

Getting Started with the TPC-22xx

This guide includes setup instructions and specifications for the TPC-22xx Human Machine Interface (HMI).

General Information

Introduction

The TPC-22xx touch panel computer, an HMI based on an x86 platform, includes these key features:

- **Powerful processing**—The TPC-22xx uses the Intel Atom processor, specifically designed for embedded, industrial applications.
- **Fanless**—By using an advanced but low-power Intel Atom processor, the TPC-22xx does not require a fan for cooling.
- **Robust communication**—The TPC-22xx is a powerful I/O interface for easy communication with other devices. The I/O interface includes serial ports, gigabit Ethernet, and USB 2.0 support.
- **Wide operating temperature and isolation protection**—The TPC-22xx provides a –20 to 60 °C operating temperature range and complete isolation protection for the serial ports.
- **Windows Embedded support**—The TPC-22xx supports the latest embedded Windows operating systems from Microsoft.

I/O Ports

The TPC-22xx includes the following ports:

- Two serial ports: RS232 (COM1) and RS422/485 (COM2)
- Two USB 2.0 ports compliant with USB 1.0 and 1.1
- Two RJ-45 Gigabit Ethernet ports

Figure 1 shows the I/O port arrangement.

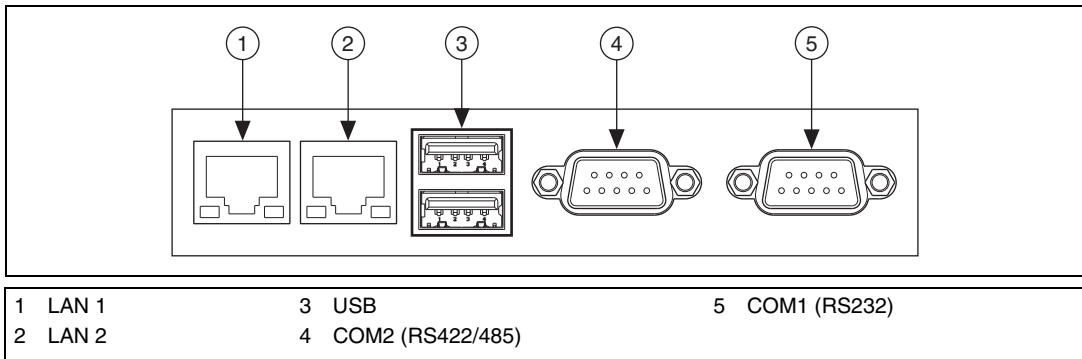


Figure 1. I/O Port Arrangement

For more TPC-22xx specifications, refer to the [Specifications](#) section.

System Setup

Important Safety Information

Before setting up the TPC-22xx, read these safety instructions carefully.

Disconnect this equipment from any AC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

For plug-in equipment, the power outlet socket must be located near the equipment and must be easily accessible.

Keep this equipment away from excessive humidity.

Place this equipment on a reliable surface during installation. Dropping it or letting it fall may cause damage.

The openings on the enclosure are for air convection and protect the equipment from overheating. Do *not* cover the openings.

Make sure the power source voltage is correct before connecting the equipment to the power outlet.

Position the power cord so that it cannot be stepped on. Do not place anything over the power cord.

All cautions and warnings on the equipment should be noted.

If the equipment is not used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

Never pour any liquid into an opening. This may cause fire or electrical shock.

Never open the equipment. For safety reasons, only qualified service personnel should open the equipment.

If one of the following situations arises, have service personnel check the equipment:

- 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 the user manual.
- The equipment has been dropped and damaged.
- The equipment has obvious signs of breakage.

Do not leave this equipment in an environment where the storage temperature may go below $-20\text{ }^{\circ}\text{C}$ ($-4\text{ }^{\circ}\text{F}$) or above $60\text{ }^{\circ}\text{C}$ ($140\text{ }^{\circ}\text{F}$). Doing so could damage the equipment. The equipment should be in a controlled environment.



Caution There is a danger of explosion if the battery is incorrectly replaced. Replace the battery only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

The sound pressure level at the operator's position according to IEC 704-1:1982 is no more than 70 dB (A).



Caution The protection this equipment provides may be impaired if it is used in a manner not described in this manual.

Setup

Follow these steps to set up the TPC-22xx:

1. Unpack the TPC-22xx. Be sure your kit includes the following items:
 - The TPC-22xx HMI
 - Panel mounting clamps
 - Panel mounting screws
 - One 3-pin power connector
 - One HMI Resource CD
 - One earth ground cable

If any items are missing or damaged, contact National Instruments.



Caution Be sure system power is off before plugging in or pulling out the CompactFlash card.

2. Verify that the CompactFlash card containing Windows Embedded or another operating system is installed in the unit.
3. Connect the power connector to an 18–32 VDC power line. Be sure to connect the positive, negative, and ground lines as shown in Figure 2. The power lines can be from either a power adapter or in-house power source.

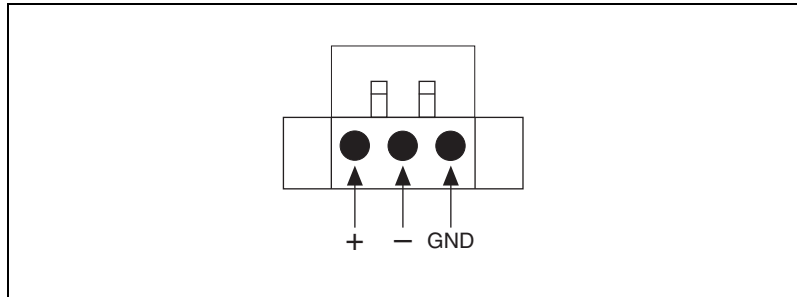


Figure 2. Power Connector

4. Connect the power connector to the power receptor on the TPC-22xx. The power receptor pin assignment is shown in Figure 3.

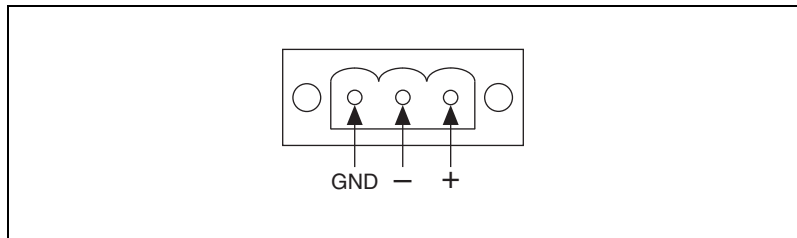


Figure 3. Power Receptor and Pin Assignment

5. The system powers on immediately after you apply power.

Specifications

For complete specifications, including physical dimensions, refer to the user manual for your TPC-22xx at ni.com/manuals. You can use this web page to search for the user manual by model name, such as TPC-2206.

System

CPU	Intel Atom Processor Z520PT 1.33 GHz w/HyperThreading
SCH	Intel System Controller Hub US15WPT
Video	Intel GMA 500
BIOS	Award 4 Mbit flash
Ethernet	Realtek RTL8168C(P) × 2; 10/100/1000, IEEE 802.3ab protocol compatible
RAM	1 GB DDR2
Watchdog timer	SCH3114X1 watchdog timer; 1~255 s timeout period
CompactFlash	Ultra ATA/100, UDMA/100 compatible, 4 GB minimum

Touchscreen

Touch type	Resistive
Base glass construction	Tempered glass
Light transmission	80% ± 3%
Controller	RS-232 interface (COM3)
Lifespan	1 million touches at a single point

Power

Input voltage18–32 VDC



Note Providing power levels either below or above the stated range is not recommended.



Note For your protection, the fuse is set to break if the input voltage exceeds 33 VDC.

Environment

Operating temperature–20 to 60 °C (–4 to 140 °F)

Storage temperature–20 to 60 °C (–4 to 140 °F)

Humidity40 °C @ 10 to 95% relative
humidity (noncondensing)

Vibration2 grms (5 to 500 Hz)

Maximum altitude2,000 m

Pollution Degree2

Indoor use only.



Note The front bezel is compliant with NEMA4 and IP65.

Safety

This product is designed to meet the requirements of the following standards of safety for information technology equipment:

- IEC 60950-1, EN 60950-1
- UL 60950-1, CSA 60950-1



Note For UL and other safety certifications, refer to the product label or the [Online Product Certification](#) section.

Electromagnetic Compatibility

This product meets the requirements of the following EMC standards for information technology equipment:

- EN 55024 (CISPR 24); Immunity
- EN 55022 (CISPR 22); Class A Emissions
- EN 55011 (CISPR 11); Class A Emissions
- AS/NZS CISPR 11; Class A Emissions
- AS/NZS CISPR 22; Class A Emissions

- FCC 47 CFR Part 15B: Class A Emissions
- ICES-003: Class A Emissions



Note In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia and New Zealand (per CISPR 11) Class A equipment is intended for use only in heavy-industrial locations.



Note Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generate radio frequency energy for the treatment of material or inspection/analysis purposes.



Note For the standards applied to assess the EMC of this product, refer to the *Online Product Certification* section.

CE Compliance

This product meets the essential requirements of applicable European Directives as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Online Product Certification

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for this product, visit ni.com/certification, search by model number or product line, and click the appropriate link in the Certification column.

Environmental Management

National Instruments is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the *NI and the Environment* Web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.



Waste Electrical and Electronic Equipment (WEEE)

EU Customers At the end of the product life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers, National Instruments WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste and Electronic Equipment, visit ni.com/environment/weee.

电子信息产品污染控制管理办法（中国 RoHS）



中国客户 National Instruments 符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。关于 National Instruments 中国 RoHS 合规性信息，请登录 ni.com/environment/rohs_china。(For information about China RoHS compliance, go to ni.com/environment/rohs_china.)

Mercury Disposal and Recycling

LCD lamp(s) in this monitor contain mercury. Dispose or recycle according to local, state or federal laws. Consult the Electronic Industries Alliance at www.eiae.org for more information. For specific information on lamp disposal, consult www.lamprecycle.org.

Cleaning

If you need to clean the unit, use a soft, nonmetallic brush. Make sure that the unit is completely dry and free from contaminants before returning it to service.

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