# COM Express

# nanoX Starter Kit

# Quick Start Guide




Manual Revision: 2.00
Revision Date: November 25, 2010
Part Number: 50-1J032-1000

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

## Revision History

| Revision | Date | Changes |
|---|---|---|
| 2.00 | 2010/11/25 | Initial Release |

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

# Preface

## Copyright 2010 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.

## Trademarks

AMIBIOS®8 is a registered trademark of American Megatrends, Inc. COM Express™ is a trademark of the PCI Industrial Computer Manufacturers Group (PICMG). Product names mentioned herein are used for identification purposes only and may be trademarks and/or registered trademarks of their respective companies.

## Quality Standards

ADLINK is certified to be in conformance with ISO 9001 quality management and ISO-14001 environmental management systems, and has addtional TL 9000 certification to meet the supply chain quality requirements of the global communications industry.

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

## Environmental Responsibility (RoHS & WEEE)

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.

## Electrostatic Sensitive Device (ESD)



Always ground yourself to remove any static charge before touching the module or carrier board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not installed in a chassis.

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

# Conventions

Take note of the following conventions used throughout this manual to make sure that tasks and instructions are performed properly.



NOTE:

Additional information, aids, and tips that help perform specific tasks.



CAUTION:

Critical information that users MUST know and instructions that users MUST perform to complete a task.



WARNING:

Information to prevent physical injury, data loss, component damage, program corruption, etc. when trying to complete a specific task.

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

# Technical Support

Contact us should you require any service or assistance.


**ADLINK Technology, Inc.**

Address: 9F, No.166 Jian Yi Road, Chungho City,
Taipei County 235, Taiwan
台北縣中和市建一路 166 號 9 樓
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: 上海市浦东新区张江高科技园区芳春路 300 号 (201203)
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 Beijing**

Address: 北京市海淀区上地东路 1 号盈创动力大厦 E 座 801 室(100085)
Rm. 801, Power Creative E, No. 1, B/D
Shang Di East Rd., Beijing, 100085 China
Tel: +86-10-5885-8666
Fax: +86-10-5885-8625
Email: market@adlinktech.com

**ADLINK Technology Shenzhen**

Address: 深圳市南山区科技园南区高新南七道 数字技术园
A1 栋 2 楼 C 区 (518057)
2F, C Block, Bldg. A1, Cyber-Tech Zone, Gao Xin Ave. Sec. 7,
High-Tech Industrial Park S., Shenzhen, 518054 China
Tel: +86-755-2643-4858
Fax: +86-755-2664-6353
Email: market@adlinktech.com


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

**ADLINK Technology (Europe) GmbH**

Address: Nord Carree 3, 40477 Duesseldorf, Germany
Tel: +49-211-495-5552
Fax: +49-211-495-5557
Email: emea@adlinktech.com

**ADLINK Technology, Inc. (French Liaison Office)**

Address: 15 rue Emile Baudot, 91300 Massy CEDEX, France
Tel: +33 (0) 1 60 12 35 66
Fax: +33 (0) 1 60 12 35 66
Email: france@adlinktech.com

**ADLINK Technology Japan Corporation**

Address: 151-0072 東京都渋谷区幡ヶ谷
1-1-2 朝日生命幡ヶ谷ビル 8F
Asahiseimei Hatagaya Bldg. 8F
1-1-2 Hatagaya, Shibuya-ku, Tokyo 151-0072, Japan
Tel: +81-3-4455-3722
Fax: +81-3-5333-6040
Email: japan@adlinktech.com

**ADLINK Technology, Inc. (Korean Liaison Office)**

Address: 서울시 서초구 서초동 1506-25 한도 B/D 2 층
2F, Hando B/D, 1506-25, Seocho-Dong, Seocho-Gu,
Seoul 137-070, Korea
Tel: +82-2-2057-0565
Fax: +82-2-2057-0563
Email: korea@adlinktech.com

**ADLINK Technology Singapore Pte. Ltd.**

Address: 84 Genting Lane #07-02A, Cityneon Design Centre,
Singapore 349584
Tel: +65-6844-2261
Fax: +65-6844-2263
Email: singapore@adlinktech.com

**ADLINK Technology Singapore Pte. Ltd. (Indian Liaison Office)**

Address: No. 1357, "Anupama", Sri Aurobindo Marg, 9th Cross,
JP Nagar Phase I, Bangalore - 560078, India
Tel: +91-80-65605817
Fax: +91-80-22443548
Email: india@adlinktech.com

LRI 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

# Table of Contents

**Preface** ..... **3**

**1 Introduction** ..... **11**

1.1 Overview ..... 11

1.2 How to order the nanoX Starter Kit ..... 11

1.3 What's included in the nanoX Starter Kit? ..... 12

**2 Getting Started** ..... **15**

2.1 Unpacking ..... 15

2.2 Board Installation ..... 17

2.3 Display Interface Installation ..... 22

2.4 Power and I/O Connections ..... 26

2.5 Powering Up the nanoX-BASE System ..... 28

**3 Using a TTL Flat Panel Display** ..... **29**

3.1 Overview ..... 29

3.2 Connectors and Jumpers ..... 30

3.3 Installation ..... 35

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

## 1.1 Overview

The nanoX Starter Kit is intended for testing and verification of COM Express systems based on Type 1 modules and includes everything customers need to begin their own design and development.

The nanoX Starter Kit includes the nanoX-BASE standard ATX size COM Express reference carrier board, the nanoX-ML COM Express Ultra form factor module and additional items such as cabling, power supply and thermal solution. The complete kit allows customers to quickly emulate the functionality of their end product for software development and hardware verification. Drivers, BSPs, design files (including schematics, mechanical drawings and BOM), certificates and test reports are included to assist customers in designing their own custom carrier board. The The nanoX Starter Kit also includes additional development tools including a verified 10.1" LVDS flat panel display, an LVDS-to-TTL conversion board, and ADD2 DVI card.

## 1.2 How to order the nanoX Starter Kit



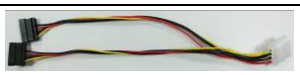

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

## 1.3 What's included in the nanoX Starter Kit?

**Standard Items**

| No. | Photo | ADLINK P/N | Item Description |
|---|---|---|---|
| 1 |  | 91-77102-0010 | nanoX-BASE Reference Carrier Board |
| 2 |  | 29-90100-F000 | 10.1” LVDS flat panel display (1024 x 600) HSD100IFW1-A00 |
| 3 |  | 91-79203-0010 | Flat Panel Transfer Board for LVDS to TTL signal conversion |
| 4 |  | 92-94046-0010 | ADD2 DVI Adapter card (FI-CH7307) |
| 5 |  | 29-024L0-0010. | USB flash drive |
| 6 |  | 31-32210-1000 | Power supply |

## Standard Cabling

| No. | Picture | ADLINK P/N | Item Description |
|---|---|---|---|
| 1 |  | 30-20243-2000 | LVDS panel cable |
| 2 |  | 30-20449-0000 | FPTB LVDS-to-LVDS cable |
| 3 |  | 30-30012-0000 | SDVO flat cable |
| 4 |  | 30-10057-5010 | 7P SATA cable |
| 5 |  | 30-20171-1000 | 4-pin Molex to 2x SATA Power cable |
| 6 |  | 30-01068-0000 | USB 2.0 Type A to mini-B cable 2m |
| 7 |  | 30-10014-3000 | LPT Flat cable IDC to DB25, L=215mm |
| 8 |  | 30-20027-3000 | PSU converter cable for AT mode using ATX power supply (no 5Vsb) |
| 9 |  | 30-00001-0030 | US Power Cord 10A,125V |
| 10 |  | 30-00002-0010 | EU Power Cord 220V |

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

### Optional Items

| No. | Picture | ADLINK P/N | Item Description |
|---|---|---|---|
| 1 |  | 91-72301-1030 | **nanoX-ML-53-512(G)** Ultra size COM Express Type 1 Module with Intel Atom Processor Z530 at 1.6GHz, 512 MB memory |
| | | 91-72301-1130 | **nanoX-ML-53-512/4G(G)** Ultra size COM Express Type 1 Module with Intel Atom Processor Z530 at 1.6GHz, 512 MB memory and 4 GB SSD |
| | | 91-72301-3130 | **nanoX-ML-51-512/4G(G)** Ultra size COM Express Type 1 Module with Intel Atom Processor Z510 at 1.1GHz, 512 MB memory and 4 GB SSD |
| | | 91-72301-4030 | **nanoX-ML-53P-512/4G(G)** Ultra size COM Express Type 1 Module with Intel Atom Processor Z530 at 1.6GHz, 512 MB memory, 4 GB SSD and 2 PCIe x1 |
| 2 |  | 91-95041-1010 | **THS-nML-B** Low profile heatsink for nanoX-ML with threaded standoffs |
| | | 91-95041-0010 | **HTS-nML-B** Heatspreader for nanoX-ML with threaded standoffs |

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

# 2 Getting Started

## 2.1 Unpacking

Check that the EPE foam layers contain the items shown below:



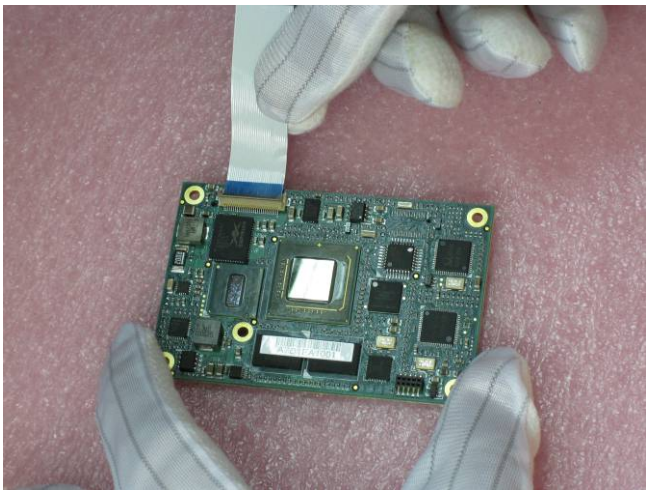

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

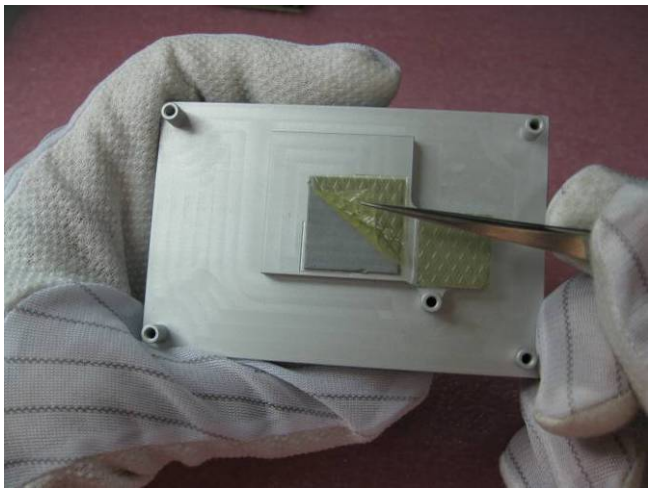
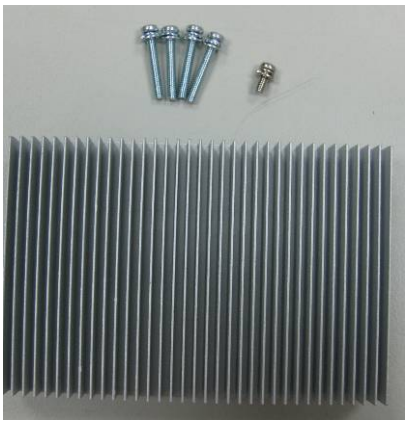
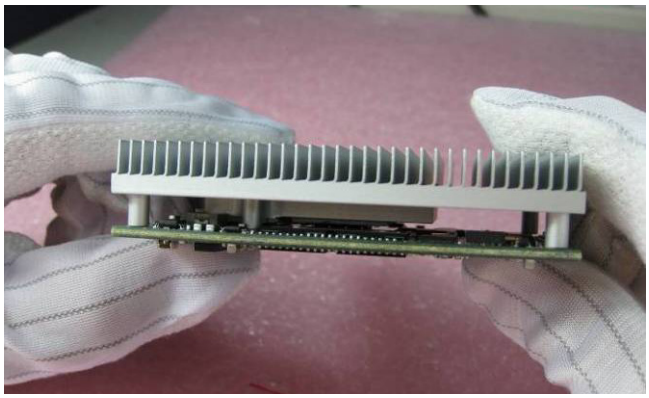
Remove the EPE foam layers and check accessory boxes contain the items below:

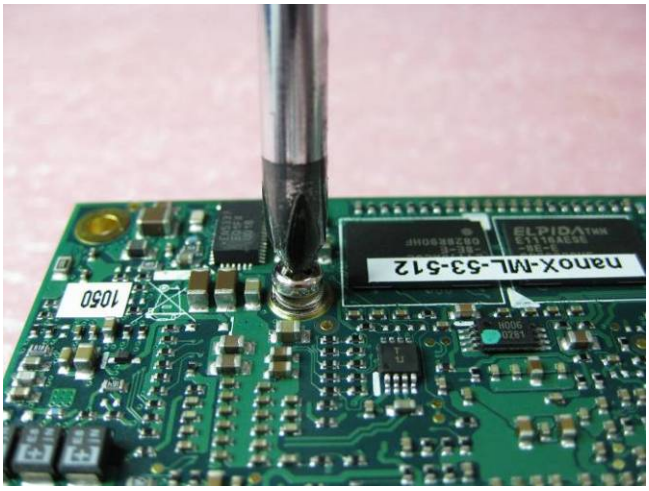
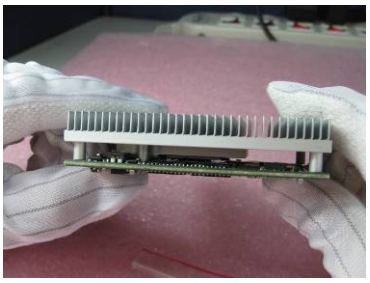


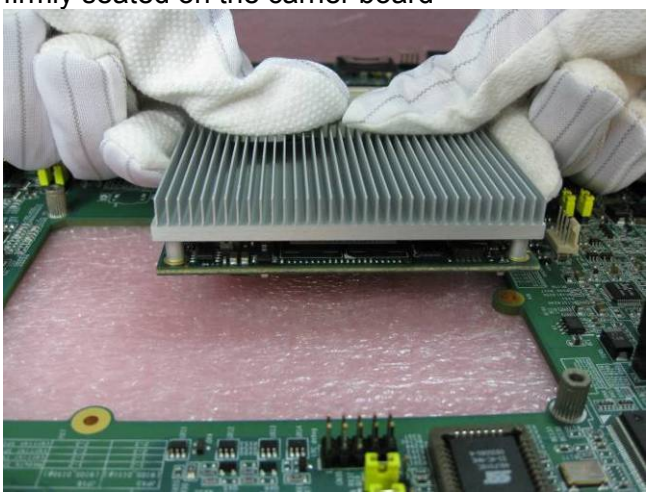
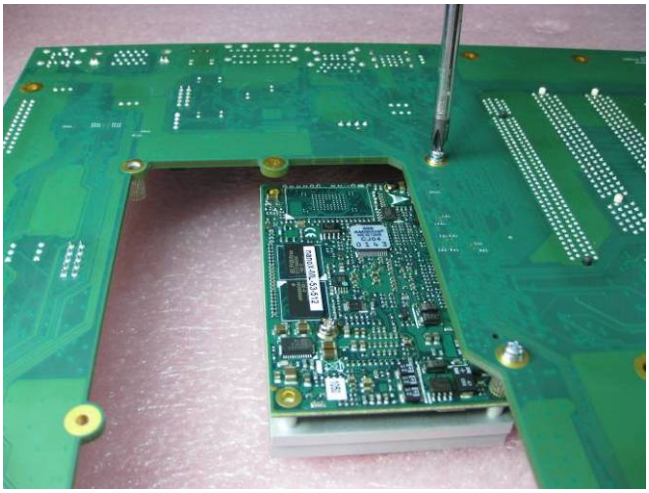
## 2.2 Board Installation

If you intend to use a DVI monitor with the ADD2 DVI card, first install the SDVO flat cable onto the nanoX-ML module. Otherwise, skip ahead to Step 3.

| **Install SDVO flat cable onto nanoX-ML** (if necessary) | **Required items** |
|---|---|
| **Step 1**<br>Lift the locking mechanism on the nanoX-ML SDVO signal connector and insert the SDVO flat cable.<br> | <br> |
| **Step 2**<br>Press down on the lock on the SDVO connector to secure the flat cable.<br> | |

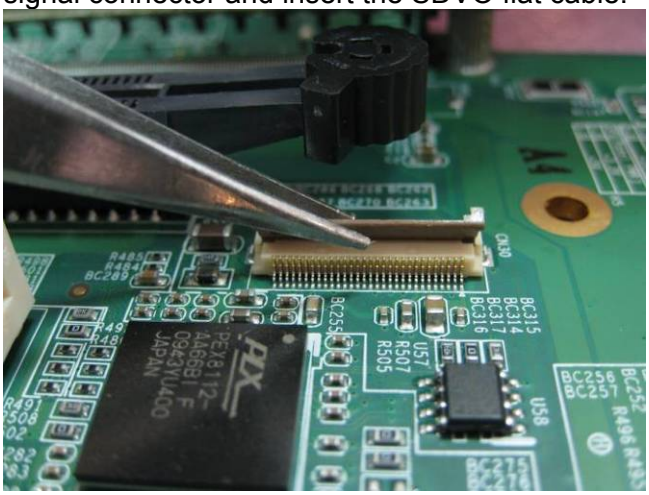
| Install heatsink onto nanoX-ML module | Required items |
|---|---|
| **Step 3**<br>Removed protective membranes from thermal pads<br> |  |
| **Step 4**<br>Assemble heatsink onto nanoX-ML module<br><br> | <br>**or**<br> |

| **Install heatsink onto nanoX-ML module** (cont'd) | **Required items** |
|---|---|
| **Step 5**<br>Use one M2.5, L:6mm screw provided to fasten the heatsink to the nanoX-ML module<br> |  |
| **Install nanoX-ML module onto carrier board** | **Required items** |
| **Step 6**<br>Place the nanoX-ML module with heatsink into the Type 1 connector on the carrier board as shown<br><br>(continued below) | <br> |

| **Install nanoX-ML module onto carrier board** (cont'd) | **Required items** |
|---|---|
| Press down on the connector side of the module until it is firmly seated on the carrier board<br> | |
| **Step 7**<br>Use two M2.5, L:16mm screws provided to secure the nanoX-ML to the carrier board (2 extra screws are provided for use with a custom carrier board with 4 mounting standoffs)<br> |  |

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

If you not using a DVI monitor with the ADD2 DVI card, skip ahead to Section 2.3.

| **Install SDVO flat cable onto carrier board** (if necessary) | **Required items** |
|---|---|
| **Step 8**<br>Lift the locking mechanism on the nanoX-BASE SDVO signal connector and insert the SDVO flat cable.<br><br>Insert the SDVO flat cable into nanoX-BASE SDVO connector and press down on the locking mechanism<br> | |

## 2.3 Display Interface Installation

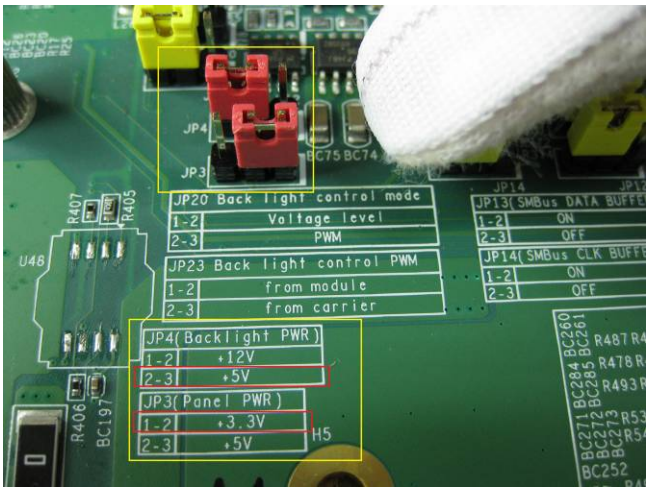
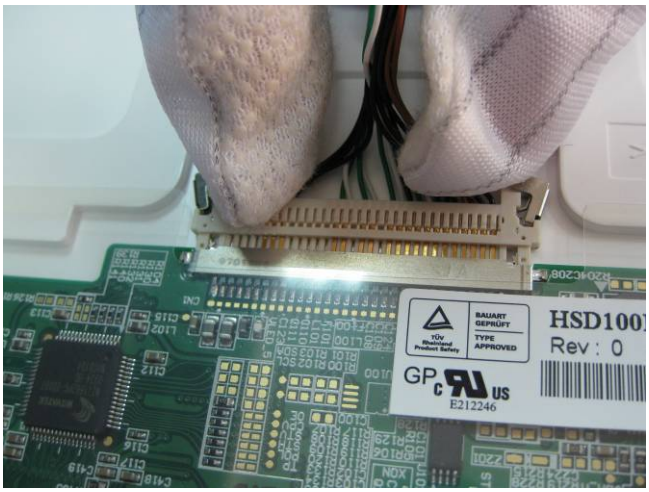
### *DVI Display using ADD2 DVI Adapter Card*

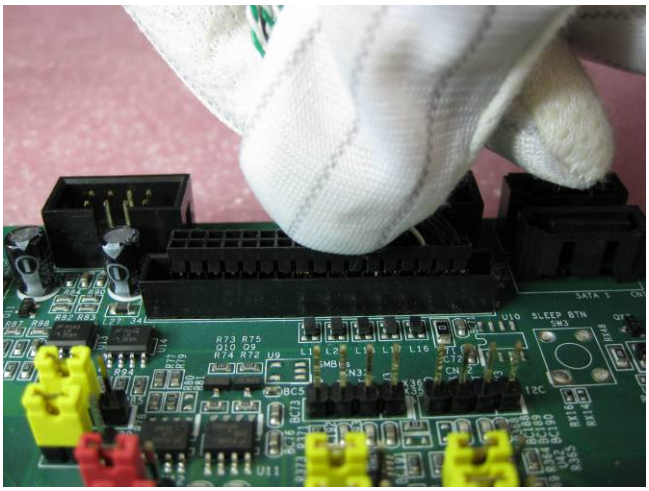
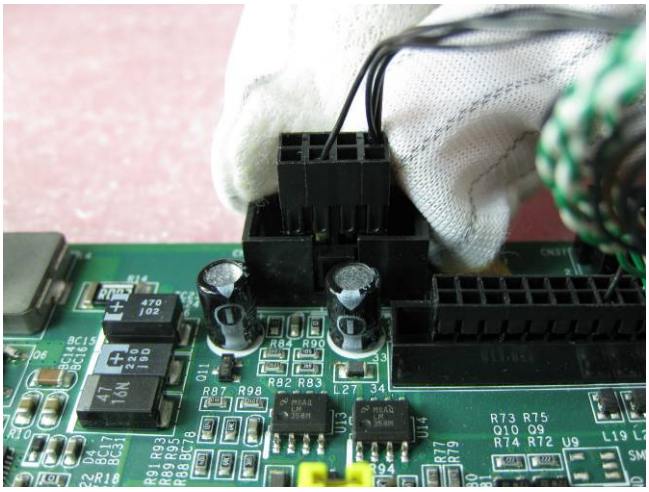
If you intend to use a DVI monitor with the ADD2 DVI Adapter Card, be sure to first install the SDVO flat cable as described in Section 2.2 Board Installation above.

| Install ADD2 DVI Adapter Card | Required items |
|---|---|
| **Step 1**<br>Plug the ADD2 DVI Adapter Card into the SDVO slot<br> |  |
| **Step 2**<br>Plug the DVI display connector into the ADD2 DVI Adapter Card<br> | |

## *LVDS Output using HannStar Flat Panel Display*

To use the HannStar 10.1” LVDS flat panel display included with the nanoX-BASE Starter Kit, follow the instructions below.

| Install Flat Panel Display | Required items |
|---|---|
| **Step 1**<br>Set the nanoX-BASE **Panel Power Jumper** (JP3) is set to *+3.3V* (short 1-2) and the **Backlight Power Jumper** (JP4) is set to *+5V* (short 2-3) as shown below<br> | |
| **Step 2**<br>Connect the JAE FI-Series end of the LVDS panel cable (P/N: 30-20243-2000) to the LVDS flat panel display as shown<br> | <br><br> |

| **Install Flat Panel Display** (cont'd) | **Required items** |
|---|---|
| **Step 3**<br>Connect the 34-pin female box header of the LVDS panel cable to CNY6 of the nanoX-BASE (LVDS Output Connector)<br> | <br> |
| **Step 9**<br>Connect the 8-pin female box header of the LVDS panel cable to CN7 of the nanoX-BASE (Backlight Control Connector)<br> | |

### *Using the Flat Panel Transfer Board*

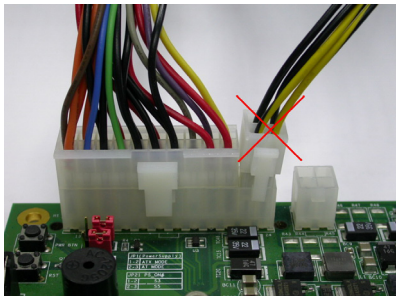
Included with the nanoX Starter Kit is the Flat Panel Transfer Board (FPTB) which is intended for prototyping and verification of LVDS and TTL flat panel displays with COM Express systems. The FPTB is equipped with an LVDS-to-TTL converter to allow users to implement TTL displays with COM Express systems that support LVDS only. Onboard PWM circuitry supports backlight control for LVDS and TTL displays.

For detailed instructions on how to connect a TTL flat panel display to the nanoX-BASE using the FPTB, see Chapter 3 on page 29.

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

## 2.4 Power and I/O Connections

| Connect the Power Supply | Required items |
|---|---|
| Plug the ATX connector of the power supply into CN1 of the nanoX-BASE<br><br>Plug the ATX 12V 4-pin connector of the power supply into the nanoX-BASE<br> |  |



CAUTION:

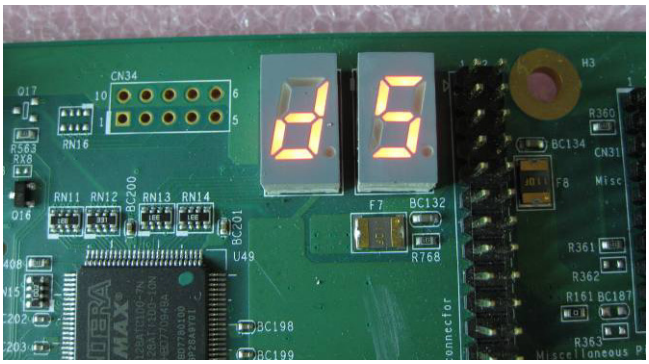
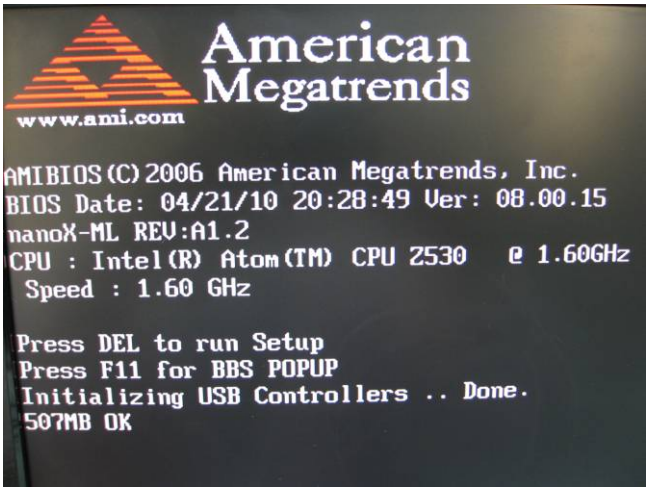
**DO NOT** plug the ATX 12V 4-pin connector of the power supply into the ATX 24-pin power connector on the nanoX-BASE

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

| **Connect the Power Supply** (cont'd) | **Required items** |
|---|---|
| Plug power cord into the power supply<br> |  |
| **Connect the Keyboard and Mouse** | |
| Plug keyboard and mouse connector into nanoX-BASE<br> | |

## 2.5 Powering Up the nanoX-BASE System

To power up the nanoX-BASE system, follow the steps below.

| Powering Up the nanoX-BASE System | Required items |
|---|---|
| The POST LEDs on the nanoX-BASE will display the bootup status – "d5" indicates a successful boot<br><br>The monitor will display the BIOS boot screen<br> | |

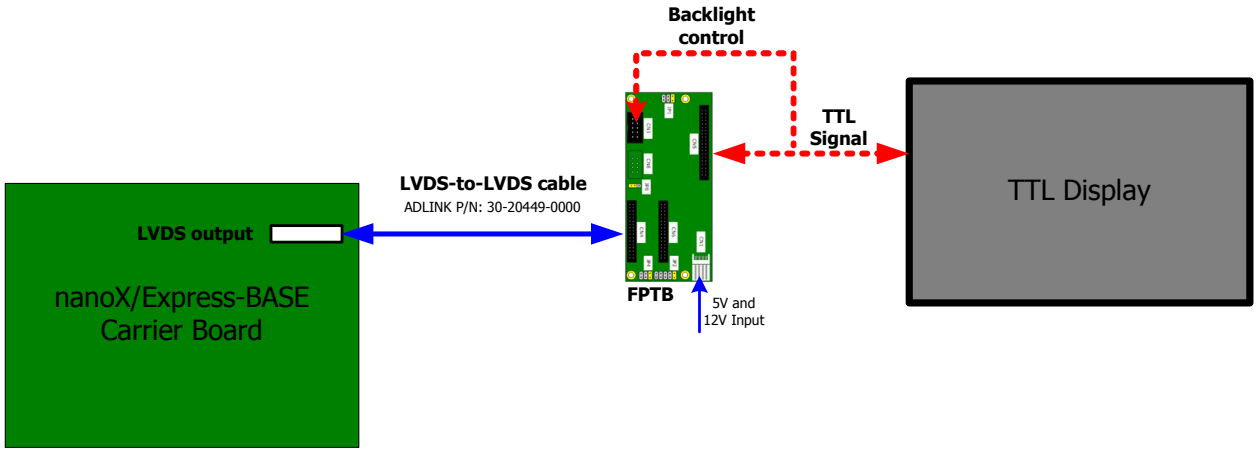
# 3 Using a TTL Flat Panel Display

Included with the nanoX Starter Kit is the Flat Panel Transfer Board (FPTB) which is intended for prototyping and verification of LVDS and TTL flat panel displays with COM Express systems. The FPTB is equipped with an LVDS-to-TTL converter to allow users to implement TTL displays with COM Express systems that support LVDS only. Onboard PWM circuitry supports backlight control for LVDS and TTL displays. For a complete description of the FPTB and its applications, refer to the *Flat Panel Transfer Board User's Manual*.

Instructions on how to connect a TTL flat panel display to the nanoX-BASE using the FPTB are provided below.

## 3.1 Overview

The FPTB provides LVDS-to-TTL conversion and backlight control for use with an ADLINK reference carrier board and TTL display. The user must provide the cable connection from the FPTB's TTL output and backlight control connectors to the TTL panel inputs.

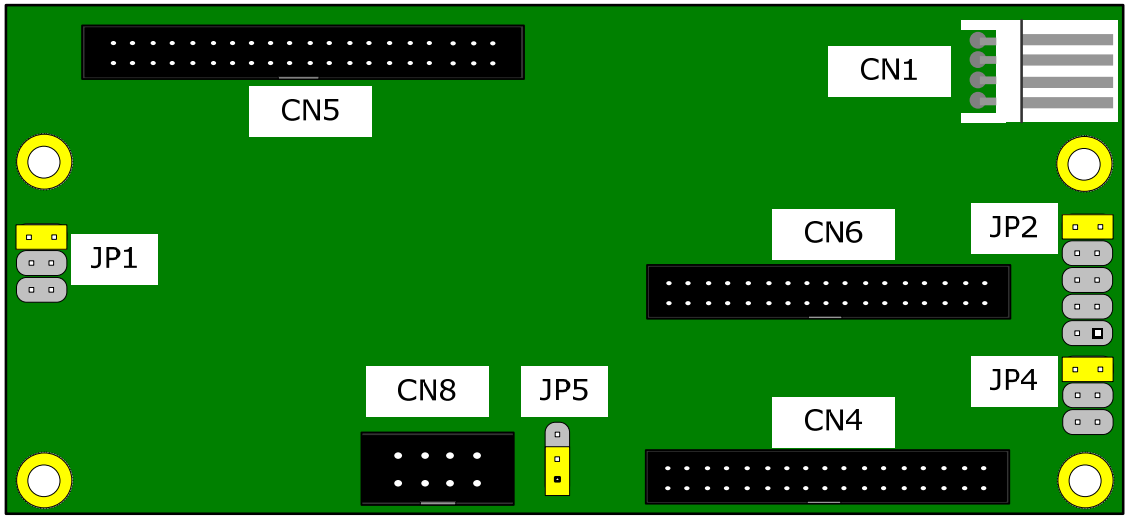



**nanoX/Express-BASE → FPTB → TTL Display:**

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

## 3.2 Connectors and Jumpers

### *Board Layout*



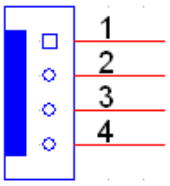

**FPTB (Flat Panel Transfer Board) Connector and Jumper Locations**

| Connector | Description |
|---|---|
| CN1 | Power Connector |
| CN4 | LVDS Input Connector |
| CN5 | TTL Output Connector |
| CN6 | LVDS Output Connector |
| CN8 | Backlight Control Connector |
| JP1 | Backlight Voltage Jumper |
| JP2 | Panel Voltage Jumper |
| JP4 | LVDS/TTL Mode Selector Jumper |
| JP5 | Backlight Control Mode Jumper |

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

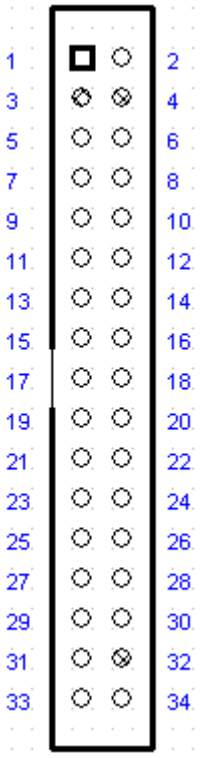
## *Connector Pin Definitions*

### *CN1: Power Connector (Floppy power connector)*




| Pin | Signal |
|---|---|
| 1 | +5V |
| 2 | GND |
| 3 | GND |
| 4 | +12V |

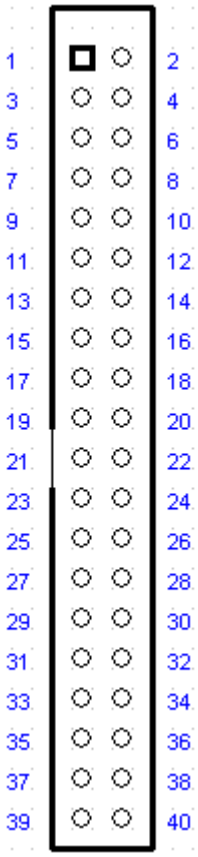
### *CN4: LVDS Input Connector (2x17 box header, 2.00 mm pitch)*




| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | LVDS_CLK_A | 2 | LVDS_DTA_A |
| 3 | PNL_PWR | 4 | PNL_PWR |
| 5 | GND | 6 | LVDS_A-N0 |
| 7 | LVDS_A-P0 | 8 | VDD_EN |
| 9 | LVDS_A-N1 | 10 | LVDS_A-P1 |
| 11 | BL_EN_2 | 12 | LVDS_A-P2 |
| 13 | LVDS_A-N2 | 14 | N.C |
| 15 | LVDS_ACLK _ N | 16 | LVDS_ACLK _ P |
| 17 | PNL_PWR | 18 | LVDS_A-P3 |
| 19 | LVDS_A-N3 | 20 | GND |
| 21 | LVDS_B-N0 | 22 | LVDS_B-P0 |
| 23 | GND | 24 | LVDS_B-N1 |
| 25 | LVDS_B-P1 | 26 | GND |
| 27 | LVDS_B-N2 | 28 | LVDS_B-P2 |
| 29 | GND | 30 | LVDS_BCLK _ P |
| 31 | LVDS_BCLK _ N | 32 | N.C |
| 33 | LVDS_B-P3 | 34 | LVDS_B-N3 |

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

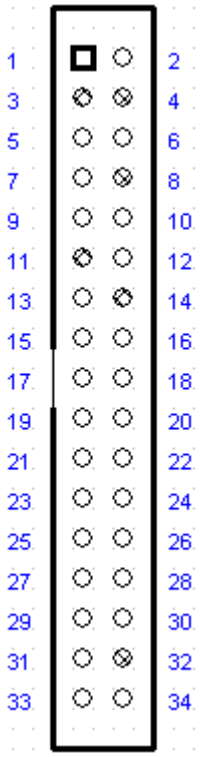
***CN5: TTL Output Connector*** *(2x20 box header, 2.00 mm pitch)*




| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | GND | 2 | FCLK |
| 3 | GND | 4 | FR0 |
| 5 | FR1 | 6 | FR2 |
| 7 | GND | 8 | FR3 |
| 9 | FR4 | 10 | FR5 |
| 11 | GND | 12 | FR6 |
| 13 | FR7 | 14 | FG0 |
| 15 | GND | 16 | FG1 |
| 17 | FG2 | 18 | FG3 |
| 19 | GND | 20 | FG4 |
| 21 | FG5 | 22 | GND |
| 23 | FG6 | 24 | FG7 |
| 25 | FB0 | 26 | GND |
| 27 | FB1 | 28 | FB2 |
| 29 | FB3 | 30 | GND |
| 31 | FB4 | 32 | FB5 |
| 33 | FB6 | 34 | GND |
| 35 | FB7 | 36 | HS (HSYNC) |
| 37 | VS (VSYNC) | 38 | GND |
| 39 | DE (DATA ENBLE) | 40 | GND |

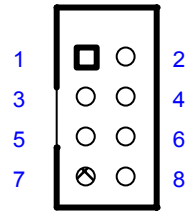
Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

***CN6: LVDS Output Connector*** *(2x17 box header, 2.00 mm pitch)*




| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | LVDS_CLK_A | 2 | LVDS_DTA_A |
| 3 | PNL_PWR | 4 | PNL_PWR |
| 5 | GND | 6 | LVDS_A-N0 |
| 7 | LVDS_A-P0 | 8 | VDD_EN |
| 9 | LVDS_A-N1 | 10 | LVDS_A-P1 |
| 11 | BL_EN_2 | 12 | LVDS_A-P2 |
| 13 | LVDS_A-N2 | 14 | N.C |
| 15 | LVDS_ACLK _ N | 16 | LVDS_ACLK _ P |
| 17 | PNL_PWR | 18 | LVDS_A-P3 |
| 19 | LVDS_A-N3 | 20 | GND |
| 21 | LVDS_B-N0 | 22 | LVDS_B-P0 |
| 23 | GND | 24 | LVDS_B-N1 |
| 25 | LVDS_B-P1 | 26 | GND |
| 27 | LVDS_B-N2 | 28 | LVDS_B-P2 |
| 29 | GND | 30 | LVDS_BCLK _ P |
| 31 | LVDS_BCLK _ N | 32 | N.C |
| 33 | LVDS_B-P3 | 34 | LVDS_B-N3 |

***CN8: Backlight Control Connector*** *(2x4 box header, 2.54 mm pitch)*

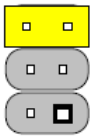



| Pin | Signal | Pin | Signal |
|---|---|---|---|
| 1 | GND | 2 | PNL_PWR |
| 3 | BL_CTRL | 4 | GND |
| 5 | LVDS_BL_EN | 6 | GND |
| 7 | N.C. | 8 | BLK_PWR |

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

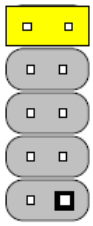
## Jumper Settings

### JP1: Backlight Voltage



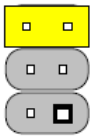
| Jumper | Status |
|---|---|
| 1 - 2 | +12V |
| 3 – 4 | Reserved |
| 5 – 6 | +5V* |

### JP2: Panel Voltage



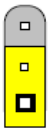
| Jumper | Status |
|---|---|
| 1 - 2 | +12V |
| 3 – 4 | Reserved |
| 5 – 6 | +5V |
| 7 - 8 | Reserved |
| 9 - 10 | +3.3V* |

### JP4: LVDS/TTL Mode



| Jumper | Status |
|---|---|
| 1 - 2 | TTL Output Active |
| 3 - 4 | Reserved |
| 5 - 6 | LVDS Output Active* |

### JP5: Backlight Control Mode



| Jumper | Status |
|---|---|
| 1 - 2 | BLCTRL_PWM * |
| 2 - 3 | BLCTRL_VTL |

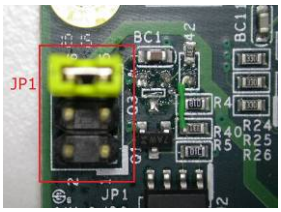
**Note:** * indicates default setting

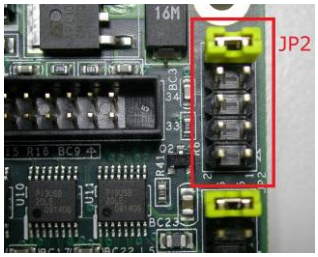
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

## 3.3 Installation

### *Jumper Settings*

Make sure the **Backlight Voltage jumper** (JP1) and **Panel Voltage jumper** (JP2) are correct for the display panel you are using.



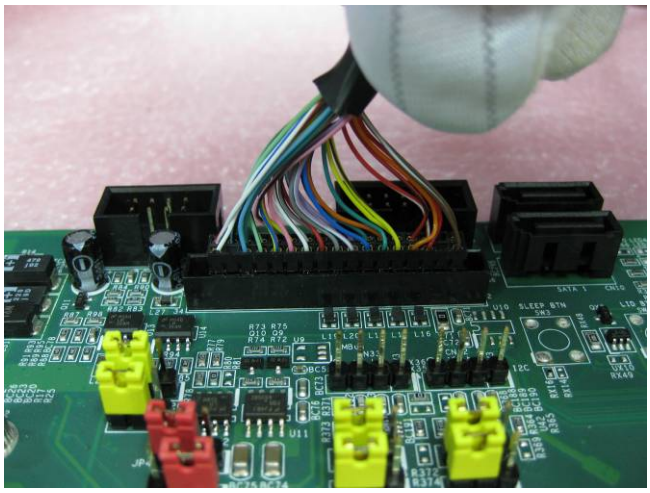
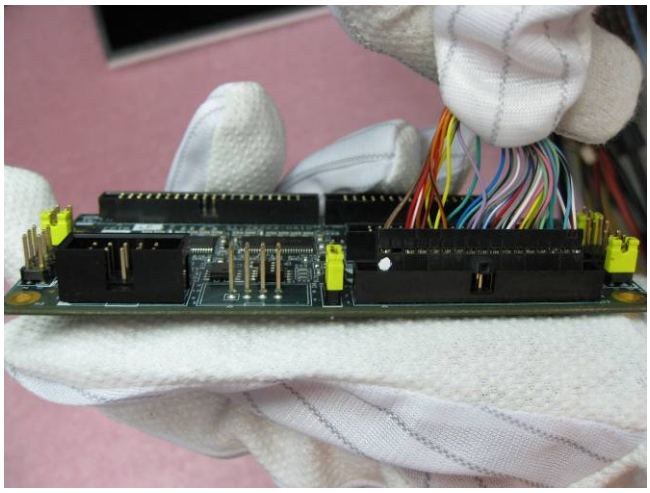




Set the **LVDS/TTL Mode jumper** (JP4) to *TTL Output Active* (short pins 1-2).Set the **Backlight Control Mode jumper** (JP5) to *PWM* or *Voltage Level* as appropriate for your display.

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

### *Connecting LVDS Input to FPTB*

Use the FPTB LVDS-to-LVDS cable (P/N 30-20449-0000) to connect the LVDS output connector on the nanoX-BASE (CN6) to the LVDS input connector on the FPTB (CN4).

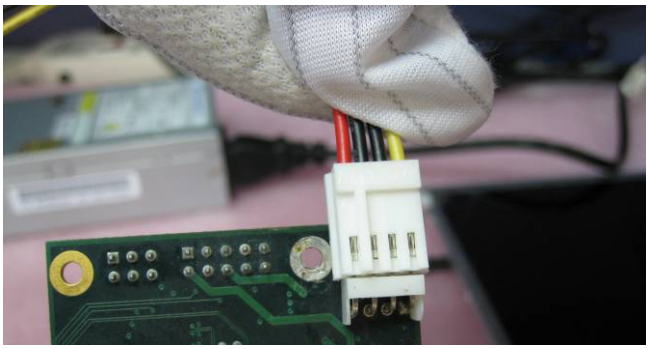
| **Connecting LVDS Input to FPTB** | **Required items** |
|---|---|
| Plug the LVDS-to-LVDS cable into nanoX-BASE CN6<br> | <br>LVDS-to-LVDS cable |
| Plug the LVDS-to-LVDS cable connector into FPTB CN4<br> | |

### *TTL Output to Display Panel*

Make the appropriate cable to connect the TTL Output Connector (CN5) and Backlight Control Connector (CN8) on the FPTB to the target TTL display panel.

### *FPTB Power Connector*

Connect the Floppy Drive power connector of your power supply to the FPTB Power Connector (CN1).



### *Power Up the System*

Assemble the rest of your system as required and power it on. An example nanoX-BASE system with FPTB connected to a TTL display panel is shown below.



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