

THOMSON

Service Manual



CHASSIS MT62B

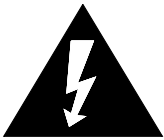
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This manual is the latest at the time of printing, and does not include the modification which may be made after the printing, by the constant improvement of product.

1 CAUTION:

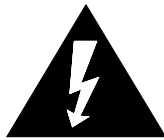
Use of controls, adjustments or procedures other than those specified herein may result in hazardous radiation exposure.



CAUTION
RISK OF ELECTRIC
SHOCK DO NOT OPEN.



CAUTION: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.



The lightning flash with arrowhead symbol, with an equilateral triangle is intended to alert the user to the presence of uninsulated “dangerous voltage” within the product’s enclosure that may be of sufficient magnitude to constitute a risk of electric shock to the person.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

**WARNING: TO REDUCE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT
EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE.**

IMPORTANT SAFETY INSTRUCTIONS

CAUTION:

Read all of these instructions. Save these instructions for later use. Follow all Warnings and Instructions marked on the audio equipment.

1. Read Instructions- All the safety and operating instructions should be read before the product is operated.
2. Retain Instructions- The safety and operating instructions should be retained for future reference.
3. Heed Warnings- All warnings on the product and in the operating instructions should be adhered to.
4. Follow Instructions- All operating and use instructions should be followed.

FOR YOUR PERSONAL SAFETY

1. When the power cord or plug is damaged or frayed, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
2. Do not overload wall outlets and extension cords as this can result in fire or electric shock.
3. Do not allow anything to rest on or roll over the power cord, and do not place the TV where power cord is subject to traffic or abuse. This may result in a shock or fire hazard.
4. Do not attempt to service this television set yourself as opening or removing covers may expose you to dangerous voltage or other hazards. Refer all servicing to qualified service personnel.
5. Never push objects of any kind into this television set through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the television set.
6. If the television set has been dropped or the cabinet has been damaged, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
7. If liquid has been spilled into the television set, unplug this television set from the wall outlet and refer servicing to qualified service personnel.
8. Do not subject your television set to impact of any kind. Be particularly careful not to damage the picture tube surface.
9. Unplug this television set from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
- 10.1. Do not place this television set on an unstable cart, stand, or table. The television set may fall, causing serious injury to a child or an adult, and serious damage to the appliance. Use only with a cart or stand recommended by the manufacturer, or sold with the television set. Wall or shelf mounting should follow the manufacturer's instructions, and should use a mounting kit approved by the manufacturer.
- 10.2. An appliance and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the appliance and cart combination to overturn.



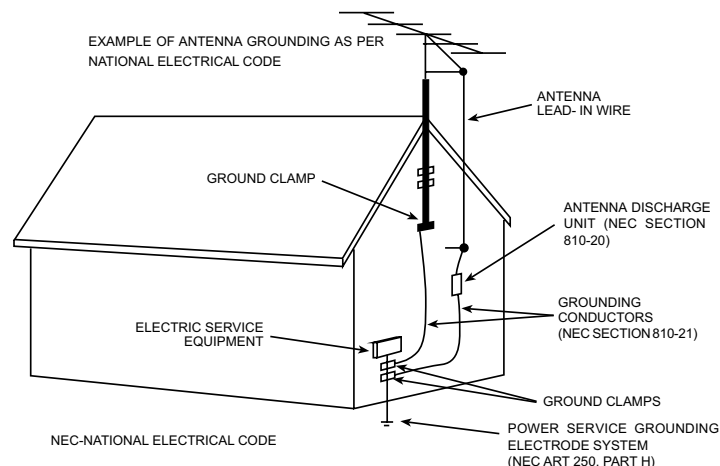
PROTECTION AND LOCATION OF YOUR SET

11.
 - Do not use this television set near water ... for example, near a bathtub, washbowl, kitchen sink, or laundry tub, in a wet basement, or near a swimming pool, etc.
 - Never expose the set to rain or water. If the set has been exposed to rain or water, unplug the set from the wall outlet and refer servicing to qualified service personnel.
12. Choose a place where light (artificial or sunlight) does not shine directly on the screen.
13. Avoid dusty places, since piling up of dust inside TV chassis may cause failure of the set when high humidity persists.
14. The set has slots, or openings in the cabinet for ventilation purposes, to provide reliable operation of the receiver, to protect it from overheating. These openings must not be blocked or covered.
 - Never cover the slots or openings with cloth or other material.
 - Never block the bottom ventilation slots of the set by placing it on a bed, sofa, rug, etc.
 - Never place the set near or over a radiator or heat register.
 - Never place the set in a "built-in" enclosure, unless proper ventilation is provided.

PROTECTION AND LOCATION OF YOUR SET

- 15.1. If an outside antenna is connected to the television set, be sure the antenna system is grounded so as to provide some protection against voltage surges and built up static charges, Section 810 of the National Electrical Code, NFPA No. 70-1975, provides information with respect to proper grounding of the mast and supporting structure, grounding of the lead-in wire to an antenna discharge unit, size of grounding conductors, location of antenna discharge unit, connection to grounding electrode, and requirements for the grounding electrode.

EXAMPLE OF ANTENNA GROUNDING AS PER NATIONAL ELECTRICAL CODE INSTRUCTIONS



- 15.2. Note to CATV system installer : (Only for the television set with CATV reception)

This reminder is provided to call the CATV system installer's attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

16. An outside antenna system should not be located in the vicinity of overhead power lines or other electric lights or power circuits, or where it can fall into such power lines or circuits. When installing an outside antenna system, extreme care should be taken to keep from touching such power lines or circuits as contact with them might be fatal.
17. For added protection for this television set during a lightning storm, or when it is left unattended and unused for long periods of time, unplug it from the wall outlet and disconnect the antenna. This will prevent damage due to lightning and power-line surges.

OPERATION OF YOUR SET

18. This television set should be operated only from the type of power source indicated on the marking label. If you are not sure of the type of power supply at your home, consult your television dealer or local power company. For television sets designed to operate from battery power, refer to the operating instructions.
19. If the television set does not operate normally by following the operating instructions, unplug this television set from the wall outlet and refer servicing to qualified service personnel. Adjust only those controls that are covered in the operating instructions as improper adjustment of other controls may result in damage and will often require extensive work by a qualified technician to restore the television set to normal operation.
20. When going on a holiday : If your television set is to remain unused for a period of time, for instance, when you go on a holiday, turn the television set “ off ” and unplug the television set from the wall outlet.

IF THE SET DOES NOT OPERATE PROPERLY

21. If you are unable to restore normal operation by following the detailed procedure in your operating instructions, do not attempt any further adjustment. Unplug the set and call your dealer or service technician.
22. Whenever the television set is damaged or fails, or a distinct change in performance indicates a need for service, unplug the set and have it checked by a professional service technician.
23. It is normal for some TV sets to make occasional snapping or popping sounds, particularly when being turned on or off. If the snapping or popping is continuous or frequent, unplug the set and consult your dealer or service technician.

FOR SERVICE AND MODIFICATION

24. Do not use attachments not recommended by the television set manufacturer as they may cause hazards.
25. When replacement parts are required, be sure the service technician has used replacement parts specified by the manufacturer that have the same characteristics as the original part. Unauthorized substitutions may result in fire, electric shock, or other hazards.
26. Upon completion of any service or repairs to the television set, ask the service technician to perform routine safety checks to determine that the television is in safe operating condition.

		32HE9234	37FE9234	40FE9234	42FE9234	46FE9234	52FE9234	19HR3224	22HR3224	26HR3224	32HR3224	40FR3234	46FR3234
Market	Picture												
	Going Price Euro at Intro.												
	Target Volume (in FY2009) (K)												
	Intro date/month/qtr.	End of 2008	End of 2008	End of 2008	End of 2008	End of 2008	End of 2008	2009-4-30	2009-4-30	2009-4-30	2009-4-30	2009-4-30	2009-4-30
Set Level	Project Start date	2008-7-15	2008-7-15	2008-7-15	2008-7-15	2008-7-15	2008-7-15	2008-7-15	2008-7-15	2008-7-15	2008-7-15	2008-7-15	2008-7-15
	Key Distribution Channel/s	MM, BG, CH, TS	MM, BG, CH, TS	MM, BG, CH, TS	MM, BG, CH, TS	MM, BG, CH, TS	MM, BG, CH, TS	MM, BG, CH, TS	MM, BG, CH, TS	MM, BG, CH, TS	MM, BG, CH, TS	MM, BG, CH, TS	MM, BG, CH, TS
	Type Classification	Large Screen	Large Screen	Large Screen	Large Screen	Large Screen	Large Screen	Small Screen	Small Screen	Small Screen	Large Screen	Large Screen	Large Screen
	Sizes	32W	37W	40W	42W	46W	52W	19W	22W	26W	32W	40W	46W
Panel Level	Chassis platform	MTS362H	MTS362H	MTS362H	MTS362H	MTS362H	MTS362H	MTS362H	MTS362H	MTS362H	MTS362H	MTS362H	MTS362H
	Styling	E9A	E9A	E9A	E9A	E9A	E9A	Value-M19	Value-M19	Value-M19	Value-M19	Value-M19	Value-M19
	Panel Type	Classic	Classic	Classic	Classic	Classic	Classic	Classic	Classic	Classic	Classic	Classic	Classic
	BLU	CCFL	CCFL	CCFL	CCFL	CCFL	CCFL	CCFL	CCFL	CCFL	CCFL	CCFL	CCFL
	Resolution	HD	FHD	FHD	FHD	FHD	FHD	HD	HD	HD	HD	FHD	FHD
	60Hz/120Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz	60Hz
	Contrast Ratio	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify
	Brightness	400nits or Less	400nits or Less	400nits or Less	400nits or Less	400nits or Less	400nits or Less	Less 400nits	Less 400nits	Less 400nits	Less 400nits	Less 400nits	Less 400nits
	View Angle	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify
	Anti reflex coated glass	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify	Supplier to specify
Front End + Digital requirement	Dynamic Contrast	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Light sensor							Yes	Yes	Yes	Yes	Yes	Yes
	Backlight Contrast	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Anlogue/Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital	Digital
	MPEG2	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	MPEG4	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	DVB-T/ T2/ C frontend	DVB-T	DVB-T	DVB-T	DVB-T	DVB-T	DVB-T	DVB-T/C	DVB-T/C	DVB-T/C	DVB-T/C	DVB-T/C	DVB-T/C
	MHEG 1.06							Yes	Yes	Yes	Yes	Yes	Yes
	CI(PCMCIA)	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	CI							No	No	No	No	No	No
Picture	OAD							Yes	Yes	Yes	Yes	Yes	Yes
	DVBT CVBS output	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Comb Filter	3D	3D	3D	3D	3D	3D	3D	3D	3D	3D	3D	3D
	De-interlacing	3D	3D	3D	3D	3D	3D	3D	3D	3D	3D	3D	3D
Sound	Sound Output	2 X 8W	2 X 8W	2 X 8W	2 X 8W	2 X 8W	2 X 8W	2 X 3W	2 X 3W	2 X 3W	2 X 8W	2 X 8W	2 X 8W
	No of Speakers	2	2	2	2	2	2	2	2	2	2	2	2
	Mono/Stereo/BBE	Stereo	Stereo	Stereo	Stereo	Stereo	Stereo	Stereo	Stereo	Stereo	Stereo	Stereo	Stereo
	MEMC	-	-	-	-	-	-	No	No	No	No	No	No
Feature	Teletext	Teletext 1.5	Teletext 1.5	Teletext 1.5	Teletext 1.5	Teletext 1.5	Teletext 1.5	Teletext 1.5	Teletext 1.5	Teletext 1.5	Teletext 1.5	Teletext 1.5	Teletext 1.5
	No of pages(Teletext)	1000p	1000p	1000p	1000p	1000p	1000p	1000p	1000p	1000p	1000p	1000p	1000p
	Close Caption	No	No	No	No	No	No	No	No	No	No	No	No
	HD Video Playback	No	No	No	No	No	No	Yes	No	Yes	Yes	Yes	Yes
	MP3 Playback	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
	Photo viewer+Photoframe	No	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes
	OSD Languages	Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian	Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian	Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian	Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian	Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian	Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian	Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian	Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian	Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian	Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian	Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian	Bulgarian, Croatian, Czech, Danish, Dutch, English, Finnish, French, German, Greek, Hungarian, Italian, Norwegian, Polish, Portuguese, Romanian, Russian, Serbian, Slovakian, Slovenian, Spanish, Swedish, Turkish, Ukrainian
	PIB/PAT/PAP/PIE/PAC	PAT	PAT	PAT	PAT	PAT	PAT	PAT	PAT	PAT	PAT/PIB/PAP/PIE/PAC	PAT/PIB/PAP/PIE/PAC	PAT/PIB/PAP/PIE/PAC
	PVR (USB)							No	No	No	No	Phase 3 TBC	Phase 3 TBC
	Picture freeze							Yes	Yes	Yes	Yes	Yes	Yes
	Picture zoom							Yes	Yes	Yes	Yes	Yes	Yes
	Color tone adjustment	No	No	No	No	No	No	No	No	No	No	No	No
	Switch on Time	5-7 seconds	5-7 seconds	5-7 seconds	5-7 seconds	5-7 seconds	5-7 seconds	5-7 seconds	5-7 seconds	5-7 seconds	5-7 seconds	5-7 seconds	5-7 seconds
	Overscan switch off	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	PC capability (up to maximum for	WXGA	WXGA	WXGA	WXGA	WXGA	WXGA	WXGA	WXGA	WXGA	WXGA	WXGA	WXGA
	Rear CVBS in	No	No	No	No	No	No	No	No	No	No	No	No
	Rear CVBS out	No	No	No	No	No	No	No	No	No	No	No	No
	Rear VBI/P	1	1	1	1	1	1	1	1	1	1	1	1
	Rear HDMI	2	2	2	2	2	2	1	1	1	2	2	2
Rear Connectivity	Audio Output	No	No	No	No	No	No	No	No	No	No	No	No
	SCART 1	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SCART 2	Yes	Yes	Yes	Yes	Yes	Yes	No	No	Yes	Yes	Yes	Yes
	PC Input	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	SPDIF	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Headphone jack	Yes(PC input)	Yes(PC input)	Yes(PC input)	Yes(PC input)	Yes(PC input)	Yes(PC input)	Yes(PC input)	Yes(PC input)	Yes(PC input)	Yes(PC input)	Yes(PC input)	Yes(PC input)
	Ethernet (RJ-45)	No	No	No	No	No	No	No	No	No	No	No	No
	USB connector	No	No	No	No	No	No	No	No	No	No	No	No
	Side CVBS in	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Side HDMI	1	1	1	1	1	1	No	1	No	1	1	1
Side Connectivity	Side Headphone	1	1	1	1	1	1	1	1	1	1	1	1
	Side USB	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	No of keys	6	6	6	6	6	6	6	6	6	6	6	6
	Front/Side	Side	Side	Side	Side	Side	Side	Side	Side	Side	Side	Side	Side
Mechanical	Front Cabinet	High Gloss	High Gloss	High Gloss	High Gloss	High Gloss	High Gloss	High Gloss	High Gloss	High Gloss	High Gloss	High Gloss	High Gloss
	Back Cabinet	In mould textured	In mould textured	In mould textured	In mould textured	In mould textured	In mould textured	In mould textured	In mould textured	In mould textured	In mould textured	In mould textured	In mould textured
	DVD slot in	No	No	No	No	No	No	No	Yes	No	Yes	No	No
	Remote control	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD	TBD
	Table Top Stand	Yes	Yes	Yes	Yes	Yes	Yes	M19 stand	M19 stand	M19 stand	M19 stand	J-Class stand	J-Class stand
	Swivel Stand	Yes	Yes	Yes	Yes	Yes	Yes	No	No	No	No	No	No
Misc	Voltage Range	230V	230V	230V	230V	230V	230V	230V	230V	230V	230V	230V	230V
	Standby Power	< 1W	< 1W	< 1W	< 1W	< 1W	< 1W	< 1W	< 1W	< 1W	< 1W	< 1W	< 1W
	VESA Mount	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Desination	Whole Europe	Whole Europe	Whole Europe	Whole Europe	Whole Europe	Whole Europe	Whole Europe	Whole Europe	Whole Europe	Whole Europe	Whole Europe	Whole Europe
PBS	Level one requirements	No	No	No	No	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes

TCL WW R&D
FPD CENTER

Factory Alignment Specification

CHASSIS: MT62

Version: V0.50

PREPARED BY : Wei Lin DATE : 2009-05-06

APPROVED BY : _____ DATE : _____

Disclosure

The information contained in this document is proprietary to TCL SZ FPD lab and shall not be disclosed by the recipient to third persons without the written permission of the team leader or GM of R&D.

Revision History

Status, Ver	Date, Drafter	Description of changes
V0.10	22/09/08	The item in gray is invalid
V0.20	28/09/08	The item in gray is invalid Factory Menu is improved
V0.30	08/10/08	Add Panel ID check Working range changed to 220 ~ 240 VAC
V0.40	28/11/08	Add Sound Curve control on factory menu Add Scart RGB ADC Calibration Improve ADC Calibration menu and WD Alignment menu Add Panel ID for new models
V0.50	06/05/09	Improve WD Alignment menu Panel ID is deleted. It can be found in another document:<Panel list for MT62>

The **MT62** chassis is designed for European LCD TV. The main chip is from Mediatec (MTK5362 series) and supports below inputs:

- one analog and digital mixed RF (PAL B/G D/K I, SECAM B/G D/K L/L', DVB-T)
- one Side AV (CVBS)
- one SCART (CVBS & RGB)
- one SCART (CVBS & YC)
- one CMP (YPrPb can support from 480i up to 1080p)
- one VGA
- three HDMI (can support 480i/p, 576i/p, 720p up to 1080i/p)
compliant v1.2. with HDCP, audio included as EIA-861B standard
- one Headphone output
- one SPDIF output

More relevant details are listed into the Spec..

INFO:

↻ All tests and measurements mentioned hereafter have to be carried out at a normal mains voltage **(220 ~ 240 VAC)**

↻ All voltages have to be measured with respect to ground, unless otherwise stated

↻ All final tests have to be done on a complete set including LCD panel in a room with temperature of **25+/-7°C**

↻ The White Balance (color temperature) has to be performed into subdued lighted room after at least **1 hour** of warm-up/burn-in. This is applicable for both Alignment and Picture Performance evaluation at OQA in order to be set free of any temperature drift (colorimetry vs time)

1. Electrical Assembly Alignment

1.1. Preconditions – DC/DC Check

Before Power On the chassis, please check and make sure that U811, U9, U31, U7, U6, U11, U5, U4, U34, C74(positive) , C62(positive) , C76(positive) , C152(positive) , C89(positive) , C82(positive) outputs are not shorted to ground.

Supply voltage to P19 and test the relative voltage.

Supply P19 : Pin5,6,8=12v (24v work with IPB PSU); Pin11,12=5v; Pin1,2=Voltage for sound Amplifier IC (18V for 46/52 inch; 12V for other inch)

Test the relative voltage:

position	value	note
C152(positive)	24V +/-5%	These are necessary only work with IPB PSU
C89(positive)	12V +/-5%	
C82(positive)	12V +/-5%	
U811	3.3V +/-5%	
C74(positive)	5.0V +/-5%	
U9	3.3V +/-5%	
U31	3.3V +/-5%	
U7	1.2V +/-5%	
U6	2.5V +/-5%	
U5	9.0V +/-5%	
U4	5.0V +/-5%	
C62(positive)	1.8V +/-5%	

C76(positive)	1.0V	+/-5%	1.0V	+/-5%
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Download latest release MCU_SW into the Standby CPU(U3) using WT_MCU_ISP SW tool. See [Appendix①](#) “**How to download MCU SW**”.

Download latest release SW into the flash using MTK SW tool. See [Appendix②](#) “**How to download FLASH SW**”. Or download the SW from USB port.

1.2. **Panel ID check and modify**

There is different ID stored in the NVM depended on different Panels. The correct number should be checked in factory menu and if not correct according to the panel list , should be correct manually. The simple way is that select the correct Id in factory menu and restart the set. If the wrong ID make the set display nothing, it must be correct with Hyper terminal . See [Appendix⑤](#)

1.3. **Functional Test**

Once the boards (chassis, KB, IR, PSU...) and the panel are well interconnected, connect all external generator devices to relevant inputs/outputs below according to their respective test patterns format and check picture content and sound quality accordingly:

Source	Test signal (generator)	Test pattern (format/image)
Analog /Digital Tuner	RF cable	Full Band (VHF/UHF) + CATV DVB-T
Composite(CVBS)	Chroma/Fluke	PAL Half Color & Gray bars
SCART1 (CVBS) SCART1 (RGB)	Chroma/Fluke	PAL Half Color & Gray bars Half Color & Gray bars
SCART2 (CVBS) SCART2 (Y/C)	Chroma/Fluke	PAL Half Color & Gray bars
VGA	Chroma/QuantumData	1024x768@60Hz Half Color & Gray bars
Component (YPrPb)	Chroma/QuantumData	1080i@60Hz Half Color & Gray bars
HDMI1/ HDMI2/ HDMI3	DVD with HDMI compliancy	Movie 720p@60Hz
Headphone	RF cable	First channel
Loud Speakers	RF cable	First channel
SCART1 (CVBS out)	RF cable	First channel
SCART2 (CVBS out)	Chroma/Fluke	PAL Half Color & Gray bars

Audio tones can be defined by the factory (ie: 1KHz & 3KHz, sweep, ...).

Picture video formats can be changed by the factory according to their own standard.

1.4. **ADC Calibration**

To ensure the ADC performance, the error of “generator+cable” must be less than 2%. Three inputs require an ADC calibration for the time being, They are:

▪ **VGA**

Provide a test signal **1024x768@60Hz** with **WhiteBlack squares**.

Select the corresponding “**Auto Color**” in “**ADC Calibration**” sub-menu of “**FactoryMenu**”, then press “**OK**” to start. Value of status will change to “**ALL**” if succeed.

▪ **CMP**

Provide a test signal **576i@50Hz** with **100% 8 steps ColorBar**.

Select the corresponding **"Auto Color"** in **"ADC Calibration"** sub-menu of **"FactoryMenu"**, then press **"OK"** to start. Value of status will change to **"ALL"** if succeed.

▪ **Scart RGB**

Provide a test signal **100% 8 steps ColorBar**.

Select the corresponding **"Auto Color"** in **"ADC Calibration"** sub-menu of **"FactoryMenu"**, then press **"OK"** to start. Value of status will change to **"ALL"** if succeed.

1.5. DDC & EDID Test

The E-EDID data structure are according to VESA Enhanced EDID 1.3 (and EIA/CEA-861B for HDMI).

Both VGA and HDMI have their own separate bin files:

For EDID check, it's needed to check whether the correct EDID is downloaded by checking corresponding EDID NVM Checksum or read them out to check bit by bit if it is in line with the released EDID bin file.

1.6. HDCP Test

For HDCP compliancy, it's needed to check whether the HDCP key has been well set.

2. Final Assembly Alignment

2.1. Entering to "FactoryMenu"

To enter into Factory Menu in case of **"FactoryKey"** is *disabled*, please to follow below steps:

- press RemoteControl key **"MENU"** to display main menu
- press the subsequence RemoteControl keys **"7"**, **"9"**, **"1"** and **"5"**

The main menu will display **"FACTCORY"** at the last item

To pop-up Factory Menu in case of **"FactoryKey"** is *enabled*, please to follow below step:

- press RemoteControl key **"Blue"**

To *enable/disable* **"FactoryKey"**, please to follow below steps:

- press RemoteControl **"OK"**key to enter into "System" submenu
- press RemoteControl **"RIGHT"**or **"LEFT"** key till **"FactoryKey"** item
- press RemoteControl **"Menu"**key to toggle mode

To exit **"FactoryMenu"**, press **"Exit"** key from RemoteControl.

To comeback to **"FactoryMenu"** root when you are into a submenu:

- press RemoteControl **"Menu"** key.

2.2. Entering to "P" Mode

Turned on the factory key to enter into **"P"** mode. The TV will display **"P"** in bottom left corner in **"P"** mode. See appendix ③ **"Serial Command Protocol for MTKxx"**.

2.3. White Balance Alignment

Make sure that the picture mode is “**vivid**”, enter to “**P**” **mode**(turned on the factory key) and **switch off “Pic. Enhance”** in “WD Alignment” sub-menu of factory menu before white balance alignment .

Only **VGA** input requires color temperature adjustment as all other inputs or relative ones. Both **Warm** and **Cool** Color Coordinates are also relatives to **Normal** Color Temperature mode ones. See appendix④ “PAL/SECAM/NTSC/DTV/SCART RGB/CMP/HDMI Relative Matrix Offsets” and “WARM/COOL Relative Matrix Offsets”. Those offsets values don’t require any alignment but can be fine-tuned in FactoryMenu as well.

<The appendix is just a template, Every lot the relative offset is different. We need to align 5 sets first to get the relative offset data every lot. >

▪ **Expected Targets and Tolerances**

The measured parameters should be “x, y” coordinates.

The White Balance alignment should be performed using a contact less analyzer (ei: Minolta CA-210). The analyzer may not touch the screen surface, and measurement must be performed in a dark environment keeping the probe(s) at 90+/-2° from the panel.

The alignment have to fulfill the requirements in Application Form.

▪ **Alignment FlowChart**

Provide a test signal 1024x768@60Hz on VGA input and align the WB as described inside attached document ensuring first that the BackLight value is matching below table:



MTK_EuroAlignmentF
lowchart.doc

2.4. High Pot. and Insulating Resistance Tests

At the end of the process, a High Pot. and an Insulating Resistance tests are required for matching Safety Electrical requirements (ei: xxxx)

▪ **High Voltage Withstanding requirements**

- | | |
|-------------------------|-------------------|
| - “Voltage” | ⇒ 4240 VDC |
| - “Max Leakage Current” | ⇒ 1 mA |
| - “Test Time” | ⇒ 3 sec |

▪ **Insulating Resistance requirements**

- | | |
|-------------------|-----------------|
| - “Voltage” | ⇒ DC500V |
| - “Threshold Max” | ⇒ |
| - “Threshold Min” | ⇒ 4M Ω |
| - “Test Time” | ⇒ 3 sec |

3. “Factory Menu” Definition

1). System

Item	Sub-item	Value	Note
System	Factory Key	Off/On	OFF: hotkey is invalid ON : hotkey(blue key) is availability
	Power Mode	Boot/Standby/ Previous	Boot: Enter power on mode Standby: Enter standby mode Previous: power on according to last status
	Burning Mode	Off/On	Select panel On with left/right key, Press “EXIT” key to enter the burning mode; Press “Menu” key on keyboard to exit the burning mode
	Pre-Frequency Poland	Run	Press “OK” key to run
	Pre-Frequency Huizhou	Run	Press “OK” key to run
	Pre-Frequency Thailand	Run	Press “OK” key to run
	Reset User		Clear date of NVM in user menu,except the value of language / related installation/Factory setting,then set to the default value.
	Reset All		clear NVM values, and set to default value.
	Reset Shop		Clear date of NVM in user menu,include the value related installation,and Clear date of factory menu except the item of Balance and sound ,set to default value

2). Feature

Item	Sub-item	Value	Note
Feature	FleshTone	Off/On	
	Adaptive Luma Control	Off/On	
	Dynamic BackLight	On/Off	Dynamic BackLight On: adapt to picture Dynamic BackLight Off: fix by back light value
	Light sensor	Off/On	Only the models with M19 front cabinet have this feature.
	Back light	0~100	
	White Peak Limitator	Off/On	
	TunerAGC	0~31	
	Panel ID	ID	Select panel ID with left/right key, restart the set to take effect.
	VT character set default	language	Select language with left/right key
	DeInterlace Mode	Mode*	

3). ADC Calibration

Item	Sub-item	Value	Note
ADC Calibration	Source		VGA\CMP\scart RGB require Calibration
	Auto color	Run	Press "OK" key to run
	Status	NONE / NOK / OK / ALL	NONE:No source has been calibrated NOK:Current source hasn't been calibrated OK: Current source has been calibrated ALL:All sources have been calibrated
	R Gain		For fine tune ADC manually.
	G Gain		
	B Gain		
	R Offset		
	G Offset		
	B Offset		

4). WD Alignment

Item	Sub-item	Value	Note
WD Alignment	Pic. Enhance	ON/OFF	Press "Right" key to switch off all of the items in the feature submenu. This should be done before white balance alignment. If it's off, the way to switch it on is to reset user/shop or set on the features in Feature sub-item manually.
	Source	PAL/SECAM... ...	For balance source: VGA,DTV,PAL,SECAM,NTSC,Scart RGB,CPM, HDMI
	Color Temperature	Normal /Warm/Cool	The value of Warm and cool is the offset of Normal mode.
	R Gain		R White balance
	G Gain		G White balance
	B Gain		B White balance
	R Offset		R Gray balance
	G Offset		G Gray balance
	B Offset		B Gray balance
	Scaling Brightness		
	Scaling Contrast		
	Scaling Saturation		
	Auto phase	Run	Press "OK" key to adjust the signal to avoid the ripple in CMP source, it is not necessary.
	SCART 1	Auto/Mixed/R GB/Composite /S-Video	

	SCART 2	Auto/Composite/S-Video	
--	---------	------------------------	--

5). Sound

Item	Sub-item	Value	Note
Sound	VOL_0	0	
	VOL_10	2	
	VOL_50	14	
	VOL_90	135	
	VOL_100	255	
	TV Pre	186	
	AV Pre	186	

6). Geometry (This item effective only in TV source)

Item	Sub-item	Value	Note
Geometry	source		
	H.Position		
	H.Size		
	V.Position		
	V.Size		

7). Version info

Version info	Project	
	Panel	
	Version	
	Date	
	MCU Version	

4. Factory default settings

Followed as OOB setting.

Appendix ① “How to download MCU SW”

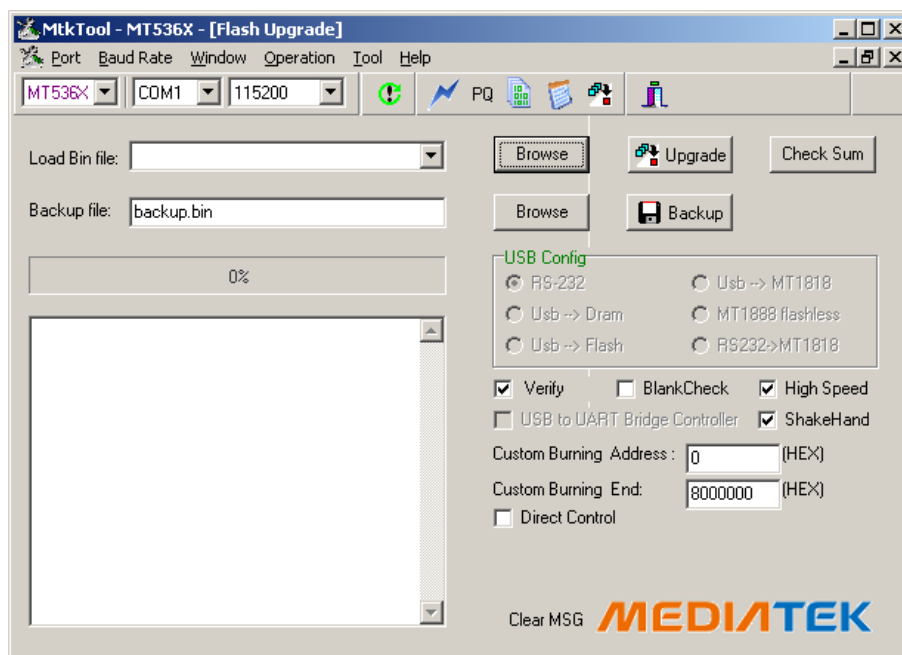
Prepare WT_MCU_ISP SW tool for update.

1. Connect the PC to board using MCU updating tool on P6 connector form chassis board.
2. Provide +5V DC on P19(pin11,12) connector on chassis board and check U811 output voltage should be 3.3V.
3. Start “Weltrend MCU ISP.exe” and download the MCU SW. (please see file *Visio-ISPToolGuide_ver090.pdf*)

Appendix ② “How to download FLASH SW”

Prepare MTK SW tool for update.

1. Connect the PC to the board using an external +3.3VDC serial device (USB or COMx) on P9 connector from chassis board.
2. Provide the voltage on P19 connector (Pin5,6,8=12v;Pin11,12=5v) from chassis board
3. Start “**MTKTOOL.exe**” application under MTKxx folder, and set the parameters as below picture:



4. Press “Browse” button to select the corresponding SW bin file to upload
5. Press “Upgrade” button to start downloading the SW and wait the gauge displayed “100%” that means the SW has been successfully downloaded.
In the meanwhile, all operations such erasing flash and so... are parsed into the debug window script.
6. Once the SW is downloaded, switch-off/on the chassis board and wait few seconds for eeprom update.

Appendix ③ “Serial Command Protocol for MTKxx”

1. A serial protocol for driving MTK μ chip through external +3.3VDC serial device (USB or COMx) is available. It may facilitate manufacturing process. Thus, both P201 connector from chassis board or either VGA input can also be used using pin12 (RXD) & pin15 (TXD) just taking care that “**FactoryKey**” from Factory Menu is enabled.
 2. The required serial port settings are as below
 - **115200** bps
 - **8** data bit
 - **1** bit stop
 - **none** parity
 3. The command format is like hereafter described into BNS representation:
 - **0xBB + Command + Data[..] + .. + 0xEE**

Both **0xBB** and **0xEE** bytes are mandatory and used as header and footer of the transmitted frame. Apart from **INIT** frame that is described further, all sent bytes need to be triggered before by an additional one as **0x50**. So a complete frame might match following one:

 - **0x50+0xBB+0x50+Command+0x50+Data[..]+0x50+..+0x50+0xEE**
 4. At first time, it might be required to initialize MTK μ chip by using once below **INIT** command (without any triggering byte):
 - **0x02 + 0x00 + 0x00 + 0x13 + 0x01 + 0x00**
 5. A none exhaustive list of commands is already available.
- 错误！链接无效。

Appendix ④ “WARM/COOL Relative Matrix Offsets”

1. These offsets should be done in the production by AOE.

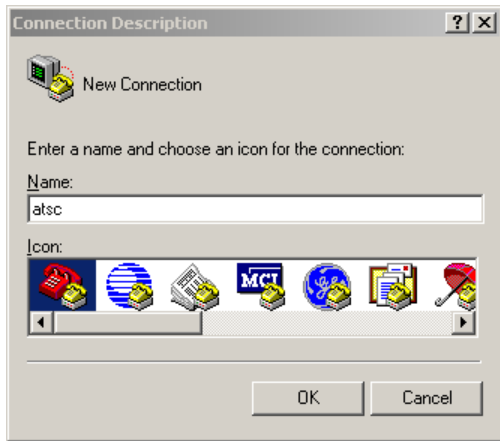
Appendix ⑤ “Modify panel ID with Hyper terminal”

- ①. Connect the PC to the mainboard using an external +3.3VDC serial device (USB or COMx) on P9 or P18 connector from chassis board.
- ②. Provide the voltage on P19 connector (Pin5,6,8=12v;Pin11,12=5v) from chassis board
- ③. Save the password file “password for hyperTerminal.txt” to your computer.



D:\MT62\调试说明\
已发布\password f

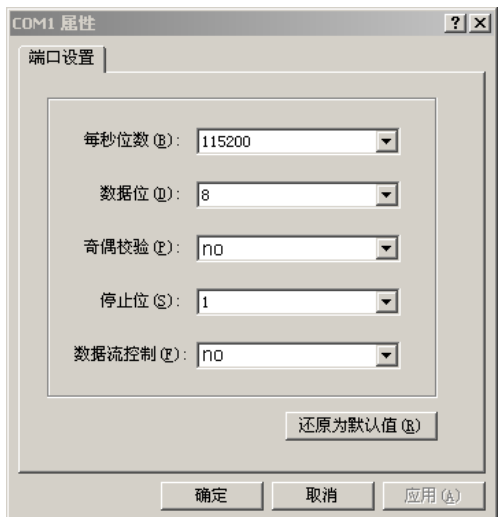
- ④. Start HyperTerminal “HyperTrm.exe” in your computer.
- ⑤. Fill the name.



⑥. Select the Com Port you are using.

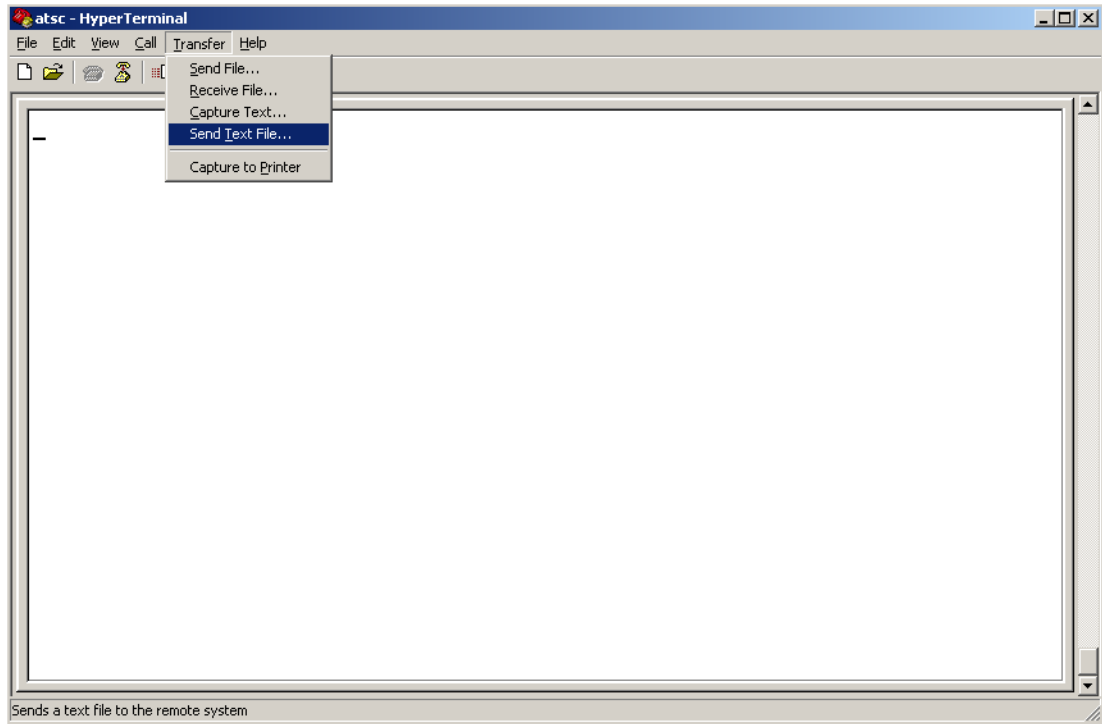


⑦. Set the items as below picture.

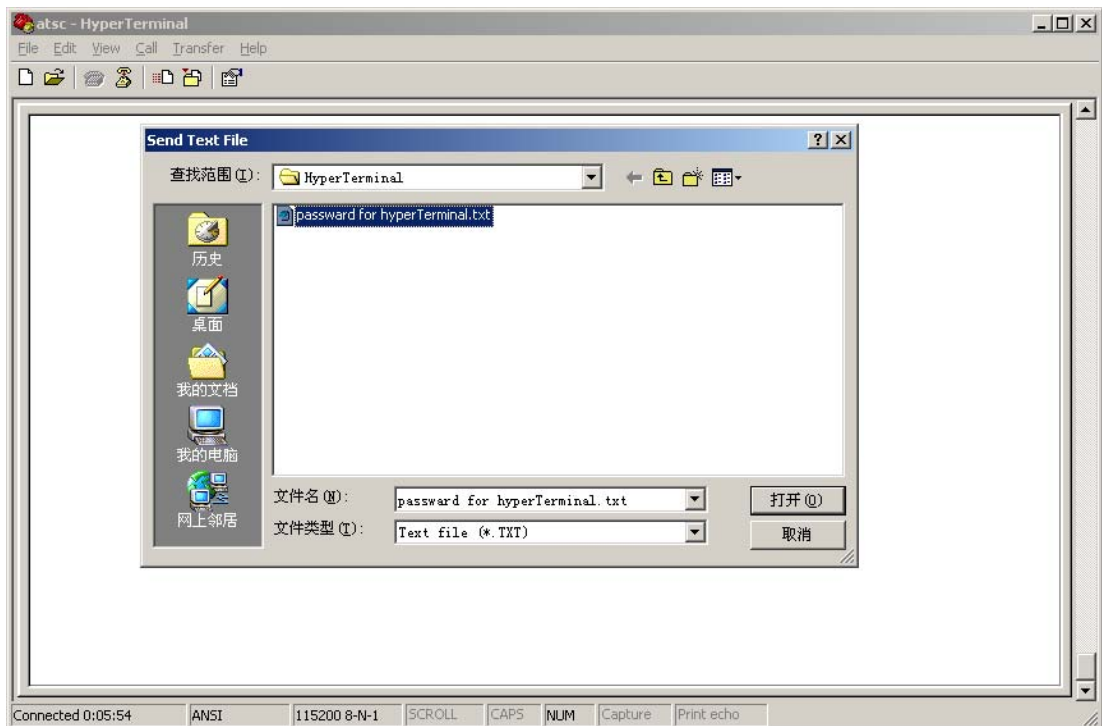


Select "File->Save->" to Save the setting. Then start HyperTerminal "atasc.ht" in your computer instead of step ③ to ⑦ later

⑧. Send the password.



- ⑨. Select the password file saved in your computer.



- ⑩. Under the folder “DTV>” enter “pmx.s.p +ID”,e.g.: pmx.s.p 102
See the panel ID in another document <Panel list for MT62>.

```

sif:                Sif command
eeprom:             Eeprom command
nim:                Nim command
ir:                 Ir command
rtc(rtc):           RTC commands
aud:                 Aud command
nptv(n):            Nptv command
av:                 Audio/Video command
vdp:                 Video plane command
fbm:                 Frame buffer manager command
dbs:                 Dbs command
mpv:                 MPEG Video Decoder command
vdec:                 Vdec command
nand:                 Nand command
dmx(d):             Demux commands
memtest:            Memory test
pdwnc(pdwnc):       PDWNC commands
gpio:                Gpio interface
nor:                 Nor command
mid:                 Memory intrusion detection
tve:                 Tve command
bim:                 BIM module test

DTV>pmx.s.p 102

```

Connected 0:04:20 ANSI 115200 8-N-1 SCROLL CAPS NUM Capture Print echo

Press “Enter”, the panel signal will be printed in the window

```

LVDS_NS, LVDS_ODD_SW_OFF, DUAL_PORT, DISP_30BIT, WFB_PANEL_RESET_OFF, PWM_LOW_PA
NEL_BRIGHT
Backlight[High=0x0, Middle=0x0, Low=0xff]
DimFreq60Hz=0, DimFreq50Hz=0

Delay[LvdsOn=30, BacklightOn=300, BacklightOff=300, LvdsOff=30]
MaxOverscan=30

Current panel setting is PANEL_LC420WUN_SAA1
Backlight gpio=9, turn on value=0, LVDS gpio=1, turn on value=1
Pixel Shift=0 (1920 x 1080)
----- Panel[102] PANEL_LC420WUN_SAA1 1920x1080 -----
PixelClk[Max=154000000, 60Hz=148351648, 50Hz=123750000, Min=119260000]
HTotall[Max=2559, 60Hz=2199, 50Hz=2199, Min=2119] HSyncLen[60Hz=279, 50Hz=279]
VTotal[Max=1200, 60Hz=1124, 50Hz=1124, Min=1090] VClk[Max=63, Min=47]
HSyncWidth=30, VSyncWidth=5, HPosition60Hz=2308428, HPosition50Hz=2288, VPositio
n=1024
LVDS_NS, LVDS_ODD_SW_OFF, DUAL_PORT, DISP_30BIT, WFB_PANEL_RESET_OFF, PWM_LOW_PA
NEL_BRIGHT
Backlight[High=0x0, Middle=0x0, Low=0xff]
DimFreq60Hz=0, DimFreq50Hz=0
Delay[LvdsOn=30, BacklightOn=300, BacklightOff=300, LvdsOff=30]
MaxOverscan=30

Current panel setting is PANEL_LC420WUN_SAA1
Backlight gpio=9, turn on value=0, LVDS gpio=1, turn on value=1
Pixel Shift=0 (1920 x 1080)

DTV>

```

Connected 0:09:00 ANSI 115200 8-N-1 SCROLL CAPS NUM Capture Print echo

Panel list for MT62B - V0.2

model	name of panel <i>(shown in factory menu->version info->panel)</i>	name of panel ID <i>(can be modified in factory menu ->feature->panel ID)</i>	panel ID <i>(can be modified with COM port)</i>	mark
32HE9234	LC320WXN-SBA1	32E9LG8	107	
37FE9234	LC370WUN	37E9LGD	106	
40FE9234	LTA400HA10	40E9SS8	105	
42FE9234	LC420WUN-SAA1	42E9LGA	102	
46FE9234	LTA460HB09	46E9SS7	103	
52FE9234	LTA520HB09	52E9SS3	104	
42FE9234/LGJ	LC420WUN-SBA1	42E9LGJ	119	
46FE9234/SS9	LTA460HA07	46E9SS9	120	
19HR3234	LC190WH1-TLA1	19R3LG1	114	
22HR3234	LC220WXE-TBA1	22R3LG1	113	
26HR3234	T260XW02 VQ	26R3AU6	112	
32HR3234	LC320WXN-SBA1	32R3LG8	115	
40FR3234	LTA400HA10	40R3SS8	116	
46FR3234	T460HW03 V1	46R3AU1	111	
40FF9234	LTA400HA08	40F9SSB	117	
46FF9234	LTA460HB08	46F9SS8	118	
32HE8234B	LC320WXN-SBA1	32E8LG8	121	
26HE9234B	LC260WXN-SBA1	26E9LG3	122	
26HE8234B	LC260WXN-SBA1	26E8LG3	123	

Notice:

The Main IC Brief Instruction, Block Diagram and Schematic Diagram on this chassis are the same with chassis MT62, please refer to the Service Manual for MT62 if needed.