



JY-9824

Specs and Manual



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1. JY-9824 Specifications

1.1 Overview



JY-9824 is a high-resolution and high-speed PXIe digitizer that supports a 16-bit resolution and a 1 GS/s (Giga Samples Per Second) sampling rate. It utilizes high-speed, large-capacity data buffering and high-speed data exchange technology, making it suitable for the precise capture of high-speed, transient signals. It can be used to construct multi-channel, high-precision, synchronized acquisition systems.

🔗 Please download JYTEK <[JYPEDIA](#)>, you can quickly inquire the product prices, the key features and available accessories.

1.2 Main Features

- 4 channels 16-bit high-speed, high-precision analog input
- 0.16% full scale accuracy
- 1 GS/s/ch sampling rate
- Multi-channel synchronized acquisition with a accuracy up to 100 ps
- Two levels of gain that can be switched online
- Analog Input Bandwidth up to 200 MHz
- DC Coupling, 50 Ω Input Impedance
- 4GB DDR4 Buffer Memory

1.3 Hardware Specifications

1.3.1 Analog Input Specifications

Number of input channels	4
Resolution (Bits)	16
Sampling Rate(Per Channel)	69.4KS/s~1 GS/s
Sample Rate resolution (69.4KS/s~1GS/s)	1GS/s 250MS/s/n,n=1/2/4/8 250MS/s/4/n,n=4/5/6/8/9/12/15/16/18/20/24/25/27/30 250MS/s/4/(m*n),n or m=4/5/6/8/9/12/15/16/18/20/24/25/27/30
Input Impedance	50 Ω
Input Coupling	DC
Full-scale input range	1 Vpp/2 Vpp, software selectable
Input mode	RSE
Guaranteed Bandwidth (-3 dB)	DC-200 MHz
Synchronization	<100 ps
Crosstalk(@1 MHz) ¹	-70 dB
Operating Temperature	0 °C~ 50 °C
Trigger Type	Analog/Digital/Software
Trigger Mode	StartTrigger,ReferenceTrigger,ReTrigger

Table 1 Analog Input Specifications

1.3.2 DC Accuracy

JY-9824 Basic Accuracy = ±(% Reading+% Range)					
Nominal Range (V)	24 Hour Tcal	±1C°	24 Hr Full Scale Accuracy	24 Hr Full Scale Accuracy	
0.5	0.050	+	0.120	820 uV	1640 ppm
1	0.070	+	0.090	1600 uV	1600 ppm

Table 2 DC Accuracy

1.3.3 Dynamic Performance

Input	CH1 50Ω Impedance	
1 Vpp	<p>Input Frequency=10 MHz SFDR=78.27 SNR=63.98 SINAD=63.89 THD=80.73 ENOB=10.49</p>	<p>Input Frequency=20 MHz SFDR=79.60 SNR=65.58 SINAD=65.43 THD=80.09 ENOB=10.75</p>
	<p>Input Frequency=10 MHz SFDR=76.57 SNR=66.27 SINAD=66.12 THD=80.77 ENOB=10.87</p>	<p>Input Frequency=20 MHz SFDR=74.49 SNR=66.48 SINAD=66.31 THD=80.32 ENOB=10.89</p>

Table 3 Dynamic Performance

1.3.4 Crosstalk

Crosstalk(@1 MHz) ¹	-70 dB
1: :Fin=1MHz, -1dBFS, sine;	

Table 4 Crosstalk

1.3.5 Noise

Normal Range (V)	Max Sample Rate (GS/s)	Impedance (Ohm)	Idle Channel Noise (mVrms)
0.5	1	50	0.2
1	1	50	0.27

Table 5 Noise

1.3.6 PFI

Sources	Software, External digital trigger, Analog trigger from CH0 to CH3, PXI Trigger Bus	
Trigger Modes	Start trigger, Reference trigger, Re-trigger for start trigger and reference trigger	
External Digital Trigger	Input:	
	Input type	SMB
	Compatibility	3.3 V TTL
	Input high threshold (VIH)	2.0 V
	Input Low threshold (VIL)	0.8 V
	Maximum input overload	-0.5 V ~ +4.2 V
	Impedance	1 kΩ
	External digital trigger	Trigger edge: Rising/Falling , software selectable
	Trigger pulse width	20 ns minimum
	Output:	
	impedance	50Ω
	Logic type	3.3V TTL
	Maximum drive current	24mA

Table 6 PFI

1.3.7 Analog Trigger

Connector type	SMB
Impedance	1 kΩ
Configurable threshold	-0.4V~2.4V,default 0V
Adjustable step	38.1uV,2.5V with 16-bit resolution

Table 7 Analog Trigger

1.3.8 External Reference Clock

Connector type	SMB
Impedance	50 Ω, single-ended
Coupling	AC
Amplitude	0.35~2.4 Vpp
Stability	25 ppm
Frequency Range	10 MHz
Duty cycle tolerance	45% to 55%

Table 8 External Clock

1.3.9 IO Interface

Signal Input	SMA
Reference Clock	SMB
Trigger Input	SMB
PFI	SMB

Table 9 Bus Interface

1.3.10 Power Requirement

Input Voltage	12 V
Input Current	2.2 A
Power	30 W

Table 10 Power Requirement

1.3.11 Environment Specifications

Maximum altitude	2,000 m (800 mbar) (at 25 °C ambient temperature)
Pollution Degree	2

Table 11 Environment

Operating Environment

Ambient temperature range	0 °C to 50°C
Relative humidity range	10% to 90%, noncondensing

Table 12 Operating Environment

Storage Environment

Ambient temperature range	-40 °C to 71 °C
Relative humidity range	5% to 95%, noncondensing

Table 13 Storage Environment

2. Order Information

- PXIe-9824 (PN: JY8727784-01)
PXIe-9824,4-CH,1 GS/s,16-bit,2 Vpp,BW:200 MHz PXIe Digitizer

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3. Introduction

3.1 Overview


The JY-9824 is a PXIe digitizer with a 16-bit resolution and 1 GSPS sampling rate, ensuring high-precision capture of high-speed, transient signals. It features 4 synchronized channels with an accuracy of up to 100 ps, allowing for precise multi-channel acquisition. The device supports two levels of gain switching for flexibility in signal amplitude capture and offers a wide analog input bandwidth of up to 200 MHz. With DC coupling and a 50Ω input impedance, it is well-suited for a variety of signal types. The JY-9824 is further enhanced by its 4GB DDR4 buffer memory, which provides substantial data storage capacity for high-speed recording sessions, making it an ideal choice for demanding test and measurement applications requiring both speed and accuracy.

3.2 Abbreviations

- AI: Analog Input
- DI: Digital Input
- DO: Digital Output

3.3 JYPEDIA

We provide many sample programs for this device. Please download the sample programs for this device. You can download a [JYPEDIA](#) excel file from our web www.jytek.com. Open JYPEDIA and search for JY-9824 in the driver sheet, select **JY-9824 Examples.zip**. In addition to the download information, JYPEDIA also has a lot of other valuable information, JYTEK highly recommend you use this file to obtain information from JYTEK.



Drivers	Update Date	Category	Support Module
JY9824_V1.0.0_Linux.tar	2024/10/25	Driver	9824
JY9824_V1.0.1_Win.rar	2024/10/25	Driver	9824
JY9824_V1.0.0_Examples.rar	2024/10/25	Example	9824
JY9824_V1.0.0_C++Examples.rar	2024/10/25	Driver	9824

Figure 1 JYPEDIA Information

4. Hardware Specifications

4.1 System Diagram

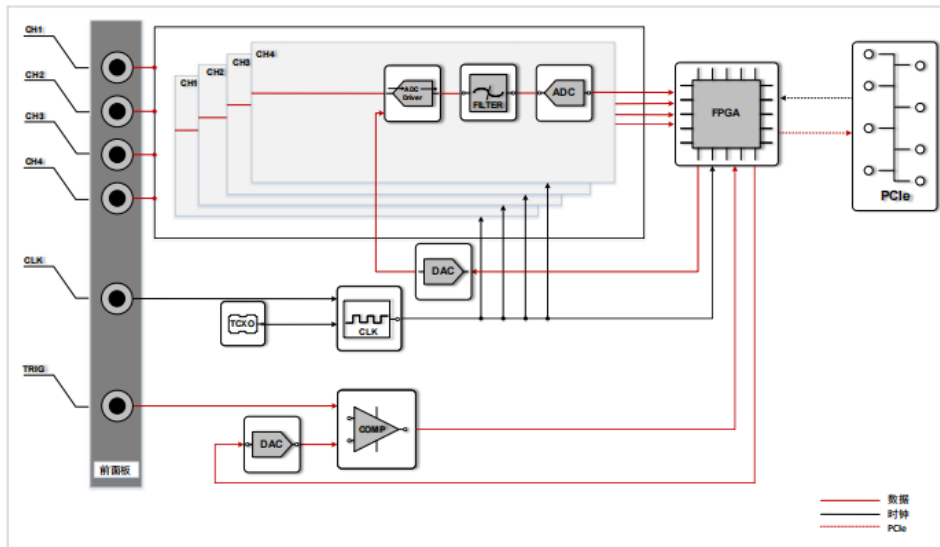


Figure 2 System Diagram

4.2 Front Panel

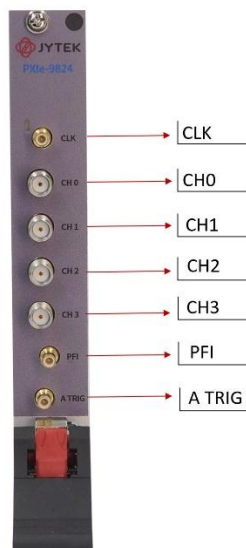


Figure 3 Front Panel

5. Software

5.1 System Requirements

JY-9824 boards can be used in a Windows or a Linux operating system.

Microsoft Windows: Windows 7 32/64 bit, Windows 10 32/64 bit.

Linux Kernel Versions: There are many Linux versions. It is not possible JYTEK can support and test our devices under all different Linux versions. JYTEK will at the best support the following Linux versions.

Linux Version	
Ubuntu LTS	
16.04:	4.4.0-21-generic(desktop/server)
16.04.6:	4.15.0-45-generic(desktop) 4.4.0-142-generic(server)
18.04:	4.15.0-20-generic(desktop) 4.15.0-91-generic(server)
18.04.4:	5.3.0-28-generic (desktop) 4.15.0-91-generic(server)
Localized Chinese Version	
中标麒麟桌面操作系统软件（兆芯版）V7.0（Build61）: 3.10.0-862.9.1.nd7.zx.18.x86_64	
中标麒麟高级服务器操作系统软件V7.0U6: 3.10.0-957.el7.x86_64	

Table 14 Supported Linux Versions

5.2 System Software

When using the JY-9824 in the Window environment, you need to install the following software from Microsoft website:

Microsoft Visual Studio Version 2015 or above,

.NET Framework version is 4.0 or above.

.NET Framework is coming with Windows 10. For Windows 7, please check .NET Framework version and upgrade to 4.0 or later version.

Given the resources limitation, JYTEK only tested JY-9824 be with .NET Framework 4.0 with Microsoft Visual Studio 2015. JYTEK relies on Microsoft to maintain the compatibility for the newer versions.

5.3 C# Programming Language

All JYTEK default programming language is Microsoft C#. This is Microsoft recommended programming language in Microsoft Visual Studio and is particularly suitable for the test and measurement applications. C# is also a cross platform programming language.

5.4 JY-9824 Series Hardware Driver

After installing the required application development environment as described above, you need to install the JY-9824 hardware driver.

JYTEK hardware driver has two parts: the shared common driver kernel software (FirmDrive) and the specific hardware driver.

Common Driver Kernel Software (FirmDrive): FirmDrive is the JYTEK's kernel software for all hardware products of JYTEK instruments. You need to install the FirmDrive software before using any other JYTEK hardware products. FirmDrive only needs to be installed once. After that, you can install the specific hardware driver.

Specific Hardware Driver: Each JYTEK hardware has a C# specific hardware driver. This driver provides rich and easy-to-use C# interfaces for users to operate various JY-9824 function. JYTEK has standardized the ways which JYTEK and other vendor's DAQ boards are used by providing a consistent user interface, using the methods, properties and enumerations in the object-oriented programming environment. Once you get yourself familiar with how one JYTEK DAQ card works, you should be able to know how to use all other DAQ hardware by using the same methods.

Note that this driver does not support cross-process, and if you are using more than one function, it is best to operate in one process.

5.5 Install the SeeSharpTools from JYTEK

To efficiently and effectively use JY-9824 boards, you need to install a set of free C# utilities, SeeSharpTools from JYTEK. The SeeSharpTools offers rich user interface functions you will find convenient in developing your applications. They are also needed to run the examples come with JY-9824 hardware. Please register and download the latest SeeSharpTools from our website, www.jytek.com.

5.6 Running C# Programs in Linux

Most C# written programs in Windows can be run by MonoDevelop development system in a Linux environment. You would develop your C# applications in Windows using Microsoft Visual Studio. Once it is done, run this application in the MonoDevelop environment. This is JYTEK recommended way to run your C# programs in a Linux environment.

If you want to use your own Linux development system other than MonoDevelop, you can do it by using our Linux driver. However, JYTEK does not have the capability to support the Linux applications. JYTEK completely relies upon Microsoft to maintain the cross-platform compatibility between Windows and Linux using MonoDevelop.

6. Operating JY-9824

This chapter provides the operation guides for JY-9824, including AI, AO, DI, DO, Timer and programmable I/O interface, etc.

JYTEK provides extensive examples, on-line help and documentation to assist you to operate the JY-9824 board. JYTEK strongly recommends you go through these examples before writing your own application. In many cases, an example can also be a good starting point for a user application.

7. Calibration

JY-9824 Series boards are precalibrated before the shipment. We recommend you recalibrate JY-9824 board periodically to ensure the measurement accuracy. A commonly accepted practice is one year. If for any reason, you need to recalibrate your board, please contact JYTEK.

8. Using JY-9824 in Other Software

While JYTEK's default application platform is Visual Studio, the programming language is C#, we recognize there are other platforms that are either becoming very popular or have been widely used in the data acquisition applications. Among them are Python, C++ and LabVIEW. This chapter explains how you can use JY-9824 DAQ card using one of this software.

8.1 Python

JYTEK provides and supports a native Python driver for JY-9824 boards. There are many different versions of Python. JYTEK has only tested in CPython version 3.5.4. There is no guarantee that JYTEK python drivers will work correctly with other versions of Python.

If you want to be our partner to support different Python platforms, please contact us.

8.2 C++

We recommend our customers to use C# drivers because C# platform deliver much better efficiency and performance in most situations. We also provide C++ drivers and examples in the Qt IDE, which can be downloaded from web. However, due to the limit of our resources, we do not actively support C++ drivers. If you want to be our partner to support C++ drivers, please contact us.

8.3 LabVIEW

LabVIEW is a software product from National Instruments. JYTEK does not support LabVIEW and will no longer provide LabVIEW interface to JY-9824 boards. Our third-party partners may have LabVIEW support to JY-9824 boards. We can recommend you if you want to convert your LabVIEW applications to C# based applications.

9. About JYTEK

9.1 JYTEK China

Founded in June, 2016, JYTEK China is a leading Chinese test & measurement company, providing complete software and hardware products for the test and measurement industry. The company has evolved from re-branding and reselling PXI(e) and DAQ products to a fully-fledged product company. The company offers complete lines of PXI, DAQ, USB products. More importantly, JYTEK has been promoting open-sourced based ecosystem and offers complete software products. Presently, JYTEK is focused on the Chinese market. Our Shanghai headquarters and production service center have regular stocks to ensure timely supply; we also have R&D centers in Xi'an and Chongqing. We also have highly trained direct technical sales representatives in Shanghai, Beijing, Tianjin, Xi'an, Chengdu, Nanjing, Wuhan, Guangdong, Haerbin, and Changchun. We also have many partners who provide system level support in various cities.

9.2 JYTEK Software Platform

JYTEK has developed a complete software platform, SeeSharp Platform, for the test and measurement applications. We leverage the open sources communities to provide the software tools. Our platform software is also open sourced and is free, thus lowering the cost of tests for our customers. We are the only domestic vendor to offer complete commercial software and hardware tools.

9.3 JYTEK Warranty and Support Services

With our complete software and hardware products, JYTEK is able to provide technical and sales services to wide range of applications and customers. In most cases, our products are backed by a 1-year warranty. For technical consultation, pre-sale and after-sales support, please contact JYTEK of your country.

10.Statement

The hardware and software products described in this manual are provided by JYTEK China, or JYTEK in short.

This manual provides the product review, quick start, some driver interface explanation for JYTEK JY-9824 Series family of multi-function data acquisition boards. The manual is copyrighted by JYTEK.

No warranty is given as to any implied warranties, express or implied, including any purpose or non-infringement of intellectual property rights, unless such disclaimer is legally invalid. JYTEK is not responsible for any incidental or consequential damages related to performance or use of this manual. The information contained in this manual is subject to change without notice.

While we try to keep this manual up to date, there are factors beyond our control that may affect the accuracy of the manual. Please check the latest manual and product information from our website.

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