

# Test Point Interface For EDR Enhanced

## Third Party Interface Driver User's Manual

TestPoint Version 4.01 with 32-bit support

# Third Party Interface

## Data Acquisition and Process Control

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# 1 Introduction

EDR Enhanced (EDRE) is a powerful application program interface (API) between your data acquisition and control application and Eagle Technologies line of plug in boards for PCs. It is a software development kit (SDK) designed to simplify the programming of the Eagle data acquisition cards but not sacrificing any power in its functionality. An extension to EDR Enhanced is the third party support for TestPoint through a 32-bit interface driver.

## 1.1 Architecture Overview

The EDRE API consists of three layers of software, Namely the device driver, DLL and the interface driver. Each layer has got unique futures and is designed to perform a specific task.

At the lowest level you will find a device driver that is specific for each operating system. The device drivers are easy to install and support Plug and Play. A control panel applet supplies information of the current hardware that is installed. General information is also available like serial number, manufacturing date, etc.

The middle layer is implemented in a Windows dynamic link library and contains a lot of the intelligence to isolate the difficulty of communicating to the driver from the COM control or application. The DLL is platform independent and contains a database of all the drivers that is currently supported.

The third layer of software, which also serves as the API, is implemented in a DLL which interface/translates between the TestPoint calls and the EDRE API.

The figure below shows the different parts of EDR Enhanced.

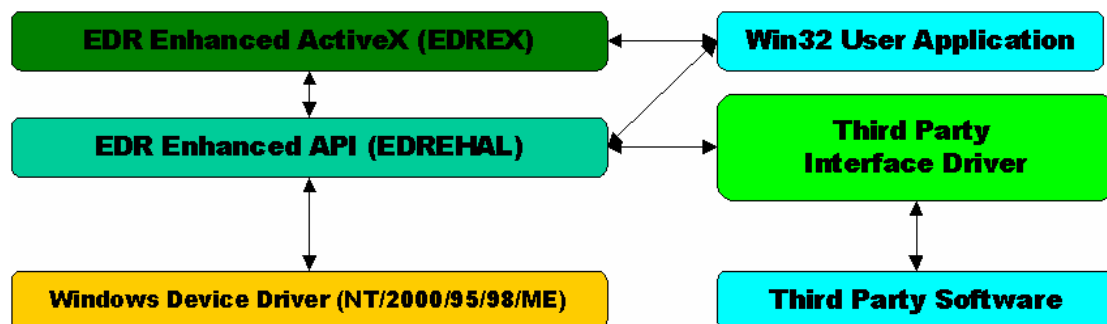


Figure 1-1 EDR Enhanced Architecture

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## 1.2 Supported Operating Systems

The EDR Enhanced SDK supports the following operating systems.

- Windows 95
  - Windows 98
  - Windows 98 SE
  - Windows 2000 Professional Edition
  - Windows 2000 Server Edition
  - Windows ME.
  - Windows XP Home Edition
  - Windows XP Professional Edition
- 

## 1.3 Features

- Easy to install
  - Support all TestPoint functions
  - Quick to learn
- 

## 1.4 Contact Details

Below are the contact details of Eagle Technology.

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## 2 Installation

This chapter explains how to install the TestPoint interface driver for EDR Enhanced. Follow the instruction closely to get your driver going quickly.

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### 2.1 Installation Instructions

- Step 1** At this point Test Point must be installed and working. If you are running version 4.1, a Test Point 32bit fix need to be installed first.  
Run ***tpad.exe*** file found in the `<EAGLECD>\EDRE\DRIVERS3P\TESTPOINT\TestPoint_ADC_Driver_Update` directory. This fix is also available on the Test Point website.
- Step 2** Run ***EDRE\_TESTPOINT.exe*** file found in the `<EAGLECD>\EDRE\DRIVERS3P\TESTPOINT\SETUP` directory on the CD that was supplied with the DAQ hardware.
- Step 3** If the API and driver for the hardware are not yet installed, it should now be done. The EDR Enhanced API can be found on the CD that was supplied with the DAQ hardware. `<EAGLECD>\EDRE\API\EDREAPI.EXE`
- Step 4** When starting to use Test Point a new "Stock List" can be loaded by selecting the "Load Stock" option from the "Utilities" Menu and then selecting the "TPEDRE.stk" file. This will add five new UDO's in your Stock Panel.

---

### 2.2 Location of Files

The installation files can be downloaded from the web our can be found in the Eagle CD-Rom.

#### Eagle Technology CD-Rom

`<EAGLECD>\EDRE\DRIVERS3P\TESTPOINT`

#### Eagle Technology Website

<http://www.eagle.co.za>

<http://www.eagledaq.com>





## 3 Trouble Shooting

If you have any issues with memory addressing you can download the updated A/D interface files from the TestPoint website.

You can find it at:

[www.cec488.com](http://www.cec488.com)

The updates in the TPAD32.DLL fix some issues with memory addressing in certain cases.



## 4 Configuration

This chapter explains how to configure the Analog Input Channels (ADC). To configure the ADC for a device, two sections need to be looked at. The first section is configuration settings that can be done in Test Point while coding and the second section is configuration settings that are fixed settings.

### 4.1 Dynamically Changeable Setting

The setting that can be changed dynamically in Test Point while coding or in run-time is the "Gain" settings of the device.

### 4.2 Fixed Configuration Settings

The fixed configuration settings for a device can be set in the testpt.ini file in the Test Point directory (C:\Testpt). To activate a setting for a device ";," in front of the setting needs to be removed.

When the Testpt.ini file is opened, the next code will be found in the file.

```
Testpt.INI
/*****

;-----
; Eagle Technology, Copyright (C) 2002 www.eagle.co.za
; Setup for EDR Enhanced. Add parameters setup each board.
; See example below. Parameters can be set for each board.

[AD0]
manufacturer=AUTO
;Burst=0
;Range=1
;Clock Source=0
;Trigger Source=0
;Trigger Mode=0
;Reference=0
[AD1]
manufacturer=AUTO
;Burst=0
;Range=1
;Clock Source=0
;Trigger Source=0
;Trigger Mode=0
;Reference=0
[AD2]
```

```
manufacturer=AUTO
;Burst=0
;Range=1
;Clock Source=0
;Trigger Source=0
;Trigger Mode=0
;Reference=0
[AD3]
manufacturer=AUTO
;Burst=0
;Range=1
;Clock Source=0
;Trigger Source=0
;Trigger Mode=0
;Reference=0
```

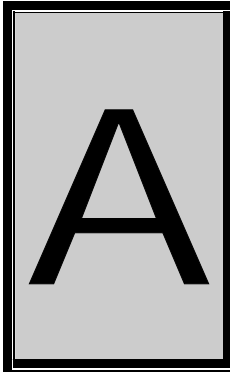
```
/******
```

The \* **“Device Index”** should be used as the \*\* **“Board #”** for each reference device in Test Point.

For each device, up to four devices, a set of configuration settings needs to be supplied. The first is the “manufacturer”. This is set to “AUTO” and lets Test Point automatically detect the driver. This setting must always be enabled. The next six settings are disabled and will have no effect on the configuration of the device until the “;” has been removed. Only enable, remove the “;”, the setting that is supported by the device in use. This must be done before Test Point is set to “RUN” mode. Test Point will read the setting as soon as the application is run and the drivers are loaded. For configuration constant values, see appendix A.

\* **“Device Index”** can be found in “EDR Enhanced Setup” in the “Control Panel”.

\*\* **“Board #”** is what Test Point use as reference to a device.



## A. Configuration Constants

### 1. Gain

#### 1 PCI-703-16/32/64/A

Gain	Value	Description
Gain 0.25	1	Gain of $\frac{1}{4}$ (+/- 10V, NU)
Gain 0.50	2	Gain of $\frac{1}{2}$ (+/- 5V, 0-10V)
Gain 1.00	3	Gain of 1 (+/- 2.5V, 0-5V)
Gain 2.50	4	Gain of 2.5(+/- 1V, 0-2V)
Gain 5.00	5	Gain of 5 (+/- 500mV, 0-1V)
Gain 10.0	6	Gain of 10 (+/- 250mV, 0-500mV)
Gain 25.0	7	Gain of 25 (+/- 100mV, 0-200mV)
Gain 50.0	8	Gain of 50 (+/- 50mV, 0-100mV)

#### 2 PCI-703S-8/16/A

Gain	Value	Description
Gain 0.50	1	Gain of $\frac{1}{2}$ (+/- 5V)
Gain 1.00	2	Gain of 1 (+/- 2.5V)
Gain 2.50	3	Gain of 2.5 (+/- 1V)
Gain 5.00	4	Gain of 5 (+/- 500mV)
Gain 10.0	5	Gain of 10 (+/- 250mV)
Gain 25.0	6	Gain of 25 (+/- 100mV)
Gain 50.0	7	Gain of 50 (+/- 50mV)
Gain 100.0	8	Gain of 100(+/- 25mV)

#### 3 PCI-30F/G

Gain	Value	Description
Gain 1.00	1	Gain of 1
Gain 10.0	2	Gain of 10
Gain 100.0	3	Gain of 100
Gain 1000.0	4	Gain of 1000

#### 4 PCI-773T/R 16

Gain	Value	Description
Gain not used	0	NOT USED

#### 5 PCI-725/726/730

Gain	Value	Description
Gain 1.00	1	Gain of 1 ( $\pm 2.5V$ )
Gain 0.50	2	Gain of 0.5 ( $\pm 5V$ )
Gain 0.25	3	Gain of 100 ( $\pm 10V$ )

## 6 PCI-725E/726E/730E

Gain	Value	Description
Gain 1	1	Gain of 1 (+/- 10V)

## 7 USB-26/30A16, USB-26/30B16 & SRL-26/30A16

Gain	Value	Description
Gain 0.25	1	Gain of ¼ (NU, +/- 10V)
Gain 0.50	2	Gain of ½ (0 - 10V, +/- 5V)
Gain 1.00	3	Gain of 1 (0 - 5V, +/- 2.5V)
Gain 2.50	4	Gain of 2.5 (0 - 2V, +/- 1V)
Gain 5.00	5	Gain of 5 (0 - 1V, +/- 500mV)
Gain 10.0	6	Gain of 10 (0 - 500mV, +/- 250mV)
Gain 25.0	7	Gain of 25 (0 - 200mV, +/- 100mV)
Gain 50.0	8	Gain of 50 (0 - 100mV, +/- 50mV)
Gain 100.0	9	Gain of 100(0 - 50mV, +/- 25mV)

## 8 USB-26/30C16/32

Gain	Value	Description
Gain 1	1	Gain of 1 (+/- 10V)

## 9 uDAQ-Lite Single Ended

Gain	Value	Description
Gain 0.25	1	Gain of ¼ (+/- 10V)

## 10 uDAQ-Lite Differential Ended

Gain	Value	Description
Gain 0.125	1	Gain of 1/8 (+/- 20V)
Gain 0.25	2	Gain of ¼ (+/- 10V)
Gain 0.5	3	Gain of ½ (+/- 5V)
Gain 0.625	4	Gain of 5/8 (+/- 4V)
Gain 1	5	Gain of 1 (+/- 2.5V)
Gain 1.25	6	Gain of 1 ¼ (+/- 2V)
Gain 2	7	Gain of 2 (+/- 1.25V)
Gain 2.5	8	Gain of 2 ½ (+/- 1V)

## 2. Clock Source

### 1 PCI-703/S-8/16/32/64/A

Value	Description
0	Undefined
1	Internal
2	External

### 2 PCI-30F/G

Value	Description
0	Internal clock to AD and external trigger
1	Internal clock to AD
2	External trigger to AD
3	Internal clock to AD with external trigger as gate

### 3 PCI-725/726/730/E

Value	Description
0	Not Used

### 4 USB-26/30A16, USB-26/30B16 & SRL-26/30A16

Value	Description
0	Internal
1	External

### 5 USB-26/30C16/32

Value	Description
-------	-------------

0	Internal
1	External

## 6 uDAQ-Lite

Value	Description
0	Internal
1	External (SLAVE)

---

## 3. Gate Source

### 1 USB-26/30A16, USB-26/30B16 & SRL-26/30A16

Value	Description
0	Disable
1	External Gate (EXT_GATE)

### 2 USB-26/30C16/32

Value	Description
0	Disable
1	External Gate (EXT_GATE)

---

## 4. Trigger Source

### 1 PCI-703/S-8/16/64/A

Value	Description
0	Internal
1	Reference (NOT SUPPORTED BY PCI 703S)
2	External

### 2 PCI-30FG

Value	Description
0	Not Used

### 3 PCI-725/726/730/E

Value	Description
0	Not Used

### 4 USB-26/30A16, USB-26/30B16 & SRL-26/30A16

Value	Description
0	Not Used

### 5 USB-26/30C16/32

Value	Description
0	Not Used

### 6 uDAQ-Lite

Value	Description
0	Disable
1	External (TRIGGER)

---

## 5. Trigger Mode

### 1 PCI-703/S-8/16/64/A

Value	Description
0	Positive
1	Negative
2	Rising
3	Falling

## 2 PCI-30FG

Value	Description
0	Not Used

## 3 PCI-725/726/730

Value	Description
0	Not Used

## 6. Range

### 1 PCI-703/S-8/16/32/64/A

Name	Value	Description
UNIPOLAR, SINGLE ENDED	0	Channel is single ended unipolar input.
BIPOLAR, SINGLE ENDED	1	Channel is single ended bipolar input.
UNIPOLAR, DIFFERENTIAL	2	Channel is differential unipolar input.
BIPOLAR, DIFFERENTIAL	3	Channel is differential bipolar input.

### 2 PCI-30F/G

Name	Value	Description
Single Ended	0	-5V to 5V
Single Ended	1	0V to 10V
Single Ended	2	-10V to 10V
Differential	0	-5V to 5V
Differential	1	0V to 10V
Differential	2	-10V to 10V

### 3 PCI-725/726/730

Value	Description
0	SINGLE ENDED
1	DIFFERENTIAL

### 4 PCI-725E/726E/730E

Value	Description
0	SINGLE ENDED
1	DIFFERENTIAL

### 5 USB-26/30A16, USB-26/30B16 & SRL-26/30A16

Name	Value	Description
UNIPOLAR, SINGLE ENDED	0	Channel is single ended unipolar input.
BIPOLAR, SINGLE ENDED	1	Channel is single ended bipolar input.
UNIPOLAR, DIFFERENTIAL	2	Channel is differential unipolar input.
BIPOLAR, DIFFERENTIAL	3	Channel is differential bipolar input.

### 6 USB-26/30C16/32

Value	Description
0	BIPOLAR SINGLE ENDED
1	BIPOLAR DIFFERENTIAL

### 7 uDAQ-Lite

Value	Description
0	BIPOLAR SINGLE ENDED
1	BIPOLAR DIFFERENTIAL

## 7. Reference

### 1 PCI-703/S-8/16/64/A

Value	Description
0	Analog in sense pin.
1	Analog ground.

## 2 PCI-30FG

Value	Description
0	Not Used

## 3 PCI-725/726/730

Value	Description
0	Not Used

---

## 8. Burst

### 1 PCI-703/S-8/16/64/A

Value	Description
0	Not Used

### 2 PCI-30F/G

Value	Description
0	Disable
1	Enable

### 3 PCI-725/726/730

Value	Description
0	Not Used

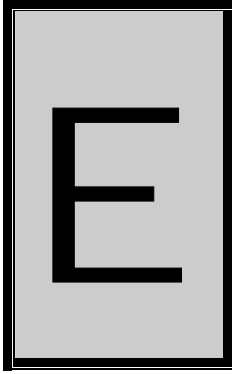
---

## 9. Thermocouple Type Codes

### 1 PCI-773T/R 16

Value	Thermocouple Type
0	Type J
1	Type K
2	Type E
3	Type T
4	Type S
5	Type R
6	Type B
7	Type N





## B. Additional Information

For more information please contact Eagle Technology directly or visit our website [www.eagle.co.za](http://www.eagle.co.za). They can also be emailed at [eagle@eagle.co.za](mailto:eagle@eagle.co.za).