**KEITHLEY**

How does TestPoint find my board?

Each A/D or D/A object in a TestPoint application is associated with a data acquisition board. Up to 4 boards can be used from the same application. TestPoint can auto search for boards or can be manually configured to associate a specific board with an A/D object. The testpt.ini file in the c:\testpt directory controls the method by which TestPoint will interface with data acquisition hardware.

The A/D and D/A objects of TestPoint rely upon a "translation layer". This translation layer converts the TestPoint commands associated with the A/D or D/A object into function calls that the Keithley data acquisition driver can implement with the hardware.

For many years, TestPoint interfaced to Keithley's ISA board products and their Advanced Softare Option (ASO) drivers for Windows 3.1 and Win95/98 (tpkeith.dll is the translation layer). For WinNT, Windows 2000 or WinXP, Keithley's DriverLINX drivers are required (tpdlinx.dll is the translation layer). Some ISA boards have both an ASO driver and a DriverLINX driver, so when operating in Win95 or Win98, you have a choice between using the ASO driver or the newer DriverLINX driver. For PCI boards, the DriverLINX driver is always required regardless of which version of Windows is in use.

Boards supported by the DriverLINX driver access digital I/O or counter/timer features of the hardware with TestPoint's new DL_DIO and DL_CT objects. These objects can be found in dldio.tst or dlct.tst example programs located in the c:\testpt folder where TestPoint is installed.
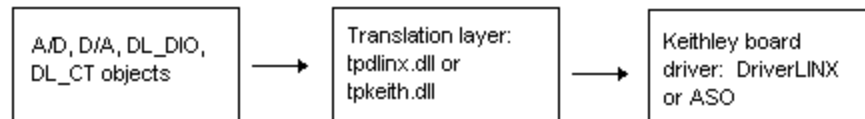
TestPoint's use of the ASO or DriverLINX driver can be controlled by settings in the testpt.ini file. For some ISA boards and DriverLINX, a second file, tpdlinx.ini, may also need to be edited. (tpdlinx.ini may be a read only file on your system. First remove the read only property from this file and then open the file with NotePad to edit the settings)

When and how to use ASO: Keithley's ASO driver was written for many of our ISA cards. ASO works in Win3.x, Win95, or Win98. ASO will not work in WinNT or Win2K/XP. The ASO driver requires a valid configuration file for the installed board. TestPoint provides the ASO driver files and configuration utility in the TestPoint install directory (c:\testpt\cfg1800.exe for the DAS1800 series for example). The default output of this configuration utility will be a text file called das1800.cfg. This utility does not "read" the board and report the settings, but rather you have to enter the base address, IRQ, DMA, channel configuration and other information for your board.

When and how to use DriverLINX: If the board is a PCI card, then only a DriverLINX driver is provided. If the version of Windows is NT or higher, then DriverLINX is required for both ISA and PCI boards. Install and configure DriverLINX before proceeding to use of TestPoint.

NOTE for users of DAS-1200, DAS-1400 or DAS-1600: for these boards, TestPoint will always interface through the ASO driver. Use of these boards is limited to Win3.x, Win95 or Win98. Run the cfg1600.exe configuration utility to create a valid configuration file for your board (das1600.cfg). Installation of DriverLINX for these boards will have no impact on use of the board with TestPoint.

TestPoint Auto Configuration: If you use the Auto configuration approach for TestPoint to find your hardware, then the ASO configuration file must be named keithley.cfg. For Auto configuration and DriverLINX drivers, TestPoint will search in the system registry for the DriverLINX installation; of course, the DriverLINX driver for the board must be installed and functioning properly before TestPoint can successfully make use of it. Below is how the testpt.ini file will look when using auto configuration:

```
[AD0]

manufacturer=AUTO

[AD1]

manufacturer=AUTO

[AD2]

manufacturer=AUTO

[AD3]

manufacturer=AUTO
```

TestPoint Manual Configuration: By editing the testpt.ini file (and maybe the tpdlinx.ini too for ISA boards and DriverLINX in Win9x), you can explicitly tell TestPoint which driver to load for which board. Below on the left is shown the testpt.ini file when using manual configuration. In this example, two boards have been configured. The first one will make use of the DriverLINX driver for the KPCI-3108 board installed as Device0. The second board, [AD1], will make use of the ASO driver for one of the DAS-1600 series of boards; this board has a configuration file called das1600.cfg in the c:\testpt folder. In this scenario, the A/D objects later used in the TestPoint program would need to reference board 0 (KPCI-3108) and board 1 (DAS-1600).

Manual Configuration	tpdlinx.ini file for ISA boards and DriverLINX

`[AD0]`
 	
`manufacturer=driverlinx`
 	
`driver=kpci3108.dll`
 	
`device=0`
 	
`[AD1]`
 	
`manufacturer=Keithley`
 	
`driver=DASSHELL.DLL`
 	
`family=DAS1600`
 	
`cfgfile=c:\testpt\das1600.cfg`
 	
`[AD2]`
 	
`manufacturer=AUTO`
 	
`[AD3]`
 	
`manufacturer=AUTO`
	`[EXCLUDE]`
	
	`; The [EXCLUDE] section applies in Win95/98`
	
	`kmb1600=`
	
	`kmbdas16= ; DriverLINX can not be the interface for kmbdas16`
	
	`; insert a semi colon at begining of line`
	
	`; to make that line a comment`
	
	`; if you want the DriverLINX driver to be used for your ISA`
	
	`; DAS-800, DAS-1700, DAS-1800, DAS-TC/B board, insert a semicolon`
	
	`; as first character for the driver name`
	
	`kmb1800=`
	
	`kmb1700= ; <-----DriverLINX will be excluded, eg, not loaded for DAS-1700`
	
	`;kmb800= ; <---- DriverLINX can be loaded for DAS-800`
	
	`kdastc=`
	
	`kdda816= ; DDA-08/16 boards`

Above on the right is shown the contents of the tpdlinx.ini file. If you have an ISA board and are in Win9x, then you may have to edit this file in order for TestPoint to make use of the DriverLINX driver. If the driver name shows up in the exclude section, then TestPoint will not use DriverLINX for your board. Simply place a semicolon in front of your driver name to remove it from the list of excluded DriverLINX drivers.

Consult the table below for summary information for Windows version support and ASO or DriverLINX driver support:

TestPoint and Keithley A/D Boards

	A/D, D/A object to ASO driver	A/D object to DriverLINX driver	TestPoint 4.1 and DriverLINX ActiveX	DriverLINX driver name	WinNT/2000/XP possible?
DAS-8 series	NO	NO	YES	c:\drvlinx4 \kmbdas8.dll	register level only
DAS-16 series	NO	NO	YES	c:\drvlinx4 \kmbdas16.dll	register level only
DAS-1600 series	YES	NO	YES	c:\drvlinx4 \kmbdas16.dll	register level only
DAS-1800 series	YES	YES	YES	kmb1800	DriverLINX
DAS-1700 series	YES	YES	YES	kmb1700	DriverLINX
DAS-800 series	YES	YES	YES	kmb800	DriverLINX
DAS-TC/B	YES	YES	YES	kdastc	DriverLINX
DAS-4000 series	YES	NO	NO	NONE	register level only
KPCMCIA	NO	YES	YES	kpcaiao	DriverLINX
KPCI-3108 series	NO	YES	YES	kpci3108	DriverLINX
KPCI-3101/2/3/4	NO	YES	YES	kpci3100	DriverLINX
KPCI-3110 and KPCI-3116	NO	YES	YES	kpci3100	DriverLINX
KPCI-180xHC	NO	YES	YES	kpci1800	DriverLINX
		other board types:			
KPCI-PIOxx	NO	YES, DL_DIO object	YES	kpcipio	DriverLINX
KPCI-3160	NO	YES, DL_DIO object	YES	kpci3160	DriverLINX
KPCI-PDISO8A	NO	YES, DL_DIO object	YES	kpciiso	DriverLINX
KPCI-PIO32IOA	NO	YES, DL_DIO object	YES	kpciiso	DriverLINX
KPCI-3130 and KPCI-3132	NO	YES, D/A object	YES	kpci3130	DriverLINX
KPCI-3140	NO	YES, DL_CT object	YES	kpci3140	DriverLINX

A final trouble shooting hint: To get an idea of what is going on when TestPoint is searching for hardware or loading a software driver, first run the Addebug.exe utility (in TestPoint directory). Then invoke the TestPoint development environment. Open or create a program that contains an A/D or other object (A/D, D/A, DL_DIO, etc) for board access. Change from edit to run mode. The addebug.exe utility will log the process of the search and load efforts for a data acquisition driver.