

Technical support

This document explains how to diagnose and solve the most common problems that users experience with Pico products and software. If you cannot find a description of your problem here, please [contact Pico Technology technical support](#).

Software - the program that you run

- PicoScope for Windows
- PicoLog for Windows
- PicoScope for DOS
- PicoLog for DOS
- Drivers and examples

Converters - the widget that you plug into the printer or serial port

- ADC10/12/40/42
- ADC11/22
- ADC100/101
- ADC200/212/216
- ADC16/TC08/TH03/RH02

Ports - the sockets on the computer that you plug the converter into

- Serial ports- general
- Parallel ports- general
- USB ports- general
- Installing a Pico MI056 dual parallel port
- Installing a Pico MI025 dual serial port

Diagnostic techniques

- Identifying printer ports
- Identifying serial ports
- Identifying Interrupts
- Installing a dynamic link library
- Installing a device driver

Miscellaneous problems

- Printing graphs from DOS
- No signal or distorted signal
- Adc12 will not work with Windows
- Negative signals are clipped
- Incorrect voltages
- Noise
- Wrong batch number
- Incorrect frequency
- DC components are removed
- Incorrect temperatures

Contacting Pico

For a rapid and effective response, please follow these simple steps:

1. Our technical support staff have detailed information about the latest release of the software. Please check that you are using the latest release, available free from our web site (www.picotech.com), before contacting Pico.
2. If you have another computer, please check whether you get the same problem with the other computer.
3. If you don't have another computer, check whether the converter works correctly with the DOS version of the software.
4. Our staff will need the following essential details:
 - Operating system (eg Windows 95)
 - Product (eg ADC-200)
 - Application program (eg PicoScope, PicoLog or Drivers)
 - how to make the program misbehave
 - what it does wrong
 - if urgent, please specify how soon you need a solution

For application programs like PicoScope:

- The software release ([Help](#) | [About](#) for full info)
- If the problem occurs only with specific data or settings, please send us a file

For drivers:

- what programming language you are using (eg Visual Basic)
 - the make of compiler (eg Borland)
 - the version of the compiler
 - the section of your program that uses the driver
5. If you are working as part of a team, please designate a 'Pico Contact': It can cause confusion if different people contact us about the same problem.
 6. If possible, please e-mail or fax your queries rather than telephoning us, so that we can monitor queries more effectively and provide you with a better service.

E-mail: tech@picotech.com
Fax: 01480-396395 (UK)
+44-1480-396395 (elsewhere)
 7. If you contact us by telephone, please note the name of the person that you spoke to. If you need to call us again, it will save you time if you talk to the same person.

Phone: 01480-396296 (UK)
+44-1480-396296 (elsewhere)
 8. We try to respond to all queries within three days. If you do not hear from us within that time, please re-send the original query.

PicoScope for Windows

Minimum Specification

The computer must have at least 4Mb RAM 4MB. The 286 is not supported. A 386 in enhanced mode is the minimum requirement.

Error messages

If PicoScope for Windows is not working correctly, you can get diagnostic information from three places:

- an error message at start-up
- the status message next to the run/stop button
- by selecting the **About** option from the Help menu

The start-up error message normally explains why PicoScope is unable to use the selected ADC (Analog to Digital Converter). If you miss the message at start-up, you can see the same information by **selecting About** from the menu.

The status message normally says whether the converter is **tuning** or **stopped**. If PicoScope is unable to use the converter, it will say **Waiting for ADC** instead.

The **Help | About** option gives useful diagnostic information about PicoScope as a whole, and also about the converter. See also:

Spectrum clipboard DDE

PicoScope Help | About

To display this dialog:

1. Select Help from the main menu
2. Select About from the help menu.

Near the top of this window is the software release number (eg R5.03.2). You can use this to check whether you are using the most recent software release published on the Pico Technology web site. You will be asked for the release number if you call Pico Technical support.

At the bottom of the screen, there is **status or error information** about the converter driver.

PicoLog for Windows

Minimum Specification

The computer must have at least 4Mb RAM 4MB. The 286 is not supported. A 386 in enhanced mode is the minimum requirement.

Error messages

If PicoLog for Windows is not working correctly, you can get diagnostic information from three places:

- an error message dialog when you open a new converter
- the **status dialog** for a converter
- by selecting the **Abou**t option from the Help menu

Invalid Serial Number / Only Runs in Demo Mode

If PicoLog for Windows will only run in demo mode, or reports an invalid serial number, the most likely cause is that the date setting on your computer is incorrect. Please check the time/date settings on your PC before running PicoLog again.

See also:

[Can't open recorder view](#)

PicoLog Help | About

To display this dialog:

1. Select Help from the main menu
2. Select About from the help menu.

Near the top of this window is the software release number (eg R5.03.2). You can use this to check whether you are using the most recent software release published on the Pico Technology web site. You will be asked for the release number if you call Pico Technical support.

PicoLog converter status

To see the converter status:

1. Select settings from the main menu
2. Select Converters from the settings menu
3. If you checked the multiple-converter box, select a converter
4. Press the Status button

The computer will then display the **status and error information** for the converter.

PicoScope for DOS

Minimum specification

The computer must be an IBM compatible PC running at least MS DOS v3. The largest executable program size must be at least 500K. To check this, type in the command 'mem' at the DOS prompt, and the memory details will be displayed.

Common problems

Printing graphs from DOS

PicoLog for DOS

Minimum specification

The computer must be an IBM compatible PC running at least MS DOS v3. The largest executable program size must be at least 570K. To check this, type in the command 'mem' at the DOS prompt, and the memory details will be displayed.

Common problems

Printing graphs from DOS

Drivers and examples

General

If the driver appears to malfunction within your own application, please check the following things:

1. Does the converter work correctly with PicoScope or PicoLog?
2. Does the driver example provided by Pico work correctly?

Borland C V4.5, V5.02

No known problems

Borland Turbo Pascal

Some drivers do not link correctly to all versions of Turbo Pascal. If you experience difficulties, please contact Pico Technology technical support, as a protected-mode driver may be available.

Borland Delphi V1, 2, 3

No known problems

Microsoft Excel V5, V7

You should use the 16-bit driver for V5 and the 32-bit driver for V7.

The driver DLL ADCxxx16.DLL or ADCxxx32.DLL must be moved to c:\windows\system, as Excel does not use the spreadsheet directory as the current directory.

Microsoft Visual Basic V3, 4, 5, 6

You should use the 16-bit driver for V3 and the 32-bit driver for V4 and V5.

The 32-bit example was written for V4, but works with V5 and V6. Once it has been converted to V5 or V6, you cannot change it back.

The driver DLL ADCxxx16.DLL or ADCxxx32.DLL must be moved to c:\windows\system, as Visual Basic does not use your program directory as the current directory.

Microsoft Visual C V1.5

No known problems

Microsoft Visual C V2, 4, 5 and 6

This application uses non-standard linkage conventions (different to Windows 95/NT, Visual Basic etc). Please read carefully the instructions in the help file about creating LIB files.

National Instruments Labview

We recommend copying both the .LLB files and the ADCxxx32.DLL files to c:\labview\user.lib.

Hewlett Packard HP-Vee

No known problems

Linux

No known problems

Converter Status and Error information

A converter driver normally provides four or five lines of status information if the converter appears to be working correctly, and two or more lines of error information if the converter is not working.

PicoScope displays status and error information in Help | About. If there is an error, it also displays the error information in an error message when the application is started.

PicoLog displays status information in the Converter Status dialog. If there is an error, it also displays the error information for each converter in an Errors dialog box.

When using the drivers, you can get it by calling `adcxxx_get_unit_info`.

The information depends upon the converter:

- `ADC10/12/40/42`
- `ADC11/22`
- `ADC100/101`
- `ADC200/212/216`
- `ADC16/TC08/TH03/RH02`

ADC10/12/40/42

All four converters are handled by the same driver. The driver cannot tell whether the converter is connected. If the driver is working correctly, four lines of status information are displayed. If it is not working for some reason, only one line or error information is displayed.

Status information

Here is an example for an ADC-10: each line of the status information is explained below.

```
ADC10/12/40/42 driver V2.1
PICO.386 V1.3
ADC-10 on LPT2
20000 samples per second
```

ADC10/12/40/42 driver V2.1

This specifies the driver name and version.

PICO.386 V1.3

This line shows the name and version of the system-resident portion of the device driver. The options are:

PICO.386 - Windows 3.1 and Windows 95/98 16 bit driver

PICO.VXD - Windows 95/98 32 bit driver

PICO.SYS - Windows NT driver

ADC-10 on LPT2

This line shows what converter type the driver has been told to use, and the name of the printer port that it is using.

20000 samples per second

This line shows the maximum sample rate achievable on this computer. Note that the sample rate will be a lot lower on NT computers, as Windows NT uses the majority of the computer's resources.

Error information

The application will supply one of the following messages if an ADC is not working correctly:

- Invalid port
- Port not opened
- LPTx not found
- `ADC10xx.DLL` not found
- `PICO.xxx` not found
- `PICO.xxx` is too old (Vx.x)
- Invalid ADC type
- Invalid VIO base address
- Unknown error

Invalid port

This indicates that the application has attempted to open a printer port that is not available on any computer, for example LPT0. If it occurs when calling the driver directly, amend your program. If you receive this message from PicoScope or PicoLog, please contact Pico technical support.

Port not opened

This indicates that the driver has not been opened on the specified port. This is unlikely to occur with PicoScope or PicoLog, but could occur if you call the driver directly to ask for status on a port that has not been opened.

LPTx not found

This indicates that you have selected a printer port that is not fitted on your computer. Please check that you have selected the correct printer port. If in doubt, see Identifying Printer Ports

ADC10xx.DLL not found

This message indicates that the dynamic link library (DLL) for this converter is not available in the same directory as the application program. Please check that you have selected the correct converter, [installing a dynamic link library](#)

PICO.xxx not found

This message indicates that the device driver for this product was not loaded correctly at system start-up. The most likely causes are that you did not restart the computer after installing the software, or that you used the DOS install program INSTALL.EXE rather than the Windows program SETUP.EXE. If not, [installing a device driver](#)

PICO.xxx is too old (Vx.x)

This message indicates that a device driver has been found, but that it has been superseded. [installing a device driver](#)

Invalid ADC type

This means that an attempt was made to open this port using an invalid converter type. This is unlikely to occur with PicoScope or PicoLog, but could occur if you call the driver directly.

Invalid VIO base address

This is an unusual error. Please contact [Pico Technical support](#)

Unknown error

This is an unusual error. Please contact [Pico Technical support](#)

ADC11/22

The same driver works for the ADC-11 and the ADC-22. It can often (but not always) detect when an ADC is not connected.

If the driver is working correctly, four lines of status information are displayed. If it is not working for some reason, only one line or error information is displayed.

Status information

Here is an example for an ADC11: each line of the status information is explained below.

```
ADC11/22 driver V2.1
PICO.386 V1.2
ADC11 on LPT2
15693 samples per second
```

ADC11/22 driver V2.1

This specifies the driver name and version.

PICO.386 V1.2

This line shows the name and version of the system-resident portion of the device driver. The options are:

```
PICO.386 - Windows 3.1 and Windows 95/98 16 bit driver
PICO.VXD - Windows 95/98 32 bit driver
PICO.SYS - Windows NT driver
```

ADC11 V8 on LPT2

This line shows what converter type the driver has been told to use, and the name of the printer port that it is using.

15693 samples per second

This line shows the maximum sample rate achievable on this computer. Note that the sample rate will be a lot lower on NT computers, as Windows NT uses the majority of the computer's resources.

Error information

The application will supply one of the following messages if an ADC11 is not working correctly:

- Invalid port
- LPTx not found
- ADC11xx.DLL not found
- PICO.xxx not found
- PICO.xxx is too old (Vx.x)
- ADC11/22 unit not found on LPTx

Invalid port

This indicates that the application has attempted to open a printer port that is not available on any computer, for example LPT0. If it occurs when calling the driver directly, amend your program. If you receive this message from PicoScope or PicoLog, please contact [Pico technical support](#)

LPTx not found

This indicates that you have selected a printer port that is not fitted on your computer. Please check that you have selected the correct printer port. If in doubt, see [Identifying Printer Ports](#)

ADC11xx.DLL not found

This message indicates that the dynamic link library (DLL) for this converter is not available in the same directory as the application program. Please check that you have selected the correct converter, [installing a dynamic link library](#)

PICO.xxx not found

This message indicates that the device driver for this product was not loaded correctly at system start-up. The most likely causes are that you did not restart the computer after installing the software, or that you used the DOS install program INSTALL.EXE rather than the Windows program SETUP.EXE. If not, [installing a device driver](#)

PICO.xxx is too old (Vx.x)

This message indicates that a device driver has been found, but that it has been superseded by a newer device driver

ADC11 unit not found on LPTx

This message indicates that the driver looked for a converter on LPTx, but did not find one. Please check that the unit is connected to the correct printer port, and then [Identifying Printer Ports](#)

ADC100/101

The same driver is used for the ADC-100 and the ADC-101. The computer cannot tell whether the converter is connected.

Status information

Here is an example for an ADC-100: each line of the status information is explained below.

```
ADC100/101 driver V2.1
LPT2, no adapter
PICO.386 V1.3
132100 samples/sec
```

ADC100/101 driver V2.1

This specifies the driver name and version.

LPT2, no adapter

This line shows the name of the printer port that it is using, and whether an adapter has been detected. The adapter is supplied with the ADC-100, and makes the ADC-100 work on computers with non-standard printer ports. The adapter is built into the ADC-101.

PICO.386 V1.3

This line shows the name and version of the system-resident portion of the device driver. The options are:

```
PICO.386 - Windows 3.1 and Windows 95/98 16 bit driver
PICO.VXD - Windows 95/98 32 bit driver
PICO.SYS - Windows NT driver
```

132100 samples/sec

This line shows the maximum sample rate achievable on this computer. Note that the sample rate will be a lot lower on NT computers, as Windows NT uses the majority of the computer's resources.

Error information

The application will supply one of the following messages if an ADC100 is not working correctly:

- Invalid port
- Port not opened
- LPTx not found
- ADC100xx.DLL not found
- PICO.xxx not found
- PICO.xxx is too old (Vx.x)
- Invalid ADC type
- Invalid VIO base address
- Unknown error

Invalid port

This indicates that the application has attempted to open a printer port that is not available on any computer, for example LPT0. If it occurs when calling the driver directly, amend your program. If you receive this message from PicoScope or PicoLog, please contact [Pico technical support](#)

Port not opened

This indicates that the driver has not been opened on the specified port. This is unlikely to occur with PicoScope or PicoLog, but could occur if you call the driver directly to ask for status on a port that has not been opened.

LPTx not found

This indicates that you have selected a printer port that is not fitted on your computer. Please check that you have selected the correct printer port. If in doubt, see [Identifying Printer Ports](#)

ADC100xx.DLL not found

This message indicates that the dynamic link library (DLL) for this converter is not available in the same directory as the application program. Please check that you have selected the correct converter, [installing a dynamic link library](#)

PICO.xxx not found

This message indicates that the device driver for this product was not loaded correctly at system start-up. The most likely causes are that you did not restart the computer after installing the software, or that you used the DOS install program INSTALL.EXE rather than the Windows program SETUP.EXE. If not, [installing a device driver](#)

PICO.xxx is too old (Vx.x)

This message indicates that a device driver has been found, but that it has been superseded. [installing a device driver](#)

Invalid ADC type

This means that an attempt was made to open this port using an invalid converter type. This is unlikely to occur with PicoScope or PicoLog, but could occur if you call the driver directly.

Invalid VIO base address

This is an unusual error. Please contact [Pico Technical support](#)

Unknown error

This is an unusual error. Please contact [Pico Technical support](#)

ADC200/212/216

If the ADC200 is working correctly, four lines of status information are displayed. If it is not working for some reason, only one line or error information is displayed.

Status information

Here is an example for a working ADC212: each line of the status information is explained below.

```
ADC200 driver V2.00
ADC212 V8 on LPT2
Batch RMY74
Cal date 23Feb98
PICO.386 V1.2
```

ADC200 driver V2.00

This specifies the driver name and version. Note that the ADC200 driver supports the whole ADC2xx range.

ADC212 V8 on LPT2

This line shows what converter type and version has been detected, and the name of the printer port that it is using.

Batch RMY74

This line shows the Pico Technology batch number for the converter. If the batch number contains any question marks, this indicates that the calibration information is corrupt. Although the unit can still be used, there may be small errors in any voltage measurements.

Cal date 23Feb98

This is the date that the ADC200 was last calibrated. We recommend annual re-calibration for equipment that is used to make repeatable measurements.

PICO.386 V1.2

This line shows the name and version of the system-resident portion of the device driver. The options are:

```
PICO.386 - Windows 3.1 and Windows 95/98 16 bit driver
PICO.VXD - Windows 95/98 32 bit driver
ADC200.SYS - Windows NT driver
```

The .386 and .VXD drivers just contain 'helpers' that speed up communication with the converter: these drivers very rarely change.

ADC200.SYS contains the majority of the ADC200 driver, and should be updated each time a new software release becomes available.

Error information

The application will supply one of the following messages if an ADC200 is not working correctly:

- Invalid port
- LPTx not found
- ADC200xx.DLL not found
- PICO.xxx not found
- PICO.xxx is too old (Vx.x)
- ADC200 unit not found on LPTx
- Error x (HxSx)

Invalid port

This indicates that the application has attempted to open a printer port that is not available on any computer, for example LPT0. If it occurs when calling the driver directly, amend your program. If you receive this message from PicoScope or PicoLog, please contact [Pico technical support](#)

LPTx not found

This indicates that you have selected a printer port that is not fitted on your computer. Please check that you have selected the correct printer port. If in doubt, see [Identifying Printer Ports](#)

ADCxxxx.DLL not found

This message indicates that the dynamic link library (DLL) for this converter is not available in the same directory as the application program. Please check that you have selected the correct converter, [Installing a dynamic link library](#)

PICO.xxx not found

This message indicates that the device driver for this product was not loaded correctly at system start-up. The most likely causes are that you did not restart the computer after installing the software, or that you used the DOS install program INSTALL.EXE rather than the Windows program SETUP.EXE. If not, [Installing a device driver](#)

PICO.xxx is too old (Vx.x)

This message indicates that a device driver has been found, but that it has been superseded. [Install a device driver](#)

ADC200 unit not found on LPTx

This message indicates that the driver looked for a converter on LPTx, but did not find one. Please check that the unit is connected to the correct printer port, and then [Identifying Printer Ports](#)

Error x (HxSx)

This is an unusual error. Please contact [Pico Technical support](#)

ADC-16/TC-08/TH-03/RH-02

These converters each have a separate driver, but the status and error information is the same for all drivers.

Status information

Here is an example for a working TC08: each line of the status information is explained below.

```
TC08 driver V2.2 TC08 Unit V10
```

Error information

If the driver is unable to establish communications with the converter, it will display the following message:

```
TC08 driver V2.2 TC08 not found
```

This message occasionally happens when changing ports or devices. If you exit from PicoLog and then restart, the problem usually clears.

Printer ports

Most Pico products connect to a printer port, also known as a parallel port, on a computer. All computers have at least one printer port: some computers have more. Parallel ports are called LPT1, LPT2 etc.

The printer port may also be used for connecting scanners, disk drives and, of course, printers. Note that the drivers supplied with these devices (especially zip drives) may interfere with the operation of the a Pico ADC even when the device is not in use. See Modes and Additional ports below for the solution.

Connectors

The printer port socket is normally on the back of the computer. It is a D-shaped female connector- female means that it has holes that the pins on a male connector will fit onto- with holes for 25 pins.

Modes

Over the years, there have been several types of printer port:

- standard mode (as used on the original IBM PC since 1981)
- SPP (short for standard printer port)
- Output only (another name for standard mode)
- EPP - enhanced parallel port
- ECP - ...

EPP and ECP offer enhanced speed when working with printers, however these modes offer no advantages when used with Pico products.

Many problems caused by non standard ports and conflicting software drivers can be solved by changing the parallel port mode to Standard. Most computers allow you to select the printer port mode as part of the BIOS setup. Consult you PC / Motherboard manual for details of how to enter the BIOS setup. When you have located the section on parallel port modes select 'Standard', 'SPP' or 'Output Only'

Some printer ports, even in Standard mode, and do not work correctly with the ADC-100, and it is necessary to use the ADC100 adapter that is supplied with the unit.

Additional ports

If you wish to use more than one ADC at once, or you wish to have a printer and an ADC connected at the same time, the best approach is to add one or more printer ports. Pico Technology can supply an inexpensive dual parallel port card ([MI056](#)).

With Windows 98/2000, an alternative approach that is also suitable for portable computers is to attach a USB (Universal Serial Bus) printer port. Although this port cannot be used for connecting an ADC, it can be used with a printer, leaving the standard port available to connect an ADC.

Pico ADCs do work correctly with purely mechanical printer port switches, but there may be compatibility problems with 'intelligent' printer port switches, which are usually designed for use exclusively with printers.

Identifying printer ports

DOS/Windows 3.1/95

1. Open up an MS-DOS box
2. Type in debug and press return
3. Type in D 40:8 and press return

The computer will display a line like this:

```
0040:0000          - 78 03 00 00 00 00 14 21
```

This first two bytes after the minus sign are the base address of LPT1 (0378 in this case). The next two bytes are for LPT2, and the next for LPT3. If you see any address other than 0378, 0278 or 03BC, do not attempt to use the corresponding port.

Windows NT

Windows NT does not make information available about printer ports, and the port numbers are not necessarily as expected, so it is necessary to try using LPT1, LPT2 and LPT3, even on a computer with only one printer port. Disconnect all equipment from other printer ports before carrying out the test.

Installing a Pico MI056 dual parallel port

The MI056 dual parallel port has the following groups of jumpers for each port:

- DMA#
- IO Port (base address)
- IRQ#
- Mode

If you wish to use the ports only with Pico products, you need only set the mode and the base address. The mode should be set to EPP/SPP, and the base address must be different for each port. [Identifying printer ports](#) to find out the base addresses of existing printer ports.

If you want to use a port with a printer in standard mode, you will need to set IRQ#. [Identifying Interrupts](#) for more details. If you wish to use EPP or ECP, you will need to set the DMA channel as well.

Serial ports

The low speed Pico products connect to the computer via a serial port. Serial ports can also be used for mice, modems, barcode readers, smartcard readers, label printers, etc.

Most desktop computers have at least two serial ports, and most portables have at least one. The serial ports are called COM1, COM2 etc. On older desktop computers, one serial port is used for the mouse.

Connectors

The serial ports are usually found on the back of the computer. They use D-shaped male connectors (male means that there are pins sticking out) with either 9 or 25 pins. All Pico serial port products are fitted with a 9-pin connector, but they are supplied with a 9-to-25 pin adapter, which must be used if you wish to use a 25-pin port.

Additional ports

If additional serial ports are required, there are three possible solutions:

- add a two-port serial card
- add a four-or eight-port card
- add a USB serial port

Pico products work with all of these types of device.

Two port cards (Pico supply the inexpensive ~~MA025~~) provide two extra serial ports that are identical to COM1 and COM2.

Each port must be allocated its own interrupt: most computers only have 16 interrupts, of which most are in use, so you usually cannot add more than one card of this type.

Four or eight port cards tend to be more expensive. All of the ports on a card share the same interrupt, and so it is necessary to have a special driver to use this type of card. Make sure that the driver is included with the card.

If you have Windows 98 or Windows 2000, adding one or ~~USB~~ **USB serial ports** is by far the easiest solution. When you plug a new USB serial port, Windows automatically adjusts the setup to include the extra port.

Remote operation

One big advantage with serial port products is the ability to connect remotely to them, using a telephone modem, a radio modem or a fibre-optic link. Bear in mind that the computer provides power for the Pico product (except EnviroMon) using the serial port control lines: if you connect through a modem, this is not possible, and so it is necessary to provide separate power inputs for the Pico product. See the product help file for information about this.

When using radio modems, it is necessary to allow for the turnround time of the modem (the time it takes to switch over from transmit to receive): see the product help file for more information about this.

Note that all serial port products can be accessed remotely via an IP network by running an 'agent' on a Windows or Linux computer connected to the product.

Identifying serial ports

This explains how to find out what serial ports are fitted on your computer. Additional serial ports are available from Pico Technology Limited. Remember that, for Windows, the mouse may be connected to one of the serial ports.

COM3 and COM4 are often assigned to the same interrupts as COM1 and COM2: if this is true, you cannot use COM1 and COM3 at the same time, or COM2 and COM4 at the same time.

DOS/Windows 3.x

1. Open up an MS-DOS box
2. Type in debug and press return
3. Type in D 40:0 and press return

The computer will display a line like this:

```
0040:0000 03 F8 02 F8 00 00 00 00 - 78 03 00 00 00 00 14 21
```

The four pairs of bytes up to the minus sign are the base addresses of COM1 to COM4. A zero value indicates that the port is not fitted.

To check the Windows interrupt settings for COM3 and COM4:

1. Start notepad
2. Open system.ini
3. Search for COM3

Windows 95/98

1. Press Start in the bottom left corner
2. Select Settings
3. Select Control panel
4. Select System
5. Select Device Manager
6. Select Ports (COM and LPT)
7. Select the COM port that you wish to check

Installing a Pico MI025 dual serial port

The MI025 card provides two additional serial ports on your computer. Each card requires two interrupts: if you need more than two additional serial ports, you should consider using a 4 or 8-port card rather than adding multiple MI025 cards. The card has two groups of jumpers for each port, and some other jumpers that should be left unchanged. The jumpers that you should set are:

- the I/O port
- the Interrupt level.

If you already have two serial ports, you should add the new card as COM3 and COM4. Remember that an internal modem is treated as a COM port, so on a computer with two serial ports and an internal modem, the new card should be set to COM4 and COM5.

COM3 and COM4 use the base addresses 3E8 and 2E8 respectively.

Check what interrupts are currently used, then select two interrupts that are not used (say 5 and 12) then set the IRQ jumpers to these interrupts.

DOS

When you run PicoLog, you will need to specify the base address and interrupts for COM3 and COM4.

Windows 3.x

1. Start **notepad**
2. Open **system.ini**
3. Search for **COM3**
4. If you find it, modify the IRQs and base addresses
5. If not found, add the following text to the [386Enh] section:

```
COM3Irq=5  
COM3Base=3E8  
COM3Irq=12  
COM3Base=2E8
```

Windows 95/98

1. Press **Start** in the bottom left corner
2. Select **Settings**
3. Select **Control panel**
4. Select **System**
5. Select the **Device manager** tab
6. Click **Ports (COM and LPT)**
7. Select **COM3**
8. Check the **Interrupts** option
9. Select **resources**
10. Un-check **Use automatic settings**
11. Change the IRQ to 5 (you may need to select basic configuration 7 before you are allowed to do this)
12. Repeat for COM4, setting IRQ to 12

Windows 2000

1. Press **Start** in the bottom left corner
2. Select **Settings**
3. Select **Control panel**
4. Select **System**
5. Select the **Hardware** tab
6. Click the **Device manager** button
7. Select the **View** menu
8. Select **devices by type** tab
9. Proceed as for Windows 95/98

Identifying interrupts

A device uses an interrupt to indicate that some action is required, for example when a character is received on a serial port. A PC has a total of 16 interrupts, and each device requires its own interrupt. Note, though, that Pico parallel port devices do not use the parallel port interrupt, and so a parallel port used exclusively with an ADC need not be allocated an interrupt.

The following table gives you a general idea of the interrupts that most computers use:

1	keyboard
2	*** used to hook-in interrupts 8 to 15
3	COM2 - serial port
4	COM1 - serial port
5	LPT2 - printer
6	Floppy disk
7	LPT1 - printer
8	Real time clock
13	Floating point processor
14	Primary disk drive

Interrupts in the 9 to 12 range are generally used for PCI devices- Graphics, network, SCSI etc. It is, however, possible to allocate unused interrupts in this range.

DOS/Windows 3.x

Run the MSD program provided with DOS

Select the IRQ Status option

Windows 95/98

1. Press **Start** in the bottom left corner
2. Select **Settings**
3. Select **Control panel**
4. Select **System**
5. Select the **Device manager** tab
6. Click the **Properties** button
7. Select the **View resources** tab
8. Check the **Interrupts** option

Windows 2000

1. Press **Start** in the bottom left corner
2. Select **Settings**
3. Select **Control panel**
4. Select **System**
5. Select the **Hardware** tab
6. Click the **Device manager** button
7. Select the **View** menu
8. Select **Resources by type** tab
9. Check the **Interrupts** option

Installing a dynamic link library

The installation program normally installs the correct DLL for the converter that you select, so this message is only likely to occur if you install for one converter and then select a different one. If you wish to use more than one type of converter with PicoScope, you should install the software once for each type of converter.

Installing a device driver

Windows 3.x and Windows 95/98 (16-bit)

To check that the device driver is correctly installed:

1. Check that c:\windows\system contains the file pico.386
2. Run notepad.exe
3. Edit system.ini
4. Check that the [386Enh] section contains an entry
device=pico.386
5. If you make any changes, restart the computer and try again

Windows 95/98 (32-bit)

To check that the device driver is correctly installed:

1. Check that c:\windows\system contains the file pico.vxd
2. Run notepad.exe
3. Edit system.ini
4. Check that the [386Enh] section contains an entry
device=pico.vxd
5. If you make any changes, restart the computer and try again

Windows NT

Check that the device driver is installed

1. Log on as administrator
2. Press the Start button in the bottom left corner
3. Select Settings
4. Select Control Panel
5. Select the Devices icon
6. Check that the device driver is present and started (ADC200 for ADC200, PICO for other products)

If the the device driver is not present:

1. check that the program **regdrive.exe** exists in the Pico directory, and type in regdrive pico or regdrive adc200
2. When it has finished, reboot the computer
3. Use the method described above to check that the device driver is now present and started.

Monitor view missing in PLW

The monitor view appears to be missing (ie the program always starts in Player Mode) if there is already a monitor view open. Check all the minimised icons.

The monitor view will also not appear if the program has been started in player mode.

Printing graphs from DOS

If the program does not print or prints incorrectly, please check the following:

1. The correct printer must be selected from the list in the Picolog program. This appears in **Main menu | Setup | Graphics printer details**.
The printers listed are **black and white printers only**: Epson FX/LQ series and the HP Laserjet/Deskjet series. If you wish to use either a colour printer, or a printer that is not on the list, you will need the additional graphics drivers. You can download this free of charge from our web site (www.picotech.com) or, for a small fee, you can contact Pico Technology technical support to ask for a diskette.
2. The file **pico.drv** must be in the same directory as the program **picolog.exe**.
3. To install a printer driver from the additional graphics drivers on the web:
 - Run install.exe to install the files on your computer
 - Run drvtool.exe.
 - choose the set of printers that you wish to use: this will create a new pico.drv file
 - open picolog
 - go to Main menu | Setup | Graphics printer details
 - select the printer to use next

Note:

pico.drv must be in the same directory as picolog.exe

No signal or a distorted signal

1 Software has been installed for the wrong device

For a Windows program, check [Help|About](#). For a DOS program, look at the opening screen (PicoScope) or at display voltages (PicoLog).

If necessary re-install the software, and reboot the computer.

Note: For PicoScope for windows you must also change to the correct converter using [File|Setup|Converter](#).

2 Parallel port 'locked' by another device or driver

Check for :

Any devices that have been installed on the parallel port in the past. In particular, check for numeric keypads, scanners, external disk drives [Especially Zip drives](#) and the HP LaserJet 5.

Solution:

The software drivers for some devices continually poll the parallel port looking for inputs. This type of operation will prevent Pico products from operating correctly. The drivers for these devices will have to be removed from the computer's system files (AUTOEXEC.BAT, CONFIG.SYS, WIN.INI and SYSTEM.INI).

Please contact the manufacturer of the device that is causing the problem and request a new driver that does not effect the operation of the parallel port. You can download alternative (PCL) drivers for Hewlett Packard printers from their web site. If you can not locate the driver, try changing the parallel port mode in the BIOS setup to standard (SPP or Output only) as this often prevents the offending driver from polling the port. [Printer Ports](#) for more information.

3 Parallel port has been disabled by the computer

Some computers as part of their Power On Self Test (POST) check the operation the parallel port. In some cases, the test may incorrectly report a fault with the parallel port when a Pico ADC device is connected. This will cause the parallel port to be 'disabled', and so the driver cannot use the port.

To check for this:

1. Shut down the computer
2. Turn the computer power off
3. Disconnect the converter from the printer port
4. Restart the computer
5. Plug the ADC device into the parallel port
6. Run the PicoScope or PicoLog.

If this is not an acceptable long term solution, [contact Pico](#) about advice on forcing Pico software to use a specific address.

4 Scope probe set to reference.

Some oscilloscope probes have three positions (x1, x10 and REF). If the switch is set to REF, then the converter will measure 0V regardless of the input signal.

5 Scope probe earth lead broken

Some makes of scope probes have earth leads that are prone to break after a period of use. This may not be immediately obvious and cause either no signal or a distorted signal to be measured. A continuity test with a multimeter should confirm the problem.

ADC100–incorrect readings

The ADC100 requires a fully IBM (Centronics) compatible parallel port. Some parallel ports, especially those on laptops, do not fully implement this standard. The effect is that, regardless of input, the trace as observed (on PicoScope) only displays one or two divisions of signal.

To check for this problem, connect a 9V battery and check the voltage reading on the screen.

If this is the problem, the adapter supplied with the ADC100 must be connected between the ADC100 and that parallel port, at either end of the parallel cable. After fitting the adapter, please restart PicoScope so that the driver can detect the adapter.

If you have lost the adapter, contact either your distributor or [Pico Technology technical support](#) to obtain a new one.

ADC12 does not work with Windows

The first version of the adc12, last produced in 1993, will not work with Windows.

Negative signals are clipped on ADC10 or ADC12

Symptom:

The input voltage range of the ADC-10 and ADC-12 is between 0 and 5V. If a bi-polar signal (such as a 1V pk-pk audio signal) is connected, then only the positive half of the signal will be displayed.

Solution:

If you wish to use an ADC10 or ADC12 for bi-polar signals, consider applying an offset using either a resistive pull up or an op-amp based circuit. Alternatively, the ADC40 and ADC42 are versions of the ADC10 and ADC12 designed for bi-polar signals (-5V to +5V).

Noise or incorrect voltage on the ADC11 or ADC16

Although the ADC11 and ADC16 will not be damaged by small overloads (up to 30V), such overloads may effect readings on adjacent channels.

If you suspect an overload, disconnect channels one at a time to isolate which channel is causing the problem.

DC components are removed (ADC100, ADC200)

If the AC/DC switch is set to the AC position, the input acts as a high pass filter with a 3dB point of 10Hz. DC components of a signal are removed and low frequency signals (<100Hz) are attenuated.

If the amplitude of slow signals is smaller than expected, or the waveform is not as expected (such as a square wave looking more like a triangle wave), check how the waveform looks with the switch in the DC position.

Incorrect readings with x10 scope probe (ADC10, ADC12)

The ADC10 and ADC12 have an input impedance of 200kOhms rather than the normal 1MOhms of an oscilloscope. For this reason, they do not give the expected result with x10 oscilloscope probes.

When the ADC10 or ADC12 is used with a x10 probe, the voltage range will be 0 to 230V rather than the expected 0 to 50V. **Important safety note** Although the ADC10/12 could in principle be used in this way, isolated probes should be used when measuring mains voltages.

If you wish to use x10 probes, consider using the ADC40 or ADC42, which have a 1M ohm input impedance.

ADC200 shows incorrect frequency

When the driver is opened, the computer reads some setup and calibration information from the ADC-200. Included in this information is the maximum sampling rate (20, 50 or 100MS/s). If the ADC200 is either disconnected or not powered when this should occur, then it will not be able to read this information. If an ADC200 is later plugged in, it may assume that it is a 20MS/s unit when in fact it may be a 50 or 100MS/s unit.

Ensure the ADC200 is connected and has power before starting the software.

ADC200 – wrong batch number

Some computers cannot read the calibration information from early version of the ADC200. Check the batch [number](#) in [| About](#)

Batch ???

If there are any question marks in the batch number, the unit should be [Rim Technology technical support](#) for a minor modification.

TC08 reads incorrect temperature

1. Make sure the correct thermocouple type is selected in the software.
2. Overload on one channel, or between channels. The TC08 has an input range of approx 60mV. If more than 5V difference occurs between any of the inputs to the TC08 then incorrect readings will result. Additionally if more than 5V difference occurs between the TC08s ground (also computer ground and usually mains earth) then errors will occur. A typical example where this may occur would be if a thermocouple is used to measure the temperature of the motor on a machine tool. The casing of the motor, although earthed may be at a potential several volts different to that of the earth of the computer.
Plug in the thermocouples one by one to locate which ones are causing the problems. If possible, electrically isolate the thermocouple. If this is not possible, running a wire from the metal outer shell of the D9 connector of the serial cable to a point near the thermocouple tip is often enough to 'pull' the two grounds close enough for normal operation. One final solution is to use a laptop running on batteries. Some laptop power supplies do not have an earth connection and this can cause the laptop to 'float' with respect to mains earth. If you have problems when the laptop is run using its mains adapter, but not on battery, try earthing the laptop - there is often a screw on the back of the laptop that can be used for this purpose.
3. A thermocouple consists of two different types of metal: a voltage proportional to temperature is generated at the thermocouple tip where these two different metals are connected. It is important that no other such junctions exist, as these will act as additional thermocouples and will affect readings. Make sure that any extensions to thermocouples are made using the appropriate thermocouple wires and connectors.
4. For more information on choosing and using thermocouples visit <http://www.picotech.com/applications/thermocouple.html>

Spectrum clipboard DDE

PicoScope for Windows crashes if you attempt to set up a DDE link with a spectrum view. This appears to be due to a bug in the Microsoft DDEML library.

USB



The USB to Serial Converter allows you to use all Pico Technology serial devices such as TC-08, ADC-16, EnviroMon and other serial devices through the USB on your PC. Installation is simple. Plug your serial device into the Converter. Plug the converter into your computer. Insert the disk. With USB technology, there are no IRQ conflicts and no COM Port conflicts.

Most computers currently have serial, parallel & USB on their PC. The USB to Serial Converter allows multiple products to be used on the same PC without plugging in add-in cards & gets around the problem of adding more serial ports into laptops.

Features and benefits

- Add Serial Devices with the ease of USB
- Free up your existing serial port or use serial devices on a PC without available serial ports
- Avoid IRQ and COM port conflicts
- No need to install an add-in card or open the computer
- Supports up to 115kb/sec
- LED light indicates power and data transfer
- Bus Powered-- no need for a cumbersome power supply
- 100% USB compliant. Guaranteed.
- The future is built in with field upgradable ROMs

Package

- Xircom USB to Serial converter
- CD-ROM with USB to Serial Drivers
- Easy installation guide

System Requirements

- Windows 98 or Windows 95b
- Available USB port

Software Updates

Our software is regularly updated with new features. To check what version of the software you are running, start PicoScope or PicoLog and select the HELP/ABOUT menu. The latest version of software can be downloaded free of charge from the Pico web site <http://www.picotech.com>. Alternatively the latest software can be purchased on CD from Pico Technology.

To be kept up to date with news of new software releases join our e-mail mailing list. This can be done from the web site at <http://www.picotech.com/mailist.html>

Printing this manual

The online manuals supplied with your product are also supplied in PDF format suitable for printing.

The pdf version can be found on the software cd, alternatively the latest version is always available from our web site www.picotech.com.

The following manuals are available in pdf format:

Product manuals	Information specific to your product
PicoScope manual	(Oscilloscope / Spectrum analyser software)
PicoLog manual	(Data logging software)
Enviromon manuals	(Enviromon software and hardware)
Signal Conditioning	(Description and specifications for signal conditioners)
Support manual	(Technical support, legal info, USB advice)
Distributor	(A list of our distributors)

Software Updates

Our software is regularly updated with new features. To check what version of the software you are running, start PicoScope or PicoLog and select the HELP/ABOUT menu. The latest version of software can be downloaded free of charge from the Pico web site at <http://www.picotech.com>. Alternatively the latest software can be purchased on CD from Pico Technology.

To be kept up to date with news of new software releases join our e-mail mailing list. This can be done from the web site at <http://www.picotech.com/mailist.html>.

Legal information

Licence

When you purchase either this software or a Pico Technology analog to digital converter, Pico Technology grants a licence for one person to use the software at any time.

The current user may install the software on multiple computers and may run multiple copies of the software, but may not permit the use of the software by other persons at the same time.

The current user may download free software upgrades from the Pico Technology web site for a period of one year from the date of purchase.

Guarantee

Pico Technology do not warrant that this software and the product with which it was supplied are completely error free or that they will function correctly in all operating environments.

It is essential that you, the user, should verify that the software and product are functioning to your requirements before relying on them or the data that they generate.

If you discover a problem, please let us know: we will take reasonable steps to deal with it. If you are still not satisfied, then upon return of the product to us we will refund your money in full.

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