LP-10R01

SERVICE MANUAL

Vibrant

TATUNG

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(Vetech Film)

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About This Manual

Audience

This service manual is primarily for system engineers, service engineers, dealers and distributors. It carries the assumption that reader understands the basic operating concepts.

Purpose

This manual contains reference data for LP-10R01 LCD monitor. It gives information regarding the operating principles of monitors, as well as technical service and maintenance information.

1.0 Introduction

The LP-10R01 is a high performance 10.4” TFT LCD monitor. This micro-controlled monitor is designed for continuous operation from 31.5 to 54 KHz and is capable of displaying up to a resolution of 800 *600 in interface mode. The razor sharp flicker-free image, and the delicate ergonomic design of this monitor elevate not only productivity but also the user’s comfort.

1.1 Operation Specification

1.1.1 Operation Environment

Temperature

Operation：0 to 40℃

Storage：-20 to 60℃

Humidity (Relative)

Operation：10 to 80% non-condensing

Storage：10 to 90% non-condensing

Altitude

Operation：0~8000ft

Storage：0~40000ft

1.1.2 Safety, Ergonomic, EMC Compliance

This monitor complies with the following safety, ergonomic, and EMC standard

UL: UL1950

TUV-GS: EN60950, ISO-9241-3

FCC : Part 15 Class B

CE : EN55022 CISPR22 Class B, EN55024(EMS), EN60950

1.1.3 Signal Input Requirement

Connector:

15 pin D-Sub high-density connector for video and sync signals. See chapter 4 for pin assignment.

Video Signals:

Type: Red, Green, Blue channels analog input.

Level: 0.7Vp-p

Impedance:75 ohms.

Sync Signals:

Type: Separate Horizontal and Vertical Sync

Level: TTL Level

Polarity: Positive or negative

1.1.4 Power Input Requirement

Operating voltage range

100~240 V AC at 50/60 HZ

Power Consumption

Normal Operation: 18W

Stand by: 2.5W

Suspend mode: 2.5W

Off mode: 2.5W

1.2 Functional Specification

The standard conditions for verifying the following specification are:

Temperature: 25±5℃

Warm-Up Time: 15 minutes minimum

AC line input: 100~240 V AC±10%, 50 / 60±3Hz

View Distance: 30cm

1.2.1 Display Quality

Display Size (H*Z): 211.2mm*158.4mm

Brightness: more than 120 cd/ m2

Contrast Ratio: 180:1

1.2.2 Color Quality

White Balance (Use full white pattern, set brightness to maximum)

At color temperature of white light CIE9300。K+27M..P.C.D

X=0.283±0.02, Y=0.298±0.02

At color temperature of white light CIE6500。K+27M..P.C.D

X=0.313±0.02, Y=0.329±0.02

1.3 Control And Adjustment

1.3.1 External User Controls

⏻	POWER	Power On / Off
▭	MENU	OSD Menu On / Off
△	UP	Increase the Value.
▽	DOWN	Decrease the Value.
↵	ENTER	Confirm the selection

1.3.2 Controlled Functions From OSD Menu

Brightness: Press (+) key to increase brightness, (-) key to decrease brightness.

Contrast: Press (+) key to increase contrast, (-) key to decrease contrast.

Auto Adjust: Press (+) or (-) to adjust H-phase & H-position & V-position clock automatically.

Phase: By varying this (+)(-) control the exact sampling time within the pixel can be adjusted.

Clock: Adjust sampling clock of analog to digital converter until clock is equal to pixel frequency of video input.

H-Position: Press (+) key to shift screen right, (-) key to shift screen left.

V-Position: Press (+) key to shift picture upward, (-) key to shift picture downward.

Sharpness: Press (+) key to increase sharpness, (-) key to decrease Sharpness.

Color Temp: Press (+) or (-) to choose three types of color temperature 9300, 6500 and user define.

Language: Press (+) or (-) to choose any one of the following language, English, French, German, Italian and Spanish.

OSD: Adjust OSD frame location, timeout, transparency and preset OSD.

Dos-text / graphic: Select display quality (text / graphic) when this monitor be used in DOS.

Recall: Recall the default value.

1.3.3 Special Functions

Automatic storing: After adjusting the screen parameters, the microprocessor automatically stores the screen settings in user mode.

Entering factory mode: Press (+) and (-) at same moment before power on, the monitor will operate in factory mode. In this mode. The value of brightness, contrast, black-level, red, green, phase, OSD time, color save (color temperature) are stored as default value. During recall function, these values will be recalled again.

2.0 Theory Of Operation

2.1 Main Board

This module consists of microprocessor, Cheetah chip, AD converter, memory, clock generator, power conversion, 3.3 volt regulator and backlight controller.

2.1.1 A/D(AD9884A U8):

U8 is a triple 8 bit ADC with controllable amplifiers and clamps for the digitizing of large bandwidth RGB signals. The clamp level, the gain and all of the other settings are controlled via a serial interface, SDA (pin29), SCL(pin30).
Analog video inputs (Rin, Gin, Bin) are internal DC polarized. These input are AC coupled by C46, C52, C54 three capacitors. ADC outputs R0~R7, G0~G7, B0~B7 are connected to scaling IC (ASI-320) via resistor array.

2.1.2 Scaling IC(ASI-320 U14):

U14 provides memory interface, ADC interface, microprocessor interface and flat panel interface. U14 can work either with or without the external frame buffer. The scaling IC is the data follow center between SDRAM(U12,U13), A/D converter(U8), MCU(U17) and LVDS transmitter (U20). Because the LVDS panel is 6 bits/color system, scaling IC also dither the 8 bits/color (from A/D) to 6bits/color system

2.1.3 Memory:

U12~U13(A43L0616V-7) for 1M*16 SDRAM frame buffer. 2.1.4 Power conversion:
U1: Main 5 volts output are generated by DC to DC conversion, from adapter we get 12
volts DC input, convert 12 volts to 5 volts .

2.1.4 Regulator

3.3 volts regulator: U2, U4, U5, U6 are 3.3 volt regulators.
U2 output for LCD panel
U4 output for scaling IC(U14) and AD9884(U8).
U5 output for SDRAM(U12,U13)and LVDS transmitter (U20)
U5 output for analog power of AD9884 (U8)

2.1.5 LVDS transmitter (U20)

U20 transmits the LVTTL color data via LVDS interface.

2.1.6 MCU(U17)

Dominate the OSD, preset mode, factory initial mode etc.

2.2 Keypad Board:

The key status input to Main Board for function adjustments ON OSD menu.

2.3 Inverter Board:

Inverter DC to high voltage AC for driving CCFL.

3.0 Troubleshooting Instruction

3.1 No Display, Power Indicator Is Off Or Blinking

3.1.1 Check AC/DC adaptor is proper installed with power code or DC jack.

3.1.2 Make sure having pressed power key.

3.2 No Display, Power Indicator Is Orange

3.2.1 Check the connector VGA1 for RGB signals input to Main board or not.

3.2.2 Change the Main Board

3.3 No Display, Power Indicator Is Green

3.3.1 Check the connector P7 for LVDS signals input to panel or not.

3.3.2 Check the LCD panel connector.

3.3.3 Check CON4 for power input of inverter.

3.3.4 Change the inverter board

3.3.5 Change the Main board

4.0 Video Connector Pin Assignment

Pin Number	Signal	Pin Number	Signal
1	Analog Red Input	9	NC
2	Analog Red Input	10	Sync Ground
3	Analog Red Input	11	Ground
4	Ground	12	SDA (DDC Data)
5	Digital Ground	13	H. Sync
6	Analog Red Ground	14	V. Sync
7	Analog Green Ground	15	SCL (DDC CLK)
8	Analog Blue Ground		

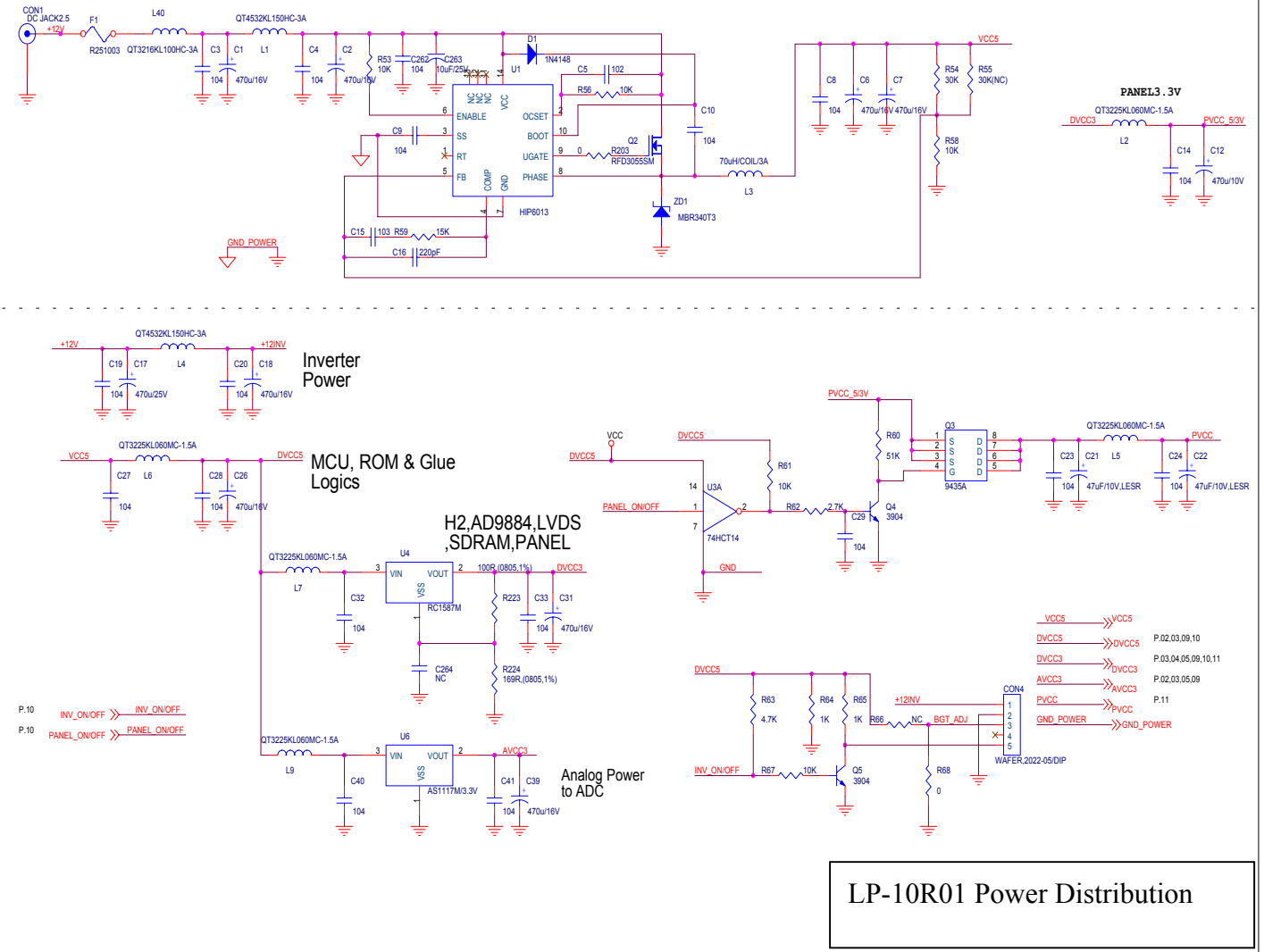
5.0 Visual Inspection Criteria-LCD Panel

Item		Criteria for defect
Display Inspection (operating)	Display function	No Display Malfunction
	Flickering	Obviously visible at display area
	Line defect	Missing line, Vertical or horizontal
	Point Defect (Red, Green, Blue, Dark)	Bright defects : 5 pcs maximum Dark defects : 5 pcs maximum Total defects : 10 pcs maximum
	Image retention	After displaying fixed pattern for 30 minutes, the afterimage is visible after 10 seconds.
	Non-uniformity	Visible through 2% ND filter.
External Inspection (non-operating)	Important dimension	Not conform to SPEC regarding outline and dimension between the mounting holes.
	Scratch on the polarize line shape	N=5 max (W≦ 0.1 or L≦ 10) N=0 (W<0.1 or L<10)
	Dent or Bubble on the polarize (in available viewing area)	N=5 max (D≦ 0.4) N=0 (D≦ 0.1)
	Foreign material on polarizer	(W>1/4L) N=4 max (0.1<D≦ 0.4) (W≦ 1/4L) N=4 max (0.03<W≦ 0.10 and 0.3<L≦ 2.1) N=0 (W>0.1 or L>2.1)
	Plastic frame	Break
	Cable	The metal wire is exposed.

6.0 Spare Parts List

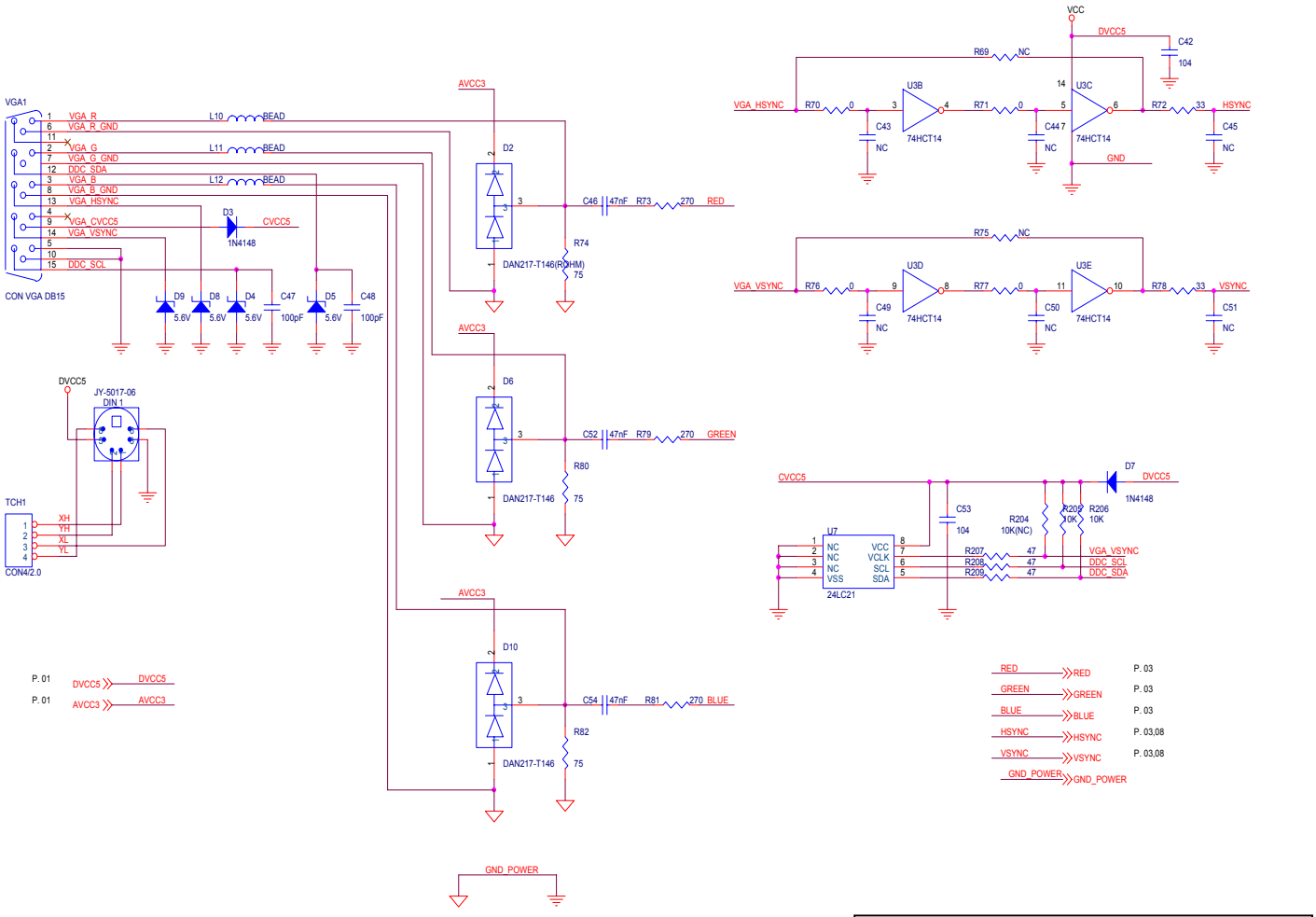
Parts No.	Description	Notes
1	Main Board	891-0100-057
2	Inverter	891-0250-003
3	Keypad	891-0010-010
4	Power Adaptor	560-1000-002
5	LCD Panel	501-1043-121

7.1 Power Distibution



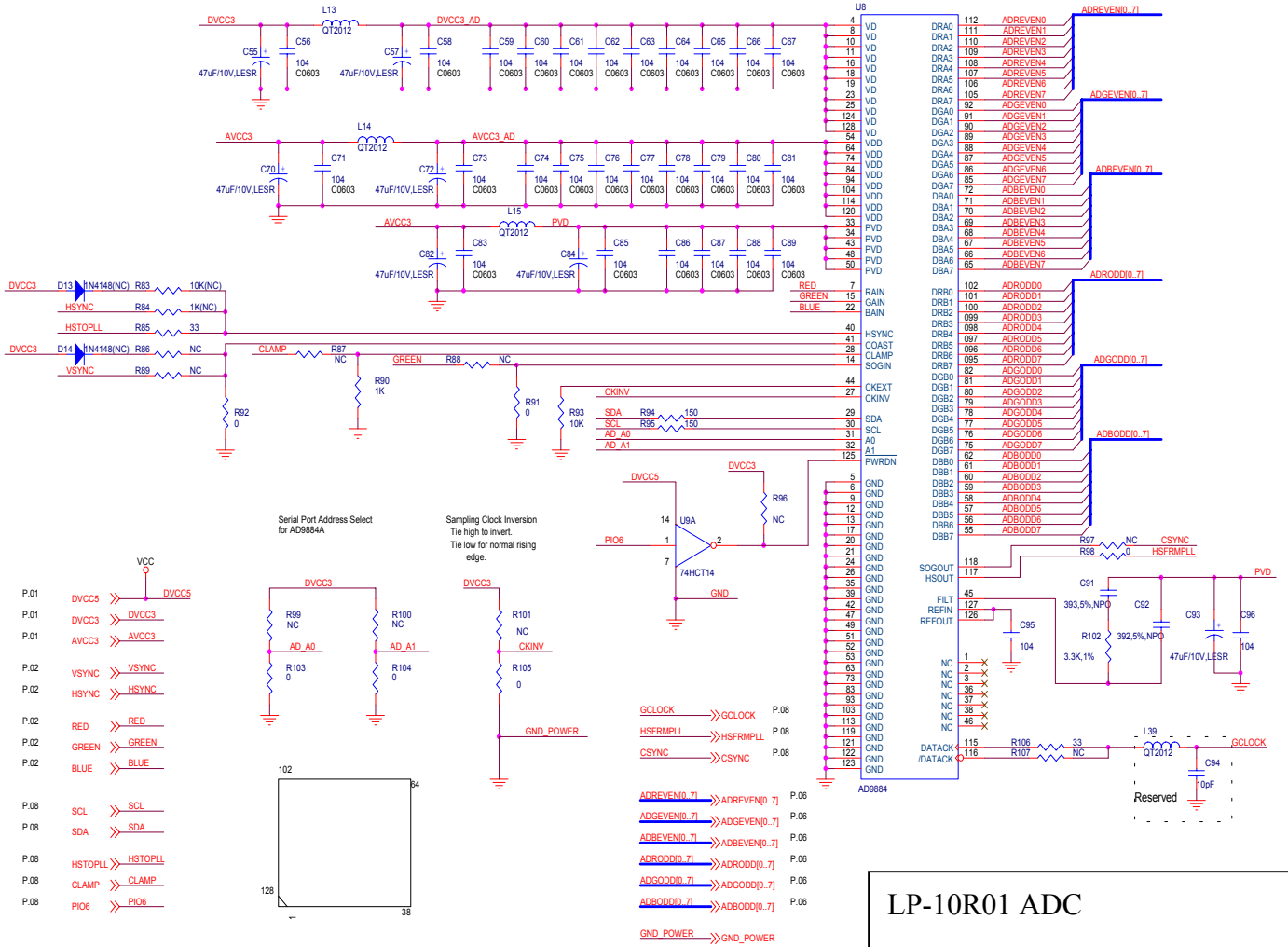
LP-10R01 Power Distribution

7.2 VGA Input



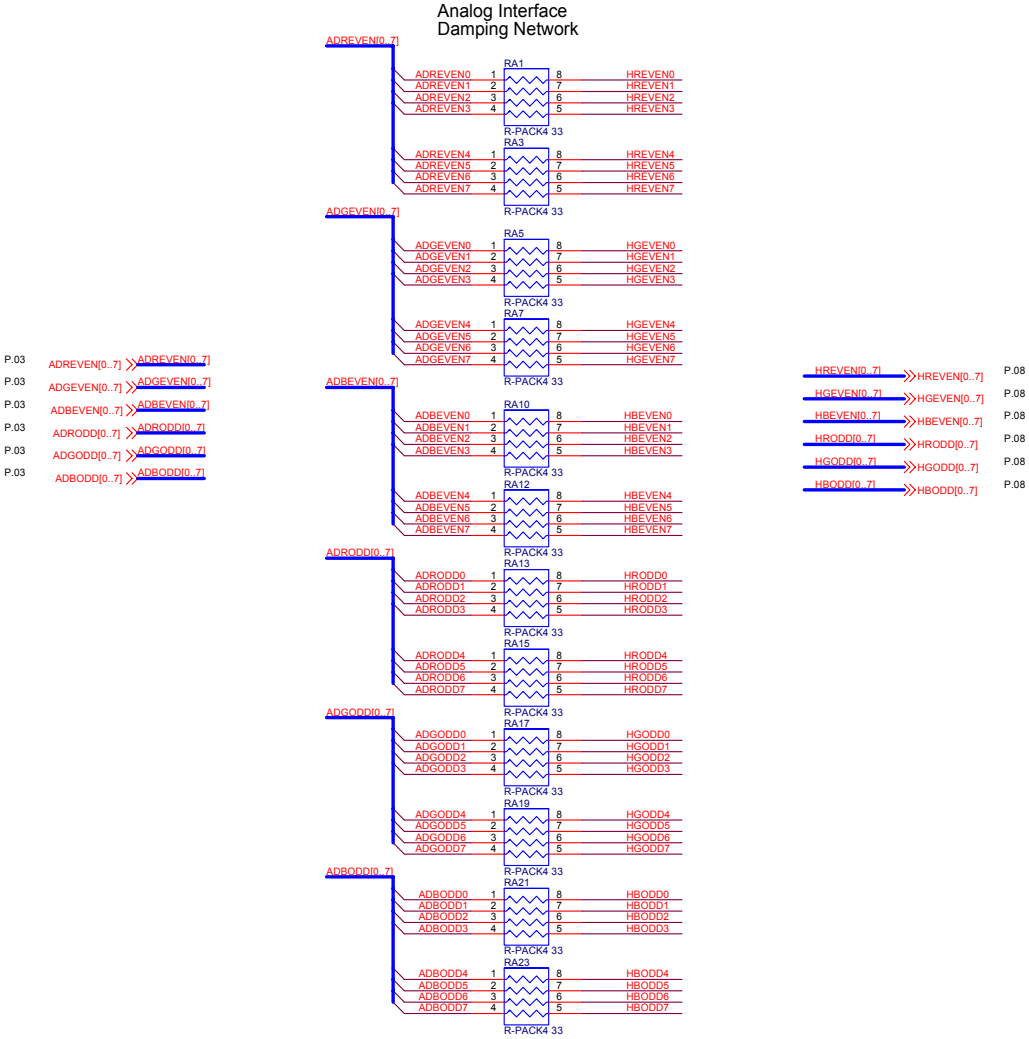
LP-10R01 VGA Input

7.3 ADC



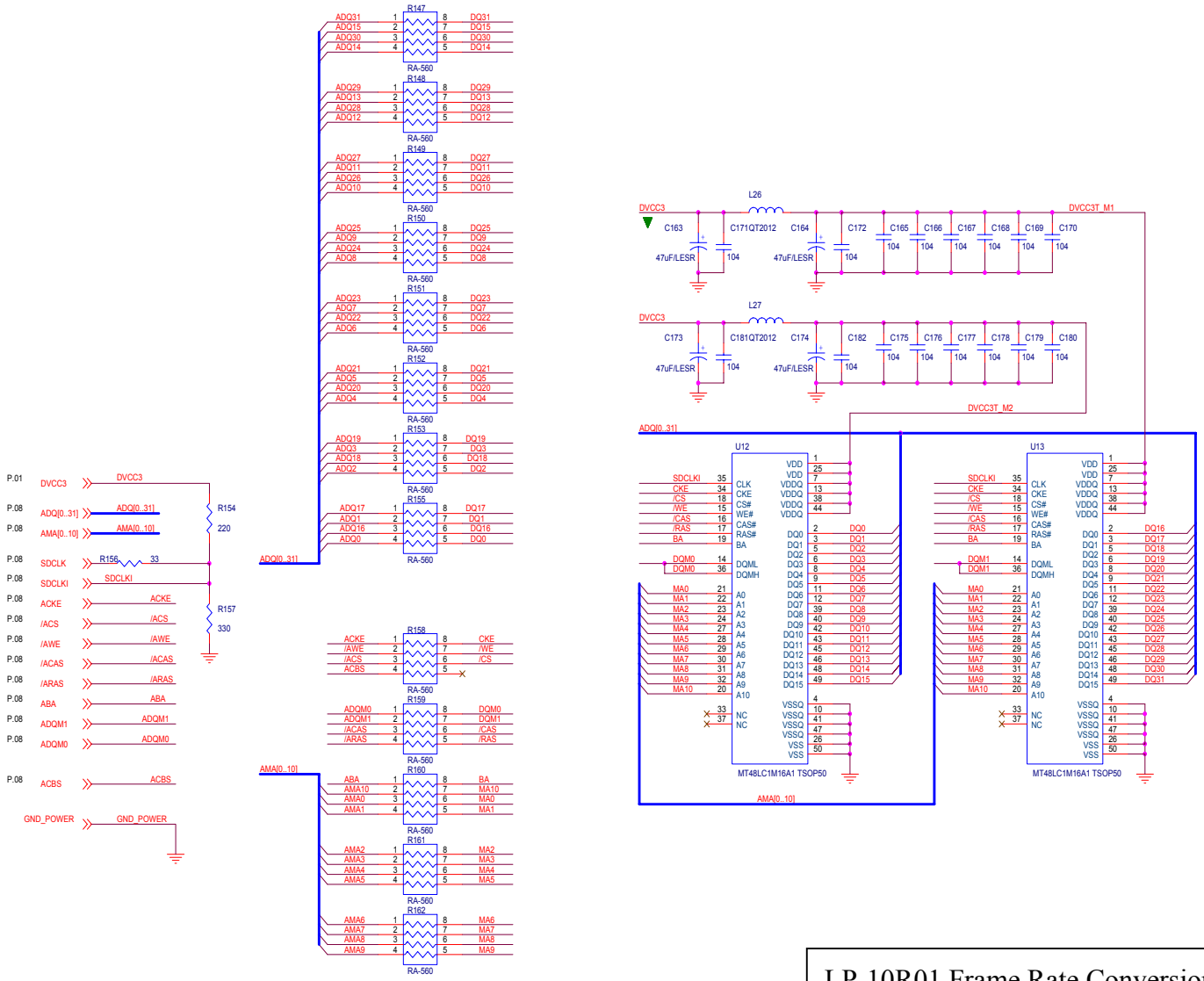
LP-10R01 ADC

7.4 Damping Network



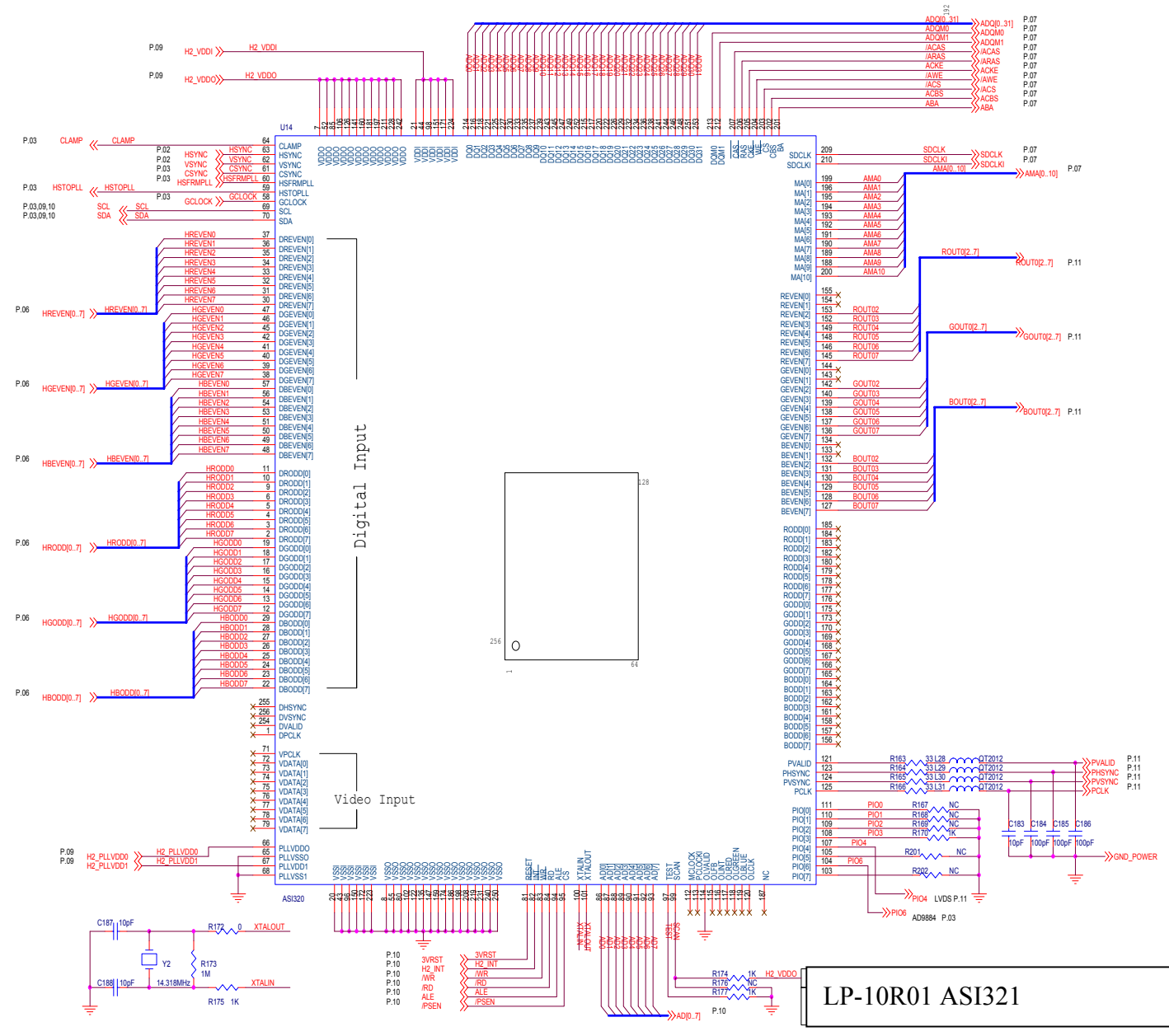
LP-10R01 Damping Network

7.5 Frame Rate Conversion

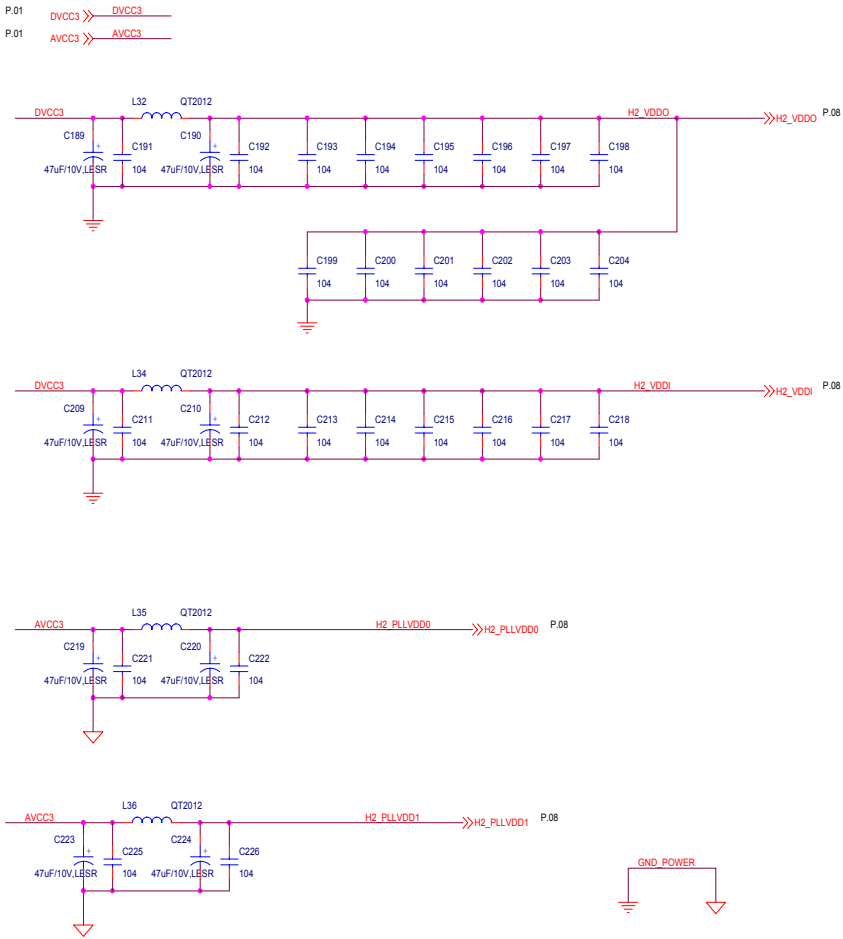


LP-10R01 Frame Rate Conversion

7.6 ASI 321

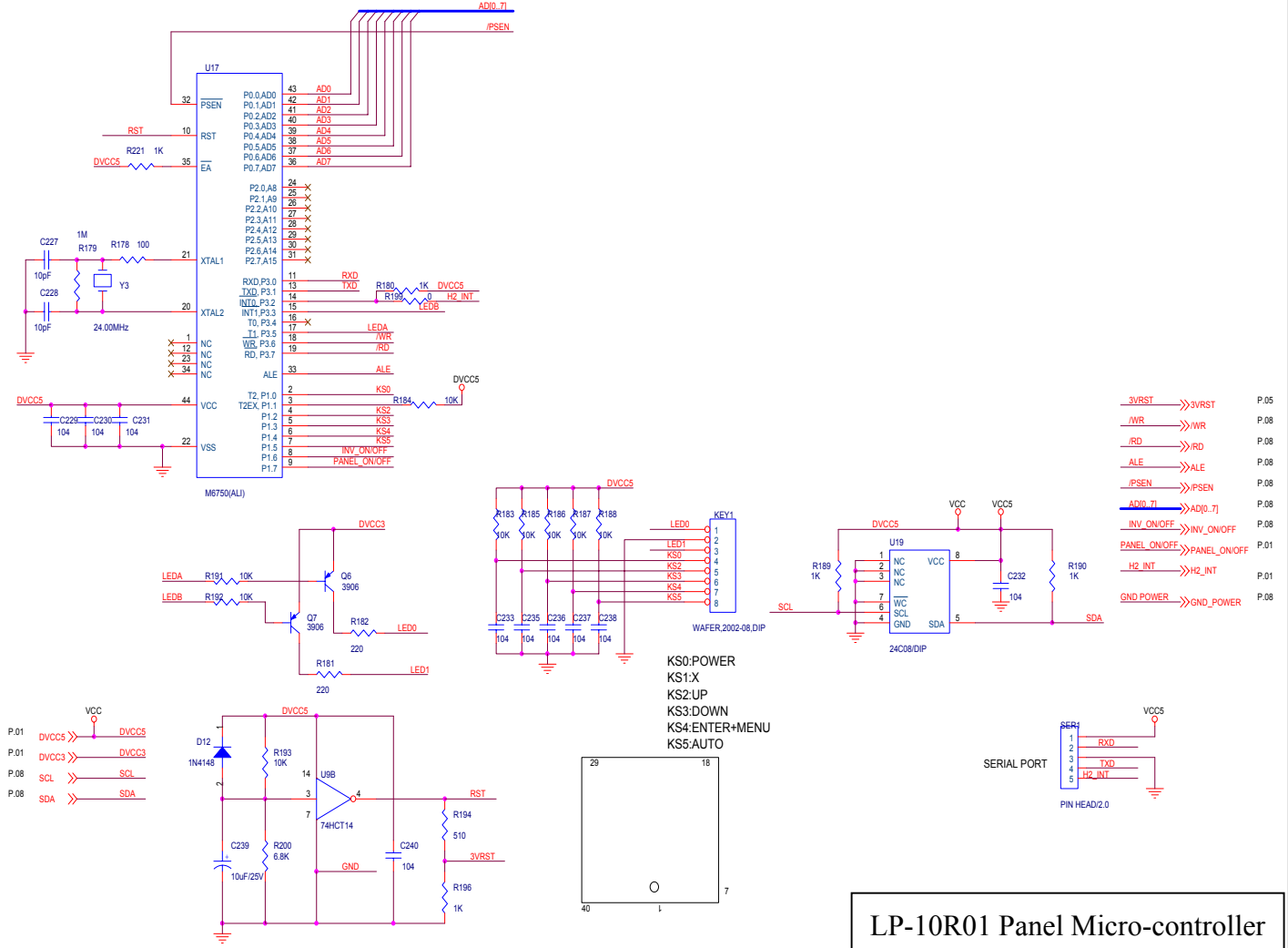


7.7 ASI 321 Power & EXT. OSD



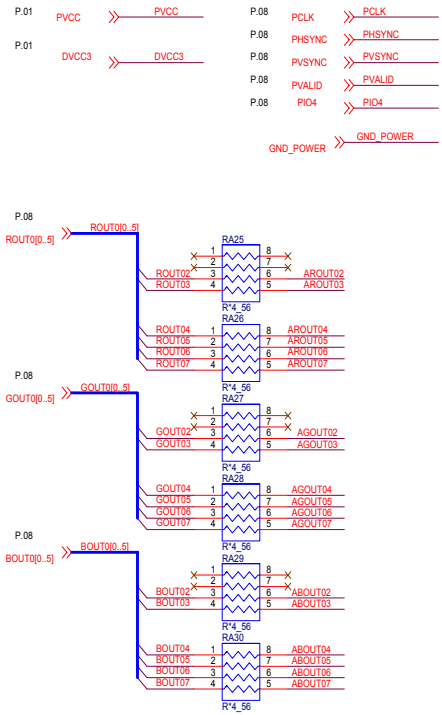
LP-10R01 ASI321 Power & Ext. OSD

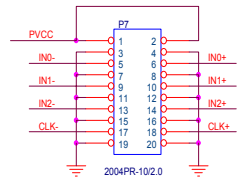
7.8 Microcontroller



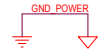
LP-10R01 Panel Micro-controller

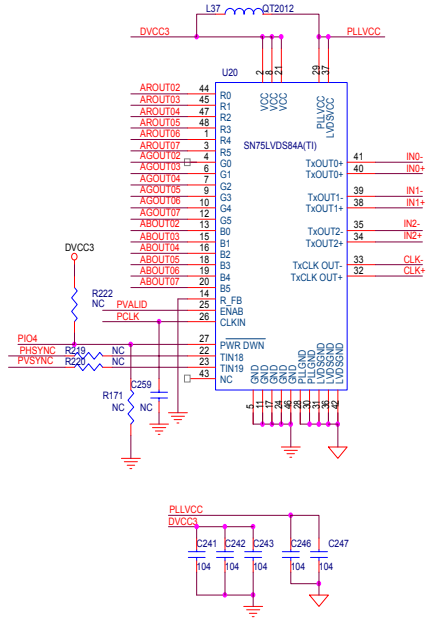
7.9 Panel Interface





PVI 10.4" PANEL USED





LP-10R01 Panel Interface

9.0 Parts List

P/N	LOCATION	P/N	LOCATION
213-0630-033	FH SCREW	213-0630-043	FH SCREW
216-0830-042	BH SCREW	216-0830-043	BH SCREW
216-0840-031	BH SCREW	218-0408-036	六角止滑螺帽
219-0408-A74	盤形華司	219-0410-153	WASHER
222-0000-002	CONNECTOR	222-0000-003	扁頭螺絲
302-0054-000	ID LABEL	302-0054-000	ID LABEL
305-1259-000	CARTON	305-1168-000	CARTON
305-3260-000	CARTON	306-0061-000	CARTON LABEL
306-0071-000	CARTON LABEL	312-0123-101	USER MANUAL
400-0101-150	POWER CORD	356-5613-000	FRONT PANEL
356-5613-102	CONTROL PANEL	356-5613-111	REAR COVER
356-5613-112	ARM COVER	356-5613-444	SWIVEL BASE
356-5613-446	ADRON COVER	356-5613-889	CONTROL KEYS
356-5695-910	LED LENS	357-0202-002	BASE PAD
357-0631-001	手把(PE)	412-0020-004	VGA CABLE
421-6214-169	L/W HOUSING	421-6305-170	L/W HOUSING
421-6602-168	L/W HOUSING	451-7004-033	MYLAR FILM
451-7104-032	PVC隔離片	460-0001-350	PHLYFORM
470-0010-020	PE BAG	470-0011-022	夾鍊袋
501-1043-121	LCD PANEL	560-1000-002	AC ADAPTER
602-LCD0-006	FIXED BRACKET	602-LCD0-017	ARM U PLATE
602-LCD0-019	BASE PLATE	602-LCD0-020	RIGHT HINCGE BRACKET
602-LCD0-021	LEFT HINGE BRACKET	604-0005-559	JACK PLATE
604-0030-310	SHIELDING PLATE	604-0003-312	SUB SHIELD PLATE
605-0100-001	EMI導電膠銅箔	621-0811-004	3M 1350膠帶
891-0010-010	KEYPAD	891-0060-278	CHASSIS ASS'Y
891-0070-347	PACKING MTR'L	891-0100-057	MAIN BOARD
891-0250-003	LCD INVERTER		