Embedded Solutions

ADLE3800PC

Manual

rev. 1.0

ADL Embedded Solutions Inc. 4411 Morena Blvd., Suite 101 San Diego, CA 92117-4345

P. +1 858 490-0597 **F.** +1 858 490-0599
e-mail: sales@adl-usa.com; **web:** http://www.adl-usa.com

Contents

0 Document History

Version	Changes
0.1	first pre-release
1.0	first complete version

1 Introduction

1.1 Important Notes

Please read this manual carefully before you begin installation of this hardware device. To avoid Electrostatic Discharge (ESD) or transient voltage damage to the board, adhere to the following rules at all times:

- You must discharge your body from electricity before touching this board.
- Tools you use must be discharged from electricity as well.
- Please ensure that neither the board you want to install, nor the unit on which you want to install this board, is energized before installation is completed.
- Please do not touch any devices or components on the board.

⚠WARNING **As soon as the board is connected to a working power supply, touching the board may result in electrical shock, even if the board has not been switched on yet. Please also note that the mounting holes for heat sinks are connected to ground, so when using an externally AC powered device, a substantial ground plane differential can occur if the external device's AC power supply or cable does not include an earth ground. This could also result in electrical shock when touching the device and the heat sink simultaneously.**

1.2 Technical Support

Technical support for this product can be obtained in the following ways:

- By contacting our support staff at +1 858-490-0597 or +49 (0) 271 250 810 0
- By contacting our staff via e-mail at support@adl-usa.com or support@adl-europe.com
- Via our website at www.adl-usa.com/support or www.adl-europe.com/support

1.3 Warranty

This product is warranted to be free of defects in workmanship and material. ADL Embedded Solutions' sole obligation under this warranty is to provide replacement parts or repair services at no charge, except shipping cost. Such defects which appear within 12 months of original shipment of ADL Embedded Solutions will be covered, provided a written claim for service under warranty is received by ADL Embedded Solutions no less then 30 days prior to the end of the warranty period of within 30 days of discovery of the defect – whichever comes first. Warranty coverage is contingent upon proper handling and operation of the product. Improper use such as unauthorized modifications or repair, operation outside of specified ratings, or physical damage may void any service claims under warranty.

1.4 Return Authorization

All equipment returned to ADL Embedded Solutions for evaluation, repair, credit return, modification, or any other reason must be accompanied by a Return Material Authorization (RMA) number. ADL Embedded Solutions requires a completed RMA request form to be submitted in order to issue an RMA number. The form can be found under the Support section at our website: www.adl-usa.com or www.adl-europe.com. Submit the completed form to support@adl-usa.com or fax to +1 858-490-0599 for the USA office, or to rma@adl-europe.com or fax to +49 (0) 271 250 810 20 to request an RMA from the European office in Germany. Following a review of the information provided, ADL Embedded Solutions will issue an RMA number.

1.5 Description of Safety Symbols

The following safety symbols are used in this documentation. They are intended to alert the reader to the associated safety instructions.

⚠ DANGER	**DANGER indicates a hazardous situation which, if not avoided, will result in death or serious injury.**
⚠ WARNING	**WARNING indicates a hazardous situation which, if not avoided, could result in death or serious injury.**
⚠ CAUTION	**CAUTION indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.**
NOTICE	**NOTICE is used to address practices not related to physical injury.**

1.6 RoHS

The PCB and all components are RoHS compliant (RoHS = Restriction of Hazardous Substances Directive). The soldering process is lead free.

1.7 FCC Approval for Canada

FCC: Canadian Notice

This equipment does not exceed the Class A limits for radiated emissions as described in the Radio Interference Regulations of the Canadian Department of Communications.

1.8 FCC Approvals for the United States of America

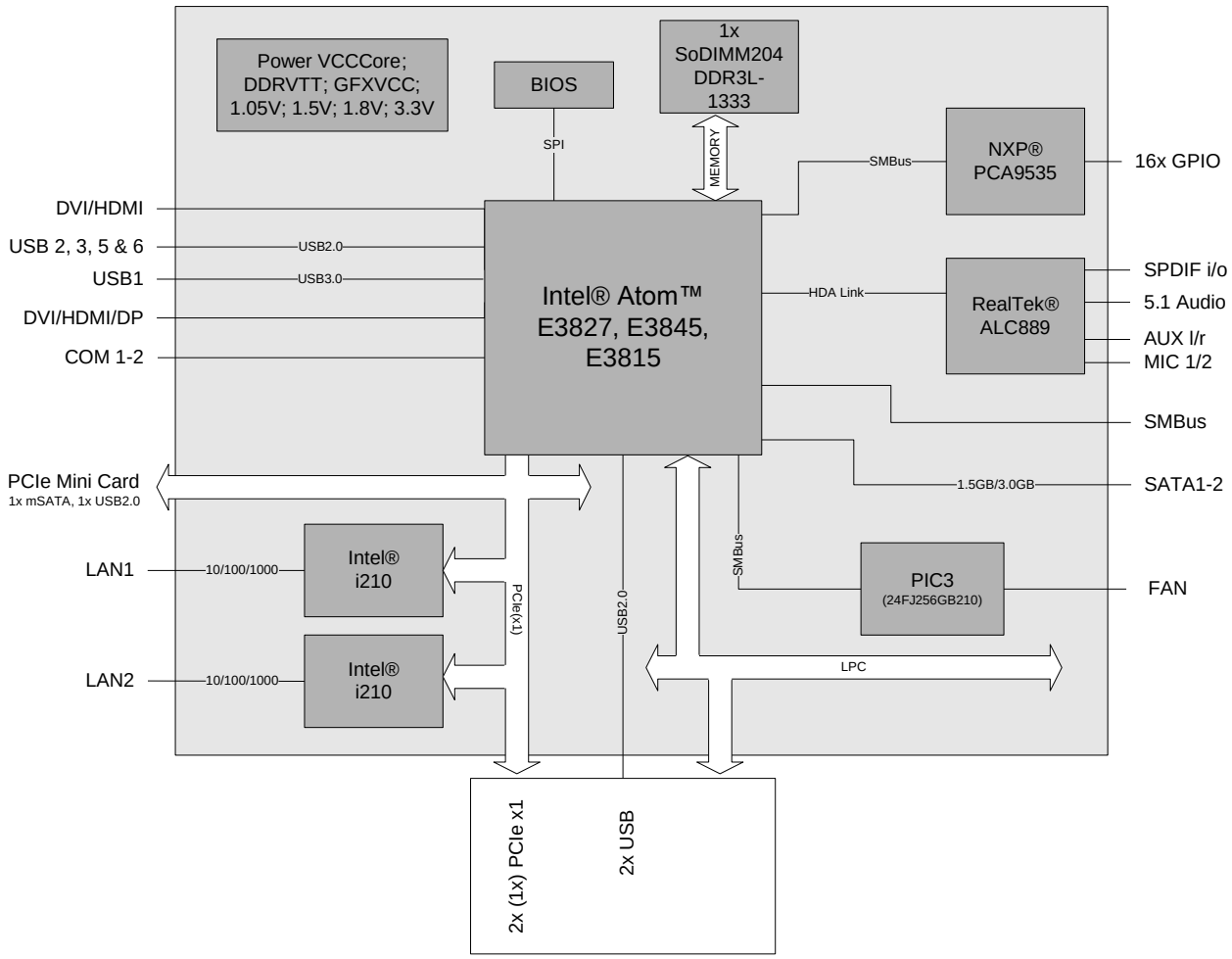
FCC: Federal Communications Commission Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

2 Overview

2.1 Features

The ADLE3800PC is a highly complex motherboard in the PC/104™ form factor, complying with the state-of-the-art "PCIe/104™" standard. It's based on a System-On-Chip (SoC) of Intel®'s Atom E3800 product family. Modern low voltage DDR3 technology provides top-notch memory performance, accomodating up to 8 GByte of RAM (DDR3L-1600) via SO-DIMM204. PCI-Express is available through the PCI/104-Express Type 2 connector, offering two x1 lanes for connecting all kinds of corresponding expansion cards in a PCIe/104™ stack-down fashion. For connecting graphics devices, several interfaces are available: CRT, HDMI and DisplayPort. Additional interfaces include two serial ports, two Gigabit Ethernet interfaces (LAN), two SATA channels (up to 3Gb/s), an audio interface (HDA 7.1), eight USB2.0-channels and one USB3.0-channels. There are also 16 discrete programmable GPIO signals available.



PCIe/104 connector (type 2)

2.1.1 Specifications and Documents

In making this manual and for further reading of technical documentation, the following documents, specifications and web-pages were used and are recommended.

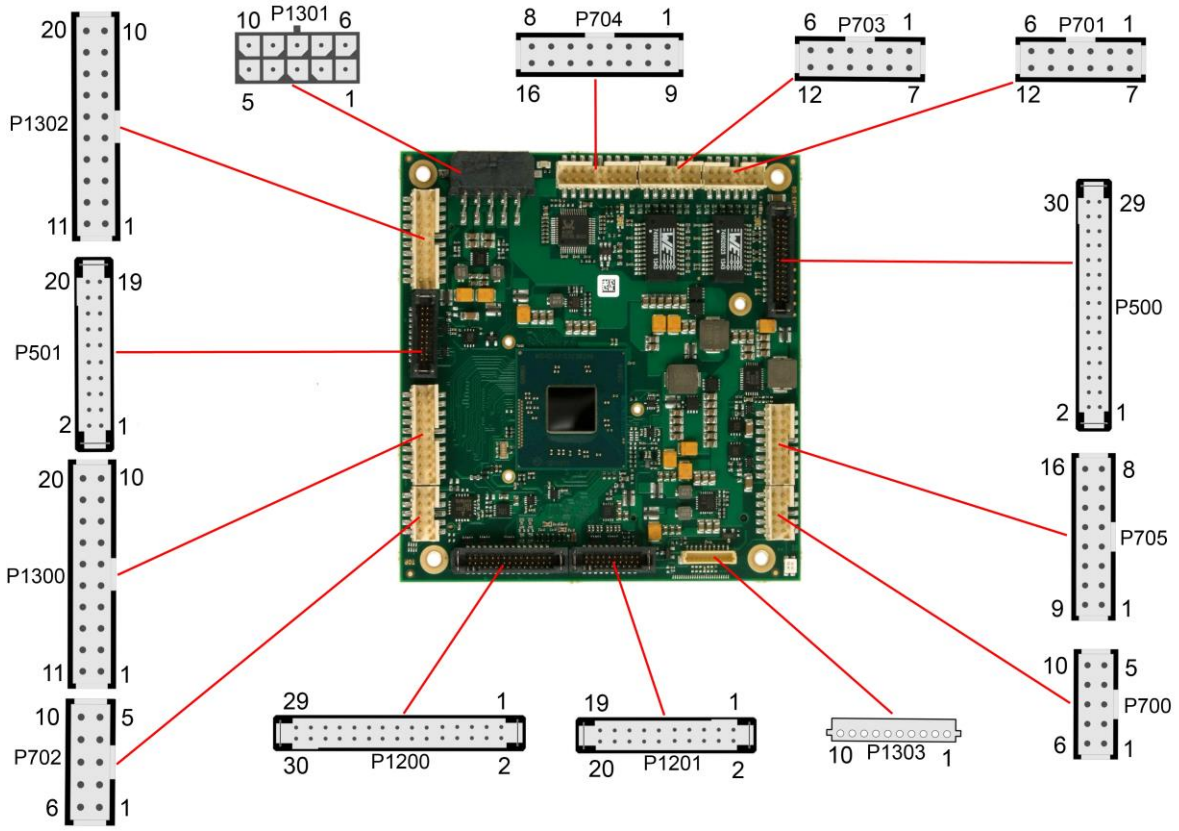
- PC/104™ Specification
  Version 2.5
  www.pc104.org
- PC/104-Plus™ Specification
  Version 2.0
  www.pc104.org
- PCI/104-Express™ Specification
  Version 2.01
  www.pc104.org
- PCI Specification
  Version 2.3 and 3.0
  www.pcisig.com
- ACPI Specification
  Version 5.0
  www.acpi.info
- ATA/ATAPI Specification
  Version 7 Rev. 1
  www.t13.org
- USB Specifications
  www.usb.org
- SM-Bus Specification
  Version 2.0
  www.smbus.org
- Intel® Chipset Description
  Intel® 8 Series Chipset Datasheet
  www.intel.com
- Intel® Chip Description
  i210 Datasheet
  www.intel.com
- Realtek® Chip Description
  ALC885/889 Datasheet
  www.realtek.com.tw
- Chrontel® Chip Description
  Chrontel 7318C Datasheet
  www.chrontel.com
- American Megatrends®
  Aptio™ Text Setup Environment (TSE) User Manual
  www.ami.com
- American Megatrends®
  Aptio™ 4.x Status Codes
  www.ami.com

3 Connectors

This section describes all the connectors found on the ADLE3800PC.

3.1 Connector Map

Please use the connector map below for quick reference. Only connectors on the component side are shown. For more information on each connector refer to the table below.



Ref.-No.	Function	Page
P500	"SATA Interfaces"	p. 28
P501	"USB 3.0"	p. 25
P700/2	"COM1 and COM2"	p. 29
P701/3	"LAN"	p. 26
P704	"Audio"	p. 27
P705	"USB 2.0"	p. 24
P1200	"DVI/HDMI/VGA"	p. 22
P1201	"DisplayPort"	p. 23
P1300	"GPIO"	p. 30
P1301	"Power Supply"	p. 14
P1302	"System/SM-Bus"	p. 15
P1303	"Monitoring Functions"	p. 31
U600*	"Memory"	p. 16
P1100*	"PCI/104-Express Bus"	p. 19
P1101*	"PCI-Express Mini Card with mSATA"	p. 21

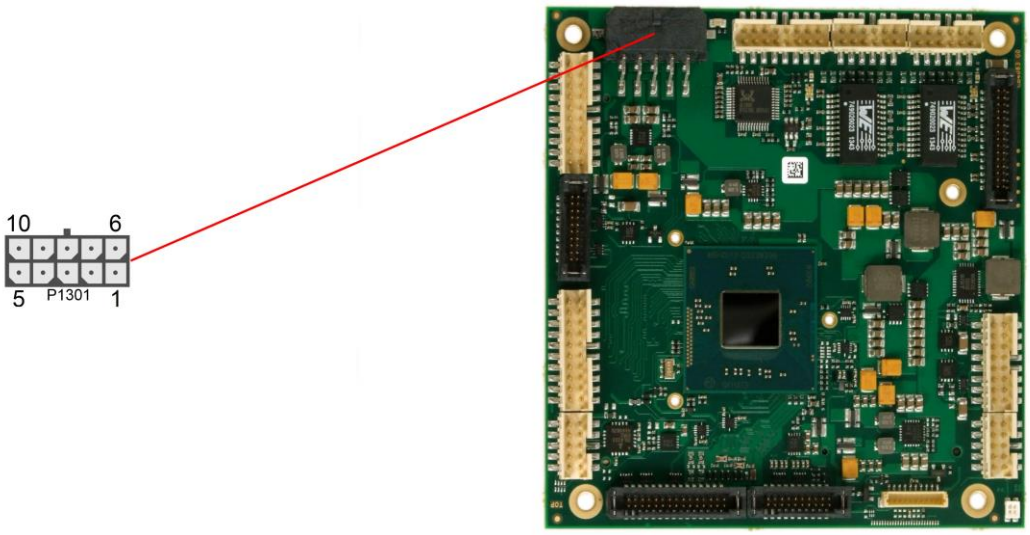
* not pictured (see bottom of the board)

3.2 Power Supply

The power supply of the hardware module is realized via a 2x5-pin connector (Molex PS 43045-10xx, mating connector: Molex PS 43025-10xx). Both 5V VCC/SVCC and 12V need to be provided. The 12V input can be left unconnected if not required by attached peripherals.

NOTICE

The ADLE3800PC includes circuitry that will notify an intelligent power supply to shut down if the processor reaches a critical temperature. This is achieved by deasserting the (low-active) PS_ON# signal found on the SM-Bus connector. When PS_ON# is no longer pulled low, an intelligent power supply would take this as a signal to shut down power. For this to work, PS_ON# must be connected to the power supply's PS_ON input. If PS_ON# is not otherwise connected, the ADLE3800PC can be damaged beyond repair if a thermal shutdown event occurs. In rare instances, if power is not shut down, the board will continue to heat up until failure occurs.



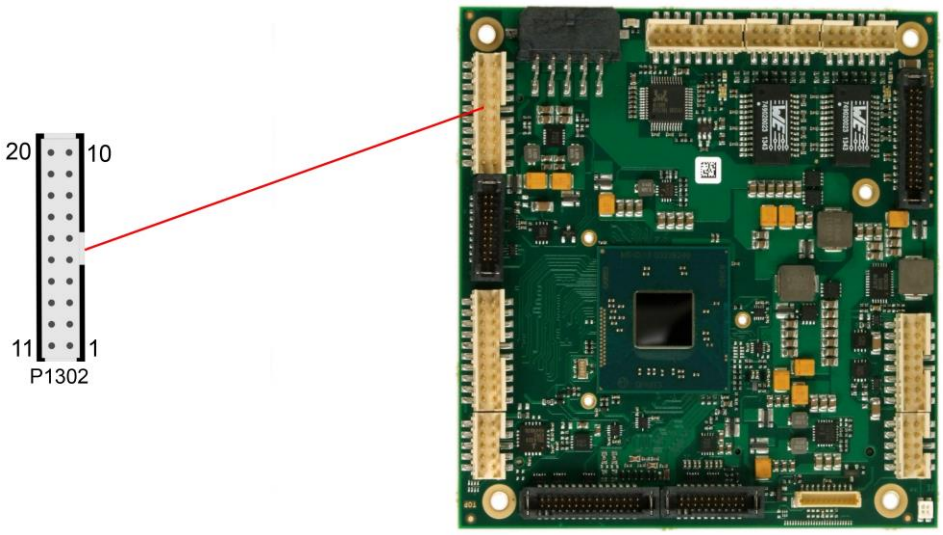
NOTICE

Since this is a 90 degree connector, the symbol in the drawing below represents the connector face as seen from the side (PCB on bottom) rather than from above.

Description	Name	Pin		Name	Description
12 volt supply	12V	1	6	12V	12 volt supply
ground	GND	2	7	GND	ground
ground	GND	3	8	SVCC	standby-supply 5V
ground	GND	4	9	GND	ground
5 volt supply	VCC	5	10	VCC	5 volt supply

3.3 System/SM-Bus

Both SM-Bus signals, and signals e.g. speaker are provided through a 2x10pin connector (FCI 98424-G52-20LF, mating connector e.g. FCI 90311-020LF). For the #PSON signal, please refer to the cautionary note in the chapter "Power Supply" (page 14).

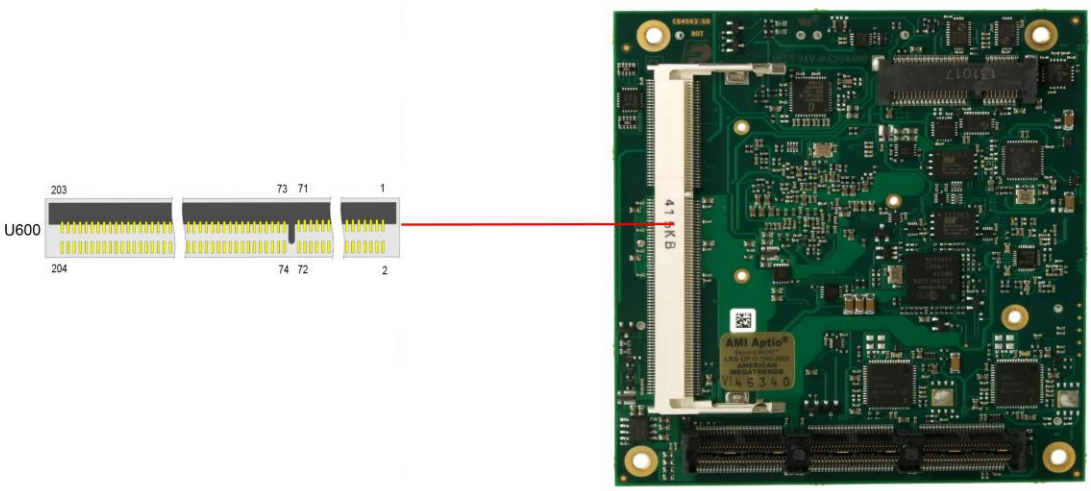


Pinout 2x10 system connector:

Dsecription	Name	Pin		Name	Description
ATX Powerbutton	ATXPWRBTN#	1	11	GND	ground
reset to ground	RSTBTN#	2	12	GND	ground
battery	BATT	3	13	GND	ground
speaker	SPEAKER	4	14	VCC	5V supply
SATA LED	SATALED#	5	15	3.3V	3.3V supply
Rot / LED0	RED/LED 0	6	16	GREEN/LED1	green / LED1
Blau / LED2	BLUE/LED2	7	17	S3.3V	standby supply 3.3V
PS-ON	PSON#	8	18	S3.3V	standby supply 3.3V
Systembus clock	SMB-CLK	9	19	SMB-ALERT	Systembus alert
Systembus data	SMB-DAT	10	20	GND	ground

3.4 Memory

There is one conventional SO-DIMM204 socket available to equip the board with memory (DDR3L-1333). It is located on the bottom side of the board. For technical and mechanical reasons it is possible that particular memory modules cannot be employed. Please ask your sales representative for recommended memory modules.
With currently available SO-DIMM modules a memory extension up to 8 GByte is possible. The timing parameters for different memory modules are automatically set by BIOS.



Pinout SO-DIMM204:

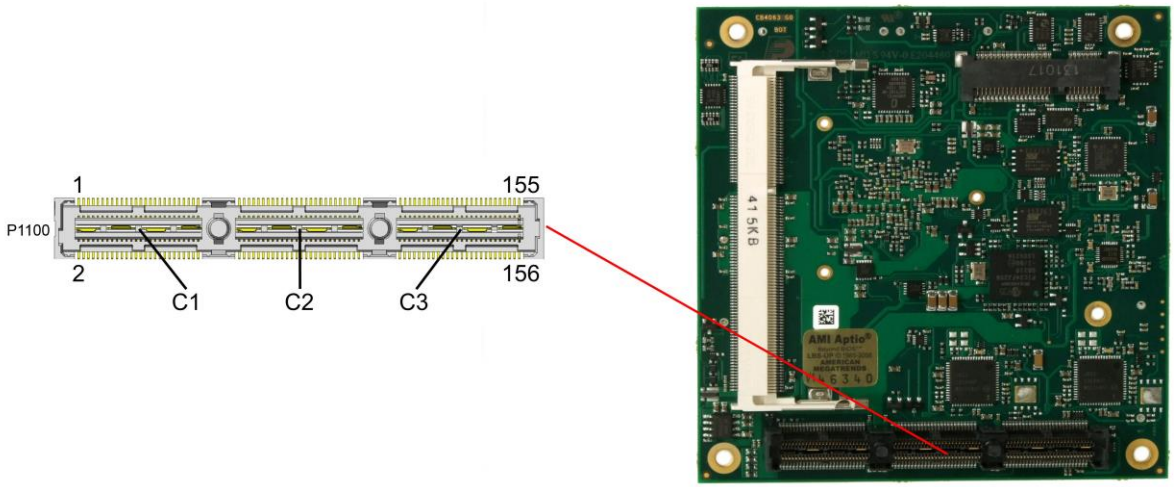
Description	Name	Pin		Name	Description
memory reference current	REF-DQ	1	2	GND	ground
ground	GND	3	4	DQ4	data 4
data 0	DQ0	5	6	DQ5	data 5
data 1	DQ1	7	8	GND	ground
ground	GND	9	10	DQS0#	data strobe 0 -
data mask 0	DM0	11	12	DQS0	data strobe 0 +
ground	GND	13	14	GND	ground
data 2	DQ2	15	16	DQ6	data 6
data 3	DQ3	17	18	DQ7	data 7
ground	GND	19	20	GND	ground
data 8	DQ8	21	22	DQ12	data 12
data 9	DQ9	23	24	DQ13	data 13
ground	GND	25	26	GND	ground
data strobe 1 -	DQS1#	27	28	DM1	data mask 1
data strobe 1 +	DQS1	29	30	RESET#	Reset
ground	GND	31	32	GND	ground
data 10	DQ10	33	34	DQ14	data 14
data 11	DQ11	35	36	DQ15	data 15
ground	GND	37	38	GND	ground
data 16	DQ16	39	40	DQ20	data 20
data 17	DQ17	41	42	DQ21	data 21
ground	GND	43	44	GND	ground
data strobe 2 -	DQS2#	45	46	DM2	data mask 2
data strobe 2 +	DQS2	47	48	GND	ground
ground	GND	49	50	DQ22	data 22

Description	Name	Pin		Name	Description
data 18	DQ18	51	52	DQ23	data 23
data 19	DQ19	53	54	GND	ground
ground	GND	55	56	DQ28	data 28
data 24	DQ24	57	58	DQ29	data 29
data 25	DQ25	59	60	GND	ground
ground	GND	61	62	DQS3#	data strobe 3 -
data mask 3	DQM3	63	64	DQS3	data strobe 3 +
ground	GND	65	66	GND	ground
data 26	DQ26	67	68	DQ30	data 30
data 27	DQ27	69	70	DQ31	data 31
ground	GND	71	72	GND	ground
clock enables 0	CKE0	73	74	CKE1	clock enables 1
1.5 volt supply	1.5V	75	76	1.5V	1.5 volt supply
reserved	N/C	77	78	(A15)	reserved
SDRAM bank 2	BA2	79	80	A14	address 14
1.5 volt supply	1.5V	81	82	1.5V	1.5 volt supply
address 12 (burst chop)	A12/BC#	83	84	A11	address 11
address 9	A9	85	86	A7	address 7
1.5 volt supply	1.5V	87	88	1.5V	1.5 volt supply
address 8	A8	89	90	A6	address 6
address 5	A5	91	92	A4	address 4
1.5 volt supply	1.5V	93	94	1.5V	1.5 volt supply
address 3	A3	95	96	A2	address 2
address 1	A1	97	98	A0	address 0
1.5 volt supply	1.5V	99	100	1.5V	1.5 volt supply
Clock 0 +	CK0	101	102	CK1	clock 1 +
Clock 0 -	CK0#	103	104	CK1#	clock 1 -
1.5 volt supply	1.5V	105	106	1.5V	1.5 volt supply
address 10 (auto precharge)	A10/AP	107	108	BA1	SDRAM bank 1
SDRAM Bank 0	BA0	109	110	RAS#	row address strobe
1.5 volt supply	1.5V	111	112	1.5V	1.5 volt supply
write enable	WE#	113	114	S0#	chip select 0
column address strobe	CAS#	115	116	ODT0	on die termination 0
1.5 volt supply	1.5V	117	118	1.5V	1.5 volt supply
address 13	A13	119	120	ODT1	on die termination 1
Chip Select 1	S1#	121	122	N/C	reserved
1.5 volt supply	1.5V	123	124	1.5V	1.5 volt supply
reserved	(TEST)	125	126	REF-CA	reference current
ground	GND	127	128	GND	ground
data 32	DQ32	129	130	DQ36	data 36
data 33	DQ33	131	132	DQ37	data 37
ground	GND	133	134	GND	ground
data strobe 4 -	DQS4#	135	136	DQM4	data mask 4
data strobe 4 +	DQS4	137	138	GND	ground
ground	GND	139	140	DQ38	data 38
data 34	DQ34	141	142	DQ39	data 39
data 35	DQ35	143	144	GND	ground
ground	GND	145	146	DQ44	data 44
data 40	DQ40	147	148	DQ45	data 45
data 41	DQ41	149	150	GND	ground
ground	GND	151	152	DQS5#	data strobe 5 -
data mask 5	DQM5	153	154	DQS5	data strobe 5 +
ground	GND	155	156	GND	ground
data 42	DQ42	157	158	DQ46	data 46
data 43	DQ43	159	160	DQ47	data 47

Description	Name	Pin		Name	Description
ground	GND	161	162	GND	ground
data 48	DQ48	163	164	DQ52	data 52
data 49	DQ49	165	166	DQ53	data 53
ground	GND	167	168	GND	ground
data strobe 6 -	DQS6#	169	170	DQM6	data mask 6
data strobe 6	DQS6	171	172	GND	ground
ground	GND	173	174	DQ54	data 54
data 50	DQ50	175	176	DQ55	data 55
data 51	DQ51	177	178	GND	ground
ground	GND	179	180	DQ60	data 60
data 56	DQ56	181	182	DQ61	data 61
data 57	DQ57	183	184	GND	ground
ground	GND	185	186	DQS7#	data strobe 7 -
data mask 7	DQM7	187	188	DQS7	data strobe 7 +
ground	GND	189	190	GND	ground
data 58	DQ58	191	192	DQ62	data 62
data 59	DQ59	193	194	DQ63	data 63
ground	GND	195	196	GND	ground
SPD address 0	SA0	197	198	EVENT#	Event
3.3 volt supply	3.3V	199	200	SDA	SMBus data
SPD address 1	SA1	201	202	SCL	SMBus clock
termination current	VTT	203	204	VTT	termination current

3.5 PCI/104-Express Bus

Expansion modules for the PCI-Express bus can be connected to the board using the PCI/104-Express™ connector. This is a "type 2" connector with only those signals connected that are supported by the chipset. "Stacking Error" functionality is available. For specifics, please refer to the PCI/104-Express™ documentation (rev. 2.01).



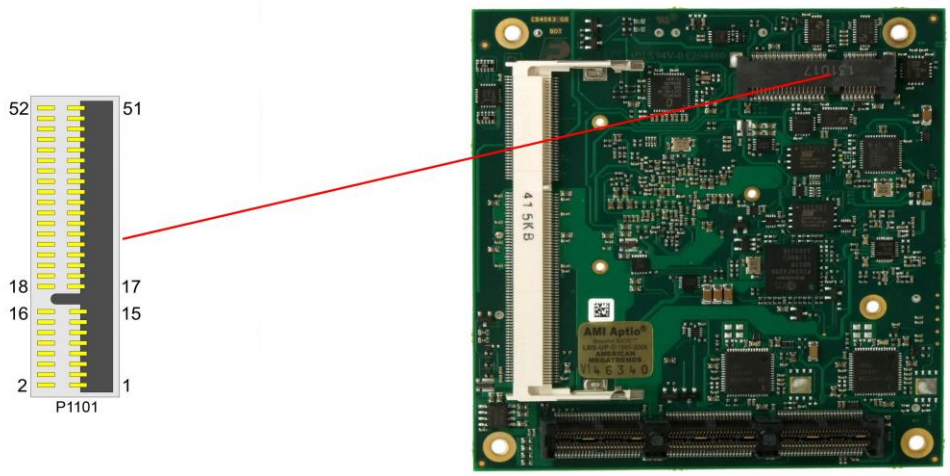
Pinout PCI104-Express connector (type 2):

Description	Name	Pin		Name	Description
USB Overcurrent	USBOC#	1	2	PERST#	PCIe reset
3.3V supply	3.3V	3	4	3.3V	3.3V supply
USB7 +	USB7	5	6	USB8	USB8 +
USB7 -	USB7#	7	8	USB8#	USB8 -
ground	GND	9	10	GND	ground
transmit lane 2 +	PEx1_1T	11	12	PEx1_0T	transmit lane 1 +
transmit lane 2 -	PEx1_1T#	13	14	PEx1_0T#	transmit lane 1 -
ground	GND	15	16	GND	ground
reserved	N/C	17	18	N/C	reserved
reserved	N/C	19	20	N/C	reserved
ground	GND	21	22	GND	ground
receive lane 2 +	PEx1_1R	23	24	PEx1_0R	receive lane 1 +
receive lane 2 -	PEx1_1R#	25	26	PEx1_0R#	receive lane 1 -
ground	GND	27	28	GND	ground
reserved	N/C	29	30	N/C	reserved
reserved	N/C	31	32	N/C	reserved
ground	GND	33	34	GND	ground
clock slot 2 +	PEx1_1C	35	36	PEx1_0C	clock slot 1 +
clock slot 2 -	PEx1_1C#	37	38	PEx1_0C#	clock slot 1 -
5V standby supply	SVCC	39	40	SVCC	5V standby supply
reserved	N/C	41	42	N/C	reserved
reserved	N/C	43	44	N/C	reserved
CPU direction	CPU_DIR	45	46	PWRGOOD	Powergood
SMBus data	SMBDAT	47	48	N/C	reserved
SMBus clock	SMBCLK	49	50	N/C	reserved
SMBus alert	SMBALERT	51	52	PSON#	PS ON
link reactivation	PEWAKE#	53	54	ST1-ERR#	stacking error 1

Description	Name	Pin		Name	Description
ground	GND	55	56	GND	ground
reserved	N/C	57	58	N/C	reserved
reserved	N/C	59	60	N/C	reserved
ground	GND	61	62	GND	ground
reserved	N/C	63	64	N/C	reserved
reserved	N/C	65	66	N/C	reserved
ground	GND	67	68	GND	ground
reserved	N/C	69	70	N/C	reserved
reserved	N/C	71	72	N/C	reserved
ground	GND	73	74	GND	ground
reserved	N/C	75	76	N/C	reserved
reserved	N/C	77	78	N/C	reserved
ground	GND	79	80	GND	ground
reserved	N/C	81	82	N/C	reserved
reserved	N/C	83	84	N/C	reserved
ground	GND	85	86	GND	ground
reserved	N/C	87	88	N/C	reserved
reserved	N/C	89	90	N/C	reserved
ground	GND	91	92	GND	ground
reserved	N/C	93	94	N/C	reserved
reserved	N/C	95	96	N/C	reserved
ground	GND	97	98	GND	ground
reserved	N/C	99	100	N/C	reserved
reserved	N/C	101	102	N/C	reserved
ground	GND	103	104	GND	ground
stacking error 2	ST2-ERR#	105	106	LPCCLK	PCI clock
ground	GND	107	108	GND	ground
reserved	N/C	109	110	N/C	reserved
reserved	N/C	111	112	N/C	reserved
ground	GND	113	114	GND	ground
reserved	N/C	115	116	N/C	reserved
reserved	N/C	117	118	N/C	reserved
ground	GND	119	120	GND	ground
reserved	N/C	121	122	N/C	reserved
reserved	N/C	123	124	N/C	reserved
ground	GND	125	126	GND	ground
reserved	N/C	127	128	N/C	reserved
reserved	N/C	129	130	N/C	reserved
ground	GND	131	132	GND	ground
reserved	N/C	133	134	N/C	reserved
reserved	N/C	135	136	N/C	reserved
ground	GND	137	138	GND	ground
reserved	N/C	139	140	N/C	reserved
reserved	N/C	141	142	N/C	reserved
ground	GND	143	144	GND	ground
LPC address/data 0	LPCAD0	145	146	LPCDRQ#	LPC DMA request
LPC address/data 1	LPCAD1	147	148	LPCSIRQ#	LPC serial IRQ
ground	GND	149	150	GND	ground
LPC address/data 2	LPCAD2	151	152	LPCFRAME#	LPC frame
LPC address/data 3	LPCAD3	153	154	RTCBATT	battery 3.3V
ground	GND	155	156	GND	ground
5V supply	VCC	C1			
5V supply	VCC	C2			
12V supply	12V	C3			

3.6 PCI-Express Mini Card with mSATA

As a soldering option, the ADLE3800PC can be equipped with PCI-Express Mini Card connector to interface with approved peripherals, such as Wi-FI and storage cards via miniPCIe. In addition the PCIe Mini Card connector supports storage modules via mSATA.

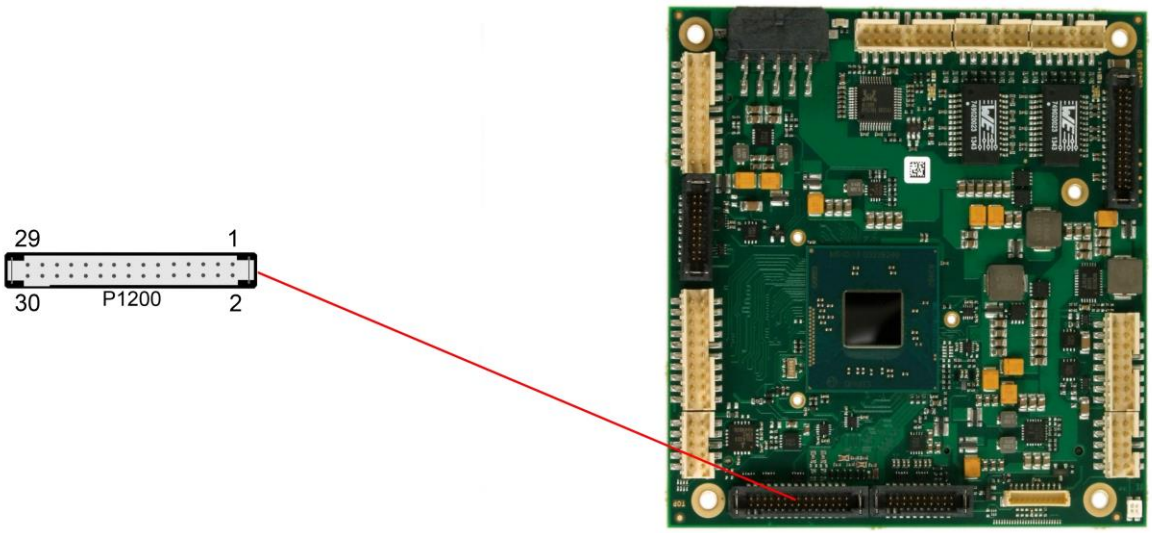


Description	Name	Pin		Name	Description
PCIe Wake	PEWAKE#	1	2	S3.3V	3.3V standby supply
reserved	N/C	3	4	MPCIeEN	configuration mPCIe#
reserved	N/C	5	6	1.5V	1.5V supply
clock enable	PEMCLKen#	7	8	N/C	reserved
ground	GND	9	10	N/C	reserved
clock -	PECLKMC#	11	12	N/C	reserved
clock +	PECLKMC	13	14	N/C	reserved
ground	GND	15	16	N/C	reserved
reserved	N/C	17	18	GND	ground
reserved	N/C	19	20	WDISABLE#	wireless disable
ground	GND	21	22	PERST#	PCIe reset
PCIe receive -	PERMC#	23	24	S3.3V	3.3V standby supply
PCIe receive +	PERMC	25	26	GND	ground
ground	GND	27	28	1.5V	1.5V supply
ground	GND	29	30	SMB-CLK	SM-Bus clock
PCIe transmit -	PETMC#	31	32	SMB-DAT	SM-Bus data
PCIe transmit +	PETMC	33	34	GND	ground
ground	GND	35	36	USBMC#	USB -
ground	GND	37	38	USBMC	USB +
3.3V supply	S3.3V	39	40	GND	ground
3.3V supply	S3.3V	41	42	N/C	reserved
ground	GND	43	44	N/C	reserved
reserved	N/C	45	46	N/C	reserved
reserved	N/C	47	48	1.5V	1.5V supply
reserved	N/C	49	50	GND	ground
configuration MSATA	MSATA#	51	52	S3.3V	3.3V standby supply

3.7 DVI/HDMI/VGA

The ADLE3800PC provides a DVI/HDMI/VGA interface which is realized as a 2x15pin header (TFM-115-02-S-D-WT, mating connector e.g. SFM-115-02-S-D-xx).

NOTICE **For parallel use of DVI- and CRT signals a custom cable design will be required. Please ask your distributor for recommended products.**

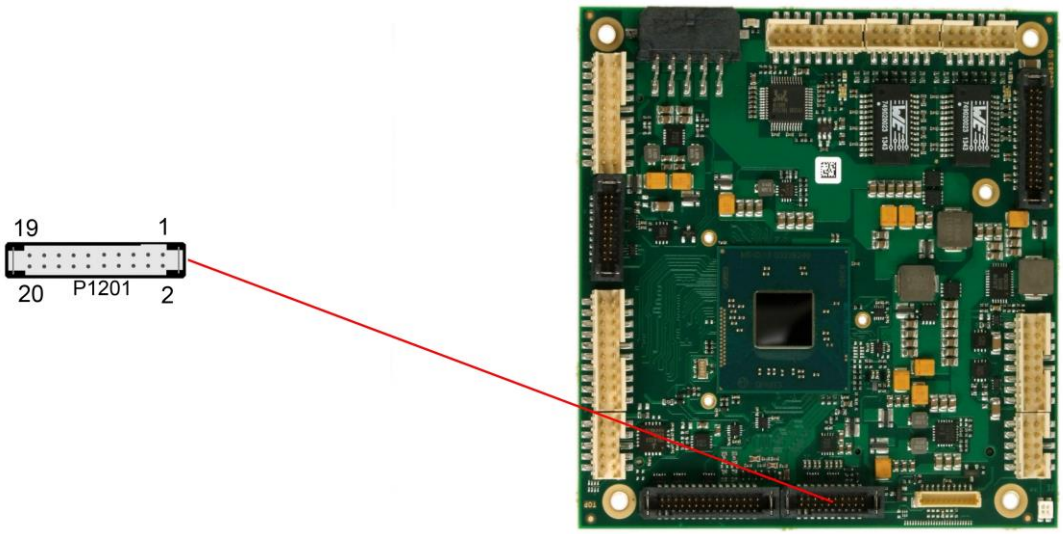


Pinout 2x15 connector DVI/HDMI/VGA:

Description	Name	Pin		Name	Description
Red	Red	1	2	GND	ground
Green	Green	3	4	CS-DDDA	DDC data
Blue	Blue	5	6	CS-DDCK	DDC clock
CS-VSYNC (Vertical synchronization)	CS-VSYNC	7	8	GND	ground
CS-HSYNC (Horizontal synchronization)	CS-HSYNC	9	10	GND	ground
5 volt supply	VCC	11	12	GND	ground
Hot Plug Detect	HPD	13	14	N/A	reserved
DDC clock	DDCCLK	15	16	DDCDAT	DDC data +
5 volt supply	VCC	17	18	GND	ground
ground	GND	19	20	TMDSCLK#	TMDS clock -
TMDS data -	TMDS#0	21	22	TMDSCLK	TMDS clock
TMDS data +	TMDS0	23	24	GND	ground
ground	GND	25	26	TMDS#1	TMDS data -
TMDS data -	TMDS#2	27	28	TMDS1	TMDS data +
TMDS data +	TMDS2	29	30	GND	ground

3.8 DisplayPort

The ADLE3800PC offers a DisplayPort interface which is realized as 2x10pin connector (TFM-110-02-S-D-WT, mating connector SFM-110-02-S-D-xx). This interface can also be operated in HDMI/DVI mode. To achieve this, pin 2 must be connected to 3.3V (e.g. pin 5).

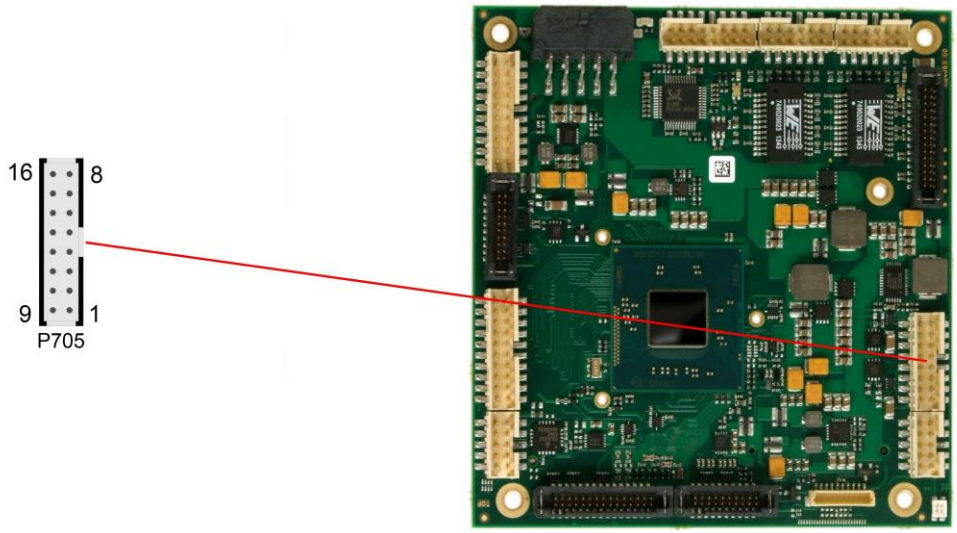


Pinout 2x10pin DisplayPort connector:

Description	Name	Pin		Name	Description
Hotplug detect	DPHPD	1	2	HDMIEN	HDMI enable
DP Aux + / EDID Clock	DPAUX/DDCK	3	4	DPAUX#/DDDA	DP Aux - / EDID data
3.3V supply	3.3V	5	6	GND	Ground
Ground	GND	7	8	DPL3#/TMDSCLK#	DP Lane 3 - / HDMI Clock -
DP Lane 2 - / HDMI 0 -	DPL2#/TMDS0#	9	10	DPL3/TMDSCLK	DP Lane 3 + / HDMI Clock +
DP Lane 2 + / HDMI 0 +	DPL2/TMDS0	11	12	GND	Ground
Ground	GND	13	14	DPL1#/TMDS1#	DP Lane 1 - / HDMI 1 -
DP Lane 0 - / HDMI 2 -	DPL0#/TMDS2#	15	16	DPL1/TMDS1	DP Lane 1 + / HDMI 1 +
DP Lane 0 + / HDMI 2 +	DPL0/TMDS2	17	18	GND	Ground
Reserved	N/C	19	20	GND	Ground

3.9 USB 2.0

USB channels 2, 3, 5 and 6 are provided via two 2x8pin connectors (FCI 98424-G52-16LF, mating connector e.g. FCI 90311-016LF).
All USB-channels support USB 2.0. You may note that the setting of USB keyboard or USB mouse support in the BIOS-setup is only necessary and advisable, if the OS offers no USB-support. BIOS-setup can be changed with a USB keyboard without enabling USB keyboard support. Running a USB supporting OS (such as Microsoft® Windows®) with these features enabled may lead to significant performance or functionality limitations.
Every USB interface provides up to 500 mA current and is protected by an electronically resettable fuse.

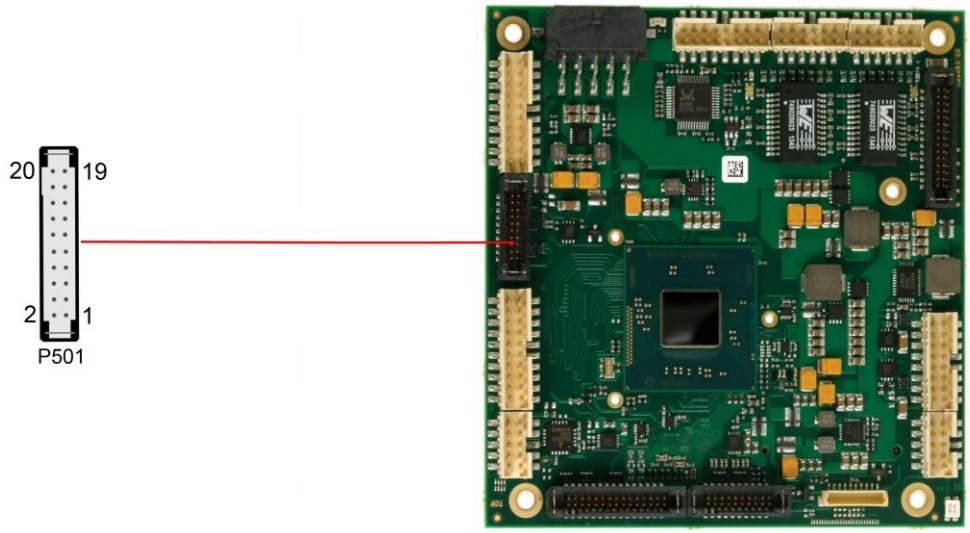


Pinout USB 2, 3, 5 and 6:

Description	Name	Pin		Name	Description
5V for USB2	USB2 VCC	1	9	USB3VCC	5V for USB3
USB- data lane 2	USB2#	2	10	USB3#	USB- data lane 3
USB+ data lane 2	USB2	3	11	USB3	USB+ data lane 3
ground	GND	4	12	GND	ground
ground	GND	5	13	GND	ground
USB+ data lane 5	USB5	6	14	USB6	USB+ data lane 6
USB- data lane 5	USB5#	7	15	USB6#	USB- data lane 6
5V for USB5	USB5VCC	8	16	USB6VCC	5V for USB6

3.10 USB 3.0

USB channel 1 is provided via a two 2x10 pin connector (TFM-110-02-S-D-WT, mating connector e.g. SFM-110-02-S-D-xx).
The USB-channel supports USB 3.0. You may note that the setting of USB keyboard or USB mouse support in the BIOS-setup is only necessary and advisable, if the OS offers no USB-support. BIOS-setup can be changed with a USB keyboard without enabling USB keyboard support. Running a USB supporting OS (such as Microsoft® Windows®) with these features enabled may lead to significant performance or functionality limitations.
Every USB interface provides up to 900 mA current and is protected by an electronically resettable fuse.

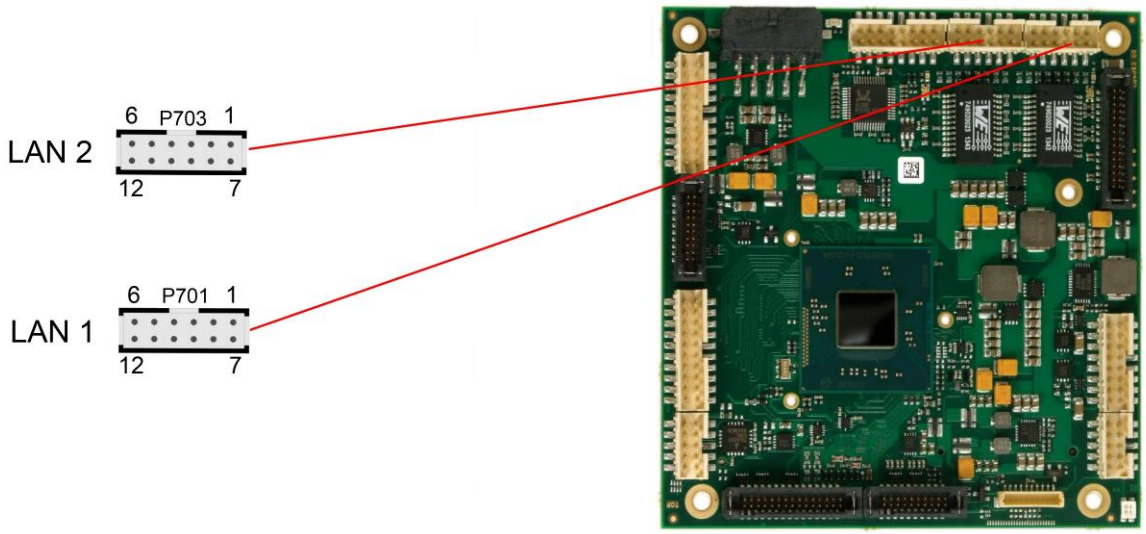


Pinout USB3.0 connector for port X:

Description	Name	Pin		Name	Description
reserved	N/C	1	2	N/C	reserved
USB x data +	USB3-x.D+	3	4	N/C	reserved
USB x data -	USB3-x.D-	5	6	GND	ground
ground	GND	7	8	N/C	reserved
USB x transmit +	SSTXx+	9	10	N/C	reserved
USB x transmit -	SSTXx-	11	12	GND	ground
ground	GND	13	14	N/C	reserved
USB x receive +	SSRX+	15	16	N/C	reserved
USB x receive -	SSRX-	17	18	N/C	reserved
power supply	VCC	19	20	N/C	reserved

3.11 LAN

Both LAN interfaces are provided via a 2x6pin connector (FCI 98424-G52-12LF, mating connector e.g. FCI 90311-012LF). The interfaces support 10BaseT, 100BaseT, and 1000BaseT compatible network components with automatic bandwidth selection. Additional outputs are provided for status LEDs. Auto-negotiate and auto-cross functionality is available, PXE and RPL are available on request.

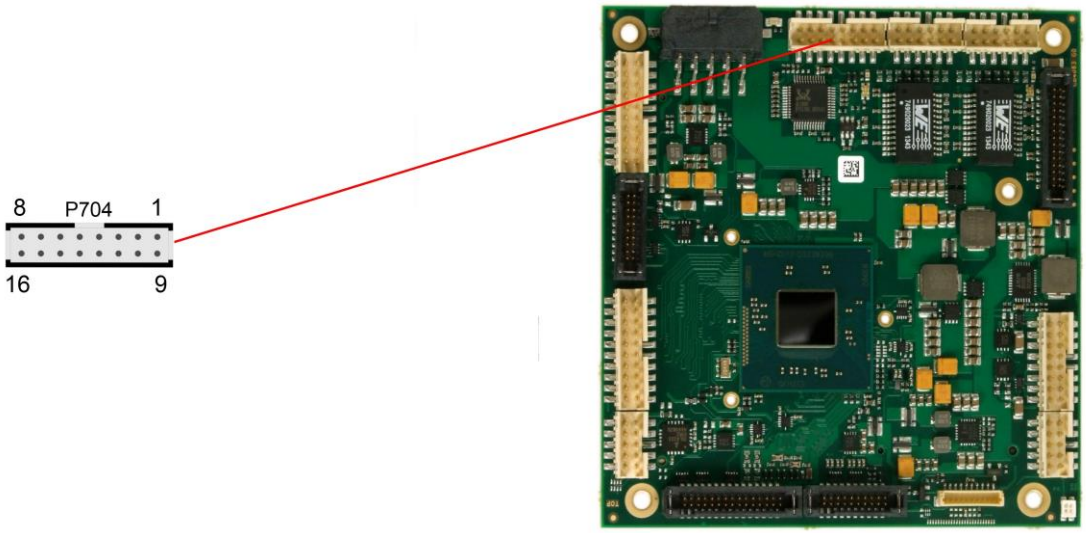


Pinout LAN interface:

Description	Name	Pin		Name	Description
LAN activity	LINKACT	1	7	SPEED1000	LAN speed 1000Mbit
LAN channel 1 plus	LAN1	2	8	LAN0	LAN channel 0 plus
LAN channel 1 minus	LAN1#	3	9	LAN0#	LAN channel 0 minus
LAN channel 3 plus	LAN3	4	10	LAN2	LAN channel 2 plus
LAN channel 3 minus	LAN3#	5	11	LAN2#	LAN channel 2 minus
LAN speed 100Mbit	SPEED100	6	12	3.3V	3.3 volt supply

3.12 Audio

The ADLE3800PC's audio functions are provided via a 2x8pin connector (FCI 98424-G52-16LF, mating connector e.g. FCI 90311-016LF). This interface provides eight output channels for full 7.1 sound output. Two microphone inputs and two AUX inputs are also available.
The signals "SPDIFI" and "SPDIFO" provide digital input and output. If a transformation to a coaxial or optical connector is necessary this must be performed externally.

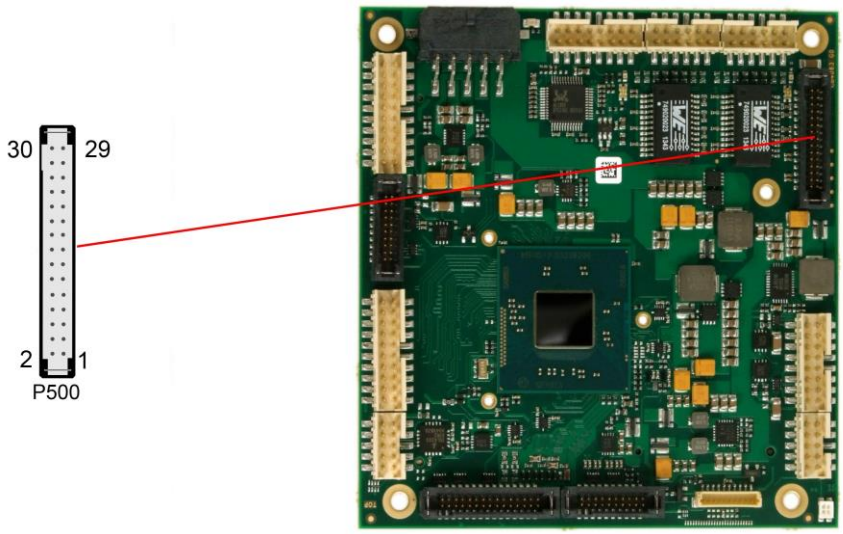


Pinout Audio:

Description	Name	Pin		Name	Description
digital output SPDIF	SPDIFO	1	9	3.3V	3.3 volt supply
digital input SPDIF	SPDIFI	2	10	S_AGND	analog ground sound
sound output right	LOUT_R	3	11	LOUT_L	sound output left
AUX input right	AUXA_R	4	12	AUXA_L	AUX input left
microphone input 1	MIC1	5	13	MIC2	microphone input 2
surround out right	SOUT_R	6	14	SOUT_L	surround out left
center output	CENOUT	7	15	LFEOUT	LFE output
side surround out right	SSOUT_R	8	16	SSOUT_L	side surround out left

3.13 SATA Interfaces

The ADLE3800PC provides two SATA interfaces allowing transfer rates of up to 3 Gbit per second.
These interfaces are made available via two 7 pin connectors.
The required settings are made in the BIOS setup.

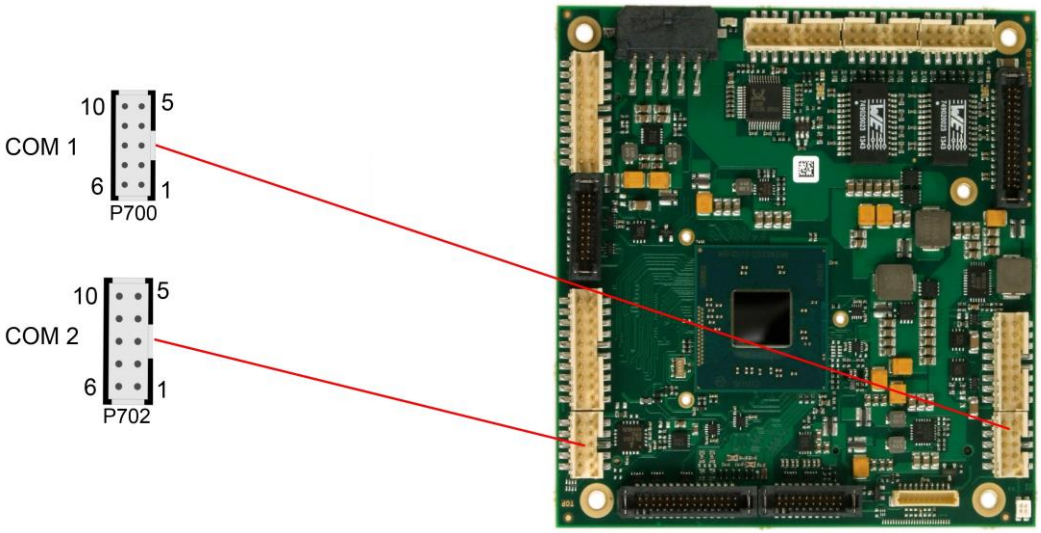


Pinout SATA 2x15:

Description	Name	Pin	Pin	Name	Description
ground	GND	1	2	GND	ground
SATA1 transmit +	SATA1TX	3	4	SATA2TX	SATA2 transmit +
SATA1 transmit -	SATA1TX#	5	6	SATA2TX#	SATA2 transmit -
ground	GND	7	8	GND	ground
SATA1 receive -	SATA1RX#	9	10	SATA2RX#	SATA2 receive -
SATA1 transmit +	SATA1RX	11	12	SATA2RX	SATA2 receive +
ground	GND	13	14	GND	ground
reserved	N/C	15	16	N/C	reserved
ground	GND	17	18	GND	ground
reserved	N/C	19	20	N/C	reserved
reserved	N/C	21	22	N/C	reserved
ground	GND	23	24	GND	ground
reserved	N/C	25	26	N/C	reserved
reserved	N/C	27	28	N/C	reserved
ground	GND	29	30	GND	ground

3.14 COM1 and COM2

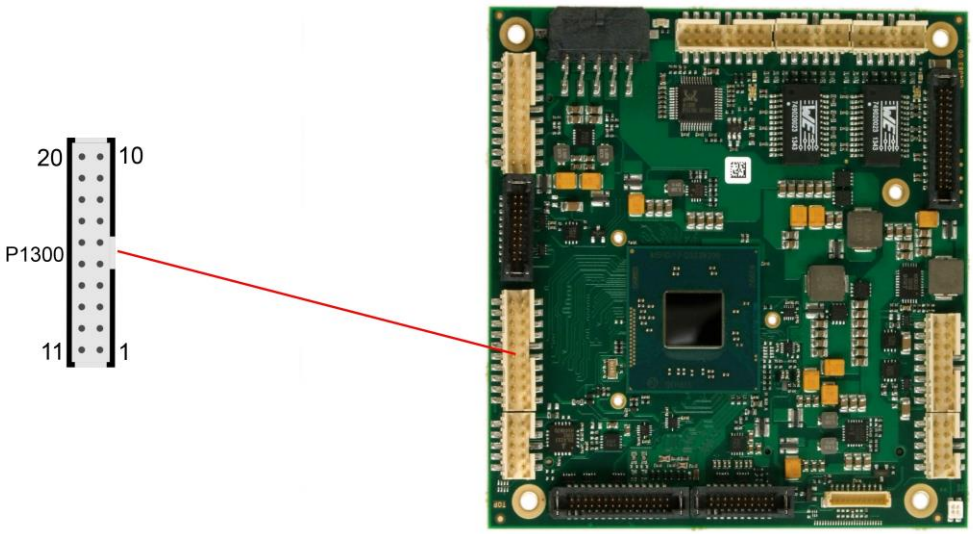
The serial interfaces COM1 and COM2 are provided via a 2x5pin connector (FCI 98424-G52-10LF, mating connector e.g. FCI 90311-010LF).



Description	Name	Pin		Name	Description
reserved	N/C	1	6	N/C	reserved
receive data	RXD	2	7	RTS	request to send
transmit data	TXD	3	8	CTS	clear to send
reserved	N/C	4	9	N/C	reserved
ground	GND	5	10	SVCC	5V standby supply

3.15 GPIO

The General Purpose Input/Output interface is made available through a 2x10 pin connector (FCI 98424-G52-20LF, mating connector e.g. FCI 90311-020LF). To make use of this interface the SIO unit must be programmed accordingly. Please refer to your sales representative for information on available software support.

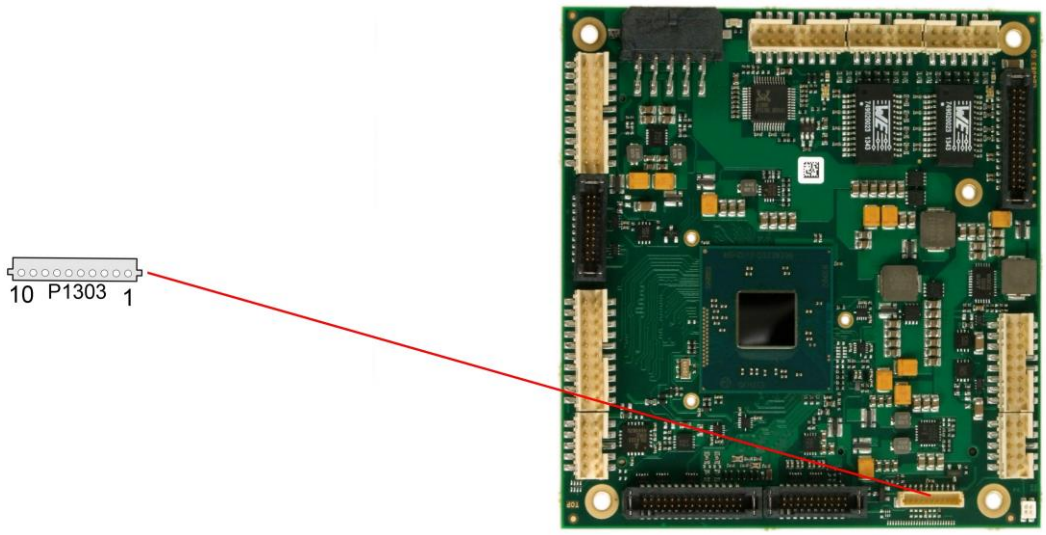


Pinout GPIO connector:

Description	Name	Pin		Name	Description
ground	GND	1	11	3.3V	3.3V supply
GP Input/Output A00	GPIOA.0	2	12	GPIOB.0	GP Input/Output B00
GP Input/Output A01	GPIOA.1	3	13	GPIOB.1	GP Input/Output B01
GP Input/Output A02	GPIOA.2	4	14	GPIOB.2	GP Input/Output B02
GP Input/Output A03	GPIOA.3	5	15	GPIOB.3	GP Input/Output B03
GP Input/Output A04	GPIOA.4	6	16	GPIOB.4	GP Input/Output B04
GP Input/Output A05	GPIOA.5	7	17	GPIOB.5	GP Input/Output B05
GP Input/Output A06	GPIOA.6	8	18	GPIOB.6	GP Input/Output B06
GP Input/Output A07	GPIOA.7	9	19	GPIOB.7	GP Input/Output B07
3.3V supply	3.3V	10	20	GND	ground

3.16 Monitoring Functions

Additional monitoring functions, such as the status of the fan or of other devices connected over SM-Bus (e. g. temperature sensor), are accessible via an 10 pin connector (JST BM10B-SRSS-TB, mating connector: SHR-10V-S(-B)).

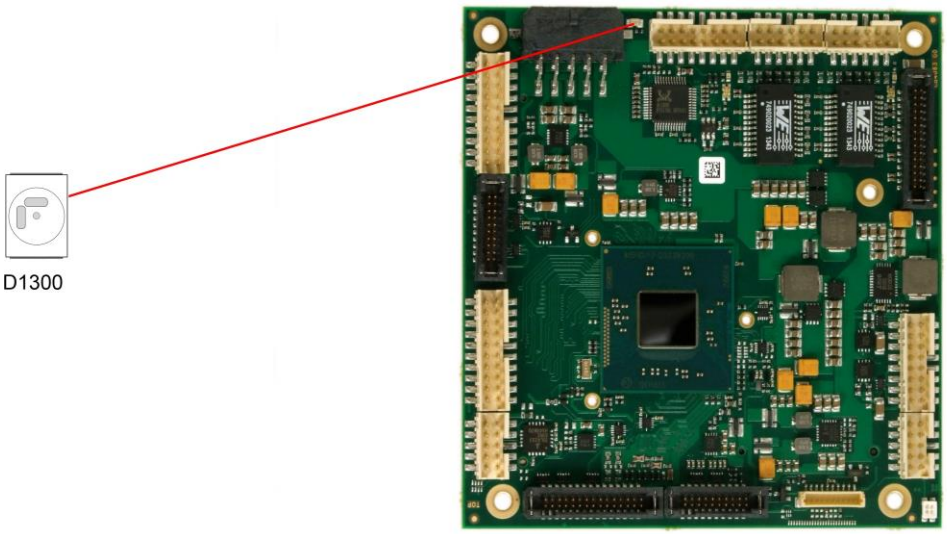


Pin	Name	Description
1	3.3V	3.3V supply
2	CS-SMB-CLK	SMBus clock
3	CS-SMB-DAT	SMBus data
4	GND	ground
5	VCC	5V supply
6	FANPWM	FAN control
7	TACH	FAN monitoring
8	N/C	reserved
9	N/C	reserved
10	N/C	reserved

4 State LEDs

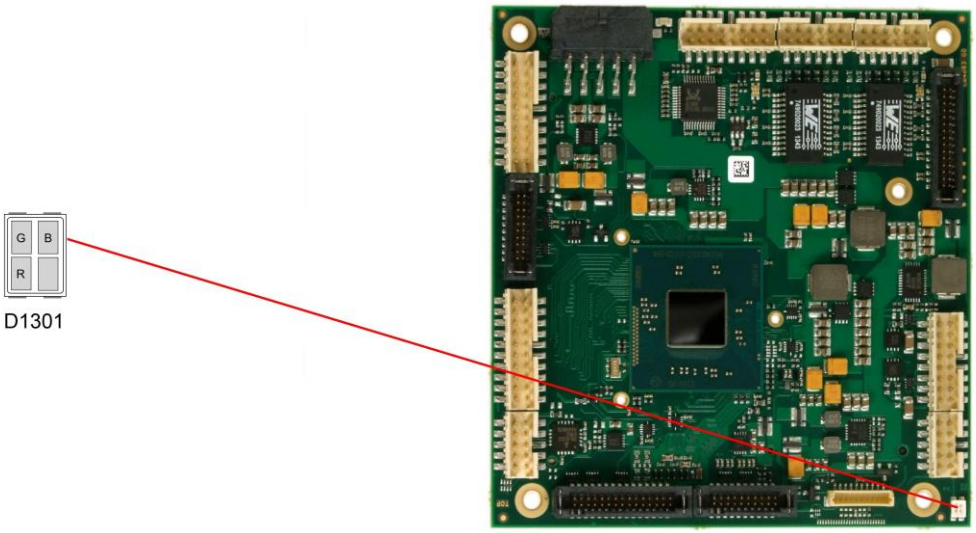
4.1 HD LED

Harddisk activity is signalled by a dedicated LED.



4.2 RGB LED

The ADLE3800PC has a tricolor LED, which signals status messages by using different colors and flash intervals.



Status Codes RGB LED:

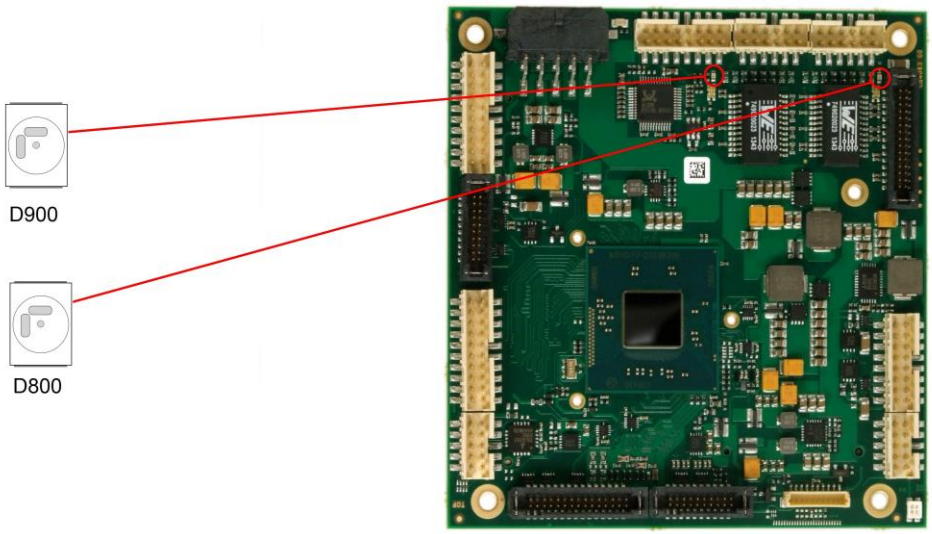
Color	Interval		Meaning
non	solid		Invalid system state
White	once		Powerfail
Cyan	solid		Reserved
Magenta	solid		if present: SUPS active
Blue	solid		Reserved
Yellow	solid		S5 state
Green	solid		S0 state
Red	solid		Reset/Start
Green/Yellow	flashing		Bootloader operates normal
Red/Yellow	flashing		Bootloader is being started (starting sequence still running)
Yellow	flashing (6s)		S4 state
Yellow	flashing (3s)		S3 state
Magenta	flashing (0,5s)		if present: SUPS test of capacity

NOTICE

If the board appears to be in Reset (Red LED lit) then this could also indicate a PCI104-Express "stacking error". Such an error could occur when the stack contains a peripheral card which has the wrong type of connector (PCI104-Express Type 1 instead of Type 2 or vice versa).

4.3 LAN Activity LED

The ADLE3800PC has two unicolor LEDs, which signal LAN activity of the current LAN port.

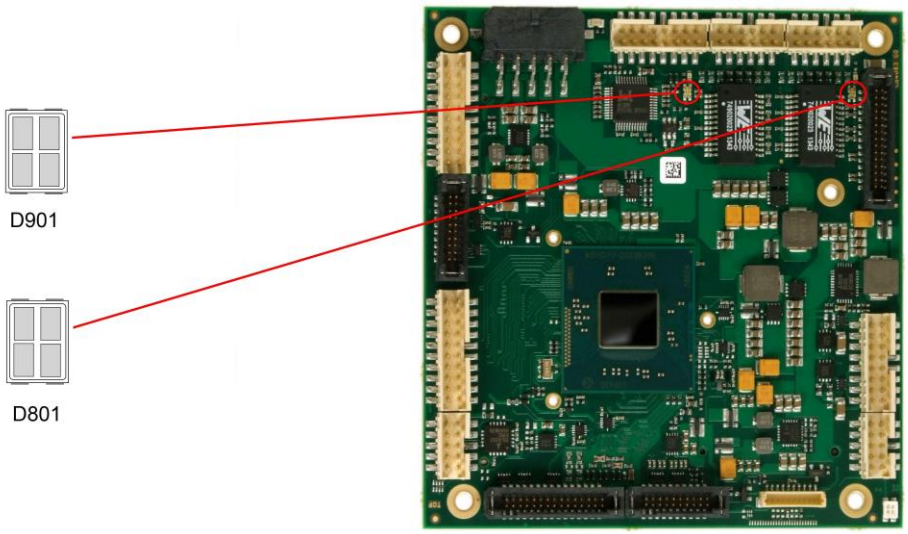


LAN link activity:

Color	Interval		Meaning
none	solid		no LAN activity
green	flashing		LAN active

4.4 LAN Speed LED

Two bicolor LEDs show the links speed of the current LAN port.



LAN speed:

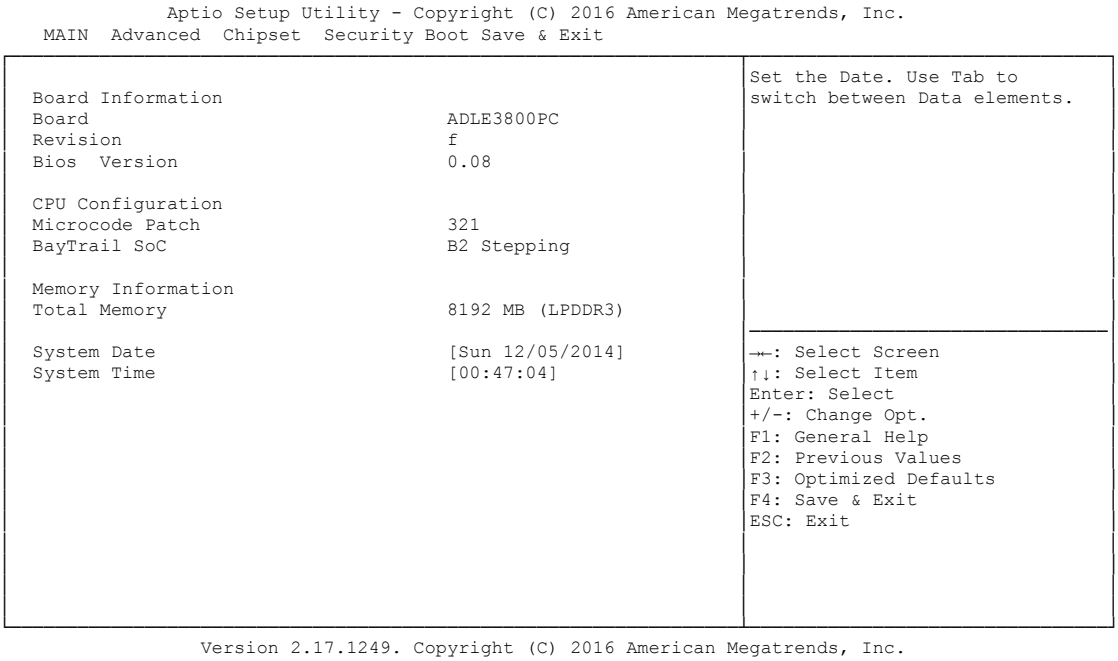
Color	Interval		Meaning
none	solid		10 Mbit/s
orange	solid		100 Mbit/s
green	solid		1000 Mbit/s

5 BIOS Settings

5.1 General Remarks

In each setup page, standard values for all setup entries can be loaded. Previously saved settings are loaded by pressing F2 and factory defaults are loaded with F3. Both F2 and F3, and also F4 ("Save & Exit") always affect the whole set of setup entries.
Setup entries starting with a „►" sign represent submenus. Navigation between entries is done using the arrow keys on the keyboard, with the <Enter> key being used to select an entry, which either opens up a dialog box or opens a whole new submenu of setup entries.
Each setup entry has a short help text associated with it. This is displayed in the upper right hand corner of the screen.

5.2 Main



- ✓ **Board**
  Options: none

- ✓ **Revision**
  Options: none

- ✓ **Bios Version**
  Options: none

- ✓ **Microcode Patch**
  Options: none

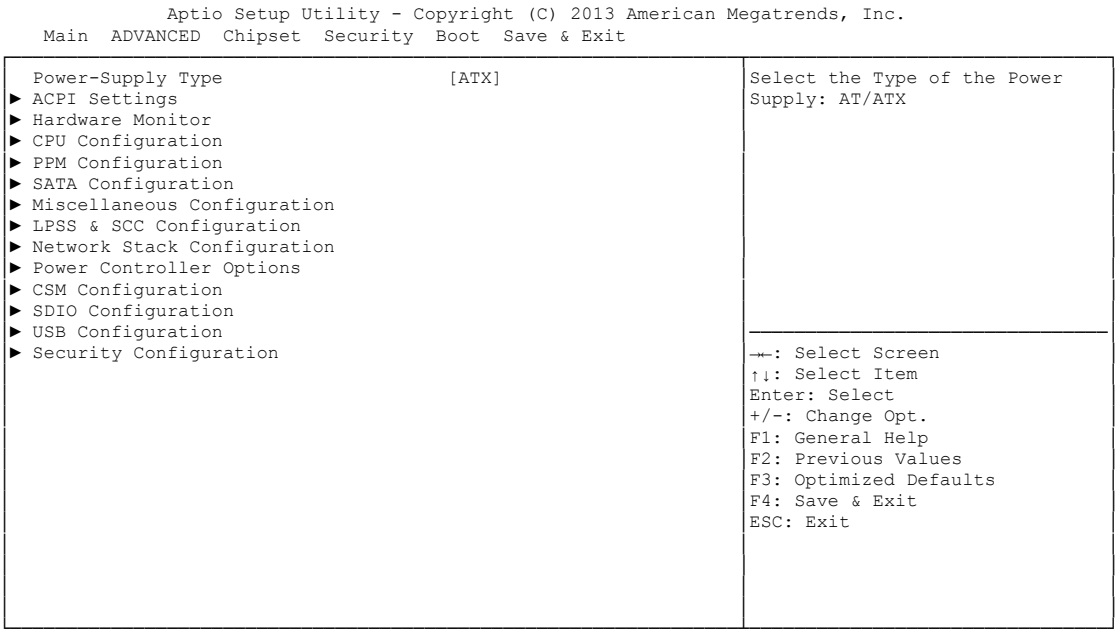
- ✓ **BayTrail SoC**
  Options: none

- ✓ **Total Memory**
  Options: none

- ✓ **System Date**
  Options: The system date can be adjusted here.

- ✓ **System Time**
  Options: The system time can be adjusted here.

5.3 Advanced



- ✓ **PCI RT32 Service**
  Options: Enabled / Disabled

- ✓ **ACPI Settings**
  Sub menu: see "ACPI Settings" (page 40)

- ✓ **H/W Monitor**
  Sub menu: see "H/W Monitor" (page 41)

- ✓ **CPU Configuration**
  Sub menu: see "CPU Configuration" (page 43)

- ✓ **PPM Configuration**
  Sub menu: see "PPM Configuration" (page 47)

- ✓ **SATA Configuration**
  Sub menu: see "SATA Configuration" (page 48)

- ✓ **Miscellaneous Configuration**
  Sub menu: see "Miscellaneous Configuration" (page 49)

- ✓ **LPSS & SCC Configuration**
  Sub menu: see "LPSS & SCC Configuration" (page 50)

- ✓ **Network Stack Configuration**
  Sub menu: see "Network Stack" (page 52)

- ✓ **Power Controller Options**
  Sub menu: see "Power Controller Options" (page 53)

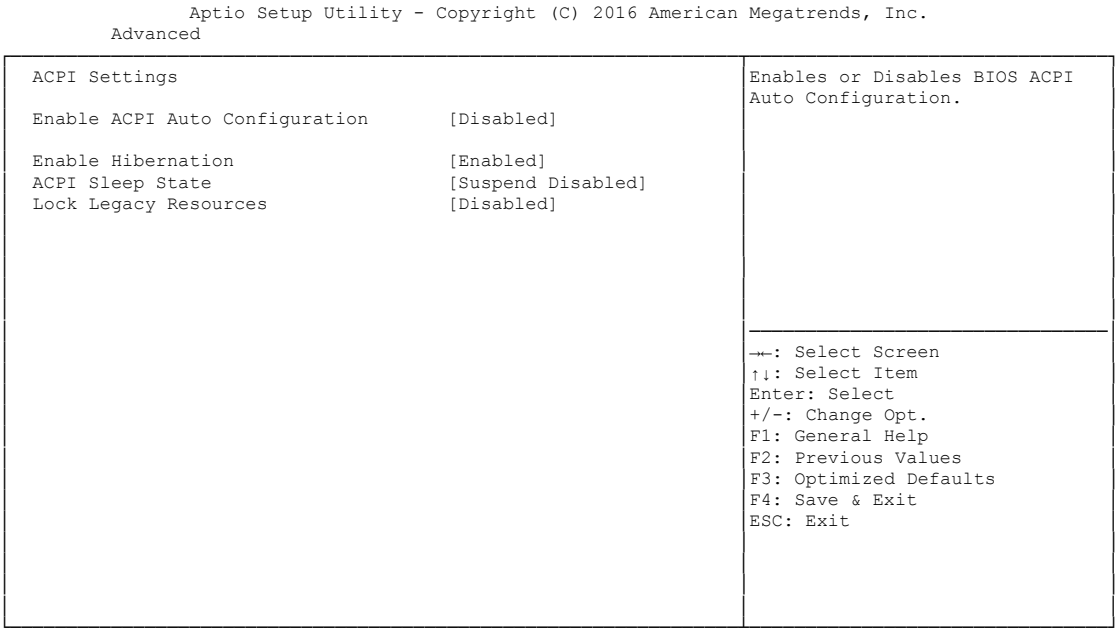
- ✓ **CSM Configuration**
  Sub menu: see "CSM Configuration" (page 55)

- ✓ **SDIO Configuration**
  Sub menu: see "SDIO Configuration" (page 56)

- ✓ **USB Configuration**
  Sub menu: see "USB Configuration" (page 57)

- ✓ **Security Configuration**
  Sub menu: see "Security Configuration" (page 58)

5.3.1 ACPI Settings



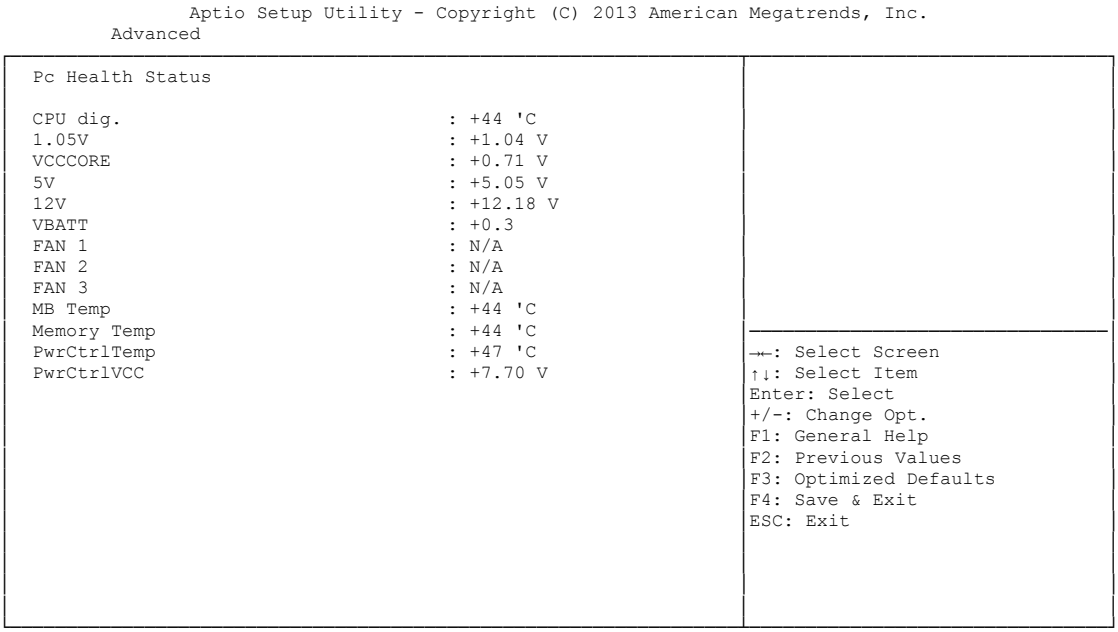
- ✓ **Enable ACPI Auto Configuration**
  Options: Enabled / Disabled

- ✓ **Enable Hibernation**
  Options: Enabled / Disabled

- ✓ **ACPI Sleep State**
  Options: Suspend Disabled / S1 (CPU Stop Clock)

- ✓ **Lock Legacy Resources**
  Options: Enabled / Disabled

5.3.2 H/W Monitor



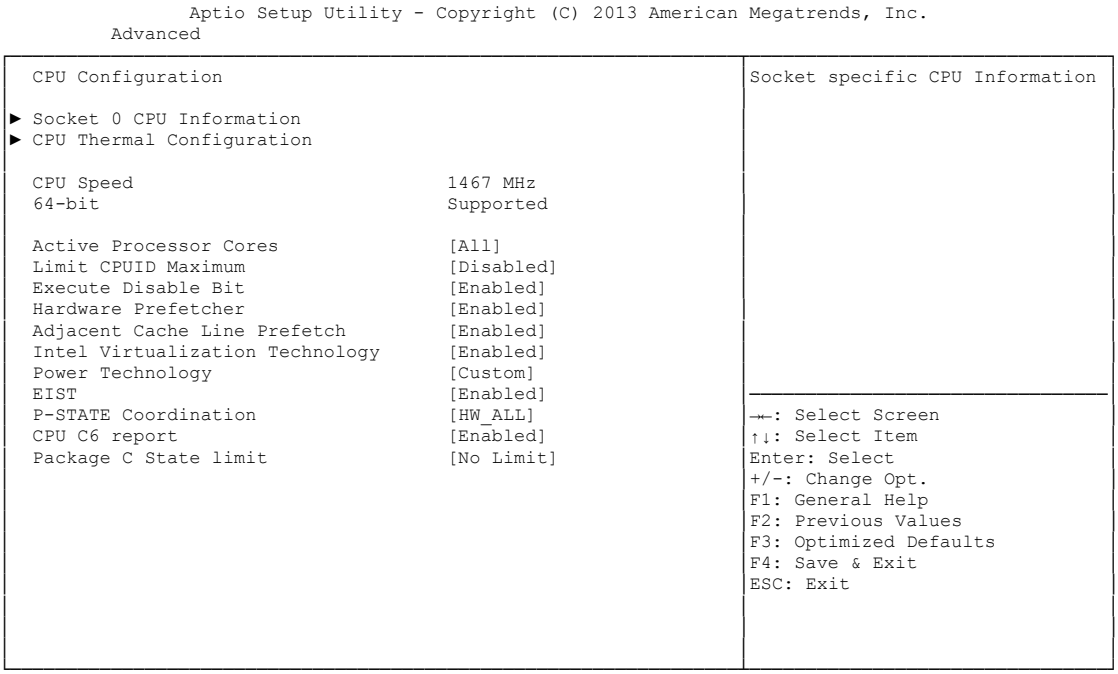
- ✓ **CPU dig.**
  Options: none
- ✓ **1.05V**
  Options: none
- ✓ **VCCCORE**
  Options: none
- ✓ **5V**
  Options: none
- ✓ **12V**
  Options: none
- ✓ **AUX FAN Speed**
  Options: none
- ✓ **VBATT**
  Options: none
- ✓ **FAN 1**
  Options: none
- ✓ **FAN 2**
  Options: none
- ✓ **FAN 3**
  Options: none
- ✓ **MB Temp**
  Options: none

- ✓ **Memory Temp**
  Options: none

- ✓ **PwrCtrlTemp**
  Options: none

- ✓ **PwrCtrlVCC**
  Options: none

5.3.3 CPU Configuration



- ✓ **Socket 0 CPU Information**
  Sub menu: see "Socket CPU Information" (page 45)

- ✓ **CPU Thermal Configuration**
  Sub menu: see "CPU Thermal Configuration" (page 46)

- ✓ **CPU Speed**
  Options: none

- ✓ **64-bit**
  Options: none

- ✓ **Active Processor Cores**
  Options: All / One / Two / Three

- ✓ **Limit CPUID Maximum**
  Options: Enabled / Disabled

- ✓ **Execute Disable Bit**
  Options: Enabled / Disabled

- ✓ **Hardware Prefetcher**
  Options: Disabled / Enabled

- ✓ **Adjacent Cache Line Prefetch**
  Options: Disabled / Enabled

- ✓ **Intel Virtualization Technology**
  Options: Enabled / Disabled

- ✓ **Power Technology**
  Options: Disable / Energy Efficient / Custom

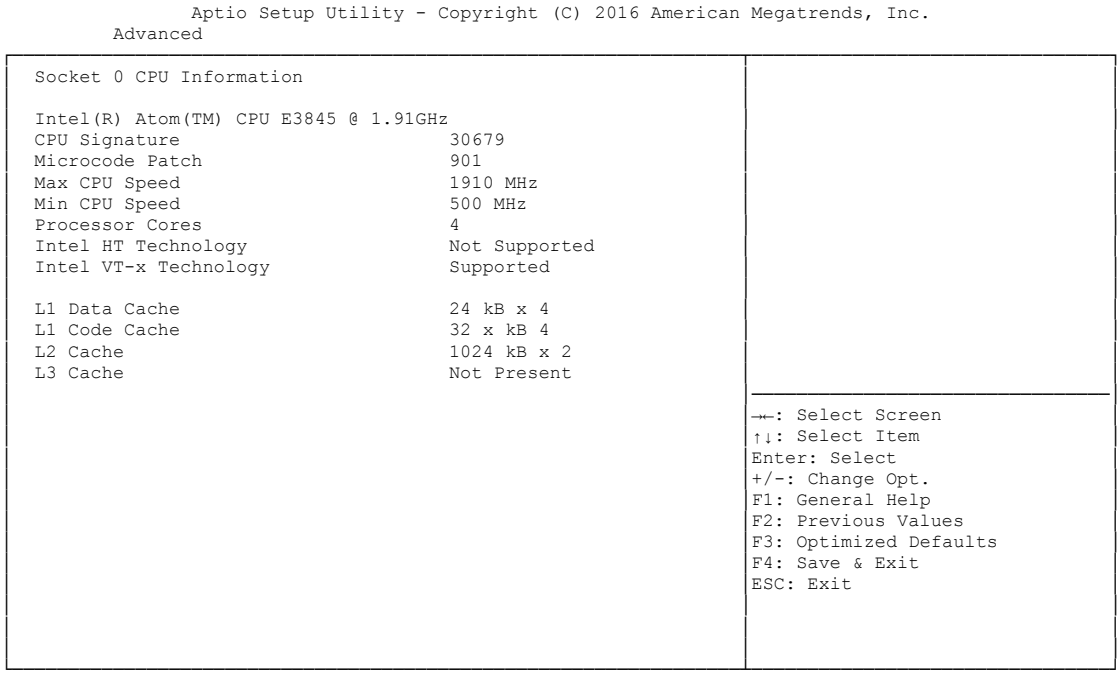
- ✓ **EIST**
  Options: Disabled / Enabled

- ✓ **P-STATE Coordination**
  Options: HW_ALL / SW_ALL / SW_ANY

- ✓ **C6 report**
  Options: Disabled / Enabled

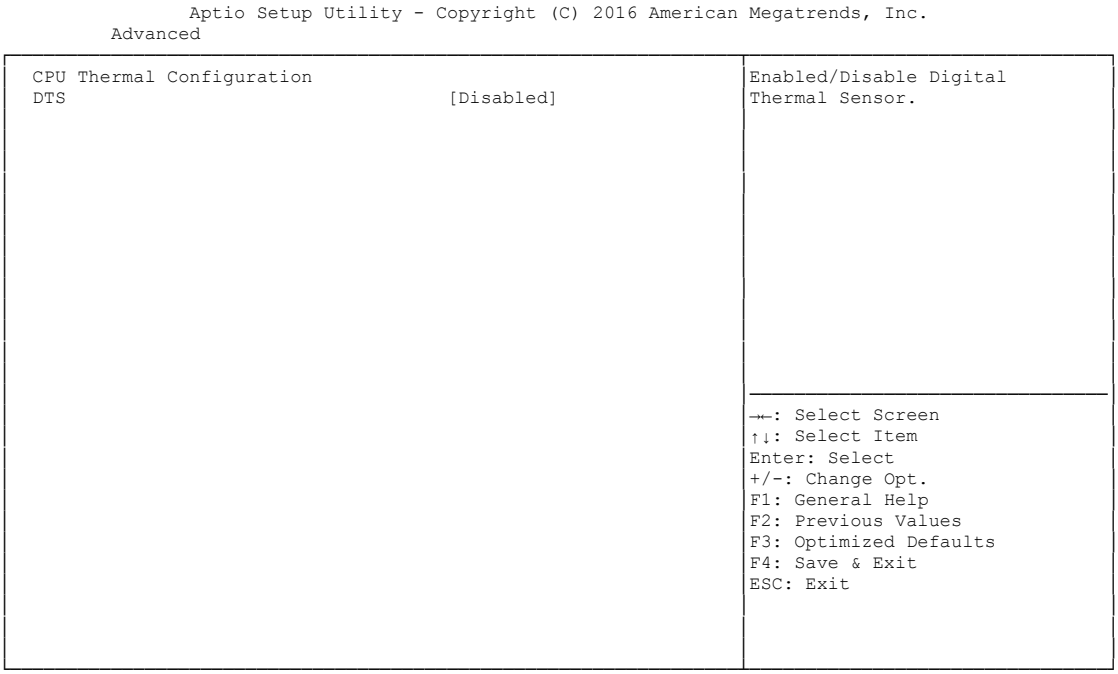
- ✓ **Package C State limit**
  Options: C0 / C1 / C3 / C6 / C7 / No Limit

5.3.3.1 Socket CPU Information



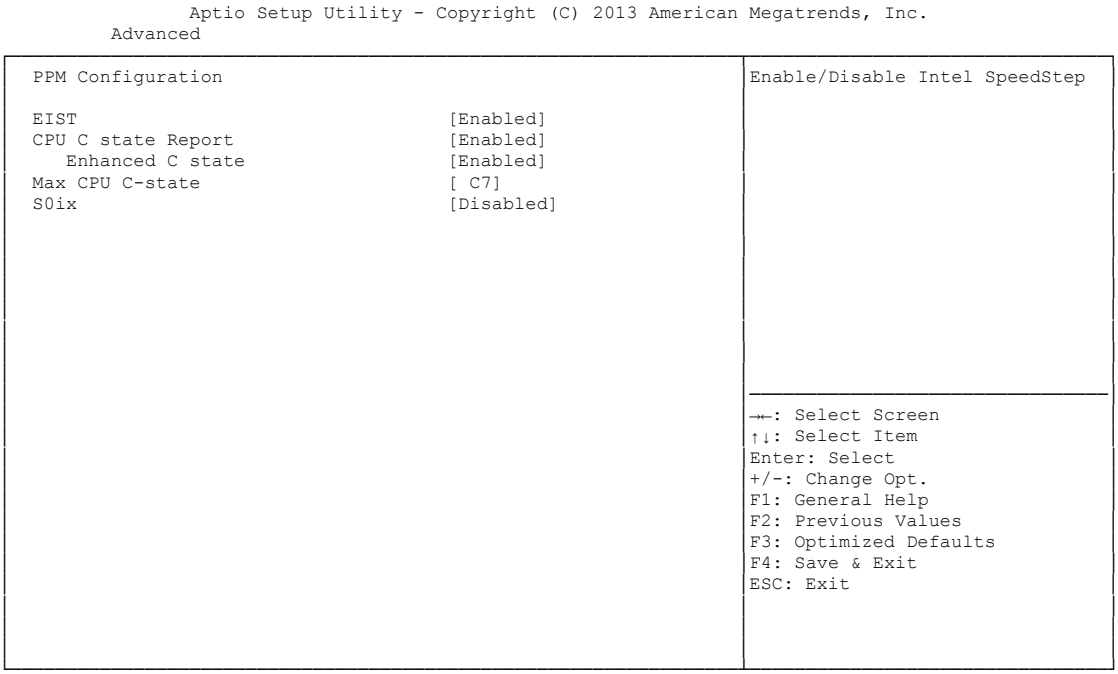
- ✓ **CPU Signature**
  Options: none
- ✓ **Microcode Patch**
  Options: none
- ✓ **Max CPU Speed**
  Options: none
- ✓ **Min CPU Speed**
  Options: none
- ✓ **Processor Cores**
  Options: none
- ✓ **Intel HT Technology**
  Options: none
- ✓ **Intel VT-x Technology**
  Options: none
- ✓ **L1 Data Cache**
  Options: none
- ✓ **L1 Code Cache**
  Options: none
- ✓ **L2 Cache**
  Options: none
- ✓ **L3 Cache**
  Options: none

5.3.3.2 CPU Thermal Configuration



✓ **DTS**
Options: Enabled / Disabled

5.3.4 PPM Configuration



- ✓ **EIST**
  Options: Disabled / Enabled

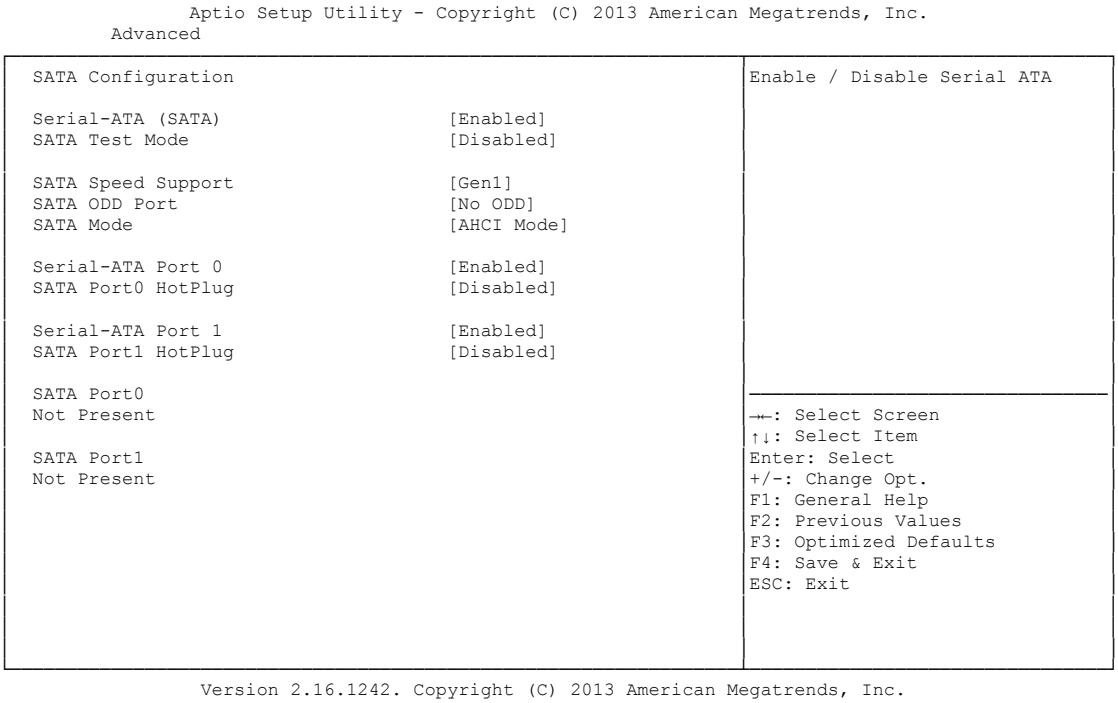
- ✓ **CPU C state Report**
  Options: Disabled / Enabled

- ✓ **Enhanced C state**
  Options: Disabled / Enabled

- ✓ **Max CPU C-state**
  Options: C7 / C6 / C1

- ✓ **S0ix**
  Options: Disabled / Enabled

5.3.5 SATA Configuration



- ✓ **Serial-ATA (SATA)**
  Options: Enabled / Disabled

- ✓ **SATA Test Mode**
  Options: Enabled / Disabled

- ✓ **SATA Speed Support**
  Options: Gen1 / Gen2

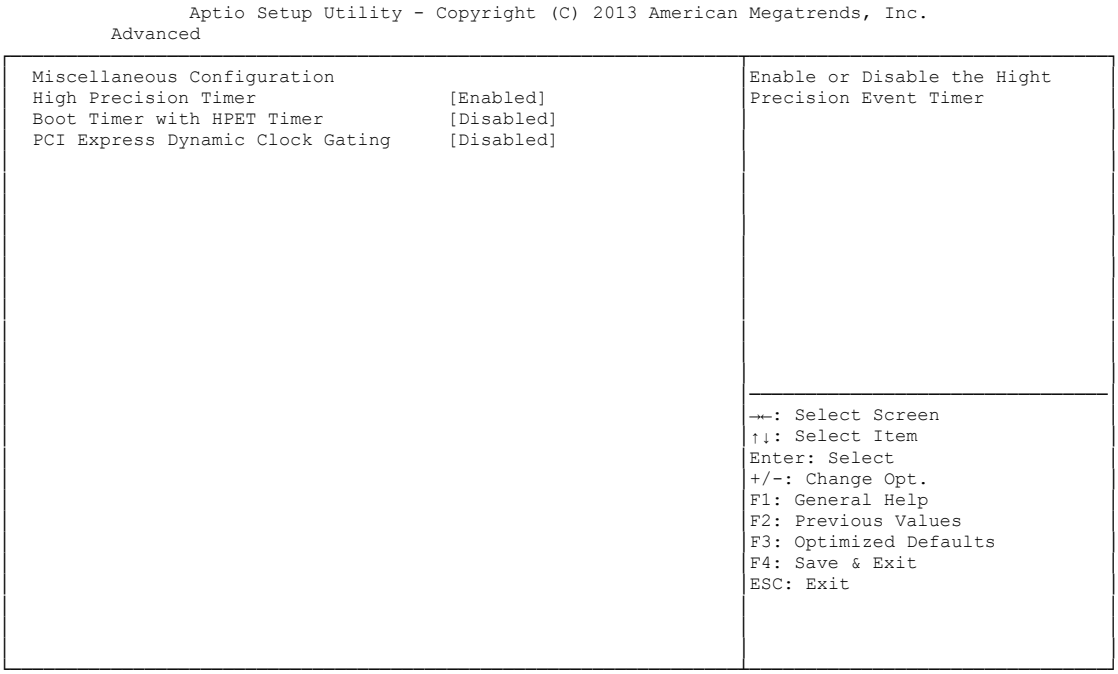
- ✓ **SATA ODD Port**
  Options: Port0 ODD / Port1 ODD / No ODD

- ✓ **SATA Mode**
  Options: IDE Mode / AHCI Mode

- ✓ **Serial-ATA Port X**
  Options: Enabled / Disabled

- ✓ **SATA PortX HotPlug**
  Options: Enabled / Disabled

5.3.6 Miscellaneous Configuration

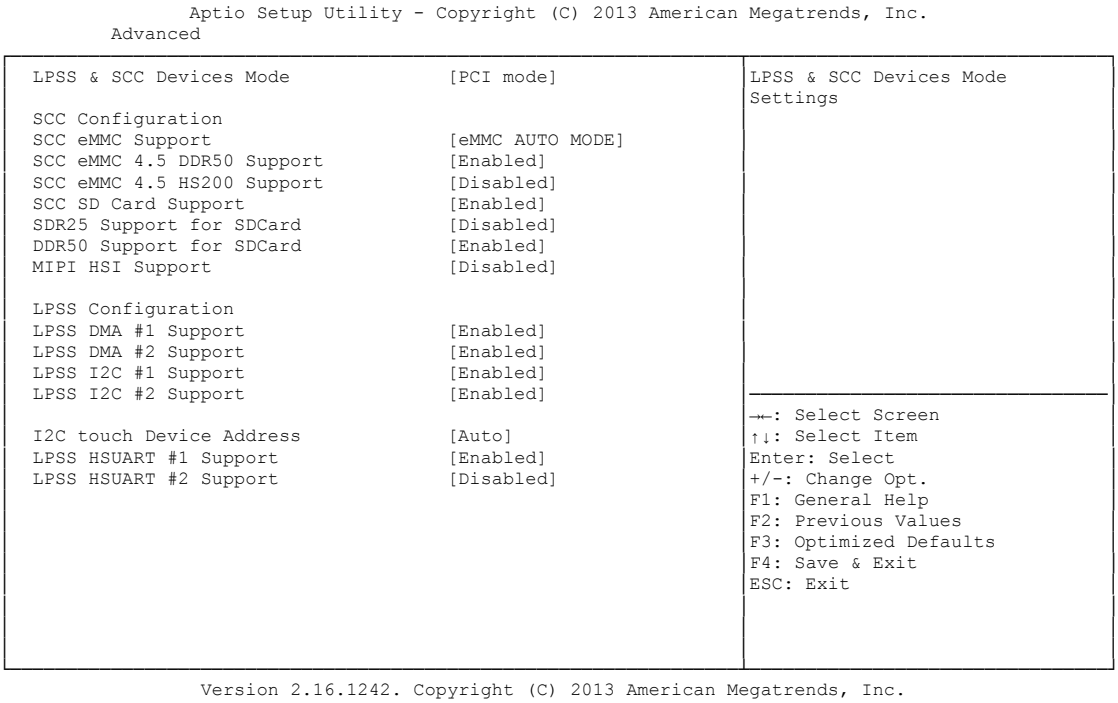


- ✓ **High Precision Timer**
  Options: Disabled / Enabled

- ✓ **Boot Timer with HPET Timer**
  Options: Enabled / Disabled

- ✓ **PCI Express Dynamic Clock Gating**
  Options: Enabled / Disabled

5.3.7 LPSS & SCC Configuration



- ✓ **LPSS & SCC Devices Mode**
  Options: ACPI mode / PCI mode

- ✓ **SCC eMMC Support**
  Options: Enable eMMC 4.5 Support / Enable eMMC 4.41 Support / eMMC AUTO MODE / Disabled

- ✓ **SCC eMMC 4.5 DDR50 Support**
  Options: Enabled / Disabled

- ✓ **SCC eMMC 4.5 HS200 Support**
  Options: Enabled / Disabled

- ✓ **SCC SD Card Support**
  Options: Enabled / Disabled

- ✓ **SDR25 Support for SDCard**
  Options: Disabled

- ✓ **DDR50 Support for SDCard**
  Options: Enabled / Disabled

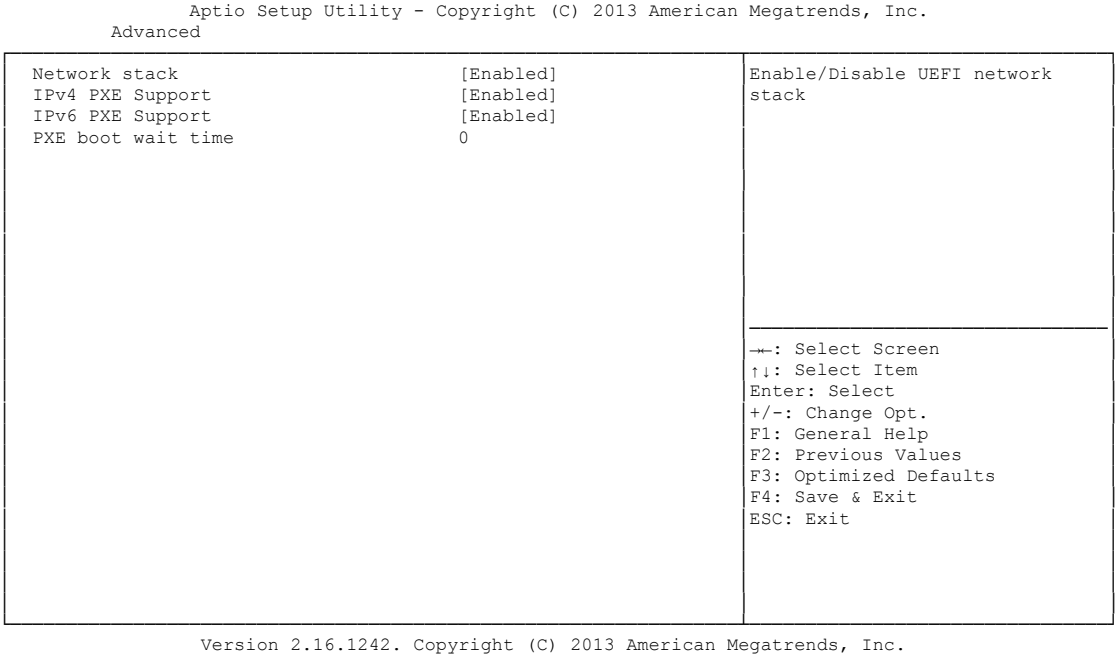
- ✓ **MIPI HSI Support**
  Options: Enabled / Disabled

- ✓ **LPSS DMA #X Support**
  Options: Enabled / Disabled

- ✓ **LPSS I2C #X Support**
  Options: Enabled

✓ **LPSS HSUART #X Support**
Options: Enabled / Disabled

5.3.8 Network Stack



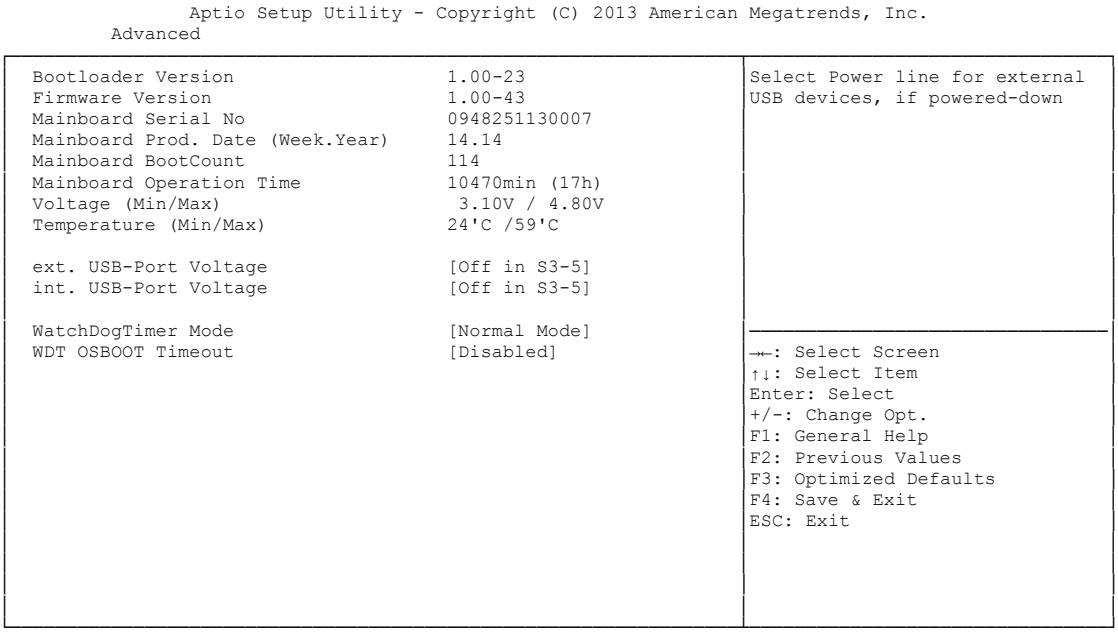
- ✓ **Network stack**
  Options: Disabled / Enabled

- ✓ **IPv4 PXE Support**
  Options: Disabled / Enabled

- ✓ **IPv6 PXE Support**
  Options: Disabled / Enabled

- ✓ **PXE boot wait time**
  Options: 0..5

5.3.9 Power Controller Options



- ✓ **Bootloader Version**
  Options: none

- ✓ **Firmware Version**
  Options: none

- ✓ **Mainboard Serial No**
  Options: none

- ✓ **Mainboard Prod. Date (Week.Year)**
  Options: none

- ✓ **Mainboard Boot Count**
  Options: none

- ✓ **Mainboard Operation Time**
  Options: none

- ✓ **Voltage (Min/Max)**
  Options: none

- ✓ **Temperature (Min/Max)**
  Options: none

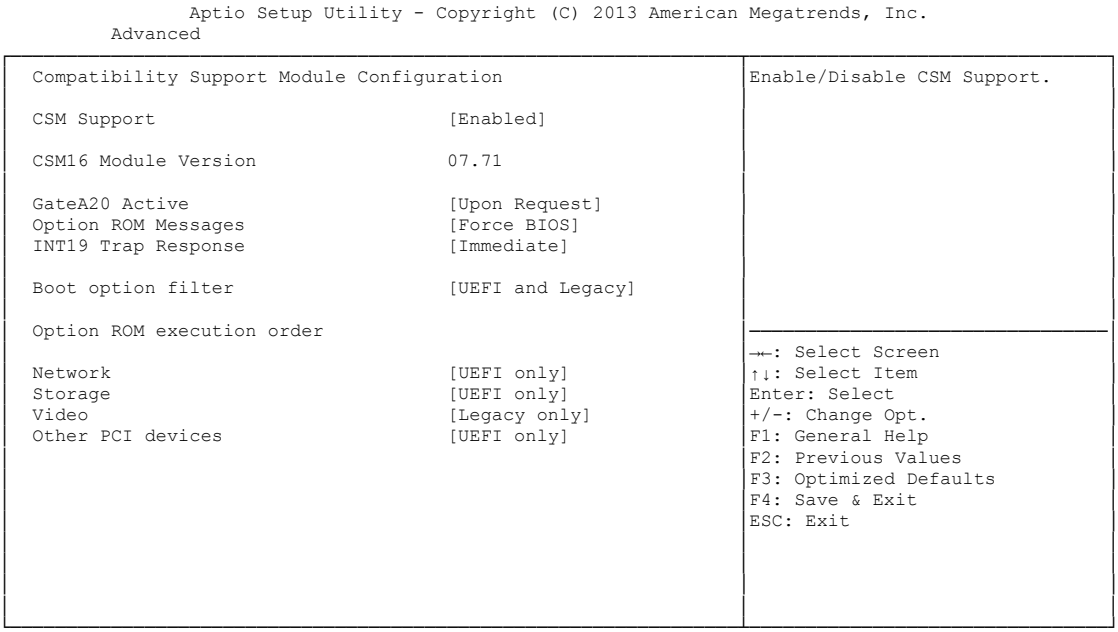
- ✓ **ext. USB-Port Voltage**
  Options: Off in S3-5 / by SVCC

- ✓ **int. USB-Port Voltage**
  Options: Off in S3-5 / by SVCC

- ✓ **WatchDogTimer Mode**
  Options: Normal Mode / Compatibility Mode

✓ **WDT OSBoot Timeout**
Options: Disabled / 45 Seconds ... 255 Seconds

5.3.10 CSM Configuration



- ✓ **CSM Support**
  Options: Disabled / Enabled

- ✓ **CSM16 Module Version**
  Options: none

- ✓ **GateA20 Active**
  Options: Upon Request / Always

- ✓ **Option ROM Messages**
  Options: Force BIOS / Keep Current

- ✓ **INT9 Trap Response**
  Options: Immediate / Postponed

- ✓ **Boot option filter**
  Options: UEFI and Legacy / Legacy only / UEFI only

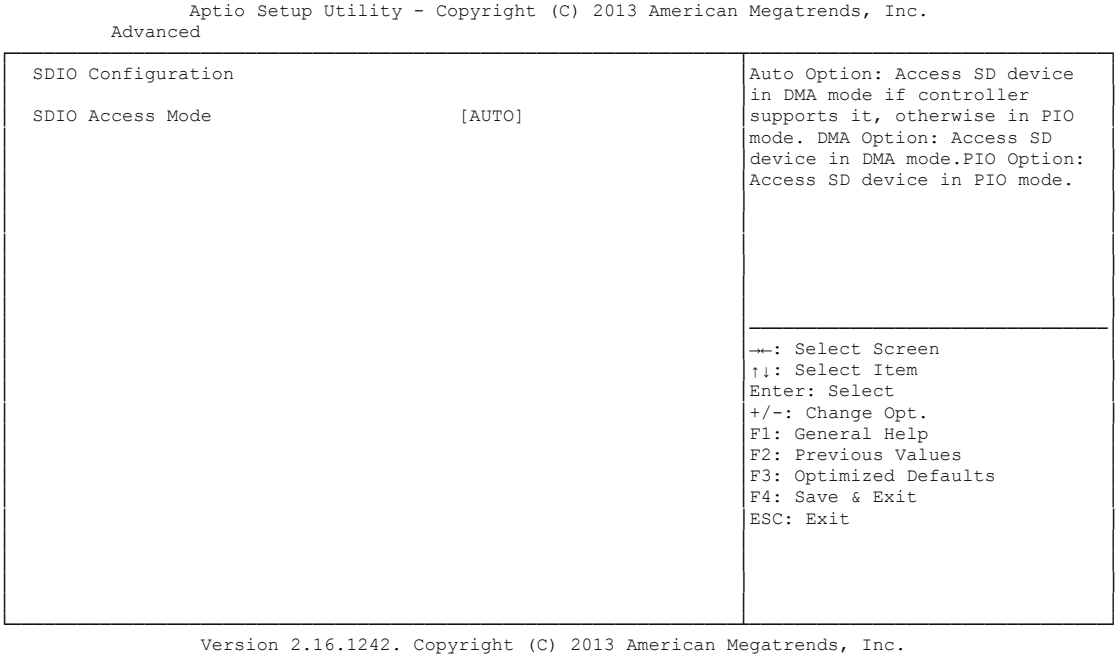
- ✓ **Network**
  Options: Do not launch / UEFI only / Legacy only

- ✓ **Storage**
  Options: Do not launch / UEFI only / Legacy only

- ✓ **Video**
  Options: Do not launch / UEFI only / Legacy only

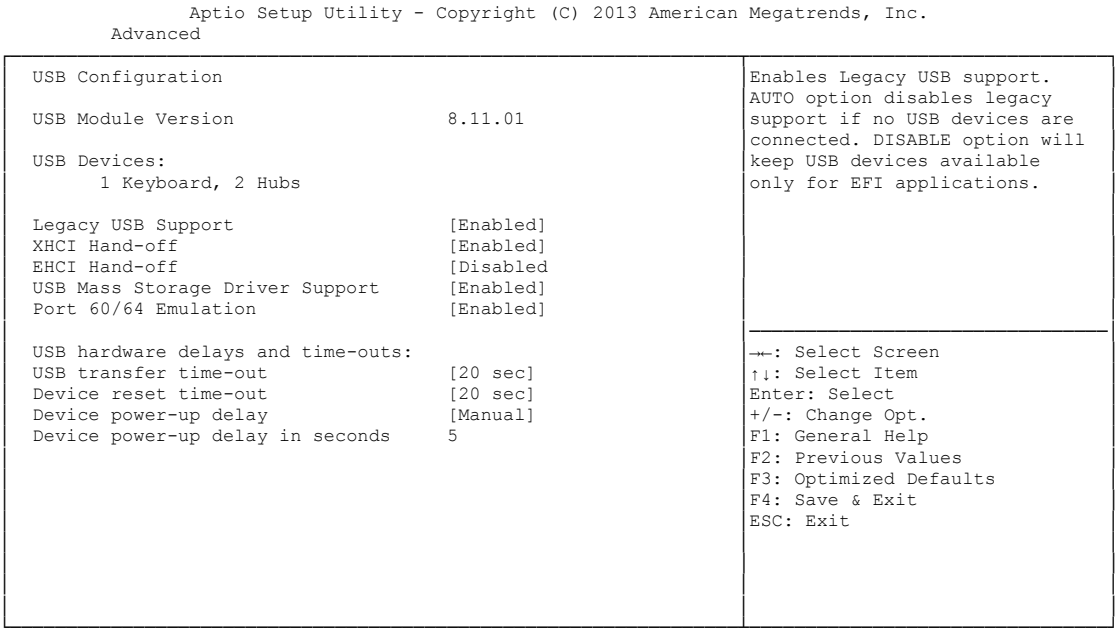
- ✓ **Other PCI devices**
  Options: Do not launch / UEFI / Legacy

5.3.11 SDIO Configuration



✓ **SDIO Access Mode**
Options: Auto / DMA / PIO

5.3.12 USB Configuration



- ✓ **USB Devices**
  Options: none

- ✓ **Legacy USB Support**
  Options: Enabled / Disabled / Auto

- ✓ **XHCI Hand-off**
  Options: Enabled / Disabled

- ✓ **EHCI Hand-off**
  Options: Enabled / Disabled

- ✓ **Mass Storage Driver Support**
  Options: Disabled / Enabled

- ✓ **Port 60/64 Emulation**
  Options: Disabled / Enabled

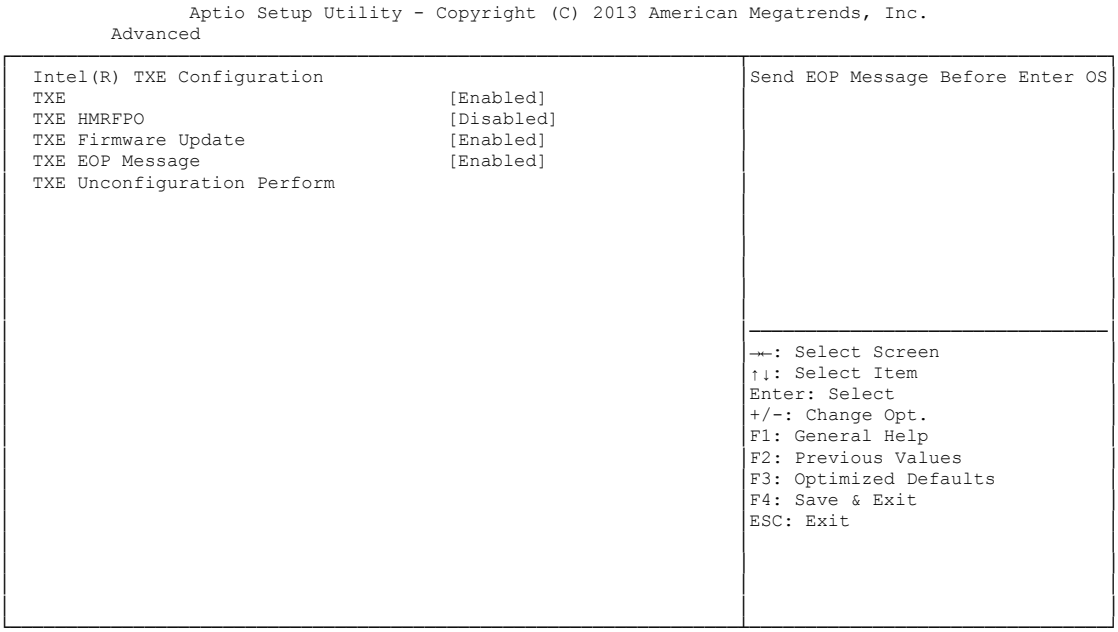
- ✓ **USB transfer time-out**
  Options: 5 sec / 10 sec / 20 sec

- ✓ **Device reset time-out**
  Options: 10 sec / 20 sec / 30 sec / 40 sec

- ✓ **Device power-up delay**
  Options: Auto / Manual

- ✓ **Device power-up delay in seconds**
  Options: 1..40

5.3.13 Security Configuration



- ✓ **TXE**
  Options: Enabled / Disabled

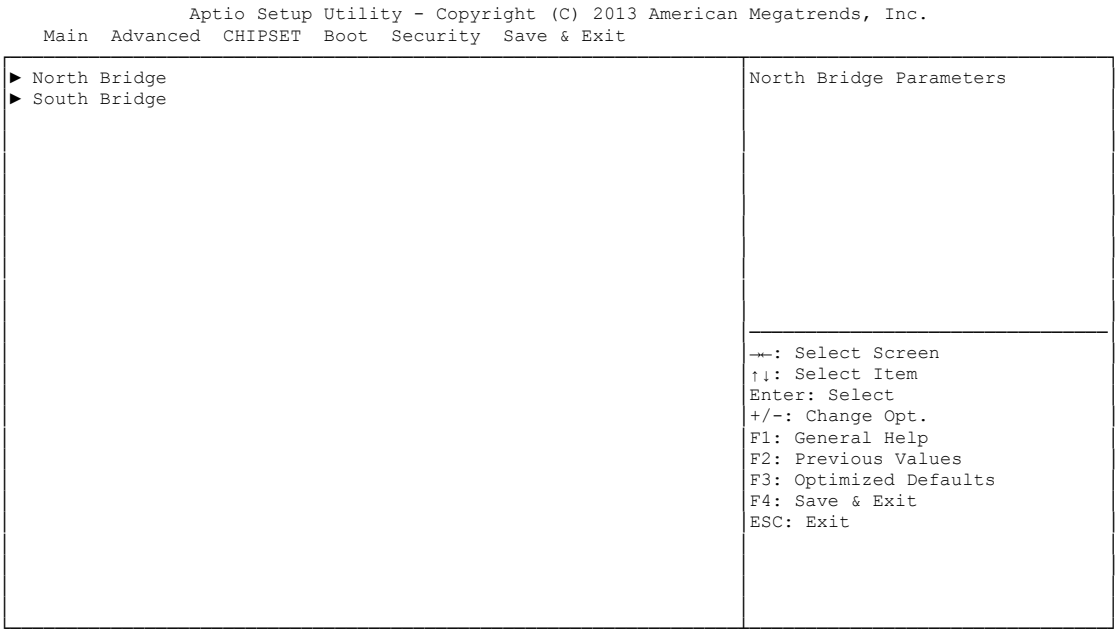
- ✓ **TXE HMRFPO**
  Options: Enabled / Disabled

- ✓ **TXE Firmware Update**
  Options: Enabled / Disabled

- ✓ **TXE EOP Message**
  Options: Enabled / Disabled

- ✓ **TXE Unconfiguration Perform**
  Options: none

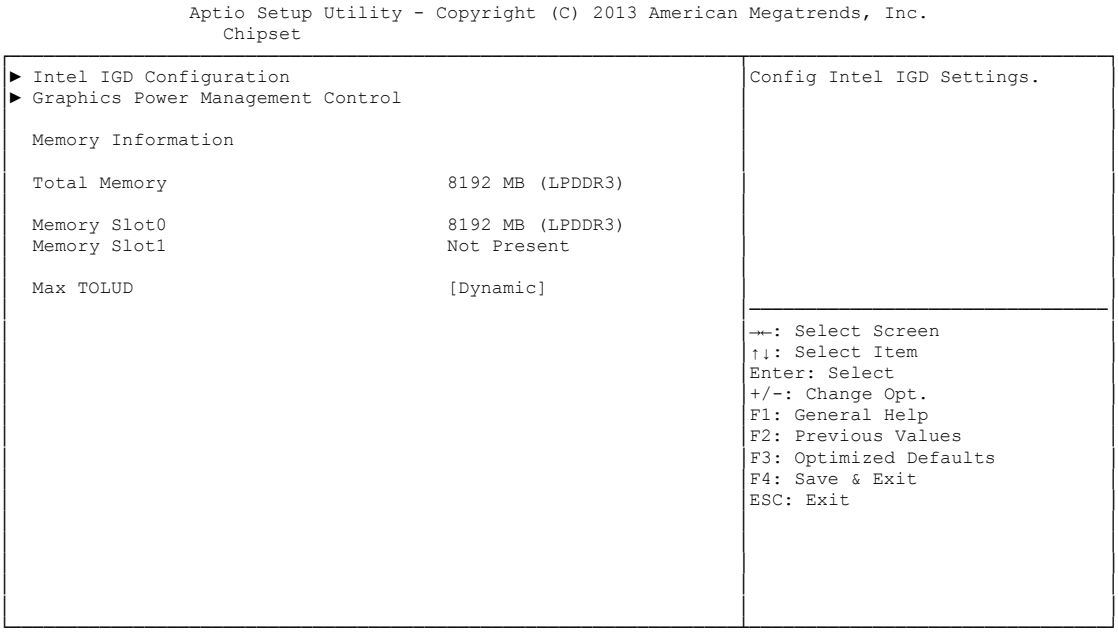
5.4 Chipset



- ✓ **North Bridge**
  Sub menu: see "North Bridge" (page 60)

- ✓ **South Bridge**
  Sub menu: see "South Bridge" (page 64)

5.4.1 North Bridge



- ✓ **Intel IGD Configuration**
  Sub menu: see "Intel IGD Configuration" (page 61)

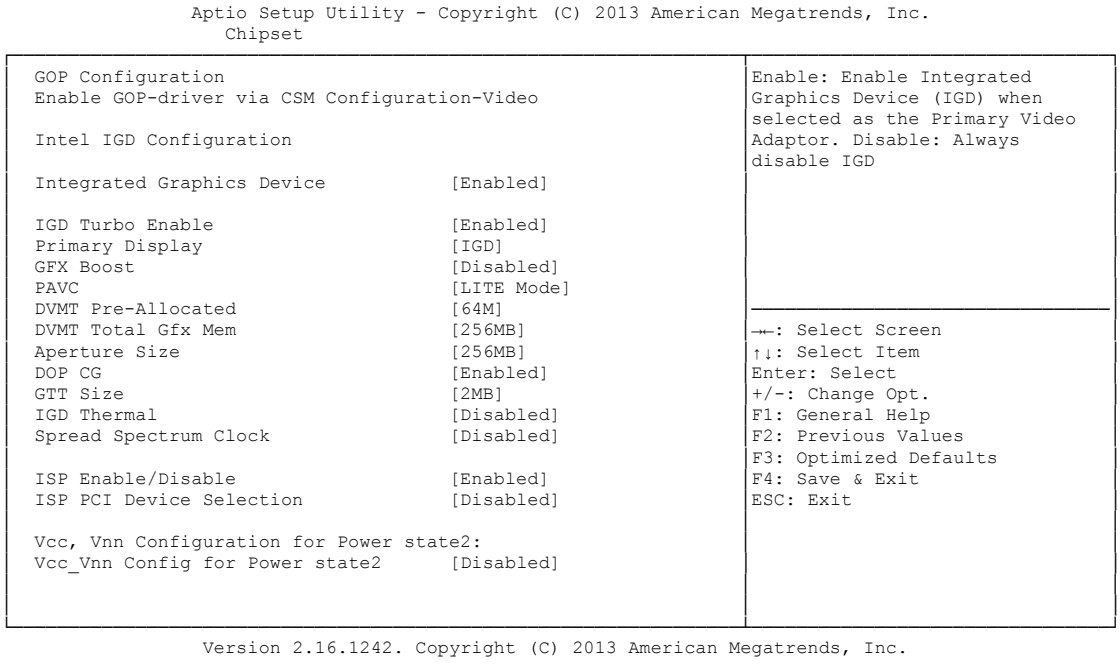
- ✓ **Graphics Power Management Control**
  Sub menu: see "Graphics Power Management Control" (page 63)

- ✓ **Total Memory**
  Options: none

- ✓ **Memory SlotX**
  Options: none

- ✓ **Max TOLUD**
  Options: Dynamic / 1GB / 1.25GB / .. / 3GB

5.4.1.1 Intel IGD Configuration



- ✓ **Integrated Graphics Device**
  Options: Enabled / Disabled

- ✓ **IGD Turbo Enable**
  Options: Enabled / Disabled

- ✓ **Primary Display**
  Options: IGD / PCI

- ✓ **GFX Boost**
  Options: Enabled / Disabled

- ✓ **PAVC**
  Options: Disabled / LITE Mode / SERPENT Mode

- ✓ **DVMT Pre-Allocated**
  Options: 32M / 64M ... 480M / 512M

- ✓ **DVMT Total Gfx Mem**
  Options: 128M / 256M / MAX

- ✓ **Aperture Size**
  Options: 128MB / 256MB / 512MB

- ✓ **DOP CG**
  Options: Enabled / Disabled

- ✓ **GTT Size**
  Options: 1MB / 2MB

- ✓ **IGD Thermal**
  Options: Enabled / Disabled

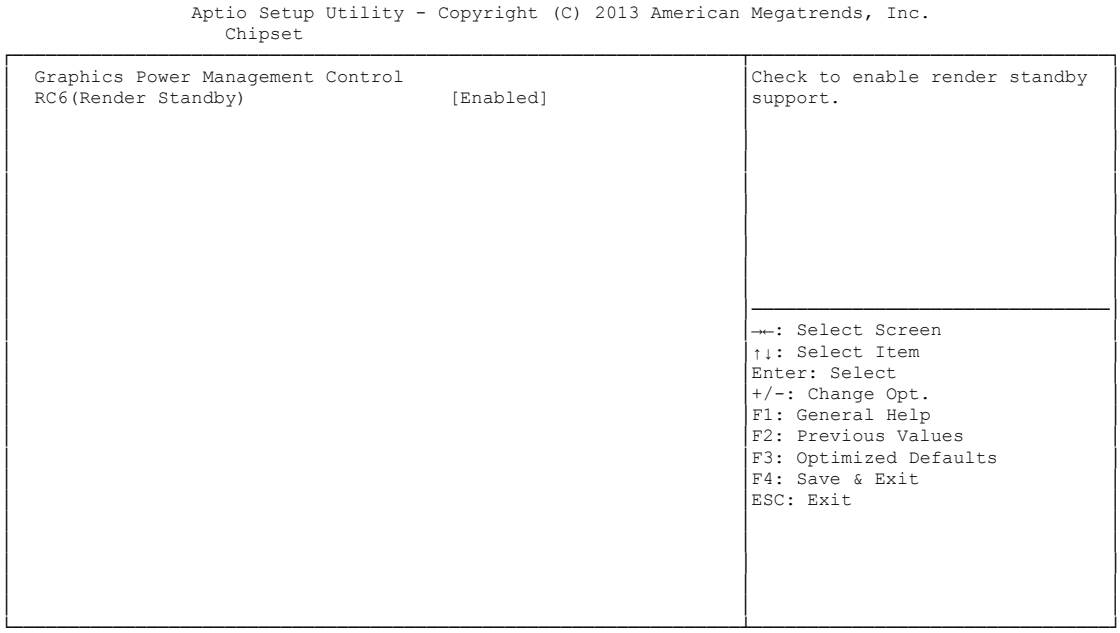
- ✓ **Spread Spectrum clock**
  Options: Enabled / Disabled

- ✓ **ISP Enable/ Disable**
  Options: Enabled / Disabled

- ✓ **ISP PCI Device Selection**
  Options: Disabled / ISP PCI Device as B0D2F0 / ISP PCI Device as B0D3F0

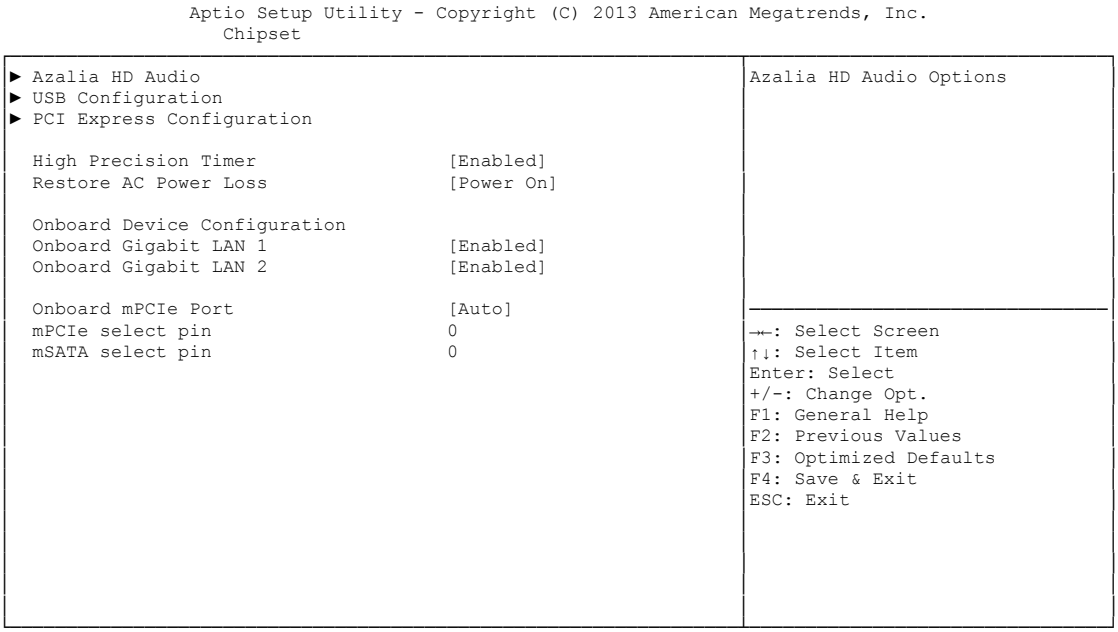
- ✓ **Vcc_Vnn Config for Power state2**
  Options: Enabled / Disabled

5.4.1.2 Graphics Power Management Control



- ✓ **RC6 (Render Standby)**
  Options: Enabled / Disabled

5.4.2 South Bridge



- ✓ **Azalia HD Audio**
  Sub menu: see ()

- ✓ **USB Configuration**
  Sub menu: see ()

- ✓ **PCI Express Configuration**
  Sub menu: see "PCI Express Configuration" (page 67)

- ✓ **High Precision Timer**
  Options: Disabled / Enabled

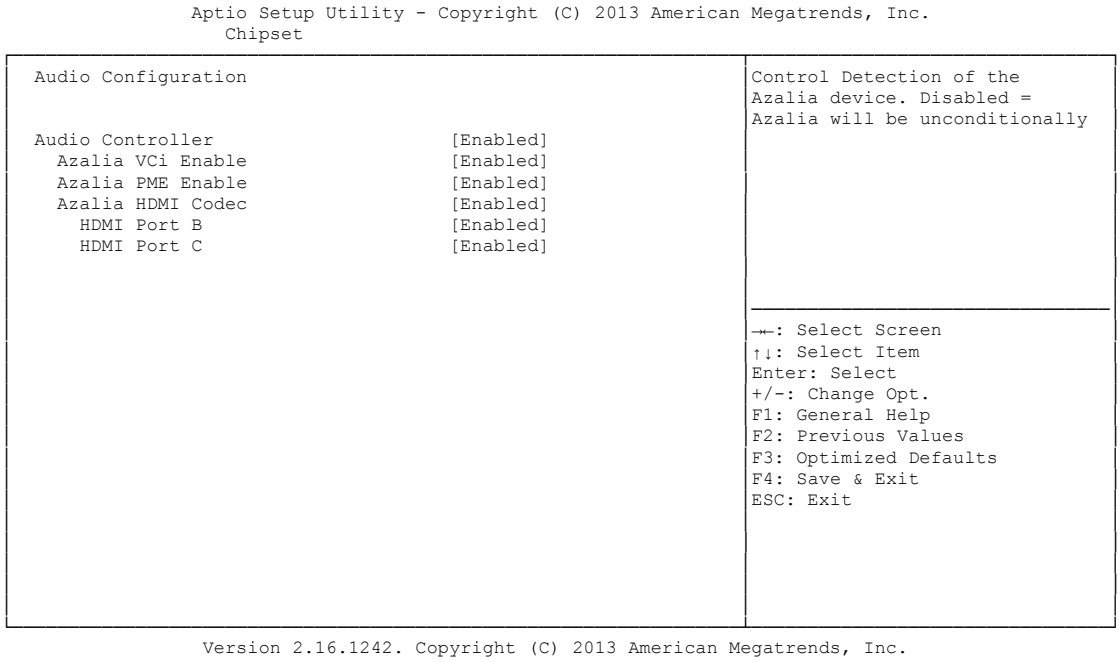
- ✓ **Restore AC Power Loss**
  Options: Power Off / Power On / Last State

- ✓ **Onboard Gigabit LAN X**
  Options: Enabled / Disabled

- ✓ **mPCIe select pin**
  Options: none

- ✓ **mPCIe select pin**
  Options: none

5.4.2.1 Azalia HD Audio



- ✓ **LPE Audio Support**
  Options: Disabled / LPE Audio PCI mode / LPE Audio ACPI mode

- ✓ **Audio Controller**
  Options: Disabled / Enabled

- ✓ **Azalia VCi Enable**
  Options: Disabled / Enabled

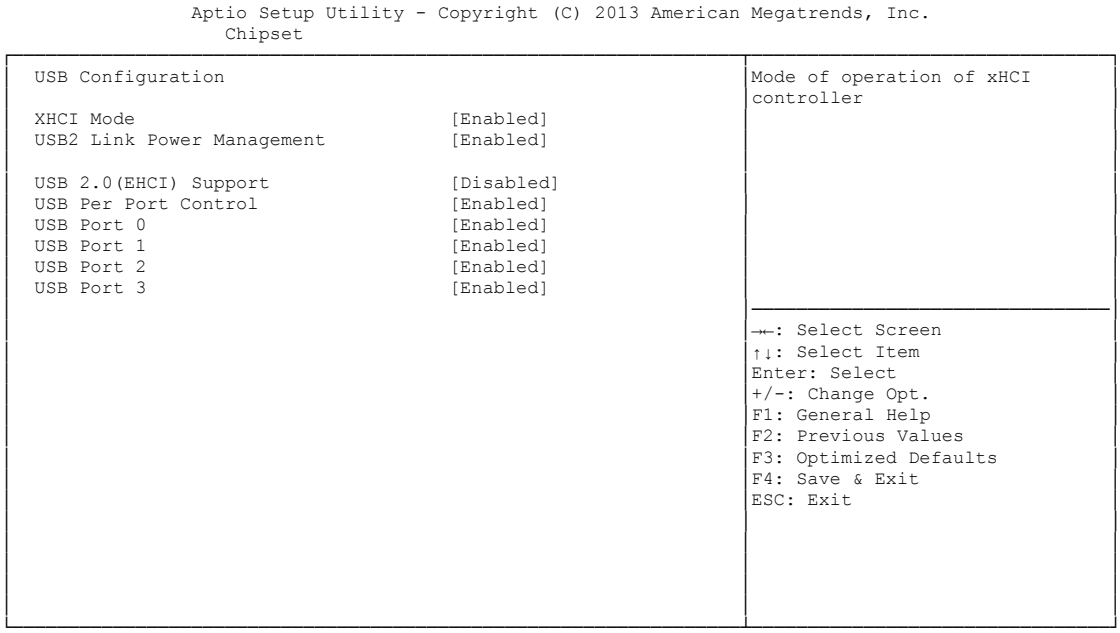
- ✓ **Azalia Docking Support Enable**
  Options: Disabled / Enabled

- ✓ **Azalia PME Enable**
  Options: Disabled / Enabled

- ✓ **Azalia HDMI Codec**
  Options: Disabled / Enabled

- ✓ **HDMI Port X**
  Options: Disabled / Enabled

5.4.2.2 USB Configuration



- ✓ **XHCI Mode**
  Options: Enabled / Disabled / Auto / Smart Auto

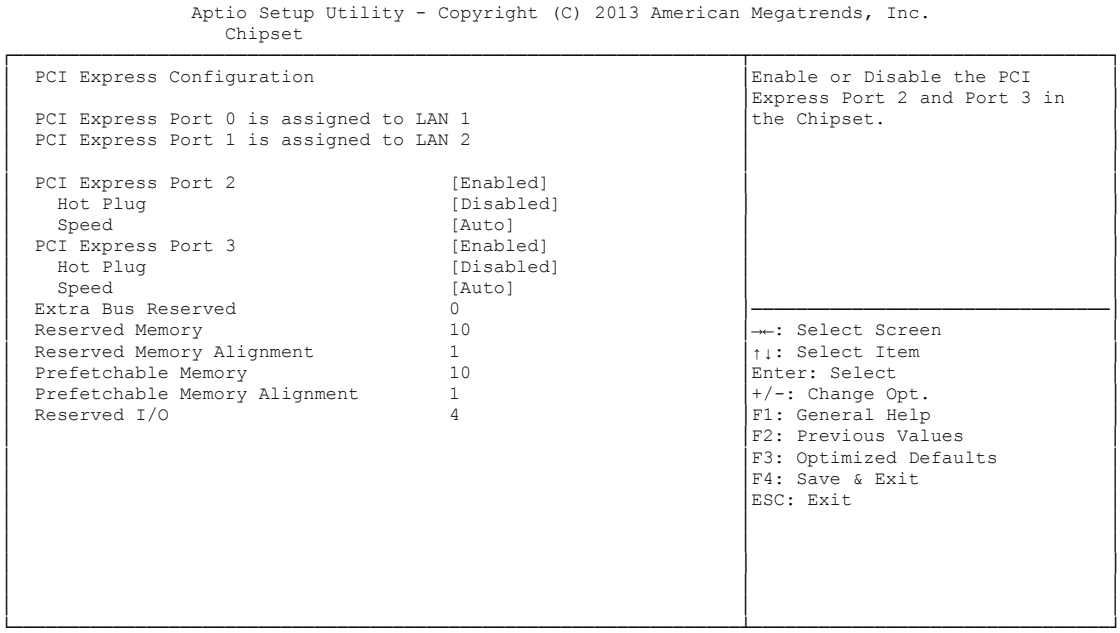
- ✓ **USB2 Link Power Management**
  Options: Enabled / Disabled

- ✓ **USB 2.0(EHCI) Support**
  Options: Disabled / Enabled

- ✓ **USB Per Port Control**
  Options: Enabled / Disabled

- ✓ **USB Port x**
  Options: Disabled / Enabled

5.4.2.3 PCI Express Configuration



- ✓ **PCI Express Port x**
  Options: Disabled / Enabled

- ✓ **Hot Plug**
  Options: Enabled / Disabled

- ✓ **Speed**
  Options: Gen1 / Gen2 / Auto

- ✓ **Extra Bus Reserved**
  Options: 0...7

- ✓ **Reserved Memory**
  Options: 1...20

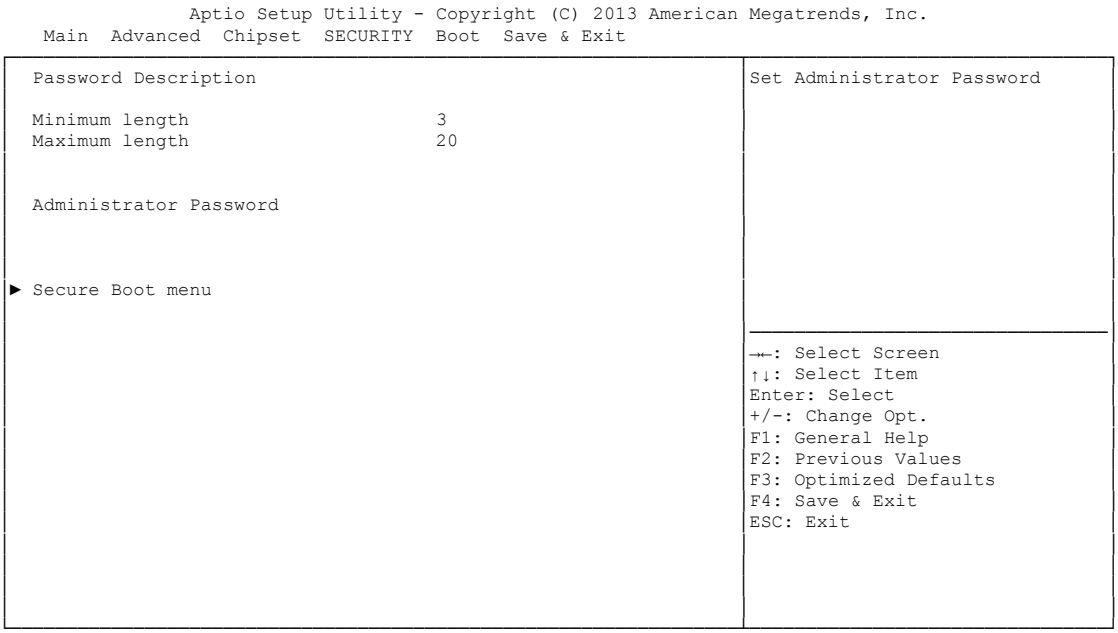
- ✓ **Reserved Memory Alignment**
  Options: 0...31

- ✓ **Prefetchable Memory**
  Options: 1...20

- ✓ **Prefetchable Memory Alignment**
  Options: 0...31

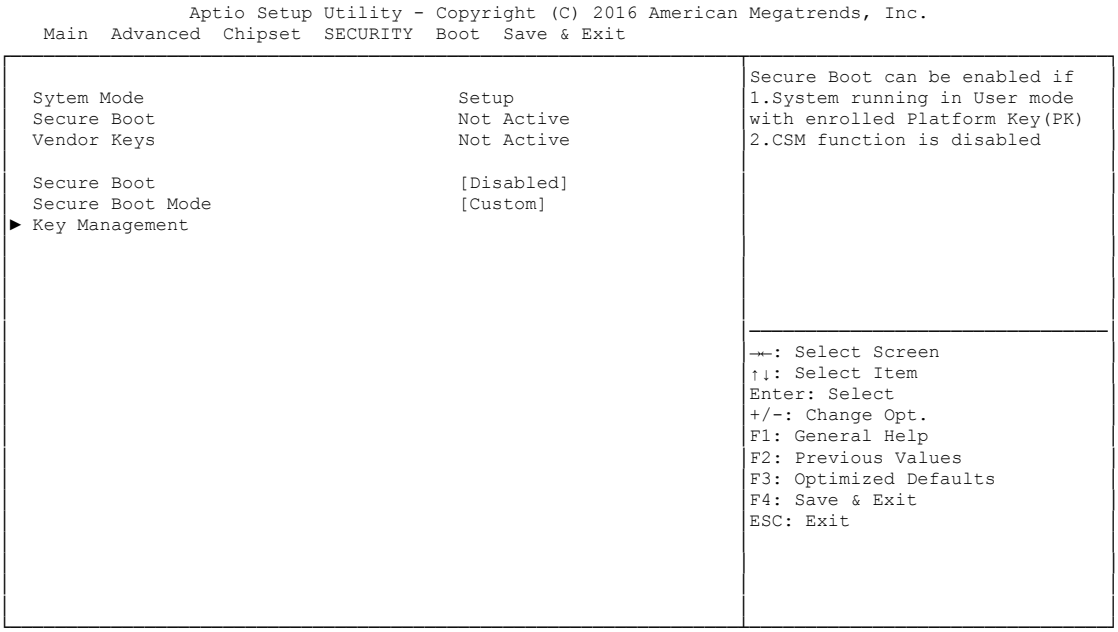
- ✓ **Reserved I/O**
  Options: 0 / 4 / 8 / 12 / 16 / 20

5.5 Security



✓ **Secure Boot menu**
Sub menu: see "Secure Boot menu" (page 69)

5.5.1 Secure Boot menu



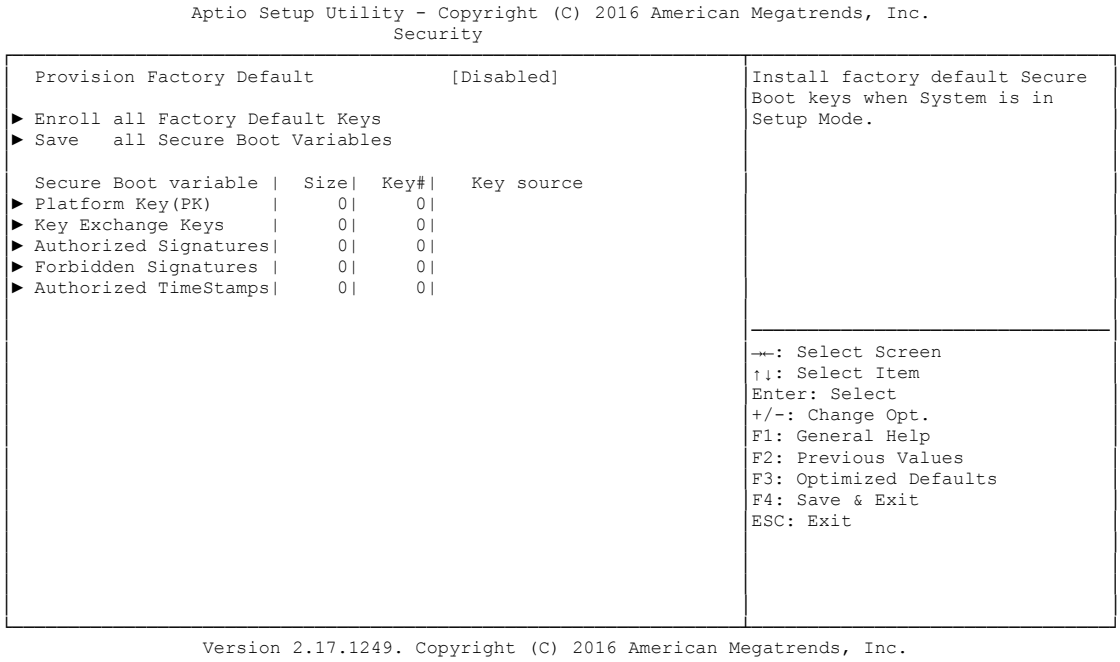
- ✓ **System Mode**
  Options: none

- ✓ **Secure Boot**
  Options: none

- ✓ **Secure Boot Mode**
  Options: Standard / Custom

- ✓ **Key Management**
  Sub menu: see "Key Management" (page 70)

5.5.1.1 Key Management



- ✓ **Provision Factory Default keys**
  Options: Enabled / Disabled

- ✓ **Enroll All Factory Default Keys**
  Options: Press [Enter]

- ✓ **Save All Secure Boot Variables**
  Options: Press [Enter]

- ✓ **Delete PK**
  Options: Press [Enter]

- ✓ **Set new PK**
  Options: Press [Enter]

- ✓ **Delete KEK**
  Options: Press [Enter]

- ✓ **Set new KEK**
  Options: Press [Enter]

- ✓ **Append KEK**
  Options: Press [Enter]

- ✓ **Delete DB**
  Options: Press [Enter]

- ✓ **Set new DB**
  Options: Press [Enter]

- ✓ **Append DB**
  Options: Press [Enter]

- ✓ **Delete DBT**
  Options: Press [Enter]

- ✓ **Set new DBT**
  Options: Press [Enter]

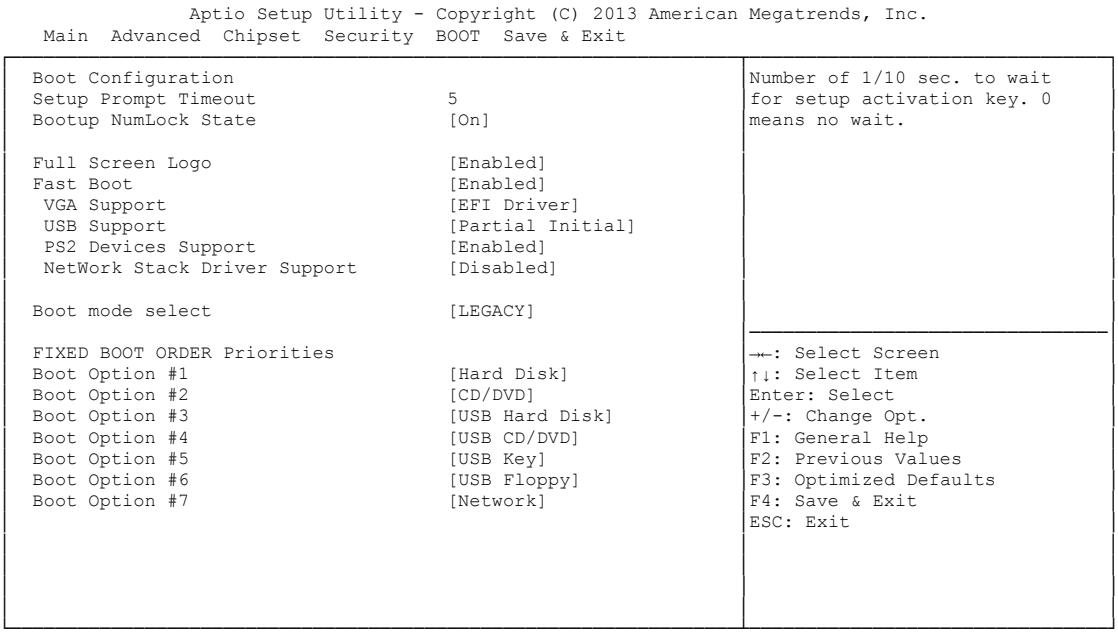
- ✓ **Append DBT**
  Options: Press [Enter]

- ✓ **Delete DBX**
  Options: Press [Enter]

- ✓ **Set new DBX**
  Options: Press [Enter]

- ✓ **Append DBX**
  Options: Press [Enter]

5.6 Boot



- ✓ **Setup Prompt Timeout**
  Options: 0...65535 [x 1/10 sec.]

- ✓ **Bootup NumLock State**
  Options: On / Off

- ✓ **Full Screen Logo**
  Options: Disabled / Enabled

- ✓ **Fast Boot**
  Options: Disabled / Enabled

- ✓ **VGA Support**
  Options: Auto / EFI Driver

- ✓ **USB Support**
  Options: Disabled / Full Initial / Partial Initial

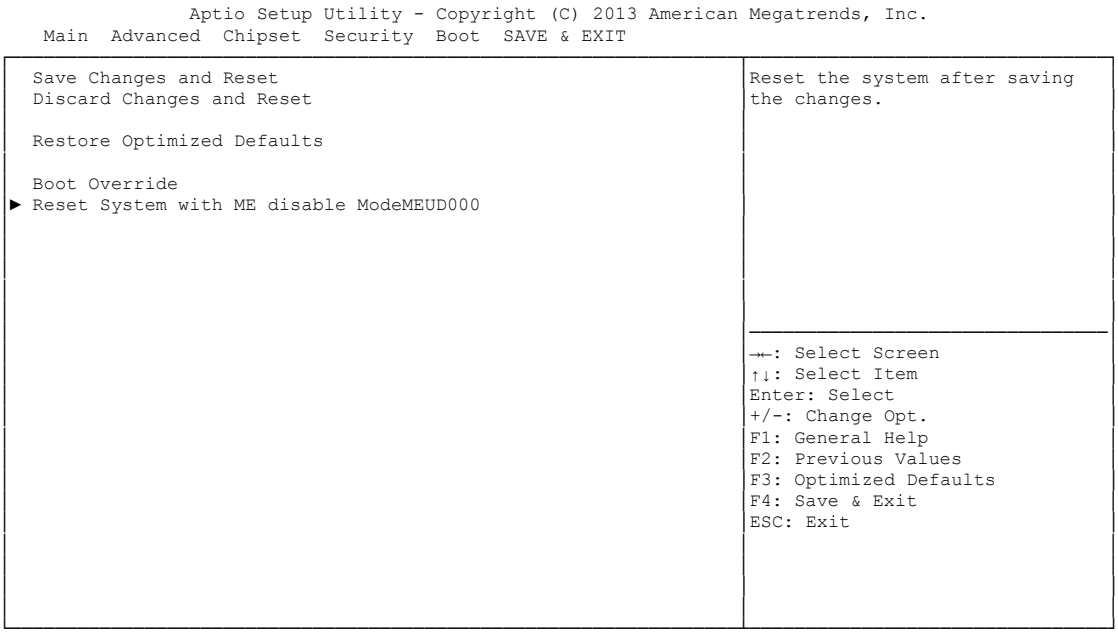
- ✓ **PS2 Devices Support**
  Options: Disabled / Enabled

- ✓ **NetWork Stack Driver Support**
  Options: Disabled / Enabled

- ✓ **Boot mode select**
  Options: Legacy / UEFI / DUAL

- ✓ **Boot Option Priorities**
  Options: Review or change the sequence of available boot devices

5.7 Save & Exit



- ✓ **Save Changes and Reset**
  Options: Press [Enter]

- ✓ **Discard Changes and Reset**
  Options: Press [Enter]

- ✓ **Restore Defaults**
  Options: Press [Enter]

- ✓ **Reset System with ME disable ModeMEUD000**
  Options: Press [Enter]

5.8 BIOS Update

If a BIOS update needs to be done, the program “DecdFlash” as well as a bootable medium which contains the newest BIOS version is used for this. It is important, that the program is started from a DOS environment without a virtual memory manager, for example “EMM386.EXE”. In case such a memory manager is loaded, the program will stop with an error message.

DescdFlash is a program which provides automatic BIOS updates on any AMI-BIOS boards. All files need to be copied from the .zip-file in another directory.
The system may not be interrupted during the flash process, otherwise the update is stopped and the BIOS is destroyed afterwards.
The program should be started as follows:

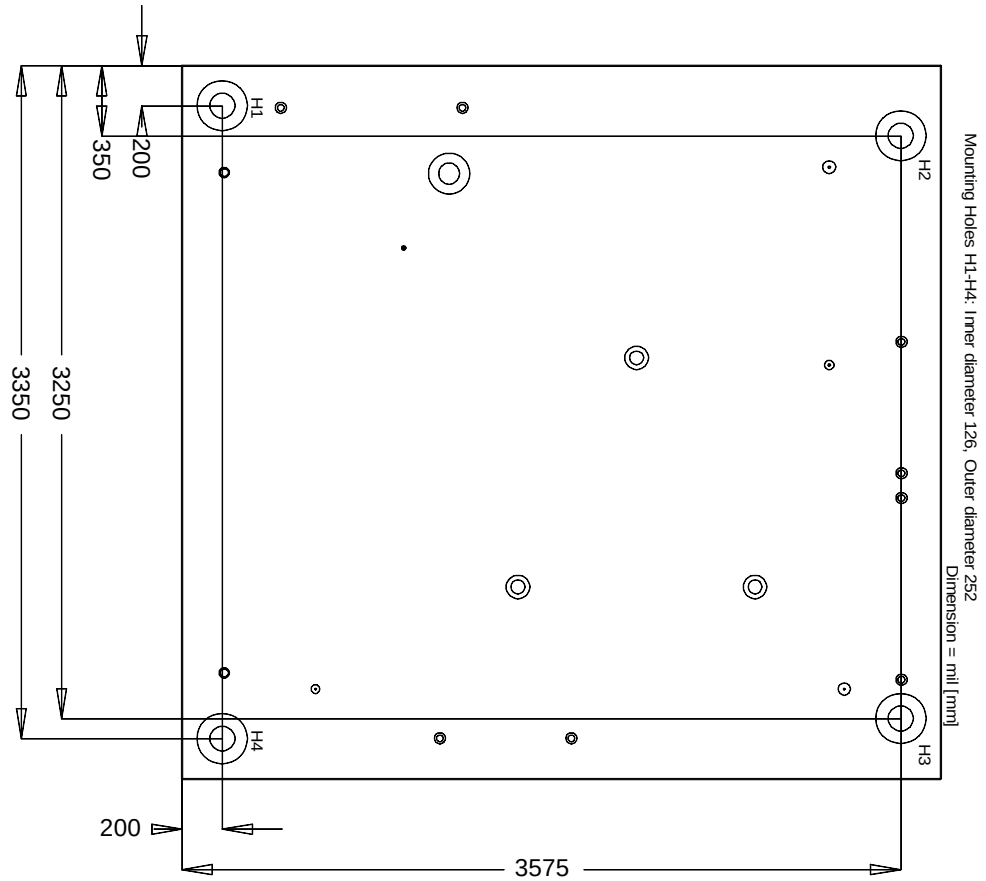
```
DecdFlsh BIOS-Filename
```

After checking the name of the BIOS file and its length the BIOS will be programmed.
The flashing takes nearly 75 seconds. The firmware will get updated automatically.

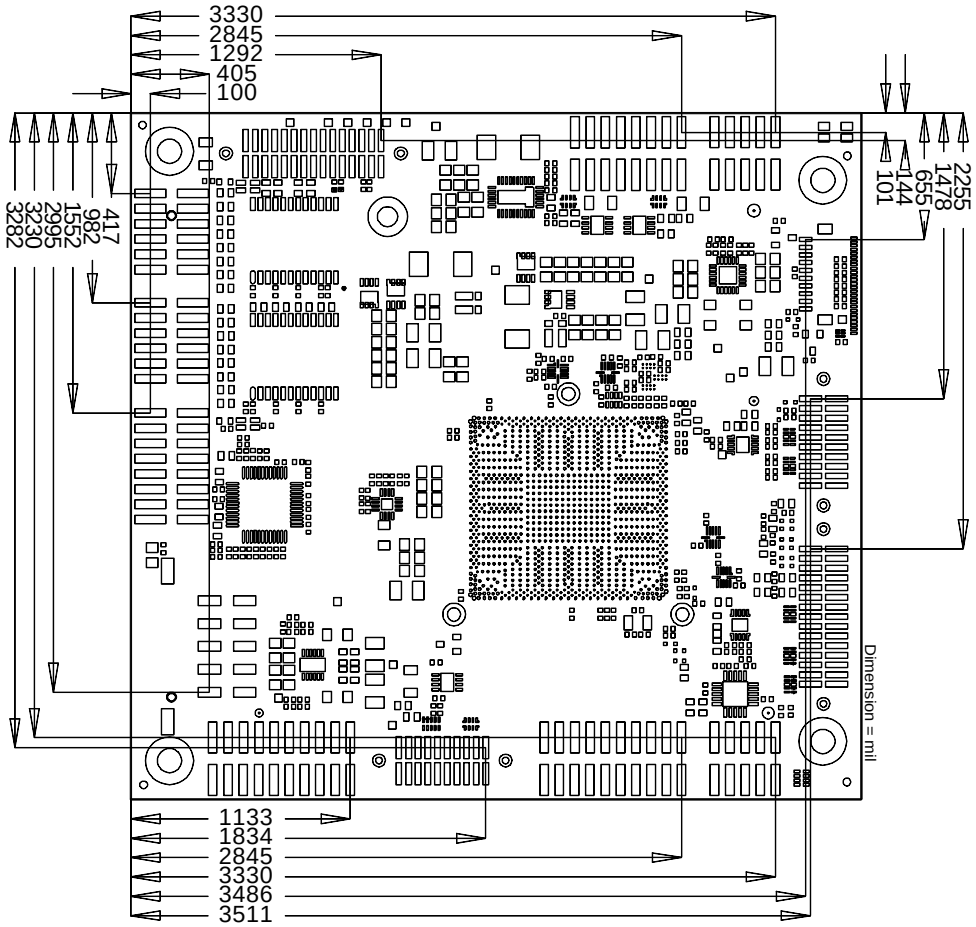
6 Mechanical Drawings

6.1 PCB: Mounting Holes

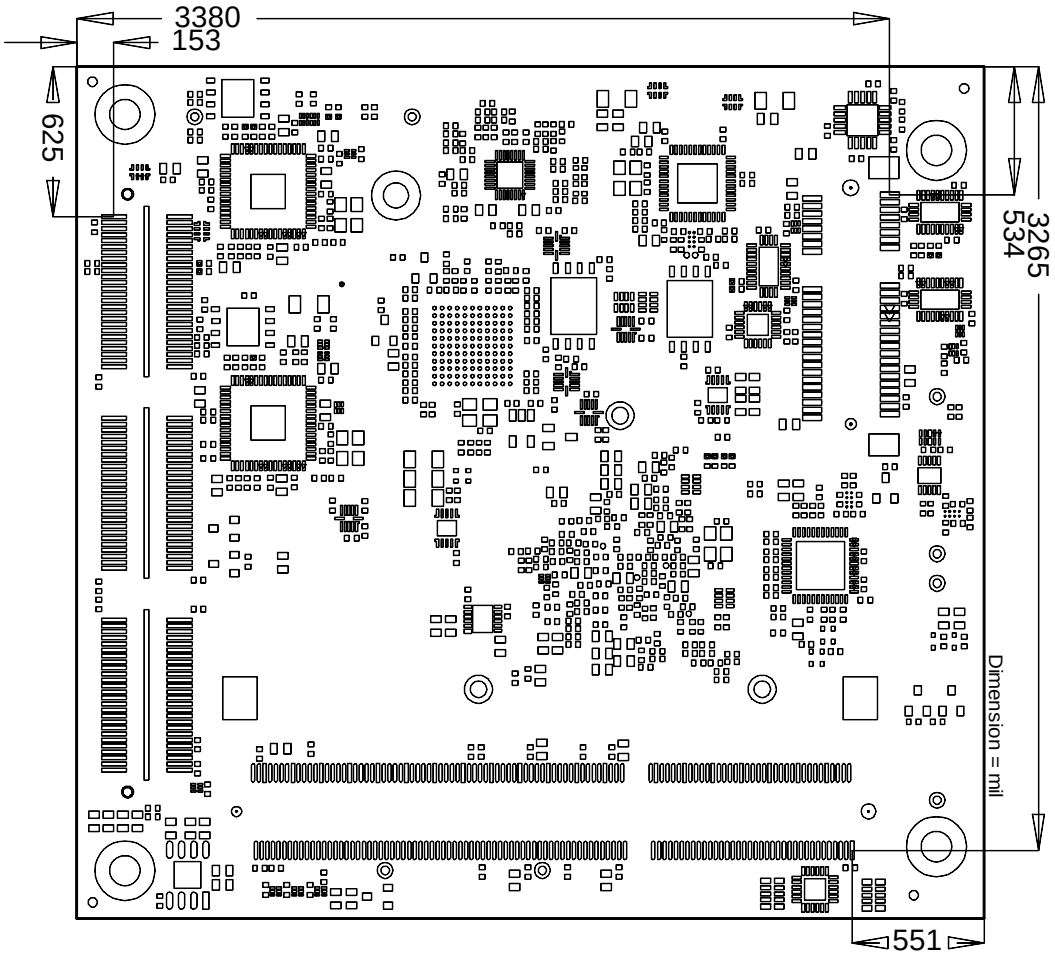
A true dimensioned drawing can be found in the PC/104 specification.



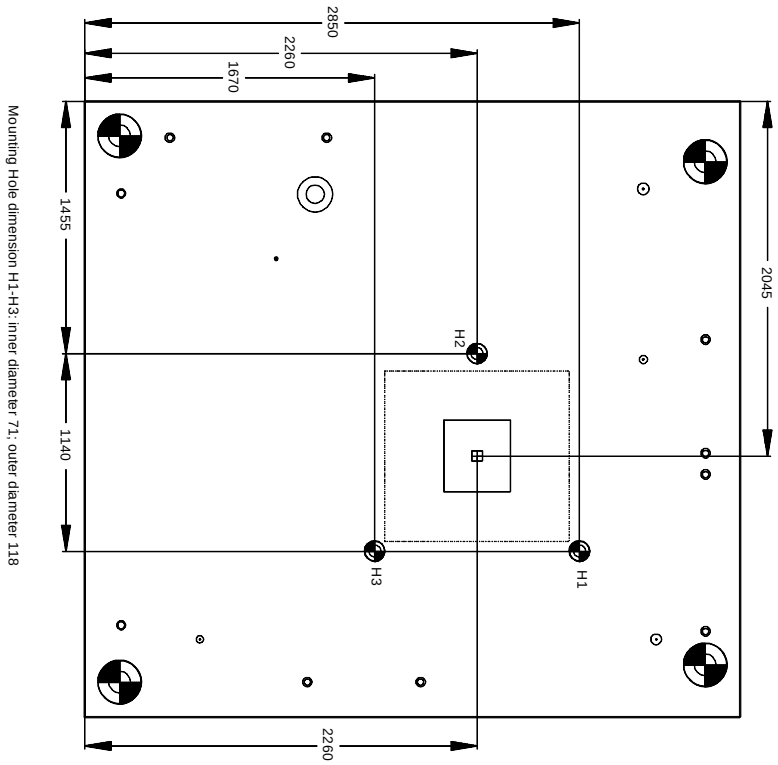
6.2 PCB: Pin 1 Dimensions - Top

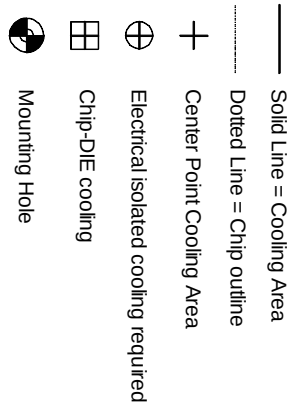


6.3 PCB: Pin 1 Dimensions - Bottom



6.4 PCB: Heat Sink/Die Center





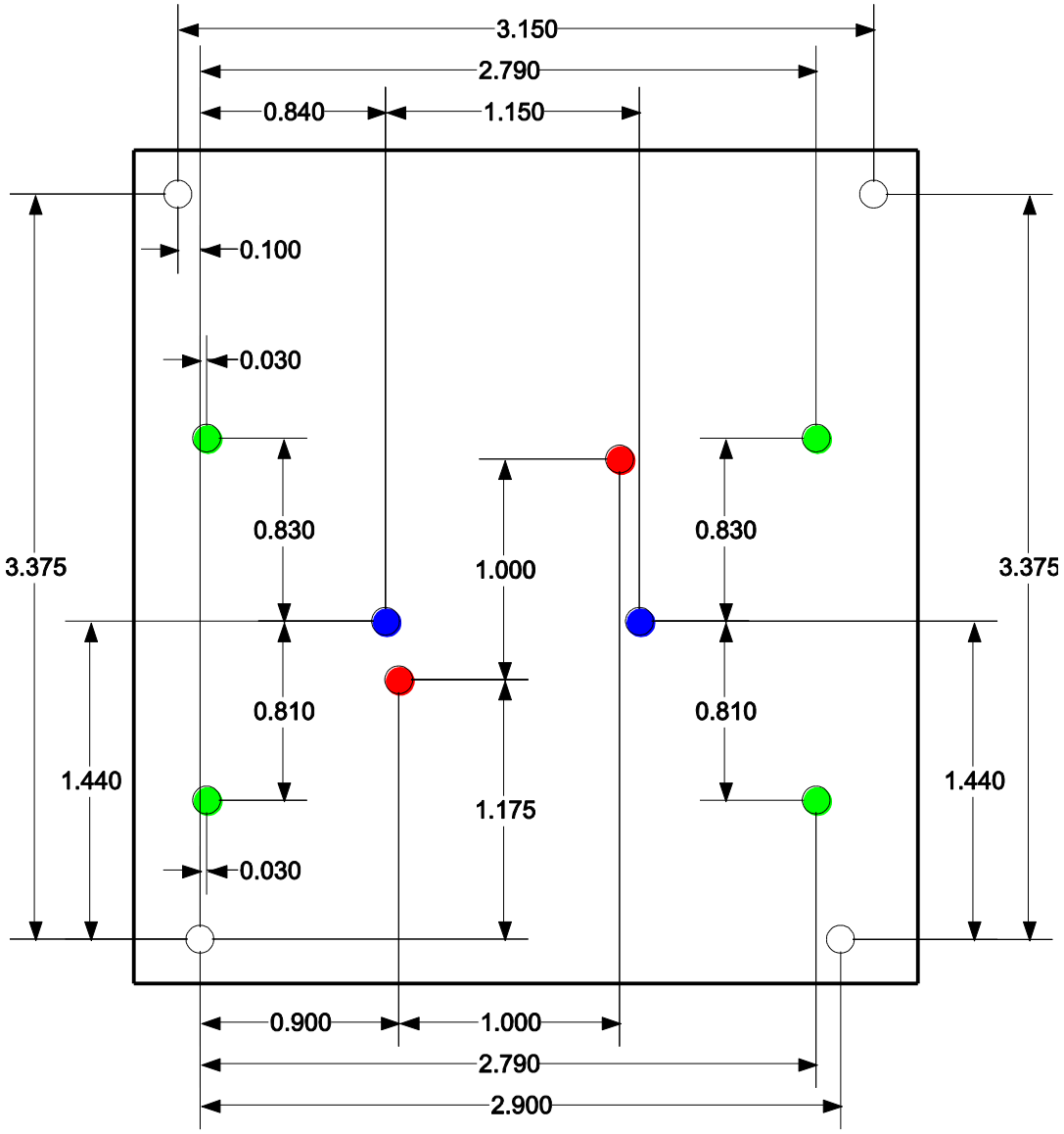
6.5 Heat Spreader: Chassis Mount

The figure below includes all hole spacing for each heat spreader available and can be used to aid in mating the heat spreader to a bulkhead or chassis. The colors in the figure refer to the heat spreaders as follows:

- Small heat spreader: Blue holes
- Medium heat spreader: Blue and red holes
- Full size heat spreader: Blue and green holes

To determine which heat spreaders are available for the ADLE3800PC, please refer to the ADLE3800PC datasheet.

NOTICE **Dimensions are in inch (1 in = 2.54cm; 1 mil = 0.0254 mm)**



7 Technical Data

7.1 Electrical Data

Power Supply:

Board:	5 Volt and 12 Volt (+/- 5%)
RTC:	>= 3 Volt

Electric Power Consumption:

RTC:	<= 10µA

7.2 Environmental Conditions

Temperature Range:

Operating:	-25°C to +70°C (using approved thermal solution)
	-40°C up to +85°C (when pre-screened for use with an approved thermal solution)
Storage:	-40°C up to +85°C
Shipping:	-40°C up to +85°C, for packaged boards

Temperature Changes:

Operating:	0.5°C per minute, 7.5°C per 30 minutes
Storage:	1.0°C per minute
Shipping:	1.0°C per minute, for packaged boards

Relative Humidity:

Operating:	5% up to 85% (non condensing)
Storage:	5% up to 95% (non condensing)
Shipping:	5% up to 100% (non condensing), for packaged boards

Shock:

Operating:	150m/s^2, 6ms
Storage:	400m/s^2, 6ms
Shipping:	400m/s^2, 6ms, for packaged boards

Vibration:

Operating:	10 up to 58Hz, 0.075mm amplitude
	58 up to 500Hz, 10m/s^2
Storage:	5 up to 9Hz, 3.5mm amplitude
	9 up to 500Hz, 10m/s^2
Shipping:	5 up to 9Hz, 3.5mm amplitude
	9 up to 500Hz, 10m/s^2, for packaged boards

NOTICE **Shock and vibration figures pertain to the motherboard alone and do not include additional components such as heat sinks, memory modules, cables etc.**

7.3 Thermal Specifications

The board is specified to operate in an environmental temperature range from -25°C to +70°C when using an approved thermal solution, and an extended temperature range of -40°C to +85°C when pre-screened for use with an approved thermal solution.
Maximum die temperature is 110°C. To keep the processor under this threshold an appropriate cooling solution needs to be applied. This solution has to take typical and maximum power consumption into account. The maximum power consumption may be twice as high and should be used as a basis for the cooling concept. Additional controllers may also affect the cooling concept. The power consumption of such components may be comparable to the consumption of the processor.
The board design includes thermal solution mounting points that will provide the best possible thermal interface between die and solution. Since we take thermal solutions seriously we have several advanced, aggressive cooling solutions in our product portfolio. Please contact your sales representative to order or discuss your thermal solution needs.

NOTICE

The end customer has the responsibility to ensure that the die temperature of the processor does not exceed 110°C. Permanent overheating may destroy the board!

In case the temperature exceeds 110°C the environmental temperature must be reduced. Under certain circumstances sufficient air circulation must be provided.

The ADLE3800PC includes circuitry that will notify an intelligent power supply to shut down if the processor reaches a critical temperature. This is achieved by deasserting the (low-active) PS_ON# signal found on the SM-Bus connector. When PS_ON# is no longer pulled low, an intelligent power supply would take this as a signal to shut down power. For this to work, PS_ON# must be connected to the power supply's PS_ON input. If PS_ON# is not otherwise connected, the ADLE3800PC can be damaged beyond repair if a thermal shutdown event occurs. In rare instances, if power is not shut down, the board will continue to heat up until failure occurs.

I Annex: Post-Codes

During boot, the BIOS generates a sequence of status codes (so-called "POST codes"), which can be viewed using a special output device (POST code card). The meaning of these codes is described in the document "Aptio™ 4.x Status Codes" by American Megatrends®, which can be downloaded from their website http://www.ami.com. The following additional OEM POST codes are generated:

Code	Description
87h	BIOS-API started
88h	PCA9535 started
89h	PWRCTRL-Firmware started

II Annex: Resources

IO Range

The used resources depend on setup settings.
The given values are ranges, which are fixed by AT compatibility. Other IO ranges are used, which are dynamically adjusted by Plug & Play BIOS while booting.

Address	Function
00 - 6F	PCI-Express
70 - 77	System CMOS/RTC
78 - CF7	PCI-Express
D00 - FFFF	PCI-Express

Memory Range

The used resources depend on setup settings.
If the entire range is clogged through option ROMs, these functions do not work anymore.

Address	Function
A0000-BFFFF	Intel HD Graphics
A0000000-AFFFFFFF	Intel HD Graphics
B0000000-B03FFFFF	Intel HD Graphics
B0827000-B08277FF	AHCI BIOS/RAID/PXE (falls möglich)
FF00000-FFFFFFF	Firmwarehub Intel®82802

Interrupt

The used resources depend on setup settings.
The listed interrupts and their use are given through AT compatibility.
If interrupts must exclusively be available on the ISA side, they have to be reserved through the BIOS setup. The exclusivity is not given and not possible on the PCI side.

Address	Function
IRQ0	Timer
IRQ1	
IRQ2 (8)	
IRQ3	
IRQ4	
IRQ5	
IRQ6	
IRQ7	
IRQ8	RTC
IRQ9	
IRQ10	
IRQ11	
IRQ12	
IRQ13	
IRQ14	
IRQ15	

PCI Devices

All listed PCI devices exist on the board. Some PCI devices or functions of devices may be disabled in the BIOS setup. Once a device is disabled other devices may get PCI bus numbers different from the ones listed in the table.

AD	INTA	REQ	Bus	Dev.	Fct.	Controller / Slot
	-	-	0	0	0	Host Bridge ID0F00
	A	-	0	2	0	VGA Controller ID0F31
	A	-	0	18	0	SD Host Control(DMA) ID0F16
	A	-	0	19	0	SATA AHCI 1.0 ID0F23
	A	-	0	20	0	XHCI Controller ID0F35
	A	-	0	23	0	SD Host Control(DMA) ID0F50
	A	-	0	27	0	HDA Controller ID0F04
	A	-	0	28	0	PCI Express Port 1 ID0F48
	B	-	0	28	1	PCI Express Port 2 ID0F4A
	A	-	0	30	0	Serial IO - DMA ID0F06
	A	-	0	30	3	Serial IO - HSUART Port 1 ID0F0A
	-	-	0	31	0	ISA Bridge ID0F1C
	B	-	0	31	3	SMBus Interface ID0F12
	A	-	1	00	0	Ethernet Controller x1 ID1533
	A	-	2	00	0	Ethernet Controller x1 ID1533

SMB Devices

The following table contains all reserved SM-Bus device addresses in 8-bit notation. Note that external devices must not use any of these addresses even if the component mentioned in the table is not present on the motherboard.

Address	Function
10-11	Standard slave address
40-41	GPIO
70-73	POST code output
88-89	BIOS-defined slave address
A0-A1	DIMM 1
A2-A3	DIMM 2
A4-AF	BIOS internal
B0-BF	BIOS internal