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PXD 222 DIGITIZER

OPERATOR'S MANUAL

OCTOBER 2003

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PXD222-OM-E Rev B

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Table of Contents

First Things...First ***1***

WHEN YOUR DIGITIZER IS DELIVERED 1

Check That You Have Everything *1*

Be Sure To Read This Warranty *1*

Take Advantage Of Maintenance Agreements *2*

Obtain Assistance *2*

Return a Product for Service or Repair *2*

Stay Up-to-Date *2*

SAFETY INFORMATION 3

Safety Symbols *3*

Warnings *4*

If Safety Features Are Impaired *5*

Care and Maintenance *5*

Operation ***7***

INTRODUCTION 7

A. Acquisition Modes *7*

B. Run Modes *10*

C. Trigger Modes *10*

D. PXD 222 Digitizer Waveform Measurements *11*

PXD 222 QUICK START APPLICATION SOFTWARE 12

Soft Front Panel *12*

USING THE PXD 222 DIGITIZER IVI INSTRUMENT DRIVERS 16

PXD 222 Digitizer Specifications ***27***

VERTICAL SYSTEM 17

HORIZONTAL SYSTEM 17

TRIGGER 18

PHYSICAL DIMENSIONS 20

POWER REQUIREMENTS 20

ENVIRONMENTAL CONDITIONS 20

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SAFETY 21

CERTIFICATIONS 23

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WHEN YOUR DIGITIZER IS DELIVERED

Check That You Have Everything

Verify that all items on the packing list or invoice copy have been shipped to you. (The items are also listed below.) Contact your nearest LeCroy customer service center or national distributor if anything is missing or damaged. If there is something missing or damaged, and you do not contact us immediately, we cannot be responsible for replacement.

The following is shipped with the standard PXD 222 Digitizer:

- ***Performance or Calibration Certificate***
- ***Quick Reference Guide***
- ***CD ROM***

NOTE: The warranty below replaces all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability, fitness, or adequacy for any particular purpose or use. LeCroy shall not be liable for any special, incidental, or consequential damages, whether in contract or otherwise. The customer is responsible for the transportation and insurance charges for the return of products to the service facility. LeCroy will return all products under warranty with transport prepaid.

Be Sure To Read This Warranty

The PXD 222 Digitizer is warranted for normal use and operation, within specifications, for a period of one year from shipment. LeCroy will either repair or, at our option, replace any product returned to one of our authorized service centers within this period. However, in order to do this we must first examine the product and find that it is defective due to workmanship or materials and not due to misuse, neglect, accident, or abnormal conditions or operation.

Spare and replacement parts, and repairs, all have a 90-day warranty.

The digitizer's firmware has been thoroughly tested and is presumed to be functional. Nevertheless, it is supplied without warranty of any kind covering detailed performance. Products not made by LeCroy are covered solely by the warranty of the original equipment manufacturer.

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Take Advantage Of Maintenance Agreements

We offer a variety of services under the heading of Maintenance Agreements. These give extended warranty and allow you to budget maintenance costs after the initial one-year warranty has expired. Installation, training, enhancements, and on-site repairs — among other services — are available through special supplemental support agreements. Inquire at your LeCroy customer service center or national distributor.

Obtain Assistance

Help with installation, calibration, and the use of your PXD 222 Digitizer scope in a range of applications is also available from your customer service center.

Return a Product for Service or Repair

If you do need to return a LeCroy product, identify it by its model and serial numbers. Describe the defect or failure, and provide your name and contact number.

For factory returns, use a Return Authorization Number (RAN), obtainable from customer service. Attach it so that it can be clearly seen on the outside of the shipping package to ensure rapid forwarding within LeCroy.

Return those products requiring only maintenance to your customer service center.

NOTE: If you need to return your digitizer, use the original shipping carton. If this is not possible, the carton used should be rigid. The digitizer should be packed so that it is surrounded by a minimum of four inches (10 cm) of shock absorbent material.

Within the warranty period, transportation charges to the factory will be your responsibility, while products under warranty will be returned to you with transport prepaid by LeCroy. Outside the warranty period, you will have to provide us with a purchase order number before the work can be done. You will be billed for parts and labor related to the repair work, as well as for shipping.

You should prepay return shipments. LeCroy cannot accept COD (Cash On Delivery) or Collect Return shipments. We recommend using air freight.

Stay Up-to-Date

To maintain your PXD 222 Digitizer's performance within specifications, have us calibrate it at least once a year. LeCroy offers state-of-the-art technology by continually refining and improving the instrument's capabilities and operation. We frequently update both firmware and software during service, free of charge during warranty.

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SAFETY INFORMATION

Safety Symbols

Where the following symbols appear on the PXD 222 Digitizer's front or rear covers, or in this manual, they alert you to important safety considerations.

WARNING — Incorrect operation or failure to heed warnings may result in death or serious injury. If a WARNING is indicated, do not proceed until its conditions are understood and met.

CAUTION — Incorrect operation or failure to heed cautions may result in injury or damage to equipment. If a CAUTION is indicated, do not proceed until its conditions are understood and met.

Refer to accompanying documents (for safety related information).

See elsewhere in this manual whenever this symbol is present, as indicated in the Table of Contents.

Earth (Ground) Terminal

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Warnings

WARNING

To avoid electrical shock or fire if the digitizer input is connected to more that 42 V peak (30 V rms) or on circuits of more than 4800 VA:

- **Use only insulated voltage probes, test leads, and adapters.**
- **Before use, inspect voltage probes, test leads, and accessories for mechanical damage and replace when damaged.**
- **Remove all probes, test leads, and accessories that are not in use.**
- **Do not connect the ground spring to voltages higher than 42 V peak (30 V rms) from earth ground.**
- **When measuring in a CAT II environment, do not apply to any input voltages that differ by more than 300 V from earth ground.**
- **When measuring in a CAT II environment, do not apply to the isolated inputs voltages that differ by more than 300 V from each other.**
- **Do not apply input voltages above the rating of the instrument. Use caution when using 1:1 test leads because the probe tip voltage will be directly transmitted to the test tool.**
- **Do not use exposed metal BNC or banana plug connectors.**
- **Do not insert metal objects into connectors.**
- **Before connecting any input voltages, the unit must be properly installed in the PXI rack.**
- **Disconnect the applied voltage(s) before disconnecting probes, BNC leads, test leads, or accessories.**
- **Always use the digitizer only in the manner specified**

Voltage ratings mentioned in the warnings are given as limits for "working voltage." They represent VAC rms (50–60 Hz) for AC sine wave applications and as VDC for DC applications.

Overvoltage Category II refers to local distribution level, which is applicable to appliances and portable equipment.

The terms "isolated" and "electrically floating" are used in this manual to indicate a measurement in which the digitizer input BNC or banana jack is connected to a voltage different from earth ground.

The isolated input connectors have no exposed metal and are fully insulated to protect against electrical shock.

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The BNC connectors can be independently connected to a voltage above earth ground for isolated (electrically floating) measurements and are rated up to 300 V rms (CAT II) above earth ground.

If Safety Features are Impaired

Whenever it is likely that safety has been impaired, the digitizer must be shut down, the PXI chassis disconnected from the line power, and the digitizer removed from the PXI chassis. The matter should then be referred to qualified personnel. Safety is likely to be impaired if, for example, the digitizer fails to perform the intended measurements or shows visible damage. Before use, inspect the test leads for mechanical damage and replace damaged test leads!

WARNING

Use of the digitizer in a manner not specified may impair the protection provided by the equipment.

Care and Maintenance

The exterior of the digitizer should be cleaned only with a soft cloth moistened with water or isopropyl alcohol.

The use of abrasive agents, strong detergents, or other solvents may damage the probe.

Ensure that the input receptacles are free of debris before inserting connection accessories.

All repair and maintenance should be referred to qualified service personnel.

Do not use the digitizer if any part is damaged.

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INTRODUCTION

This section is intended to give you an understanding of the standard acquisition, triggering, and measurement features of the PXD 222 Digitizer. Detailed descriptions of how to operate the PXD 222 Digitizer can be found in the Driver Help file.

A. Acquisition Modes

The PXD 222 Digitizer has two modes of operation NORMAL and MIN/MAX. These are defined as follows:

NORMAL: In Normal mode, the PXD 222 Digitizer operates as a typical digitizer. The module will digitize the input signals during a specified time window and create a data array with the digitized data that can be read out by the controller. The user programs the number of points (maximum of 1000) as well as the time window to be digitized. The maximum sample rate is 2.5 GS/s, and will vary depending on the time window setting. Table 1 gives the sample rates that are achieved.

MIN/MAX: There are two MIN/MAX modes, which are referred to as **Glitch Capture** and **Scope Record**. In these modes, the PXD 222 Digitizer outputs two arrays; a MIN array with the minimum values detected during each sample interval, and a MAX array with the maximum value detected during each sample interval. Here's how it works. In MIN/MAX mode, the time window is divided into sampling intervals. During each interval, the digitizer oversamples the input at high speed (see tables 2 and 3 on the following pages) and stores the MIN and MAX values in data arrays. This technique allows you to detect and record glitches in the waveform that would not be found if only 1 sample were taken during each sampling interval. The Acquisition type is programmed by means of the function **LcPXD222_ConfigureAcquisitionType**. (**Note:** This mode is sometimes also referred to as a Peak Detect mode.)

When in Min/Max mode, and for time windows of 10 seconds or less, the digitizer is in Glitch Capture Mode, and will record MIN/MAX arrays of roughly 255 points. For time ranges of 11 seconds and higher, the digitizer is in Scope Record Mode, and will store min-max arrays of roughly 27kpts.

Understanding the difference between Normal and MIN/MAX modes

Take an example where the time window is set to 1 ms. In Normal mode, the time between samples would be 1 µs (1 ms/1000 = 1 µs), corresponding to a sample rate of 1 MS/s because exactly one sample is acquired per sample interval in this mode.

When setting the time window to 1 ms in MIN/MAX mode, the sampling interval is approximately 4 µs. This is roughly 4X longer than the corresponding value in Normal mode because 255 points are stored instead of 1000. The PXD 222 Digitizer, however does not take only 1 sample in this 4 µs time interval, but instead samples at the higher speed of 20 MS/s. Of the 80 samples that are taken (20 MS/s * 4 µs = 80), the min and max points are retained. This is done for each of the 255 time intervals to create the Min and Max data arrays.

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Table 1: Normal Mode Time Windows, Intervals, and Sample Rates

Time Window	Sampling Time Interval for Each Point	Real Time Sampling Rate	Nominal # of Samples[a]
100 ns	400 ps	2.5 GS/s	250
200 ns	400 ps	2.5 GS/s	500
500 ns	2 ns	500 MS/s	250
1 µs	2 ns	500 MS/s	500
2 µs	2 ns	500 MS/s	1000
5 µs	10 ns	100 MS/s	500
10 µs	10 ns	100 MS/s	1000
20 µs	20 ns	50 MS/s	1000
50 µs	50 ns	20 MS/s	1000
100 µs	200 ns	5 MS/s	500
200 µs	200 ns	5 MS/s	1000
500 µs	500 ns	2 MS/s	1000
1 ms	1 µs	1 MS/s	1000
2 ms	2 µs	500 kS/s	1000
5 ms	5 µs	200 kS/s	1000
10 ms	10 µs	100 kS/s	1000
20 ms	20 µs	50 kS/s	1000
50 ms	50 µs	20 kS/s	1000
100 ms	100 µs	10 kS/s	1000
200 ms	200 µs	5 kS/s	1000
500 ms	500 µs	2 kS/s	1000
1 s	1 ms	1 kS/s	1000
2 s	2 ms	500 S/s	1000
5 s	5 ms	200 S/s	1000
10 s	10 ms	100 S/s	1000

a. # of points will vary slightly from the nominal value

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Table 2: Glitch Capture Mode Time Windows, Intervals, and Sample Rates

Time Window	Sampling Time Interval for Each Point	Real Time Sampling Rate[a]
100 ns	400 ps	2.5 GS/s
200 ns	800 ps	2.5 GS/s
500 ns	2 ns	2.5 GS/s
1 µs	4 ns	2 GS/s
2 µs	8 ns	1 GS/s
5 µs	20 ns	200 MS/s
10 µs	40 ns	100 MS/s
20 µs	80 ns	50 MS/s
50 µs	200 ns	20 MS/s
100 µs	400 ns	20 MS/s
200 µs	800 ns	20 MS/s
500 µs	2 µs	20 MS/s
1 ms	4 µs	20 MS/s
2 ms	8 µs	20 MS/s
5 ms	20 µs	20 MS/s
10 ms	40 µs	20 MS/s
20 ms	80 µs	20 MS/s
50 ms	200 µs	20 MS/s
100 ms	400 µs	20 MS/s
200 ms	800 µs	20 MS/s
500 ms	2 ms	20 MS/s
1 s	4 ms	20 MS/s
2 s	8 ms	20 MS/s
5 s	20 ms	20 MS/s
10 s	40 ms	20 MS/s

a. Waveform is oversampled at the real time sampling rate. Within each time interval, the minimum and maximum values are stored. A total of roughly 27 kpts are stored in the MIN and MAX arrays.

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Table 3: Scope Record Mode Time Windows, Intervals, and Sample Rates

Time Window	Sampling Time Interval for Each Point	Real Time Sampling Rate[a]
11 s	400 µs	20 MS/s
22 s	800 µs	20 MS/s
55 s	2 ms	20 MS/s
110 s	4 ms	20 MS/s
220 s	8 ms	20 MS/s
9 min	20 ms	20 MS/s
18 min	40 ms	20 MS/s
36 min	80 ms	20 MS/s
90 min	200 ms	20 MS/s
3 h	400 ms	20 MS/s
6 h	800 ms	20 MS/s
9 h	1200 ms	20 MS/s
18 h	2400 ms	20 MS/s
36 h	4800 ms	4 MS/s

a. Waveform is oversampled at the real time sampling rate. Within each time interval, the minimum and maximum values are stored.

B. Run Modes

The digitizer can be set to run in either **Continuous** or **Single-shot** mode. This is done through the function **LcPXD222_ConfigureInitiateContinuous**.

C. Trigger Modes

The PXD 222 Digitizer supports the following trigger types: EDGE, GLITCH, WIDTH, TV, and IMMEDIATE.

EDGE: An edge trigger occurs when the trigger signal crosses the specified trigger level with the specified slope. The trigger level and slope are configured with the function **LcPXD222_ConfigureEdgeTriggerSource**.

GLITCH: A glitch trigger occurs when the trigger signal has a pulse width that is less than the glitch width. The trigger does not actually occur until the edge of the pulse that corresponds to the specified glitch width and polarity crosses the trigger level. The trigger level is configured with the function **LcPXD222_ConfigureGlitchTriggerSource**.

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WIDTH: A width trigger occurs when the oscilloscope detects a positive or negative pulse width between or, optionally, outside the width thresholds. The trigger does not actually occur until the edge of a pulse that corresponds to the specified width thresholds and polarity crosses the trigger level. The width thresholds, whether to trigger on pulse widths that are within or outside the width thresholds, the polarity of the pulse, and the trigger level are configured with the function **LcPXD222_ConfigureWidthTriggerSource**.

TV: The PXD 222 Digitizer can trigger on NTCS, PAL and SECAM video signals. The TV signal type, the field and line number on which to trigger, and the signal polarity are configured with the function **LcPXD222_ConfigureTVTriggerSource**.

IMMEDIATE: In this mode, the oscilloscope does not wait for trigger event and instead immediately begins the digitization process.

D. PXD 222 DIGITIZER WAVEFORM MEASUREMENTS

The PXD 222 Digitizer performs the following waveform measurements:

Mean Voltage	LCPXD222_VAL_VOLTAGE_AVERAGE
RMS Voltage (AC)	LCPXD222_VAL_VOLTAGE_RMS
True RMS Voltage (AC+DC)	LCPXD222_VAL_VOLTAGE_TRUE_RMS
Peak to Peak voltage	LCPXD222_VAL_VOLTAGE_PEAK_TO_PEAK
Maximum Peak voltage	LCPXD222_VAL_VOLTAGE_MAX
Minimum Peak voltage	LCPXD222_VAL_VOLTAGE_MIN
Neg Duty Cycle percentage	LCPXD222_VAL_DUTY_CYCLE_NEG
Pos Duty Cycle percentage	LCPXD222_VAL_DUTY_CYCLE_POS
Frequency	LCPXD222_VAL_FREQUENCY
Neg Pulse Width	LCPXD222_VAL_WIDTH_NEG
Pos Pulse Width	LCPXD222_VAL_WIDTH_POS
Phase Difference	LCPXD222_VAL_PHASE

To read out a waveform measurement, use the **LcPXD222_ReadWaveformMeasurement** function. To read back both the measurement and the waveform, call the function. **LcPXD222_FetchWaveform** after calling LcPXD222_ReadWaveformMeasurement.

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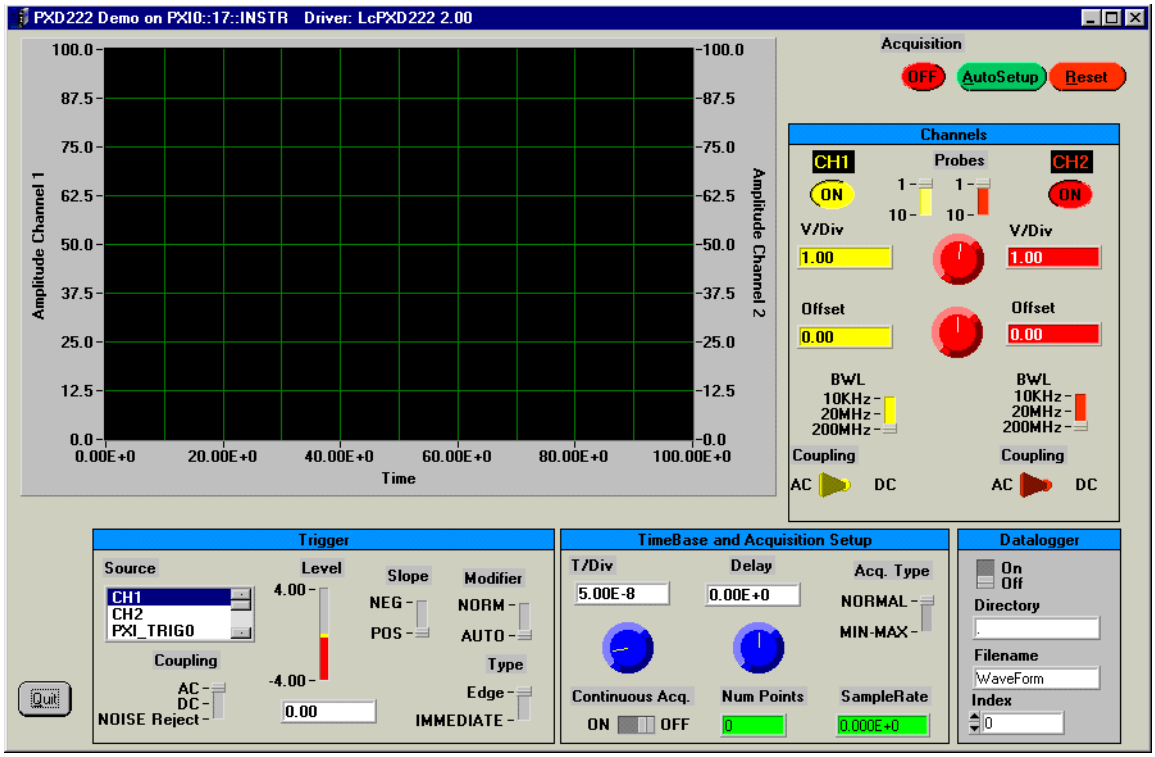
PXD 222 DIGITIZER QUICK START APPLICATION SOFTWARE



Soft Front Panel

The PXD 222 Digitizer Quick Start Application software has the following features:

- Graphic Display with independent vertical axis for each digitizer input channel
- Acquisition section including autosetup and reset
- Channels section with independent control of probe attenuation, Volts/Div, Offset, Bandwidth limit, and coupling
- Timebase section including Time/Div, Delay and acquisition type as well as indicators for the number of points per acquisition and the sample rate
- Trigger section with source, coupling, slope, type, and level selectors
- Data Logger section

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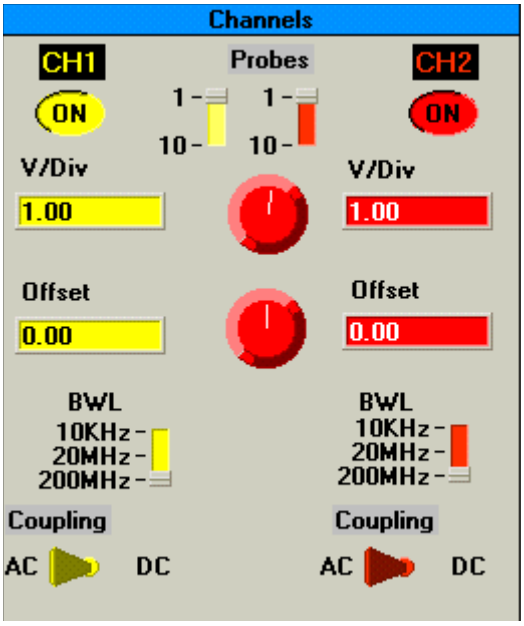
Acquisition: The "Acquisition" indicator is green when data is being acquired and red when the acquisition is stopped.

AutoSetup: The **AutoSetup** feature lets the digitizer display complex, unknown signals automatically. This function optimizes the position, range, time base, and triggering.

Reset: The **Reset** feature will reset the PXD 222 Digitizer hardware and the software application to a default state.



Hint: Typing values is easier that using the knob.

En CH1 and En CH2: The enable channel 1 and enable channel 2 buttons are used to turn on and off channels 1 and 2 respectively. The color of the buttons matches the color of the trace.

CH1 and CH2 Probes: The BNC inputs to the digitizer do not include automatic probe sensing. The CH1 and CH2 Probe switch should be set to **10** when a 10:1 probe is connected to the channel input, but it should be set to **1** when there is a direct connection.

V/Div. CH1 and CH2: Set the volts per division for each input independently by using the **V/Div** knob or by typing a value in the V/Div control box. The **V/Div** knob will change color depending on the channel selected: yellow when channel 1 is selected and red when channel 2 is selected. These colors also match the trace colors in the graphic display.

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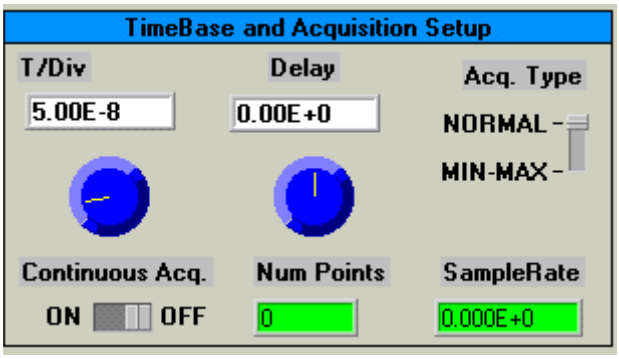
Offset CH1 and CH2: Set the Offset for each input independently using the **Offset** knob or by typing a value in the Offset control box. The **Offset** knob will change color depending on the channel selected: yellow when channel 1 is selected and red when channel 2 is selected. These colors also match the trace colors in the graphics display.

Bandwidth Limit CH1 and CH2: To suppress high frequency noise on waveforms, you can limit the bandwidth of the digitizer by selecting a **10 kHz** or **20 MHz** filter. This function smooths the displayed waveform by blocking frequencies above the filter's limit.

Coupling CH1 and CH2: Each channel of the digitizer is set to **DC** coupled by default so that AC and DC voltages appear on the display. Select **AC** coupling when you wish to observe a small signal that rides on a DC signal. Clicking the switch control toggles the selection.



T/Div: The time per division is set by using the **T/Div** knob or by typing a value in the T/Div control box. The digitizer automatically adapts itself to use the maximum sampling rate whenever the timebase is changed.

Delay: Turn the **Delay** knob to adjust the horizontal position and the amount of pre-trigger, as desired.

Acquisition Type: In **NORMAL** type, each acquisition is a fixed number of points depending on the timebase; and the time between points is the inverse of the sample rate. In **Mn-Max** type an oversampling technique is used to detect peaks. This acquisition type is useful for detecting glitches on slow timebase settings. See the Operation chapter for more information.

Number of Points: This is an indicator that displays the number of points in each acquisition. This will vary automatically depending on the T/Div and Acquisition type.

Sample Rate: This is an indicator that displays the sample rate for each acquisition. This will vary automatically depending on the T/Div and Acquisition type.

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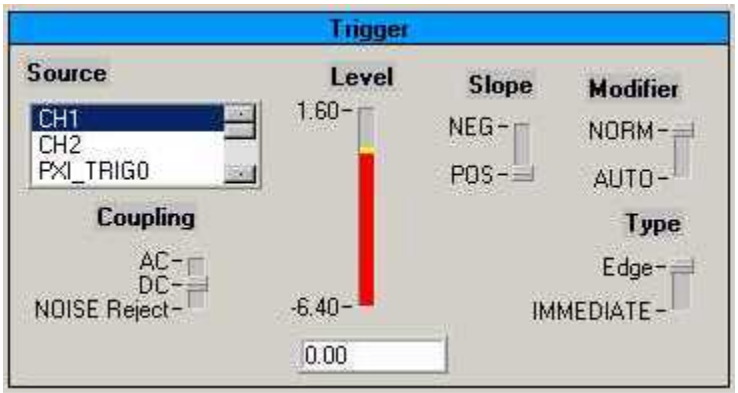

Source: The trigger source for the digitizer may be either of the input channels or the PXI Trigger and Star Trigger lines on the PXI backplane.

Coupling: This sets the trigger coupling for the input channels. **DC** is used when all the signal frequency components are coupled to the trigger circuit. When **AC** is selected the signal is capacitively coupled, DC levels are rejected, and frequencies below 50 Hz are attenuated. **NOISE Reject** is a filter that will help reduce jitter when triggering on noisy waveforms.

Level: Defines the source voltage at which the trigger circuit will generate an event.

Slope: Determines the direction of the trigger voltage transition used to generate a particular trigger event.

Modifier: In **NORM** mode the digitizer will acquire while there is a valid trigger. In **AUTO** mode the trace will automatically be displayed regardless of a valid trigger. When a valid trigger is present in auto mode, the digitizer will behave as if in normal mode.

Type: Edge type requires a valid trigger edge. **IMMEDIATE** type will force a trigger even if the trigger conditions are not met.

On/off: turns datalogging on and off.

Directory: Sets the directory for storying waveforms. Entering a period sets the current directory of the Quick-Start Demo; entering another value (e.g., "Test 1") creates a new folder called "Test1" referenced from the current directory.

Filename: Sets prefix for filename.

Index: An auto-incrementing index is appended to the above filename. When the datalogger is turned on, and the program is in continuous Acquisition mode, each waveform will be stored.

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USING THE PXD 222 DIGITIZER IVI INSTRUMENT DRIVERS

Your CD-ROM includes several example programs written in LabWindows/CVI using the PXD 222 IVI driver. Even if you are not using CVI, the ".c" files provide practical examples that will help you learn how to program the PXD 222 Digitizer.

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PXD 222 DIGITIZER SPECIFICATIONS

NOTE: Specifications are subject to change without notice.

VERTICAL SYSTEM

Bandwidth (DC coupled): 200 MHz (–3dB)

Lower Frequency Limit (AC coupled):

with 10:1 probe.....< 2 Hz (–3dB)

direct (1:1).....< 5 Hz (–3dB)

Rise Time: 1.7 ns

Analog Bandwidth Limiters: 20 MHz and 10 kHz

Input Coupling: AC, DC

Full Scale ranges:

direct (1-2-5 sequence).....40 mV to 800 V

with 10:1 probe.....400 mV to 8000 V

Positioning (% of full range): 100%

Input Impedance on BNC:

DC Coupled.....1 M ohms (±1%) // 15 pF (±2 pF)

Max. Input Voltage

with 10:1 probe.....1000 V CAT II

direct (1:1).....300 V CAT II

(For detailed specifications, see “SAFETY”)

Vertical Accuracy: ±2% of full range

Digitizer Resolution: 8 bits, separate digitizer

HORIZONTAL SYSTEM

Maximum Time Base Speed: 400 ps/sample

Minimum Time Base Speed: 4.8 s/sample (scope record mode)

Real Time Sampling Rate (for both inputs simultaneously):

400 ps to 80 ns/S .....up to 2.5 GS/s

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40 ns to 2.4 s/S ..... 20 MS/s

4.8 s/S ..... 4 MS/s

(See the chapter on Operation for more information.)

Acquisition Modes: Real Time, Single Sweep

Normal Acquisition Mode:

Record size ..... up to 1000 samples/ch

Record time span ..... 100 ns to 10 s

Glitch Capture Mode:

Record size ..... 250 points (Min. and Max data arrays returned)

Recorded time span ..... 50 µs to 10 s; detects glitches as fast as 50 ns by oversampling waveform

Sample rate ..... up to 2.5 GS/s

Scope Record Size:

Record size ..... 27 points (Min. and Max data arrays returned)

Sample rate ..... up to 20 MS/s

TRIGGER

Trigger Modes: Automatic, Edge, Video, Pulse Width

Trigger Delay: up to +25000 samples

Pre Trigger View: 2500 samples

Max. Delay: 10 s

Edge Trigger:

Mode ..... On Trigger, Single Shot

Source ..... Ch1, Ch2, PXI_TRIG[0,1,2…7],PXI_STAR[0,1,2…7]

Slope ..... Positive, Negative

Trigger Level Control Range:

Input Ch1, Ch2 ..... 100% of full range

PXI_TRIG[0,1,2…7] ..... fixed C-mos Cpci-level

PXI_STAR[0,1,2…7] ..... fixed C-mos Cpci-level

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Trigger Sensitivity Ch1 and Ch2:

DC to 5 MHz.....5 mV or 6.25% of full range

@ 200 MHz .....12.5% of full range

@ 250 MHz .....25.0% of full range

Video Trigger:

Standards.....PAL, PAL+, NTSC, SECAM

Modes .....Lines, Line Select, Field 1, or Field 2

Source.....Ch 2

Polarity .....Positive, Negative

Sensitivity (sync level).....8.75% of full range

Pulse Width Trigger:

Screen Update .....On Trigger, Single Shot

Trigger Conditions.....< T, > T, approximately equal to T (±10%), not equal to T (±10%)

Source.....Ch2

Polarity .....Positive or negative pulse

Pulse Time Adj. Range .....0.25 to 10 samples with a maximum resolution of 50 ns

Auto Set/ Range:

Autoranging attenuators and timebase; automatic triggering with automatic source selection. The autorange must be switched on or off.

If autorange is on, all auto functions are active until an **autorange off** command is executed.

Modes:

Normal.....15 Hz to max. bandwidth

Low Frequency.....1 Hz to max. bandwidth

Minimum Amplitude Ch 1, Ch 2

DC to 1 MHz.....20 mV

1 MHz to max. bandwidth.....40 mV

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PHYSICAL DIMENSIONS

Height.....3 U (13.3 cm, 5.25 in.)

Width.....2 slots (3.9 cm, 1.56 in.)

Weight.....0.77 kg (1.7 lb.)

POWER REQUIREMENTS

Input voltage at cPCI connector..... 5 V ±10%

Input current..... 1.6 A

ENVIRONMENTAL CONDITIONS

Temperature

Operating .....0 °C to 50 °C (32 °F to 122 °F) with specified cooling of PXI rack (indoor use only)

Non-Operating .....–40 °C to +71 °C

Humidity

Operating .....5% to 95% max. RH (non-condensing) up to 30 °C; upper limit derates to 45% RH (non-condensing) at 40 °C (104 °F)

Non-operating .....5% to 95% max. RH (non-condensing) up to 30 °C; upper limit derates to 45% RH (non-condensing) at 60 °C (140 °F)

Altitude

Operating .....4600 m (15,092 ft.)

Non-operating .....12,000 m (39,377 ft.)

Altitude

Conforms to MIL-PRF-28800 Class 3

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SAFETY

CAUTION

Safety specifications are only valid if the unit is properly grounded, as described in the Installation procedure.

The LeCroy PXD 222 Digitizer is designed for measurements on 300 V Category II Installations, Pollution Degree 2, per:

EN 61010-1:1993 + A2:1995

CAN/CSA-C22.2 No.1010.1-92

UL3111-1

Max. Input Voltages:

Input Ch 1 and Ch 2 directly.....300 V CAT II

Input Ch 1 and Ch 2 via 10:1 probe .....1000 V CAT II

Max. Floating Voltage:

From any terminal to ground .....300 V CAT II

Between any terminal.....300 V CAT II

Voltage ratings are given as “working voltage.” They should be read as VAC rms (50–60 Hz) for AC sine wave applications and as VDC for DC applications.

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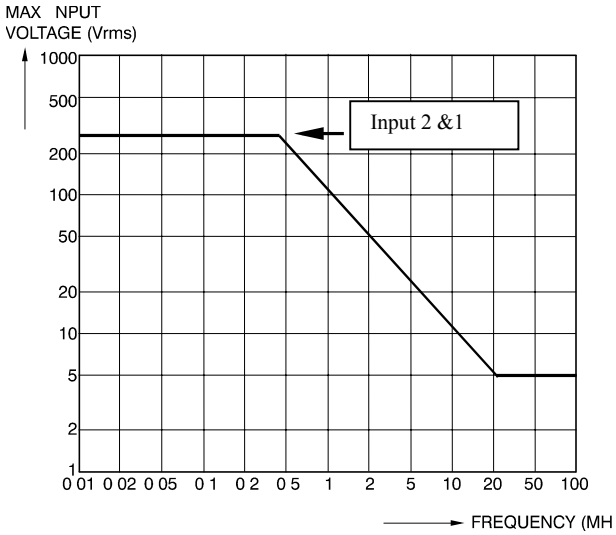
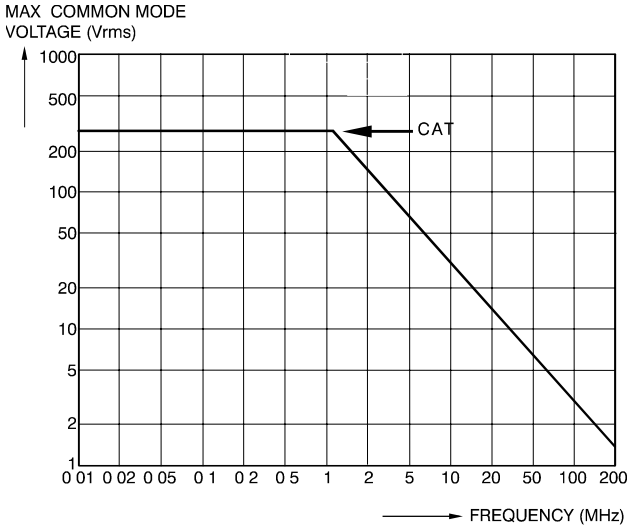


Max. Input Voltage v.s. Frequency



Safe Handling: Max. Input Voltage between Scope References 1and 2 and between Scope References and safety ground

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CERTIFICATIONS

CE approved, UL & cUL recognized

CE Declaration of Conformity: The PXD 222 Digitizer meets requirements of the EMC Directive 89/336/EEC for Electromagnetic Compatibility and Low Voltage Directive 73/23/EEC for Product Safety.

EMC Directive:	EN 61326-1:1997 +A1:1998	
	EMC requirements for electrical equipment for measurement, control, and laboratory use.	
Electromagnetic Emissions:	EN55022:1998, Class B	Radiated emissions
Electromagnetic Immunity:	EN 61000-4-2:1995 +A1:1998*	Electrostatic Discharge
	EN 61000-4-3:1996 +A1:1998*	RF Radiated Electromagnetic Field
	EN 61000-4-4:1995*	Electrical Fast Transient/Burst
	EN 61000-4-5:1995*	Surges
	EN 61000-4-6:1996*	RF Conducted Electromagnetic Field

* Meets Performance Criteria “B” limits – during the disturbance, product undergoes a temporary degradation or loss of function of performance which is self recoverable.

CAUTION

EMC specifications are only valid if the unit is properly installed in a CE compliant PXI chassis, as described in the Installation procedure.

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Low Voltage Directive:	EN 61010-1:1993 +A2:1995 Safety requirements for electrical equipment for measurement, control, and laboratory use. The PXD 222 Digitizer has been qualified to the following EN 61010-1 category: 300 V Installation (Overvoltage) Category II Pollution Degree 2 Protection Class I
UL and cUL Recognized:	UL Standard: UL 3111-1 Canadian Standard: CSA-C22.2 No. 1010.1-92

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