

**TPI4200 Series
Protocol Analyzers
Installation and Safety
Instructions**



071-2995-00

**TPI4200 Series
Protocol Analyzers
Installation and Safety
Instructions**

Copyright © Tektronix. All rights reserved. Licensed software products are owned by Tektronix or its subsidiaries or suppliers, and are protected by national copyright laws and international treaty provisions.

Tektronix products are covered by U.S. and foreign patents, issued and pending. Information in this publication supersedes that in all previously published material. Specifications and price change privileges reserved.

TEKTRONIX and TEK are registered trademarks of Tektronix, Inc.

Contacting Tektronix

Tektronix, Inc.
14150 SW Karl Braun Drive
P.O. Box 500
Beaverton, OR 97077
USA

For product information, sales, service, and technical support:

- In North America, call 1-800-833-9200.
- Worldwide, visit www.tektronix.com to find contacts in your area.

Table of Contents

Preface	1
Documentation	1
General Safety Summary	2
Compliance Information	4
EMC Compliance	4
Safety Compliance	5
Environmental Considerations	7
Operating Requirements	8
Electrical Ratings	8
Environmental Ratings	9
Physical Specifications	9
Basic Installation Procedure	10
Power-On and Power-Off Procedure	11

Preface

This document contains the following information:

- Important safety precautions to avoid injury and prevent damage to this product or any products connected to it
- EMC (electromagnetic compliance), safety, and environmental standards with which the instrument complies
- Voltage, power, and environmental requirements to use the product
- Installation procedure
- Power-on and power-off procedure

Documentation

The following table lists the documentation that is available for the product and shows where you can find it: in a printed manual, on the product documentation CD-ROM, or on the Tektronix Web site at www.tektronix.com.

Table 1: Product documentation

Item	Purpose	Location
Installation and Safety Instructions (this manual)	Provides safety and compliance information along with high-level installation instructions.	Printed manual and also available in electronic format at www.tektronix.com/manuals
User Guides	Provide operation and application information.	Product Documentation CD
Online Help	instrument operation and user interface help.	On the instrument

General Safety Summary

Review the following safety precautions to avoid injury and prevent damage to this product or any products connected to it.

To avoid potential hazards, use this product only as specified.

Only qualified personnel should perform service procedures.

While using this product, you may need to access other parts of a larger system. Read the safety sections of the other component manuals for warnings and cautions related to operating the system.

To Avoid Fire or Personal Injury

Use Proper Power Cord. Use only the power cord specified for this product and certified for the country of use.

Connect and Disconnect Properly. Do not connect or disconnect probes or test leads while they are connected to a voltage source.

Ground the Product. This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor must be connected to earth ground. Before making connections to the input or output terminals of the product, ensure that the product is properly grounded.

Observe All Terminal Ratings. To avoid fire or shock hazard, observe all ratings and markings on the product. Consult the product manual for further ratings information before making connections to the product.

The inputs are not rated for connection to mains or Category II, III, or IV circuits.

Do not apply a potential to any terminal, including the common terminal, that exceeds the maximum rating of that terminal.

Power Disconnect. The power cord disconnects the product from the power source. Do not block the power cord; it must remain accessible to the user at all times.

Do Not Operate Without Covers. Do not operate this product with covers or panels removed.

Do Not Operate With Suspected Failures. If you suspect that there is damage to this product, have it inspected by qualified service personnel.

Avoid Exposed Circuitry. Do not touch exposed connections and components when power is present.

Do Not Operate in Wet/Damp Conditions.

Do Not Operate in an Explosive Atmosphere.

Keep Product Surfaces Clean and Dry.

Provide Proper Ventilation. Refer to the manual's installation instructions for details on installing the product so it has proper ventilation.

Terms in this Manual These terms may appear in this manual:



WARNING. *Warning statements identify conditions or practices that could result in injury or loss of life.*



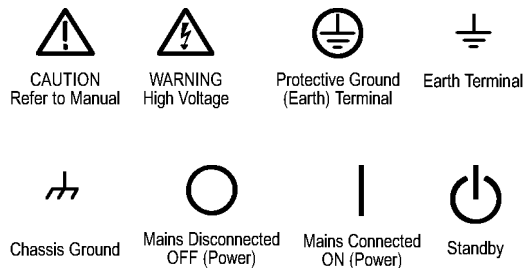
CAUTION. *Caution statements identify conditions or practices that could result in damage to this product or other property.*

Symbols and Terms on the Product

These terms may appear on the product:

- DANGER indicates an injury hazard immediately accessible as you read the marking.
- WARNING indicates an injury hazard not immediately accessible as you read the marking.
- CAUTION indicates a hazard to property including the product.

The following symbol(s) may appear on the product:



Compliance Information

This section lists the EMC (electromagnetic compliance), safety, and environmental standards with which the instrument complies.

EMC Compliance

EC Declaration of Conformity – EMC

Meets intent of Directive 2004/108/EC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

EN 61326-1 2006. EMC requirements for electrical equipment for measurement, control, and laboratory use. ^{1 2 3}

- CISPR 11:2003. Radiated and conducted emissions, Group 1, Class A
- IEC 61000-4-2:2001. Electrostatic discharge immunity
- IEC 61000-4-3:2002. RF electromagnetic field immunity
- IEC 61000-4-4:2004. Electrical fast transient / burst immunity
- IEC 61000-4-5:2001. Power line surge immunity
- IEC 61000-4-6:2003. Conducted RF immunity
- IEC 61000-4-11:2004. Voltage dips and interruptions immunity ⁴

EN 61000-3-2:2006. AC power line harmonic emissions

EN 61000-3-3:1995. Voltage changes, fluctuations, and flicker

European Contact.

Tektronix UK, Ltd.
Western Peninsula
Western Road
Bracknell, RG12 1RF
United Kingdom

¹ This product is intended for use in nonresidential areas only. Use in residential areas may cause electromagnetic interference.

² Emissions which exceed the levels required by this standard may occur when this equipment is connected to a test object.

³ To ensure compliance with the EMC standards listed here, high quality shielded interface cables should be used.

⁴ Performance Criterion C applied at the 70%/25 cycle Voltage-Dip and the 0%/250 cycle Voltage-Interruption test levels (IEC 61000-4-11).

**Australia / New Zealand
Declaration of
Conformity – EMC**

Complies with the EMC provision of the Radiocommunications Act per the following standard, in accordance with ACMA:

- CISPR 11:2003. Radiated and Conducted Emissions, Group 1, Class A, in accordance with EN 61326-1:2006.

Safety Compliance

**EC Declaration of
Conformity – Low Voltage**

Compliance was demonstrated to the following specification as listed in the Official Journal of the European Communities:

Low Voltage Directive 2006/95/EC.

- EN 61010-1: 2001. Safety requirements for electrical equipment for measurement control and laboratory use.

**U.S. Nationally Recognized
Testing Laboratory Listing**

- UL 61010-1:2004, 2nd Edition. Standard for electrical measuring and test equipment.

Canadian Certification

- CAN/CSA-C22.2 No. 61010-1:2004. Safety requirements for electrical equipment for measurement, control, and laboratory use. Part 1.

Additional Compliances

- IEC 61010-1: 2001. Safety requirements for electrical equipment for measurement, control, and laboratory use.

Equipment Type

Test and measuring equipment.

Safety Class

Class 1 – grounded product.

**Pollution Degree
Description**

A measure of the contaminants that could occur in the environment around and within a product. Typically the internal environment inside a product is considered to be the same as the external. Products should be used only in the environment for which they are rated.

- Pollution Degree 1. No pollution or only dry, nonconductive pollution occurs. Products in this category are generally encapsulated, hermetically sealed, or located in clean rooms.
- Pollution Degree 2. Normally only dry, nonconductive pollution occurs. Occasionally a temporary conductivity that is caused by condensation must be expected. This location is a typical office/home environment. Temporary condensation occurs only when the product is out of service.

- Pollution Degree 3. Conductive pollution, or dry, nonconductive pollution that becomes conductive due to condensation. These are sheltered locations where neither temperature nor humidity is controlled. The area is protected from direct sunshine, rain, or direct wind.
- Pollution Degree 4. Pollution that generates persistent conductivity through conductive dust, rain, or snow. Typical outdoor locations.

Pollution Degree Pollution Degree 2 (as defined in IEC 61010-1). Note: Rated for indoor use only.

Installation (Overvoltage) Category Descriptions Terminals on this product may have different installation (overvoltage) category designations. The installation categories are:

- Measurement Category IV. For measurements performed at the source of low-voltage installation.
- Measurement Category III. For measurements performed in the building installation.
- Measurement Category II. For measurements performed on circuits directly connected to the low-voltage installation.
- Measurement Category I. For measurements performed on circuits not directly connected to MAINS.

Overvoltage Category MAINS overvoltage Category II

Environmental Considerations

This section provides information about the environmental impact of the product.

Product End-of-Life Handling

Observe the following guidelines when recycling an instrument or component:

Equipment Recycling. Production of this equipment required the extraction and use of natural resources. The equipment may contain substances that could be harmful to the environment or human health if improperly handled at the product's end of life. In order to avoid release of such substances into the environment and to reduce the use of natural resources, we encourage you to recycle this product in an appropriate system that will ensure that most of the materials are reused or recycled appropriately.



This symbol indicates that this product complies with the applicable European Union requirements according to Directives 2002/96/EC and 2006/66/EC on waste electrical and electronic equipment (WEEE) and batteries. For information about recycling options, check the Support/Service section of the Tektronix Web site (www.tektronix.com).

Perchlorate Materials. This product contains one or more type CR lithium batteries. According to the state of California, CR lithium batteries are classified as perchlorate materials and require special handling. See www.dtsc.ca.gov/hazardouswaste/perchlorate for additional information.

Restriction of Hazardous Substances

This product has been classified as Monitoring and Control equipment, and is outside the scope of the 2002/95/EC RoHS Directive.

Operating Requirements

This section provides the specifications that you need to know to operate your product safely and correctly.

Electrical Ratings

Power Requirements

The product has a single-phase power source with one current-carrying conductor at or near earth-ground (the neutral conductor).

NOTE. *Systems with both current-carrying conductors live with respect to ground (such as phase-to-phase in multiphase systems) are not recommended as power sources.*

The following table list the power requirements.

Table 2: Power requirements

Characteristic	Description
Source voltage	100 to 240 VAC, $\pm 10\%$ (90 to 264 VAC _{RMS})
Frequency	50 or 60 Hz
Power consumption	TPI4202 600 W maximum, 100 to 240 V, 50 to 60 Hz, single phase TPI4208 1200 W maximum, 100 to 240 V, 50 to 60 Hz, single phase
Peak inrush current	13 A peak at 240 VAC, 50 Hz



WARNING. *To reduce risk of fire and shock, ensure the mains supply voltage fluctuations do not exceed 10% of the operating voltage range.*

Fuses

Only the line conductor is fused for over-current protection. The fuse is internal and not user replaceable. Do not attempt to replace the fuse. If you suspect the fuse has blown, return the instrument to an authorized service center for repair.

Batteries

The instrument does not contain any user-replaceable batteries.

Environmental Ratings

Table 3: TPI4200 environmental requirements

Feature		Description
Temperature	Operating	+5 °C to +45 °C with 15 °C/hour maximum gradient, non-condensing, derated 1.0 °C per 300 meters above 1500 m altitude.
	Nonoperating	-20 °C to +60 °C, with 15 °C/hour maximum gradient, with no media installed in disc drives.
Humidity 20% to 80%	Operating	5% to 95% relative humidity at up to +30 °C 5% to 45% relative humidity above +30 °C up to 40 °C, non-condensing, and as limited by a maximum wet bulb temperature of +29 °C (derates relative humidity to 45% relative humidity at +40 °C)
	Nonoperating	5% to 95% relative humidity at up to +30 °C 5% to 45% relative humidity above +30 °C, non-condensing, and as limited by a maximum wet bulb temperature of +29 °C (derates relative humidity to 20% relative humidity at +60 °C)
Altitude	Operating	Up to 3000 m (9843 ft), derates maximum operating temperature by 1 °C per 300 m (984 ft) above 1500 m (4921 ft) altitude
	Nonoperating	Up to 12,000 m (39,370 ft)
Cooling		This product is provided with forced-air cooling; do not block ventilation openings.

Physical Specifications

Table 4: Physical specifications

Characteristic	TPI4202	TPI4208
Dimensions	Height	424 mm (16.7 in.)
	Width	333 mm (13.1 in.)
	Depth	173 mm (6.8 in.)
Weight	10,5 kg (23.0 lb.)	20.5 kg (45.0 lb.)

Basic Installation Procedure

Verify that you have received all of the parts of your instrument and the following items:

- Correct power cords for your geographical area
- Standard accessories
- All optional accessories that you ordered

Refer to your Quick Start user documentation that you received with your product for additional installation information.

Power-On and Power-Off Procedure

This instrument operates from a single-phase power source with the neutral conductor at or near earth ground. The line conductor is fused for over-current protection. A protective ground connection through the grounding conductor in the power cord is essential for safe operation.

- Power-On**
1. Connect the supplied power cord to the power connector.
 2. Press the power button on the instrument front-panel and the instrument will turn on.

NOTE. *The Standby button on the front-panel does not disconnect mains power. Only the power cord at the rear of the product can disconnect mains power.*

- Power-Off**
1. Press the power button on the instrument front-panel to turn the instrument off.
 2. If you want to remove power completely, disconnect the power cord from the rear-panel of the instrument.