CoPilot EXT

PDA Based Software

Installation & Operation Manual
Revision 1.02

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Electro Industries/GaugeTech

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"The Leader in Web Accessed Power Monitoring and Control"

CoPilot EXT
User Manual
Version 1.02

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Customer Service and Support

Customer support is available 9:00 am to 4:30 pm, eastern standard time, Monday through Friday. Please have the model, serial number and a detailed problem description available. If the problem concerns a particular reading, please have all meter readings available. When returning any merchandise to EIG, a return authorization number is required. For customer or technical assistance, repair or calibration, phone 516-334-0870 or fax 516-338-4741.

Product Warranty

Electro Industries/GaugeTech warrants all products to be free from defects in material and workmanship for a period of four years from the date of shipment. During the warranty period, we will, at our option, either repair or replace any product that proves to be defective.

To exercise this warranty, fax or call our customer-service department. You will receive prompt assistance and return instructions. Send the instrument, transportation prepaid, to EIG at 1800 Shames Drive, Westbury, NY 11590. Repairs will be made and the instrument will be returned.

Limitation of Warranty

This warranty does not apply to defects resulting from unauthorized modification, misuse, or use for any reason other than electrical power monitoring.

Our products are not to be used for Primary Over-Current Protection. Any protection feature in our products is to be used for Alarm or Secondary Protection only.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. ELECTRO INDUSTRIES/GAUGETECH SHALL NOT BE LIABLE FOR ANY INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES ARISING FROM ANY AUTHORIZED OR UNAUTHORIZED USE OF ANY ELECTRO INDUSTRIES/GAUGETECH PRODUCT. LIABILITY SHALL BE LIMITED TO THE ORIGINAL COST OF THE PRODUCT SOLD.

Statement of Calibration

Our instruments are inspected and tested in accordance with specifications published by Electro Industries/GaugeTech. The accuracy and a calibration of our instruments are traceable to the National Institute of Standards and Technology through equipment that is calibrated at planned intervals by comparison to certified standards.

Disclaimer

The information presented in this publication has been carefully checked for reliability; however, no responsibility is assumed for inaccuracies. The information contained in this document is subject to change without notice.

About Electro Industries/GaugeTech

History

Founded in 1973 by engineer and inventor Dr. Samuel Kagan, Electro Industries/GaugeTech changed the face of power monitoring forever with its first breakthrough innovation: an affordable, easy-to-use AC power meter. A few of our many **Technology Firsts** include:

1978: First microprocessor-based power monitor
1986: First PC-based power monitoring software for plant-wide power distribution analysis
1994: First 1 Meg Memory high performance power monitor for data analysis and recording
1999: Nexus® Series generation power monitoring with industry-leading accuracy
2000: First low profile socket meter with advanced features for utility deregulation
2002: Innovative 100BaseT Total Web Solutions

Today

Over thirty years later, Electro Industries/GaugeTech, the leader in Web-Accessed Power Monitoring, continues to revolutionize the industry with the highest quality, cutting edge power monitoring and control technology on the market today. An ISO 9001:2000 certified company, EIG sets the standard for web-accessed power monitoring, advanced power quality, revenue metering, artificial intelligence reporting, industrial submetering and substation data acquisition and control. EIG's products can be found on site at virtually all of today's leading manufacturers, industrial giants and utilities.

World Leader

In fact, EIG products are used globally and EIG is accepted as the world leader in power monitoring and metering technology. With direct offices in the United States, Turkey, Brazil, Mexico, Guatemala, Croatia and the Phillipines, EIG support is available in most regions around the world. Our worldwide support, advanced technology and quality manufacturing standards make EIG the superior choice when dependable, reliable service is paramount.

Table of Contents

Chapter 1
Installing CoPilot for Pocket PC

1.1: System Requirements

- IrDA or USB Port (with USB adapter cable for your Pocket PC)
- Microsoft® ActiveSync® installed on your PC or other Pocket PC file transfer software (to make PC to Pocket PC connection)
  www.microsoft.com/windowsmobile/downloads/activesync37.mspx

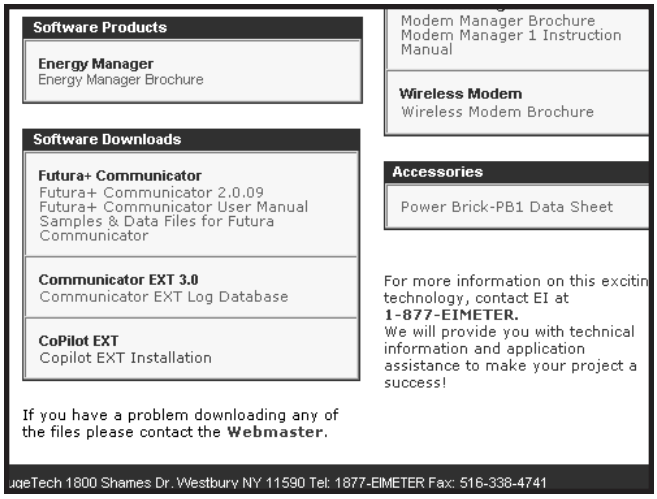
1.2: CoPilot Installation Downloads

To install CoPilot on your Pocket PC, follow the steps given below. CoPilot can be used with all Nexus® meters (with a Unicom 2500) and with the Shark® 100 meter.

1. Go to www.electroind.com. Click **Downloads** at the top of the page (a detail of the **Downloads** page is shown on the right).

2. Click on the CoPilot EXT Installation link. Select the appropriate .zip file for your Pocket PC and save it to your computer (ArmV4 is recommended).

3. Open the .zip file and extract the **.cab** and **.dat** files. Transfer both files onto your Pocket PC's temp directory (in root). From the Pocket PC, click on the .cab file. The CoPilot EXT software should be installed.



■ Transferring Instructions

1. Connect to your Pocket PC with Microsoft® ActiveSync® or other Pocket PC file transfer software using a USB or IrDA connection. If file transfer software is not already installed, see the documentation that came with your Pocket PC or go to microsoft.com/windowsmobile/downloads.

2. When the Explore option comes up, first go to the **My Device** directory, then the **temp** directory. Copy the files to the **temp** directory.

   NOTE: CoPilot EXT ArmV4 is the recommended (and most common) install file.
   If you are unsure which install file to use, choose the CoPilot EXT ArmV4 file.
   If you know your processor type, you may choose to use one of the following install files:
   CoPilot EXT ARM, MIPS, SH3, WCE420X86 or X86.

1.3: Connections

1.3.1: Connect to a Shark® 100 meter with IrDA

1. Locate the IrDA Port on the Pocket PC.

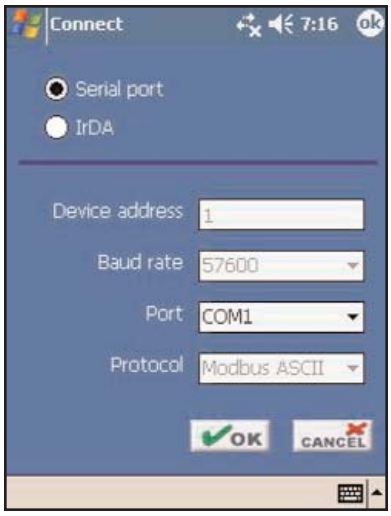
2. Line up the IrDA Port on the Pocket PC with the IrDA Port on the face of the Shark® 100 meter. They should face each other and be less than 1 foot apart.

3. Open the CoPilot EXT software.

4. Click the **Connect** icon. You will see the **Connect** screen.

5. Select **IrDA** and **Com3** on the **Connect** screen.

6. Click **OK**.



- If a connection is not established, an "Error in Transmit Data" message will appear:

  Cannot Connect - Nothing to Communicate with (or)

  Connection Settings are wrong (Protocol, for example)

- If the software cannot locate a port, the following message will appear:

  Port already in use or does not exist

7. Change settings or connections until a connection is established.

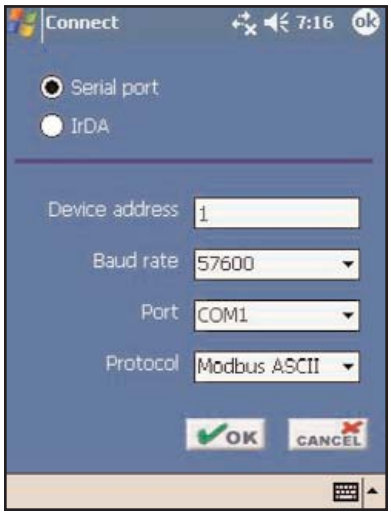
8. Click **OK** in the upper right hand corner of the **Connect** screen to close the CoPilot EXT program.

1.3.2: Connect to a Shark® 100 meter with RS485

■ **Hardware Requirements:** Pocket PC with Serial Cable and Unicom 2500 (RS485 to RS232 Converter)

1. Attach the Serial Cable from the RS485 port on the back face of the Shark® 100 meter to the RS485 connection of the Unicom.

2. Connect the RS232 connection of the Unicom to the RS232 cable of the Pocket PC.
   The Unicom settings are: DTE, 57600 Baud, HD (Half Duplex)



3. Open the CoPilot EXT software.

4. Click the **Connect** icon. You will see the **Connect** screen.

5. Select **Serial Port.** Enter **Device Address, Baud Rate** and **Protocol**. The **Com Port** setting is usually COM1, but you can select from COM1 to COM16.

6. Click **Connect**. You will see the **Device Status** screen.
   This is a View Only screen.

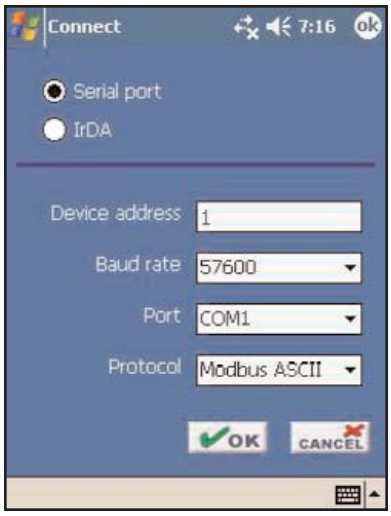
7. Click **OK** to continue to the selection screen.

1.3.3: Connect to a Nexus® meter with RS485

■ **Hardware Requirement:** Pocket PC with Serial Cable, Unicom 2500 (485 to 232 Converter) and 9-pin male to male adapter.

1. Attach the Serial Cable from the RS485 port (Port 1) on the face of the Nexus® meter (A+ B- S) to the RS485 connection of the Unicom. The corresponding connection on the Unicom is: A+ (TX+/RX+), B- (TX-/RX-), S (GND). A male to male 9-pin adapter is required to make this connection.

2. Connect the RS232 connection of the Unicom to the RS232 cable of the Pocket PC.
   The Unicom settings are: DTE, 57600 Baud, HD (Half Duplex)



3. Open the CoPilot EXT software.

4. Click the **Connect** icon. You will see the **Connect** screen.

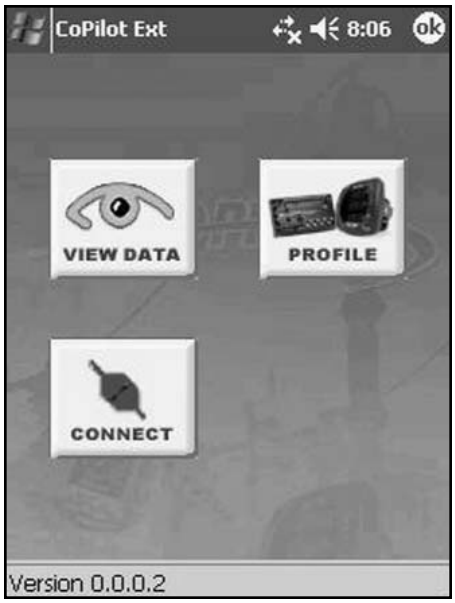
5. Select **Serial Port.** Enter **Device Address, Baud Rate** and **Protocol**. **Com Port** setting is usually COM1, but you can select from COM1 to COM16.

6. Click **Connect**. You will see the **Device Status** screen.
   This is a View Only screen.

7. Click **OK** to continue to the selection screen.

Chapter 2
Configuring with CoPilot

2.1: Configuring a Shark® 100 meter with CoPilot

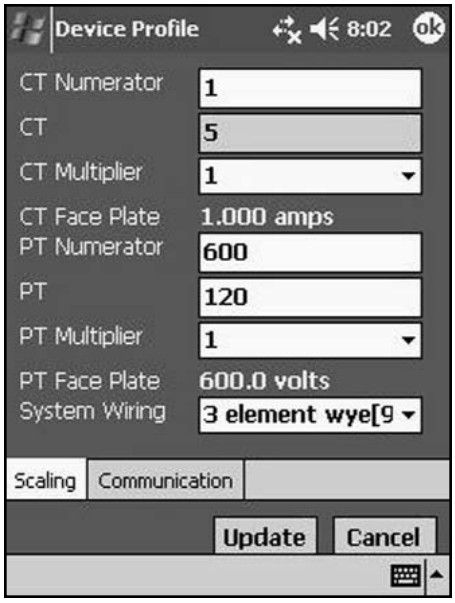


The **Device Profile** screens for the CoPilot - Shark® 100 meter Interface are very easy to use.
First, follow the directions in Chapter 1 to establish a connection.

1. Open the CoPilot EXT software. You will see the **Main** screen.

2. Click on the **Profile** icon.

■ **Scaling**



Use the pull-down windows to make the following selections:

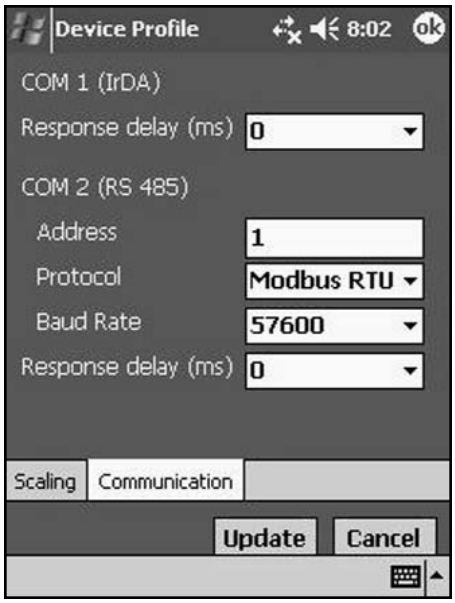
CT Multiplier: 1, 10 or 100

PT Multipler: 1, 10 or 100

System Wiring: 3 Element Wye, Delta 2 CTs or 2.5 Element Wye

For CT Numerator, PT Numerator and PT Denominator, use the Keyboard in the lower right hand corner of the screen.

a. Click on the **Keyboard** icon.
b. Enter the settings.
c. Click **OK**.



■ **Communications**

Use the pull-down windows to make the following selections:

Response Delay (COM 1 and COM 2): 0 - 750 ms (increments of 50ms)

Protocol: Modbus RTU or Modbus ASCII

Baud Rate: 9600 - 115,200

For **Address**, use the Keyboard in the lower right hand corner of the screen.

a. Click on the **Keyboard** icon.
b. Enter the settings.
c. Click **OK**.

■ **Buttons**

Click **Update** to update the Device Profile.
Click **Communication** to view the Communication screen.
Click **OK** to return to the **Main** screen.

■ **Updating the Device Profile**

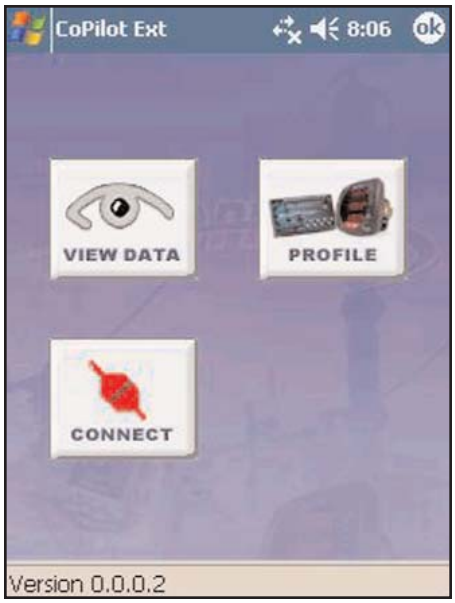
1. Click **Update** after you have made changes to settings. This will update the Device Profile of the Shark® 100 meter. The meter will then Reset. After Reset is completed, CoPilot will attempt to reconnect.

2. When "**Programming Complete"** appears, click **OK**.

   NOTE: If Comm Settings were changed, you must exit the program from the **Connect** screen and **reconnect with the new settings**.

Chapter 3
Viewing Data

3.1: Viewing Shark® 100 Meter Data with CoPilot



Once a connection has been established and any configuration is done, you are ready to View Data.

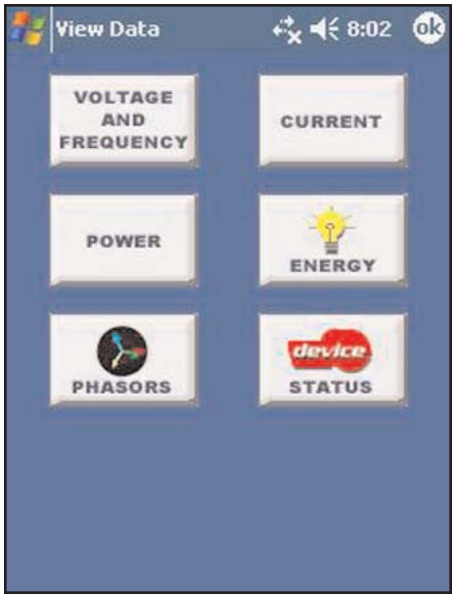
1. Open the CoPilot EXT software. You will see the **Main** screen.

2. Click on the **View Data** icon. You will see the **View Data** screen, shown below, on the right.

■ **Select Data to View**

3. Click on the Icon for the type of data you want to view.

   You will see Real Time Data for the type of data you selected. (The meter is polling continuously.)



■ **Screen Data**

- **VOLTAGE AND FREQUENCY Screen**
  A-N, B-N, C-N, A-B, B-C, C-A

- **POWER Screen**
  Totals for W, VAR, VA and PF

- **PHASORS**
  Phasor Diagram, VAN, VBN, VCN, IA, IB, IC

- **CURRENT Screen**
  Instantaneous Current Readings A, B, C

- **ENERGY Screen**
  Instantaneous Energy Readings for Delivered Wh, Received Wh, Delivered VARh, Received VARh, VAh

- **DEVICE STATUS**
  Device ID & Type, Boot, Run-Time, DSP Boot, Run-Time

■ **Exit**

Click **OK** to Exit this screen and return to the **Main** screen.

3.2: Viewing Nexus® Meter Data with CoPilot

Once a connection has been established, you are ready to View Data.

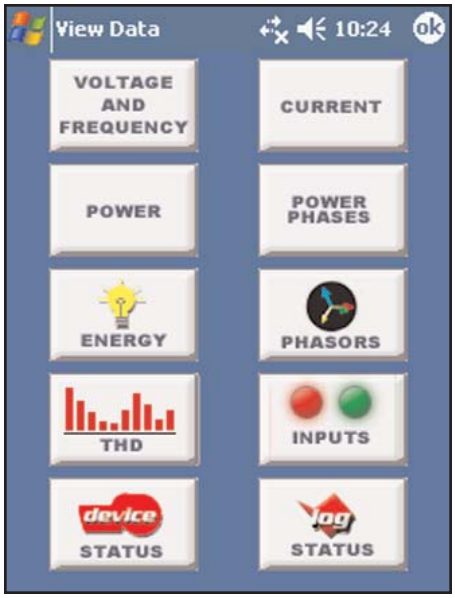
1. Open the CoPilot EXT software. You will see the **Main** screen.

2. Click on the **View Data** or the **Retrieve Logs** icon. You will see one of the following screens.

■ **View Data**

3. Click on the Icon for the type of data you want to view.

   Real Time Data appears for the type of data selected. (The meter is polling continuously.)



■ **Screen Data**

- **VOLTAGE AND FREQUENCY**
  Select 1 sec or .1 sec readings
  A-N, B-N, C-N, A-B, B-C, C-A, AUX, FREQ

- **POWER Screen**
  Select 1 sec or .1 sec readings
  Totals for W, VAR, VA and PF

- **ENERGY**
  Instantaneous Energy Readings for Delivered Wh, Received Wh, Delivered VARh, Received VARh, VAh

- **THD**
  Channel Selection: VAN, VBN, VCN, IA, IB, IC
  Harmonics Spectrum, % THD Factor, K Factor, Zoom

- **DEVICE STATUS**
  Device ID, Device Type, Boot, Run-Time, DSP Boot and Run-Time, Protection (Password)

- **CURRENT**
  Select 1 sec or .1 sec readings
  A, B, C, NC, Nm

- **POWER PHASES Screen**
  A, B, C for W, VAR, VA and PF

- **PHASORS**
  Phasor Diagram, VAN, VBN, VCN, IA, IB, IC

- **INPUTS**
  8 Labeled High Speed Inputs with Status for each

- **LOG STATUS**
  Number of Records and Memory Used for the following logs:
  Historical Logs 1 & 2
  Limit Triggers
  Digital Inputs
  Digital Outputs
  Waveform / PQ
  System Events

■ Retrieve Logs

1. Click on the **Retrieve Logs** Icon. The **Retrieve Logs** screen for the connected device appears. The screen lists the available logs for that device with a check box in front of each log.

2. Select the Log(s) you want to retrieve from the screen.

3. Click **OK**. The software retrieves the Programmable Settings for the connected device and then retrieves the selected logs. The software downloads the logs to a file labelled: ***meter name***.db.