EDRE eMbedded for Pocket PC

EDR Enhanced eMbedded User's Manual for

Pocket PC 2002 & Pocket PC 2003

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Pocket PC Software

Data Acquisition and Process Control

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1. Introduction

EDR Enhanced eMbedded for Pocket PC consists of three parts. The first is a powerful application program interface (API) between your data acquisition (DAQ) and control application. Secondly is a Control Panel Application, “EDRE Setup”, that is used to setup the DAQ devices. The third part is a very useful DAQ application, “WaveView eMbedded”, that has many uses like the acquiring of data. This software was designed to interface with Eagle Technologies line of Serial and Wireless Devices. EDR Enhanced eMbedded is platform dependent and runs on the Windows CE™ platforms for Pocket PC 2002/2003.

Contact Details

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2. Installation

This chapter describes how to install the EDR Enhanced software. Minimal configuration is necessary and all settings are done through software. The operating system will take care of all resource assignments.

Software

EDR Enhanced for Pocket PC contains the following:

- Edrapi
- EDRE Setup
- WaveView eMbedded

Operating System Support

The EDRE eMbedded software are available in two major versions, 1.0.0 & 2.0.0. Version 1 was designed to work only on Pocket PC 2002. This is the **first and only** release for Pocket PC 2002. Version 1 was only designed to work with the Serial devices and **do not support any Wireless** devices. Version 2 was designed to work only on Pocket PC 2003. Development will continue on this version of EDRE eMbedded. Version 2 support Serial and Wireless devices. The operating systems are listed in the table below.

Revision	Operating Systems	Devices Support
1.0.0	Windows CE for Pocket PC 2002	Serial
2.0.0	Windows CE for Pocket PC 2003	Serial & Wireless

Table 1 Operating System Support

Installation

This section will describe how to install the EDRE eMbedded software on the Pocket PC.

Software Installation

Installing EDR Enhanced for Pocket PC is very straightforward.

- Before starting the installation the Pocket PC must already be connected to the PC and Microsoft® ActiveSync™ must be running.

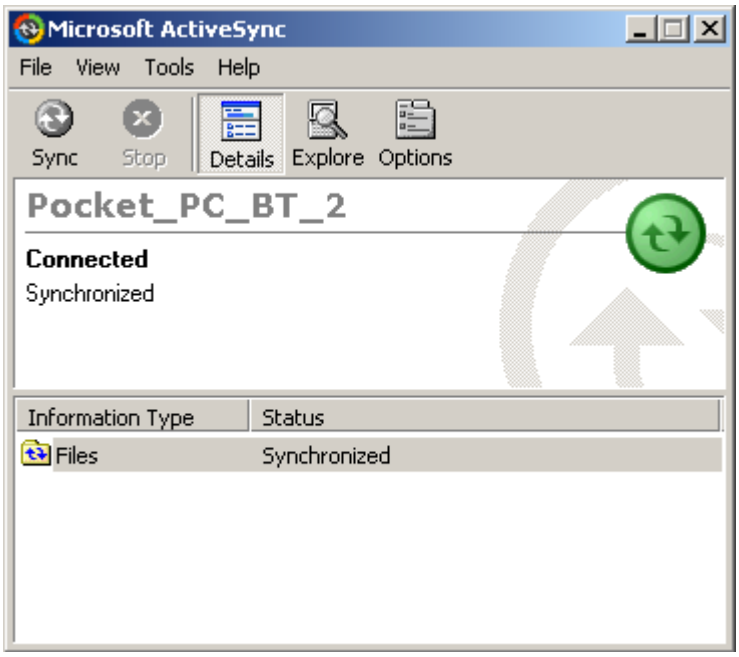

Figure 2-1 Microsoft® ActiveSync

- Double click “Files” to add new files to be synchronized with the Pocket PC.

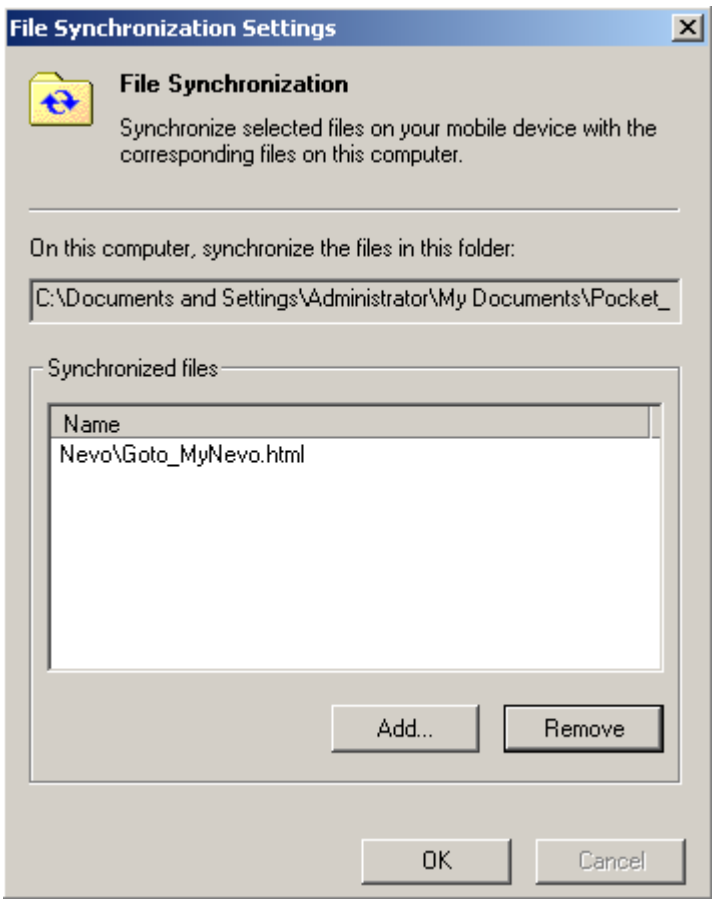

Figure 2-2 Synchronization

- Click “Add…” to add the EDR Enhanced for PocketPC.CAB file to be synchronized with the Pocket PC.

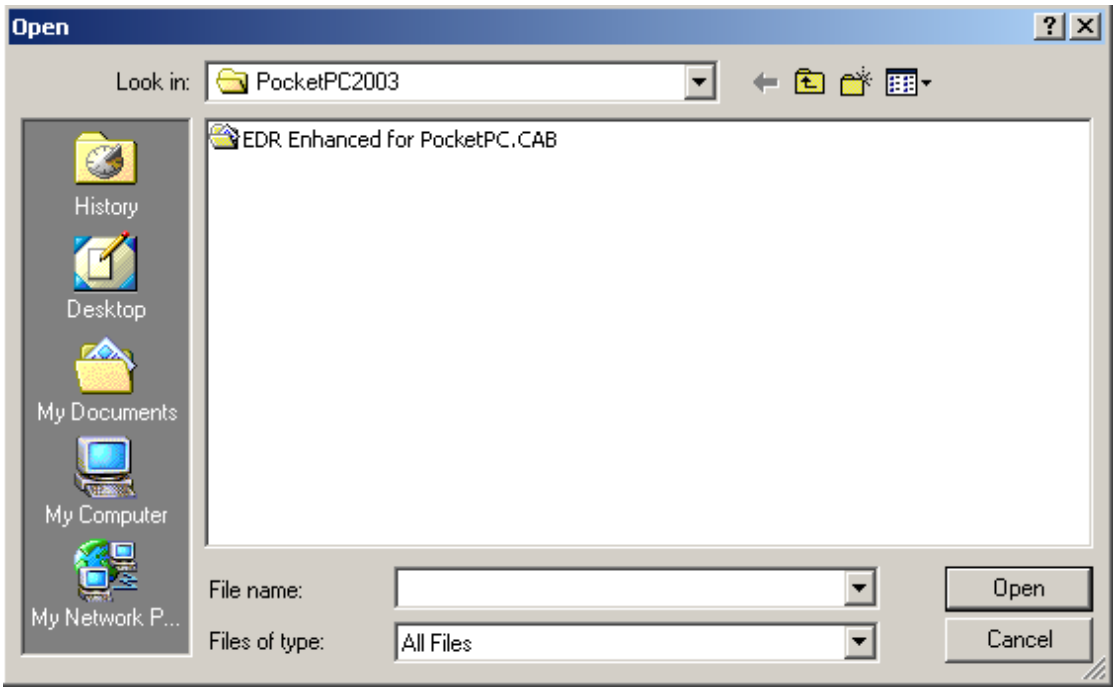

Figure 2-3 Select File

- Select the file “EDRAPI for PocketPC.CAB” (EagleCD\EDRE\PocketPC2003\) and click “Open”.

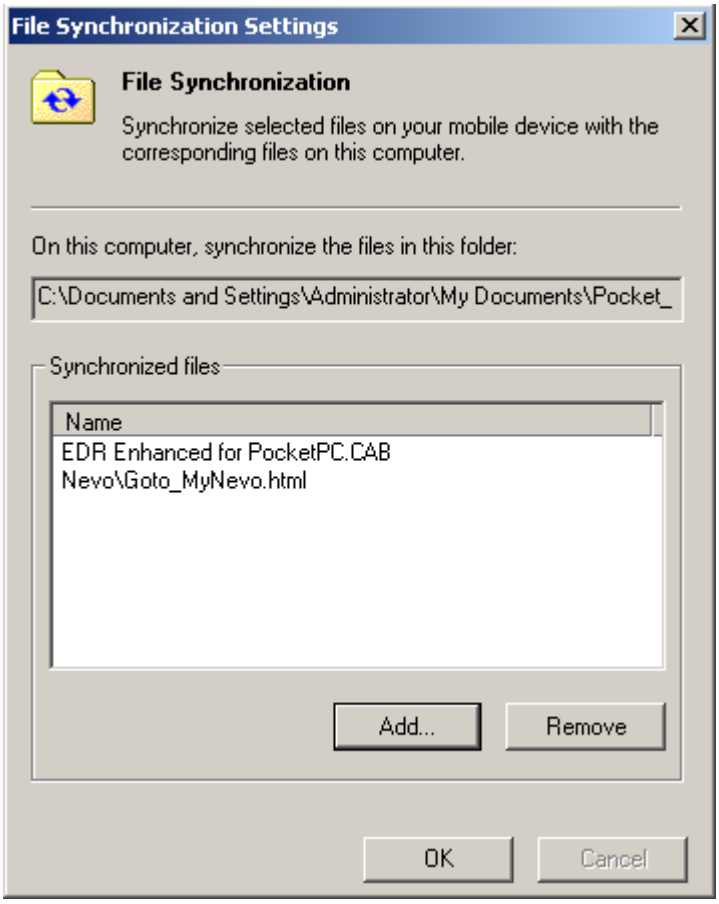

Figure 2-4 Added Files

- The file should now be added to the list of Synchronized files.
- Click the “OK” button.

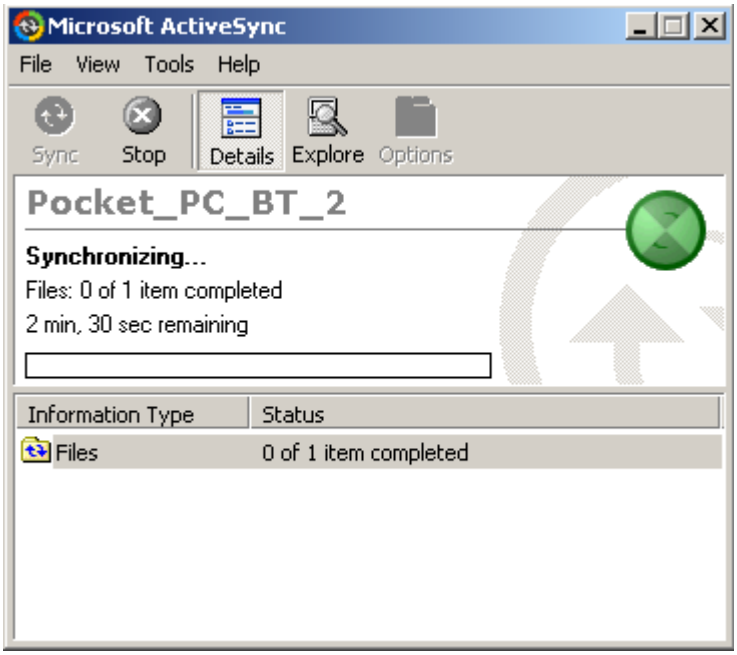

Figure 2-5 Synchronizing

- The file will now be copied to the “My Documents” folder on the Pocket PC.
- On the Pocket PC, Click the file “EDR Enhanced for PocketPC”.
- This file is a self-extracting and will install all the components to the desired folders.

3. WaveView eMbedded for Pocket PC

Introduction

WaveView eMbedded is a very useful application for the Pocket PC that was designed around the “WaveView for Windows” package. WaveView eMbedded is designed to work with the Serial and Wireless micro DAQ devices. It supports all the Analog, Digital I/O and Temperature devices in the range.

Starting WaveView eMbedded

WaveView eMbedded can be found in the Programs directory.
In the “About” screen it will display a version. This is the WaveView eMbedded version.
The EDRE eMbedded software are available in two major versions, 1.0.0 & 2.0.0. Version 1 was designed to work only on Pocket PC 2002. This is the **first and only** release for Pocket PC 2002. Version 1 was only designed to work with the Serial devices and **do not support any Wireless** devices. Version 2 was designed to work only on Pocket PC 2003. Development will continue on this version of EDRE eMbedded. Version 2 support Serial and Wireless devices.

Figure 3-1 About WaveView

Select Device

In the Setup screen all the devices will be logged in the Serial Number Combo box.
As soon as a serial number is selected in the combo box, the details of the device will be displayed.

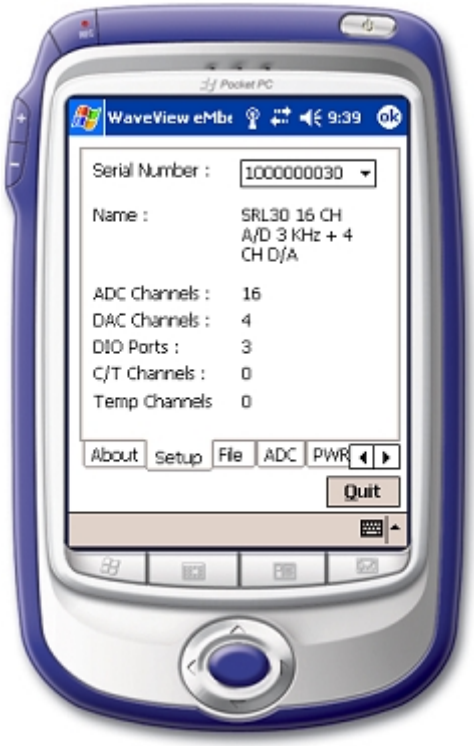

Figure 3-2 Select Device

File Settings

A configuration file can be selected to load and/or safe a configuration from/to.
The configuration will be loaded as soon as the Analog Meter (ADC) or Oscilloscope (OSC) screen is opened and the configuration will be saved as soon as the “Done” button is clicked after changing the configuration.
A directory and file name can also be specified when logging data to disc.
The logging of data will start as soon as the “Start” button is clicked and will stop as soon as the “Stop” button is clicked.

Figure 3-3 File Settings

Analog Meter (ADC)

The Analog Meter is a useful tool for measuring and logging single analog readings.
The Analog Meter provides the user with up to 8 analog channels at a time that can be sample every second. It can be used for logging temperature, speed or any type of slow process application.

Figure 3-4 Analog Meter

ADC Configuration

Click the “Config” button to do the channel configuration.
A specific channel can be assigned to each of the 8 positions that are going to be measured. In each case the Gain, range and description of the channel can be set. A calculation can also be done with the values that are been measured on each channel. By simply changing the value of x, y, z a 4 - 20mA reading can be converted to a temperature or speed value.
The interval between each set of samples can also bee changed by setting the “Time” value.

Setting up a Channel

- Select a position in the description combo box.
- Assigned a channel to the description.
- Set the channel gain, range and x, y, z values.
- Click the “Config” button to save the settings.

This should be done with all 8 positions.
If a position is not going to be used, the “Not Used” channel should be assigned to this position.

Click the “Done” button to finish.
All the sittings will now be saved to file if this setting was set in the “File” screen.

Power Supply (PWR)

The Power Supply can be used to set voltage levels on the Analog outputs of the micro DAQ devices. These outputs can only be used as reference outputs and are not to be used as a power source!

Set Voltage

- Select a channel.
- Enter Voltage.
- Select “V” for Voltage or “mV” for milli-voltage.

Store Voltage

- Set the voltage.
- Click “STO”.
- Click the position to store the Voltage “0 – 4”.

Recall Voltage

- Select a channel.
- Click “RCL”.
- Click the position of the voltage to recall “0 – 4”.

Figure 3-5 Power Supply

Oscilloscope (OSC)

The Oscilloscope is a useful tool for measuring and logging analog signals.
The Oscilloscope can sample up to 8 analog channels at a time with an overall sampling rate of 3000Hz.

Figure 3-6 Oscilloscope

OSC Configuration

Click the “Config” button to do the channel configuration.
A specific channel can be assigned to each of the 8 positions that are going to be measured.
In each case the Gain, range and description of the channel can be set.
The Frequency, Clock Source and Gate Source of the devices can also be configured. The display update interval can change by setting the “Time (Sec)” value.

Setting up a Channel

- Select a position in the description combo box.
- Assigned a channel to the description.
- Set the channel gain and range.
- Click the “Config” button to save the settings.

This should be done with all 8 positions.
If a position is not going to be used, the “Not Used” channel should be assigned to this position.
The Frequency, Clock Source, Gate Source and Time can now be set.

Click the “Done” button to finish.
All the sittings will now be saved to file if this setting was set in the “File” screen.

DIO Interface

The Digital I/O interface is very easy to use device.
It can be used to check the status of a digital input Port or set the state of a digital output Port.

Read Function

- Select a Port.
- Click the “Read” button.

Write function

- Select a Port.
- Tick the needed blocks.
- Click the “Write” button.

Figure 3-7 DIO Interface

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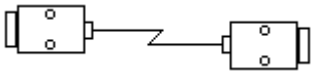
4. Device Installation

The serial devices require a Pocket PC with a compatible serial port, either RS232, RS485 or Bluetooth, depending on the µDAQ or Rugged µDAQ version.

Serial Installation

The serial and wireless communications driver is embedded into the EDR Enhanced API. To be able to communicate to your device you have to add it as a serial server.

1		Attach you serial cable to your device and computer. Apply power to the unit.
2	 EAGLE CD	Install the EDR Enhanced API. See Installation Section 2. This will install all required operating specific interface software.
3	 EDRE Setup	Open the ***EDRE Setup*** in the Windows Control Panel Start>Settings>Systeml>EDRE Setup
4	***Serial***	Select the ***Serial*** Tab
5		Click on the ***+ Add*** button
6		Enter the Device ***Serial Number.*** Select the correct ***COM Port***, Select the correct ***BAUD Rate.***
7		Select the ***+ Add*** button.
8		Select the ***Host Setup*** button. Confirm the following values

Host ID	1000
Read Interval Timeout	100
Read Total Timeout Multiplier	100
Read Total Timeout Constant	500
Write Total Timeout Multiplier	100
Write Total Timeout Constant	500

9		Select the ***OK*** button to apply the new ***Host Setup*** settings.
10		Select the ***OK*** button to close and apply the new settings.
11		To verify the installation reopen ***EDRE Setup*** and select ***Devices*** Tab.
12	***Devices***	Select the ***Devices*** Tab Select the ***Devices*** serial number to display information about the newly installed serial device. If the device name is ***SRL Device Unavailable,*** it means the device was no detected properly. Go to the troubleshooting section to resolve this problem or try installing the device again.

Wireless Installation

The wireless devices use Bluetooth® technology for communications. The wireless devices work in the same manner as serial. After the Bluetooth® installation has been completed use the serial installation section to complete the device setup.

Manager

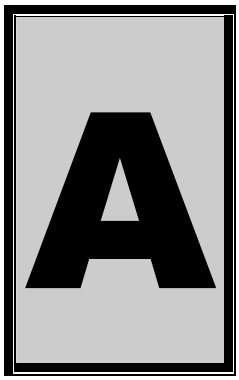
Follow the instructions below to prepare your wireless device for **serial installation**.

1		Apply power to the unit.
2		Do initial Bluetooth setup by selecting the ***Bluetooth Manager*** on the Pocket PC.
3		Tab New > Connect! To access devices via bluetooth
4		Select ***Explore a Bluetooth device***. Select ***Next*** ⇒
5.1		Secect ***Device*** ***<No device selectod>*** Tab here to choose device.
5.2	 BSC110-DCE	***Bluetooth Browser :*** Select **BSC110-DCE**
6	 Serial Port on BSC110-DCE	Select ***Serial Port*** on **BSC110-DCE** Select ***Next*** ⇒
7	 BSC110-DCE	Select ***Finish***
8		Tab Tools > Paired devices. To pair the µDAQ device with the iPAQ Pocket PC.

9		Select the ***Add*** button.
10		Select the find ***ICON***
11	 BSC110-DCE	***Bluetooth Browser :*** Select **BSC110-DCE**
12		Enter the ***Passkey :*** **0000**
13		Select **ok**
14		Select **ok** again.
15	 BSC110-DCE	The device will now be ready for use. Use the serial setup section to configure your device for EDR Enhanced. Make sure to set the BAUD rate to 115200.

Settings

1		To find your Bluetooth Com Port selecting the ***Bluetooth Settings*** on the Pocket PC.
2	***Serial Port***	Select the ***Serial Port*** Tab
3		The ***Outbound COM Port:*** must be used when doing **Serial Installation**
4		The ***Authentication (Passkey) required*** should be unselected.
5		Select **ok**



A.Support

µDAQ Devices supported by EDR Enhance for Pocket PC

The table shows all the µDAQ devices that are supported by the EDR Enhance for Pocket PC software. This can change form one software version to the next.

Board	Description
SRL 24A	24 channel digital I/O SERIAL device
SRL 48A	48 channel digital I/O SERIAL device
SRL 72A	72 channel digital I/O SERIAL device
SRL 96A	96 channel digital I/O SERIAL device
SRL 120A	120 channel digital I/O SERIAL device
SRL 26	16 channel analog input SERIAL device
SRL 30	16 channel & 4 channel analog input/output SERIAL device
SRL 73T8	8 Channel Thermo Couple input SERIAL device
SRL 73T16	16 Channel Thermo Couple input SERIAL device
SRL 73T32	32 Channel Thermo Couple input SERIAL device
SRL 73R8	8 Channel RTD input SERIAL device
SRL 73R16	16 Channel RTD input SERIAL device
SRL 73R32	32 Channel RTD input SERIAL device

Table A 1 µDAQ Devices supported by Version 1

Board	Description
SRL 24A	24 channel digital I/O SERIAL device
SRL 48A	48 channel digital I/O SERIAL device
SRL 72A	72 channel digital I/O SERIAL device
SRL 96A	96 channel digital I/O SERIAL device
SRL 120A	120 channel digital I/O SERIAL device
SRL 26	16 channel analog input SERIAL device
SRL 30	16 channel & 4 channel analog input/output SERIAL device
SRL 73T8	8 Channel Thermo Couple input SERIAL device
SRL 73T16	16 Channel Thermo Couple input SERIAL device
SRL 73T32	32 Channel Thermo Couple input SERIAL device
SRL 73R8	8 Channel RTD input SERIAL device
SRL 73R16	16 Channel RTD input SERIAL device
SRL 73R32	32 Channel RTD input SERIAL device
WRL 24A	24 channel digital I/O WIRELESS device
WRL 48A	48 channel digital I/O WIRELESS device
WRL 72A	72 channel digital I/O WIRELESS device
WRL 96A	96 channel digital I/O WIRELESS device
WRL 120A	120 channel digital I/O WIRELESS device
WRL 26	16 channel analog input WIRELESS device
WRL 30	16 channel & 4 channel analog input/output WIRELESS device
WRL 73T8	8 Channel Thermo Couple input WIRELESS device
WRL 73T16	16 Channel Thermo Couple input WIRELESS device
WRL 73T32	32 Channel Thermo Couple input WIRELESS device
WRL 73R8	8 Channel RTD input WIRELESS device
WRL 73R16	16 Channel RTD input WIRELESS device
WRL 73R32	32 Channel RTD input WIRELESS device

Table A 2 µDAQ Devices supported by Version 2