

DuraPANEL 10-15

S-Line Series

DuraPANEL 10.1 S-Line
DuraPANEL 15.6 S-Line

User Reference Manual



Disclaimer

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Image sticking: If the display is operated with static images (logo's etc.) it will inevitably lead to images sticking on the display. Image sticking can be reduced by regular operating the display with moving pictures that is designed for the purpose.

FCC Warning

Computing devices and peripherals generate and radiate radio frequency energy, and if not installed and used in accordance with the instructions advised by ISIC A/S, it may cause interference to radio communication.

The DuraPANEL 10-15 S-line series, manufactured by ISIC A/S, is designed to comply with the emerging generic EEC standards that cover applications in maritime environments.

Classification

The DuraPANEL is classified as "protected from the weather" according to IEC 60945 ed.4 (former class b).

Approvals

Approval according to IEC 60945: Ed. 4 2002/COR1:2008 and IACS E10 Rev. 8, Maritime navigation and radio communication equipment and systems – General requirements.



ISIC A/S is complying with the WEEE directive within the European Union, stating that electronic and electric products must be collected separately.
Products are marked according to the directive.

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1 Features

Congratulations on your product purchase of DuraPANEL 10-15 S-Line series.

This short form manual is designed to get you started working with your new DuraPANEL 10-15 S-Line.

DuraPANEL 10-15 S-Line series of panel computers are all designed for the demanding operating conditions at sea.

The DuraPANEL 10-15 S-line series are tested for full compliance to marine-standards IACS E10 and IEC 60945. The DuraPANEL comes with excellent brightness and contrast levels that, together with wide viewing angles, ensure high readability, making it very eye-friendly. For the best picture quality, always use double shielded video cables with ferrites.

USB Touch

Anti-Reflective coated cover glass

1 x DisplayPort video out

2 x 10/100/1000 Mbps (Intel® i211-AT) Ethernet LAN RJ45

2 x USB 3.0 Type-A

2 x USB 2.0 Type-A in front (variants only)

Auto power up at power loss.

Feature control support for dimming of screen brightness via Windows Display API (Windows Display Brightness Control). Dimming control (1cd to 100%) Squared curve for maximum resolution at low brightness.

IP56 protected front, mounted in sealed console.

2 General considerations at Installation and Operation

DuraPANEL 10-15 S-line series are designed to work at conditions according to IEC 60945. However, keeping the temperature and vibration level at a minimum will extend the lifetime of the product. ISIC recommend operating this product at normal room temperature (20-25°C), with the lowest level of vibration and humidity.

2.1 Installation

To obtain the best possible operating conditions, please note the following precautions.

- Cooling.
When mounting DuraPANEL 10-15 S-line series in cabinet/console, please ensure that air can flow freely around the product cabinet, to avoid any unnecessary rise in temperature. If it is not possible to have an adequate natural airflow, please ensure forced airflow inside the console.
- Mounting positions
To obtain adequate cooling by convection, ISIC recommends that the DuraPANEL is mounted at least 30 degrees from horizontal. Make sure any ventilation holes on the back of the panel PC is not covered.
- Sunlight
If the unit can be exposed to direct sunlight, there is a potential risk that the unit can be overheated. Please take measures to prevent direct sunlight. Do also consider forced cooling on the back of the unit.

Please refer to Mechanical Outline for installation

2.1.1 Mechanical Outline

DuraPANEL 10.1 S-Line:	09511-000
DuraPANEL 10.1 S-Line:	09811-000 (variant with 2 x USB2.0 in front)
DuraPANEL 15.6 S-Line:	09516-000

2.1.2 Desktop/Ceiling mounting kit with tilt

DuraMON/PANEL 10.1 S-Line:	09313-000
DuraMON/PANEL 15.6 S-Line:	09314-000

2.1.3 Console mounting kit (Sealing IP44):

DuraMON/PANEL 10.1 S-Line:	09353-000
DuraMON/PANEL 15.6 S-Line:	09354-000

2.1.4 Compass safe distance

Test object / condition	Minimum Compass safe distance [cm] (5.4°/H deviation or a horizontal magnetic flux of 0.094μT)	Minimum Compass safe distance [cm] (18°/H deviation or a horizontal magnetic flux of 0.313μT)
DuraPANEL 10.1 S-Line	160	100
DuraPANEL 15.6 S-Line	110	70

2.1.5 Power Consumption

Test object / condition	Pmax [W]
DuraPANEL 10.1 S-Line	35
DuraPanel 15.6 S-Line	35

In sleep or standby mode, the product will still consume power.

To cut off all power consumption, it is necessary to disconnect its supply power.

2.1.6 Inrush current

Test object / condition	Current[A] @ 24VDC
DuraPANEL 10.1 S-Line	4
DuraPANEL 15.6 S-Line	5

2.2 Operation

2.2.1 Warm up

To obtain correct display colors and luminance, a warm-up period of minimum 30 minutes is required.

2.2.2 Operating System (OS)

Compatible operating systems:

Microsoft Windows: Windows10 IoT Enterprise LTSC 2019 and newer.

Linux: Ubuntu version 18.04 LTS (kernel: 4.15.0) and newer.

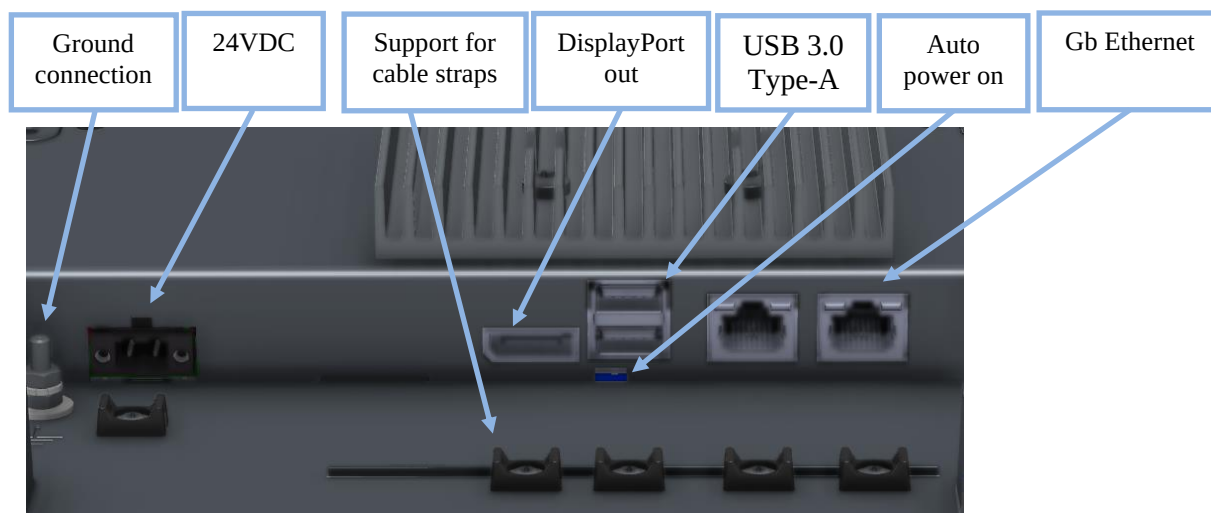
Please note:

If OS soft power down is activated, this product requires power cycling to reboot. Please refer to section [3.3 Auto power up switch](#).

It is recommended to disable the OS soft power down option, disable disk write cache and setup application in "[Kiosk mode](#)" to prevent data loss.

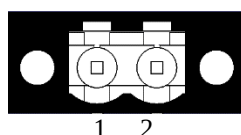
It is also strongly recommended to utilize the [Windows 10 IoT Enterprise Unified Write Filter \(UWF\)](#) feature.

3 DuraPANEL 10-15 S-line connections



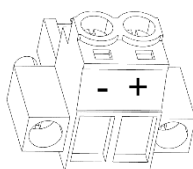
3.1 24VDC supply

24 VDC: Nominal input voltage. Galvanic marine isolated with reverse polarity protection.
 18-36VDC: Operating voltage range.



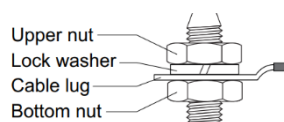
Terminal	Connection	Wire compliance
1	0VDC	Multicore AWG16-12 (1-4 mm²)
2	+24VDC	Multicore AWG16-12 (1-4 mm²)

Mating part: Weidmüller BLZP5.08HC/02/180F



Tool: 0.6x3.5mm slotted (flat headed) screwdriver

3.2 Ground connection (Earth)



Choose an appropriate cable lug for M4
 Fasten the cable lug between the bottom nut and the lock washer with the upper nut.
 Please note: when fastening the upper nut, it is necessary to hold the bottom nut with an open ended 7mm wrench.

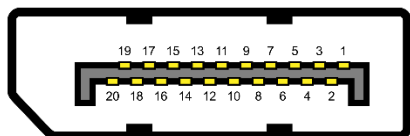
3.3 Auto power up switch

If auto power on switch is enabled(default), the system will automatically power up.
 Warning! if auto power on switch is disabled, the system will not power up, unless an optional soft power on/off button is pressed.



Function	Setting
Disable auto power on	1-2 close
Enable auto power on	2-3 close (Default)

3.4 DisplayPort 1.2 (DP) receptacle

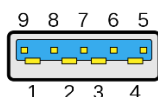


Mating part: Male full size DisplayPort connector with mechanical latch.

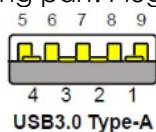
Note! Only use DisplayPort cables with pin 20 unconnected

Pin	Description
1	ML_Lane 0 (p)
2	GND
3	ML_Lane 0 (n)
4	ML_Lane 1 (p)
5	GND
6	ML_Lane 1 (n)
7	ML_Lane 2 (p)
8	GND
9	ML_Lane 2 (n)
10	ML_Lane 3 (p)
11	GND
12	ML_Lane 3 (n)
13	Detect pin
14	GND
15	AUX CH (p)
16	GND
17	AUX CH (n)
18	Hot plug detect
19	Return (GND)
20	DP_PWR (+3.3V)

3.5 USB3.0 Type A receptacle

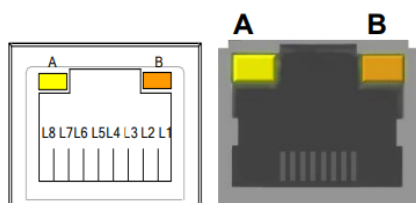


Mating part: Plug USB type A

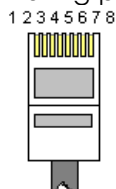


Pin	Description
1	VBUS (+5V)
2	Data-
3	Data+
4	GND
5	StdA_SSRX-
6	StdA_SSRX+
7	GND_DRAIN
8	StdA_SSTX-
9	StdA_SSTX+

3.6 Ethernet RJ45 receptacle



Mating part: RJ45 plug



Description		
Pin	1000 base-T	100/10 Base-T
L1	BI_D1+	TX+
L2	BI_D1-	TX-
L3	BI_DB+	RX+
L4	BI_DC+	N.C.
L5	BI_DC-	N.C.
L6	BI_DB-	RX-
L7	BI_DD+	N.C.
L8	BI_DD-	N.C.
A	Active Link LED (Yellow) Off: No link Blinking: Data activity detected	
B	Speed LED 1000: Orange 100/10: Green/OFF	

4 Technical specifications DuraPANEL 10-15 S-line

Please refer to datasheet for the purchased variant

DuraPANEL 10.1 S-Line: 09833-000

DuraPANEL 10.1 S-Line: 09953-001 (2 x USB2.0 in front)

DuraPANEL 15.6 S-Line: 09834-000

5 USB Touch

Multi-PCAP touch sensor complies with Windows 8 (or newer) standard USB HID drivers. Linux operating systems might come with the HID driver as part of the Linux kernel, compatibility is not guaranteed. Please contact ISIC A/S for compatibility.

6 Display backlight luminance (Dimming)

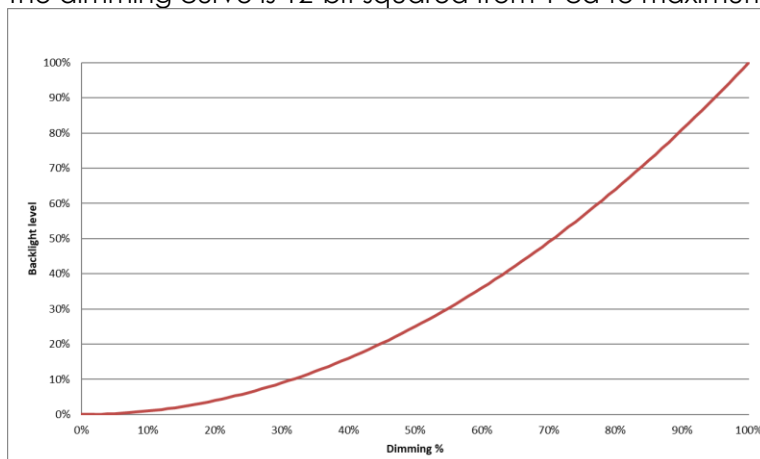
6.1 Backlight Luminance control

Display luminance can be controlled via Windows Display API (Windows Display Brightness Control).

Please refer to Please refer to Microsoft support: <https://support.microsoft.com/en-us/windows/change-screen-brightness-in-windows-3f67a2f2-5c65-ceca-778b-5858fc007041>

6.2 Dimming curve

The dimming curve is 12-bit squared from 1 cd to maximum display luminance.



7 DuraPANEL 10-15 S-line LED indicator

The LED is not marked on the front and is only visible when activated.

LED brightness follows the LCD backlight setting.

7.1 Power LED indicator

Green: The computer is powered on.

No light: No power



8 Troubleshooting

Problem	Cause	Solutions
No picture on display	Backlight luminance set to minimum	Increase backlight
	The computer is in sleep mode	Activate the computer
	BIOS setting for LVDS is changed	Please use correct setting Refer to Appendix A for guidance
	No power connected	Apply power
The unit will not power up when power is applied	Auto power switch is disabled	Enable auto power on switch
The unit will not power up when power is applied	Unknown	Please do not try to open the unit. Send it to ISIC A/S for repair.

9 Servicing the unit

In case the unit still fails after following the troubleshooting send the unit to ISIC for repair. There are no user serviceable parts inside and to ensure compliance the DuraPANEL must be serviced at ISIC.

10 Terms, Acronyms and abbreviations

11 ISIC info / Support

In case you have inquiries or problems with your DuraPANEL 10-15 S-line, you have a number of possibilities to get support.

Company name:	ISIC A/S
Head office:	Edwin Rahrs Vej 54 DK – 8220 Brabrand Denmark
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Telephone:	+45 70 20 70 77
Email:	isic@isic-systems.com
www:	www.isic-systems.com
VAT number:	DK 16 70 45 39
Bank Address:	Handelsbanken A/S Havneholmen 29 DK-1561 København V Denmark
Bank Code:	0892
IBAN DKK:	DK53 0892 0001 0159 69
IBAN EUR:	DK48 0892 0003 0026 19
IBAN USD:	DK26 0892 0003 0026 27
SWIFT:	HANDDKKK
Contacts:	
RFQ's:	By mail to sales@isic-systems.com
Orders:	By mail to orders@isic-systems.com
Support:	Via homepage www.isic-systems.com under aftersales By mail to service@isic-systems.com During office-hours (Mo-Fr: CET 0800 - 1500) at +45 70 20 70 77
Service:	Before shipment for service Request Return Material Authorization number at homepage https://isic-systems.com/after-sales/tech-support-rma/ By mail to service@isic-systems.com

12 Revision history

Rev A	December 2022	First release
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13 Appendix A: BIOS Setup

AMI BIOS Setup Utility

The AMI UEFI BIOS provides users with a built-in setup program to modify basic system configuration. All configured parameters are stored in a flash chip to save the setup information whenever the power is turned off. This chapter provides users with detailed description about how to set up basic system configuration through the AMI BIOS setup utility.

13.1 Starting

To enter the setup screens, connect a USB keyboard and follow the steps below:

1. Turn on the computer and press the key immediately.
2. After you press the key, the main BIOS setup menu displays. You can access the other setup screens from the main BIOS setup menu, such as the Advanced and Chipset menus.

NOTE: If your computer cannot boot after making and saving system changes with BIOS setup, please contact ISIC A/S for support

NOTE: It is strongly recommended that you should avoid changing the chipset's defaults. Both AMI and your system manufacturer has carefully set up these defaults that provide the best performance and reliability.

13.2 Navigation Keys

The BIOS setup/utility uses a key-based navigation system called hot keys. Most of the BIOS setup utility hot keys can be used at any time during the setup navigation process. These keys include <F1>, <F2>, <Enter>, <ESC>, <Arrow> keys, and so on.

NOTE: Some of the navigation keys differ from one screen to another.

Hot Keys	Description
→← Left/Right	The Left and Right <Arrow> keys allow you to select a setup screen.
↑↓ Up/Down	The Up and Down <Arrow> keys allow you to select a setup screen or sub-screen.
+– Plus/Minus	The Plus and Minus <Arrow> keys allow you to change the field value of a particular setup item.
Tab	The <Tab> key allows you to select setup fields.
F1	The <F1> key allows you to display the General Help screen.
F2	The <F2> key allows you to Load Previous Values.
F3	The <F3> key allows you to Load Optimized Defaults.
F4	The <F4> key allows you to save any changes you have made and exit Setup. Press the <F4> key to save your changes.
Esc	The <Esc> key allows you to discard any changes you have made and exit the Setup. Press the <Esc> key to exit the setup without saving your changes.
Enter	The <Enter> key allows you to display or change the setup option listed for a particular setup item. The <Enter> key can also allow you to display the setup sub- screens.

13.3 Main Menu

When you first enter the setup utility, you will enter the Main setup screen. You can always return to the Main setup screen by selecting the Main tab. System Time/Date can be set up as described below. The Main BIOS setup screen is shown below.

Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.					
Main	Advanced	Chipset	Security	Boot	Save & Exit
BIOS Information		PICO318 X007		Set the Date. Use Tab to switch between Date elements.	
Project Version		06/29/2018 10:01:16		Default Ranges:	
Build Date and Time				Year: 2005-2099	
EC Information		PICO318 X02		Months: 1-12	
Firmware Version				Days: dependent on month	
System Date		[Fri 09/21/2018]			
System Time		[19:44:46]			
Access Level		Administrator			
				++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.					

13.3.1 System Date/Time

Use this option to change the system time and date. Highlight System Time or System Date using the <Arrow> keys. Enter new values through the keyboard. Press the <Tab> key or the <Arrow> keys to move between fields. The date must be entered in MM/DD/YY format. The time is entered in HH:MM:SS format.

13.4 Advanced Menu

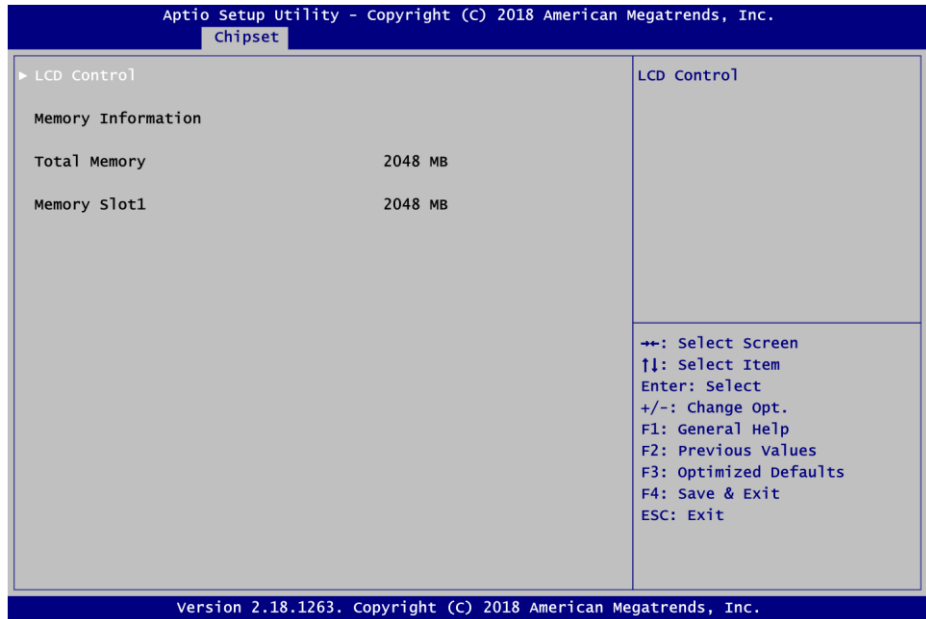
13.4.1 Hardware Monitor

This screen monitors hardware health status.

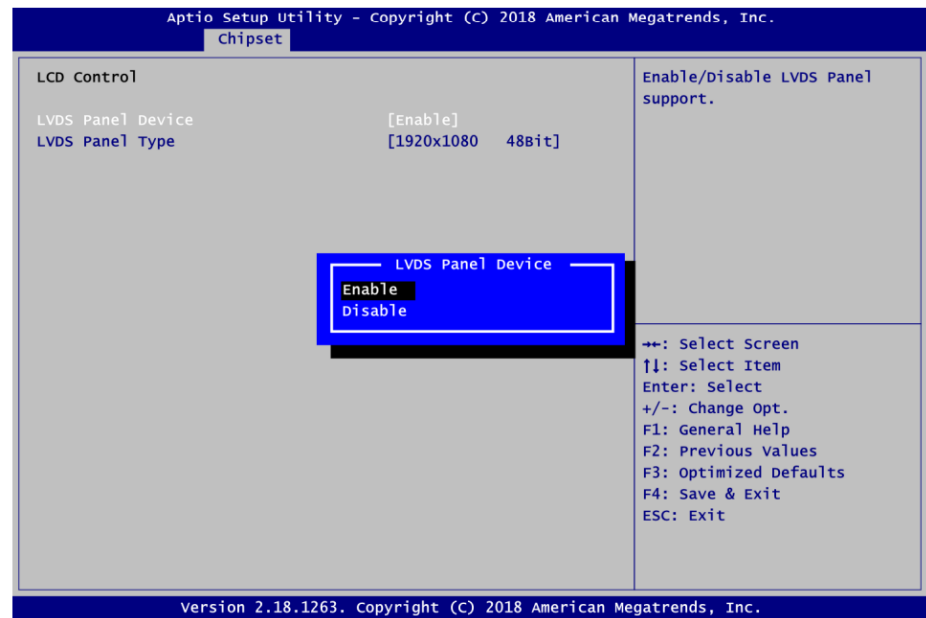
Aptio Setup Utility - Copyright (C) 2018 American Megatrends, Inc.					
Advanced	Main	Chipset	Security	Boot	Save & Exit
PC Health Status					
CPU Temperature		: +57 °C			
System Temperature		: +43 °C			
VBAT		: +2.96 V			
+3.3V		: +3.26 V			
+3.3VSB		: +3.26 V			
+5VSB		: +5.02 V			
				++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.18.1263. Copyright (C) 2018 American Megatrends, Inc.					

13.5 Chipset Menu

13.5.1 North Bridge

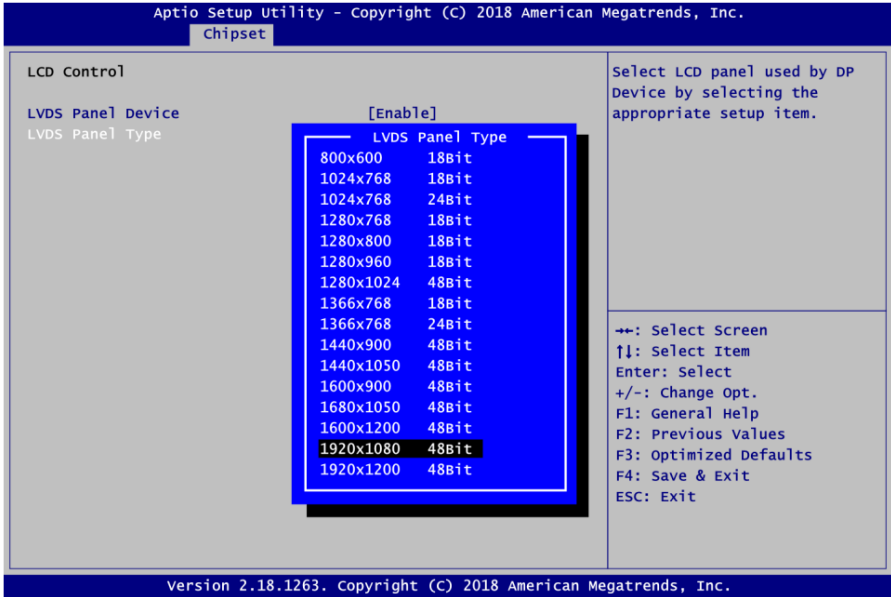


13.5.2 LCD Control



NOTE: Please do not disable LVDS, unless an external monitor is connected to the DisplayPort video output.

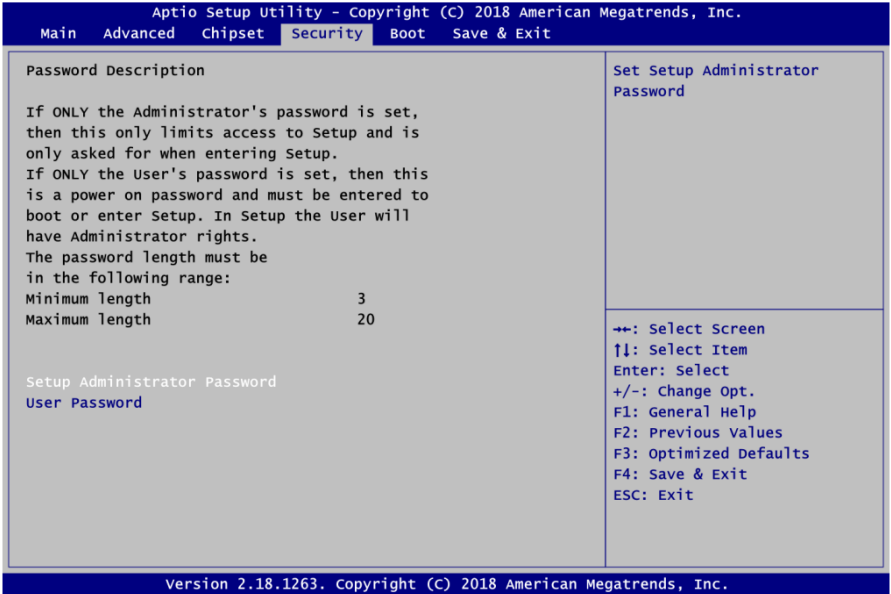
13.5.3 LVDS Panel type



NOTE: Please do not change LVDS panel type unless an external monitor is connected to the DisplayPort video output.
Please refer to datasheet for appropriate setting for LVDS resolution.

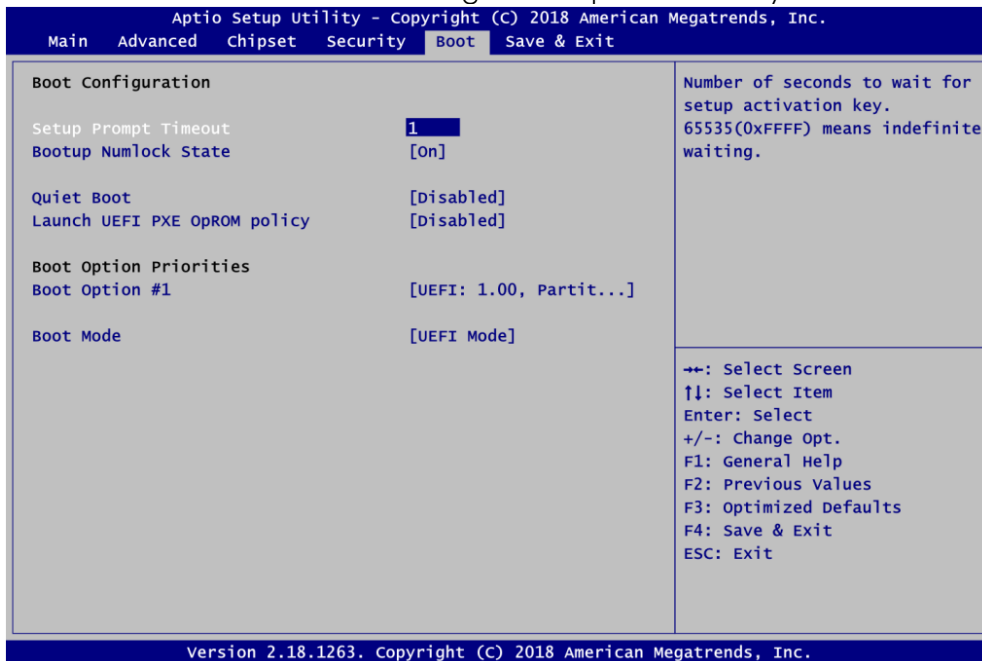
13.6 Security Menu

The Security menu allows users to change the security settings for the system.



13.7 Boot Menu

The Boot menu allows users to change boot options of the system



13.7.1 Setup Prompt Timeout

Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.

13.7.2 Bootup Numlock State

Use this item to select the power-on state for the keyboard NumLock.

13.7.3 Quiet Boot

Select to display either POST output messages or a splash screen during boot-up.

13.7.4 Launch UEFI PXE OpROM policy

Control the execution of UEFI PXE OpROM.

13.7.5 Boot Option Priorities

These are settings for boot priority. Specify the boot device priority sequence from the available devices.

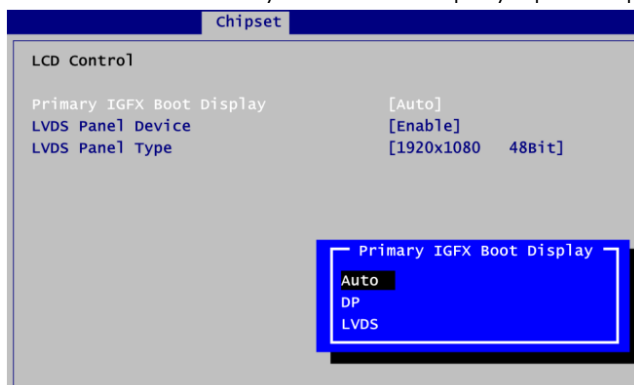
13.7.6 Boot Mode

Use this option for boot mode settings.

- UEFI Boot: Select support to boot any UEFI-capable OS.

- Legacy Boot: Select support to boot non UEFI-capable OS that expects a legacy BIOS interface.

Note that the Primary IGFX Boot Display option appears only if Legacy Mode is selected, see image below.

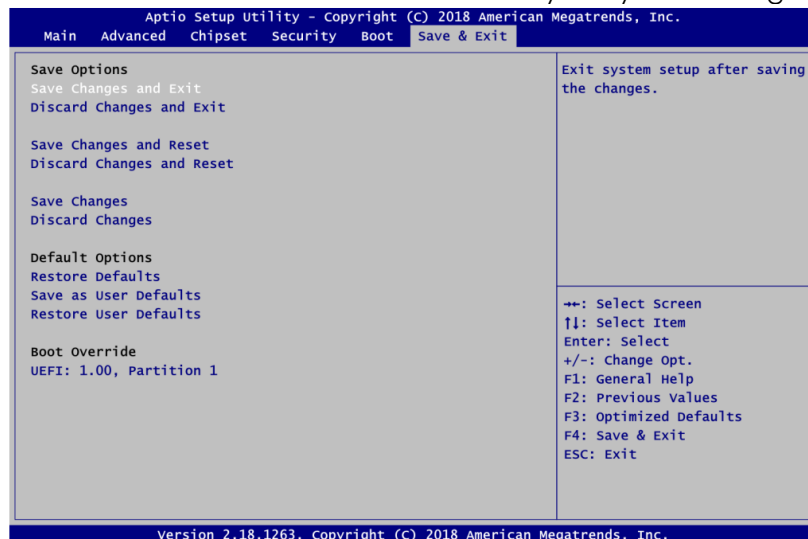


Primary IGFX Boot Display (Legacy mode use only)

Select the video device which will be activated during POST (Power-On Self Test). Default is "Auto". The image above shows option list in Primary IGFX Boot Display

13.8 Save & Exit Menu

The Save & Exit menu allows users to load your system configuration with optimal or fail-safe default values.



13.8.1 Save Changes and Exit

When you have completed the system configuration changes, select this option to leave Setup and return to Main Menu. Select Save Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to save changes and exit.

13.8.2 Discard Changes and Exit

Select this option to quit Setup without making any permanent changes to the system configuration and return to Main Menu. Select Discard Changes and Exit from the Save & Exit menu and press <Enter>. Select Yes to discard changes and exit.

13.8.3 Save Changes and Reset

When you have completed the system configuration changes, select this option to leave Setup and reboot the computer so the new system configuration parameters can take effect. Select Save Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to save changes and reset.

13.8.4 Discard Changes and Reset

Select this option to quit Setup without making any permanent changes to the system configuration and reboot the computer. Select Discard Changes and Reset from the Save & Exit menu and press <Enter>. Select Yes to discard changes and reset.

13.8.5 Save Changes

When you have completed the system configuration changes, select this option to save changes. Select Save Changes from the Save & Exit menu and press <Enter>. Select Yes to save changes.

13.8.6 Discard Changes

Select this option to quit Setup without making any permanent changes to the system configuration. Select Discard Changes from the Save & Exit menu and press <Enter>. Select Yes to discard changes.

13.8.7 Restore Defaults

It automatically sets all Setup options to a complete set of default settings when you select this option. Select Restore Defaults from the Save & Exit menu and press <Enter>.

13.8.8 Save as User Defaults

Select this option to save system configuration changes done so far as User Defaults. Select Save as User Defaults from the Save & Exit menu and press <Enter>.

13.8.9 Restore User Defaults

It automatically sets all Setup options to a complete set of User Defaults when you select this option. Select Restore User Defaults from the Save & Exit menu and press <Enter>.

13.8.10 Boot Override

Select a drive to immediately boot that device regardless of the current boot order.

14 Appendix B: Watchdog Timer

14.1 About Watchdog Timer

After the system stops working for a while, it can be auto-reset by the watchdog timer. The integrated watchdog timer can be set up in the system reset mode by program.

14.2 How to Use Watchdog Timer

Assembly sample code :

```
mov     dx,fa10      ; 5 seconds (Maximum is 65535 seconds; fill in
                     ; 0xFA10 and 0xFA11 register, ex: 0xFA11=0x01,
                     ; 0xFA10=0x68 means 360 seconds)

mov     al,05
out     dx,al
mov     dx,fa12      ; Enable WDT
mov     al,01
out     dx,al
```

15 Appendix C: Pixel policy

ISO 9241-307:2008 guidelines for LCD pixel defects

Introduction

TFT displays consist of a set number of pixels. Each pixel consists of 3 sub-pixels also called dots (one red, one blue and one green). Every sub-pixel is addressed by its own transistor. As a result, the manufacturing of glass substrate is very complex.

Due to the nature of this manufacturing process, occasional defects can occur. Pixel defects or failures cannot be fixed or repaired and may occur at any stage during the service life of the TFT display.

To regulate the acceptability of defects and protect the end user, ISIC A/S complies with the ISO 9241-307:2008 standard. This standard recommends how many defects are considered acceptable in a display, before it should be replaced within the terms of the warranty.

Display classification

ISO 9241-307:2008

Allowed defects per type per million pixels						
Defect classes	Pixel defects			Cluster defect		
	Type 1	Type 2	Type 3 total ($2 \times N_{3a} + N_{3b}$)	Type 1	Type 2	Type 3
Class: 0	0	0	0	0	0	0
Class: I	1	1	5	0	0	0
Class: II	2	2	10	0	0	1
Class: III	5	15	100	0	0	5

ISIC TFT displays comply with ISO 9241-307:2008 Class II.

Special agreements about other classifications can be made between ISIC A/S and the customer.

Measurement method/monitoring conditions for pixel defects

In compliance with the ISO-9241-307:2008 standard, the following conditions are observed:

- Final check for pixel fault undertaken right after burn-in, i.e. with pre-heating of the display.
- Surrounding temperature $25^{\circ}\text{C} \pm 5^{\circ}\text{C}$
- Relative air humidity 40–70%

Pixel definition

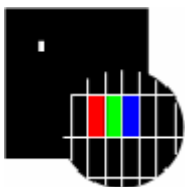
Every pixel consists of three sub-pixels/dots (red, blue, green).

Every sub-pixel has its own transistor.

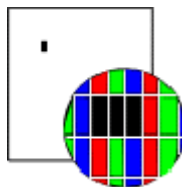
The three sub-pixels/dots must be considered as one unit.



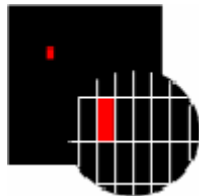
Pixel



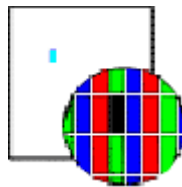
Pixel defect type 1 Pixel constantly lit



Pixel defect type 2 Pixel constantly dark



Pixel defect type 3a
Sub-pixel/dot (red, blue, green) constantly lit



Pixel defect type 3b
Sub-pixel/dot (red, blue, green) constantly dark

Cluster

A cluster consists of 5 x 5 pixels.



Cluster pixel defect type 1
Pixels in a cluster area constantly lit



Cluster pixel defect type 2
Pixels in a cluster area constantly dark



Cluster pixel defect type 3a
Sub-pixels/dots in a cluster area constantly lit



Cluster pixel defect type 3b
Sub-pixels/dots in a cluster area constantly dark

Pixel faults accepted by ISiC A/S

The maximum number of pixel faults that is considered acceptable at different screen resolutions is shown in the table below. This is the native resolution and not the resolution as adjusted by user.

Class II

Allowable number of pixel faults in display applications							
Screen type	Native resolution	Number of pixels	Pixel defect type 1	Pixel defect type 2	Pixel defect Type 3 total ($2 \times N_{3a} + N_{3b}$)	Cluster defect type 1 and 2	Cluster defect type 3
WVGA	800x480	384,000	0	0	3	0	0
XGA	1024x768	768,432	1	1	7	0	0
WXGA	1280x800	1,024,000	2	2	10	0	1
SXGA	1280x1024	1,310,720	2	2	13	0	1
UXGA	1600x1200	1,920,000	3	3	19	0	1
FHD	1920x1080	2,073,600	4	4	20	0	2
WUXGA	1920x1200	2,304,000	4	4	23	0	2



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