

Technical Reference



PQA500 Picture Quality Analyzer Specifications and Performance Verification 071-2264-00

This document applies to firmware version 1.0 and above.

Warning

The servicing instructions are for use by qualified personnel only. To avoid personal injury, do not perform any servicing unless you are qualified to do so. Refer to all safety summaries prior to performing service.

www.tektronix.com

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 supercedes 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.
14200 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

General Safety Summary	iii
Service Safety Summary	v
Preface	vii
Related Documentation	vii
Specifications	1
Performance Conditions	1
General Characteristics	1
Certifications and Compliances	2
Performance Verification	5
Performance Verification Process	6

List of Figures

Figure 1: Download the Platform Confidence Test Utility for DOS .	7
--	----------

List of Tables

Table 1: Power supply	1
Table 2: Environmental characteristics	1
Table 3: Required test equipment	5

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.

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.

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 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.

Replace Batteries Properly. Replace batteries only with the specified type and rating.

Use Proper Fuse. Use only the fuse type and rating specified for this product.

Wear Eye Protection. Wear eye protection if exposure to high-intensity rays or laser radiation exists.

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:



Service Safety Summary

Only qualified personnel should perform service procedures. Read this *Service Safety Summary* and the *General Safety Summary* before performing any service procedures.

Do Not Service Alone. Do not perform internal service or adjustments of this product unless another person capable of rendering first aid and resuscitation is present.

Disconnect Power. To avoid electric shock, switch off the instrument power, then disconnect the power cord from the mains power.

Use Care When Servicing With Power On. Dangerous voltages or currents may exist in this product. Disconnect power, remove battery (if applicable), and disconnect test leads before removing protective panels, soldering, or replacing components.

To avoid electric shock, do not touch exposed connections.

Preface

This document provides the specifications and performance verification procedure for the PQA500 Picture Quality Analyzer.

Related Documentation

- *PQA500 Picture Quality Analysis System Quick Start User Manual* (English), Tektronix part number 071-2256-XX
- *PQA500 Picture Quality Analysis System Release Notes*, Tektronix part number 071-2259-XX
- *PQA500 Picture Quality Analysis System User Technical Reference*, Tektronix part number 071-2263-XX
- *PQA500 Picture Quality Analysis System Measurement Technical Reference*, Tektronix part number 071-2260-XX
- *PQA500 Picture Quality Analysis System Specification and Performance Verification Manual*, Tektronix part number 071-2264-XX
- *PQA500 Picture Quality Analysis System Measurement Declassification and Security Instructions*, Tektronix part number 071-2266-XX

Specifications

Performance Conditions

The Performance Requirements are valid if the instrument has been adjusted at approximately 25 °C, is being operated within environmental limits (see Table 2), and has had a minimum warm-up of 20 minutes.

General Characteristics

Table 1: Power supply

Characteristic	Performance requirements	Supplemental information
Line Voltage Range	90 V - 264 V, single phase	
Power Consumption, Nominal	450 Watts	

Table 2: Environmental characteristics

Characteristic	Information	Supplemental information
Temperature, Operating	+10 °C to +35 °C (+50 °F to +95 °F)	Rate of temperature change not to exceed 10 °C per hr
Temperature, Non-operating	-40 °C to +70 °C (-40 °F to +158 °F)	
Humidity Operating Non-operating	Not specified Up to 90% RH, non-condensing, at +28 °C	
Shock Operating Non-operating	2 g peak, half-sine, 11 ms 25 g, trapezoidal, velocity change 136 in/sec	
Shock, Transit Package	Non-palletized free fall from 24 in	
Vibration	2.20 g RMS, 5 Hz to 500 Hz, random	
System Cooling Requirement	1826 BTU/hr	

Certifications and Compliances

EC Declaration of Conformity - EMC

Meets intent of Directive 89/336/EEC for Electromagnetic Compatibility. Compliance was demonstrated to the following specifications as listed in the Official Journal of the European Communities:

EN 61326. EMC requirements for Class A electrical equipment for measurement, control, and laboratory use¹.

- IEC 61000-4-2. Electrostatic discharge immunity (Performance criterion B)
- IEC 61000-4-3. RF electromagnetic field immunity (Performance criterion A)
- IEC 61000-4-4. Electrical fast transient / burst immunity (Performance criterion B)
- IEC 61000-4-5. Power line surge immunity (Performance criterion B)
- IEC 61000-4-6. Conducted RF immunity (Performance criterion A)
- IEC 61000-4-11. Voltage dips & interruptions immunity (Performance criterion B)

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

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

¹ Emissions which exceed the levels required by this standard may occur when this equipment is connected to a test object.

Australia / New Zealand Declaration of Conformity - EMC

Complies with EMC provision of Radiocommunications Act per these standard(s):

- AS/NZS 2064.1/2. Industrial, Scientific, and Medical Equipment: 1992

EMC Compliance

Meets the intent of Directive 89/336/EEC for Electromagnetic Compatibility when it is used with the product(s) stated in the specifications table. Refer to the EMC specification published for the stated products. May not meet the intent of the directive if used with other products.

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 73/23/EEC, amended by 93/68/EEC.

EN61010-1:2001. Safety Requirements for electrical equipment for measurement, control and laboratory use. Part 1: General Requirements.

U.S. Nationally Recognized Testing Laboratory Listing

UL 60950-1:2003 - Information Technology Equipment - Safety - Part 1: General Requirements.

Canadian Certification

CAN/CSA C22.2 No. 60950-1-03 - Information Technology Equipment - Safety - Part 1: General Requirements.

Additional Compliance

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 Descriptions

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 Overvoltage Category II (as defined in IEC 61010-1)

Performance Verification

Use the Platform Confidence Test, supplied by Intel, to determine if your PQA500 is correctly assembled and functioning correctly. Three test suites are supplied: a quick test, a comprehensive test and a continuous loop of the comprehensive test. You do not need to intervene in the test process.

At the start of each test, the Platform Confidence Test package interrogates the hardware present and reports the identified components. The test will indirectly identify many assembly and cabling errors, such as broken or improperly seated cables, because the associated hardware component will not be found.

Upon completion of the test, the results are saved to the file result.log. You can open and view the results log file with a text viewer.

NOTE. Before performing any of the procedures and tests in this manual, the instrument must have been operating for a warm-up period of at least 20 minutes and must be operating at an ambient temperature as listed in Table 2 on page 1.

Table 3: Required test equipment

Test equipment	Requirements	Example
PC	Network connected, with CD-ROM burner	Standard equipment
CD-ROM Burning software	Capable of burning ISO file to a CD-ROM	Nero, EasyCD Creator, ISO Recorder Power Toy, or other
Blank CD-ROM	Writable CD-ROM	Standard equipment

Performance Verification Process

The performance verification process includes the downloading of the test suite from the Intel Web site to your PC. The downloaded zip file contains an ISO format file. The ISO file contains the test files in a directory structure.

You must extract the ISO file and, using your CD-ROM creation utility, create a CD-ROM. You then use the CD-ROM to reboot and test the PQA500 unit.

Download the Platform Confidence Test

1. Use a network browser to go to the Intel Web site, www.intel.com. With the cursor hovering over the Support & Downloads menu item, select **Download Center**.
2. In the Download Center, search for S5000_PCT. This is a Platform Confidence Test utility for DOS.
3. Download the Platform Confidence Test by clicking on one of the **Platform Confidence Test (PCT) Utility for DOS** links as shown in Figure 1, and then click the **Download** link in the following dialog window. Save the file to a convenient directory.

You may need to turn off any pop-up blockers and, if you are using Internet Explorer as your browser, you may need to defeat its download blocker before the download will start. Follow your browser instruction messages to enable file downloading.

4. Unzip the file to access the ISO image.

Create the Platform Confidence Test CD-ROM

5. Use the ISO image file, and your preferred CD-ROM creation software, to create a bootable CD-ROM that contains the PCT. Simply copying the file to the CD-ROM will not work.
6. Connect a keyboard and monitor to your PQA500.
7. If the front panel is installed, remove it to access the CD-ROM drive.
8. Insert the PCT CD-ROM, created in step 5, into the CD-ROM drive.
9. Reboot the unit from the CD-ROM by powering it off followed by powering it on.
10. Follow the on-screen instructions.

On completion of the tests, remove the CD-ROM and replace the front panel.

The screenshot shows the Intel Download Center interface. At the top, there is a navigation bar with links for 'Products', 'Technology & Research', 'Resource Centers', 'Support & Downloads', and 'Where to Buy'. A search bar is located on the right. The main content area is titled 'Downloads' and displays 'Software Search Results' for the query 'S5000_PCT'. A yellow bar highlights the search results section. Below this, a blue bar indicates '1 - 4 of 4 items found'. The search results are listed as follows:

1. Intel® Server Board S5000PSL
File Name: [Platform Confidence Test \(PCT\) Utility for DOS](#)
2. Intel® Server Board SC600XCL
File Name: Platform Confidence Test (PCT) Utility for DOS
3. Intel® Server System SC5400RA
File Name: Platform Confidence Test (PCT) Utility for DOS
4. Intel® Workstation Board S5000XVN
File Name: Platform Confidence Test (PCT) Utility for DOS

A red circle highlights the first result, and a mouse cursor is pointing at the link. To the right of the search results, there is a 'Download Assistance' box with the text: 'Don't see your product? You can also find your product by using the menus on the main Download page - or by using links at Identify Your Product.'

At the bottom of the page, there is a footer with links for 'Site Map', 'RSS Feeds', 'Jobs at Intel', 'Investor Relations', '*Legal Information', 'Privacy Policy', and '©Intel Corporation'.

Figure 1: Download the Platform Confidence Test Utility for DOS

