
ESD	Electro Static Discharge	Voltage induced into equipment by static charges present in most work/lab environments. Units or subassemblies may fail when subjected to electro static charges.
FAT	File Allocation Table	The file system structure used by MS-DOS to organize and keep track of file storage.
Flash Memory		
FM	Frequency Modulation	Method of integrating data onto an RF carrier signal.
Hz	Hertz	Unit of frequency measurement. 1 Hz =1 cycle per second.
I/O	Input/Output	Data going to (input) or coming from (output) a device or component.
in	Inches	

Abbreviation	Meaning	Comments
IRQ	Interrupt Request	A signal that data is about to be sent to or received by a peripheral travels by an IRQ line to the microprocessor. Each peripheral connection must be assigned an IRQ number.
k	kilo	
KB	kilobytes	
LAN	Local Area Network	
LCD	Liquid Crystal Display	
m	milli	A thousandth (e.g.mV=1 thousand volts)
min	minimum	
mini-pci	miniature PCI bus	Mini PCI allows high-speed transfer peripheral connections in small form factor devices such as laptop computers.
max	maximum	
qty	quantity	The number of items required.
RAM	Random Access Memory	Medium of temporary storage of instructions or data.
ROM	Read Only Memory	Medium for permanent storage of instructions or data.
SRAM	Static Random Access Memory	SRAM memory
UUT	Unit Under Test	Designator used to indicate the hand-held computer in the testing/troubleshooting procedures.
V	volt	Unit of measurement for electrical pressure.
VGA	640 x 480 pixel format	
WVA	Wide Viewing Angle	Film compensated LCD for improved viewing angle (horiz & vert)
XGA	1026 x 768 pixel format	

Specifications

CV60 Data Collection PC

Physical/Environmental

- Weight: 5.0 kg (11.02 lbs) for base unit

Size

- Height: 26 cm (9.44 in)
- Width: 34 cm (13.38 in)
- Depth: 9.5 cm (3.74 in)

Processor/Memory/Storage

- Intel P-III 800Mhz embedded processor
- 128MB base memory with upgrade to 384MB SDRAM
- 512KB FLASH.
- Removable IDE rotating media or solid state drive or PC Card solid state memory
- Resistive display/touch Screen
- 12.1 Inch, Color TFT 800 X 600 SVGA

System Software

- Windows XP, Embedded
- Windows XP Professional
- Windows CE.NET

Power System

- 6-36 VDC DC/DC converter for 12 V vehicle systems
- 15-96 VDC DC/DC converter for 24-72 V vehicle systems
- AC/DC adapter that supports international power requirements
- Optional Uninterruptible Power Supply

Wired Connectivity

- Two RS-232 ports, supporting external tethered scanners
- 2 USB host ports
- 10BaseT/100BaseT Ethernet

Wireless Connectivity

- 802.11g
- Embedded wireless scanning option
- Wireless Printing radio module

Peripherals/Accessories

- External alpha/numeric keyboard, PS/2
- Tethered barcode scanners
- Mounting brackets to meet a wide range of vehicles.

Intermec Scanners:

Sabre (1551, 1552, 1553)

Vista (1400, 1800)

External Keyboards

PS/2 interface with locking connector.

External mouse

Off-the-shelf USB mouse.

System Quality Factors

Reliability

- Mean Time Between Failures:
- Electrical board Level: Three Years or 20,000 power on hours (not including battery).
- The unit has 3-4 year MTBF.

Customer Servicability

The customer will be able to do the following maintenance using standard hand tools:

- Hard drive removal and install
- Memory upgrade

To be replaced in a controlled environment and by trained technicians:

- Radio Options

Environmental Conditions

Specification	Description
Mean Time Between Failures (Electrical)	Three years or 20,000 power on hours
Temperature, Storage	-305 C to 705 C
Temperature, Recommended Operating (1)	-205 C to 505 C – Solid State HDD 05 C to 505 C – Rotating HDD
Temperature, Extreme Operating With heater option (1)	-305 C to 505 C – Solid State HDD only
Thermal Cycle (1)	-205 C to 505 C ramp 55 C/min
Thermal Shock Non-operating	-305 C to 705 CRamp 305 C/min
Humidity, Storage & Operating	5 % to 95 % RH Non-condensing
Moisture Resistance	IPX5 compliant – Resistive Touch panel option
Sand/ dust resistance	IP66 compliant
Headset jack	1000 insert/extract cycles
Altitude	-100 to 5000 meters ASL
Quasi-Random Vibration (2)	Quasi-Random 3 axis 20 G's RMS. For 4 hours Will determine test levels based on intended use
Vehicle Vibration (2)	6 hours total, 2 hours in each axis Accelerated wear – an additional 50 hrs in worst case axis Need customer use environment to determine vibration profile
Shock (2)	50g, 8ms, ½ Sin, 5000 impulses each direction, each axis
ESD	17KV air discharge 8KV current injection

2 Theory of Operation

The CV60 Data Collection PC is a rugged PC computing device consisting of a 12.1-inch color, SVGA LCD display with touch screen for data input and menu navigation. Communication options include connectivity through two RS-232 serial ports, USB (host), and Ethernet Wireless network connectivity is enabled through multiple LAN radio options.

Peripherals supported include PS/2 keyboard, USB mouse, external headset, speaker, wired RS-232 scanners, wireless scanners via priority wireless base station, Bluetooth™ wireless printers and USB data recovery drives.

Design Reference

The circuit boards referenced and described by this document are:

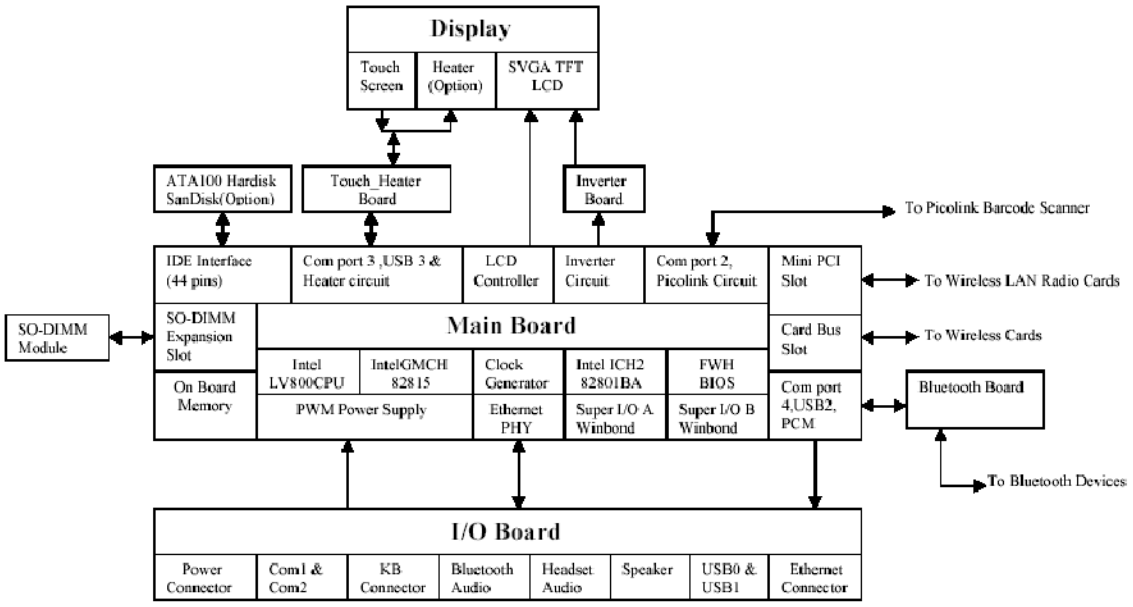
Board References

Board	Number
CV60 Main Board	G2A-PC004
CV60 IO Board	G2A-PC002
CV60 Inverter Board	G2A-PC006
CV60 Touch_Heater Board	G2A-PC003
CV60 Blue-tooth Board	G2A-PC008

Product Architecture

- The CV60 Data Collection PC is comprised of:
- Main board
- I/O board
- Inverter board
- Touch_heater board
- Bluetooth board
- Power system
- IDE mass storage
- LCD panel
- Touch Panel
- Audio System
- Communication Interface
- Heater (optional)

The CV60 top-level block diagram is shown below:



CV60 Top Level Block DiagramMain board

The Main board is the "motherboard" of the CV60. It is designed for Intel® Pentium® III low power series CPUs. Key features are listed below:

- CPU: Intel low voltage Pentium III and ultra low voltage Celeron® processor with 512k L2 Cache, 800 MHz and up, Micro-BGA package without fan.
- Chip set: Intel 815E.
- 100 MHz or 133 MHz Front Side Bus and System Memory Bus.
- 128 MB or 256 MB on-board memory, expandable through a single SO-DIMM memory slot
- Supports 128 MB or 256 MB memory module.
- 512KB FLASH
- Supports removable IDE HDD (ATA100).
- Supports removable SanDisk PC Cards.
- Backup battery retains RTC data for at least 6 years.
- Supports 4 USB 1.1 ports
- Supports 4 serial ports
- Supports 10/100 BaseT-Ethernet
- Supports audio (AC97)
- 3D graphics controller

- One Type II CardBus slot
- One Mini-PCI socket (for 802.11 radio ONLY)

Connectors:

(J7) Main Board to Bluetooth Connector

Signal Name	Pin Number	Type	Active	Description
VCC	1,2			3.3V power supplySupply voltage: 3.3V 3.3V+10%.Current consumption: 85mA max of TX and 80mA max of RX
PCM_MD OUT	3	I	Hi: 1Lo: 0	PCM data output of bluetooth module
PCM_CLK	4	I	Hi: 1Lo: 0	PCM clock output of bluetooth module
PCM_MDIN	5	O	Hi: 1Lo: 0	PCM data input of bluetooth module
PCM_SYNC	6	I	High	PCM synchronous signal output of bluetooth module
PCM_PWRD WN#	7	I	Low	PCM power down signal output of bluetooth module
GND	8,14,19,20			Ground
NC	9,15,17			No Connect
CTS4	10	O	Low	Clear To Send of serial port 4
RXD4	11	O	Hi: 0Lo: 1	Receive Data of serial port 4
RTS4	12	O	Low	Request To Send of serial port 4
TXD4	13	O	Hi: 0Lo: 1	Transmit Data of serial port 4

(J7) Main Board to Bluetooth Connector

Signal Name	Pin Number	Type	Active	Description
USBP4-	16	I/O	1:<VOL0:>VOH	Negative data line of USB port 4
USBP4+	18	I/O	0:<VOL1:>VOH	Positive data line of USB port 4

(J14) LCD Display Connector

Signal Name	Pin Number	Type	Active	Description
GND	1,3,6,7,8,12,16,17,18,22,26,27,28,32,36			Ground
CLK	2	O		Output closk to LCD panel
HSYNC	4	O		Horizontal Synchronizing Signal
VSYNC	5	O		Vertical Synchronizing Signal
R0	9	O		Red Data (LSB)
R1	10	O		Red Data
R2	11	O		Red Data
R3	13	O		Red Data
R4	14	O		Red Data
R5	15	O		Red Data (MSB)

(J14) LCD Display Connector

Signal Name	Pin Number	Type	Active	Description
G0	19	O		Green Data
G1	20	O		Green Data
G2	21	O		Green Data
G3	23	O		Green Data
G4	24	O		Green Data
G5	25	O		Green Data (MSB)
B0	29	O		Blue Data
B1	30	O		Blue Data
B2	31	O		Blue Data
B3	33	O		Blue Data
B4	34	O		Blue Data
B5	35	O		Blue Data (MSB)
DE	37	O	High	Data Enable
NC	38	O		For Test Purpose
VCC	39,40			3/3V Power Supply
NC	41			Should be open during operation

(J22) Main board to Picolink Radio Board Connector

(J22)

Signal Name	Pin Number	Type	Active	Description
V3P3_OUT	1			Regulated 3.3V power out Load current: 10mA max. No current limit protection
9745_RST#	2	O	Low	Reset signal
DSR2	3	I	High	Data Set Ready serial port 2
RI2	4	I	High	Ring Indicator serial port 2
CTS2	5	I	High	Clear to Send serial port 2
RTS2	6	O	High	Request to Send serial port 2
V5P0	7,8			5.0V power supply Supply voltage: 5.0V±10%.
GND	9,10			Ground
RXD2	11	O	Hi: 0 Lo: 1	Receive Data serial port 2
TXD2	12	O	Hi: 0 Lo: 1	Transmit Data serial port 2

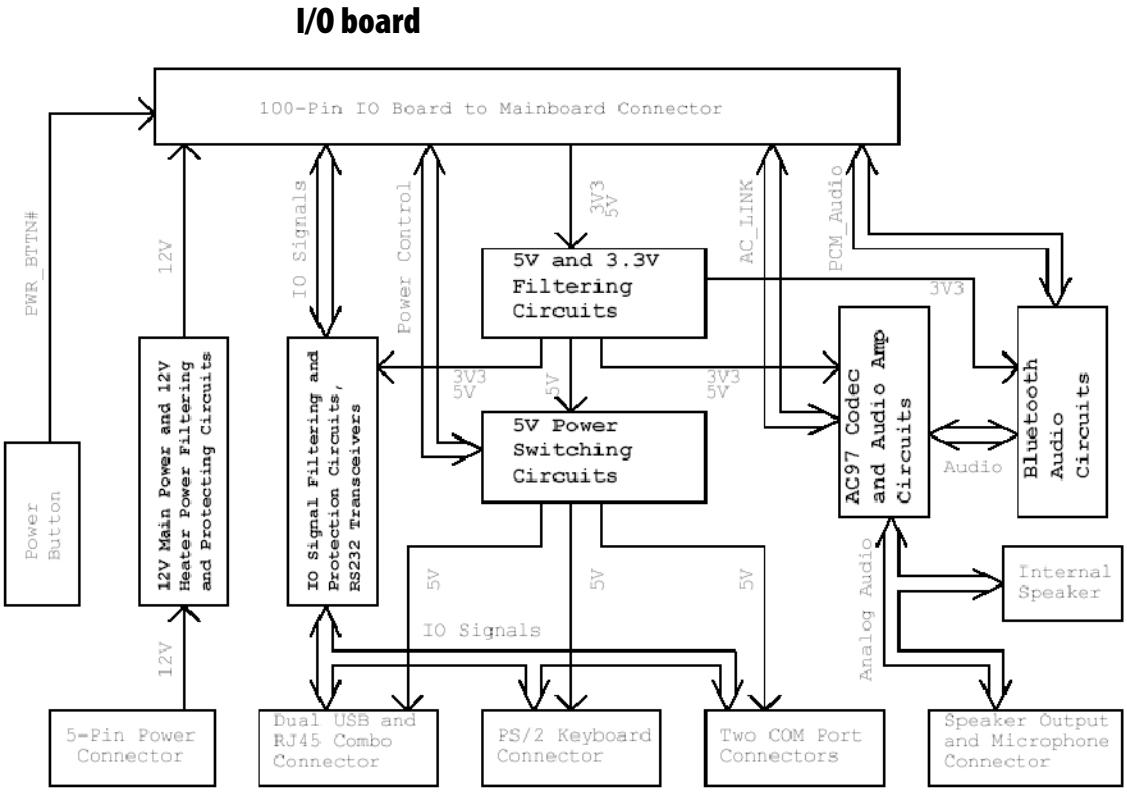


Figure 2 I/O Board Block Diagram

The CV60 I/O board connects to the main board through a 100-pin cable.

The power supply converters connect directly to the I/O board. There are two separate power sources available at the input. Both are 12V. One is for system main power and the other is for the heater (optional). Both 12V power sources are protected and filtered by poly-switches, common mode chokes, capacitors and power inductors in the I/O board, and the voltage is then output to the main board.

Legacy PS/2 keyboard and COM port interfaces are located on the I/O board. The PS/2 port is silicon- switch-protected and can supply 5V power up to 750mA of current. There are two full-featured COM ports; both can supply 5V power up to 750mA through pin 9 (shared with RI).

There are two USB1.1 ports (host side) at the I/O board. The total allowable current draw by the two ports is 1.5A.

There is also an Ethernet LAN port at the I/O board. Once a valid link is detected, either 10Base-T or 100Base-T, the green LED light on the connector is lit. The yellow LED flashes if there is any activity on the Ethernet LAN port.

The audio system is AC97 2.2 compatible. A speaker with 1watt output power is installed on the I/O board. An external headset jack is provided for use with a headphone and microphone.

Inverter board

The Inverter board is designed to power 2 CCFLs (cold cathode fluorescent lamp) at the back of the LCD. Key features are listed below:

Input voltage: 12VDC

- Lamp power consumption: less than 8.6W
- Backlight control signal (BLCTL) frequency: 2.93KHz
- Lamp current range: 3.2mA~8.1mA
- Inverter Board Control Signals
- Backlight ON/OFF signal: BL_ON (1-turn on backlight, 0-turn off backlight)
- Backlight intensity control signal: BLCTL (2.93KHz, 1~4VDC)
- Inverter Error Status Control Signal
- Inverter fault signal LAMP_FAULT#(1-Normal, 0-fault)

CCFL Connectors:

(J1)

Pin	Description
Pin 1	High voltage pin, HV (connects to LCD panel backlight connector's pink wire)
Pin 2	Low voltage pin, LV (connects to LCD panel backlight connector's white wire)

(J3)

Pin	Description
Pin 1	High voltage pin, HV (connects to LCD panel backlight connector's pink wire)
Pin 2	Low voltage pin, LV (connects to LCD panel backlight connector's white wire)

(J2) Inverter to Main Board Power Supply

Pin	Description
Pin 1	12V power supply (less than 1A)
Pin 2	12V power supply
Pin 3	12V power supply
Pin 4	Ground
Pin 5	Ground
Pin 6	Ground
Pin 7	Ground
Pin 8	Backlight intensity control signal: BLCTL (2.93KHz, 1~4VDC)
Pin 9	Backlight ON/OFF signal: BL_ON (1-turn on backlight, 0-turn off backlight)
Pin 10	Inverter fault signal LAMP_FAULT#(1-Normal, 0-Fault)

Touch_heater board

The touch heater board is comprised of a:

- Touch screen interface
- Heater interface
- Blue light system LED interface.

The touch screen interface is used to receive position data from the resistive touch screen. It receives an 8-wire resistive touch screen signal and transfers position data to the main board via COM3. The main board's USB 3 port is reserved for touch screen purpose.

The heater interface consists of a step-up regulator and a heater power ON/OFF control circuit. The step-up regulator converts 12V heater power supply voltage to 23V for heater use. In the heater power ON/OFF control circuit, HEATER_DET# (input from heater) signal is an indicator of heater connection (1- heater not connected, 0- heater connected); HEATRE_ON (output from main board) signal is used to force the heater power supply turn on (1-ON, 0-OFF). HEATER_EN# (output from main board) signal is used to make the heater feedback control functional. All the 3 signals are connected to main board.

When HEATER_ON is logic 0, HEATER_EN# is also logic 0, the circuit enters feedback control mode. It receives the thermal signal from the heater's thermistor. When the thermistor's temperature is 10 C, it turns on the heater power supply; when it reaches 18 C, it turns off.

The heater function then, ensures that the CV60 display is readable in –30 C environments, or varying temperature environments (-30 to 25 C), such as a transition from a freezer or walk-in cooler to a warehouse.

Blue light system

LED signal comes from main board and is directly sent to system LED.

Connectors

J1-Mainboard to Touch_heater board connector

J2-Touch screen to Touch_heater board connector

J4-Heater to Touch_heater board connector

J5-Blue light LED to Touch_heater board connector

Mainboard to Touch_heater board connector, J1

(J1) Main Board to Touch_heater Board

Pin Number	Description
Pin1	12V Power Supply
Pin2	12V Power Supply
Pin3	Ground
Pin4	Ground

(J1) Main Board to Touch_heater Board

Pin Number	Description
Pin5	Heater 12V Power Supply
Pin6	Heater 12V Power Supply
Pin7	Heater 12V Power Supply
Pin8	Heater 12V Power Supply
Pin9	Heater 12V Power Supply
Pin10	Heater Ground
Pin11	Heater Ground
Pin12	Heater Ground
Pin13	Heater Ground
Pin14	Heater Ground
Pin15	5V Power Supply
Pin16	5V Power Supply
Pin17	Ground
Pin18	Ground
Pin19	HEATER_EN#(output from main board, 1-disable, 0-enable)
Pin20	HEATER_ON(output from main board, 1-on, 0-off)
Pin21	HEATER_DET(input from heater, 1-heater connected, 0-heater disconnected
Pin22	SYS_LED#(Blue light output signal, 1-off blue light, 0-on blue light)
Pin23	RXD3 (receive data line of serial port 3 for touch panel)
Pin24	RTS3 (request to send signal of serial port 3 of touch panel)
Pin25	PCIRST#(touch panel controller reset signal, 1-normal, 0-reset)
Pin26	CTS3 (clear to send signal of serial port for touch panel)
Pin27	Ground
Pin28	Ground
Pin29	For future use
Pin30	For future use

(J2) Touch screen to Touch_heater Board Connector

Pin Number	Description
Pin1	Sense line for Y bottom, BI TTIM SENSE
Pin2	Sensor's excitation driver connected to Y bottom, BI TTIM EXCITE
Pin3	Sensor's excitation driver connected to Y top, TIP EXITE
Pin4	Sense line for Y top, TIP SENSE
Pin5	Sense line for X right, RIGHT SENSE
Pin6	Sense line for X left, LEFT SENSE
Pin7	Sensor's excitation driver connected to X left, LEFT EXCITE

Pin8	Sensor's excitation driver connected to X right, RIGHT EXCITE

(J4) Heater to Touch_heater Board Connector

Pin Number	Description
Pin1	Heater Heater input voltage (25.5V+/-5%)
Pin2	Heater input voltage (25.5V+/-5%)
Pin3	Heater input voltage (25.5V+/-5%)
Pin4	Heater input voltage (25.5V+/-5%)
Pin5	Heater ground
Pin6	HEATER_DET#(1- heater not install, 0 – heater install)
Pin7	Heater ground
Pin8	Heater ground
Pin9	Heater ground
Pin10	Heater ground
Pin11	Heater ground
Pin12	Thermistor input signal

(J5) Blue light LED to Touch_heater board connector

Pin Number	Description
Pin1	Blue light output signal (+)
Pin2	Blue light output signal (-)

Bluetooth board

The board has only one function, that is to connect blue tooth module to main board.

Connectors:

- Bluetooth Connection board to Main board connector J1 (refer to section 1.3.1)
- Bluetooth Connection board to Bluetooth module connector J2

Signal Name	Pin Number	Type	Active	Description
GND	1,11			Ground
PCM_OUT	2	I	Hi:1 Lo:0	PCM data output of bluetooth module
PCM_IN	3	O	Hi:1 Lo:0	Data Set Ready serial port 2
PCM_PWR_DWN	4	I	Low	PCM power down signal output of bluetooth module
	5	I	High	Pullup to VCC
RXD	6	O	Hi:1 Lo:0	Receive data of serial interface

Signal Name	Pin Number	Type	Active	Description
TXD	7	O	Hi:1 Lo:0	Transmit Data of serial interface
RESET	8	O	High	Module reset
NC	9	O		No connect
VCC	10, 20			3.3V power supply Supply voltage: 3.3V+/-10% Current consumption: 85mA max of TX and 80mA max of RX
RTS	12	O	Low	Request to send of serial interface
	13		Low	Pull down to GND
CTS4	14	I	Low	Clear to Send of serial interface
PCM_SYNC	15	I	High	PCM sysnchronous signal output of bluetooth module
USBP4+	16	I/O	0: VOL 1:> VOH	Positive data line of USB port
USBP4-	17	I/O	0: VOL 1:> VOH	Negative data line of USB port
PCM_CLK	18	I	Hi:1 Lo:0	PCM clock output of bluetooth module

Power system

CV60 computer powered by +12 VDC ±10% input voltage. Current consumption of CV60 computer in heavy load is 3.30A, and surge current in switching on the computer status will be up to 14.79A. Additional power input required to supply heater power by+12 VDC ±25% input voltage also.

IDE mass storage

CV60 can support Ultra DMA 33, Ultra DMA 66 and Ultra DMA 100 IDE storage devices. Depends on cable type and device type, rotating media hard disc drive (HDD) and solid state flash memory disk (Sandisk) can work at their optimum speed.

LCD panel

The CV60 Computer allows the following panel options:

- 12.1", 800 X 600 SVGA Active Matrix Color
- Transmissive or transflective for future only
- Display brightness minimum 300 Nits adjustable.
- Design provisions to allow heater option.

Touch panel

The touch panel used to navigate Windows O/S using finger with and without gloves.

- Unaffected by moisture or water droplets on display.
- Operate over specified temperature range.
- Environmental specifications require IP66.
- Touch surface remain unaffected by water, high temperature and high humidity. No uneven surface is allowed ("pillowing").

Audio system

Various components comprise the audio system:

- Built-in speaker
- External headset jack with speaker and microphone. 2.5mm 3 conductor plug.
- Must comply with AC97 Microsoft audio specification v2.2.

Speaker

One speaker capable of variable volume levels is available inside the unit, and can be used for programmatic sound. This can be muted if desired. Also upon connection of headset devices the internal speaker must automatically disconnect.

Transducer Volume:	85 db min at 10 cm from front surface of terminal
Frequency Range:	300 Hz-8 KHz

External Headset Jack

The external headset jack allows the user to connect a mono headset to the unit for use in noisy environments. Pin compatible with standard 2.5 mm three-conductor plug. Plug insertion disconnects internal speaker.

Line Out

This is an external line-out jack, which is pin compatible with standard 3.5mm, three-conductor stereo plug.

Communication Interface

There are two full-featured COM ports. Both can supply 5V power to attached devices through pin 9. If Picolink is on, COM2 cannot be used.

There are also two USB1.1 ports (host side) on the IO board. The total current draw by the two ports is limited to 1.5A.

An Intel 82559-based Wired Ethernet LAN chip set is integrated in the system.

Wireless networks

See 2.8.1 for details.

Heater

A heater option is available for applications requiring the computer to prevent frost build-up on screen when going in and out of a freezer (-30 C).

The heater turns on at 10C, turned off at 17C. On/off margin is 7C.

The heater should not be forced on at room temperature for more than 3 minutes.

Design Description

Main CPU and Platform

The processor is a market leading processor - Intel LV P-III with external clock running equal to 800MHz. The design path is for LV P-III 933Mhz for upgrades in the future.

The system and processor can support the following Operating Systems:

- CE.NET (4.0) developed by Intermec
- Windows XP
- Windows XP Embedded

Memory

Non-volatile

512K FLASH memory is provided for system and video BIOS. Contents field upgradeable via Floppy Drive through USB port.

Volatile

128MB SDRAM base load with factory upgrade capability during final configuration. This base loading is offered as initial standard configuration.

Upgrade memory options (base + add-in memory):

- 256MB (128MB + 128MB)
- 384MB (128MB + 256MB)
- 256MB minimum base load of SDRAM with capability for factory to upgrade during final configuration. This is an alternate option for future release.

Upgrade memory options (base + add-in memory):

- 384MB (256MB + 128MB)
- 512MB (256MB + 256MB)

- Memory upgrade is easily installed during final configuration in manufacturing.

Real Time Clock

RTC (Real Time Clock) function resides in ICH2 CMOS memory and it is battery backed up together with BIOS settings. It will maintain proper time even if main power source is removed

Battery Shelf Life

The backup battery is a Maxell 2032 with 210mAH capacity, 3V power.

When the CV60 is running or in suspend (by pressing the power button), the RTC circuit is powered by 3V3_SB and the back-up battery current is cut off by diode D3 (3V3_SB is higher than VBAT). When the CV60 is shut off (12V power from power connector gone), the RTC circuit is powered by the back-up battery through diode D3 (3V3_SB is 0V, lower than VBAT). The current draw from the battery is 4 uA maximum. The working voltage for the RTC circuit can be as low as 2V.

The shelf life for the CV60 battery RTC circuit is about 6 years.

RTC Accuracy

The crystal for the RTC is 32.768 kHz. Load capacitance is 12pF and accuracy is 20ppm maximum with 3ppm maximum aging effect.

The RTC accuracy is within 10 minutes error per year.

IDE Mass Storage Bay

The ICH2 has two independent IDE channels. Each can support Ultra DMA 33, Ultra DMA 66 and Ultra DMA 100 depending on cable type and device type. CV60 uses only primary channel. (Note: Pin 20 is a key-pin, there is no actual pin at HDD side)

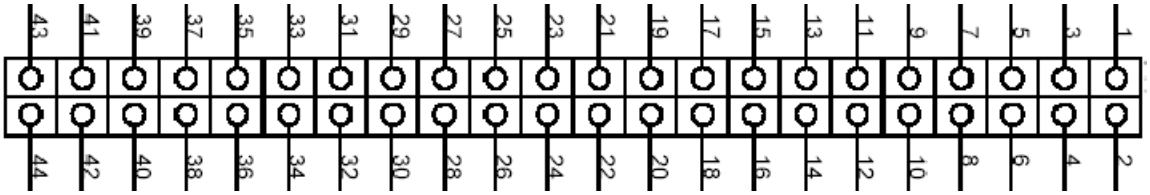


Figure 3 IDE Connector on main board (J15, Top view)

IDE Connector SIgnal Assignment

Signal Name	Pin Number	Type	Active	Description
RESET#	1	O	Low	Reset Signal to IDE device
GND	2,19,22,24,26, 30,49,43			Ground
PD07	3	I/O	High	Primary IDE device data
PD08	5	I/O	High	Primary IDE device data

IDE Connector SIgnal Assignment

Signal Name	Pin Number	Type	Active	Description
PD09	6	I/O	High	Primary IDE device data
PD05	7	I/O	High	Primary IDE device data
PD10	8	I/O	High	Primary IDE device data
PD04	9	I/O	High	Primary IDE device data
PD11	10	I/O	High	Primary IDE device data
PD03	11	I/O	High	Primary IDE device data
PD12	12	I/O	High	Primary IDE device data
PD02	13	I/O	High	Primary IDE device data
PD13	14	I/O	High	Primary IDE device data
PD01	15	I/O	High	Primary IDE device data
PD14	16	I/O	High	Primary IDE device data
PD00	17	I/O	High	Primary IDE device data
PD15	18	I/O	High	Primary IDE device data
NC	20,32,44			No Connection Pin 20 is a key pin.
PDREQ	21	I	High	Primary IDE Devics DMA request
PDIOW#	23	O	Low	Primary disk I/O write
PDIOR#	25	O	Low	Primary disk I/O read
PIORDY	27	I	High	Primary I/O channel ready
PRPD1	28	I	High	IDE device number selec-tion
PDDACK#	29	O	Low	Primary IDE device DMA Achknowledge

IDE Connector SIgnal Assignment

Signal Name	Pin Number	Type	Active	Description
IRQ14	31	I	High	Primary IDE Device Interrupt
PDA1	33	O	High	Ide device address
P66DETECT	34	I	High	Ultra DMA 66 and above allowed (not used)
PDA0	35	O	High	IDE device address
PDA2	36	O	High	IDE device address
PDCS#1	37	O	Low	IDE device chip select for 100 range
PDCS#3	38	O	Low	IDE device chip select for 300 range
IDEACT#0	39	O	High	Transmit data of serial interface
5V	41,42			5V power +/- 5%, 1A

User Interface

LCD Panels

The CV60 Computer LCD panel has the following features:

- 12.1”, 800 X 600 SVGA Active Matrix Color
- Transmissive or transflective display (future option)
- Display brightness minimum 300 Nits adjustable from 0 to full brightness.
- 6 bits color depth.
- 3.3V power supply, 1W for 3.3V power supply.
- 2 CCFL (see inverter board for details).

Currently, the CV60 uses two available LCD panels listed below.

- LG Philips (LB121S02)(future use)
- ToriSan (TM121SV-22L11A)

Note: The main board has a different BOM and parts loading for each panel. (See section 5.2.4)

Touch Panel

The CV60 uses a 3M, 12.205 inch resistive touch panel. Pin description is shown below.

Touch Panel Pin Assignments

Pin	Description
Pin 1	Sense line for Y bottom, BI TTIM SENSE
Pin 2	Sensor’s excitation driver connected to Y bottom, BI TTIM EXCITE
Pin 3	Sensor’s excitation driver connected to Y top, TIP EXITE
Pin 4	Sense line for Y top, TIP SENSE
Pin 5	Semse line for X right RIGHT SENSE
Pin 6	Sense line for X left, LEFT SENSE
Pin 7	Sensor’s excitation driver connected to X left, LEFT EXCITE
Pin 8	Sensor’s excitation driver connected to X right, RIGHT EXCITE

Display Heater Option

The CV60 uses an Elmwood heater. The specification is shown below.

Rating power: 43 Watts(Typical), 65Watts(Maximum)

Resistance: 11(Min) - 16 (Typical) - 21(Max) ohm

Thermistor: @25C: 9K(Min) - 10K(Typical) – 11K(Max) ohm

Pin description is shown below.

Pin1-4 – Heater power (+)

Pin5-11 – Heater power & thermistor (-)

Pin12 – Thermistor (+)

For the CV60 heater option, the heater input voltage is 25.5V(5%), with a corresponding power dissipation of 40.6W (typical).

Audio System

- The audio system is comprised of the following elements:
- ICH2 with AC97 controller
- AC97 CODEC
- Internal speaker
- Headset jack and line out jack (with HP amplifier)
- PC-Beep input from ICH2
- Audio path to and from the codec. The AC97 codec used is STAC9750T from Sigmatel.

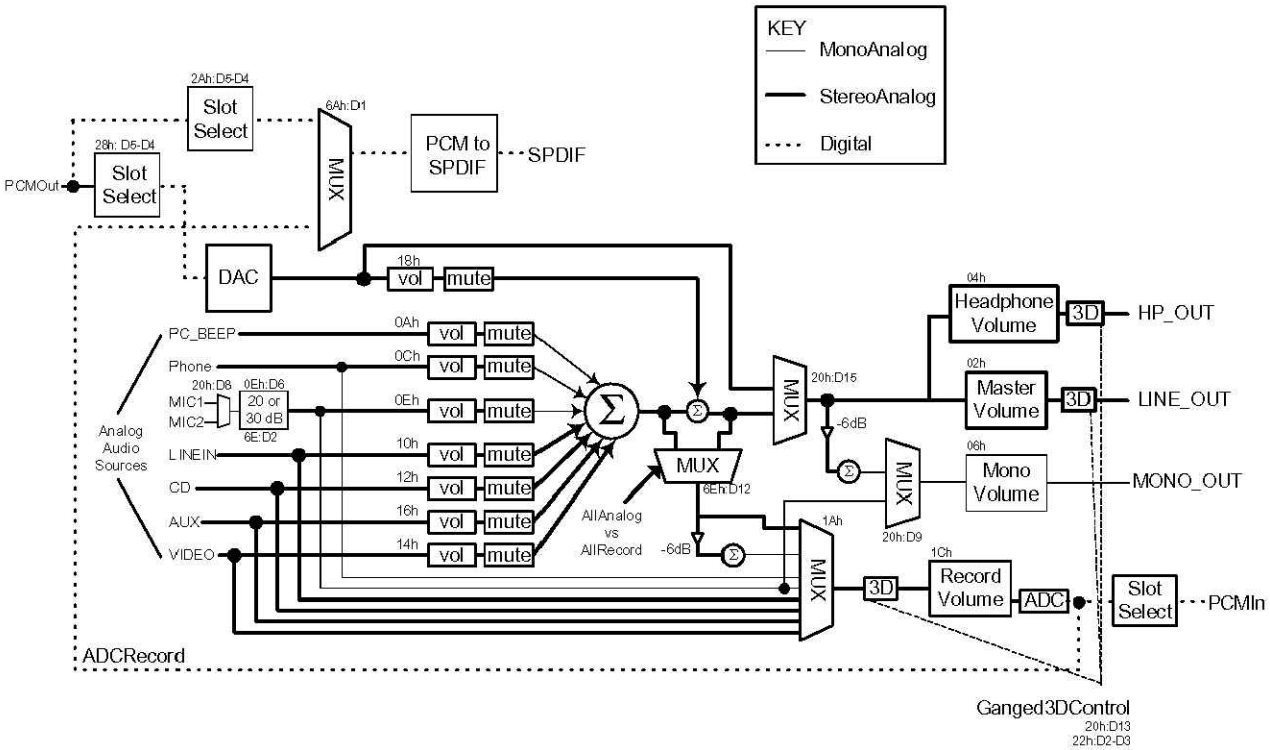


Figure 4 Audio Block Diagram

Codec internal audio paths – see datasheet for further details.

AC97 Codec Interface

ICH2 has an AC97 controller that is comprised of the following five signals:

- AC_SDOUT: serial date from AC97 controller to the codec.
- AC_BITCLK: clock from the codec to AC97 controller
- AC_SDIN: serial data from codec to AC97 controller
- AC_SYNC: synchronizing signal, places the codec in different modes
- AC_RST#: AC97 controller resets the codec

This serial interface runs at approximately 12.288Mhz. All audio digitized by the codec A2Ds are sent over this link (like an audio recording). All digital audio to be converted to audio (like a MP3 decoded file) is send over this link.

AC97 Codec

The codec is comprised of the following functions:

- Stereo A2D converters with variable rate sampling
- Stereo D2A converters with variable sample rate play
- Multiple audio paths with variable gain and mixers
- Multiple audio inputs and outputs
- Integrated headphone amplifier

The codec is used to route all audio signals to the proper destinations under software control. Software also controls gain and muting per user direction.

Internal Speaker

The codec MONO_OUT is routed to an amplifier (LM4865M from National Semiconductor) that is used to drive the internal 8ohm 1W speaker.

Headset Jack

The unit has a headset jack that allows the headset to connect to the codec. The headset jack allows the headset microphone to connect to the codec for voice recording or VOIP function. The speaker amplifier is used to drive the headphone. Jack-sensing detection is implemented to cut off the internal speaker when headset is inserted.

Line Out

The unit has a stereo line out jack, which are capable of driving external stereo headphone.

Scanning Audio or Normal Play Back

When scanning option are implemented, the user can invoke audio feedback for ease of use. The system can generate “SCAN_BEEP” signal to indicate a good or bad bar code decoding has occurred. Another process is

to allow a wave file to be played. As always, the audio can be routed to internal speaker, headset or line out jacks.

Headset Jack Sensing

When the headset is inserted into the headset jack, the sensing circuit senses the present of the headset and mutes the internal speaker.

Power Switch

A power switch is provided. Power cycling will destroy the DRAM content, but will not alter mass storage and RTC contents.

Power switch operation is similar to a laptop computer.

When the CV60 is on and the button is held down for less than 4 seconds the CV60 will request a power down.

When the unit is on and the button is held down for greater than 4 seconds, the CV60 will shut down immediately (S5).

When the unit is off and the button is held down the switch will wake up the system form S5 to S1.

External Power System

Input power to the CV60 is separated into logic power and heater power. Input voltage is +12 VDC +/- 10% for logic power and +12 VDC +/- 25% for the heater. Both power inputs are accommodated through one connector.

- Applications without heater requirements can use one DC/DC power supplies and UPS, or one AC/DC power supply.
- Applications with heater require using two DC/DC or two AC/DC converters to provide power to each +12 VDC input. This solution uses a Y type cable to connect the two power supplies to CV60.

The pin assignment is shown below:

Power Connector

Pin	Description
1	Chassis GND
2	DC Input Positive for logic
3	DC Input Negative for logic
4	DC Input Negative for heater
5	DC Input Positive for heater

Power converters

Listed below are power converters available for use with the CV60:

- 10-36 VDC DC/DC input converter for 12 V and 24 V vehicle systems (PN 851-040-001)
- 15-96 VDC DC/DC input converter for 24-72 V vehicle systems (PN 851-041-00X)

- AC/DC adapter that support international power requirements, 90-260VAC input voltage, 47-63Hz input frequency, 1.5A at 115VAC or 0.8A at 230VAC and +12 VDC output (PN 852-042-00X).
- Uninterruptible Power Supply (UPS) with 5-96 VDC input, +12 VDC output and sustaining a 2 A load for 15 minutes at 22°C (PN 851-059-00X). UPS is connected to a serial port of the CV60 terminal to allow powering down the O/S after the unit is on backup battery (in the UPS) for a specified period of time.

Power Accessories

- Standard IEC input line cords. Various, country dependent
- Vehicle install kit with fuse 6' PN 226-512-001
- DC/DC output power cable 6'

Backup Battery

Lithium battery with 6-year shelf life. The battery is not user accessible.

Communication Interface

RS-232 Interface

There are two high-speed 16550 compatible UARTs with 16-byte send/receive FIFOs in each super IO. They are MIDI compatible.

- COM1 and COM2 reside in first superIO (U7).
- COM3 and COM4 reside in second superIO (U8).

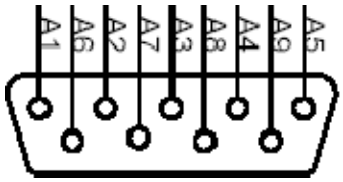


Figure 5 Serial Port Pin Out

Serial Connector Signal Assignment

Pin	Description
Pin 1	1 DCD (Data Carrier Detect)
Pin 2	RXD# (Receive Data)
Pin 3	TXD# (Transmit Data)
Pin 4	DTR (Data Terminal Ready)
Pin 5	Ground
Pin 6	DSR (Data Set Ready)
Pin 7	RTS (Request to Send)
Pin 8	CTS (Clear to Send)
Pin 9	RI (Ring Indicator)

USB

There are 4 Host USB 1.1 ports. Two are for internal use and the two are wired out. The USB controllers are inside of ICH2

USB Connector Signal Assignment

Pin	Description
Pin 1	Default +5V
Pin 2	USB_Data+
Pin 3	USB_Data-
Pin 4	Ground

Wired Networks

10Base-T/100Base-T Ethernet is integrated on board. The MAC portion resides in the ICH2, it is linked through Intel LAN interface to Intel PHY chip 82562ET.

A 256bit EEPROM attached ICH2 to provide unique MAC address and configuration contents.

Once a valid link is detected, whether it is 10Base-T or 100Base-T, the green LED light on the connector will be on. The yellow LED will be on if there is any activity of the Ethernet LAN port.

RJ45 Connector (Integrated with Magnetic Module) Signal Assignment (cable side)

Pin	Description
1	Default TX+
2	TX-
3	RX+
4	Ground
5	Ground
6	RX-

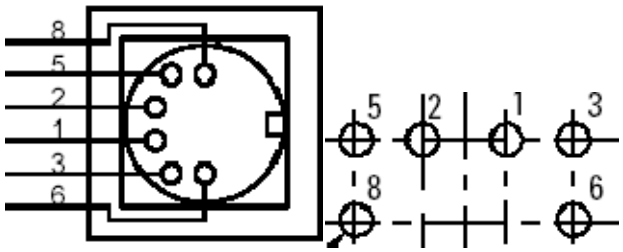
RJ45 Connector (Integrated with Magnetic Module) Signal Assignment (pcb side)

Pin	Description
1	Default TX+
2	TX-
3	RX+
4	RX-
5	CT1
6	CT2

PS/2 Keyboard Connector

Keyboard Connector Signal Assignment

Pin	Description
1	Default data
2	Not connected
3	Ground
5	+5V
6	Clock
8	Not connected
	Note: there is no pin 4 or pin7



J5 (Side View) *J5 (Bottom View)*

Figure 6 PS2 Port Pin Out

Wireless

The CV60 computer can have the following radio options via Card bus or mini-PCI card slots:

- Agere 802.11b/g 2.4 GHz
- Bluetooth

The design provides a means to install radio options and antenna system at the Intermec factory or Intermec service center without disassembly of unit.

Wireless Scanner

Wireless scanning capability is enabled using Intermec Picolink radio compatible with Intermec 1552 wireless scanners.

If integrated wireless scanning option is enabled only one external serial port is active.

9745 base station can be connected to external serial port as currently supported on 5055.

Bluetooth Option

A configurable option of Bluetooth radio module can be integrated into the CV60.

The Bluetooth radio module works with on-board antenna of module.

Electrical interface for Bluetooth radio module is serial port. USB interface is designed in for future option.

Connector Signal Assignment (see sector 1.3.1 Main Board, Main board to Bluetooth Connection board connector J7)

Specifications

Physical Characteristics

- Weight not to exceed 4.9 kg for base unit

Size

- - Height: 27 cm
- - Width: 34 cm
- - Depth: 9.5 cm
- Weather resistant and rugged:
- Meets Intermec shock and vibration requirements

System Quality Factors

Reliability

- Mean Time Between Failures:
- Electrical board Level: Three Years or 20,000 power on hours (not including battery).
- The unit has 3-4 year MTBF.

Customer Servicability

The customer will be able to do the following maintenance using standard hand tools:

- Hard drive removal and install
- Memory upgrade

To be replaced in a controlled environment and by trained technicians:

- Radio Options

Environmental Conditions

Environmental

Specification	Description
Mean Time Between Failures (Electrical)	Three Years or 20,000 power on hours
Temperature, Storage	-305 C to 705 C

Environmental

Specification	Description
Temperature, Recommended Operating (1)	-205 C to 505 C – Solid State HDD 05 C to 505 C – Rotating HDD
Temperature, Extreme Operating With heater option (1)	-305 C to 505 C – Solid State HDD only
Thermal Cycle (1)	-205 C to 505 C ramp 55 C/min
Thermal Shock Non-operating	-305 C to 705 CRamp 305 C/min
Humidity, Storage & Operating	5 % to 95 % RH Non-condensing
Moisture Resistance	IPX5 compliant – Resistive Touch panel option
Sand/ dust resistance	IP66 compliant
Headset jack	1000 insert/extract cycles
Altitude	-100 to 5000 meters ASL
Quasi-Random Vibration (2)	Quasi-Random 3 axis 20 G's RMS. For 4 hours Will determine test levels based on intended use
Vehicle Vibration (2)	6 hours total, 2 hours in each axis Accelerated wear – an additional 50 hrs in worst case axisNeed customer use environment to determine vibration profile
Shock (2)	50g, 8ms, ½ Sin, 5000 impulses each direction, each axis
ESD	17KV air discharge 8KV current injection

Configuration and Connection

Connection

There are 13 connectors, 2 jumper pins and one switch on the Main board.

J1—3-pin header for CPU fan. The header is not normally installed.

J2—30-pin connector for ITP debugger. The connector is not installed in normal, for debugging only.

J7—20-pin right-angle connector to interconnect to Bluetooth Module Sub-board by cable M2A-F0600-01.

J9—144-pin SO-DIMM socket to extend system memory.

J11—68-pin CardBus socket for PCMCIA card.

J12—124-pin MINI-PCI socket for connecting to MINI-PCI card.

J13—15-pin D-SUB connector for RTC monitor. The connector is not normally installed, for debugging only.

J14—41-pin connector for Main board to LCD display panel interconnect.

J15—44-pin connector to interconnect to IDE device (such as HDD).

J16—100-pin connector to interconnect Main board to IO board by cable M2A-F0200-00.

J22—12-pin FFC connector to interconnect to Picolink radio board by cable M2A-F0500-01.

J23—30-pin top-entry connector for Main board to Touch-Heater Sub-board interconnecting by cable M2A-F0100-00.

J24—10-pin top-entry connector for Main board to Inverter Sub-board interconnecting by cable M2A-F0300-01).

SW1—System hard reset switch. It is not installed on the board, for debugging only.

RTC—System RTC CMOS memory clear jumper. CMOS memory is cleared when the two jumper pins are shorted.

I/O Board

There are several connectors / Jumper wires on the I/O Board.

J1—100-pin connector for I/O board to mainboard interconnecting

J3—2.5mm headset and 3.5mm speaker integrated connector for audio

J4—COM1 RS232 interface connector

J5—PS/2 keyboard connector

J6—Dual USB port and RJ45 combo connector

J7—COM2 RS232 interface connector

JP1—Chassis ground jumper wire

JP2—System power positive line jumper wire

JP3—System power negative line jumper wire

JP4—Heater power negative line jumper wire

JP5—Heater power positive line jumper wire

JP6—System ground jumper wire

JP7—Power button jumper wire

Inverter Board

There are 3 connectors to the inverter board as listed below.

Inverter Board

Connector	Description
J1	Connects to ToriSan LCD CCFL (ToriSan LCD PN: VIPE0001)
J2	Connects to mainboard by mainboard-to-inverter cable PN: M2A-F0300-01)
J3	Connects to ToriSan LCD CCFL (ToriSan PN: VIPE0001)

Touch_Heater Board

There are 4 connectors on the touch heater board as listed below.

Touch Heater

Connector	Description
J1	Connects to mainboard by mainboard-to-touch heater cable PN:M2A-F0100-00
J2	Connects to touch panel PN: VEPT0001 no heater, VEPT0002 with heater
J3	Connects to heater PN: VEPT0002
J4	Connects to LED cable assembly PN: M2A-F0700-00

Bluetooth Board

There are 2 connectors on the Bluetooth Connector Sub board.

J1—20-pin connector to connect to Main board by cable M2A-F0600-01.

J2—20-pin connector to connect to Bluetooth module.

Configuration

GPIO Configuration

On board Memory Configuration

Memory	R441	R442
128MB	No Load	Load
256MB	Load	No Load

CV60 Chipset ICH2 GPIO Definitions

GPIO Number	Signal Name	Input or Output	Description	Active Voltage
GPI6	NA	Fixed Input	Reserved	NA
GPI7	LAMP_FAULT#	Fixed Input	LCD backlight failure indication	Low (0)
GPI8	BL_ON/OFF	Fixed Input	LCD backlight ON indication	High (1)
GPI13	LPC_PME#	Fixed Input	Power management event from super IO	Low (0)
GPO19	P1_ENAB	Fixed Output	Serial Port 1 power supply enable	High (1)
GPO20	P2_ENAB	Fixed Output	Serial Port 2 power supply enable	High (1)
GPO21	GPO21	Fixed Output	To LCD Reset	Low (0)
GPO23	BOOTLOCK#	Fixed Output	Required by firmware to enable flashing of bootloader code,	Low (0)
GPIO24	GPIO24	Need to set as Iuput	For LCD HSYNC Signal	High (1)
GPIO25	GPIO25	Need to set as Iuput	To identify if Board has LCD Reset Rework/Circuit (Low==> Rework)	Low (0)

CV60 SuperIO(1, Base Address: 0x2E) GPIO Definitions

GPIO Number	Signal Name	Input or Output	Description	Active Voltage
GP10	NA	NA	No Connection	NA
GP11	SYS_LED_BLINK#	Need to set as Output	System Blinking LED, function TBD by Intermec	Low (0)
GP12	BRD_VERSION0	Need to set as Iuput	Combined with GP13 as main Board Version Indication GPI13GPI12 = 00 (BB1), GPI13GPI12 = 10 (LP1),	NA
GP13	BRD_VERSION1	Need to set as Iuput	GPI13GPI12 = 01 (Pilot), GPI13GPI12=11 (MP)	NA
GP14	BOARD_MEM128	Need to set as Iuput	On board system memory capacity indication. High(1)=256MB;Low(0)=128MB	NA
GP16	PCM_PWRDWN#	Need to set as Iuput	Bluetooth PCM Radio Power Down Indication	Low (0)
GP17	BTPWR_EN#	Need to set as Output	BlueTooth Module power enable	Low (0)
GP20	LCD_BL_Off	Need to set as Output	LCD Backlight Off	High (1)
GP23	HEATER_EN#	Need to set as Output	Enable Heater Function	Low (0)
GP24	HEATER_ON	Need to set as Output	Turn on Heater	High (1)
GP25	HEATER_DET#	Need to set as Iutput	Heater present detection	Low (0)
GP30	PCBEEP_MUTE	Need to set as Output	To Mute PC Beep	High (1)
GP31	SP2_OFF#	Need to set as Output	Serial Port 2 Transceiver Shutdown	Low (0)
GP32	9745_PWRON#	Need to set as Output	Wireless scanner power on	Low (0)
GP34	9745_RST#	Need to set as Output	Wireless scanner reset	Low (0)
GP35/SUS_LED	SYS_LED	Need to configure as ALT FN	Configure as ALT Function SUS_LED Bluelight LED	High (1)

Main board Version Indication

Version	R445	R446	R447	R448
BB1	No Load	No Load	Load	Load
LP1	Load	No Load	No Load	Load
Pilot	No Load	Load	Load	No Load
MP	Load	Load	No Load	No Load

LCD panel Configuration

There are 2 LCD panels that can be used in the CV60.

- LG Philips (LB121S02)
- ToriSan (TM121SV-22L11A)

LCD	R511	R512	R513	R415
ToriSan	Load	No Load	No Load	No Load
LG Philips	No Load	Load	Load	Load

3 Maintenance

This chapter contains testing, troubleshooting, and disassembly/assembly procedures for the CV60 data collection computer.

Handling of ESD Components

The CV60 data collection computer contains electrostatic discharge (ESD) components. ESD components can be damaged by static voltages present in most environments.

Place the equipment display side down on a grounded conductive surface BEFORE removing or opening any covers or components normally attached to the equipment

When the covers or any other components normally attached to the equipment ***are being removed, and while these parts are removed from the equipment***, the repair technician and any other person coming in contact with the equipment MUST be grounded through a 1-Megohm resistor by a conductive wrist strap or other suitable device.

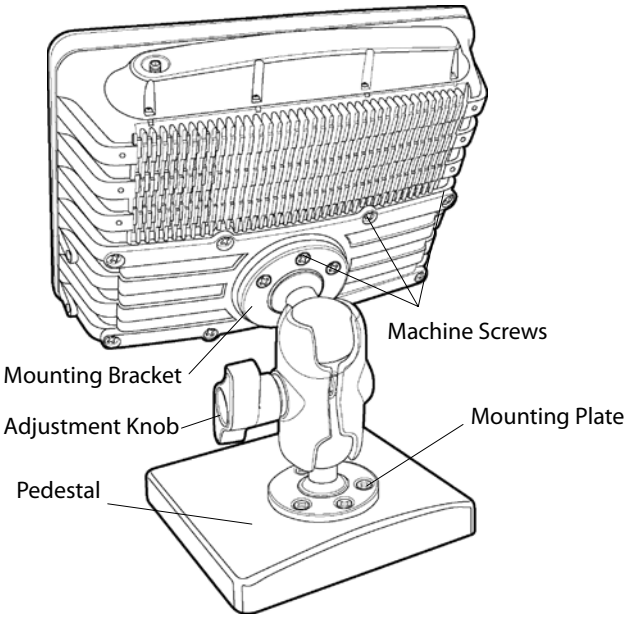
- Ground any tools (including soldering equipment) that will contact the equipment. Contact with the operators hand provides a sufficient ground for equipment that is that is otherwise electrically isolated.
- De-energize or disconnect all power and signal sources attached to the equipment before attempting to remove or replace any components.
- All ESD components are shipped in conductive materials or containers. These components MUST be stored in the original shipping container until they are used.
- When ESD devices and assemblies are removed from the equipment, but not immediately worked on, they should be placed on a conductive surface or in conductive containers.
- Do not handle ESD devices unnecessarily, or remove them from their conductive packages until they are actually used or tested.

Failure to observe any of the preceding precautions can result in damage to the ESD components, or the equipment they reside in. This damage may cause the device or equipment to fail immediately, or at a later date when exposed to an adverse environment.

The following procedures explain how to disassemble the CV60 data collection PC. Disassemble the UUT (unit under test) only to the extent necessary for testing and repair.

Disassembly

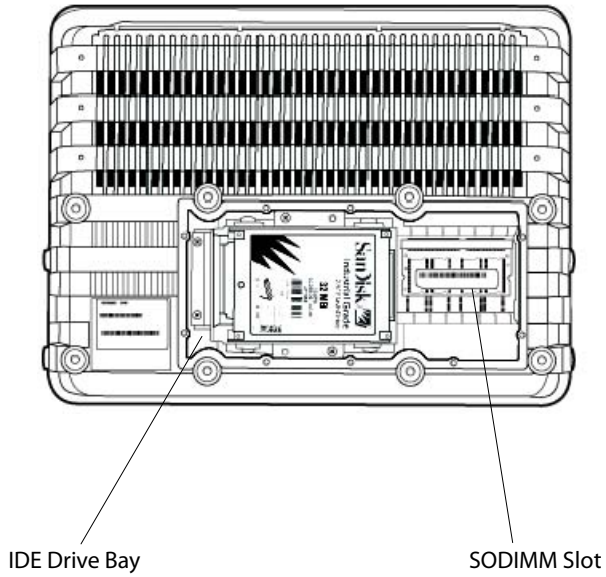
Remove the CV60 vehicle mount assembly (if so equipped) prior to unit disassembly.



CV60 shown with pedestal

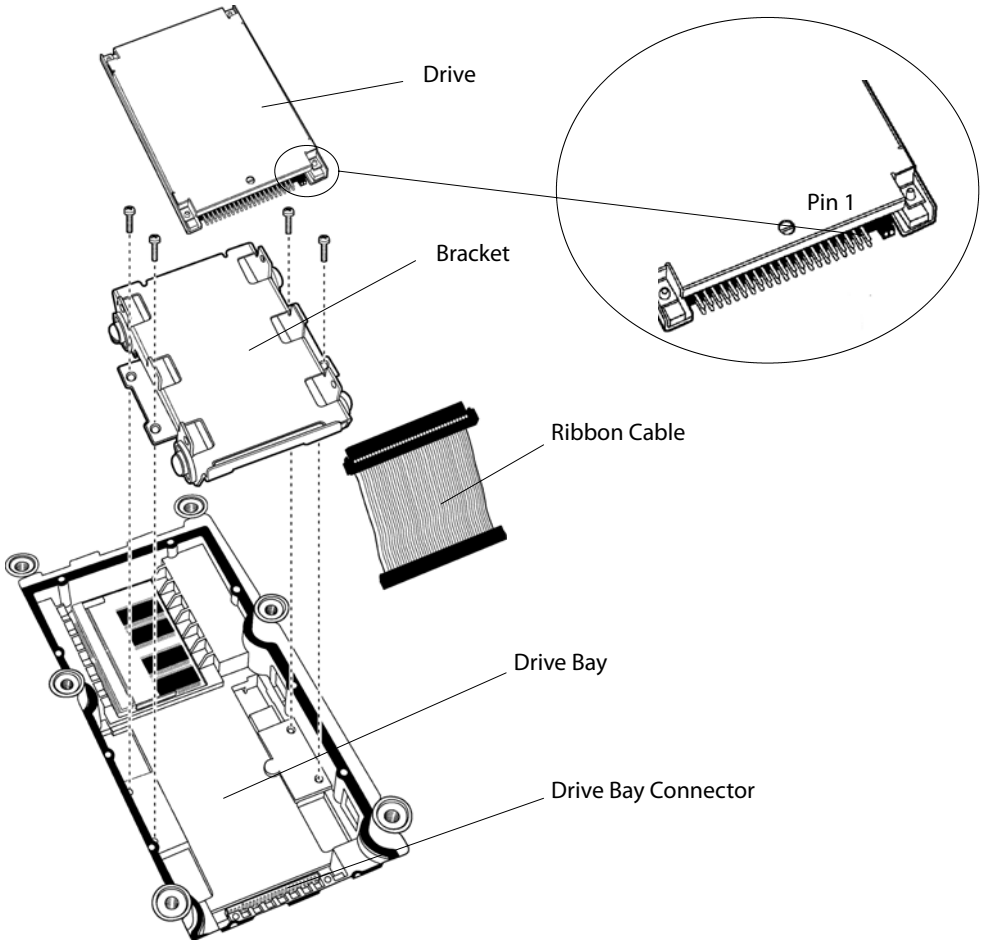
Place the CV60 display side down on a cushioned anti-static mat.

Remove the bracket assembly by removing the (8) 1/4 x 20 x 5/8“Philips head machine screws securing the assembly to the rear bracket.



CV60 Rear View (Mounting Bracket Removed

Hard Drive Installation/Removal



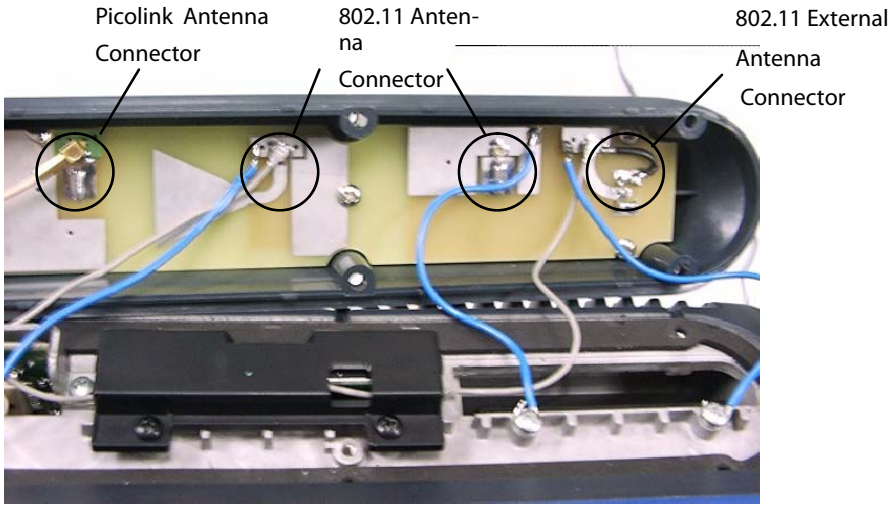
1. Remove the four Philips head screws securing the bracket to the drive bay.
2. Disconnect the ribbon cable to the drive bay connector.
3. Remove the four screws securing the drive to bracket.
4. Remove the ribbon cable from the drive, noting pin 1 position.

SDRAM Removal

Remove SODIMM module from the connector by simultaneously spreading the two spring hold down clips and very gently lifting up on the SO-DIMM module. Use a small screwdriver or similar tool as an aid in separating the spring clips. Use the thumb and forefinger to lift and extract the memory module. Place the SODIMM module in an antistatic container.

Radome Removal

1. Remove the radome cover shield by removing the (8) 4-40 x 3/4 Philips head screws. *Gently* remove the antenna connectors from the antenna board.
2. Remove any grounding wires attached to the case and the antenna board.
3. Remove the (4) 4-24 x 1/4' Philips head screws to access the radome assembly.



Mini-PCI Radio Removal

1. Remove the radio card (if so equipped) from the mini-PCI slot by removing the four (4) philips head screws holding the mini-PCI shield.
2. Remove the radio module from the slot by simultaneously spreading the two spring hold down clips and very gently lifting up on the radio module. Use a small screwdriver or similar tool as an aid in separating the spring clips. Use the thumb and forefinger to lift and extract the radio module. Place the radio module in an antistatic container.
3. Remove the PC Card (if installed) by pressing down on the ejector lever and pulling the PC Card out and away from the unit. Set the PC Card assembly aside.

Bluetooth Radio Removal

1. Remove the Bluetooth module from the radome cover by first removing the the two (2) 2-24 x 1/4 Philips head screws.
2. Disconnect the cable assembly from the bluetooth module and place the radio module in an antistatic container.

Picolink Radio Removal

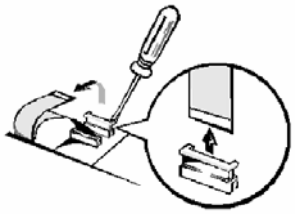
1. Remove the two (2) Philips head screws 4-40 x 1/4" securing the Picolink pcb to the bracket assembly.
2. Remove the radio module from the bracket by first disconnecting the flex cable from the radio module to the MLB.
3. The picolink antenna cable should be removed during the radome cover disassembly.
4. Set the radio module aside in an antistatic container.

Bezel and Touch Panel Removal

1. Remove the (10) 6-32 x 3/8" Torx screws securing the bezel to the front panel assembly.
2. Grasp both sides of the bezel and press downward on the touch panel with your thumbs. Swing the bezel over to the left.

Removing the Bezel

3. Unplug the LED connector.
4. Note the position of the touch panel flex connector at the ZIF (zero insertion force) connector.
5. Unplug the flex cable(s).



Note: ZIF connectors are fragile. To avoid breaking the connectors, open and close them carefully. Do not apply excessive pressure to the movable part of the connector when opening or closing.

6 Remove the touch screen and gasket assembly.

Display Removal

To separate the two case halves, remove the (16) Phillips head screws (4-40 x 3/8”), located on the front (as sumes the unit is placed display side up on a cushioned antistatic mat). Grasp the unit with both hands and turn the unit over so the display bracket faces upward on the cushioned antistatic mat.

Carefully pry the front cover from the rear housing. Lift the front cover up slightly from the rear housing to gain access to the backlight connector and cable. Remove the backlight connector cable.

Remove the display ribbon cable from the front cover by disconnecting the ribbon cable from the connector located on the main logic board.

I/O Panel Removal

1 Remove the I/O interface cable from the MLB end by squeezing the connector retaining clip on each side of the cable connector end and lifting up the cable end. The cable end secured to the I/O board assembly may be removed later.

2 Remove the (10) Philips head screws securing the I/O assembly to the rear housing.

3 Next, remove the Philips head screws located at the base of the I/O board.

4 Remove the Philips head screws located at the base of the rear hous ing attaching the I/O assembly.

5 Gently press forward on the I/O assembly to free it from the rear housing and lift the assembly up and away from the MLB.

6 Set the I/O panel aside.

Main Logic Board Removal

Remove the Philips head screws securing the MLB to the rear housing.

Lift the MLB up from the rear housing. Grasp the board by the edges and place it on an antistatic surface or in an antistatic container.

Assembly

Assembly of the CV60 data collection computer is the reverse of the disassembly procedures.

CV60 Test Procedures

Title:	Document No:	Rev:	Page 9
CV60 Final Test Procedure	426-405-758-900	B	of 9

Date:	CV60 Final Test Procedure	Document No:
November 4, 2003		426-405-758-900
Originator: Brian Clair		**Page:** 9 of 9
Approval: Harold Tiedemann		**Revision Level:** B

1.0 PURPOSE

This document defines the minimum acceptable performance required for this product. Failure to pass any portion of this procedure will be cause for rejection and repair of the UUT. Abnormal operation of the UUT, although not specifically addressed by this document, must be brought to the attention of the appropriate process control engineer.

2.0 SCOPE

This test procedure is used to run the CV60 unit-level final test. This is done at Venture, Everett, and service centers.

3.0 TEST EQUIPMENT REQUIRED

3.01 CV60 Functional Test Station: 405-758

For a detailed list of items please reference the CV60 functional test bill of materials. This may be obtained from the Test Equipment lab.

3.02 LabWindows/CVI Test Program distributed as CV60N.ZIP. This is installed on the test station computer per 433-405-758.

4.0 REFERENCE DOCUMENTS

4.01 Setup Procedure for the CV60 test station, 433-405-758. This includes special software and hardware that must be installed on the test station PC prior to use.

5.0 SET UP

Hardware Setup

5.01 For a detailed description on the initial set up of a CV60 test station refer to the Test Station Hardware Installation section of document 433-405-758.

5.02 Be sure that the power switch of the functional test fixture is set to the ON (upward) position. The LED labeled "Fixture Power" should be lit.

Software Setup

5.03 If necessary, boot the test station computer to the Windows desktop.

5.04 Run the CV60 test program by double-clicking on the " CV60 Test Program" icon.

5.05 The main test window will appear followed by a "Specify Test Environment" labeled window. To do this, click on the text box and then click on the appropriate test environment to highlight. After choosing the appropriate test environment, click on OK.

Note: Whenever this document says to "click on OK" you may use the mouse to left-click on the OK button or you can press the <space bar> or the <Enter> key on the keyboard if the button has focus (a dotted box around the word OK). You may also press the <Tab> key to advance the focus to another button icon.

Choose the test environment that is most appropriate. Here are the options:

Vendor Unit Test: This is mainly for Venture. Choosing this will cause another window to appear which will ask for you to choose what type of basic unit you are testing. This is necessary since the units built at Venture do not have serial number/ config number labels.

Functional Unit Config: This is mainly for Everett production. This allows the operator to scan in the configuration code for each unit tested.

Service Unit: As the name implies all service centers should choose this.

5.06 Note that a window may appear telling you that the MAC Addresses are running out. If this is the case then you will soon need to replace the smartcard that holds your test station's MAC addresses.

5.07 Next, the panel "CVI Test Executive Login" box (panel) will appear. Leave "Login Name" and "Password" blank. Click **OK**.

5.08 Verify that the following boxes are correct at the top of the main test screen:

Description: CV60 VMU Test, 405-758-890, VX.YZ (where X.YZ is the current test software version)
Test Type: Full Unit
Environment: *the correct test environment*

6.0 TEST PROCEDURE – VENTURE PRODUCTION

This section is for Venture only – skip ahead to the next section if you are running this test at Everett or a repair center

6.01 Setup the unit for testing as follows:

Plug the Sandisk hard drive with CV60 test code loaded on it into the CV60 hard drive connector located on the back of the unit. Note that this test drive should have a ribbon cable already attached to it.

Insert the golden 128MB DRAM module into the CV60 DRAM connector located on the back of the unit near the hard drive.

Place the unit onto the CV60 test stand of the test station.

Insert a golden ActionTec 802.11 radio board, 405-758-790, into the CV60 Mini-PCI slot located at the top of the unit.

Insert the cable of a golden bluetooth module, 405-758-791, into the CV60 bluetooth connector located at the top of the unit.

Insert the flex connector of the 405-758-606 cable into the CV60 Picolink connector located at the top of the unit. The contacts of the flex should face towards the back of the unit.

Insert the Sycard PCMCIA socket test card, 405-758-713, into the CV60 PCMCIA slot located at the top of the unit. The front of the card must face towards the back of the unit. Note also that the plug that is attached to the card must say CARDBUS. If it says 16 BIT then it will fail the test.

6.02 Tilt the test stand back to allow easy access to the connectors on the bottom of the unit and attach the test cables to the CV60 connectors as follows:

Note that this is listed from left to right but it doesn't matter what order you plug the cables in.

Headset, Smaller 2.5mm plug, Test cable 405-758-606
External speaker, Larger 3.5mm plug, Test cable 405-758-606
COM2, 9 pin Dsub receptacle labeled COM2, Test cable 405-758-605
COM1, 9 pin Dsub receptacle labeled COM1, Test cable 405-758-605
Keyboard, 6 pin PS/2, Kbd cable from Vetra Smartpipe box
Ethernet, 10 pin RJ45 plug, 405-758-603 cable coming from Ethernet switch
USB port 1 (bottom), 4 pin USB, USB cable from UUT USB 1 connector of fixture
USB port 0 (top), 4 pin USB, USB cable from UUT USB 0 connector of fixture
Power Input, 5 pin circular, Test cable 405-758-604

Warning: note that the USB cables cannot be swapped around.

6.03 To test the unit, click on the button labeled **Test UUT**.

6.04 Since you selected *Vendor Unit Test* as the test environment, a panel will appear asking for you to choose the type of unit being tested. Select the appropriate one and click on OK.

6.05 The test will now start. The unit is first booted up to DOS in order to run some of the tests that will only run under the DOS operating system.

6.06 The test status will be shown in the test status window, '*Sequence Display*', on the main test screen (see figure 1). As each test is run it will be highlighted, after which its Pass/Fail result will be displayed. Note that some of the tests will be skipped depending upon the configuration of the unit. Many of the messages that the test program displays will be shown in the bottom half of the screen in the Standard I/O window.

6.07 After the DOS tests are done the test step "Launch WinCE" will be run. This will run the Windows CE operating system on the unit. You may see the touch panel calibration screen before the Windows desktop. If so, simply use a touch pen to press each of the targets and then press the screen again to save the cal settings. When the Windows desktop screen appears you will need to do the following with a touch pen in order to start the WinCE test program (CV60CMD.EXE):

Double-tap on the My Computer icon
Double-tap on the Hard Disk icon
Double-tap on the CETests icon
Double-tap on the CV60cmd icon

6.08 The CV60cmd program is a command interpretor that will receive commands from the test station computer and execute tests or functions on the CV60 unit. It then sends results back to the computer.

6.09 Note that a (possibly 2nd) touch panel calibration screen appears. For this one you should use the template, 405-758-716, to assure accurate and consistent results. This will be important later on during the touch screen test.

6.010 If a test step fails, the program will ask whether or not you want to retry the test. Retry the test one time. If it passes the second time then continue on. If it fails a second time then stop testing and fail the unit.

6.011 After all test steps are completed and the unit has passed, a green PASSED window will be displayed. The unit may now be disconnected from the test cables and the various golden test modules removed.

7.0 TEST PROCEDURE – EVERETT PRODUCTION OR SERVICE CENTER

7.01 Setup the unit for testing as follows:

Be sure that a CD with CV60 test code loaded on it is loaded in the CD-ROM drive of the test station.

Be sure that a floppy with the latest BIOS flash code is loaded into the test station's USB floppy drive.

Place the unit onto the CV60 test stand of the test station.

7.02 Tilt the test stand back to allow easy access to the connectors on the bottom of the unit and attach the test cables to the CV60 connectors as follows:

Note that this is listed from left to right but it doesn't matter what order you plug the cables in.

Headset, Smaller 2.5mm plug, Test cable 405-758-606
External speaker, Larger 3.5mm plug, Test cable 405-758-606
COM2, 9 pin Dsub receptacle labeled COM2, Test cable 405-758-605
COM1, 9 pin Dsub receptacle labeled COM1, Test cable 405-758-605
Keyboard, 6 pin PS/2, Kbd cable from Vetra Smartpipe box
Ethernet, 10 pin RJ45 plug, 405-758-603 cable coming from Ethernet switch
USB port 1 (bottom), 4 pin USB, USB cable from Golden USB Peripheral connector of the 405-758-500 test fixture
USB port 0 (top), 4 pin USB, Leave this connector open
Power Input, 5 pin circular, Test cable 405-758-604

Note: you can actually use either of the USB connectors to connect to the fixture.

7.03 To test the unit, click on the button labeled **Test UUT**.

7.04 Since you selected *Functional Unit Config* or *Service* 2 panels will appear. The first is entitled "Enter Serial Number". Use the barcode scanner or keyboard to enter the serial number of the terminal. Click on **OK** when done. Note that you will be asked to enter the serial number twice to ensure accuracy.

The second window will appear entitled "Enter Configuration Code". Use the barcode scanner or keyboard to enter the 16-character Configuration number. Click on **OK** when done.

7.05 The test will now start. The unit is first booted up to DOS in order to run some of the tests that will only run under the DOS operating system. Check for the words "Nero Boot-Loader". This indicates that the unit booted from the CD-ROM and not from the unit's own hard drive or PCMCIA card.

7.06 The test status will be shown in the test status window, '*Sequence Display*', on the main test screen (see figure 1). As each test is run it will be highlighted, after which its Pass/Fail result will be displayed. Note that some of the tests will be skipped depending upon the configuration of the unit. Many of the messages that the test program displays will be shown in the bottom half of the screen in the Standard I/O window.

7.07 After the DOS tests are done the test step "Launch WinCE" will be run. This will run the Windows CE operating system on the unit. You may see the touch panel calibration screen before the Windows desktop. If so, simply use a touch pen to press each of the targets and then press the screen again to save the cal settings. When the Windows desktop screen appears you will need to do the following with a touch pen in order to start the WinCE test program (CV60CMD.EXE):

Double-tap on the My Computer icon
Double-tap on the CDROM Drive icon
Double-tap on the CETests icon
Double-tap on the CV60cmd icon

7.08 The CV60cmd program is a command interpretor that will receive commands from the test station computer and execute tests or functions on the CV60 unit. It then sends results back to the computer.

7.09 Note that a (possibly 2nd) touch panel calibration screen appears. For this one you should use the template, 405-758-716, to assure accurate and consistent results. This will be important later on during the touch screen test.

7.010 If a test step fails, the program will ask whether or not you want to retry the test. Retry the test one time. If it passes the second time then continue on. If it fails a second time then stop testing and fail the unit.

7.011 After all test steps are completed and the unit has passed, a green PASSED window will be displayed. The unit may now be disconnected from the test cables and the various golden test modules removed.

8.0 TEST NOTES

8.01 Running Individual Tests

In order to run an individual test the login level must be Technician or Developer. Change the CV60.INI file's Login field to one of these if necessary or enter the password **T** or **D** at the login window, which appears when the test program is first loaded. To run an individual test simply double click on the test (in the test status window) that you want to run. You may also highlight the test and click on the Run Test button of the main test screen.

To run an individual test multiple times in succession, highlight the test that you want to run and click on the Loop Test button of the main test screen.

8.02 Help Screens

To select help on any of the tests in the test status window simply highlight the test by left clicking on it and then pressing the mouse's right button (right click). There is also a main help screen available by selecting the Options/Help button of the main test screen followed by the Main Help button.

8.03 Options/Help Menu

Fixture Control: This allows you to manually control and monitor many of the functions of the test station such as setting the main battery and charge voltages to the UUT.

Test Results: This displays all of the readings taken in the last test that was run.

Main Help: Displays the main help screen.

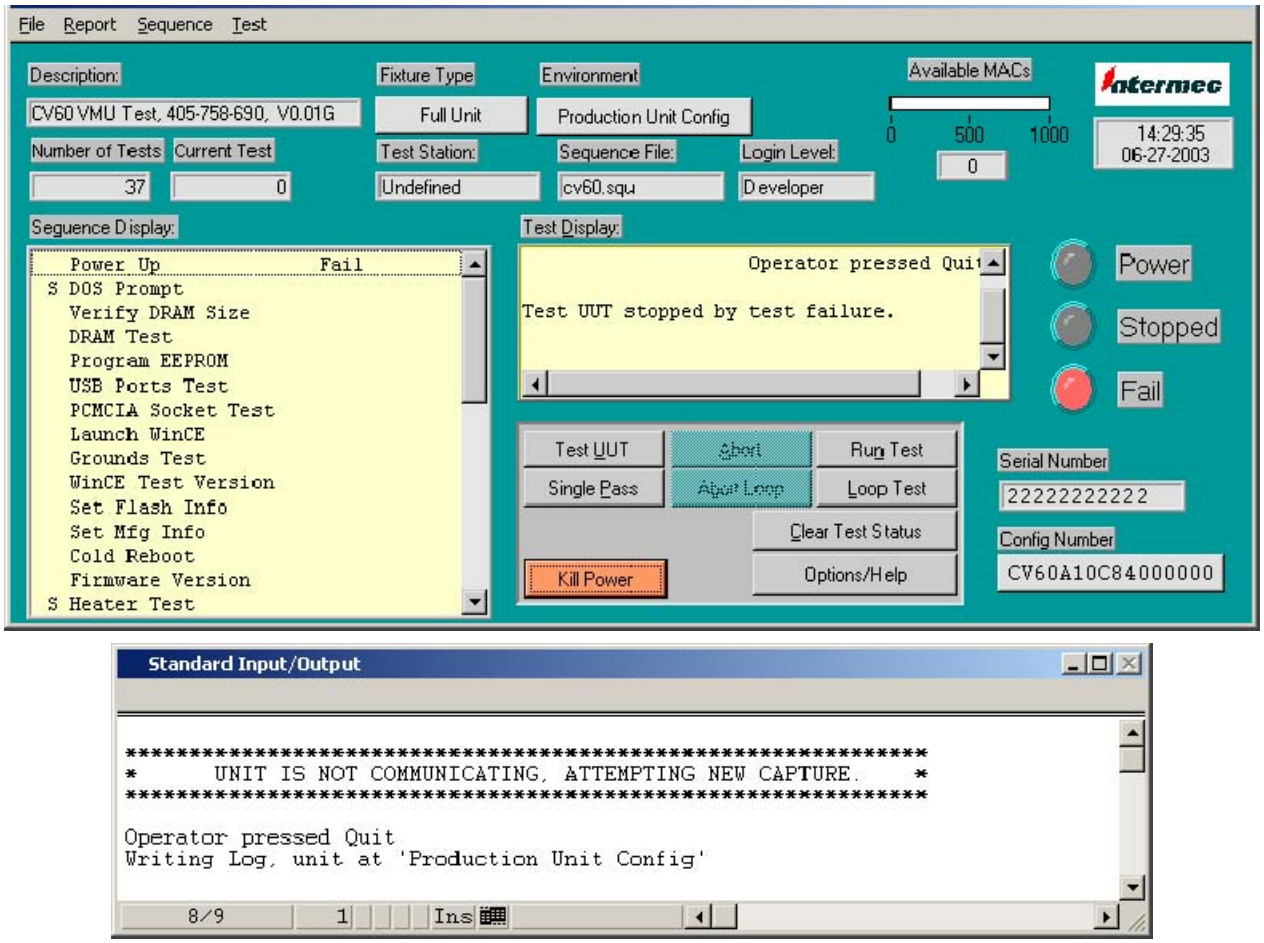


Figure 1
Main Test Screen and Standard I/O window

REVISION HISTORY

LEVEL	DATE	ORIGINATOR	DESCRIPTION OF CHANGE
A	08/13/03	Brian Clair	Original Release
B	11/04/03	B. Clair	Split the test procedure section into 2 parts, one for Venture and the other for Everett/Service. Added use of the CDROM and Floppy drives. Added use of touch panel template. Added note about tilting the unit stand back.

Title: CV60 Customer Drive Boot Test	**Document No:** 426-405-758/902	**Rev:** C	**Page** 17 of 4

Date: December 9, 2003	**Title:** CV60 Customer Drive Boot Test	**Document No:** 426-405-758/902
Originator: Harold Tiedemann		**Page:** 18 of 3
Approval: Brian Clair		**Revision Level:** C

1.0 PURPOSE

This document defines the minimum acceptable performance required for this product. Failure to pass any portion of this procedure will be cause for rejection and repair of the UUT. Abnormal operation of the UUT, although not specifically addressed by this document, must be brought to the attention of the appropriate process control engineer.

2.0 SCOPE

This document defines a method of testing the ability of a CV60 to boot with a customer's disk drive loaded.

3.0 TEST EQUIPMENT REQUIRED

3.1 Power Supply (12V DC) and Power Cable for CV60.

3.2 Optional touch screen template 405-758-716 used with machined stylus 405-758-726.

3.3 Any plastic stylus such as 203-620-001 (if not using template above).

4.0 REFERENCE DOCUMENTS

4.01 426-405-758/900 CV60 Final Test Procedure.

5.0 SETUP

5.01 Plug the power supply into an appropriate AC outlet.

6.0 FLASH PROCEDURE

6.01 Plug the CV60 into the cable from the power supply.

6.02 If the CV60 does not begin to power up immediately, press and release the large black on/off power button on the CV60.

6.03 The CV60 should boot up into Windows. (XP takes a long time.)

6.04 What you will now do depends on whether the load is a Windows Wal-Mart CE.net, Windows CE.net, Windows **XP** or Windows **XP embedded** (XPe) load. Be sure the Windows Logo and/or operation matches the type of Operating System ordered.

6.04.1 Wal-Mart CE.net:

6.04.1.1 If this is the first time the unit has been booted, a touch screen calibration screen *may* appear. DO NOT continue with the touch screen calibration. If you do not see the touch screen calibration screen, you will see a Windows CE screen asking for terminal settings. *Do not fill anything in.*

6.04.1.2 Turn the unit off by pressing and releasing the large black on/off button.

6.04.2 CE.net or XP embedded:

6.04.2.1 If this is the first time the unit has been booted, a touch screen calibration screen *may* appear.

If you have a plastic touch screen calibration template, place it over the CV60 screen. You may use the template as long as the holes match up with the cross-hairs shown on the screen. Use care -- the calibration you set here will be retained in the unit when the customer uses the unit.

Using a stylus, carefully press each cross-hair shown.

Press once more to save and close the touch screen calibration screen.

6.04.2.2 Shut the unit down by pressing the "**Start"** icon in the lower left corner. Then select "**Shut Down**…" When the Windows Shut Down window appears, make sure "**Shut Down**" is the selected option and then press "**OK**".

6.04.2.3 Wait for the CV60 to shut off.

6.04.3 XP:

(This is tricky to do because XP will not shut down, but does a restart instead. If you don't turn it off at the right time, the unit will do a Scandisk when the customer first powers it up.)

6.04.3.1 If this is the first time the unit has been booted, a touch screen calibration screen *may* appear.

If you have a plastic touch screen calibration template, place it over the CV60 screen. You may use the template as long as the holes match up with the cross-hairs shown on the screen. Use care -- the calibration you set here will be retained in the unit when the customer uses the unit.

Using a stylus, carefully press each cross-hair shown.

Press once more to save and close the touch screen calibration screen.

6.04.3.2 You will see a Wizard box appear. Select Next.

6.04.3.3 You will see a License Agreement box. Select "I do NOT accept this agreement".

6.04.3.4 Another box: "This will exit Setup". Select "Yes".

6.04.3.5 Another box: "An error has been encountered…" Select "OK" to view log.

6.04.3.6 An error log box will be shown. Select "Close". This will cause the unit to restart.

6.04.3.7 After the screen goes black, wait for the initial BIOS boot up screen (Intermec logo). When you see the Intermec boot up logo, press and hold the big power button to shut the unit fully off (it takes four seconds).

6.05 Unplug the unit from the power cord.

REVISION HISTORY

LEVEL	DATE	ORIGINATOR	DESCRIPTION OF CHANGE
A	11/24/03	Harold Tiede-mann	Original Release.
B	12/8/03	Harold Tiede-mann	Renamed document, formerly "CV60 CE.net Boot Test" (actually was Wal-Mart). This document now includes Wal-Mart CE.net, CE.net, XP, and XP em-bedded.
C	12/9/03	Harold Tiede-mann	Not to continue with touch screen calibration with Wal-Mart units.

Intermec

Final Assembly Test

Date: January 26, 2004	**Setup Procedure for CV60 Functional Test Station**	**Document No:** 433-405-758
Originator: Brian Clair		**Page:** 1 of 23
Approval: Harold Tiedemann		**Revision Level:** D

1.0 PURPOSE

This document provides setup and configuration information for the CV60 functional test station.

2.0 SCOPE

This setup procedure should be used by anyone who is installing the hardware and/or software used by a CV60 functional test station 405-758.

3.0 EQUIPMENT REQUIRED

CV60 Functional Test Station, 405-758
- see the 405-758 bill of material's cover sheet for a complete list of how this station may be configured for various test scenarios.

Note that the test station computer must have the following:

- CRT or Flat Panel Display (set video settings at 800 x 600 w/ 256 colors or better)
- Win2000
- CD-ROM
- At least 1 serial port
- At least 1 USB ports
- 1 PCI slot for the 6025E data acquisition card
- 1 PCI slot for Quad serial port card (Not needed at Venture)
- 1 PCI slot for additional Ethernet card (Not needed at Venture)

If connecting to a corporate network then the computer should have its own ethernet port other than the one on the PCI ethernet card. In order to run the test program at a respectable speed the computer should have at least a Pentium 200MHz processor.

4.0 TEST STATION COMPUTER CONFIGURATION

4.1 Configuring IP Settings

Test computers connected to the corporate network should have two network ports. The internal (integrated) port should be configured only for use on the corporate network. The PCI network interface card is used for connecting to the UUT by way of the test fixture and to the access point (see figure 1 near the end of this document).

When selecting IP addresses for the test, use addresses on the PCI card that will be different than the address assigned to the internal Ethernet port that will be connected to the corporate network. Also, the use of a non-routable address is preferred. Thus, in Cedar Rapids avoid addresses beginning 136.179, and in Everett avoid addresses beginning 10.10 (non-routable numbers used internally within the Intermec corporate system).

Suggested beginning numbers:

IP address	192.168.80.1 and/or 192.168.80.2
Subnet Mask	255.255.240.0

4.2 Configuring a computer loaded with Win2000

This section applies to a newly purchased computer only being configured by the Cedar Rapids test engineering department.

Attach the computer's main ethernet port to the corporate network. Power up the computer and go through the initial screens. Perform the steps below for each screen listed.

Computer Name and Administrator Password

Leave the name set to the default which should be the computer's serial number.
Leave the password blank
Click on **Next**

Date and Time Settings

Set the Time Zone to whatever the test station's destination will be.
Click on **Next**
<Wait while PC searches for Network>

Networking Settings

Select **Custom Settings**
Click on **Next**

Networking Components

Click on **Install**
Dbl-click on **Client**
Dbl-click on **Client Service for NetWare**
<Wait about 30 seconds>
Click on **Next**
Click on **Next** (to select No, this computer…)
Click on **Restart Now**
<Wait for computer to Reboot>

Network Identification Wizard

Click on **Next**
Select **Users must enter a user name and password to use this computer**
Click on **Next**
Click on **Finish**

Log on to Windows

Leave the User name set to Administrator and the password left blank.
Click on **OK**
Click on **Cancel**
An error window will appear. Click on **Yes**

Getting Started with Windows

Uncheck the "show this screen at startup" box
Click on **Exit**

Click on **Start**, then **Settings**, then **Control Panel**

Dbl-click on **Users and Passwords**
Click on **Add**
User name: **mfgtest**
Leave the other 2 boxes blank and click on **Next**
Leave password blank and click on **Next**
Select **Other: Administrators**
Click on **Finish**
Click on **OK**
Close the Control Panel

Right click on My Network Places icon

Click on **Properties**
Right click on **Local Area Connection**
Click on **Properties**
Dbl-click on **NW Link IPX/SPX/NetBIOS**…
Choose **ETHERNET II** for the **Frame Type**
Click on **OK**

Dbl-click on **Internet Protocols (TCP/IP)**
Verify or Select **Obtain an IP address automatically**
Verify or Select **Obtain DNS server address automatically**
Click on **OK**
Click on **OK**

Close the Network and Dial-up Connections window

Click on **Start** then **Shut Down**

Select **Log off Administrator**
Click on **OK**

Log on to Windows

Change Administrator to **mfgtest**
Click on **OK**

Select NetWare Logon

Select **Default Tree and Context**
Tree: Norand
Context: .production.operations
Check the box marked **Run Login Script (VERY IMPORTANT!)**
Click on **OK**

4.3 Configuring for Ethernet Download of WinCE Files

There are 3 different ways that the WinCE files can be loaded into the CV60.

At Venture the WinCE and all test files will be loaded off of the test hard drive.

At Everett and Service the CV60MFG test CD must be used for booting and for the test code but the WinCE files can be loaded from the CD drive or they can be downloaded from the test station computer over ethernet. The ethernet download is much faster but currently only works with the non-data capture version of WinCE.

- A username and password must be set up on the test PC so the CV60 can log in.
  - Click on **Start->Settings-Control Panel**
  - Double-click on the **Users and Passwords** icon.
  - Click **Add**
  - Type **CV60TEST** for the User name. Leave the other boxes blank. Click **Next**.
  - Type in a password and confirm it. Note that the password cannot be left blank. We suggest the password **CV60*TestGood** (case sensitive).
  - Click **Next**
  - Click **Other: Administrators**
  - Click **Finish**

  The PC does not have to be logged into this username, but each CV60 will use it when it logs in to do the download.
  If using the XP OS and the PC is set to use Domain (such as corpnet), the username and password must be an actual name and password registered with the CSSC.

- Set up the folder that will contain the shared (WinCE) files
  - Create the folder, **c:\cvi\programs\cv60mfg**.
  - Copy the **NK.bin**, **NK_NDC.bin**, and **Testver.bat** files from the CV60MFG test CD into this folder. Be sure that they are the latest released version.
  - Enable File Sharing to the c:\cvi\programs\cv60mfg folder
    - Right-click on the folder
    - At the Sharing tab click on **Share this folder**
    - Click on **Apply**
    - Click on **OK**

- Modify the CV60.ini file to the following settings:
  - IP NK Download=**False**
  - IP NK_NDC Download=**True**
  - Share Name=**CV60MFG**
  - Share User=**CV60TEST**
  - Share Password= **CV60*TestGood**

  As stated above the NK Download must be set to False because the non-data capture version of WinCE cannot currently be downloaded via ethernet.

  The User and Password settings may be set to Prompt. This will cause popup windows to appear when the test program is run, allowing the operator to enter the user name and password.

4.4 Loading and Configuring the PCI-6025E DAQ Board

NOTE: BE SURE TO INSTALL THE NI-DAQ SOFTWARE <u>BEFORE</u> INSTALLING THE PCI-6025E DAQ BOARD

Install Version 6.9.1 or later of National Instruments NI-DAQ "Data Acquisition Driver Software". This is located on the CD-ROM that comes with the DAQ board. Insert the CD-ROM and run its setup.exe program (note that the CD will also auto play if you have that feature enabled). Perform the following steps:

- At the main **NI-DAQ** screen click on **Install NI-DAQ**
- At the **Welcome** screen click on **Next**
- At the **Please note** screen click on **Next**
- At the **License Agreement** screen click on **Yes**
- At the **Select Support Files** screen click on **Next**
- At the **Selection Confirmation** screen click **Next**
- At the **Installation Status** screen click on **Restart later**

Click on **Start** then **Shut Down**.
Select **Shut Down** and click on **OK**.

After the computer shuts down unplug the power cord from the computer and install the PCI-6025E DAQ board into one of the available PCI slots. If you are installing the Serial board and the D-Link Ethernet board then do those now too (see sections below on how to configure these boards).
Plug the power cord back in and restart the computer. Perform the following:

- Log in as mfgtest again.
- At the **NI-DAQ Documentation Setup** screen check the box **"If you do not want to install documents now, check this box**".
- Click on **Next**
- Leave Configure Measurement and Automation System selected and click on **Finish**.

Perform the following steps to configure the DAQ board:

- Double-click on the **Devices and Interfaces** folder
- Right-click on the **PCI-6025E** folder
- Click on **Properties**
- Click on the **AI** tab
- Click in the **Mode** box and then Click on **Referenced Single Ended**
- Click on **Apply**
- Click on the **System** tab
- Click on the **Test Resources** button
- Verify that a window appears with the message *The device has passed the test*.
- Click on the **OK** button
- Click **OK** again
- Close the MAX window

Remove the NI-DAQ CD now!!

4.5 Loading and Configuring the Siig Quad Serial Port Board

Not Needed at Venture – use Lava Single or Dual Serial board instead (see 433-405-715) and set a port up for COM4.

The CV60 test station utilizes a Siig Quad Serial Port board. This board is loaded in the test station computer in order to provide communication to the following:

Access Point: COM3

Serial Bluetooth Adapter: COM4 *(not used if station uses USB Bluetooth adapter)*

Note that COM2 and COM5 are not currently used.

Install the card into an available PCI slot of the test computer. After a computer power up or reset the following must be done:

- When asked, insert the Siig PCI I/O driver floppy disk
- Click on Next

4.6 Loading and Configuring the D-Link Ethernet Board

Not Needed at Venture – use PC's built-in ethernet port.

The test station utilizes an Ethernet board and an Ethernet Hub to connect to the Ethernet ports of both the Access Point and test fixture (see figure 1 near the end of this document).

4.5.1 Installing the D-Link Ethernet Board

- Install the D-Link board into an available PCI slot of the computer.
- After a computer power up or reset the following may need to be done depending upon the version of the operating system and the board:
  - At the Found New Hardware Wizard panel click on Next
  - Click on Search for a suitable driver for my device
  - Click on Next
  - Insert the D-Link CD ROM disk
  - Check the "CD ROM drives" box, uncheck the other 2 boxes
  - Click on Next
  - At the message "Windows found a driver for this device…" click on Next
  - Click on Finish

4.5.2 Setting TCP/IP Address for the D-Link Ethernet Board

- Go to the Windows Desktop
- Right click on My Network Places icon
- Click on Properties
- Right click on Local Area Connection 2
- Click on Properties
- Dbl-click on Internet Protocols (TCP/IP)
- Select Use the following IP address
- Enter a valid address in the IP Address box (**192.168.80.1**)
- Enter a Subnet Mask of **255.255.240.0**
- Click on OK
- Click on OK
- Reboot the computer or these changes won't take affect.

4.7 Loading and Configuring Winzip

Copy the O:\Tools\Winzip folder to C:\Program Files. Note that the O: drive is located at *\\Norand2\Data\Common\Testeng* and should already be mapped since you logged in as MFGTEST. Run the WINZIP32.EXE program and perform the following:

- At the Thank you screen click on Next
- At the License Agreement screen click on Yes
- Select Start with WinZip Classic and click on Next
- Select Express Setup and click on Next
- Click on Finish
- Click on Close
- Close the WinZip windows

4.8 Installing Corporate Version of McAfee AntiVirus Program

This step only needs to be performed on computers that will be located at Everett or Cedar Rapids but should be run to verify that no Viruses are on this computer.

- First remove any existing version of McAfee (Start->Settings->Control Panel ->Add/Remove Programs).
- Place a CD containing McAfee VirusScan into the computer's CD drive.
- Run the **SETUP.EXE** file that's under the VirusScan Enterprise folder on the CD.
- Click on **Next**
- Select "**I accept the terms…**" and click on **OK**
- Leave the setup type set to **Typical** and click on **Next**
- Click on **Install**
- Click on **Finish**
- Allow a few minutes for the update to occur.
- Allow another few minutes for the scan to occur.
- Close the scan window.
- Run the **SDAT4303.EXE** program on the CD.

Note that this is a good time to also load Microsoft Office on any test station computer going to the production lines since MS-Access will be needed there.

4.9 Loading and Configuring the Smartcard Drivers

Important: Be sure to install the software BEFORE plugging in the hardware.

Go to the O:*Tools*\ *Smartcard**Drivers* folder and extract the latest version zip file to a *C:\Program Files**Smartcard* folder that you need to create.

Perform the following:

4.8.1 Go to the C:\Program Files\Smartcard folder.
4.8.2 Run SETUPTWK.EXE.
4.8.3 Click Start when asked.
4.8.4 Click Finish after the installation (Do NOT click on Restart!).
4.8.5 Click on the CHIPDRIVE icon in the Control Panel.
4.8.6 Load the smartcard reader, 405-758-705, into one of the computer's USB ports.
4.8.7 Run the Detailed Test option from the Test tab and verify that the reader is found. You can also run Show Devices to see the com port assigned to the reader.

4.10 Loading the LabWindows/CVI Test Software

4.9.1 Loading CV60 Test Software

The CV60 test software is located in the Cedar Rapids test engineering *O:\Released* under the CV60N.ZIP file. Use Winzip to extract it to C:\CVI\PROGRAMS\CV60 on the target machine.

Run the SETUP.EXE program in order to extract the test files. At the CV60 Functional test installation screen click on the Finish button.

After the setup program is run a panel will be displayed with the *CV60 Test Program* icon. This is the Intermec CVI Tests group. Do the following in order to have the test program run properly:

- Right click on the icon and Click on **Properties**.
- Click on the **Shortcut** tab.
- Click at the end of the line, c:\cvi\programs\cv60.exe, in the **Target** box. This will place the blinking cursor at the end of this line.
- Add the characters **CV60.squ** to the end of this line so that it now reads **C:\CVI\PROGRAMS\CV60.EXE CV60.SQU**.
- Click on **OK**.

Edit the CV60.ini file to match the characteristics of the test station (see section on the CV60.INI file below.

4.11 Setting up the CV60.INI File

After first loading the test software the file CV60NEW.INI will exist. Rename this file as CV60.INI and modify the fields described below as needed.

Workcenter: this is the production team's work center. This is used for the quality database. If you are not Intermec production then simply leave this set to its default.

Testsite: this is any name used to differentiate this test station from all others. This name is also used to specify the network name for the Lucent 802.11 radio test. You can give this any name you want, as long as it is unique from all other test sites. Good names are Everett CV60 Test #1, Everett CV60 Test #2, UK Service CV60 Test #1, etc.

Logfile: name of the file used to hold the test results. Leave it at **CV60DATA.TXT**.

PC IP Address: This is the IP address of the Ethernet port in the test station computer that is used during the Ethernet test. Set this to **192.168.80.1**.

UUT IP Address: This is an IP address given to the UUT when the Ethernet test is run. The first 6 digits must be the same as the first 6 digits of the PC IP Address, set this to **192.168.80.2**.

Wavelan IP Address: This is the same as the PC IP Address.

IP Subnet Mask: This is the Ethernet subnet mask for this station. Leave this at **255.255.240.0**.

UAP COM PORT: If the test station has an access point then leave this set to 3 unless you must attach the access point to a different Com port. If the test station does not have an access point then set this to 0.

BLUETOOTH COM PORT: If the test station has a serial bluetooth test box, 405-731-500, then leave this set to 4 (for COM4) unless you must attach the to a different Com port. If using a USB bluetooth test adapter then set this to U (for USB). If the test station does not have an bluetooth test adapter then set this to 0.

LABEL PRINTER COM PORT: If the test station has a label printer to print the 802.11 radio's MAC address then leave this set to 2. If the test station does not have a label printer then set this to 0.

LABEL TOP OF FORM: Leave this set to the default of 0.

LABEL RETRACT DISTANCE: Leave this set to the default of 200.

Ticket Printer: this is used to indicate whether or not this test station has a failure tag printer. If you don't have a printer on the test station then set this to 0.

IP NK Download: set this True only if you are using ethernet to download the data collection version of WinCE.

IP NK_NDC Download: set this True only if you are using ethernet to download the Non-data collection version of WinCE.

Share Name: leave this set to CV60MFG.

Share User: leave this set to mfgtest.

Share Password: leave this blank unless you want a password for the test station computer.

Login: this indicates the default login level. This may be OPERATOR, TECHNICIAN, or DEVELOPER. Normal test stations should be set to OPERATOR while a repair station should be set to TECHNICIAN. The main difference is that the TECHNICIAN login level allows you to run individual tests.

Default Config Number: this is the default Configuration Number that appears when the program is first run.

Environment: this indicates to the test program what the test environment default will be when the *Set Test Environment* panel comes up at test program load time.

4.12 Setting up the VER.INI File

You may need to change this file when the CV60 BIOS code contained in the flash has a version change or if the bluetooth radio undergoes a version change. If you are using this test station at a service center then you may want to change the bluetooth version to ANY since you may have multiple versions of radios.

4.13 Loading and Configuring the Bluetooth Test Adapter

The drivers for the USB Bluetooth adapter are contained in the CV60 code. Plug the adapter into an available USB port of the test station computer and wait for the plug-n-play wizard to appear. Do the following steps:

- At the Found New Hardware Wizard panel click on **Next**
- Click on **Search for a suitable driver for my device**
- Click on **Next**
- Check the "**Specify a location**" box, uncheck the other boxes
- Click on **Next**
- Click on **Browse** and point to the **c:\cvi\programs\cv60\InstallBluetooth** folder. Filename should be **BTWUSB.INF**.
- Click on **Open**
- Click on **OK**
- At the message "Windows found a driver for this device…" click on **Next**
- Click on **Finish**

4.14 Login as Administrator

Close all programs
Click on **Start** then **Shut Down**
Select **Log off mfgtest**
Click on **OK**

Log on to Windows
Change mfgtest to **Administrator**
Click on **OK**

If using a separate ethernet NIC board (Everett or Service) then remove the ethernet cable from the main ethernet port of the test station computer.

Copy the CV60 Test Program icon found in Start->Programs->Intermec CVI Tests to the desktop.

If this station is for Venture then change the main ethernet port's IP address as follows:

- Go to the Windows Desktop
- Right click on My Network Places icon
- Click on Properties
- Right click on Local Area Connection
- Click on Properties
- Dbl-click on Internet Protocols (TCP/IP)
- Select Use the following IP address
- Enter a valid address in the IP Address box (**192.168.80.1**)
- Enter a Subnet Mask of **255.255.240.0**
- Click on OK
- Click on OK

5.0 TEST STATION HARDWARE INSTALLATION

See Photos at the end of section 5

5.1 Test Fixture, 405-758-500, Connections

5.1.1 DAQ cable

Plug the large 100 pin connector of the 405-758-600 ribbon cable into the connector of the PCI-6025E DAQ board that is installed in one of the computer's PCI slots. Plug the other 2 connectors of the NI-DAQ cable into the test fixture. Be sure to mate the cable labeled POSITIONS 1-50 and the one labeled POSITIONS 51-100 with the correct connectors of the fixture.

5.1.2 Serial cable

Plug the female connector of the 405-758-601 ribbon cable into the computer's COM1 port. Plug the male connector of the serial cable, 405-758-601, into the fixture's 9 pin female connector labeled **PC COM1**.

5.1.3 Power Supply cable

Plug the connector of the power supply cable into the fixture's connector labeled **Fixture Power Connector**.

5.1.4 USB cables (Venture Only)

For Venture: attach the proper USB cable between the Sycard USB Port Tester connector labeled **Port 0** and the fixture connector labeled **Golden USB Peripheral**. Attach the other 2 USB cables to the fixture connectors labeled **UUT USB 0** and **UUT USB 1**. The other ends of these cables will go directly to the CV60.

5.1.5 UUT Power Cable

Plug the 9 pin Dsub connector of the power supply cable, 405-758-604, into the fixture connector labeled **UUT Power**.

5.1.6 UUT Signal Cables

Plug the connector labeled **To J5** of the test cable, 405-758-605, into the fixture connector labeled **J5 UUT Signals**.

Plug the connector labeled **To J6** of the test cable, 405-758-606, into the fixture connector labeled **J6 UUT Signals**.

5.2 Smartcard Reader

Plug the reader, 405-758-705, into one of the USB ports on the back of the computer. If the driver has been loaded correctly then this should plug and play and link to the first open COM port. Put the Smartcard containing the MAC Addresses, 405-758-706, for this station into the reader (gold circuit contacts should be facing up). Mount the reader somewhere safe.

5.3 Siig Quad Serial Card (not used at Venture)

The spider cable that comes with this card has four 9 pin Dsub connectors for the 4 COM ports that it provides. The connectors of the spider cable will be S1=COM3, S2=COM4, S3=COM5, and S4=COM6.

5.4 Sycard USBtest 2000 USB Port Tester (not used at Everett or Service)

Not used at Everett or Service – USB test fails when CV60 boots from a CD.

Apply power to the tester and plug the appropriate end of the USB cable going to the fixture into the Port 0 connector (see 5.1.4 above).

5.5 Vetra Smartpipe

SET SW1-4 TO UP POSITION

Plug the 9 pin Dsub connector of the 405-758-606 cable into the smartpipe's connector labeled **RS-232**.

Attach the keyboard cable to the smartpipes connector labeled **To PC**. The other end of this cable goes to the CV60's keyboard port.

If using a keyboard to communicate with the CV60 (not normal) then plug this keyboard into the smartpipe's connector labeled **Keyboard**.

5.6 Ethernet 10/100 Switch

Note that you must use this switch – you cannot simply run a crossover ethernet cable between the CV60 and the computer's ethernet port.

Run one ethernet cable, 405-758-603 between the switch and the computer. If the computer will be attached to a network then use a separate ethernet NIC card for the test station and use the computer's built-in ethernet port for the network (see figure 1 below). If the computer will not be attached to a network then simply run the test station cable from the switch to the computer's built-in port.

Run another between the switch and the CV60's ethernet port.

If the test station has an access point then run one more ethernet cable between the switch and the access point (see figure 1).

5.7 CD-ROM Drive (not used at Venture)

At the Everett production line and at service centers the CV60 will boot and run the test code from a CD. Connect the CD drive directly to the CV60 – see test procedure.

5.8 Floppy Drive (not used at Venture)

The floppy drive is used to reprogram the flash (BIOS) of the CV60 if it is not correct at Everett production or at service. If you need to use the Floppy drive then you will connect it directly to the CV60 – see the CV60 reflash procedure.

5.9 Universal Access Point with 802.11 Radio (not used at Venture)

If you are testing the RF capability of the 802.11 radios then you will need to have an access point installed on your test station. Note that Venture will not need access points.

Attach the serial cable, 405-758-608, to both the COM3 port of the computer and to the access point. Note that both ends of this cable have the same type of connector but that you must connect the end labeled "**TO PC**" to COM3 and the other end labeled "**TO UAP**" to the access point.

Plug the UAP into a wall outlet.

Attach the antenna and its adapters to the Radio A Primary Antenna port of the access point. Note that a 40dB attenuator must be in series with the adapters and antenna.

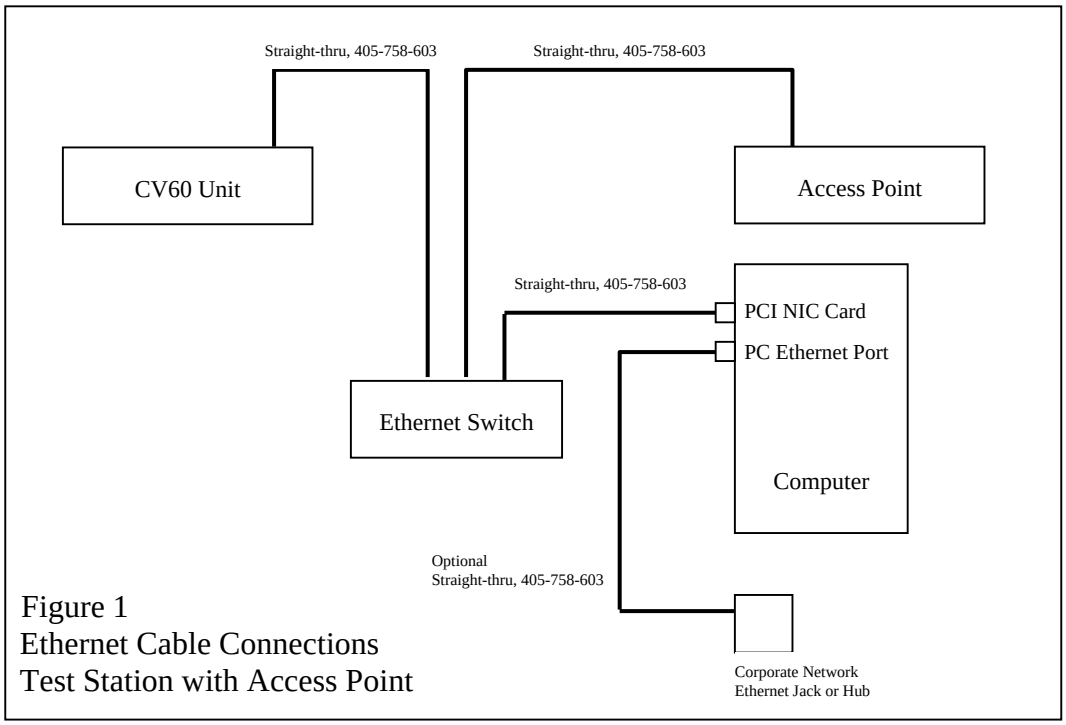


Figure 1
Ethernet Cable Connections
Test Station with Access Point

5.10 Bluetooth Radio Test Equipment

<u>If using a Serial Bluetooth test box, 405-731-500</u>

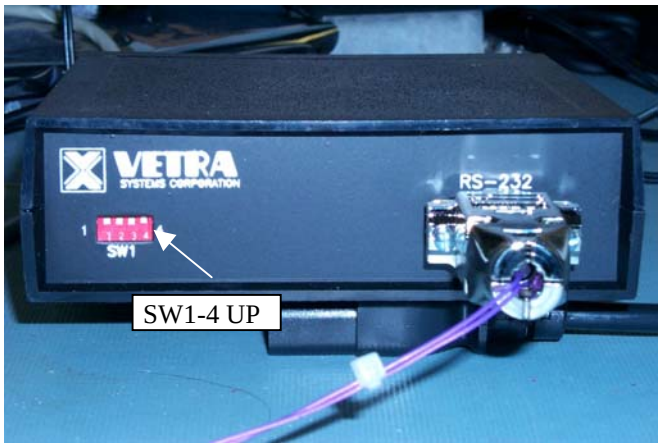
Attach the serial cable, 405-731-600, to both the COM4 port of the computer and to the test adapter box. Plug the Bluetooth adapter power cable, 405-731-601, into a wall outlet and plug the other end of it into the test adapter box. Set the adapter box's power switch to ON and verify that the green LED lights up. Place the adapter so that there is an open air path to the CV60 being tested.

<u>If using a USB Bluetooth Adapter</u>

Plug the USB bluetooth adapter into the USB extension cable and plug the other end of the cable into a USB port of the test station computer. Place the adapter so that there is an open air path to the CV60 being tested.

USB Cables shown for Venture setup

Only used at Venture



Test Station Setup Pictures

6.0 CONFIGURING THE UNIVERSAL ACCESS POINT (UAP NAMING)

6.1 HyperTerminal Startup

You will need to use the program HyperTerminal to communicate over the COM3 port with the UAP in order to initialize its name. Every UAP is given the same name as found in the test site description of the CV60.INI file. The HyperTerminal program may be found at Start->Programs->Accessories->Communications. Run HyperTerminal and create a new connection called UAP. Set it up for COM3 with the port settings 9600, 8, NONE, 1, NONE.

6.2 Network Name Changing

The newer access points changed their menus to the format shown in this section.

```
Access Point Configuration
Copyright (c) 1995-2001 Intermec Technologies Corporation.  All rights reserved.

IP:       DHCP
Serial:   18200100174

Username:
```

Enter intermec for the username and press Enter. The UAP will then ask for a password. Enter intermec and press Enter for that too. The UAP should now display the following menu:

```
Access Point Configuration
   [TCP/IP Settings]
   [IEEE 802.11B Radio]
   [Spanning Tree Settings]
   [Ethernet]
   [IP Tunnels]
   [Network Management]
   [Passwords]
   [Maintenance]
      Save Configuration
      Reboot
```

Use the down arrow key to select the IEEE 802.11B Radio option and press Enter. The following menu should now be displayed:

```
[IEEE 802.11B Radio]
   Port Control                <Enabled>
   SSID (Network Name)         "INTERMEC"
   [Wireless Bridging]
   Frequency                   <Channel 03, 2422 MHz>
   Data/Voice Settings         <Data Traffic only>
   WEP Encryption              <Disabled>
   [Advanced Configuration]
```

Use the down arrow key to select the SSID (Network Name) option and press Enter. The following menu should now be displayed:

```
Range is:
32 chars
```

Type in the name of your test station and press Enter. This is the same name that is listed in the CV60.INI file on the Testsite=”XXXXX” line.

Press Esc once to return to the Access Point Configuration menu.

6.3 Saving the configuration

Select **Save Configuration** and press Enter. The UAP will display a message indicating that is saving the changes.

6.4 Rebooting

Select **Reboot** and press Enter. After ~60 seconds the UAP will be ready for use and display the message “radio configuration #1 = good”. Exit the HyperTerminal program. The configuration is now complete.

7.0 CONFIGURING SOLID STATE HARD DRIVES AS CV60 TEST DRIVES

Currently we are using 256MB SanDisk 2.5" Flashdrives as the media to hold the operating system and test program files for the CV60 test at Venture. These should be labelled 405-758-800.

Follow the steps below to format a drive and copy the necessary files to it.

1) Plug a 256MB flashdrive into a known good CV60 unit.
2) Plug a keyboard into the unit.
3) Plug a USB floppy drive into the unit.
4) Put the released copy of the DOS 6.22 boot disk, CV60DOS, into the floppy drive.
5) Apply power to the unit and verify that it boots from the floppy into DOS. It should display the A:\> prompt after about 35 seconds.

6) Type **FDISK** and press **Enter**.
7) Type **3** <Enter> to delete the current drive partition.
8) Type **1** <Enter> to delete the Primary partition.
9) Press **Enter** to confirm the deletion.
10) If a **Volume Label** already exists then type that in followed by the Enter key.
11) Type **Y** <Enter> to confirm.
12) Press **ESC** to return to the main Fdisk menu.
13) Type **1** <Enter> to create a new DOS partition.
14) Type **1** <Enter> to create Primary DOS partition.
15) Type **Y** <Enter>.
16) Press any key to reboot.

17) After the unit reboots to the DOS prompt type **FORMAT C: /U /S**
18) Type **Y** <Enter> to confirm.
19) Wait for the formatting to complete and enter a volume label of **CV60MFG_xyz** where xyz is the version of the released code (for example 100 for version 1.00).

20) Press the power button on the CV60 to turn its power off.
21) Remove the floppy drive from the unit and plug a USB CD drive into the unit.
22) If you don't already have a CD with the latest CV60 test code on it then you will need to create one. Burn a CD from the released test image, CV60MFG (DO NOT SIMPLY DRAG AND DROP THE CV60MFG.ISO TO THE CD).
23) Place the CD into the drive.
24) Turn power back on to the CV60. You should get a COM1 error and be able to press '**A**' to abort and get to the DOS prompt. If you don't get this error message then press CTRL-C several times after the unit displays messages following the "Starting MS-DOS" prompt. This should abort the autoexec program and get the unit to the DOS prompt.
25) Type **XCOPY *.* D: /E**. This will copy the necessary files from the CD (C: drive) to the hard drive (D: drive). When prompted about the Command.com file type **N** <Enter> to NOT copy this file.

8.0 CONFIGURING A CD AS A BOOTABLE TEST DISK

Currently we are using bootable CD's as the media to hold the operating system and test program files for the CV60 test at Everett and service centers. These should be labelled 405-758-801.

Follow the steps below to format a CD and copy the necessary files to it.

8.1 Creating a bootable Flashdisk Card

1) Place a 64 Meg or larger flashdisk card in the PC Card slot of a CV60. This can be a PC Card, CF, or SD card.
2) Plug a keyboard into the unit.
3) Plug a USB floppy drive into the unit.
4) Put the released copy of the DOS 6.22 boot disk, **CV60DOS**, into the floppy drive.
5) Apply power to the unit and verify that it boots from the floppy into DOS. It should display the A:\> prompt after about 35 seconds.

6) Type **FDISK** and press **Enter**.
7) Type **5** <Enter> to change the current fixed disk drive.
8) Type **2** <Enter> to select the PC Card drive (drive D:).
9) Type **3** <Enter> to delete the current drive partition.
10) Type **1** <Enter> to delete the Primary partition.
11) Press **Enter** to confirm the deletion.
12) If a **Volume Label** already exists then type that in followed by the Enter key.
13) Type **Y** <Enter> to confirm.
14) Press **ESC** to return to the main Fdisk menu.
15) Type **1** <Enter> to create a new DOS partition.
16) Type **1** <Enter> to create Primary DOS partition.
17) Type **Y** <Enter>.
18) Press **Esc** to return to the main Fdisk menu.
19) Press **Esc** to Exit the Fdisk program.
20) Press any key to reboot.

21) After the unit reboots to the DOS prompt type **FORMAT D: /U /S**
22) Type **Y** <Enter> to confirm.
23) Wait for the formatting to complete and enter a volume label of **CV60MFGXYZ** where xyz is the version of the released code (for example CV60MFG100 for version 1.00).
24) Press the power button on the CV60 to turn its power off.
25) Remove the flashdisk card.

8.2 Running Nero to create the CV60 Test CD

1) Put the flashdisk card created above into a flashdisk reader attached to a computer and copy all the desired CV60MFG files and folders to the card. **Note: be sure to leave the existing DOS system files such as command.com, io.sys, and ms-dos.sys untouched.**

   Note: after the CD is created, the image of this card will be contained in a special partition on the CD and will be used for booting and at DOS (and to start WinCE), but it cannot be seen by WinCE after it has started. It also cannot be seen when viewing the disk from Explorer under WinCE.
2) Place a blank CD into the CD-RW drive of your computer.
3) Run the Nero Burning ROM program.
4) At the **New Compilation** window scroll down the icons on the left and click **CD-ROM (Boot)**.
5) If necessary, click on the **Boot** tab (*it probably already is selected*).
6) For the source of boot image data choose the flashdisk card drive.
7) Click on the **ISO** Tab
   File name length: **Max. of 11=8+3 chars (ISO Level 1)**
   Format: **Mode 1**
   Character Set: **ISO 9660 (standard ISO CD-ROM)**
   Leave the Joliet box checked
   Under Relax ISO restrictions: leave only the **Do not add**… box checked.
   Under Relax Joliet restrictions: leave the **Allow more than 64**… box checked.
8) Click on the **Label** Tab
   Enter a descriptive volume label in the ISO 9660 box such as CV60MFG100.
9) Click on the **Misc** Tab
   Leave both of the boxes (Cache files from disk and network & Cache files smaller than) checked. Leave the KB box set to 64.
10) Click the **New** icon to finish the New Compilation window.
11) At the main window find the files to copy to the disk (drag etc. from the right side of the window). *Note that these files are seen on the CD only after booting to WinCE or when looking at the disk with Explorer, etc. These are not seen from the unit in DOS.*
12) Click on **Recorder->Burn Compilation** or click on the Burn Compilation icon.
13) Under the Burn Tab:
    Leave both the **Write** and **Finalize CD** boxes checked.
    Leave the write speed set to **48X** if you are using an internal drive. Go slower if you have trouble.
    Leave the Write method set to **Disc-at-once.**
    Leave Number of copies set to 1.
    Leave the **Buffer underrun protection** box checked.
    Click on **Burn.**
    Leave the **Verify written data** box checked.
    After the burn and verification steps are completed click on **OK.**
    Click on **Done.**
    Remove the CD and label it CV60MFG VX.YZ (where X.YZ is the version).
    Exit the Nero program.

8.3 Making an ISO Image.

An ISO image ensures compatibility with Roxio/Adaptec, Ahead Nero, and the built-in functions in Windows XP. The images made with most software packages are exclusive to their own brand of software.

The image is made from a CD that has already been burned.

1) Install the **ISORecorderSetup** program (O:\TOOLS\CD Make ISO Image) on an XP PC.
2) Place an already made test CD into any CD drive.
3) Under Windows Explorer right-click on the drive and click on **Copy CD to image file**.
4) Enter the path and name of the image file to be created (for example CV60MFG100) and click on **Next**.
5) Click on **Finish** when its done creating the file.
6) Use WinZip to compress the file when you are done, it shrinks quite a bit.

8.4 Burning a CD from an ISO Image.

If you have an XP pc, you can install the **ISORecorderSetup** program as described above.

1) Place a blank CD in the CD RW drive.
2) Right click on the ISO file and click on **Copy image to CD.**
3) Verify the Source and Recorder settings and then click on **Next**.
4) After the CD is burned click on **Finish**.

Notes:
If you have a Windows 2000 or 98 machine, you will need to use commercial software, usually provided with the drive.

The software provided with a drive typically can only be used with the brand of drive it was shipped with.

Be sure to select the option to burn from an image. Do not “drag and drop” or you will only have a CD with the image contained in a file on it – not a disk burned with the image.

REVISION HISTORY

LEVEL	DATE	ORIGINATOR	DESCRIPTION OF CHANGE
A	06/24/03	Brian Clair	Document Released
B	10/30/03	B. Clair	Updated section 4.2 (computer setup). Added note about D-Link not necessarily needing drivers loaded. Removed reference to VER.INI. Added section 4.10 (Login as Administrator). Added CD-ROM and Floppy drive setups and modified USB cable connections. Added note that USB tester is only used at Venture.
C	12/10/03	B. Clair	Added section on creating the 256MB test hard drives. Added section on creating bootable test CD for Everett and service centers. Updated the McAfee virus scan section. Removed bluetooth driver installation.
D	01/26/04	B. Clair	Added information for using the USB Bluetooth test adapter instead of the serial test box. Added the plug-n-play instructions for the bluetooth adapter. USB cable no longer used at Everett or Service. CD drive and floppy drive plug directly into CV60 since running the USB signals through the test fixture may degrade them and cause problems. Added new entries for CV60.INI file. Added section on the VER.INI file. Added section for setting up the computer for ethernet download of WinCE file (NK.BIN).

4 Diagrams and Parts List

The schematics, bills of materials, and mechanical assembly drawings are available under ECN release.

ECN 29382 V60A MRP REL OF OPTION AND VENTURE PNS

ECN 29623 CV60 OPTIONS RELEASE

LV 800Mhz Pentium III Processor Based 815E

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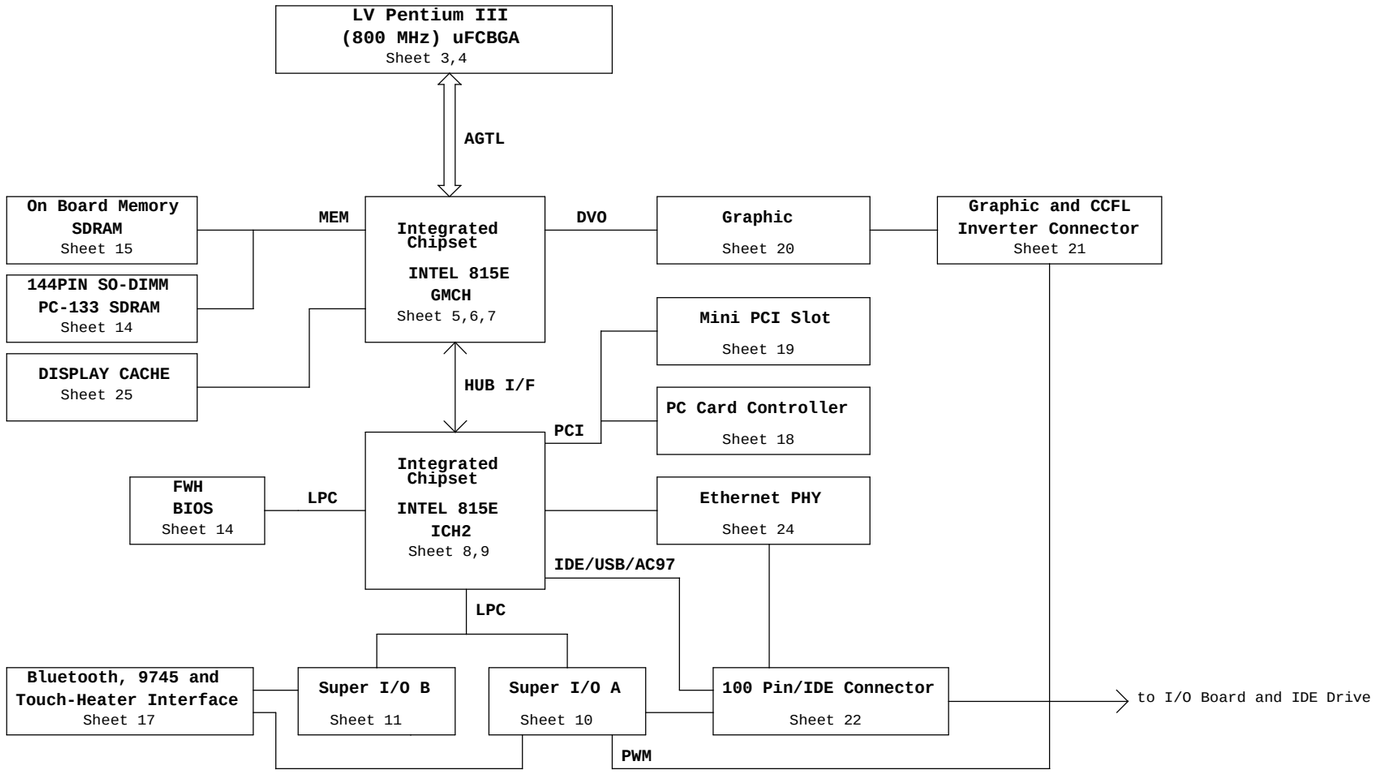
CV60 based on Intel® 815E

Block Diagram



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Title: CV60 Main Board - System Block Diagram		
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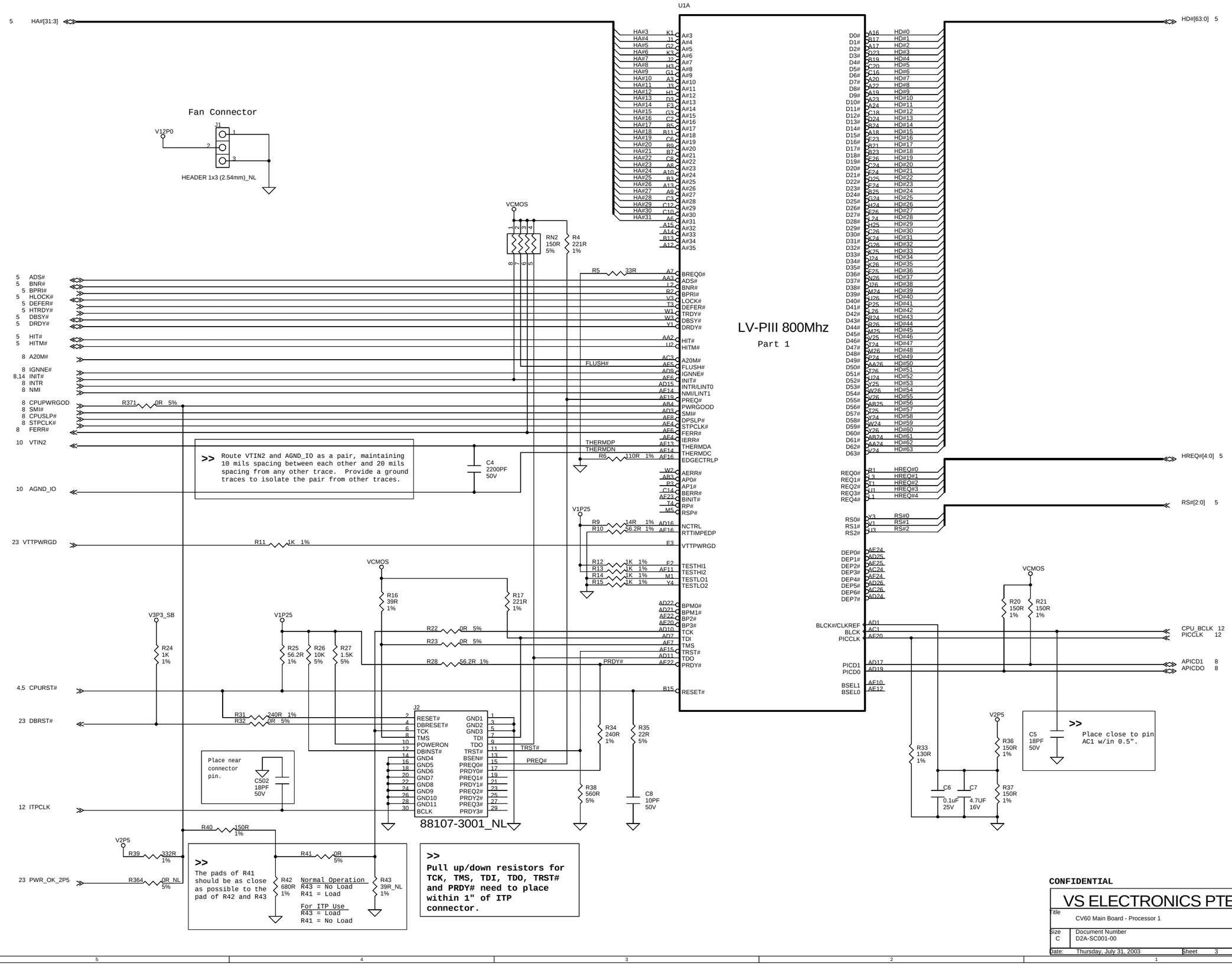

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LV-PIII 800Mhz

Part 2

LV Intel Pentium III Processor 512K VID Values

VID[4:0]	VCC (V)	VID[4:0]	VCC (V)
00100	1.050	01100	1.450
10100	1.075	11100	1.475
00011	1.100	01011	1.500
10011	1.125	11011	1.525
00010	1.150	01010	1.550
10010	1.175	11010	1.575
00001	1.200	01001	1.600
10001	1.225	11001	1.625
00000	1.250	01000	1.650
10000	1.275	11000	1.675
01111	1.300	00111	1.700
11111	1.325	10111	1.725
01110	1.350	00110	1.750
11110	1.375	10110	1.775
01101	1.400	00101	1.800
11101	1.425	10101	1.825

Vcore for LV PIII 800Mhz = 1.15V

ULV/LV Celeron 650 VID Values

VID[4:0]	VCC (V)	VID[4:0]	VCC (V)
00000	1.750	10000	0.975
00001	1.700	10001	0.950
00010	1.650	10010	0.925
00011	1.600	10011	0.900
00100	1.550	10100	0.875
00101	1.500	10101	0.850
00110	1.450	10110	0.825
00111	1.400	10111	0.800
01000	1.350	11000	0.775
01001	1.300	11001	0.750
01010	1.250	11010	0.725
01011	1.200	11011	0.700
01100	1.150	11100	0.675
01101	1.100	11101	0.650
01110	1.050	11110	0.625
01111	1.000	11111	0.600

Vcore for ULV Celeron 650Mhz = 1.10V
Vcore for LV Celeron 650Mhz = 1.15V

VCMOS
R44 75R 1%
R48 150R 1%
C9 0.1uF 25V
V1P25_CPU

For LV Pentium III 800Mhz only.

V1P8
R45 1K
R46 4.7K
R47 1K
R49 1K
R50 3K
R372 20K 1%
V3P3_SB
Q1A
Q1B
Q2 MMBT3904
UMX1N
UMX1N
THERMTRIP#
3,5 CPURST#
PWRBTN# 9,10

U1B

VCORE: D6, D8, D10, D12, D14, D16, D18, D20, D22, E5, E7, E9, E11, E13, E15, E17, E19, F21, F6, F8, E10, E12, E14, E16, E18, E20, F22, G5, G21, H6, H22, J5, J21, K6, K22, L21, M6, M22, N5, N21, P6, P22, R5, R21, T6, T22, U5, U21, V6, V22, W5, W21, Y6, Y22, AA5, AA7, AA9, AA11, AA13, AA15, AA17, AA19, AA21, AB6, AB8, AB10, AB12, AB14, AB16, AB18, AB20, AB22, AC5, AC7, AC9, AC11, AC13, AC15, AC17, AC19, AC21

VCC1 VCC2 VCC3 VCC4 VCC5 VCC6 VCC7 VCC8 VCC9 VCC10 VCC11 VCC12 VCC13 VCC14 VCC15 VCC16 VCC17 VCC18 VCC19 VCC20 VCC21 VCC22 VCC23 VCC24 VCC25 VCC26 VCC27 VCC28 VCC29 VCC30 VCC31 VCC32 VCC33 VCC34 VCC35 VCC36 VCC37 VCC38 VCC39 VCC40 VCC41 VCC42 VCC43 VCC44 VCC45 VCC46 VCC47 VCC48 VCC49 VCC50 VCC51 VCC52 VCC53 VCC54 VCC55 VCC56 VCC57 VCC58 VCC59 VCC60 VCC61 VCC62 VCC63 VCC64 VCC65 VCC66 VCC67 VCC68 VCC69 VCC70 VCC71 VCC72 VCC73 VCC74 VCC75 VCC76 VCC77 VCC78 VCC79 VCC80 VCC81

VCC38 VCC37 VCC36 VCC35 VCC34 VCC33 VCC32 VCC31 VCC30 VCC29 VCC28 VCC27 VCC26 VCC25 VCC24 VCC23 VCC22 VCC21 VCC20 VCC19 VCC18 VCC17 VCC16 VCC15 VCC14 VCC13 VCC12 VCC11 VCC10 VCC9 VCC8 VCC7 VCC6 VCC5 VCC4 VCC3 VCC2 VCC1

AF2 AF1 AE18 AE3 AD20 AD18 AD14 AD12 AD6 AD5 AC23 AC4 AA23 AA4 W23 W4 V4 U23 R23 R4 N23 N4 L4 J23 J4 G23 G4 E6 E4 D5 C19 C17 C15 C13 C11 C9 C7 C5 C26

AF12 AD5

CMOSREF2 CMOSREF1

AF18 AE16 AE10 AE8 AD23 AD13 AA24 AA6 P5 P4 P1 N24 N4 L5 F1 E1 D26 D1 C22 C4 C1 B11 A11 A5 A2

NC25 NC24 NC23 NC22 NC21 NC20 NC19 NC18 NC17 NC16 NC15 NC14 NC13 NC12 NC11 NC10 NC9 NC8 NC7 NC6 NC5 NC4 NC3 NC2 NC1

VSS146 VSS145 VSS144 VSS143 VSS142 VSS141 VSS140 VSS139 VSS138 VSS137 VSS136 VSS135 VSS134 VSS133 VSS132 VSS131 VSS130 VSS129 VSS128 VSS127 VSS126 VSS125 VSS124 VSS123 VSS122 VSS121 VSS120 VSS119 VSS118 VSS117 VSS116 VSS115 VSS114 VSS113 VSS112 VSS111 VSS110 VSS109 VSS108 VSS107 VSS106 VSS105 VSS104 VSS103 VSS102 VSS101 VSS100 VSS099 VSS098 VSS097 VSS096 VSS095 VSS094 VSS093 VSS092 VSS091 VSS090 VSS089 VSS088 VSS087 VSS086 VSS085 VSS084 VSS083 VSS082 VSS081 VSS080 VSS079 VSS078 VSS077 VSS076 VSS075 VSS074 VSS073 VSS072 VSS071 VSS070 VSS069 VSS068 VSS067 VSS066 VSS065 VSS064 VSS063 VSS062 VSS061 VSS060 VSS059 VSS058 VSS057 VSS056 VSS055 VSS054

AE26 AE25 AE26 AE23 AE21 AE19 AE17 AE15 AE13 AE11 AE9 AE7 AE5 AE1 AD2 AC25 AC22 AC20 AC18 AC16 AC14 AC12 AC10 AC8 AC6 AB23 AB21 AB19 AB17 AB15 AB13 AB11 AB9 AB7 AB5 AB2 AA25 AA22 AA20 AA18 AA16 AA14 AA12 AA10 AA8 AA6 V23 V21 V5 V2 U25 U22 U6 U4 T23 T21 T5 T2 R25 R22 R6 R4 P23 P21 P2 N25 N22 N6 M23 M21 M4 M3 M2 L25 L22 L6 K23 K21 K5 K4 K2 J25 J22 J6 H23

VSS1 VSS2 VSS3 VSS4 VSS5 VSS6 VSS7 VSS8 VSS9 VSS10 VSS11 VSS12 VSS13 VSS14 VSS15 VSS16 VSS17 VSS18 VSS19 VSS20 VSS21 VSS22 VSS23 VSS24 VSS25 VSS26 VSS27 VSS28 VSS29 VSS30 VSS31 VSS32 VSS33 VSS34 VSS35 VSS36 VSS37 VSS38 VSS39 VSS40 VSS41 VSS42 VSS43 VSS44 VSS45 VSS46 VSS47 VSS48 VSS49 VSS50 VSS51 VSS52 VSS53

A25 B2 B4 B6 B8 B10 B12 B14 B16 B18 B20 B22 B24 C23 C25 D4 D7 D9 D11 D13 D15 D17 D19 D21 D24 E10 E12 E14 E16 E18 E20 E22 E25 F4 F5 F7 F9 F11 F13 F15 F17 F19 F21 F23 G6 G22 G25 H4 H5 H21

A4 A21 H26 N1 AA1 AB26 AF9 AF21

VREF1 VREF2 VREF3 VREF4 VREF5 VREF6 VREF7 VREF8

PLL1 PLL2

N3 N2

VID0 VID1 VID2 VID3 VID4

A13 A14 A15 A16 A17

R3

LV-PIII 800Mhz
Part 2

>>
a) 0.47uF capacitors directly under the package on the solder side of the board using at least two vias per capacitor node.
b) Keep 10uF capacitors around the package periphery near the balls. Trace lengths to the vias should be designed to minimize inductance. Avoid bending traces to minimize ESL.

VCORE
C10 C11 C12 C13 C14 C15 C16 C17 C18 — 0.47UF 10V
C19 C20 C21 C22 C23 C24 C25 C26 C27 — 0.47UF 10V
C28 C29 C30 C31 C32 C33 C470 C471 — 0.47UF 10V
C34 C35 C36 C37 C38 C39 C40 C41 C42 C43 — 10UF 6.3V

>>
Place twelve 1uF and four 4.7uF capacitors close to the package. At least two vias per capacitor node. Trace lengths to the vias should be designed to minimize inductance.

V1P25_CPU
V1P25
FB25
HU-1H3216-500
C44 C45 C46 C47 C48 C49 C50 C51 C52 C53 — 1UF 10V
C456 C457 C458 C459 C460 C461 — 1UF 10V / 4.7UF 16V

>>
a) Minimize CPU_AGTLREF length, and 20 mils minimum width.
b) Keep capacitors close to CPU w/in 500mils. (1 cap for every 2 input pins)

V1P25
R51 75R 1%
R52 150R 1%
CPU_AGTLREF
C54 C55 C56 C57 — 0.1uF 25V

V1P25
R53 1R 5%
L1 4.7uH
C58 33UF 20V
PLL1
PLL2

>>
a) Keep capacitor close to PLL1 and PLL2 pins, with less than 0.1 Ohm per route.
b) PLL2 route should be parallel and next to PLL1 route (minimize loop area).
c) Keep inductor close to the capacitor. Any routing resistance should be inserted between V1P25 and the inductor.

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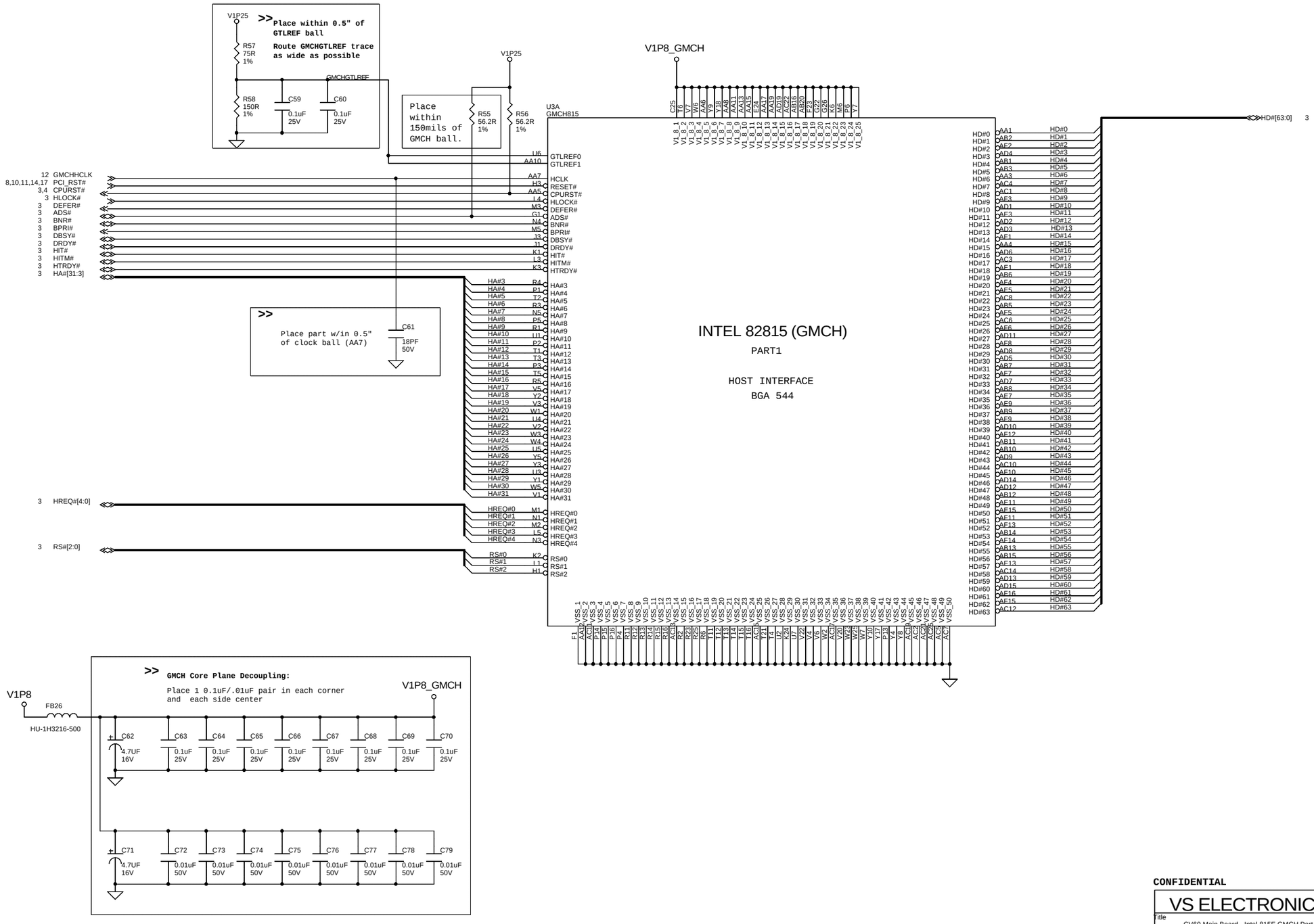
82815 PART 1: HOST INTERFACE



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VS ELECTRONICS PTE LTD

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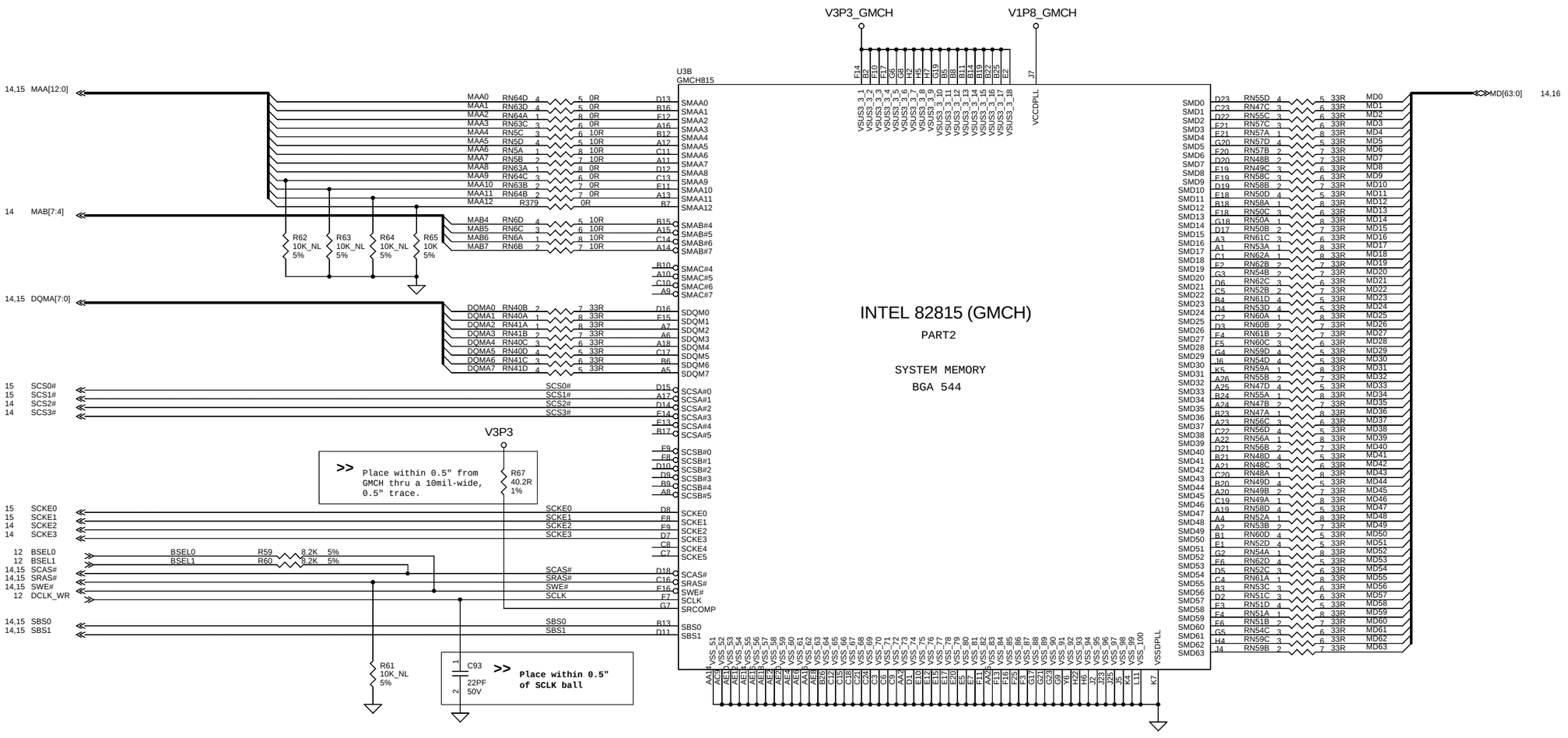
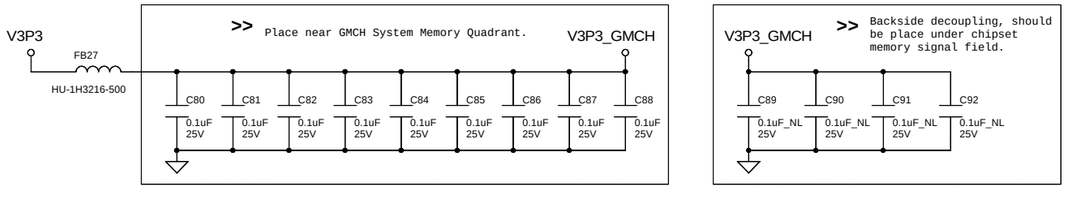
82815 PART 2: SYSTEM MEMORY

GMCH Power up/Reset Strap Option

Pin Name	Description	
SWE#	Host Freq.	High = 100MHz (default) Low = 66MHz
SCAS#	Host Freq.	High = 133MHz (default) Low = 100MHz or 66MHz
SRAS#	XOR Test Mode	High = Normal (default) Low = XOR Test Mode
MAA9	FSB P-MOS Kicker	High = enabled (Non-CuMine) (default) Low = Disabled (CuMine)
MAA10	All Z	High = Normal (default) Low = All Z
MAA11	IOQ Depth	High = 4 (default) Low = 1





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VS ELECTRONICS PTE LTD

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82815 PART 3:
VIDEO INTERFACE
DISPLAY CACHE INTERFACE
HUB INTERFACE

L_FSEL	
Display Cache Freq.	High = 133Mhz (default) Low = 100Mhz

>> Caps placed close as possible to power pins with short, wide direct connections

>> Backside decoupling, should be placed under chipset display cache signal field.

>> Place near GMCH Display Cache Quadrant. Within 70mils of GMCH.

>> Place resistor within 0.5' of the LOCLK Ball

>> Place Resistor within 0.5' of the GRCOMP Ball

>> DVO[11:0] should be 5mils wide, 20mils spacing minimum. Should be 7" maxium length, within +/- 0.1" of DVO_CLK[1:0].

>> DVO_CLK0 should be 5mils wide with max. length of 7". 20 mils from adjacent signal also.

>> Place as close as possible to IREF and Via straight to VSS plane.

>> Place as close as possible to GMCH ball.

>> Place w/in 0.5" of clock pin (F22).

>> Place site w/in 0.5" of clock ball (AE24).

>> HL[10:0] should be matched w/in 100mils of HLSTB and HLSTB#. Max. 7".

>> Place resistor w/in 0.5" with 10 mils wide, 0.5" trace.

>> HLSTB and HLSTB# should be the same length. Max. 7".

>> Place as close as possible to GMCH and via straight to VSS plane.

INTEL 82815 (GMCH)

PART3

VIDEO INTERFACE
DISPLAY CACHE INTERFACE
HUB INTERFACE

BGA 544

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VS ELECTRONICS PTE LTD

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ICH2, Part 1

>> Distribute near 1.8V power pins of the ICH2.

V1P8 — FB29 FB390@100MHz — V1P8_ICH

C125 0.1uF 25V, C126 0.1uF 25V, C127 0.1uF 25V, C450 0.1uF 25V, C451 0.1uF 25V, C452 0.1uF 25V, C453 0.1uF 25V, C454 0.1uF 25V, C128 4.7UF 16V

V3P3_SB >> Place near Power Pin.

C112 4.7UF 16V, C113 0.1uF 25V, C114 0.1uF 25V, C115 0.1uF 25V, C116 0.1uF 25V

V1P8_SB >> Place near Power Pin.

C506 0.1uF 25V, C507 0.1uF 25V

V3P3 — FB30 FB390@100MHz — V3P3_ICH

>> Place 1 0.1uF/0.01uF pair at each corner.

C117 0.1uF 25V, C118 0.1uF 25V, C123 0.1uF 25V, C124 0.1uF 25V, C119 0.01uF 50V, C120 0.01uF 50V, C121 0.01uF 50V, C122 0.01uF 50V

V5P0 >> Place near V5P0 pull up RNET.

C462 0.1uF 25V, C463 0.1uF 25V, C464 0.1uF 25V, C465 0.1uF 25V

U4A 82801BA

V3P3_ICH: E14 E15 E16 E17 F18 G18 H18 J18 P18 R18 R6 T5 U5 V5 V6 V7 V8

V1P8_ICH: D10 E5 K19 L19 P5 V9 D2

V3P3_SB: U18 T18 F5 G5 V17 V18

V1P8_SB: V14 V15 V16 H5 J5

C1 C2 D1 E2 E3 E4 F4 G4 H3 H4 J1 J2

NC1 NC2 NC3 NC4 NC5 NC6 NC7 NC8 NC9 NC10 NC11 NC12

18,19 AD[31:0]

AD0 AA4, AD1 AB4, AD2 Y4, AD3 W5, AD4 W4, AD5 Y5, AD6 AB3, AD7 AA5, AD8 AB5, AD9 Y3, AD10 W6, AD11 W3, AD12 Y6, AD13 Y2, AD14 AA6, AD15 Y1, AD16 V2, AD17 AA8, AD18 V1, AD19 AB8, AD20 U4, AD21 W9, AD22 U3, AD23 Y9, AD24 U2, AD25 AB9, AD26 U1, AD27 W10, AD28 T4, AD29 Y10, AD30 T3, AD31 AA10

V5P0 V3P3

R81 1K, R82 1K, R83 1K

U5 74LVC07A: 1A 1Y 2A 2Y 3A 3Y Gnd Vcc 6A 6Y 5A 5Y 4A 4Y

22 PCIRST#_IDE

5,10,11,14,17 PCI_RST#

18,19 PCI_RST1#

R84 1K, C129 0.1uF 25V, PCIRST#, C132 10PF 50V

18,19 C/BE#[3:0]

C/BE#0 AA3, C/BE#1 AB6, C/BE#2 Y8, C/BE#3 AA9 — C_BE#0, C_BE#1, C_BE#2, C_BE#3

Place w/in 0.5" of clock ball(C14). C131 18PF NL 50V

12 PCLK_ICH

18,19 FRAME#

18,19 DEVSEL#

18,19 IRDY#

18,19 TRDY#

18,19 STOP#

18 PLOCK#

18,19 PAR

18,19 SERR#

18,19 PERR#

18,19 PME#

18 REQA#

18 GNTA#

PCICLK W11, FRAME# V3, DEVSEL# AB7, IRDY# W8, TRDY# V4, STOP# W1, PCIRST# AA15, PLOCK# AA7, PAR W2, SERR# W7, PERR# Y7, PCI_PME# Y15, REQ#A/GPI0 M3, GNT#A/GPO16 L2

V5P0

RN43A 8 1 2.7K, RN43C 6 3 2.7K, RN43B 7 2 2.7K, RN43D 5 4 2.7K

PIRQ#E/GPI2 N3, PIRQ#F/GPI3 N2, PIRQ#G/GPI4 N1, PIRQ#H/GPI5 M4

21 LAMP_FAULT#

20,21 BL_ON

LAMP_FAULT# — TP3 1 — GPI6 Y11, GPI7 AA11, GPI8 Y14, GPI12 W14, GPI13 AB15

10,11 LPC_PME#

22 P1_ENAB

22 P2_ENAB

20 LCD_RST# — TP4 1 — GPO18 A15, GPO19 D14, GPO20 C14, GPO21 L1

14 BOOTLOCK# — TP5 1 — GPOD22 B14, GPO23 A14, GPIOD27 AB14, GPIOD28 AA14

V3P3_SB V3P3

RN19 8.2K: LAMP_FAULT#, FLG_P1#, FLG_P2#, LPC_PME#

V5P0

RN13 2.7K, RN14 2.7K, RN15 8.2K — V3P3

VSS0 VSS1 VSS2 VSS3 VSS4 VSS5 VSS6 VSS7 VSS8 VSS9 VSS10 VSS11 VSS12 VSS13 VSS14 VSS15 VSS16 VSS17 VSS18 VSS19 VSS20 VSS21 VSS22 VSS23 VSS24 VSS25 VSS26 VSS27 VSS28 VSS29 VSS30 VSS31 VSS32 VSS33 VSS34 VSS35 VSS36 VSS37 VSS38 VSS39 VSS40 VSS41 VSS42 VSS43 VSS44 VSS45 VSS46 VSS47 VSS48 VSS49 VSS50 VSS51 VSS52 VSS53 VSS54 VSS55 VSS56 VSS57 VSS58 VSS59 VSS60 VSS61 VSS62 VSS63 VSS64 VSS65 VSS66 VSS67 VSS68 VSS69 VSS70

A20M# P11, CPUSLP# A12, FERR# P22, IGNNE# A11, INIT# C12, INTR C11, NMI R11, SMI# R12, STPCLK# C10, RCIN# B13, A20GATE C13, CPUPWRGOD A13

HL0 A4, HL1 B5, HL2 A5, HL3 B6, HL4 B7, HL5 A8, HL6 B8, HL7 A9, HL8 C8, HL9 C6, HL10 C7, HL11 C5

V1P8 — R85 40.2R 1% >> Place as close as possible to ICH. — TP1 1

V5P0 — RN10 2.7K, RN11 2.7K

>> 5mils wide, 20mils spacing and 7" max. length. Should be matched w/in +/-0.1" of HLSTB & HLSTB#.

HLSTB A6, HLSTB# A7, HCOMP A3 IHCOMP_PU, HUBREF B4

V5P0 — R88 2.7K, R89 2.7K — V3P3

PIRQ#A P1, PIRQ#B P2, PIRQ#C P3, PIRQ#D N4

IRQ14 F21, IRQ15 C16

APICCLK N20, APICD1 N19, APICD0 P22, SERIRQ N21

REQ#0 R2, REQ#1 R3, REQ#2 T1, REQ#3 AB10, REQ#4 P4, REQ#5 L3 — REQ#B/GPI1/REQ#5

RN12 8.2K — REQ0# — GNT0#

GNT#0 M2, GNT#1 M1, GNT#2 R4, GNT#3 T2, GNT#4 R1 R4 — GNT#B/GPO17/GNT#5

LAN_RXD0 G2, LAN_RXD1 G1, LAN_RXD2 H1

LAN_TXD0 E3, LAN_TXD1 E2, LAN_TXD2 E1

R459 22R, R460 22R, R461 22R

LAN_RSTSYNC H2, LAN_CLK G3

R462 22R

C572 10PF 50V

V1P8 — R86 301R 1%, C130 0.1uF 25V, R87 301R 1%

>> Place as close as possible to ICH and via straight to VSS plane.

A20M# 3, CPUSLP# 3, FERR# 3, IGNNE# 3, INIT# 3,14, INTR 3, NMI 3, SMI# 3, STPCLK# 3, RCIN# 10, A20GATE 10, CPUPWRGOD 3, HL[10:0] 7

HLSTB 7, HLSTB# 7

INTB# 18, INTC# 19, INTD# 19

IRQ14 22

APICCLK_ICH 12, APICD1 3, APICD0 3, SER_IRQ 10,11,18

REQ1# 18, REQ2# 19

GNT1# 18, GNT2# 19

LAN_RXD0 24, LAN_RXD1 24, LAN_RXD2 24

LAN_TXD0 24, LAN_TXD1 24, LAN_TXD2 24

LAN_RSTSYNC 24, LAN_CLK 24

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ICH2

PART 2

LCD Reset Rework to New Circuit (GPIO25)

Old Circuit	R489 load, R490 on load
New Circuit	R489 no load, R490 load

Normal	Open pin1 and pin2 of J3
Clear CMOS	Short pin 2 and pin2 of J3

All IDE signals has to be 5 mils wide, 5 mils spacing, 8" max. length and match w/in +/-1".

>> Place <1" of ICH.

>> Place w/in 0.5" of clock ball pins.

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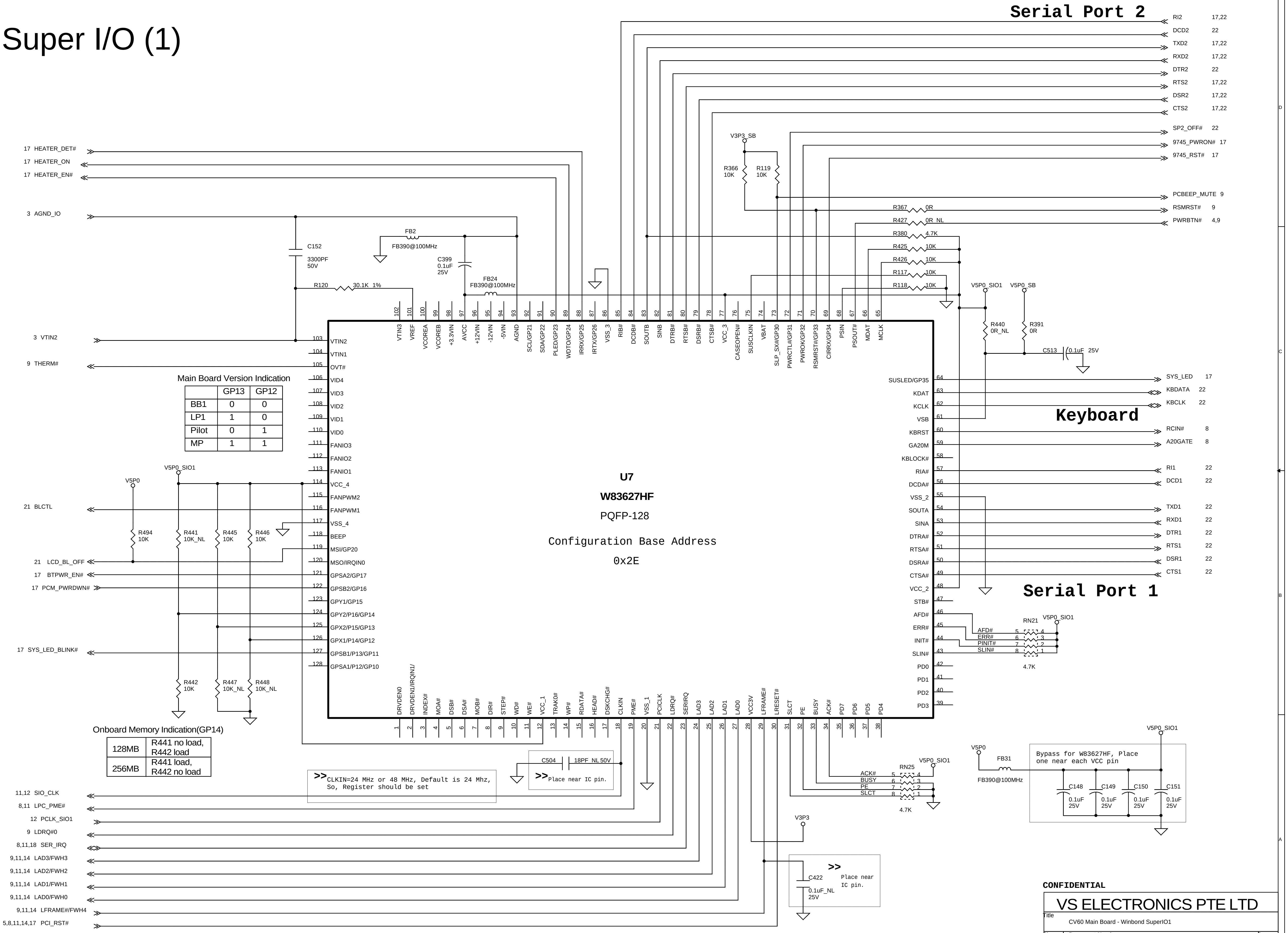
Super I/O (1)



Main Board Version Indication

	GP13	GP12
BB1	0	0
LP1	1	0
Pilot	0	1
MP	1	1

Onboard Memory Indication(GP14)

128MB	R441 no load, R442 load
256MB	R441 load, R442 no load

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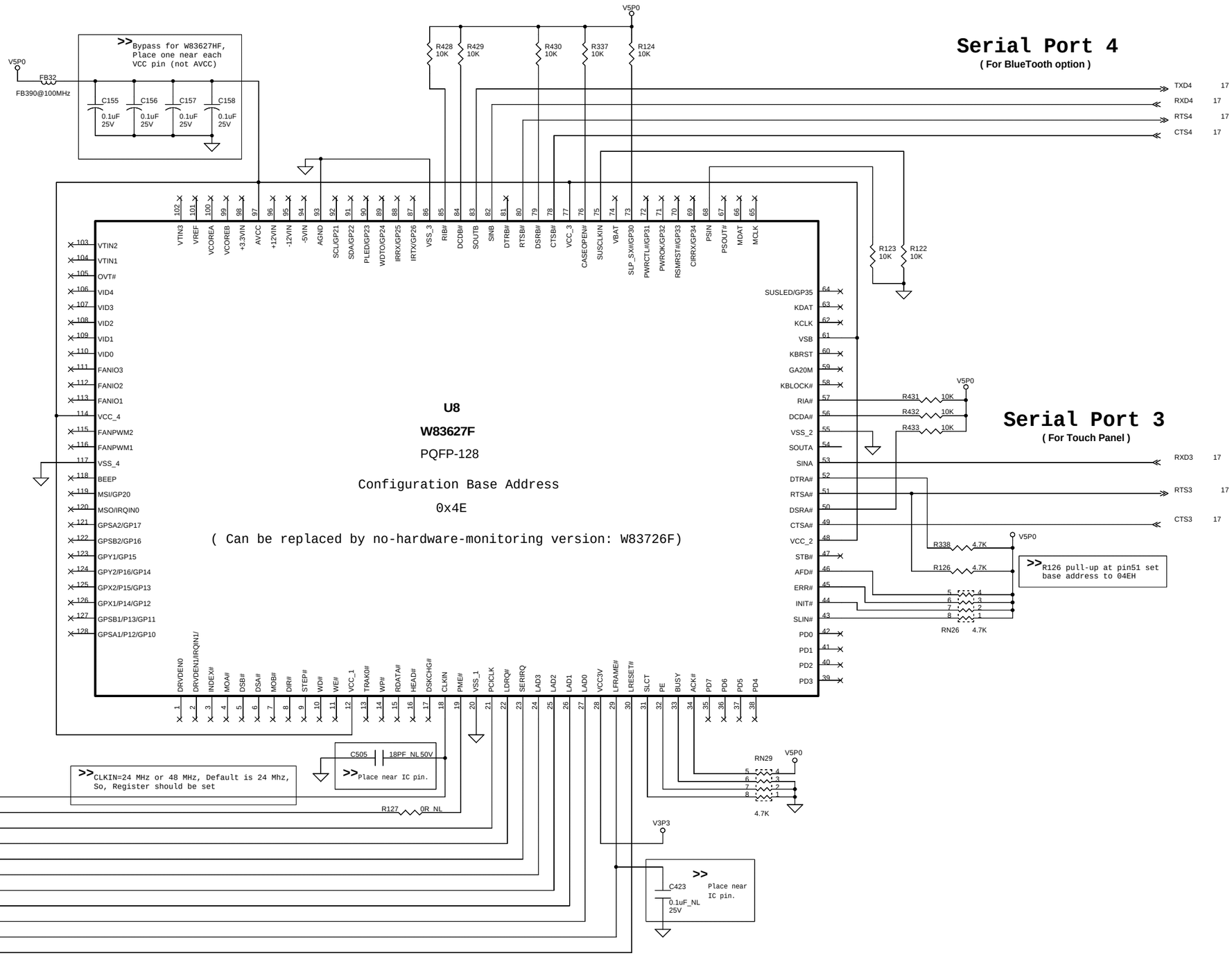
Super I/O (2)



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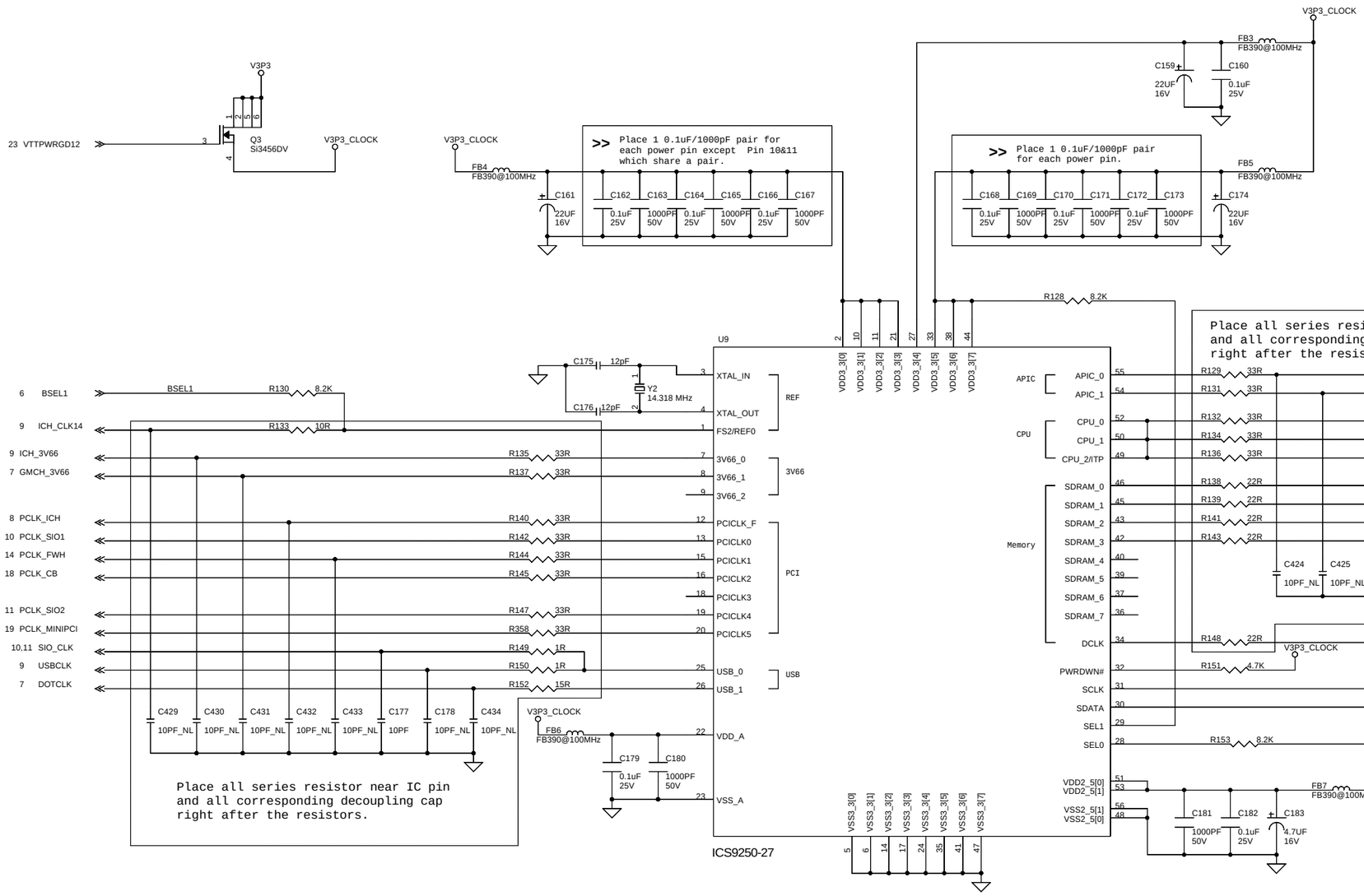

Supported system bus and system memory bus frequency

Front Side Bus	System Memory Bus
66Mhz	100Mhz
100Mhz	100Mhz
133Mhz	100Mhz
133Mhz	133Mhz

	R18	R434
LV PIII 800Mhz	Load	No load
ULV Celeron 650Mhz	No load	Load

>> All clock must be routed 5mils wide and 15mils spacing to other signal.

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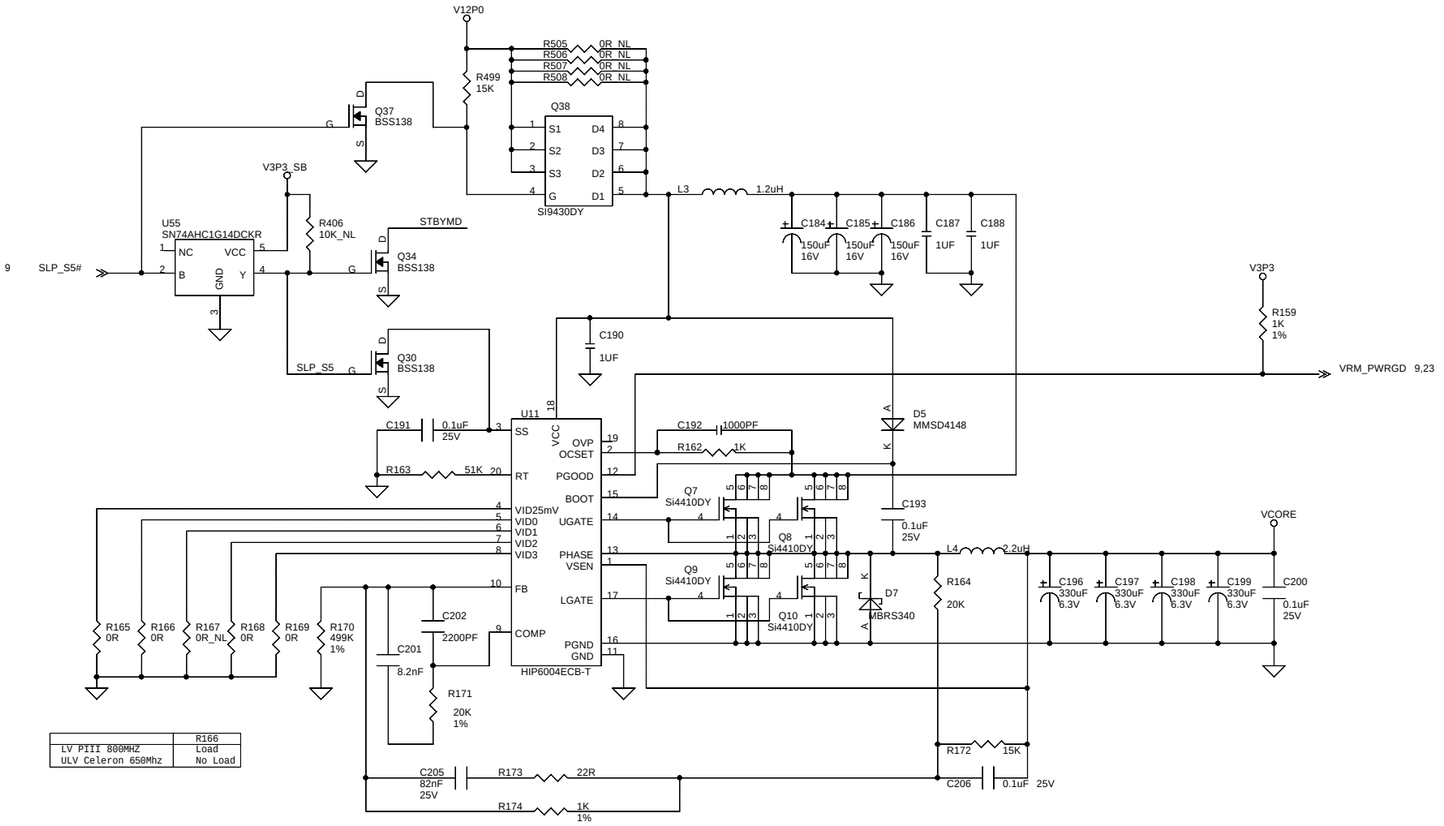
VS ELECTRONICS PTE LTD

Title	CV60 Main Board - CLOCK GENERATOR	
Size C	Document Number D2A-SC001-00	Rev 0.0
Date: Thursday, July 31, 2003	Sheet 12 of 27	



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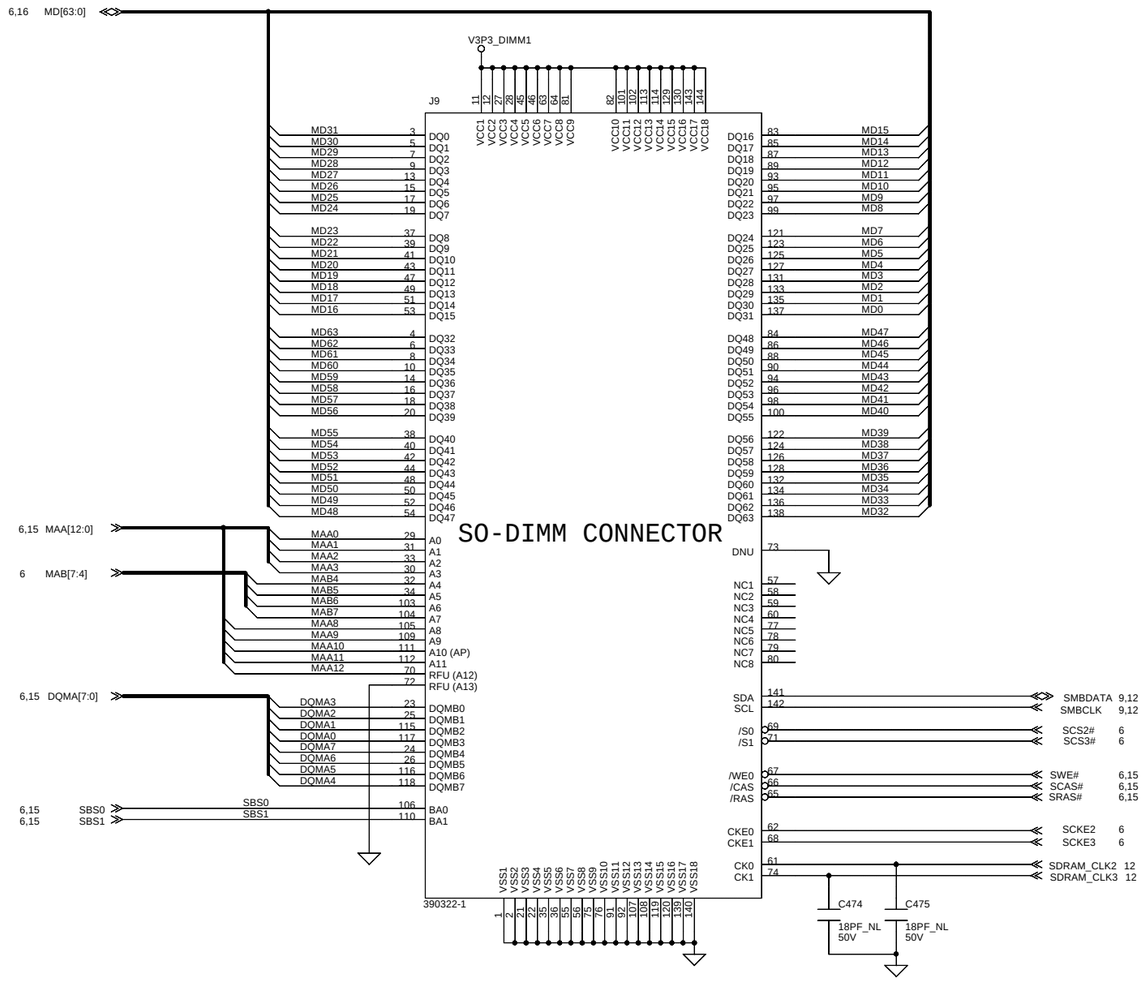
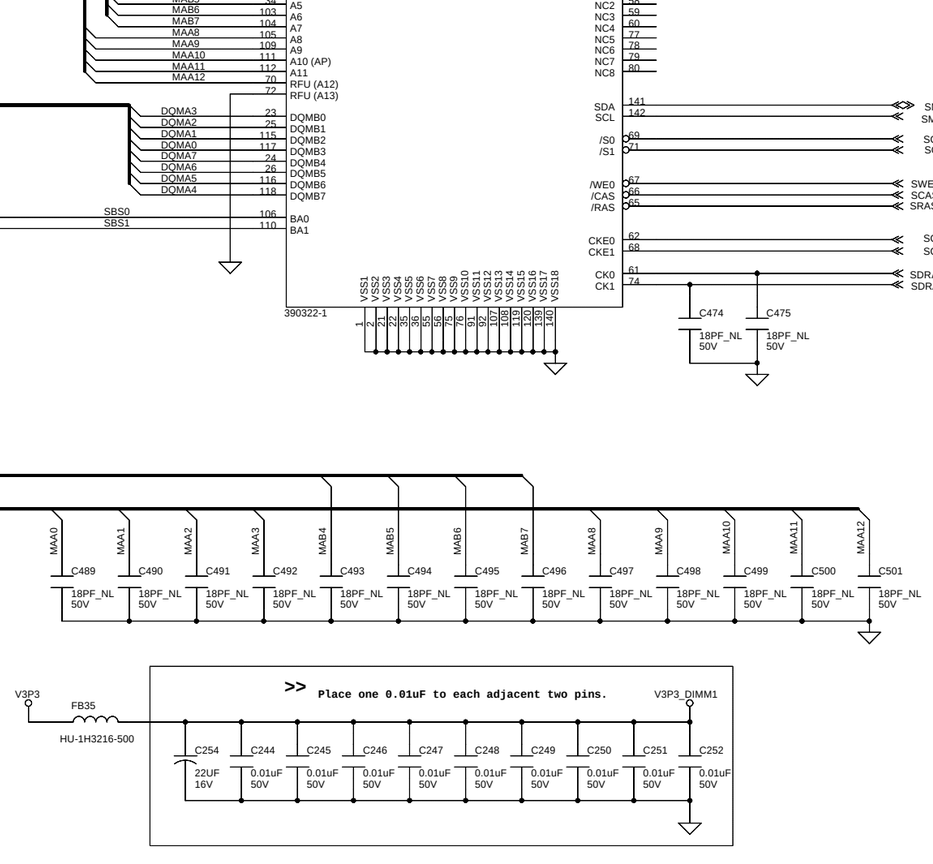
VS ELECTRONICS PTE LTD

Title	CV60 Main Board - Power Supply		
Size C	Document Number D2A-SC001-00		Rev 0.0
Date: Thursday, July 31, 2003	Sheet 13 of 27		

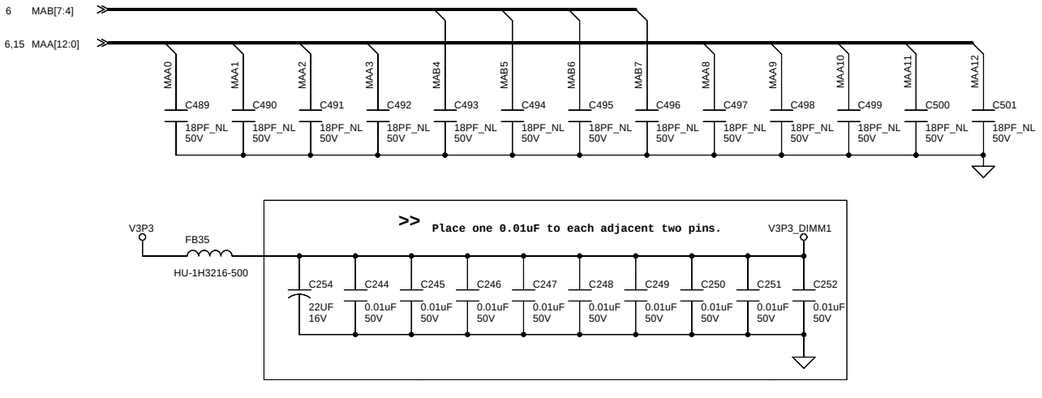
FirmWare Hub (FWH)





Notes:

When WP# is low, prevent programming to all but the highest addressable block. When high (tied to 3.3V), it disables hardware write protection for these blocks. This pin cannot be left unconnected.



CONFIDENTIAL

VS ELECTRONICS PTE LTD

Title	CV60 Main Board - SO-DIMM and Firmware Hub	
Size C	Document Number D2A-SC001-00	Rev 0.0
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6,14 DQMA[7:0]

16 MDB[63:0]

6,14 SWE#

6,14 SCAS#

6,14 SRAS#

6,14 SBS0

6,14 SBS1

12 SDRAM_CLK0

6 SCKE0

6 SCS0#

V3P3_MEM

U64 U65 U66 U67 U68 U69 U70 U71

SDRAM16Mx16

6 SCS1#

6 SCKE1

12 SDRAM_CLK1

6,14 MAA[12:0]

V3P3

FB40

HU-1H3216-500

>> Place three 0.1uF decoupling capacitors to each memory chip.

0.1uF C529 C530 C531 C532 C533 C534 C535 C536 C537 C538 C539 C540 C541 C542 C543 C544 C545 C546 C547 C548 C549 C550 C551 C552

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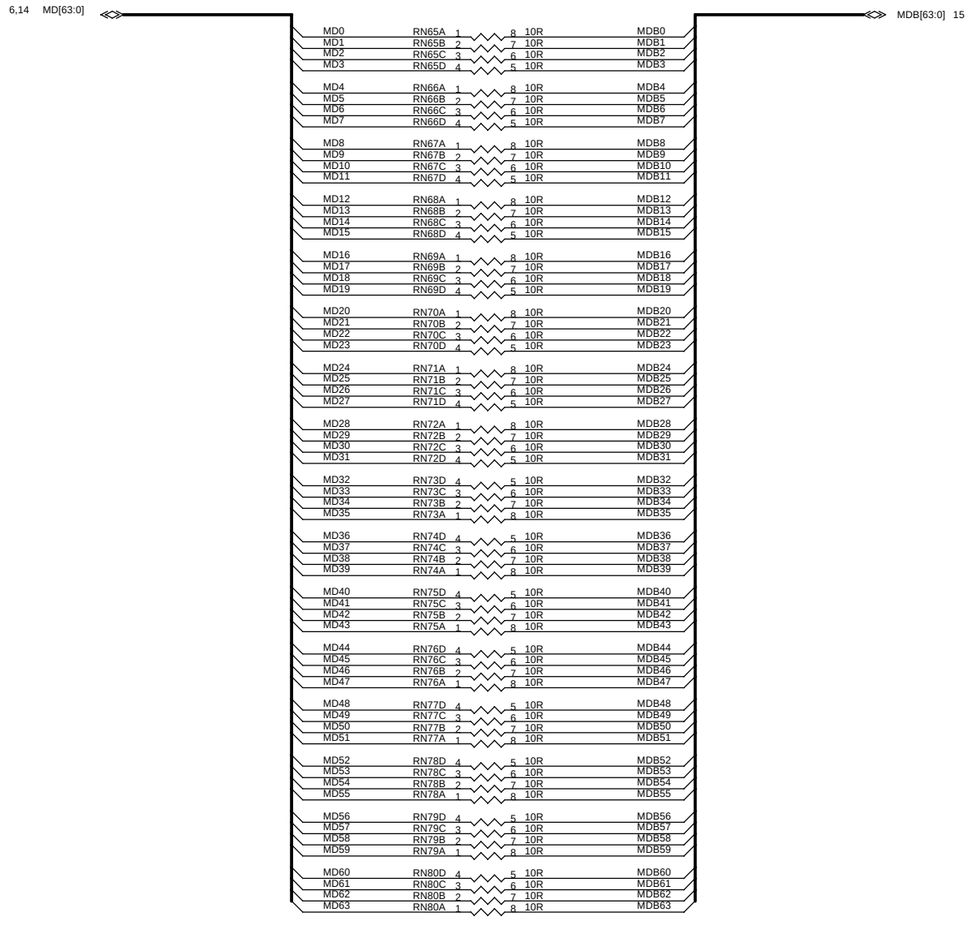
VS ELECTRONICS PTE LTD

Title	CV60 Main Board - ON BOARD MEMORY	
Size C	Document Number D2A-SC001-00	Rev 0.0
Date: Thursday, July 31, 2003	Sheet 15 of 27	



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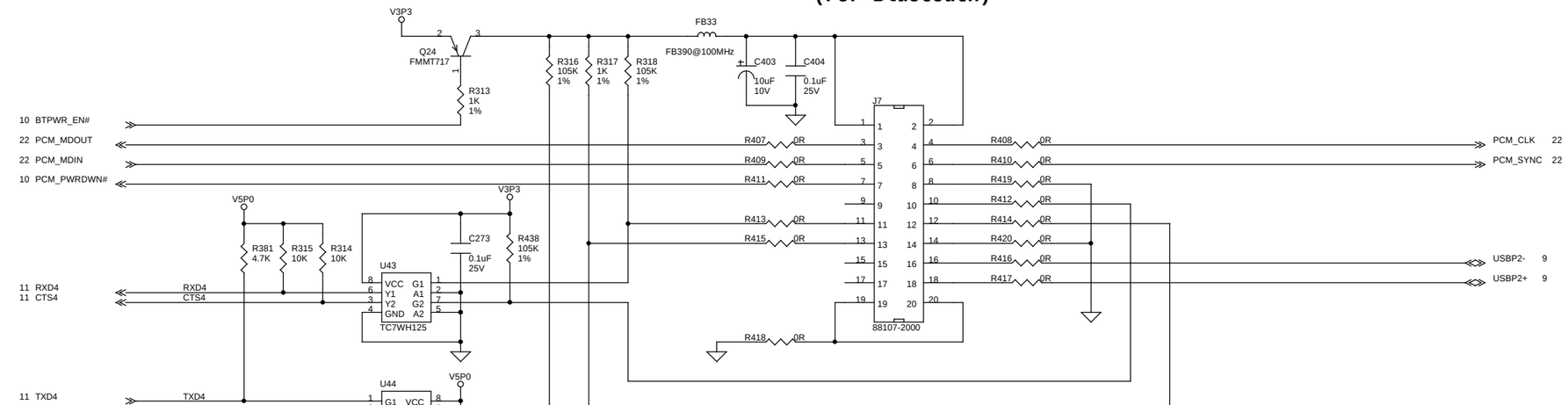
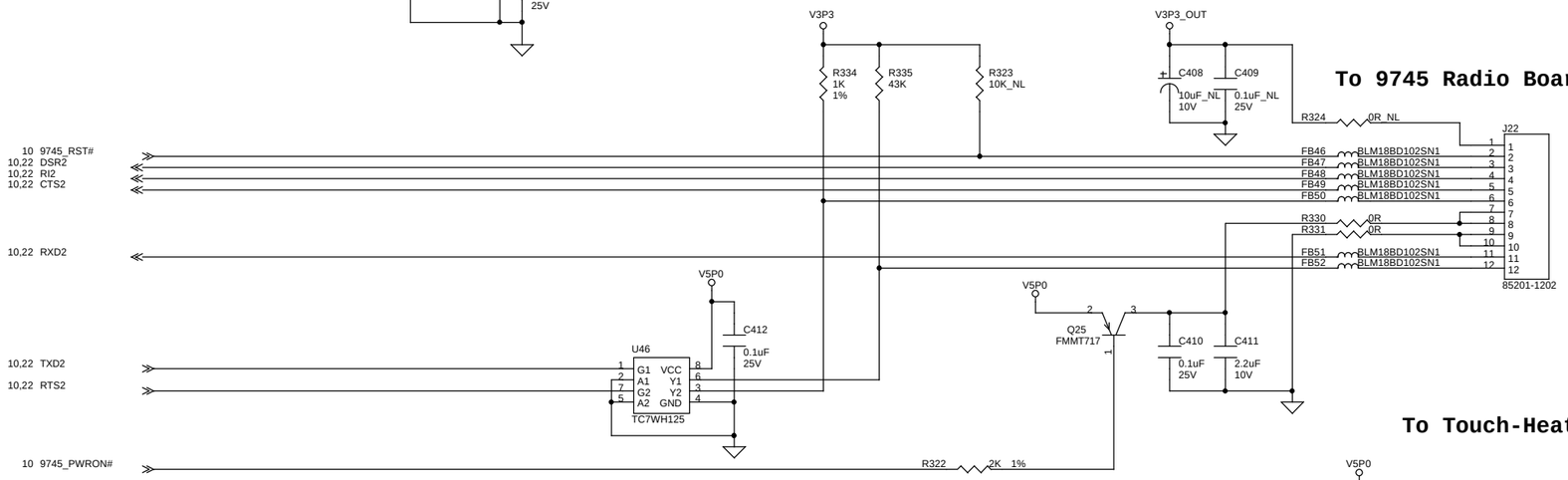
VS ELECTRONICS PTE LTD

Title: CV60 Main Board - Resistor Array of On Board Memory		
Size: C	Document Number: D2A-SC001-00	Rev: 0.0
Date: Thursday, July 31, 2003	Sheet 16 of 27	

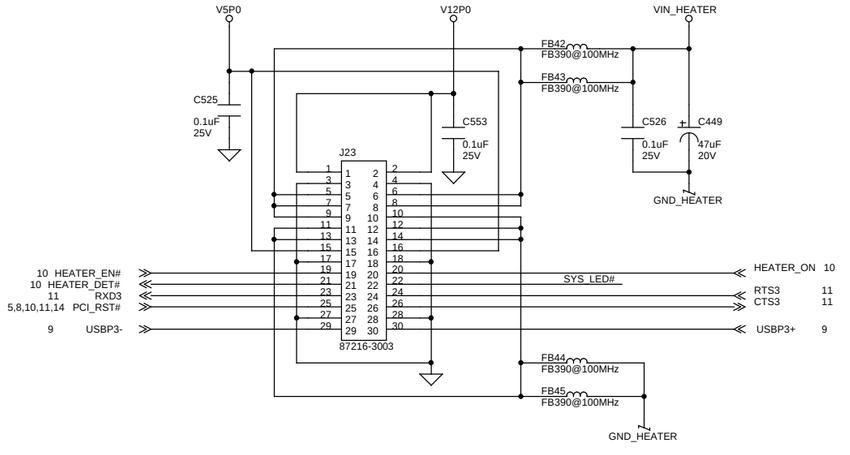
To Radome Board (For Bluetouth)

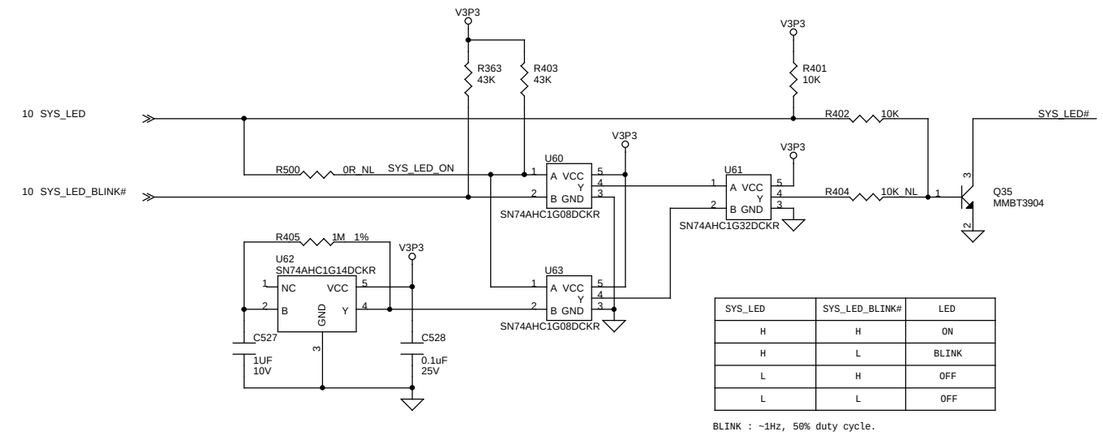


To 9745 Radio Board



To Touch-Heater Board





SYS_LED	SYS_LED_BLINK#	LED
H	H	ON
H	L	BLINK
L	H	OFF
L	L	OFF

BLINK : ~1Hz, 50% duty cycle.

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VS ELECTRONICS PTE LTD

Title	CV60 Main Board - Radome(Bluetouth), 9745 and Touch-Heater Interface	
Size C	Document Number D2A-SC001-00	Rev 0.0
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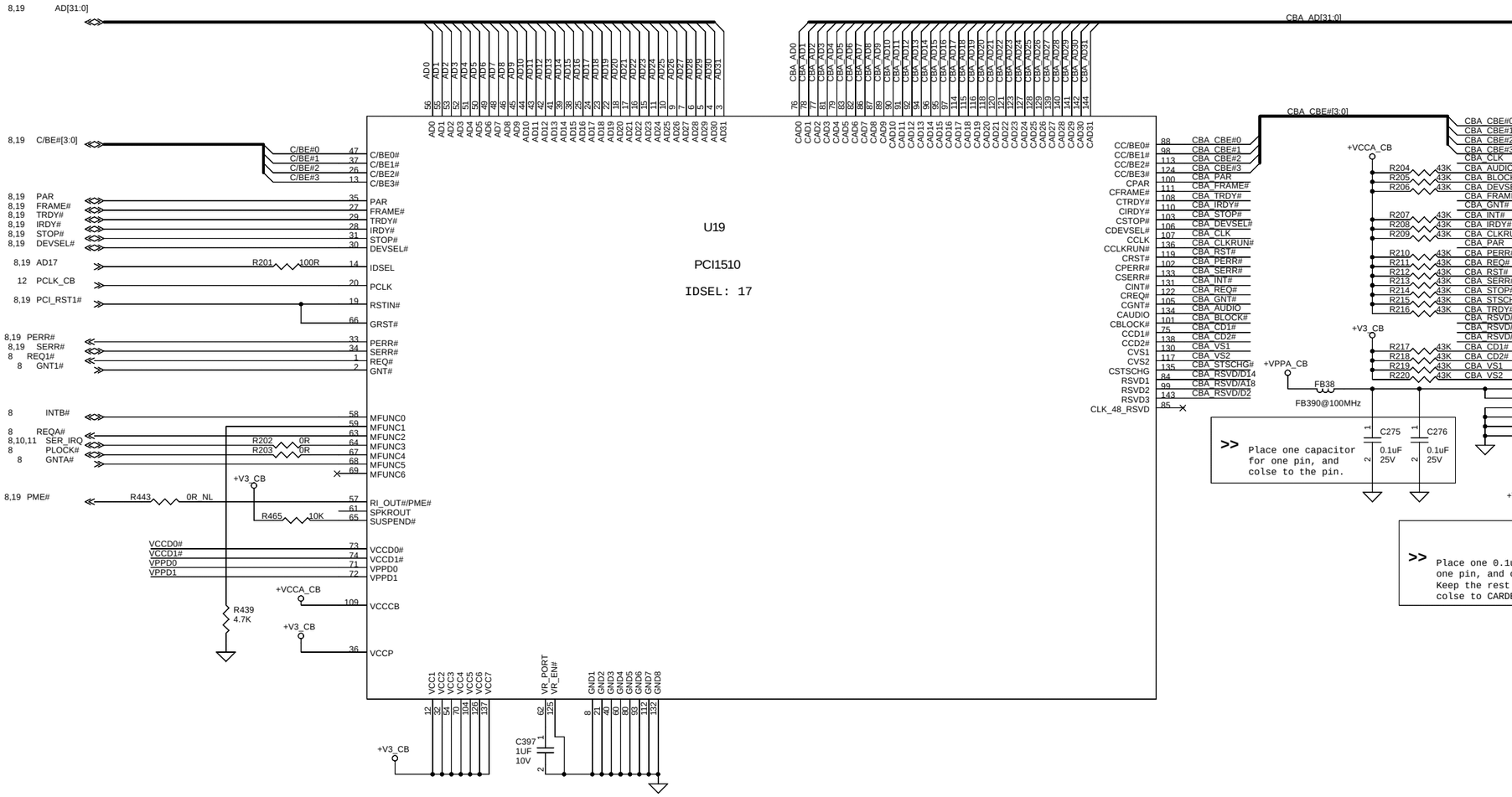

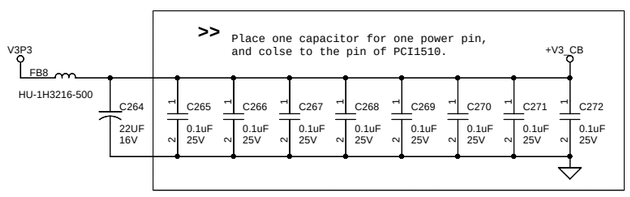

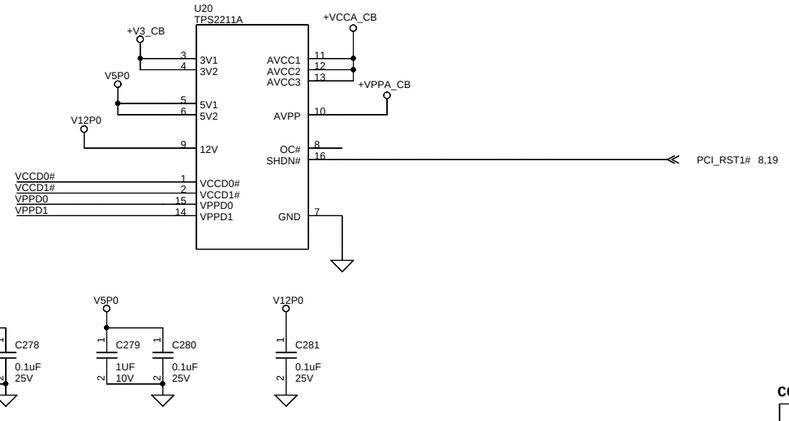

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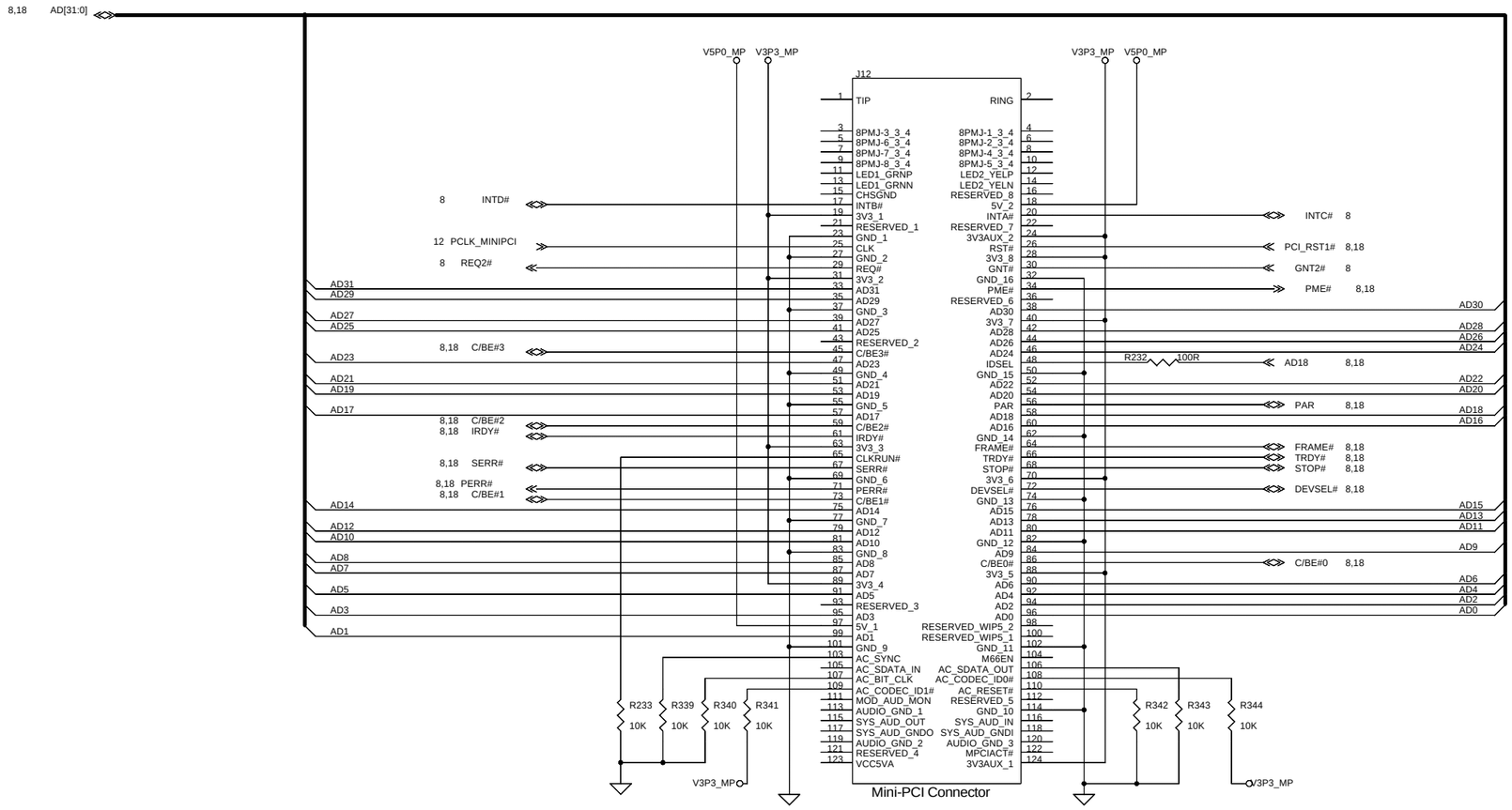
VS ELECTRONICS PTE LTD

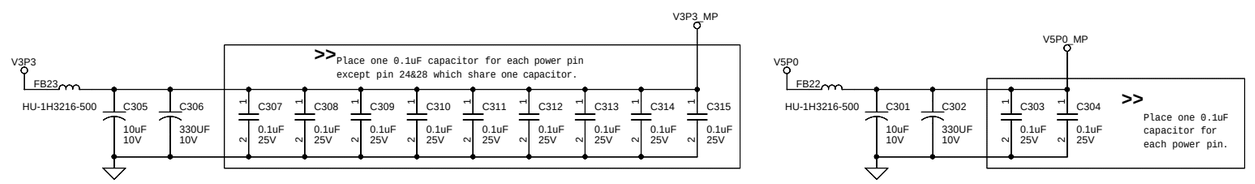
Title: CV60 Main Board - PC Card Controller

Size: C | Document Number: D2A-SC001-00 | Rev: 0.0

Date: Thursday, July 31, 2003 | Sheet 18 of 27



IDSEL: 18



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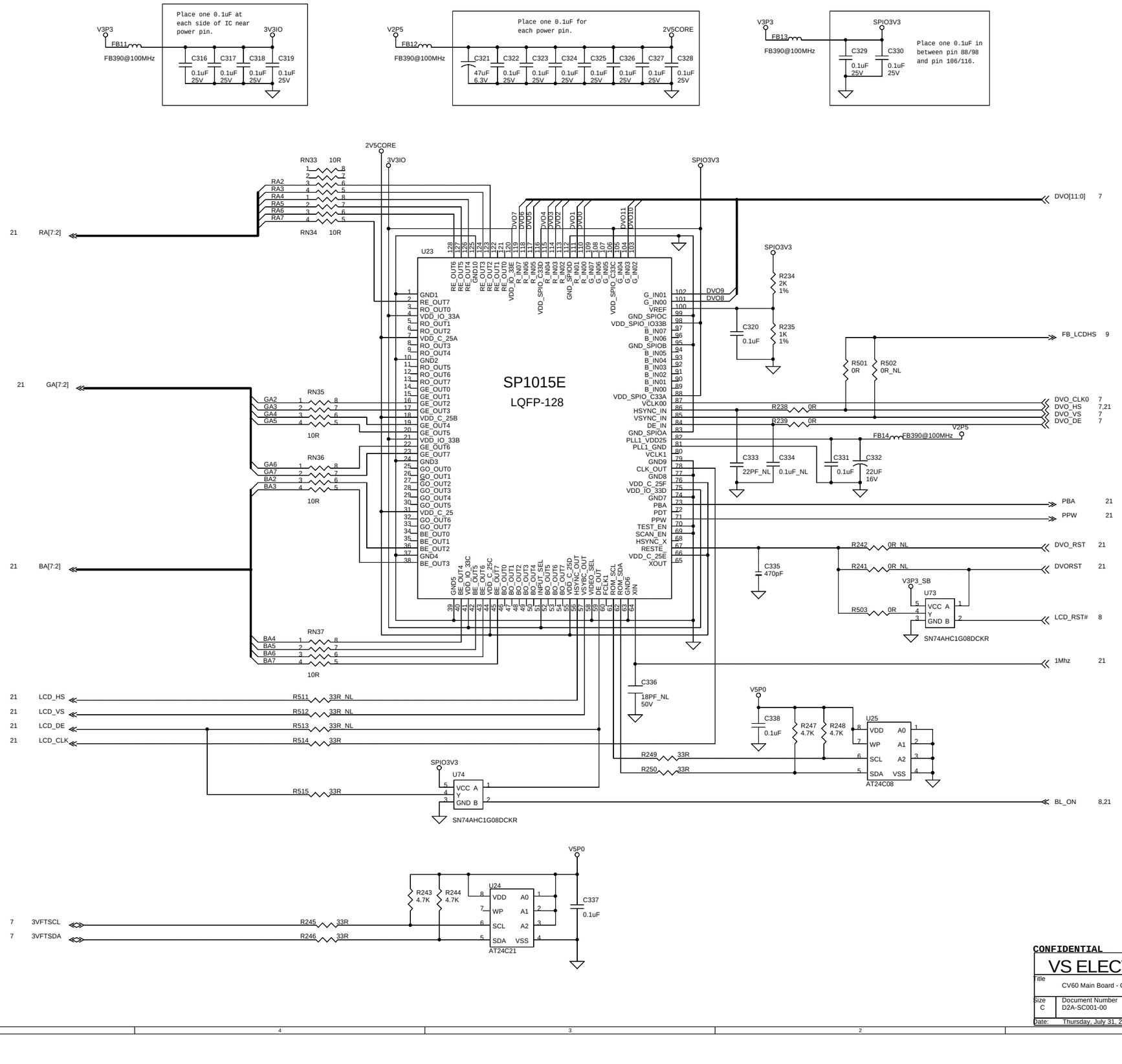
VS ELECTRONICS PTE LTD

Title	CV60 Main Board - Mini PCI Slot	
Size C	Document Number D2A-SC001-00	Rev 0.0
Date: Thursday, July 31, 2003	Sheet 19 of 27	



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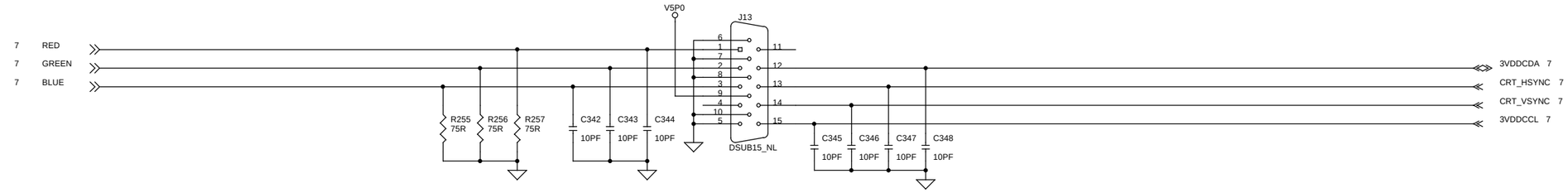
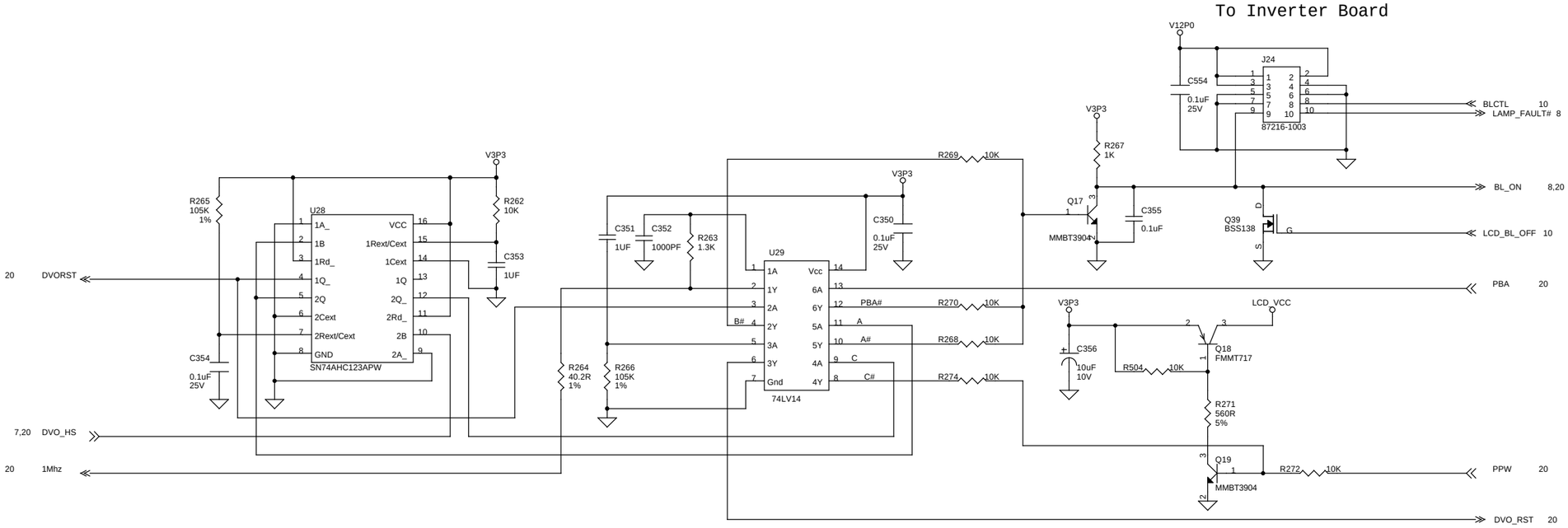
VS ELECTRONICS PTE LTD		
Title: CV60 Main Board - Graphic		
Size: C	Document Number: D2A-SC001-00	Rev: 0.0
Date: Thursday, July 31, 2003	Sheet 20 of 27	

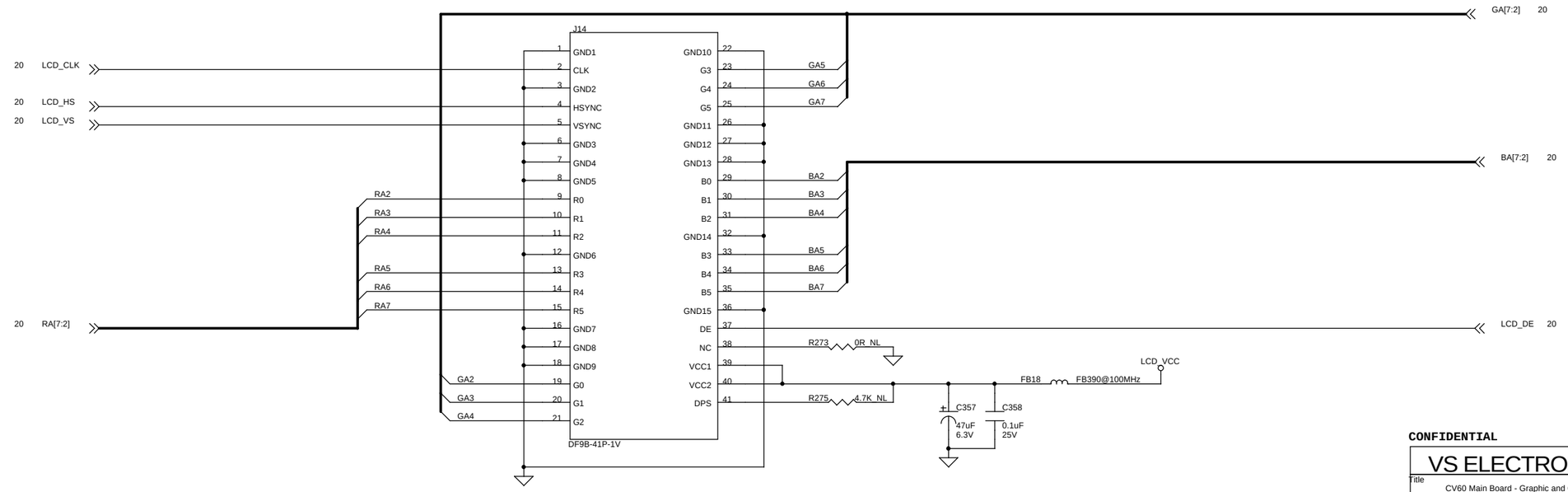
To External Monitor



To Inverter Board



To LCD Display



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VS ELECTRONICS PTE LTD

Title	CV60 Main Board - Graphic and CCFL Inverter Connector	
Size C	Document Number D2A-SC001-00	Rev 0.0
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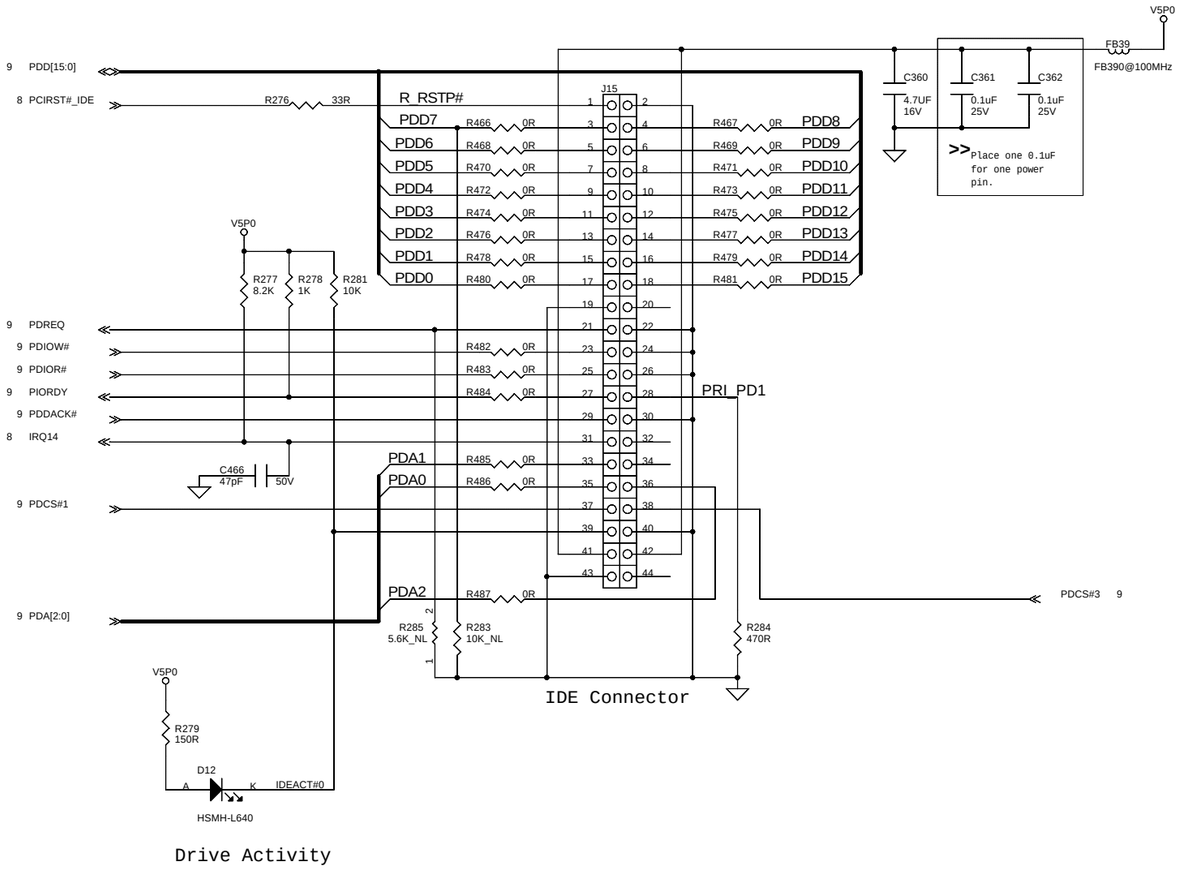

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VS ELECTRONICS PTE LTD

Title	CV60 Main Board - 100-Pin and IDE Connector	
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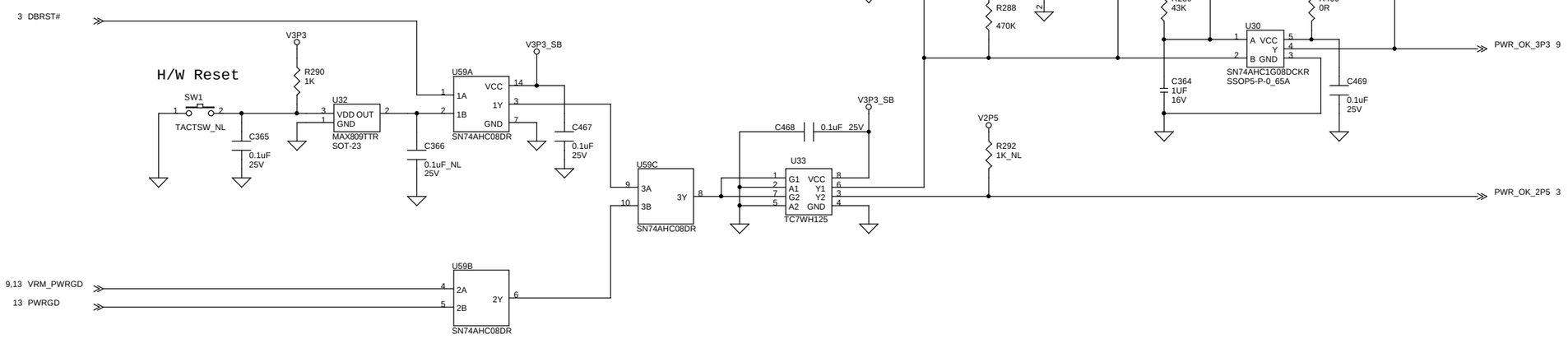
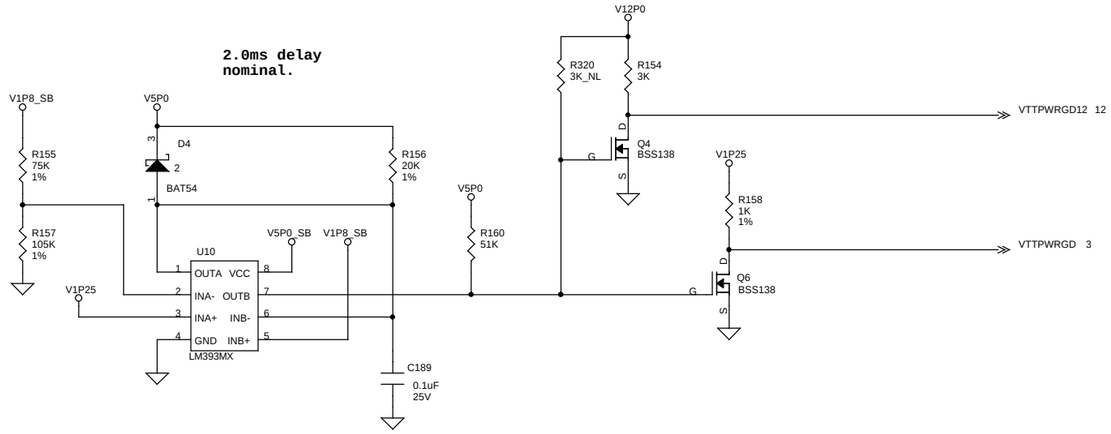
RESET CIRCUITRY



POWER OK

2.0ms delay nominal.



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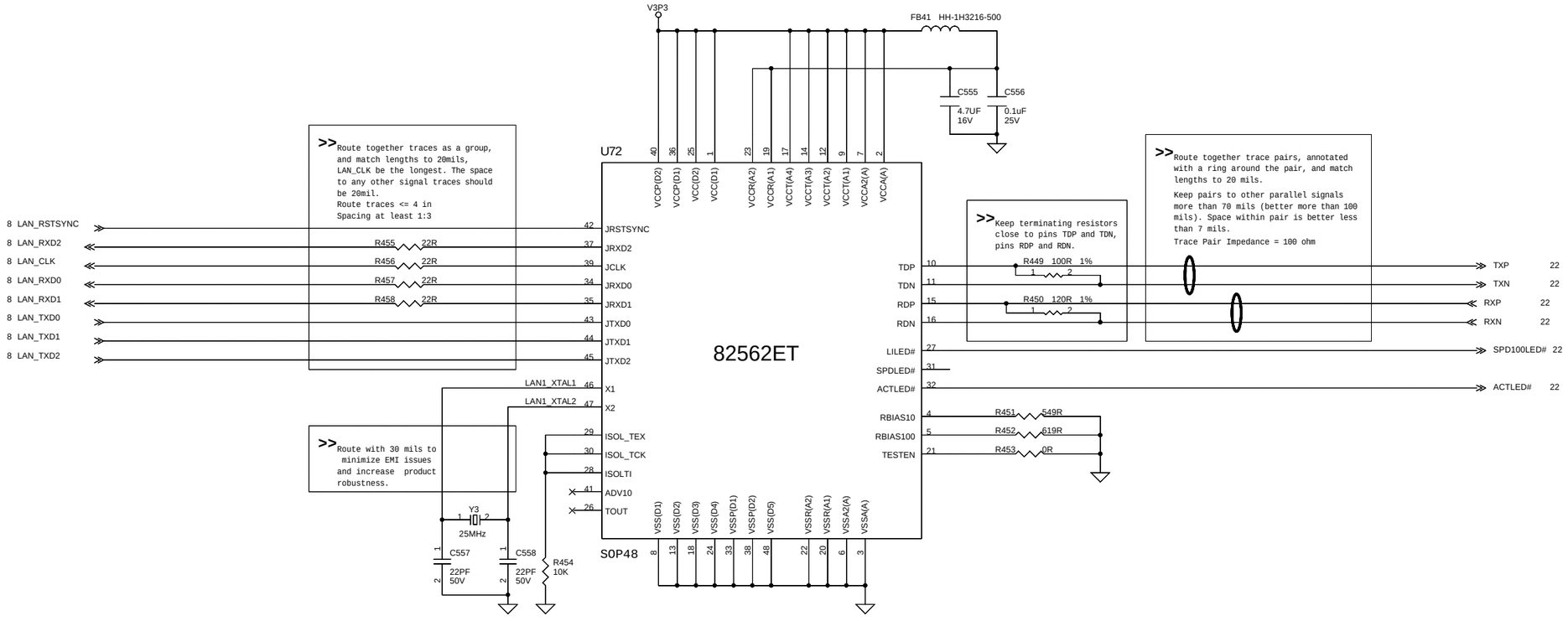
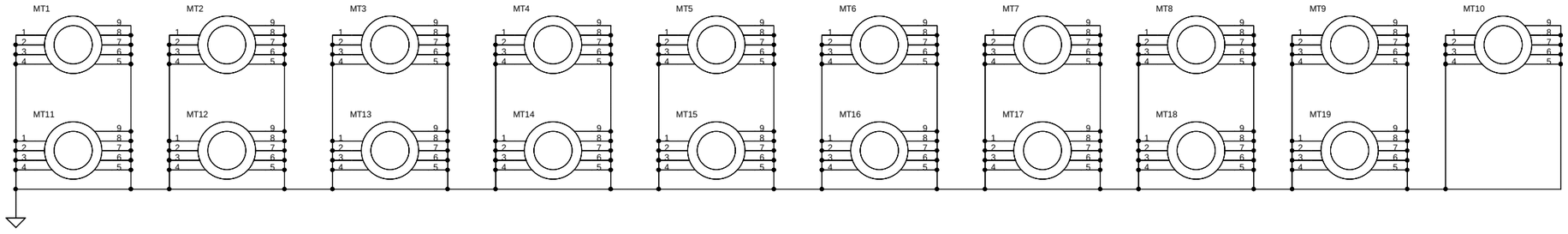
VS ELECTRONICS PTE LTD

Title: CV60 Main Board - Reset		
Size: C	Document Number: D2A-SC001-00	Rev: 0.0
Date: Thursday, July 31, 2003	Sheet 23 of 27	





Mounting Hole

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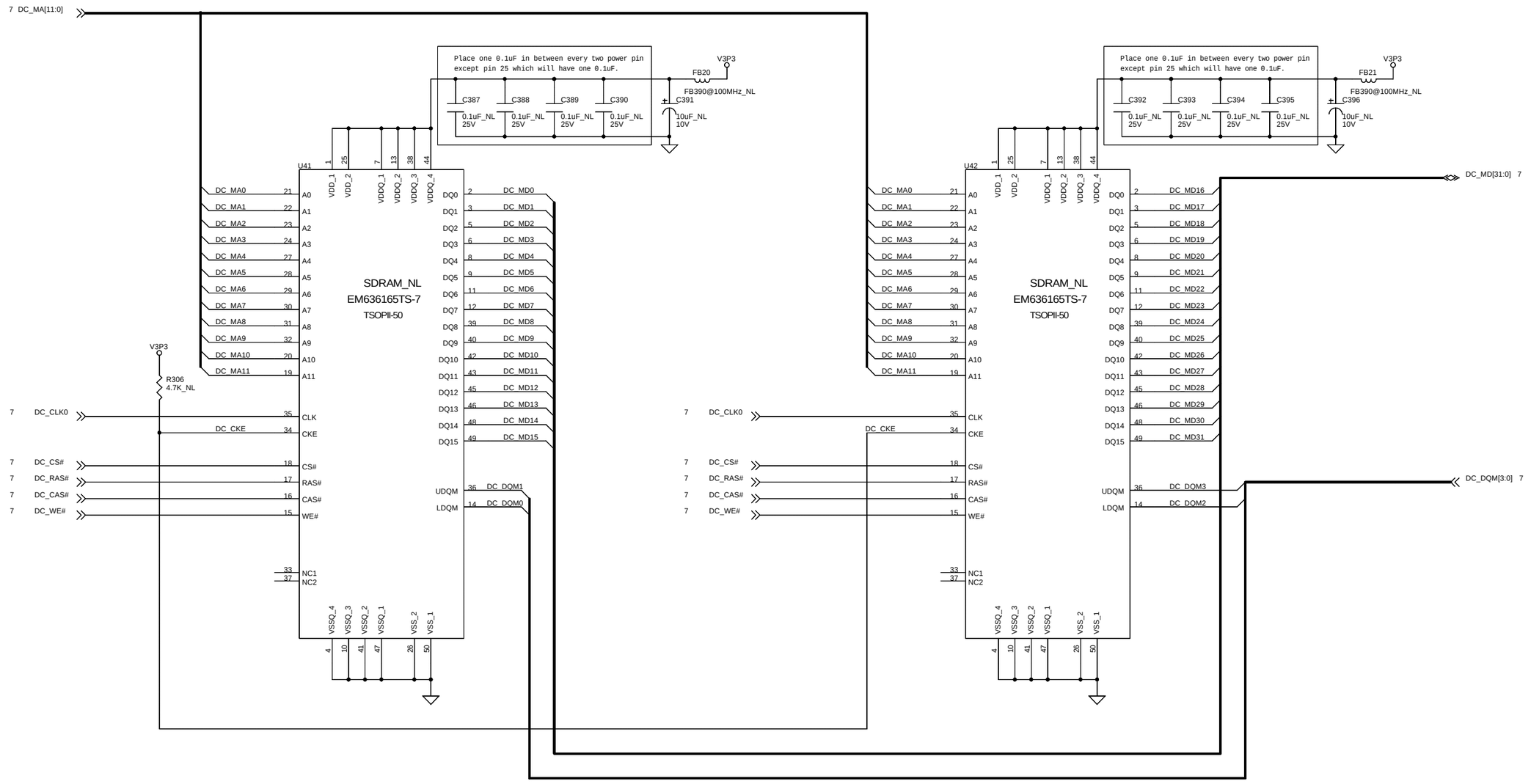
Title	CV60 Main Board - Ethernet PHY and Mounting Hole	
Size C	Document Number D2A-SC001-00	Rev 0.0
Date: Thursday, July 31, 2003	Sheet 24 of 27	



Only 133Mhz is supported.

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VS ELECTRONICS PTE LTD

Title: CV60 Main Board - Display Cache		
Size: C	Document Number: D2A-SC001-00	Rev: 0.0
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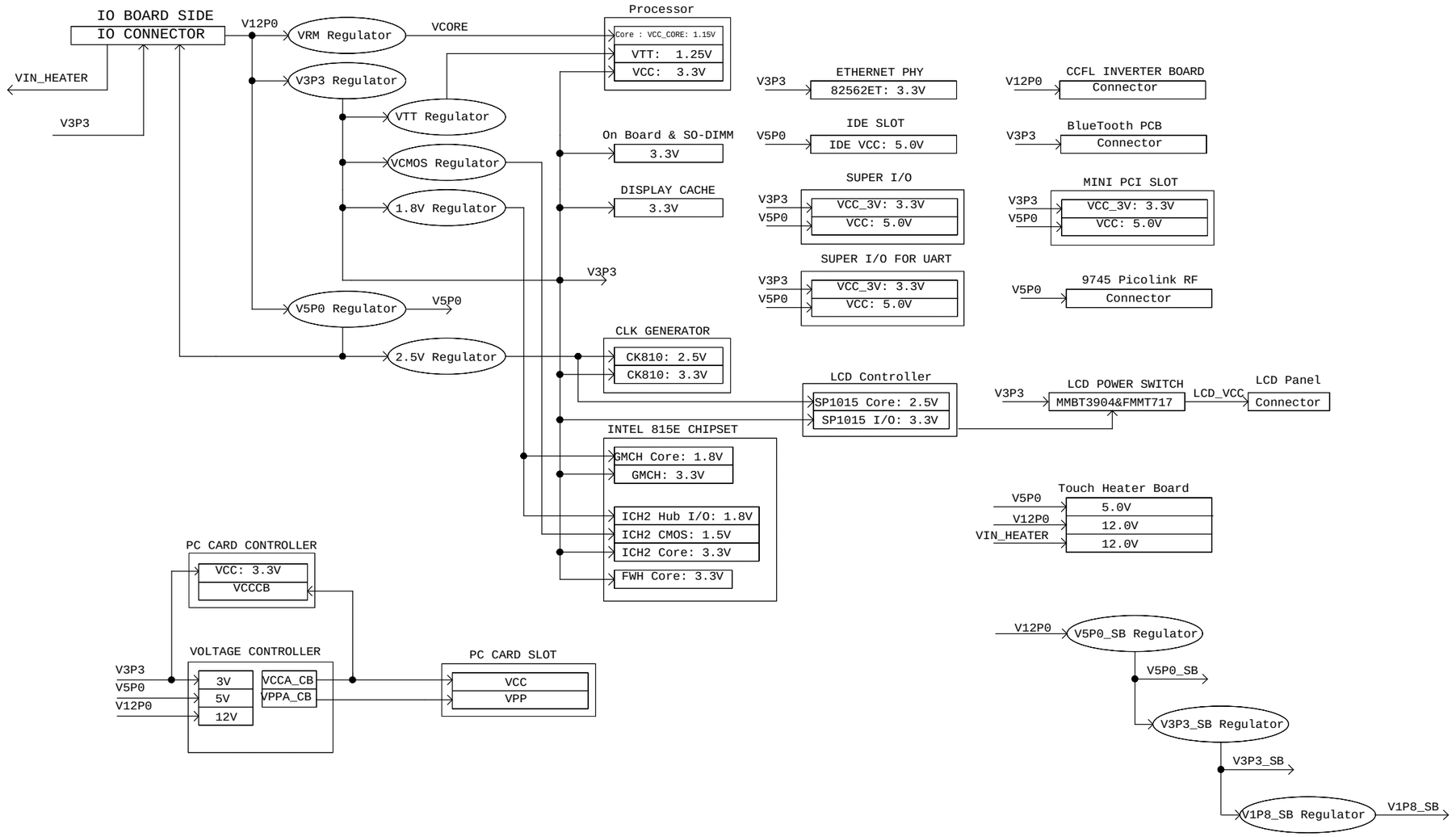

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VS ELECTRONICS PTE LTD

Title	CV60 Main Board - Power Block Diagram	
Size C	Document Number D2A-SC001-00	Rev 0.0
Date: Thursday, July 31, 2003	Sheet 26 of 27	

REV	DESCRIPTION	DATE	RELEASE BY	SIGN
0.0a	RELEASE FOR BB-1	Oct, 2002	ENG KIM	
0.0b	Remove Fan connector circuit on Sheet 3 Remove JP1 for Vcore on Sheet 4 Remove J4 and all the LED signals on Sheet 10 & 11 Remove Floppy disk and parallel port circuit on sheet 10 Remove JP2 & HP3 on sheet 13 Remove FWH TSOP-32 package on sheet 15 Remove ethernet circuit on sheet 17 Remove touch controller circuit, add system LED control circuit and add Touch Heater Board connector on sheet 22. Remove heater switching circuit on sheet 21 Add V5P0_SB, V3P3_SB and V1P8_SB circuit on sheet 13. Add Power On/Off switch debouncing circuit on sheet 9. Remove external ethernet controller circuit on sheet 17. Add on board memory circuit on sheet 17. Remove one SO-DIMM on sheet 14. Move Firmware Hub circuit to sheet 14. Change on board memory circuit sheet from 17 to 15. Change on board memory circuit sheet from 16 to 17. Add Radome interface connector (for Bluetouth module) and move arrount circuit on sheet 16. Move 9745 radio board conncetor and arround circuit on sheet 16. Move system LED control circuit, Touch Heater Board connector on sheet 16. Add resistor R421 and R422 on pin127 of Super I/O (1) for onboard memory configeration on sheet 10. Add pull-up resistor R425 and R426 on pin65 and pin66 of Super I/O (1) on sheet 10. Add jump resistor R427 in PWRBTN# singal wire of Super I/O (1) on sheet 10. Remove Maxim CPU temperature monitoring IC on sheet 3. Change connector to touch heater board from 20 pin tp 30 pin on sheet 16. Remove Inverter circuit to Inverter board and add mounting hole for main board on sheet 23. Add resistor R445 and R447, R446 and R448 on pin126 and 125 of Super I/O (1) for board version indication on sheet 10. Move CCFL inverter connector circuit to sheet 20. Add Ethernet PHY circuit on sheet 23. Re-assignment pin's signals of 100pin I/O Board connector on sheet 21. Insert a new page as sheet 16 to add resister array for on board memory. Modify system block diagram on sheet 2 Add pull-up resistor R463 on pin2 of U51 for PWR_SW, and capacitor C573 on pin R19 of ICH2 for AC_BITCLK on sheet 9.	12 Dec, 02 23 Dec, 02 01 Jan, 03 02 Jan, 03 16 Jan, 03 22 Jan, 03 24 Jan, 03 27 Jan, 03 26 Feb, 03 27 Feb, 03 06 Mar, 03 	 WEN JIANG WEN JIANG ENG KIM ENG KIM WEN JIANG WEN JIANG WEN JIANG 	
0.0c	Add pull-up resistor R465 on U19.65 on sheet 18. Add series resistor for IDE high speed signal on sheet 22.	14 Mar, 03 17 Mar, 03	ENG KIM ENG KIM	
0.0d	Change LDOs and arround their components: U57, U58, U54, C519, C521 and C516 on sheet 13. Remove 1.8V stand-by power divider R392, R394 and C514 on sheet 13. Remove U56, Q31, Q36, R393, C517 and C518 on sheet 13. Add Q37, Q38 and R499 to switch off VCORE input as stand-by, and jumper R505-R508 as no use the switching circuit on sheet 13. Remove Q5 on sheet 13. Add R504 between pin1 and pin2 of Q18 for LCD power off stably on sheet 21. Add jumper R501 and R502 from signal DVO_HS and DVO_VS to GPIO24 of ICH2 on sheet 20. Add U73 and R503 for software reset LCD controller on sheet 20. Add R492 and R493 to pull-up ICH2 SMLINK[1,0] (pin U19 and V20) to V3P3_SB on sheet 9. Change signal SPD100LED# from pin31 to pin27 of U72 on sheet 24. Add Q40 to signal trace AC97_SPKR, and remove U6, R377 and connection signal CB_SPKR on sheet 9 and 18. Change connection CB_SUSPEND# between U19.65 and U4.A14 to BOOTLOCK# between U18.8 and U4.A14, remove R107 on sheet 8 and 14. Disconnect SYS_LED_ON from U7.128 and connect to SYS_LED through jumper R500 on sheet 17. Add Q39 to BL_ON and connectgate to U7.119 with R494 pulling up to V5P0 on sheet 21 and 10. Add jumper R495 and R496 to connect pull-up resistors to V3P3 or V3P3_SB on sheet 12. Remove R280, R282 and signal P66DETECT# on sheet 22. Add R509 and R510, remove R103 on sheet 9.	16 May, 03	WEN JIANG	
	Connect pin Y11 (GPI6) of ICH2 to pin 8 of resistor network for pulling up to V3P3 on sheet 8. Change pull-up resistor connection from V5P0_SIO1 to V3P3_SB on sheet 10. Add ferrite bead FB42-FB45 to VIN_HEATER and GND_HEATER around J23 on sheet 17. Change jumper resistors R325-R329, R332 and R333 to ferrite bead FB46-FB52 to 9745 Radio signals around J23 on sheet 17.	30 July 03	WEN JIANG	

VS ELECTRONICS PTE LTD

Title: CV60 Main Board - History		
Size: C	Document Number: D2A-SC001-00	Rev: 0.0
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			Venture Corporation Limited					
			Indented Bill of Material					
		IMG2A-FP003-000	**Sub-Assy CV60 P-III LV800 12.1SVGA 128MB**					
		02.10.2003						
Lvl	**Item**	**Part No.**	**Description**	**Qty Per**	**UoM**	**Reference Designator**	**AVL & Vendor Name**	**Vendor Part No.**
1	140	IMM2A-M1100-00	SCREW, 6-32 X 3/8 TORX CAP w/EPOXY	10	EA		MAY-MIZU	M2A-M1100-00
1	160	IMM2A-L0000-00	LABEL, INTERMEC	1	EA		FLEXI COMPONENT	M2A-L0000-00
1	170	IMM2A-F0200-00	Cable Assy Main to I/O INTERFACE, 100pin	1	EA		TYCO	M2A-F0200-00
1	180	IMM2A-F0100-00	Heater Wire Harness, 30pin	1	EA		ACES	M2A-F0100-00
							SPEEDY	M2A-F0100-00
1	310	IMV-MAX-P033	CV60 Carton Box set 493 X 415 X 345 mm	0.5	EA		MATSON	V-MAX-P033
1	320	IMV-MAX-P034	CV60 PACKAGES PE FOAM	1	EA		MATSON	V-MAX-P034
1	330	IMV-MAX-P035	Wooden Pallet 40" x 48" x 130mm	0.042	EA		MATSON	V-MAX-P035
1	340	IMV-MAX-P036	Anti-Static PE Bag 16.5" x 24"	1	EA		MATSON	V-MAX-P036
1	490	IMM2A-F0300-01	Inverter Wire Harness (L=90mm) 10pins	1	EA		SPEEDY	M2A-F0300-01
1	500	IMG9A-A0000-02	Assy CV60, BASE, IO AND MLB	1	EA			
2	50	IMM2A-R0600-00	GEL PAD, GMCH	1	EA		GLOCOM	M2A-R0600-00
2	60	IMZ2A-M0001-00	SCREW, 4-40 X 5/16 PH -BLK w/EPOXY	10	EA		MAY-MIZU	Z2A-M0001-00
2	80	IMZ2A-M0000-01	Screw 4-40 x 1/4 PH-Blue Zinc w/Epoxy	22	EA		MAYMIZU PTE LTD	Z2A-M0000-01
2	130	IMG9A-A0001-02	I/O PANEL Assy	1	EA			
3	50	IM334-023-001	SPEAKER 1W 8 Ohm 28mm 550-7KHz	1	EA		KEYRIN	28-8BB-20
3	60	IMVSWH0001	SWITCH PUSH-BUTTON, I/O	1	EA		MARQUART	5000
3	70	IMVCNC0001	RECPT, 5P-CIRC BULKHD MNT	1	EA		SINGATRON	91M-701-5P
3	90	IM904-022-001	ADHESIVE RTV3140	0.06	ML		DOW CORNING	RTV3140
3	100	IM321-402-101	WIRE 18AWG BLACK	0.05	M		ALPHA	3055
							ATRIA	IM321-402-101
							BELDEN	9918-10
							CONSOLIDATED ELECT.	846-0
							DEARBORN	401816-0
							MANHANTTAN/CDT	M204-0
							NEW ENGLAND	N20-30T-255-2
							OLYMPIC WIRE & CABL3	355 BLACK
3	110	IM321-348-001	WIRE 22AWG BLACK	0.15	M		ALPHA	3251
							ASTRO INDUSTRIES INC.	22-730-UL-1061 BLK
							ATRIA	IM321-348-001
							BELDEN	9983-10
							BRAND REX	RH220907 BLK
							CAROL CABLE	C2111-01
							CONSOLIDATED ELECT.	896-0
							DEARBORN	422207-0
							JUDD WIRE INC.	H0101014 BLK
							TELEDYNE INC	1061227 BLK
3	130	IMV-MAX-098	SILICON ADH. RTV GE5818	3.5	G		GE (HARRIS)	RTV5818
3	140	IMV-MAX-099	JET MELT 3748 TC	2.5	G		3M	IMV-MAX-099
3	180	IMZ2A-M0000-01	Screw 4-40 x 1/4 PH-Blue Zinc w/Epoxy	4	EA		MAYMIZU PTE LTD	Z2A-M0000-01
3	190	IMZ2A-M0020-00	JS-1000 Hex Jack Screw #4-40 UNC	4	EA		KYCON	Z2A-M0020-00
3	200	IMM2A-F1500-00	WIRE 18 AWG RED	0.07	M		ALPHA	M2A-F1500-00
							DENETRON (PLASTRONIC)	M2A-F1500-00
3	210	IMM2A-F1600-00	WIRE 18 AWG BLUE	0.04	M		ALPHA	M2A-F1600-00
							DENETRON (PLASTRONIC)	M2A-F1600-00
3	220	IMM2A-P0800-02	I/O PANEL	1	EA		GOLDTIUM	M2A-P0800-02
3	230	IMM2A-R0300-02	GASKET I/O PANEL	1	EA		FABRITECH	M2A-R0300-02
3	240	IMM2A-M0500-02	BRACKET SPEAKER	1	EA		NCT	M2A-M0500-02
3	250	IMV-INT-M001	Kapton Tape 16mm Wide	0.033	M			
4	30	IMVCNJ0001	Conn Headset and Line out jack	1	EA	J3	HOSIDEN	HSJ1468-01-010
4	40	IMVCNJ0002	Conn RJ45 (w/Integrated.)+2USB	1	EA	J6	PULSE ENGINEERING	J6026M51U
4	50	IMVCNN0004	Conn Right angle gold plated Mini-Din	1	EA	J5	KYCON	KMDG-6SBS
4	60	IMVCNO0001	Conn Serial Port - Dsub 9 Pin Male	2	EA	J4,J7	KYCON	K11-E9P-NJ
4	80	IMVCPA0002	Fuse Poly Switch (Fuse) 5A, 30V	2	EA	F3,4	RAYCHEM	RUE 500
4	170	IMVFPK0001	Choke High Current TH Common M.	2	EA	T1,2	STEWARD	CM2545X171B-00

	Item	Part No.	Description	Qty	UoM	Reference	AVL & Vendor Name	Vendor Part No.
4	650			Per		Designator		
4	760	IMG2A-PC002-00S	ASSY, IO Board (CV60) SMT	1	EA			
5	100	IMVCPD0001	Transguard	23	EA	D6-23,28-31,34	AVX	VC080514A300RP
5	110	IMVCPD0002	Transient Volt Sup.Dual Anode Zener	4	EA	ZD1 - 4	ON SEMICONDUCTOR	MMBZ6V2ALT1
5	120	IMVDIG0001	Diode Schottky Barrier Double SOT-23	7	EA	D1 - 5,32,33	PHILIPS	BAT54C
5	140	IMVFPG0002	FB Lead-Bead (50-Ohm typ, 6000mA) 1206	12	EA	FB1-4,7,20-23,25,26,27	WORLD PRODUCTS	HU-1H3216-500JT
5	180	IMVICF0001	IC Low Volt Audio Pwr Amplifier SO-8	1	EA	U3	NATIONAL SEMICONDUCTOR	LM4865M
5	190	IMVICG0003	IC RS232 Transceiver SSOP-28	2	EA	U4,5	SIPEX CORPORATION	SP3243EEA
							TEXAS INSTRUMENT	MAX3243CDBR
5	220	IMVICI0021	IC Quad Pwr Switch 500mA SOP-16	1	EA	U1	MICREL	MIC2027-1BM
5	230	IMVICI0022	IC AC97 AudioCodec Rev2.2 TQPF-48	1	EA	U2	SIGMATEL	STAC9750T
5	260	IMVVIA0004	Crystal 24.576MHz (For Audio Codec)	1	EA	Y1	HCJ QUARTZ	HQS-MS3HA2-24576-2
5	270	IMVCOA0003	P-Cap 220uF 20% 16V 6.3x8mm	2	EA	C13,46	NIC COMPONENTS ASIA PTE LTD	NACZ221M16V6.3X8
5	280	IMVCOA0004	P-Cap 220uF 20% 35V 8x10.5mm	2	EA	C4,89	NIC COMPONENTS ASIA PTE LTD	NACZ221M35V8X10.5
5	290	IMVCOD0001	Cap 10uF 20% 10V Tant ESR=3000mohm	7	EA	C6,8,20,36,49,57,105	AVX	TAJA106M010R
5	300	IMVCOD0007	Cap 10uF(+-20% 25V)Tant 7343	2	EA	C2,87	AVX	TAJD106M025R
5	310	IMVCOL0004	Cap 22pF (+-5%, COG/NPO, 50V) C0603	2	EA	C47,48	AVX	06035A220JAT
5	330	IMVCOL0010	Cap 1000pF (+-10%, X7R, 50V) C0603	4	EA	C30,31,39,40	MURATA	GRM188R71H102KA01J
5	340	IMVCOL0013	Cap 0.01uF (+-10%, X7R, 50V) C0603	7	EA	C1,3,52,55,86,88,107	MURATA	GRM188R71H103KA01J
5	350	IMVCOL0016	Cap 0.1uF (+-10%, X7R, 25V) C0603	36	EA	C5,7,9,10,12,14-19,21-24,32,33,35, C41,43,44,53,54,56,58-65,67, C103,104,125	MURATA	GRM188R71E104KA01J
5	360	IMVCOL0018	Cap 1uF (+-10%, X7R, 10V) C0603	4	EA	C25,34,42,45	MURATA	GRM188B11A105KA61J
5	380	IMVCOL0024	Cap 100pF(+-5% COG/NPO 50V)0603	1	EA	C50	AVX	06035A101JAT
5	390	IMVCOL0025	Cap 470pF(+-5% COG/NPO 50V)0603	4	EA	C68,69,126,127	AVX	06035A471JAT
5	400	IMVCOL0026	Cap 2700pF(+-10% X7R 50V) 0603	1	EA	C38	MURATA	GRM188R71H272KA01J
5	410	IMVCOL0027	Cap 0.22uF (+-20% X7R 16V) 0603	2	EA	C29,37	AVX	0805YC224MAT_A
							MURATA	GRM219R71E224KC01B
5	420	IMVREC0001	Res Rnet 0 Ohm , 5% 0603	16	EA	R17,20,23,25-27,31,34-36,	ASJ	CR16-000-JF
						R101-104,105,107	DALE	CRCW0603000JRT1
							PHYCOMP	2322 702 96001
5	440	IMVREC0020	Res 150 Ohm, 1% 0603	3	EA	R14,42,43	ASJ	CR16-1500-FF
							DALE	CRCW06031500FRT1
Lvl	Item						PHYCOMP	2322 704 61501
		IMVREC0034	Res 1.00 K, 1% 0603	1	EA	R9	ASJ	CR16-1001-FF
							DALE	CRCW06031001FRT1
							PHYCOMP	2322 704 61002
5	460							
		IMVREC0041	Res 4.7K, 5% 0603	4	EA	R15,16,40,41	ASJ	CR16-472-JF
							DALE	CRCW0603472JRT1
							PHYCOMP	2322 702 60472
5	470							
		IMVREC0044	Res 10K, 5% 0603	10	EA	R1,2,11,12,38,24,28,37,95,96	ASJ	CR16-103-JF
							DALE	CRCW0603103JRT1
							PHYCOMP	2322 702 60103
5	480							
		IMVREC0058	Res 16.2 Ohm 1% 0603	8	EA	R18,19,21,22,29,30,32,33	ASJ	CR16-16R2-FF
							DALE	CRCW060316R2FRT1
							PHYCOMP	2322 704 61629
5	490							
		IMVREC0059	Res 47K 5% 0603	4	EA	R7,8,74,75	ASJ	CR16-473-JF
							DALE	CRCW0603473JRT1
							PHYCOMP	2322 702 60473
5	500							
		IMVREC0060	Res 220K 5% 0603	1	EA	R10	ASJ	CR16-224-JF
							DALE	CRCW0603224JRT1
							PHYCOMP	2322 702 60224
5	510							
		IMVTRH0002	Transistor (Dual) General Purpose SC-88	1	EA	Q1	ROHM	UMX1N
		IMVREC0054	Res 105K, 1% 0603	1	EA	R87	ASJ	CR16-1053-FF
5	540						DALE	CRCW06031053FRT1
							PHYCOMP	2322 704 61054
5	590							
		IMVFPG0001	Ferrite Bead (390 ohm typ, 2000mA) RC12	17	EA	FB8-18,28,31-35	MURATA	BLM31PG391SN1K
		IMVREC0014	Res 52.3 Ohm, 1% 0603	1	EA	R3	ASJ	CR16-52R3-FF
5	600						DALE	CRCW060352R3FRT1
							PHYCOMP	232270465239
5	610							
		IMVCOD0008	CAP TANT 220uF CASED 6V3 20%	3	EA	C11,26,27	AVX	TAJD227M006R
5	660	IMVCOL0001	Cap 10pF (+-5%, COG/NPO, 50V) C0603	2	EA	C108,C109	AVX	06035A100JAT

		Part No.	Description	Qty	UoM	Reference		Vendor Part No.
				Per		Designator		
		IMVICI0030	Pwr Switch for PS/2 Short Circuit	1	EA	U10	RAYCHEM	RYC8220-2M
5	710							
5	720	IMVREC0013	Res 40.2 Ohm, 1% 0603	1	EA	R98	ASJ	CR16-40R2-FF
							DALE	CRCW060340R2FRT1
							PHYCOMP	2322 704 64029
5	730							
		IMD2A-BL002-00	PCB, IO, CV60 (4-layer)	1	EA		MAXEDGE	D2A-BL002-00
		IMG2A-PC004-00	Assy Main Bd(CV60) 800Mhz 128MB	1	EA			
5	740							
		IMVCNB0002	Conn 100pin header 1.27mm Vertical SMT	1	EA	J16	AMP	1-104549-0
2	150							
		IMVMPA0001	Conn Cardbus Ejector	1	EA	(J11 Assembly)	FCI	62604-22R0C
3	230							
		IMVCOA0001	Cap 150uF 20% 16V OS-CON ESR=28mohm	6	EA	C184 - 186,219 - 221	SANYO	16SA150M+T
Lvl	Item	IMVCOA0002	Cap 330uF 20% 6.3V OS-CON ESR=25 M	10	EA	C196 - 199,215 - 217,229 - 231	SANYO	6SA330M+T
		IMZ2A-M0017-00	MACHINE SCREW PAN HD PHILIP M2x8 SUS	4	EA		MAYMIZU PTE LTD	Z2A-M0017-00
3	510							
		IMINT-FA-015	ADHESIVE RTV 3145	4	ML		DOW CORNING	3145RTV(MIL-A-4614
3	820							
		IMG2A-PC004-00S	Assy Main Bd(CV60) 800Mhz 128MB(SMT)	1	EA			
3	830							
		IMVICH0001	IC Hex Buffer w/open-drain outputs SSOP-	1	EA	U5	PHILIPS	74LVC07APW
3	1880							
		IMVICI0002	IC GMCH- FSB66/100, SDRAM-133Mhz	1	EA	U3	INTEL	FW82815 GMCH (SL5N
3	1990	IMVICI0003	IC ICH2 - ATA100	1	EA	U4	INTEL	FW82801BA ICH2 SL
3	2000	IMVICI0005	IC LPC Super I/O PQFP-128	1	EA	U7	WINBOND	W83627HF-AW
4	20	IMVICI0006	IC LPC Super I/O PQFP-128	1	EA	U8	WINBOND	W83627F-AW
4	40	IMVICI0007	IC Clk Generator (meet CK810E Spec)	1	EA	U9	ICS	ICS9250BF-27T
4	50	IMVICI0008	IC L-Offset Volt Dual Comparators	1	EA	U10	NATIONAL SEMICONDUCTOR	LM393MX
4	70	IMVICI0009	IC VRM8.5 Mod. PWM DC-DC converter	1	EA	U11	INTERSIL	HIP6004ECB-T
4	80	IMVICI0010	IC LDO Reg.(for Vtt and Vcc1_8) 3A TO-2	2	EA	U12,16	NATIONAL SEMICONDUCTOR	LMS1587CSX-ADJ
4	90	IMVICI0011	IC LDO Regulator Output: 2.5V 1A SOT-2	1	EA	U13	ON SEMICONDUCTOR	NCP1117ST25T3
4	100	IMVICI0012	IC LDO Regulator Output: 1.5V 1A SOT-223	1	EA	U14	ON SEMICONDUCTOR	NCP1117ST15T3
4	110	IMVICI0013	IC Sync Step-Down Regulator (5V, 3.3V)	1	EA	U15	LINEAR TECHNOLOGY	LTC1628CG-PG
4	120	IMVICI0014	IC Single Slot CardBus/PCMCIA Controller	1	EA	U19	TEXAS INSTRUMENT	PCI1510PGE
4	130	IMVICI0015	IC CardBus Power Switch (Single Slot)	1	EA	U20	TEXAS INSTRUMENT	TPS2211AIDB
4	140	IMVICI0016	IC LCD Interface Controller (DVO	1	EA	U23	SMARTASIC	SP1015E
4	150	IMVICL0003-P	IC Programmed from VICL0003	1	EA	U24 (Programmed from VICL0003)	E-PROG TECHNOLOGY PTE LTD	1300
4	170	IMVICL0003	IC Eeprom(1kb,128x8)ID ROM CRT Display	1	EA	U24	ATMEL	AT24C21-10SI-2.5
4	180	IMVICL0004-P	IC Programmed from VICL0004	1	EA	U25 (Programmed from VICL0004)	E-PROG TECHNOLOGY PTE LTD	0001600A
4	190							
		IMVICL0004	IC Eeprom (8kbits, 1Kx8) SO-8	1	EA	U25	ATMEL	AT24C08N-10SI-2.7
4	200							
		IMVCNB0001	Conn 44pin Grid-Header Vertical 2mm SM	1	EA	J15	MOLEX	87332-4420
5	10							
		IMVCNB0010	Conn 30 pin Main to tou./heat 1.mm pitch	1	EA	J23	ACES	87216-3003
4	210							
		IMVCNE0002	Conn Cardbus 68 pin	1	EA	J11	FCI	62598-22A
5	10	IMVCNE0005	Conn 144pin SODIMM w/High Stack-up	1	EA	J9	TYCO	390322-1
4	220	IMVCNE0006	Conn 12-pin 1mm pitch FFC SMT R/A	1	EA	J22	ACES	85201-1202
4	250	IMVCNN0002	Conn 41pin (Receptacle) for 12.1 SVGA LC	1	EA	J14	HIROSE	DF9B-41P-1V(22)
4	270	IMVDIA0001	Diode Switching SOD-123	1	EA	D5	ON SEMICONDUCTOR	MMSD4148T1
4	290	IMVDIB0001	Diode Schottky Pwr Rectifier (3A, 40V) 4	4	EA	D6,7,16,17	ON SEMICONDUCTOR	MBRS340T1
4	300	IMVDIB0002	Diode Schottky Pwr Rectivier (1A, 40V) 4	2	EA	D8,11	ON SEMICONDUCTOR	MBRS140T3
4	310	IMVDIB0003	Diode Schttky Pwr Rect. (0.5A 40V) SOD-1	2	EA	D10,9	ON SEMICONDUCTOR	MBR0540T1
4	320	IMVDIG0001	Diode Schottky Barrier Double SOT-23	4	EA	D1 - 4	PHILIPS	BAT54C
4	330	IMVDIG0002	Diode Schottky Barrier Double SOT-23	3	EA	D20 - 22	PHILIPS	BAT54S
4	340	IMVICH0003	IC Tri-State Buffer	4	EA	U33,43,44,46	TOSHIBA	TC7WH125FK
4	350	IMVICH0004	IC Dual Monostable w/Reset TSSOP-16	1	EA	U28	TEXAS INSTRUMENT	SN74AHC123APW
4	360	IMVICH0005	IC Schmitt Trigger Inverter SSOP-14	1	EA	U29	PHILIPS	74LV14PW
4	370	IMVICH0006	IC Single AND Logic SSOP5	4	EA	U30,60,63,74	TEXAS INSTRUMENT	SN74AHC1G08DCKR

		Part No.	Description	Qty	UoM	Reference	AVL & Vendor Name	Vendor Part No.
4	400			Per		Designator		
4	410	IMVICH0008	IC Quad AND Gate SO-14	1	EA	U59	TEXAS INSTRUMENT	SN74AHC08DR
4	420	IMVICH0009	IC Single OR Logic SSOP5	1	EA	U61	TEXAS INSTRUMENT	SN74AHC1G32DCKR
4	430	IMVICI0017	Reset Monitor SOT-23	1	EA	U32	ON SEMICONDUCTOR	MAX809TTR
Lvl	Item							
		IMVICL0002	IC Serial Eeprom 1Kb(64x16) 2.7~5.5V, 1M	1	EA	U50	CATALYST	CAT93C46SI-TE13
4	450	IMVICL0006	IC 128MBits SDRAM (SDR) 8Kx16	8	EA	U64 - 71	ELPIDA MEMORY	D45128163G5-A75-9J
							HYNIX ELECTRONICS	HY57V281620HCT-H
4	460						MICRON	48LC8M16A2TG-75
							SAMSUNG	K4S281632D-TC75
4	470						SAMSUNG	K4S281632E-TC75
4	490	IMVTRC0001	Transistor N-Channel MOSFET, 30V TSOP-6	1	EA	Q3	VISHAY	SI3456DV-T1
4	500	IMVCOL0001	Cap 10pF (+-5%, COG/NPO, 50V) C0603	11	EA	C8,132,177,342-348,572	AVX	06035A100JAT
		IMVCOL0002	Cap 12pF (+-5%, COG/NPO, 50V) C0603	4	EA	C140,141,175,176	AVX	06035A120JAT
		IMVCOL0003	Cap 18pF (+-5%, COG/NPO, 50V) C0603	6	EA	C5,61,107,108,139,502	AVX	06035A180JAT
4	520	IMVCOL0004	Cap 22pF (+-5%, COG/NPO, 50V) C0603	4	EA	C93,110,557,558	AVX	06035A220JAT
4	540	IMVCOL0005	Cap 27pF (+-5%, COG/NPO, 50V) C0603	3	EA	C213,233,573	AVX	06035A270JAT
4	550							
							MURATA	GRM1885C1H270JA01D
4	560						PHYCOMP	2238 867 15279
4	570	IMVCOL0006	Cap33pF (+-5%, COG/NPO, 50V) C0603	2	EA	C224,226	AVX	06035A330JAT
4	580	IMVFPA0001	Inductor 1.2uH, +40%~-20%, 9.8A, 70mohm	1	EA	L3	ANLA	SCB1207-1R2N
		IMVFPA0002	Inductor 2.2uH, 20%, 16A, 14mohm	2	EA	L4,6	ANLA	ANB1807-2R2M
Lvl		IMVFPA0003	Inductor 4.7uH, +40%~-20%, 6.8A,158mohm	1	EA	L5	ANLA	SCB1207-4R7N
	590	IMVFPG0001	Ferrite Bead (390 ohm typ, 2000mA) RC12	26	EA	FB2 - 7,11-14,18,24,29-33,37-39,	MURATA	BLM31PG391SN1K
						FB42-45,53,54		
	620							
		IMVFPG0002	FB Lead-Bead (50-Ohm typ, 6000mA) 1206	10	EA	FB8,9,22,23,25 - 28,35,40	WORLD PRODUCTS	HU-1H3216-500JT
4	630							
		IMVFPH0001	Inductor 100nH, 10%, 250mA, 250 M	1	EA	L2	MURATA	LQM21NNR10K10J
4	640							
		IMVFPH0002	Inductor 4.7uH, 30%, 30mA, 300mohm	1	EA	L1	MURATA	LQM21DN4R7N00J
4	670							
		IMVIPA0002	HSMH-L640 for LED	2	EA	D14,12	HP	HSMH_L640
4								
	680	IMVTRA0001	Transistor 2.5A PNP Bi-Polar SOT-23	3	EA	Q18,24,25	ZETEX	FMMT717
4								
	690	IMVTRB0001	Transistor Small Signal GP NPN SOT-23	6	EA	Q2,17,19,20,29,35	ON SEMICONDUCTOR	MMBT3904LT1
4	700	IMVTRB0002	Transistor Small Signal GP NPN SOT-23	1	EA	Q28	ON SEMICONDUCTOR	MMBT3906LT1
4	710	IMVTRC0002	Transistor N-MOSFET Transistor SOT-23M	7	EA	Q4,6,30,34,37,39,40	ON SEMICONDUCTOR	BSS138LT1
4	720	IMVTRC0003	Transistor N-Channel MOSFET SO-8	10	EA	Q7 - 16	TEMIC	SI4410DY-T1
4	730	IMVTRH0002	Transistor (Dual) General Purpose SC-88	1	EA	Q1	ROHM	UMX1N
4	740	IMVVIA0001	Crystal 32.768KHz (needed for RTC to ICH	1	EA	Y1	HCJ QUARTZ	HQS-SM26FA-32768-1
4	750	IMVVIA0002	Crystal 14.3181 (For Clock Gen)	1	EA	Y2	HCJ QUARTZ	HQS-MS3HA2-14318-1

	Item	Part No.	Description	Qty	UoM	Reference	AVL & Vendor Name	Vendor Part No.
				Per		Designator		
4	780						MURATA	GRM1885C1H470JA01D
							PHYCOMP	2238 867 15479
4	790							
		IMVCOD0001	Cap 10uF 20% 10V Tant ESR=3000mohm	11	EA	C203,204,207,208,211,212,301,305,	AVX	TAJA106M010R
4	800					C356,403,520,		
		IMVCOD0002	Cap 22uF 20% 16V Tant ESR=2300 M	8	EA	C159,161,174,254,263,264,332,522	AVX	TAJB226M016R/TAJB2
		IMVCOD0003	Cap 33uF 20% 20V Tant ESR=200mOhm	1	EA	C58	AVX	TPSD336M020S0200
4								
		IMVCOD0004	Cap 47uF 20% 6.3V Tant ESR=2000 M	5	EA	C104,194,195,321,357	AVX	TAJB476M006R
4	840							
		IMVCOD0005	Cap 47uF 20% 20V Tant ESR=900mohm	1	EA	C449	AVX	TAJD476M020R
	850	IMVCOD0006	Cap 330uF 20% 10V Tant ESR=900 M	2	EA	C302,306	AVX	TAJD337M010R
4								
	860	IMVCOL0009	Cap 220pF (+-5%, COG/NPO, 50V) C0603	2	EA	C225,228	AVX	06035A221JAT
4	870	IMVCOL0010	Cap 1000pF (+-10%, X7R, 50V) C0603	12	EA		MURATA	GRM188R71H102KA01J
						C163,165,167,169,171,173,180,		
4	880					C181,192,210,232,352		
4	890	IMVCOL0011	Cap 2200pF(+-10% X7R 50V) 0603	2	EA	C4,202	MURATA	GRM188R71H222KA01J
4	920	IMVCOL0012	Cap 8.2nF (+-10, X7R, 50V) C0603	1	EA	C201	MURATA	GRM188R71H822KA01J
	930	IMVCOL0013	Cap 0.01uF (+-10%, X7R, 50V) C0603	29	EA	C72,C73,C74,C75,C76,	MURATA	GRM188R71H103KA01J
Lvl						C77,C78,C79,C98,C99,		
						C100,C101,C102,C103,C105,		
						C119,C120,C121,C122,C244,		
4	940					C245,C246,C247,C248,C249,		
						C250,C251,C252,C523		
	950							
4	960	IMVCOL0015	Cap 82nF (+-10%, X7R, 25V) C0603	1	EA	C205	AVX	0603YC823KAT (16V)
4		IMVCOL0016	Cap 0.1uF (+-10%, X7R, 25V) C0603	181	EA	C6,C9,C54,C55,C56,C57,	MURATA	GRM188R71E104KA01J
						C59,C60,C63,C64,C65,C66,		
4						C67,C68,C69,C70,C80,C81,		
						C82,C83,C84,C85,C86,C87,		
						C88,C106,C109,C111,C113,		
						C114,C115,C116,C117,C118,		
	980					C123,C124,C125,C126,C127,		
						C129,C130,C135,C136,C143,		
	990					C148,C149,C150,C151,C155,		
						C156,C157,C158,C160,C162,		
4						C164,C166,C168,C170,C172,		
						C179,C182,C189,C191,C193,		
4						C200,C206,C209,C214,C218,		
						C227,C234,C256,C257,C261,		
						C262,C265,C266,C267,C268,		
						C269,C270,C271,C272,C273,		
						C274,C275,C276,C278,C280,		
						C281,C303,C304,C307,C308,		
						C309,C310,C311,C312,C313,		
						C314,C315,C316,C317,C318,		
						C319,C320,C322,C323,C324,		
						C325,C326,C327,C328,C329,		
						C330,C331,C337,C338,C350,		
						C354,C355,C358,C361,C362,		
						C365,C399,C404,C410,C412,		
						C450,C451,C452,C453,C454,		
						C455,C462,C463,C464,C465,		
						C467,C468,C469,C506,C507,		
						C513,C525,C526,C528,C529,		
						C530,C531,C532,C533,C534,		
						C535,C536,C537,C538,C539,		
						C540,C541,C542,C543,C544,		
						C545,C546,C547,C548,C549,		
						C550,C551,C552,C553,C554,		
						C556,C559,C560,C561,C562,		
						C563,C564		
		IMVCOL0017	Cap 0.47uF (10V, +-10%) C0603	26	EA	C10 - 33,470,471	MURATA	GRM188B11A474KA61J
		Part No.	Description	Qty	UoM	Reference		Vendor Part No.
				Per		Designator		
		IMVCOL0018	Cap 1uF (+-10%, X7R, 10V) C0603	21	EA	C44-53,456,457,133,134,277,279,351,	MURATA	GRM188B11A105KA61J
	1000					C353,508,527		
4								
		IMVCOL0020	Cap 1uF (+-20%, X7R, 16V) C1206	5	EA	C187,188,190,223,364	AVX	1206YC105MAT/1206Y
	Item							
		IMVCOL0021	Cap 2.2uF, (+-10%, X5R, 10V) C0805	5	EA	C137,411,516,519,521	MURATA	GRM21BR61A225KA01K
		IMVCOL0022	Cap 4.7uF (+80,-20%, Y5V, 16V) C1206	19	EA	C7,62,71,112,128,142,183,222,	MURATA	GRM31MF51C475ZA12K
Lvl	1010					C255,C360,458,C459,C460,C461,		
						C555,C565,C566,C567,C568		

		Part No.	Description	Qty	UoM	Reference	AVL & Vendor Name	Vendor Part No.
	1020			Per		Designator		
4								
	1030	IMVCOL0029	Cap 3300pF (+-10%, X7R, 50V) C0603	1	EA	C152	MURATA	GRM188R71H332KA01J
4	1040	IMVREC0001	Res Rnet 0 Ohm , 5% 0603	62	EA	R22,R23,R32,R41,R165,	ASJ	CR16-000-JF
						R166,R168,R169,R202,R203,	DALE	CRCW0603000JRT1
4						R238,R239,R330,R331,R367,	PHYCOMP	2322 702 96001
Lvl	**Item**					R371,R379,R391,R395,R396,		
						R400,R407,R408,R409,R410,		
						R411,R412,R413,R414,R415,		
	1060					R416,R417,R418,R419,R420,		
						R421,R453,R466,R467,R468,		
4	1080					R469,R470,R471,R472,R473,		
						R474,R475,R476,R477,R478,		
4						R479,R480,R481,R482,R483,		
						R484,R485,R486,R487,R495,		
4						R501,R516		
		IMVREE0001	Res RNET 0 Ohm, 5%	2	EA	RN63,64	ROHM	MNR14E0ABJ000
		IMVREE0002	Res RNET 10 Ohm, 5%	23	EA	RN6,5,65-80,33-37	ROHM	MNR14E0ABJ100
		IMVREE0003	Res RNET 33 Ohm, 5%	18	EA	RN40,41,47-62	ROHM	MNR14E0ABJ330
		IMVREE0004	Res RNET 150 Ohm, 5%	1	EA	RN2	ROHM	MNR14E0ABJ151
	1090							
		IMVREE0005	Res RNET 2.7K, 5%	5	EA	RN10,11,13,14,43	ROHM	MNR14E0ABJ272
	1100							
		IMVREE0006	Res RNET 4.7K, 5%	8	EA	RN7,8,16,21,25,26,29,31	ROHM	MNR14E0ABJ472
4								
	1110	IMVREE0007	Res RNET 8.2K, 5%	3	EA	RN12,15,19	ROHM	MNR14EOABJ822
4								
	1120	IMVREE0008	Res RNET 10K, 5%	1	EA	RN9	ROHM	MNR14EOABJ103
4	1130	IMVREC0002	Res 0.004 Ohm, 5% 1206	1	EA	R184	IRC	LRC-LRF1206-01-R00
4	1140	IMVREC0003	Res 0.01 Ohm, 1% 1206	1	EA	R177	IRC	LRC-LRF1206-01-R01
4	1150	IMVREC0005	Res 1 Ohm, 5%	3	EA	R53,149,150	ASJ	CR16-1R0-JF
							DALE	CRCW0631R0JRT1
4	1160						PHYCOMP	232270260108
4	1170	IMVREC0006	Res 10 Ohm, 5% 0603	2	EA	R133,180	ASJ	CR16-100-JF
4	1180							
4	1200	Part No.	Description	Qty	UoM	Reference		Vendor Part No.
				Per		Designator		
4								
							DALE	CRCW0603100JRT1
4	1210						PHYCOMP	2322 702 60109
		IMVREC0007	Res 10 Ohm, 1% 0603	1	EA	R74	ASJ	CR16-10R0-FF
							DALE	CRCW060310R0FRT1
	Item						PHYCOMP	2322 704 61009
		IMVREC0008	Res 14 Ohm, 1% 0603	1	EA	R9	ASJ	CR16-14R0-FF
							DALE	CRCW060314R0FRT1
Lvl							PHYCOMP	2322 704 61409
	1220	IMVREC0009	Res 15 Ohm, 5% 0603	9	EA	R109,110,113,114,383,384,387,388,	ASJ	CR16-150-JF
						R152	DALE	CRCW0603150JRT1
							PHYCOMP	2322 702 60159
4	1230	IMVREC0010	Res 22 Ohm, 5% 0603	15	EA	R35,138,139,141,143,148,173,	ASJ	CR16-220-JF
						R455-462	DALE	CRCW0603220JRT1
							PHYCOMP	2322 702 60229
4	1240	IMVREC0011	Res 33 Ohm, 5% 0603	21	EA	R5,129,131,132,134-137,140,142,	ASJ	CR16-330-JF
						R144,145,147,245,246,	DALE	CRCW0603330JRT1
						R249,250,276,R358,514,515	PHYCOMP	2322 702 60339
4	1250	IMVREC0012	Res 39 Ohm, 1% 0603	1	EA	R16	ASJ	CR16-39R0-FF
							DALE	CRCW060339R0FRT1
							PHYCOMP	232270463909
4	1260	IMVREC0013	Res 40.2 Ohm, 1% 0603	8	EA	R67,77,80,85,264,464,509,510	ASJ	CR16-40R2-FF
							DALE	CRCW060340R2FRT1
							PHYCOMP	2322 704 64029
4	1270	IMVREC0014	Res 52.3 Ohm, 1% 0603	1	EA	R178	ASJ	CR16-52R3-FF
							DALE	CRCW060352R3FRT1
							PHYCOMP	232270465239
4	1280	IMVREC0015	Res 56.2 Ohm, 1% 0603	5	EA	R10,25,28,55,56	ASJ	CR16-56R2-FF
							DALE	CRCW060356R2FRT1
							PHYCOMP	232270465629
4	1290	IMVREC0016	Res 75 Ohm, 1% 0603	6	EA	R44,51,57,255,256,257	ASJ	CR16-75R0-FF
							DALE	CRCW060375R0FRT1
							PHYCOMP	2322 704 67509
4	1300	IMVREC0017	Res 100 Ohm, 1% 0603	3	EA	R201,232,449	ASJ	CR16-1000-FF
							DALE	CRCW06031000FRT1
							PHYCOMP	2322 704 61001

		Part No.	Description	Qty Per	UoM	Reference Designator		
							DALE	CRCW06031100FRT1
							PHYCOMP	2322 704 61101
	1320	IMVREC0019	Res 130 Ohm, 1% 0603	1	EA	R33	ASJ	CR16-1300-FF
							DALE	CRCW06031300FRT1
							PHYCOMP	2322 704 61301
		IMVREC0020	Res 150 Ohm, 1% 0603	10	EA	R20,21,36,37,40,48,52,58,279,286	ASJ	CR16-1500-FF
							DALE	CRCW06031500FRT1
							PHYCOMP	2322 704 61501
		IMVREC0021	Res 174 Ohm, 1% 0603	1	EA	R71	ASJ	CR16-1740-FF
							DALE	CRCW06031740FRT1
							PHYCOMP	2322 704 61741
4	1350	IMVREC0022	Res 200 Ohm, 1% 0603	2	EA	R79,307	ASJ	CR16-2000-FF
							DALE	CRCW06032000FRT1
							PHYCOMP	2322 704 62001
Lvl								
	1360	IMVREC0023	Res 221 Ohm, 1% 0603	4	EA	R4,17,359,360	ASJ	CR16-2210-FF
							DALE	CRCW06032210FRT1
							PHYCOMP	2322 704 62211
4	1370	IMVREC0024	Res 240 Ohm, 1% 0603	2	EA	R34,31	ASJ	CR16-2400-FF
							DALE	CRCW06032400FRT1
							PHYCOMP	2322 704 62401
4	1380	IMVREC0026	Res 301 Ohm, 1% 0603	5	EA	R75,76,78,86,87	ASJ	CR16-3010-FF
							DALE	CRCW06033010FRT1
							PHYCOMP	2322 704 63011
4	1390	IMVREC0027	Res 332 Ohm, 1% 0603	1	EA	R39	ASJ	CR16-3320-FF
							DALE	CRCW06033320FRT1
							PHYCOMP	2322 704 63321
4	1410	IMVREC0028	Res 470 Ohm, 5% 0603	2	EA	R284,361	ASJ	CR16-471-JF
							DALE	CRCW0603471JRT1
							PHYCOMP	2322 702 60471
4	1420	IMVREC0030	Res 560 Ohm, 5% 0603	2	EA	R271,38	ASJ	CR16-560-JF
							DALE	CRCW0603561JRT1
							PHYCOMP	2322 702 60561
4	1430	IMVREC0032	Res 680 Ohm, 1% 0603	1	EA	R42	ASJ	CR16-6800-FF
							DALE	CRCW06036800FRT1
							PHYCOMP	2322 704 66801
4	1450	IMVREC0034	Res 1.00 K, 1% 0603	32	EA	R11-15,18,19,24,45,47,49,	ASJ	CR16-1001-FF
						R81-84,91,94,98,99,104,158,159,162,	DALE	CRCW06031001FRT1
						R174,235,267,278,290,370,	PHYCOMP	2322 704 61002
						R313,317,334		
4	1470							
		IMVREC0035	Res 1.3K, 5% 0603	1	EA	R263	ASJ	CR16-132-JF
							DALE	CRCW0603132JRT1
							PHYCOMP	2322 702 60132
4	1490							
		IMVREC0036	Res 1.5K, 5% 0603	1	EA	R27	ASJ	CR16-J152-JF
							DALE	CRCW0603152JRT1
							PHYCOMP	232270260152
4								
	1500	IMVREC0037	Res 2.00K, 1% 0603	2	EA	R234,322	ASJ	CR16-2001-FF
							DALE	CRCW06032001FRT1
							PHYCOMP	2322 704 62002
4	1510	IMVREC0038	Res 2.7K, 5% 0603	2	EA	R88,89	ASJ	CR16-272-JF
							DALE	CRCW0603272JRT1
4	1520						PHYCOMP	232270260272
		IMVREC0039	Res 3.0K, 5% 0603	2	EA	R154,50	ASJ	CR16-302-JF
							DALE	CRCW0603302JRT1
4	1530						PHYCOMP	2322 702 60302
		IMVREC0041	Res 4.7K, 5% 0603	21	EA	R46,126,151,188,191,243,244,	ASJ	CR16-472-JF
						R247,248,308,309,338,380,381,	DALE	CRCW0603472JRT1
						R369,439,488,490-493	PHYCOMP	2322 702 60472
Lvl								
	1540	IMVREC0042	Res 5.6K, 5% 0603	1	EA	R100	ASJ	CR16-562-JF
							DALE	CRCW0603562JRT1
							PHYCOMP	2322 702 60562
4	1560	IMVREC0043	Res 8.2K, 5% 0603	10	EA	R59,60,97,128,130,153,277,374,375,376	ASJ	CR16-822-JF
							DALE	CRCW0603822JRT1
							PHYCOMP	2322 702 60822
4	1570	IMVREC0044	Res 10K, 5% 0603	46	EA	R26,R65,R106,R117,R118,	ASJ	CR16-103-JF
						R119,R122,R123,R124,R175,	DALE	CRCW0603103JRT1
						R233,R262,R268,R269,R270,	PHYCOMP	2322 702 60103
						R272,R274,R281,R287,R314,		
4	1580					R315,R337,R339,R340,R341,		
						R342,R343,R344,R366,R401,		
						R402,R425,R426,R428,R429,		
						R430,R431,R432,R433,R442,		
4	1590					R445,R446,R454,R465,R494,		
						R504		
4		IMVREC0045	Res 15K, 5% 0603	12	EA	R111,112,115,116,172,182,183,385,	ASJ	CR16-153-JF
						R386,389,390,499	DALE	CRCW0603153FRT1
							PHYCOMP	2322 702 60153
		IMVREC0047	Res 20.0K 1% 0603	7	EA	R156,164,171,181,185,372,382	ASJ	CR16-2002-FF
						R335,363,403,R463	DALE	CRCW06032002FRT1
							PHYCOMP	2322 704 62003

	Item	Part No.	Description	Qty Per	UoM	Reference Designator		Vendor Part No.
4	1620	IMVREC0050	Res 51K, 5% 0603	4	EA	R163,R160,R423,R424	ASJ	CR16-513-JF
							DALE	CRCW0603513JRT1
							PHYCOMP	2322 702 60513
4	1640	IMVREC0053	Res 63.4K, 1% 0603	1	EA	R186	ASJ	CR16-6342-FF
							DALE	CRCW06036342FRT1
							PHYCOMP	2322 704 66343
4	1650	IMVREC0054	Res 105K, 1% 0603	7	EA	R157,179,265,266,316,318,438	ASJ	CR16-1053-FF
							DALE	CRCW06031053FRT1
							PHYCOMP	2322 704 61054
4	1680	IMVREC0055	Res 470K, 5% 0603	1	EA	R288	ASJ	CR16-474-JF
							DALE	CRCW0603474JJRT1
							PHYCOMP	2322 702 60474
4	1690							
		IMVREC0056	Res 499K, 1% 0603	1	EA	R170	ASJ	CR16-4993-FF
							DALE	CRCW06034993FRT1
							PHYCOMP	2322 704 64994
4	1700							
		IMVREC0057	Res 10Meg, 5% 0603	2	EA	R101,R102	ASJ	CR16-106-JF
							DALE	CRCW0603106JRT1
							PHYCOMP	2322 702 60106
	1710	IMVREC0064	Res 1M, 1% 0603	4	EA	R373,405,436,437	ASJ	CR16-1004-FF
							DALE	CRCW06031004FRT1
							PHYCOMP	2322 704 61005
Lvl								
	1720	IMVICI0023	IC Intel P-III 800MHz LV	1	EA	U1	INTEL	RJ80530KZ800512 (S
		IMVCOL0028	Cap 0.047pF (+/- 10% X7R 25V) 0603	1	EA	C138	MURATA	GRM188R71E473KA01J
4								
	1750							
		IMVCNB0011	Conn 87216-1003	1	EA	J24	ACES	87216-1003
4		IMVICG0004	IC 10/100 Base-T Ether Phy SSOP-48	1	EA	U72	INTEL	82562ET
	1760							
		IMVFPG0005	Lead-Bead (50 ohm typ, 600mA)	1	EA	FB41	WORLD PRODUCTS	HH-1H3216-500
	1780							
4		IMVVIA0003	Crystal 25Mhz (For Ether. Ctrl)(10/100)	1	EA	Y3	HCJ QUARTZ	HQS-MS3HA2-25000-2
	1790	IMVREC0065	Res 120 Ohm 1% 0603	1	EA	R450	DALE	CRCW06031200FRT1
4	1800	IMVREC0029	Res 549 Ohm, 1% 0603	1	EA	R451	ASJ	CR16-5490-FF
							DALE	CRCW06035490FRT1
4	1820						PHYCOMP	2322 704 65491
	1830	IMVREC0031	Res 619 Ohm, 1% 0603	1	EA	R452	ASJ	CR16-6190-FF
4							DALE	CRCW06036190FRT1
	1840						PHYCOMP	2322 704 66191
4								
	1850	IMVREC0063	Res 30K1, 1% 0603	1	EA	R120	ASJ	CR16-3012-FF
4							DALE	CRCW06033012FRT1
							PHYCOMP	2322 704 63013
4								
	1860	IMVCOL0025	Cap 470pF(+-5% COG/NPO 50V)0603	1	EA	C335	AVX	06035A471JAT
4								
		IMVICI0027	IC 150mA Low-noise LDO Regulator 5V	1	EA	U57	MICREL	MIC5205-5.0BM5
4								
	1870							
		IMVICI0028	IC 150mA Low-noise LDO Regulator 3.3V	1	EA	U58	MICREL	MIC5205-3.3BM5
4								
	1910	IMVICI0029	IC 150mA Low-noise LDO Regulator 1.8V	1	EA	U54	MICREL	MIC5207-1.8BM5
	1920							
4		IMVTRC0004	Transistor Mosfet SO-8	1	EA	Q38	VISHAY	SI9430DY
	1930	IMVCNE0003	Socket Mini PCI SMT-124	1	EA	J12	FCI	62629-001
							TOTAL SOLUTIONS	80402A-124G2
4							AMP	0-1318228-1
	1940							
4		IMVREC0075	Res 75K 5% 0603	1	EA	R155	ASJ	CR16-753-JF
							DALE	CRCW0603753JRT1
	1950						PHYCOMP	2322 702 60753
4								
	1960							
		IMVFPG0006	Ferrite Bead 1000 Ohm@100Mhz 25% 0603	15	EA	FB46-52,55-62	MURATA	BLM18BD102SN1J
4								
	1970	IMD2A-BL001-00	PCB Main Bd CV60	1	EA			
		IMVICL0001-P3	Prog IC, System Bios (Ver 3)	1	EA	U18	E-PROG TECHNOLOGY PTE LTD	SST SST49LF004A-33
Lvl								
		IMVICL0001	IC 4Mbits 3V Firmware Hub Flash Mem(PLCC	1	EA	U18	SST	SST49LF004A-33-4C-
	1990							
		IMVEPP0001	Battery 2 Positions, 210mAh	1	EA	BT1	MAXELL	CR2032T6
4								
	2000	IMM2A-P0000-02	HOUSING REAR	1	EA		GOLDTIUM	M2A-P0000-02
	2010							
		IMM2A-R1400-00	GEL PAD, CPU (New)	1	EA		GLOCOM	M2A-R1400-00
4	10							
		IMG9A-A0002-02	Assy 12.1COLOR LCD DISPLAY SVGA	1	EA			
	2010							
4		IMM2A-P0300-01	HOUSING FRONT	1	EA		GOLDTIUM	M2A-P0300-01
	160							

	Item	Part No.	Description	Qty Per	UoM	Reference Designator		Vendor Part No.
5	170							
		IMVIPE0001	SVGA 12.1Color TFT (800x600) 300nits typ	1	EA		SANYO	TM121SV-22L11A
3	510							
2	110	IM813-006-000	GROMMET 3/8 ID 1/2 OD	2	EA		ATLANTIC INDIA RUBBER	230
							MINOR RUBBER	Z-181
							NOTT COMPANY	224
2	140							
		IMZ2A-X0003-01	Conductive EMI Gasket (14 x 10 x 7mm)	4	EA		FABRITECH	Z2A-X0003-01
1	20							
2		IMM2A-M0000-02	FRAME LCD	1	EA		NCT	M2A-M0000-02
	50							
2		IMZ2A-M0023-00	Screw 4-40x5/16 PH Blue w/Epoxy	4	EA		MAY-MIZU	Z2A-M0023-00
3	80							
		IMM2A-F0000-01	LCD FFC Assy 41pin (LCD TO Main Bd)	1	EA		SPEEDY	M2A-F0000-01
3	100							
		IMM2A-R1200-00	FOAM LCD Cable (Small)	1	EA		SPECTRUM INDUSTRY	M2A-R1200-00
	110							
3		IMM2A-R1300-00	FOAM LCD Cable (Bigl)	1	EA		SPECTRUM INDUSTRY	M2A-R1300-00
	120							
3		IMV-INT-M002	ADHESIVE 1401B	0.2	G		NEJILOCK TECHNOLOGY	V-INT-M002
	130	IMZ2A-M0000-01	Screw 4-40 x 1/4 PH-Blue Zinc w/Epoxy	20	EA		MAYMIZU PTE LTD	Z2A-M0000-01
3								
	140							
3		IMM2A-R0000-02	GASKET REAR	1	EA		FABRITECH	M2A-R0000-02
	150	IMG2A-PC003-00	ASSY, Touch_Heater Board, CV60	1	EA			
3								
	130	IMVCNE0007	Conn 8 pin 1mm pitch Touch FFC T/H	1	EA	J2	ACES	85215-0822
							MOLEX	52043-0810
3								
		IMVCNE0011	Conn 12 pin 1mm pitch FFC T/H	1	EA	J4	ACES	85216-1222
	170							
		IMVCNB0014	HEADER	1	EA	J5	ACES	86522-0200
Lvl	180							
		IMV-MAX-099	JET MELT 3748 TC	0.5	G		3M	IMV-MAX-099
	40							
		IMG2A-PC003-00S	ASSY, Touch_Heater Board, CV60 SMT	1	EA			
2	50	IMVCNB0010	Conn 30 pin Main to tou./heat 1.mm pitch	1	EA	J1	ACES	87216-3003
2	410	IMVCOA0006	Cap 22uF (Pcap 35V) CASEE	3	EA	C13 - 15	AVX	TPSE226M035R0300
3	490	IMVCOD0001	Cap 10uF 20% 10V Tant ESR=3000mohm	1	EA	C6	AVX	TAJA106M010R
	510	IMVCOL0011	Cap 2200pF(+-10% X7R 50V) 0603	1	EA	C18	MURATA	GRM188R71H222KA01J
3								
	20	IMVCOL0013	Cap 0.01uF (+-10%, X7R, 50V) C0603	11	EA	C3,4,7-10,12,16,17,22,27	MURATA	GRM188R71H103KA01J
3								
	70	IMVCOL0016	Cap 0.1uF (+-10%, X7R, 25V) C0603	3	EA	C2,5,30	MURATA	GRM188R71E104KA01J
3								
	80	IMVCOL0030	Cap 0.022uF(10% 16V) 0603	1	EA	C19	AVX	0603YC223KAT
3								
	90	IMVDIB0001	Diode Schottky Pwr Rectifier (3A, 40V) 4	1	EA	D1	ON SEMICONDUCTOR	MBRS340T1
4								
	100	IMVFPA0007	Inductor 10uH SCB1207	1	EA	L1	ANLA	SCB1207-100M
4								
	110	IMVFPG0001	Ferrite Bead (390 ohm typ, 2000mA) RC12	1	EA	FB1	MURATA	BLM31PG391SN1K
4								
	120	IMVICI0008	IC L-Offset Volt Dual Comparators	1	EA	U4	NATIONAL SEMICONDUCTOR	LM393MX
4								
	130	IMVICI0018	IC Touch Screen Controller	1	EA	U2	SEMTECH	UR7HCTS2-S840-FG
4								
	140	IMVICI0019	IC Electronic Protection Array	1	EA	U1	LITTLEFUSE	SP720ABT
4								
	150	IMVREC0020	Res 150 Ohm, 1% 0603	1	EA	R25	ASJ	CR16-1500-FF
4							DALE	CRCW06031500FRT1
	170						PHYCOMP	2322 704 61501
4								
Lvl	180	IMVREC0044	Res 10K, 5% 0603	3	EA	R1,9,26	ASJ	CR16-103-JF
							DALE	CRCW0603103JRT1
	190						PHYCOMP	2322 702 60103
4								
	210	IMVREC0054	Res 105K, 1% 0603	1	EA	R2	ASJ	CR16-1053-FF
4							DALE	CRCW06031053FRT1
							PHYCOMP	2322 704 61054
4								
	220							

	Item	Part No.	Description	Qty Per	UoM	Reference Designator		Vendor Part No.
4								
	240	IMVREC0064	Res 1M, 1% 0603	1	EA	R3	ASJ	CR16-1004-FF
4							DALE	CRCW06031004FRT1
							PHYCOMP	2322 704 61005
		IMVREC0068	Res 0.02 Ohm 1% 1206	2	EA	R10,11	IRC	LRF1206-01-R020F
4								
		IMVREC0069	Res 4.75K Ohms, 1% 0603	1	EA	R14	ASJ	CR16-4751-FF
							DALE	CRCW06034751FRT1
	250						PHYCOMP	2322 7046 4752
4								
		IMVREC0070	Res 34.8K Ohms 1% 0603	3	EA	R5,8,13	ASJ	CR16-3482-FF
							DALE	CRCW06033482FRT1
	280						PHYCOMP	2322 7046 3483
	290	IMVREC0071	Res 121K Ohms 1% 0603	1	EA	R17	ASJ	CR16-1213-FF
							DALE	CRCW06031213FRT1
							PHYCOMP	2322 7046 1214
Lvl	300	IMVREC0072	Res 200K Ohms, 1%, 1/16 0603	1	EA	R16	ASJ	CR16-2003-FF
							DALE	CRCW06032003FRT1
							PHYCOMP	2322 7046 2004
4								
	310	IMVREC0073	Res 15K Ohms 1% 0603	3	EA	R4,7,27	ASJ	CR16-1502-FF
							DALE	CRCW06031502FRT1
							PHYCOMP	2322 7046 1503
4								
	320	IMVREE0006	Res RNET 4.7K, 5%	1	EA	RN1	ROHM	MNR14E0ABJ472
4								
		IMVTRC0004	Transistor Mosfet SO-8	1	EA	Q1	VISHAY	SI9430DY
	330	IMVVIB0002	Crystal 4MHz	1	EA	Y1	MURATA	CSTCR4MOOG53-RO
4								
		IMVTRC0002	Transistor N-MOSFET Transistor SOT-23M	3	EA	Q3-5	ON SEMICONDUCTOR	BSS138LT1
	340	IMVCOD0009	Cap tant 68uF 20V ESR=70Mohm	4	EA	C1,11,28,29	AVX	TPSD686M020R0070
4								
	350							
		IMD2A-BL003-00	Touch Heater Bd CV60 (2-LAYER)	1	EA		HOIHO	D2A-BL003-00
	380							
4		IMVREC0050	Res 51K, 5% 0603	1	EA	R6	ASJ	CR16-513-JF
	390						DALE	CRCW0603513JRT1
							PHYCOMP	2322 702 60513
	430							
4		IMVCPD0001	Transguard	5	EA	D2-6	AVX	VC080514A300RP
	440	IMVFPG0002	FB Lead-Bead (50-Ohm typ, 6000mA) 1206	2	EA	FB3,4	WORLD PRODUCTS	HU-1H3216-500JT
4	450	IMVTRC0003	Transistor N-Channel MOSFET SO-8	1	EA	Q2	TEMIC	SI4410DY-T1
4		IMG2A-PC006-00	ASSY, Inverter Board, CV60	1	EA			
4	460	IMVCOJ0001	Cap 0.1uF 100V (5x10x7.2)MKP2	1	EA	C7	WIMA	MKP2 0.1UF/100V/20
4	470	IMVCOJ0002	Cap 0.22uF 100V (7.2 x 13 x 7.2)MKP2	1	EA	C6	WIMA	MKP2 0.22UF/100V/2
4	480	IMV-MAX-099	JET MELT 3748 TC	1	G		3M	IMV-MAX-099
	190	IMG2A-PC006-00S	ASSY, Inverter Board, CV60 SMT	1	EA			
4								
	140	IMVICI0020	IC High Power CCFL Controller SSOP-16N	1	EA	U1	LINEAR TECHNOLOGY	LT1768CGN
4								
	150	IMVCNB0004	Conn for CCFL Converter (LCD backlight)	2	EA	J3,J1	JST	SM02(8.0)B-BHS-1-T
	320	IMVCNB0011	Conn 87216-1003	1	EA	J2	ACES	87216-1003
4								
	340	IMVTRC0001	Transistor N-Channel MOSFET, 30V TSOP-6	1	EA	Q2	VISHAY	SI3456DV-T1
2	10	IMVTRC0002	Transistor N-MOSFET Transistor SOT-23M	1	EA	Q3	ON SEMICONDUCTOR	BSS138LT1
		Part No.	Description	Qty	UoM	Reference	AVL & Vendor Name	Vendor Part No.
3	20			Per		Designator		
	30	IMVFPA0004	Inductor 68uH, 20%, 3.5A, 130mohm	1	EA	L1	ANLA	ANB1807-680M
	40	IMVFPA0008	Inverter Transformer	1	EA	T1	SUMIDA	CEPH249
Lvl	50	IMVDIB0002	Diode Schottky Pwr Rectivier (1A, 40V) 4	1	EA	D1	ON SEMICONDUCTOR	MBRS140T3
	Item							
		IMVFPG0002	FB Lead-Bead (50-Ohm typ, 6000mA) 1206	1	EA	FB1	WORLD PRODUCTS	HU-1H3216-500JT
3								
	70	IMVCOL0007	Cap 33pF (+-5%, 2KV) C1206	2	EA	C5,C1	AVX	CF316CG330J2000AT
4								
	80	IMVCOL0014	Cap 0.033uF (+-10%, X7R, 25V) C0603	1	EA	C9	MURATA	GRM188R71E333KA01J
4								
	90	IMVCOL0011	Cap 2200pF(+-10% X7R 50V) 0603	1	EA	C12	MURATA	GRM188R71H222KA01J
4								
Lvl	100	IMVCOL0016	Cap 0.1uF (+-10%, X7R, 25V) C0603	4	EA	C3,C4,C8,C10	MURATA	GRM188R71E104KA01J
	120	IMVCOD0001	Cap 10uF 20% 10V Tant ESR=3000mohm	1	EA	C11	AVX	TAJA106M010R
4								
	130	IMVCOD0005	Cap 47uF 20% 20V Tant ESR=900mohm	1	EA	C2	AVX	TAJD476M020R
4								
	160	IMVREC0004	Res 0.025 Ohm 1% 1206	1	EA	R10	IRC	LRC-LRF1206-01-R02
4								
	170	IMVREC0040	Res 3.92K 1% 0603	1	EA	R6	ASJ	CR16-3921-FF
4							DALE	CRCW06033921FRT1
	180						PHYCOMP	232270463922
4								
	190	IMVREC0017	Res 100 Ohm, 1% 0603	1	EA	R9	ASJ	CR16-1000-FF
4							DALE	CRCW06031000FRT1
	200						PHYCOMP	2322 704 61001
4								
	210	IMVREC0044	Res 10K, 5% 0603	1	EA	R7	ASJ	CR16-103-JF
4							DALE	CRCW0603103JRT1
							PHYCOMP	2322 702 60103

4		Part No.	Description	Qty	UoM	Reference		Vendor Part No.
	230			Per		Designator		
4							DALE	CRCW0603433JRT1
							PHYCOMP	2322 702 60433
4								
	240	IMVREC0025	Res 249 Ohm, 1% 1206	1	EA	R3	ASJ	CR16-2490-FF
4							DALE	CRCW1206249FKTA
							PHYCOMP	2322 7046 2491
4	Item							
		IMVREC0046	Res 15.4K, 1% 0603	1	EA	R5	ASJ	CR16-1542-FF
							DALE	CRCW06031542FRT1
							PHYCOMP	232270461543
	260							
4		IMVREC0048	Res 42K2, 1% 0603	1	EA	R1	ASJ	CR16-4222-FF
							DALE	CRCW06034222FRT1
							PHYCOMP	232270464223
4	270	IMVREC0051	Res 60.4K 1% 0603	1	EA	R4	ASJ	CR16-6042-FF
							DALE	CRCW06036042FRT1
							PHYCOMP	2322 7046 6043
	280	IMD2A-BL005-00	PCB INVERTER CV60 (2-LAYER)	1	EA		HOIHO	D2A-BL005-00
		IMM2A-L0400-00	BCODE LABEL P/N 48X42 mm(HEATER)	1	EA			
	290	IMG9A-A0007-02	Assy BEZEL w/HEATER	1	EA			
Lvl		IMG9A-A0012-00	Housing Bezel Sub-Assy	1	EA			
	310	IMM2A-P1000-01	LIGHTPIPE LED	1	EA		FONG SHEN	M2A-P1000-01
4								
	530							
		IMM2A-P1100-01	HOLDER LED	1	EA		FONG SHEN	M2A-P1100-01
	540							
4								
	110	IMZ2A-M0001-00	SCREW, 4-40 X 5/16 PH -BLK w/EPOXY	2	EA		MAY-MIZU	Z2A-M0001-00
	30	IMM2A-R0700-01	GASKET LED LIGHTPIPE	1	EA		SPECTRUM CHEMICAL	M2A-R0700-01
4								
	40	IMM2A-F0700-00	LED CABLE ASSY	1	EA		SPEEDY IND. (NS TECH)	M2A-F0700-00
4								
	50	IMM2A-P0200-02	HOUSING BEZEL (REISTIVE)	1	EA		GOLDTIUM	M2A-P0200-02
1								
	60							
1		IMM2A-R0100-02	GASKET BEZEL	1	EA		FABRITECH	M2A-R0100-02
2	70	IMG2A-A0018-00	TOUCH PANEL ASSY w/HEATER	1	EA			
3		IMVEPT0002	Analog Touch Panel 12.1"Clear Heater Asy	1	EA		ELMWOOD	RER 1384-3
	80							
3		IMM2A-P0700-02	GASKET TOUCH PANEL	1	EA		SEI WOO	M2A-P0700-02
	90							
		IMM2A-P0600-02	GASKET COVER ANTENNA	1	EA		FABRITECH	M2A-P0600-02
3	130							
		IMZ2A-M0022-00	Screw 4-40x3/8 PH Blue w/Epoxy	16	EA		MAY-MIZU	Z2A-M0022-00
3	30	IMV-LBL-1000	Shipping Label 4" x 6"	1	EA		GEN HUAT	V-LBL-1000
							OLTEC PACIFIC	V-LBL-1000

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