

# Improving Power Studio<sup>™</sup> Performance Over RS-485 Interfaces

By: Kirk Liberty

#### ABSTRACT

Oztek's Power Studio<sup>™</sup> GUI is a complimentary tool that can be used to directly control Oztek products, modify and apply their configuration, view and download datalogs, and apply firmware updates. Many Oztek products utilize the Modbus RTU protocol over RS-485 to communicate with Power Studio<sup>™</sup>. This application note provides instructions for improving the communication performance when using Power Studio<sup>™</sup> with an industry standard USB to RS-485 adapter.

## **Table of Contents**

1	Introduction	. 2
2	Background	. 2
3	Procedure	2
	Troccure	

## **List of Figures**

Figure 1 – Device Manager	2
Figure 2 – COM Port Device	3
Figure 3 – Port Settings	3
Figure 4 – Latency Timer	4



#### **1** Introduction

The Oztek Power Studio<sup>™</sup> GUI is a PC application that can be used to interface with Oztek products, such as the OZpcs-RS40 and OZIP-R. Power Studio<sup>™</sup> allows users to directly control products, modify and apply configurations, view datalogs, and apply firmware updates.

Power Studio<sup>™</sup> communicates with the target using the Modbus protocol over a serial RS-485 hardware interface. To facilitate communication between the PC running Power Studio<sup>™</sup> and the target, an RS-485 adapter is typically required. The most common PC to RS-485 adapters are USB modules that utilize an FTDI interface chip. This application note provides instructions on how to improve the communication performance of Power Studio<sup>™</sup> when using an FTDI-based RS-485 adapter.

### 2 Background

The configuration setup, datalog downloading, and firmware update features in Power Studio create a significant load on the RS-485 bus. With the default configuration settings, the FTDI drivers will buffer a message received on the RS-485 bus for 16ms before transferring it to the host computer over USB. During this time, Power Studio<sup>™</sup> must wait for the response message to arrive before sending the next Modbus message to the PCS. Reducing the buffering time in the FTDI drivers allows Power Studio<sup>™</sup> to better utilize the full bandwidth of the RS-485 bus. For example, with the buffering time reduced to 1ms the OZpcs-RS40 product configuration can be read 3 times faster than with the default settings.

### **3** Procedure

Open the Windows Device Manager and select your RS-485 adapter.



Figure 1 – Device Manager

Select "Change Settings", then under the "Port Settings" tab select "Advanced".



Concert				-			
seneral	Port Settings	Driver	Details	Events			
	USB Serial Po	ort (CON	16)				
	Device type:	P	orts (COM	& LPT)			
	Manufacturer	F	TDI				
	Location:	01	n USB Se	rial Conve	rter		
Device status Currently, this hardware device is not connected to the computer. (Code 45)					~		
					iputor.		
To fi	x this problem, re	econnec	t this hard	ware devi	ce to the		
com	puter.		/				
			/				~
		1					
		1					
•	Change settings	k.					

Figure 2 – COM Port Device

USB Serial Port (COM6) Properties			×			
General PortSettings Driver Details Events						
Bits per second:	9600	~				
Data bits:	8	$\sim$				
Parity:	None	$\sim$				
Stop bits:	1	$\sim$				
Flow control:	None	$\sim$				
	Advanced	Restore Defaults				
	ОК	Cancel				

Figure 3 – Port Settings

The "Latency Timer" option defaults to 16ms. This value may be reduced to 1ms to maximize message throughput.



USB Serial Port (COM6) Properties						
Advanced Settings for COM6		? ×				
COM Port Number: COM6 USB Transfer Sizes Select lower settings to correct perform	ance problems at low baud rates.	OK Cancel Defaults				
Select higher settings for faster perforn Receive (Bytes): Transmit (Bytes):	hance. 4096 ∨ 4096 ∨					
BM Options Select lower settings to correct respons Latency Timer (msec):	Miscellaneous Options Serial Enumerator Serial Printer Cancel If Power Off					
Timeouts Minimum Read Timeout (msec): Minimum Write Timeout (msec):	Event On Surprise Rem Set RTS On Close Set RTS On Close Disable Modem Ctrl At Enable Selective Suspend Idle Selective Suspend Idle	Startup				

Figure 4 – Latency Timer



#### **IMPORTANT NOTICE**

The information provided herein is believed to be reliable; however, Oztek assumes no responsibility for inaccuracies or omissions. Oztek assumes no responsibility for the use of this information, and all use of such information shall be entirely at the user's own risk. No patent rights or licenses to any of the circuits described herein are implied or granted to any third party. Oztek's publication of information regarding any third party's products or services does not constitute Oztek's approval, warranty, or endorsement thereof. Customers are responsible for their applications using Oztek products.

Copyright © 2021 Oztek Corp. All rights reserved.