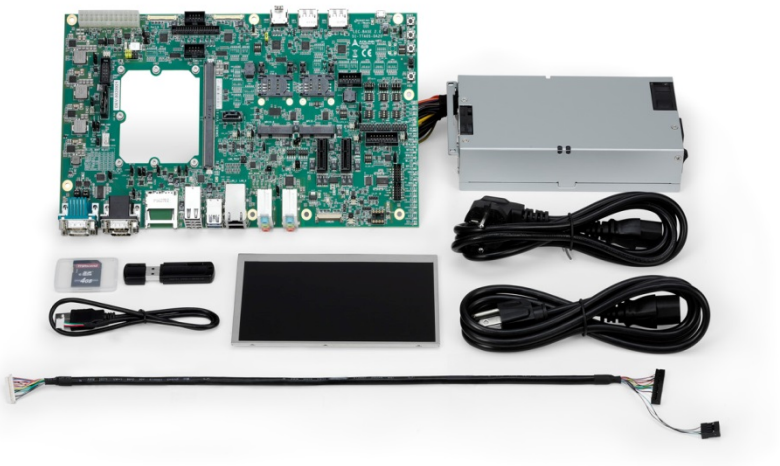
LEC-Starterkit 2.0

Quick Start Guide



Manual Rev.: 1.0

Revision Date: October 01, 2018

Part Number: 50-1Z245-1000

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Leading EDGE COMPUTING

Preface

Copyright

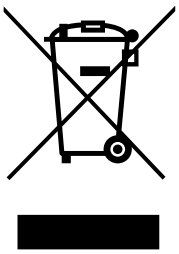
Copyright 2018 ADLINK Technology, Inc. This document contains proprietary information protected by copyright. All rights are reserved. No part of this manual may be reproduced by any mechanical, electronic, or other means in any form without prior written permission of the manufacturer.

Disclaimer

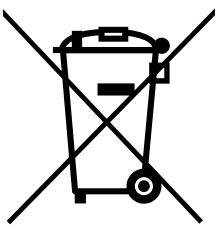
The information in this document is subject to change without prior notice in order to improve reliability, design, and function and does not represent a commitment on the part of the manufacturer. In no event will the manufacturer be liable for direct, indirect, special, incidental, or consequential damages arising out of the use or inability to use the product or documentation, even if advised of the possibility of such damages.

Environmental Responsibility

ADLINK is committed to fulfill its social responsibility to global environmental preservation through compliance with the European Union's Restriction of Hazardous Substances (RoHS) directive and Waste Electrical and Electronic Equipment (WEEE) directive. Environmental protection is a top priority for ADLINK. We have enforced measures to ensure that our products, manufacturing processes, components, and raw materials have as little impact on the environment as possible. When products are at their end of life, our customers are encouraged to dispose of them in accordance with the product disposal and/or recovery programs prescribed by their nation or company.



Battery Labels (for products with battery)









California Proposition 65 Warning



WARNING: This product can expose you to chemicals including acrylamide, arsenic, benzene, cadmium, Tris(1,3-dichloro-2-propyl)phosphate (TDCPP), 1,4-Dioxane, formaldehyde, lead, DEHP, styrene, DINP, BBP, PVC, and vinyl materials, which are known to the State of California to cause cancer, and acrylamide, benzene, cadmium, lead, mercury, phthalates, toluene, DEHP, DIDP, DnHP, DBP, BBP, PVC, and vinyl materials, which are known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Trademarks

Product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

Revision History

Revision	Description	Date	By
1.0	Initial release	2018-10-01	DA

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Table of Contents

Preface ii

1. Introduction 1

1.1. How to Order the LEC-Starterkit 2.0 1

1.2. What's Included in the LEC-Starterkit 2.0 2

2. Getting Started 4

2.1. Unpacking 4

2.2. Board Installation 6

2.3. Power and I/O Connectors 9

2.4. Powering Up the SMARC System 11

3. Display LEDs and Mini LEDs 13

3.1. Bootup Procedure 13

3.2. LED Table 13

3.3. BMC Status 13

4. Debug Card 14

Safety Instructions 15

Getting Service 16

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

This page intentionally left blank.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1. Introduction

The LEC-Starterkit 2.0 is intended for testing and verifying SMARC systems based on SMARC modules and includes everything customers need to begin their own designs and developments. The LEC-Starterkit 2.0 includes the LEC-BASE 2.0 reference carrier board, a SMARC LEC module (of your choice), thermal solution (heat spreader or heatsink, of your choice), cabling, LVDS touchscreen, and ATX power supply.

The complete kit allows customers to quickly emulate the functionality of their end product for software development and hardware verification. Drivers, BSP, carrier board design files (including schematics, mechanical drawings and BOM), certificates, test reports, SMARC module user's manual, and thermal solution drawings are included to assist customers in designing their own custom carrier boards.

The LEC-Starterkit 2.0 also includes a USB flash drive with SEMA pre-installed in a Linux OS environment. This helps customers quickly review the features provided by the EAPI.

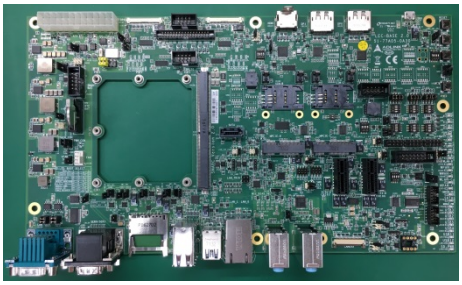
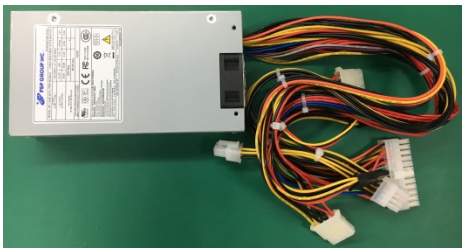
1.1. How to Order the LEC-Starterkit 2.0



Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

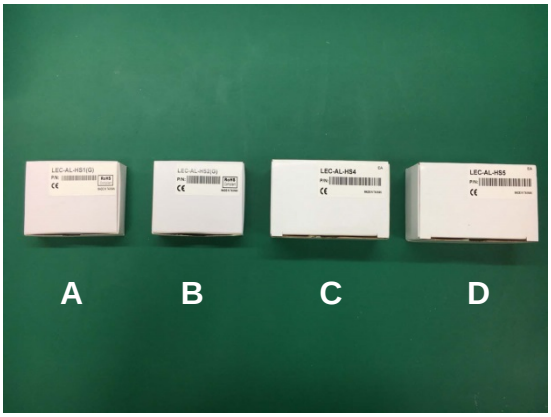
1.2. What's Included in the LEC-Starterkit 2.0

1.2.1. Standard Items

No.	Photo	Part Number	Description
1.		91-77A05-000E	**LEC-BASE 2.0** SMARC 2.0 reference carrier board
2.		31-32220-0000	**Power Supply Unit**
3.		29-F0400-1010	**SD Card** **Containing bootable OS**
4.		29-02480-0040	**USB Flash Drive (**2pcs) One containing documents One with SEMA pre-installed in Linux OS
5.		30-10057-5010	**7-pin SATA cable** 180° (-) to 180°
6.		30-00001-0030	**US Power Cord**, 10A, 125V
7.		30-00002-0010	**EU Power Cord**, 220V
8.		59-79007-0000 30-30016-0000 30-10192-0000 30-20736-0000	**Debug Card** (DB40) 40-pin flat cable External SPI cable (used for BIOS update) DB40 to BMC cable (used for BMC FW update)

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1.2.2. Optional Items

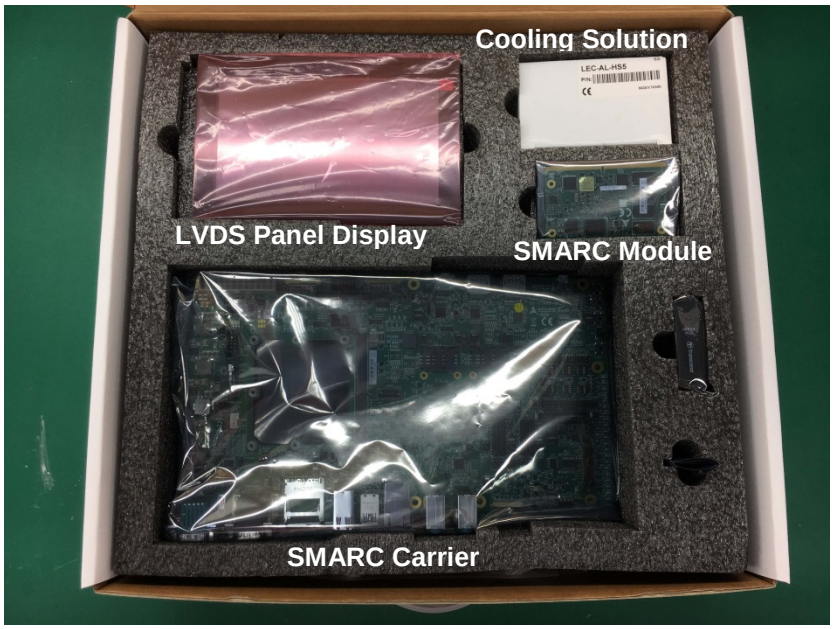
No.	Photo	Part Number	Description
1.		91-72506-00x0 91-72506-10x0 91-72506-20x0 91-72506-30x0 91-72506-40x0 91-72506-50x0	**SMARC module** of your choice: LEC-AL-E3930-2G-8G-ER LEC-AL-E3940-4G-32G-ER LEC-AL-E3950-8G-32G-ER LEC-AL-N3350-4G-8G-CT LEC-AL-N4200-8G-32G-CT LEC-AL-E3940-4G-ER
2.		A = Heat spreader HS1 (Apollo Lake-I Skus) B = Heat spreader HS2 (Apollo Lake Skus) C = Passive heatsink HS4 (Apollo Lake-I Skus) D = Passive heatsink HS5 (Apollo Lake Skus)	**Thermal solution** of your choice (only one thermal solution included in standard kit.)
3.		29-90070-U020	**LVDS Panel (Option)**
4.		30-20968-0000	**LVDS cable (Option)**
5.		30-20969-0000	**USB-to-Touchscreen Controller cable (Option)**

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2. Getting Started

2.1. Unpacking

Make sure the EPE foam contains the items shown in the following two photos.





Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Remove the EPE foam and ensure the underneath accessory boxes contain items shown in the following four photos.

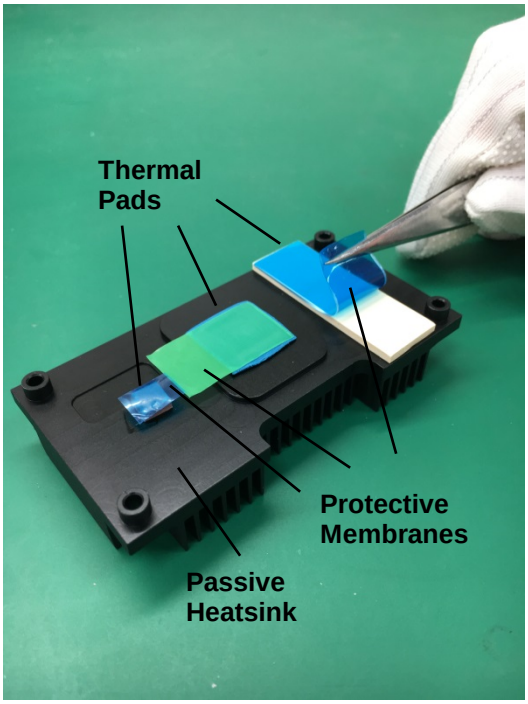
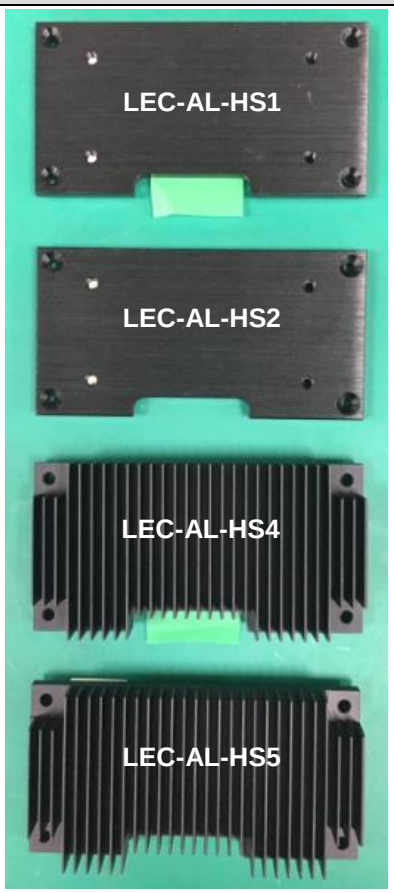








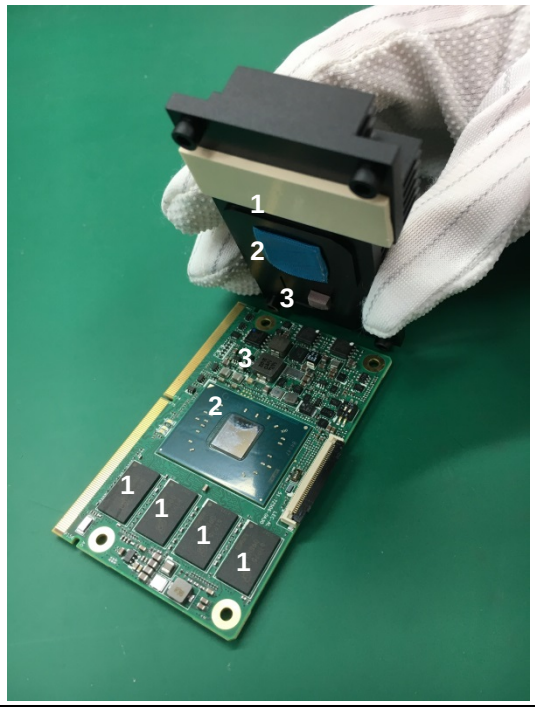
2.2. Board Installation

Procedure	Required Items
Step 1 Remove all protective membranes from the thermal pads on the thermal solution (either heat spreader or passive heatsink.)  	 Key: - LEC-AL-HS1 = Heat Spreader for E3930, E3940,and E3950 CPUs - LEC-AL-HS2 = Heat Spreader for N3350 and N4200 CPUs - LEC-AL-HS4 = Passive Heatsink for E3930, E3940,and E3950 CPUs - LEC-AL-HS5 = Passive Heatsink for N3350 and N4200 CPUs

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Step 2

Assemble the thermal solution (either heat spreader or passive heatsink) onto the SMARC module as shown in the following photo.



LEC-AL-HS1 assembled with module
LEC-AL-HS2 assembled with module



LEC-AL-HS4 assembled with module
LEC-AL-HS5 assembled with module



Step 3

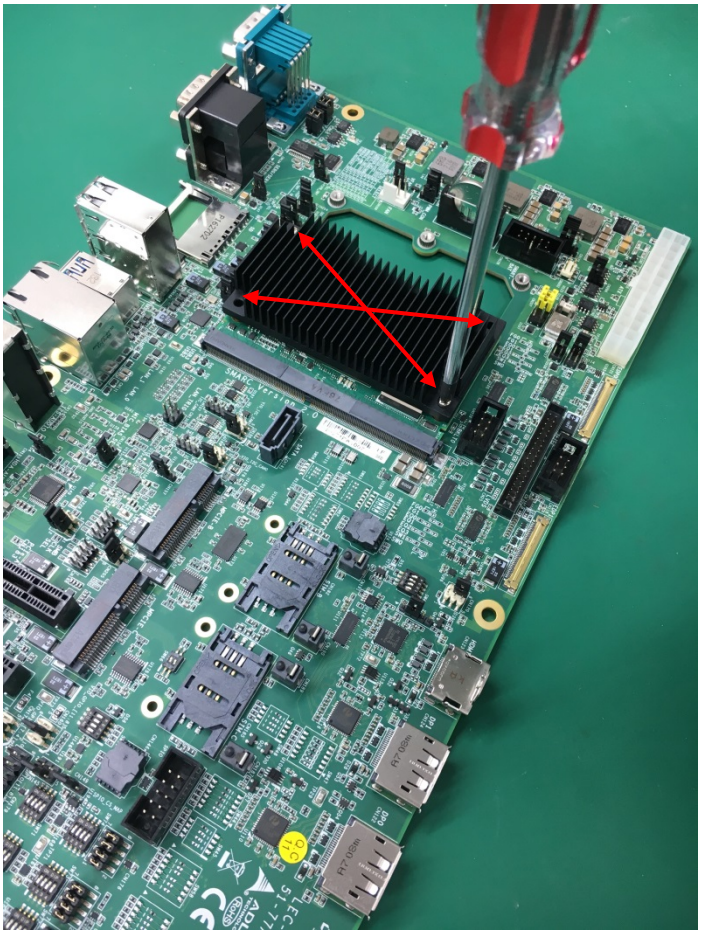
Insert the SMARC connector on the module into the SMARC interface slot on the carrier board as shown in the following photo.

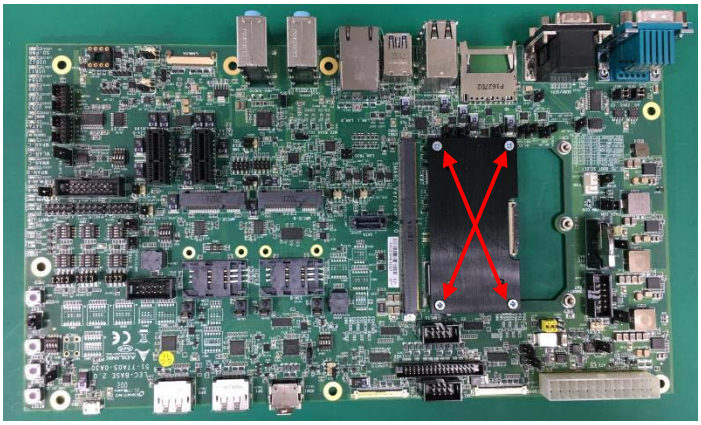


Not Applicable

Step 4

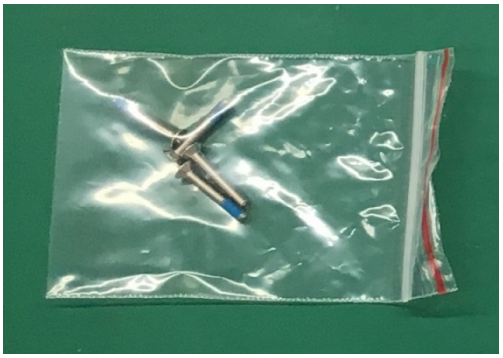
Install four 2.7mm pan head screws to mount the passive heatsink to the carrier board as shown in the following photo or use four 2.7mm countersink screws to mount the heat spreader as shown in the second photo. (Install the screws in alternating patterns as indicated by the crossing red arrows.)





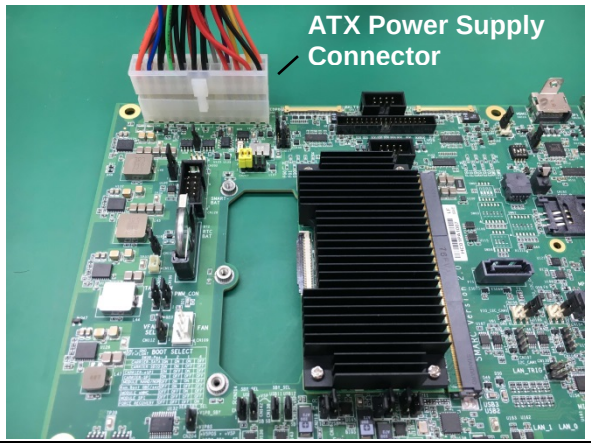
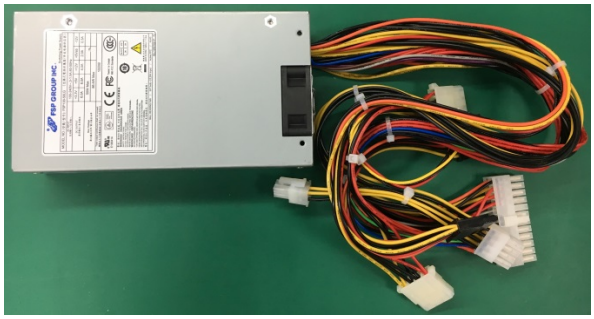


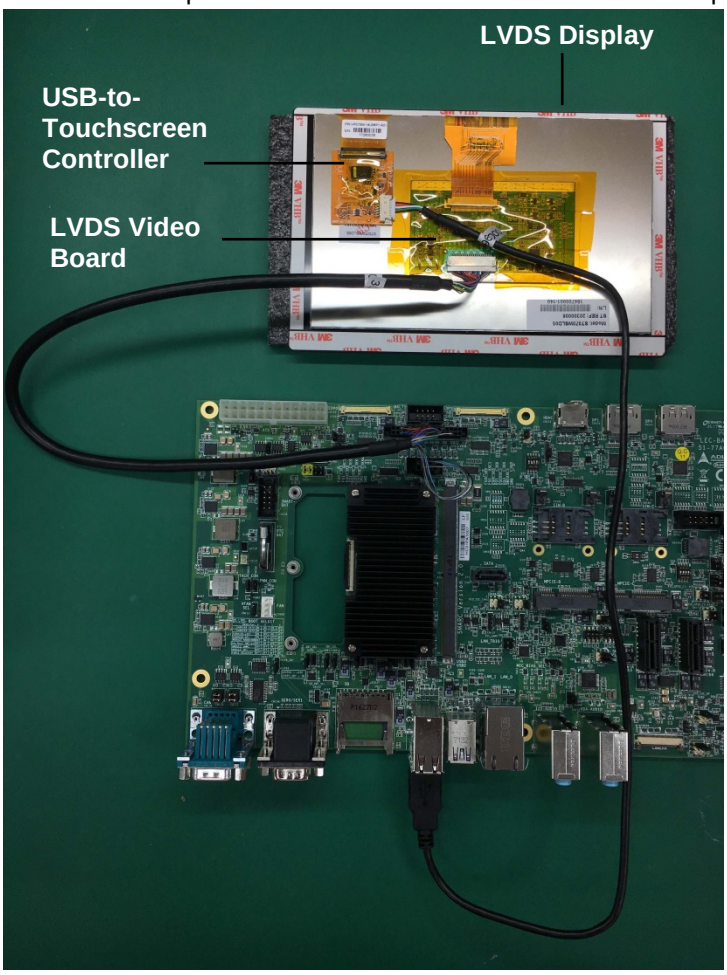
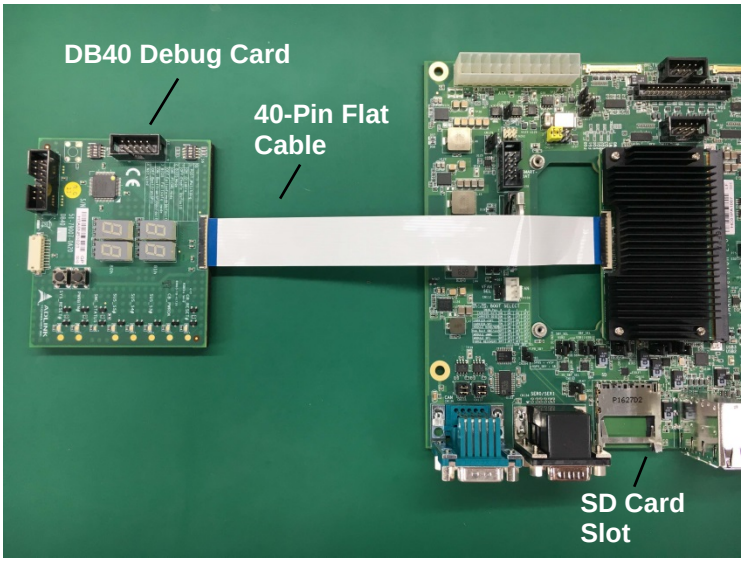
Pan Head Screws for Passive Heatsink



Countersink Screws for Heat Spreader

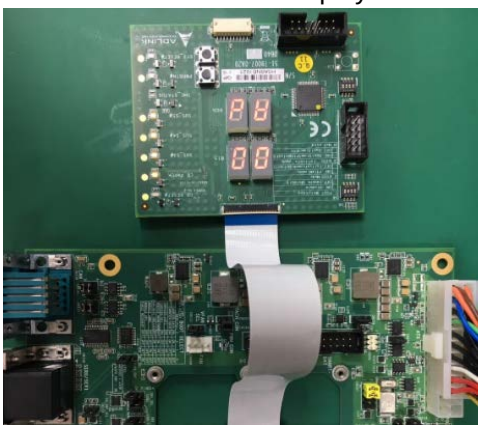
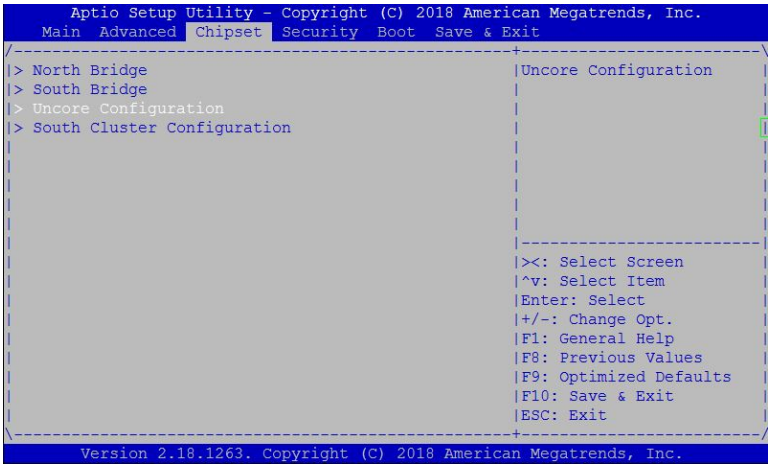
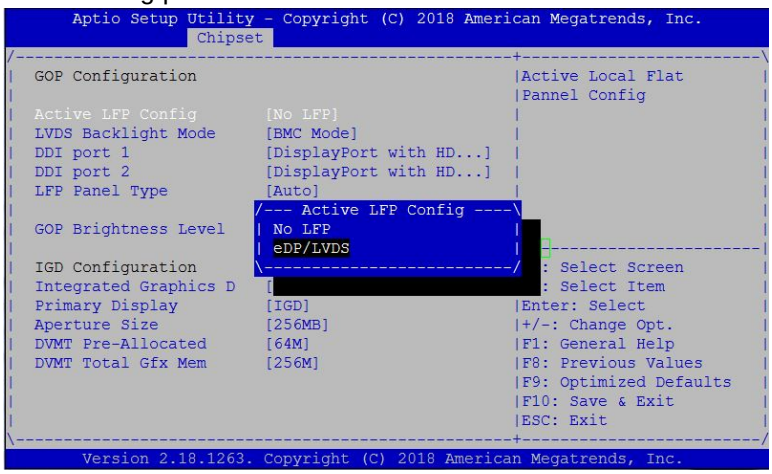
2.3. Power and I/O Connectors

Connect the Power Supply	Required Items
Plug in the ATX connector of the power supply to the CN2 connector on the LEC-BASE 2.0 carrier board. 	
Plug the AC power cord into the power supply. 	

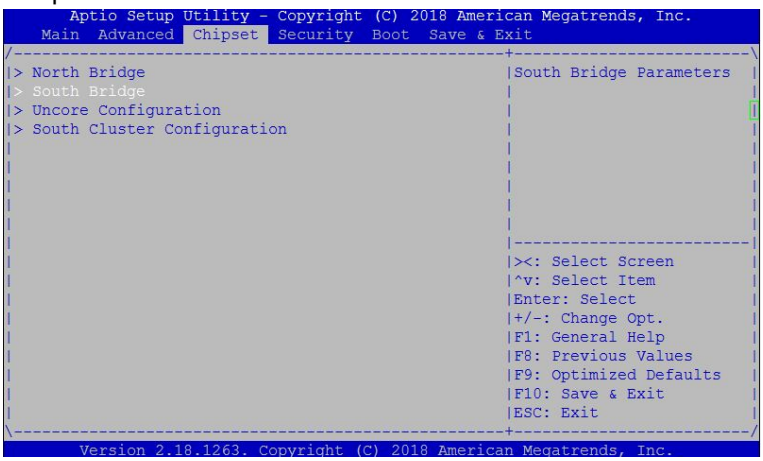
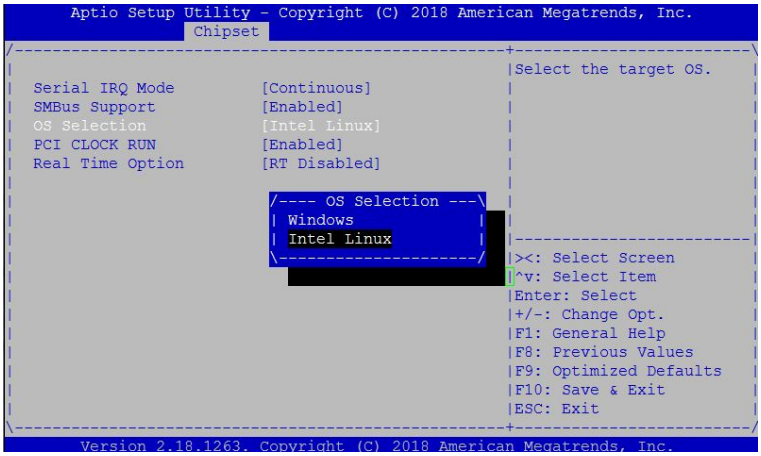
Connect the LVDS Display	Required Items
Connect the LVDS video cable and USB-to-Touchscreen Controller cable to the respective connectors on the carrier and the display.  	Connect the LVDS video cable to CN25 and CN116 on the carrier.  Connect the USB-to-Touchscreen Controller cable to CN144 on the carrier. 
Connect a DB40 debug card to the SMARC module using the 40-pin flat cable.  	Not Applicable

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2.4. Powering Up the SMARC System

Powering up the SMARC system	Required Items
- Plug in the AC power cord to a wall outlet and turn on the power supply. - Press and hold the SW34 power button on the carrier. - Release the SW34 power button on the carrier and wait for the 80h POST LEDs on the DB40 debug card to display the bootup status. “Pd” on POST LED means successful booting. You can then type in “exit” to enter the BIOS setup menu while POST LED displays “Pb”.  - Select Chipset > Uncore Configuration from the BIOS Setup utility. See the following photo.  - Select Active LFP Configuration > eDP/LVDS. See the following photo.  	Not Applicable Not Applicable Not Applicable

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Powering up the SMARC system	Required Items
- Select Chipset > South Bridge as shown in the following photo.  - Select the OS to be loaded from the OS Selection submenu. See the following photo.  - Save the setting. If no operating system is installed on the system, the monitor will display the BIOS setup menu after the first boot up.	Not Applicable Not Applicable

3. Display LEDs and Mini LEDs

This section describes the hexadecimal display and mini LED functionality.

3.1. Bootup Procedure

During power-up and BIOS execution, the CPU will first retrieve commands from POST and then execute them. Each command has a corresponding debug port data code or BIOS POST checkpoint code. The results from each checkpoint can be viewed on the display LEDs of the debug card, allowing the technician or administrator to debug the system. The POST code is written to I/O port 80h, and for extended POST codes port 80h and 81h are used.

The POST code is shown on the LED displays on the debug card

3.2. LED Table

The following LEDs indicate status of system signals as shown in the table below.

LED	Function
CB_RESET#	LED lights on active reset signal of carrier board
CB_PWROK	LED lights on active power-OK from SMARC module
SUS_S3#	LED lights on released SUS_S3# signal from SMARC module
SUS_S4#	LED lights on released SUS_S4# signal from SMARC module
SUS_S5#	LED lights on released SUS_S5# signal from SMARC module
BMC_STATUS	LED shows the status of the BMC on the SMARC module
PWRBTN#	LED lights on active power button signal of SMARC module
SYS_RESET#	LED lights on active reset signal of SMARC module

3.3. BMC Status

The BMC_STATUS LED (LED3) shows the status of the BMC on the SMARC module.

Behavior (blue)	Description
Blinking	A blinking BMC_STATUS LED indicates a failure during power up. The number of flashes indicates the error code. A missing/wrong system voltage, stuck on the reset line, BIOS failure or an unexpected shutdown of an onboard power supply is displayed by this signaling code. The error code is board specific (refer to the user's manual for your SMARC module).
Bright flash	A system state change occurs. Power-button activity, Reset-button activity, PCI_RST# activity or activity on the SLP_Sx signals is shown by this signaling mode.
Fast blinking	If the board is running on Fail-Safe-BIOS, the BMC_STATUS LED blinks very quickly.
Short bright flash every 4 seconds	System is in Suspend-to-RAM or Suspend-to-Disk state.

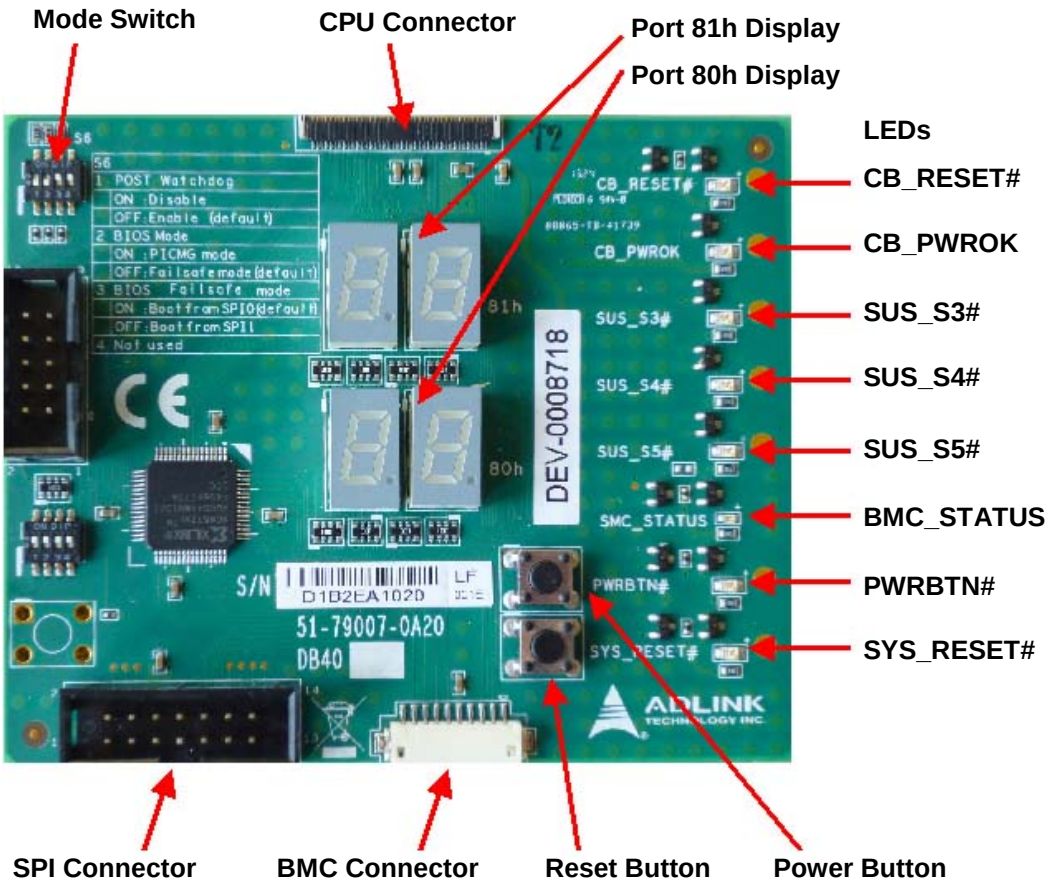
Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

4. Debug Card

The DB40 Debug Card provides SMARC system debugging functions and includes the following features:

- **Port 80/81 Decoding Interface** with LED hexadecimal display for Power On Self Test (POST) via LPC interface
- **Interface to SPI Flash** for BIOS update
- **Interface to BMC** for Board Management Controller (BMC) update
- **Buttons** for Power and Reset
- **Status LEDs** for Power Button, Reset Button, CB_PWROK, CB_RESET#, SLP_S3#, SLP_S4#, SLP_S5#

The DB40 Debug Card can only be used with SMARC products that have the appropriate 40-pin flat flexible connector (FFC).



Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Safety Instructions

Read and follow all instructions marked on the product and in the documentation before you operate your system. Retain all safety and operating instructions for future use.

- Please read these safety instructions carefully.
- Please keep this User‘s Manual for later reference.
- The equipment should be operated only from the type of power source indicated on the rating label. Make sure of the voltage of the power source when connecting the equipment to the power outlet.
- If your equipment has a voltage selector switch, make sure that the switch is in the proper position for your area. The voltage selector switch is set at the factory to the correct voltage.
- For pluggable equipment, make sure that the socket-outlet shall be installed near the equipment and shall be easily accessible.
- Place the power cord in such a way that people cannot step on it. Do not place anything over the power cord.
- If the equipment is not used for long time, disconnect the equipment from the main power to avoid being damaged by transient overvoltage.
- All cautions and warnings on the equipment should be noted.
- Please keep this equipment from humidity.
- Do not use this equipment near water or a heat source.
- Lay this equipment on a reliable surface when installing. A drop or fall could cause injury.
- Never pour any liquid into opening; this could cause fire or electrical shock.
- Openings in the case are provided for ventilation. Do not block or cover these openings. Make sure you provide adequate space around the system for ventilation when you set up your work area. Never insert objects of any kind into the ventilation openings.
- To avoid electrical shock, always unplug all power cables and modem cables from the wall outlets before removing covers.
- Lithium Battery provided (real time clock battery)

CAUTION – Risk of explosion if battery is replaced with one of an incorrect type. Dispose of used batteries according to the instructions

- If one of the following situations arises, get the equipment checked by a service personnel:
  - The power cord or plug is damaged.
  - Liquid has penetrated into the equipment.
  - The equipment has been exposed to moisture.
  - The equipment does not work well, or you cannot get it to work according to user‘s manual.
  - The equipment was dropped and damaged.
  - The equipment has obvious signs of breakage.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

Getting Service

Ask an Expert: http://askanexpert.adlinktech.com

ADLINK Technology, Inc.
Address: 9F, No.166 Jian Yi Road, Zhonghe District
New Taipei City 235, Taiwan
Tel: +886-2-8226-5877
Fax: +886-2-8226-5717
Email: service@adlinktech.com

Ampro ADLINK Technology, Inc.
Address: 5215 Hellyer Avenue, #110, San Jose, CA 95138, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200 (USA only)
Fax: +1-408-360-0222
Email: info@adlinktech.com

ADLINK Technology (China) Co., Ltd.
Address: 300 Fang Chun Rd., Zhangjiang Hi-Tech Park, Pudong New Area
Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5132-3588
Email: market@adlinktech.com

ADLINK Technology GmbH
Address: Hans-Thoma-Strasse 11, D-68163, Mannheim, Germany
Tel: +49-621-43214-0
Fax: +49-621 43214-30
Email: emea@adlinktech.com

Please visit the Contact page at www.adlinktech.com for information on how to contact the ADLINK regional office nearest you.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000