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APLICATION NOTES.... FOR THE EAGLE LINE OF SOLAR CONTROLLERS

RS232 SERIAL INTERFACE for PC's and LAPTOPS Using Windows HYPER TERMINAL as the main communications software

Direct connection to a PC SERIAL PORT

If you are using a standard towered/desk top PC you will have at least one RS232 serial port available. It is located on the back of the console as a serial DB-9 male pin connector. The EAGLE data port connector connects directly to this port. In the event there is more than one port, please make sure you know which **serial port** number it is. When you set up HYPER TERMINAL you will need to know this port number. Please proceed directly to the section ...**SETTING UP HYPER TERMINAL.** Please omit any references to USB converters as this topic is not applicable. Just proceed to enter the **port number** you physically connected the DATA PORT ADAPTER into the Hyper Terminal window . You may also use a different file setup name such as **SERIAL EAGLE PORT** instead of SERIAL_USB.

SERIAL CONNECTION to a USB PORT such as a LAP TOP

Why do you need a USB to SERIAL converter when towered PC's all have SERIAL PORTS??

Because almost all LAP TOPS don't have serial ports any more. They have a USB port instead. Thus we need to purchase and install a USB to SERIAL converter. The installation can be any were from very easy to somewhat difficult. Please be careful in following the installation steps given below. !! I will later describe setting up HYPER TERM in Windows to display the serial Data the EAGLE Controller sends at regular intervals.

AUTOMATIC INSTALLATION for XP computers

The following assumes that your system already has administrator privileges to install new drivers!

- 1 Plug in the USB connector type-B into the USB port on the adapter, and connect the USB type-A on the other end of the cable to the host USB port in your computer.
- 2 The connection brings up "Found New Hardware Wizard"
- 3 Click "Next"
- 4 Select "search for the best driver for my device(recommended)", click "Next"
- 5 Select "specify a location" and click "next". In the "Copy Manufacturer's file from" type the drive letter that your CD-ROM is... for example "D"
- 6 Windows driver file searches for the device "USB High Speed Serial Converter"
- 7 Click "Next" to continue
- 8 Windows has finished installing the software. Click "Finish" to complete the first part of the installation.
- 9 The "Found New Hardware Wizard" appears again, and will complete the installation for the device "USB" Serial Port

Your installation is now complete!!

The next discussion will deal with CONFIRMING that the installation is OK and also setting up the **COMMUNICATIONS PROGRAM** called **HYPER TERMINAL**

The following instructions are for the SERIAL to USB adapter manufactured by MICRO INOVATIONS Model no USB610A. I have chosen this converter because it is WELL supported and it is easy to install. There are other OFF SHORE manufacturers with models down to \$10 dollars. Their installation is the same

Install the DRIVERS for the USB to serial converter Model 610A according to the printed instructions furnished with the CD from Micro innovations in a similar manner as described above. The driver NAME for this MODEL is "**Prolific USB**" and will appear as such in the following descriptions: FOR WINDOWS XP

Go to START and select control panel... the following will appear:

📴 Control Panel			
File Edit View Favorites Tools	Help		AV
	unte 🗠 Californi I 🖎 🖎 🔽 🚺		
		•••••	
-	Name 🔺	Comments	
Control Panel *	Accessibility Options	Adjust your computer	
	🛰 Add Hardware	Installs and troublesho	
Switch to Category View	🔂 Add or Remove Programs	Install or remove prog	
- • ·	administrative Tools	Configure administrati	
	🖳 Adobe Gamma	Calibrate monitor for c	
See Also *	🛚 🥸 Automatic Updates	Set up Windows to au	
	BDE Administrator	Configures the Borlan	
🍪 Windows Update	8 Bluetooth Configuration	Allows you to configur	
e Help and Support	8 Bluetooth Devices	Configure and manag	
	Corel Versions	Configure Corel Versions	
	ピ Date and Time	Set the date, time, an	
	Solisplay	Change the appearan	
	General Contions	Customize the display	
	C Fonts	Add, change, and ma	
	Same Controllers	Add, remove, and co	
	🔯 Internet Options	Configure your Intern	
	Keyboard	Customize your keyb	
	A Mail	Microsoft Outlook Prof	
	Mouse	Customize your mous	
	SNetwork Connections	Connects to other co	
	💁 Network Setup Wizard	Launch the Network S	
	NVIDIA nView Desktop Manager	NVIDIA nView UI contr	
	bPhone and Modem Options	Configure your teleph	
	Power Options	Configure energy-savi	
	Printers and Faxes	Shows installed printer	
	🔮 Regional and Language Options	Customize settings for	
	Scanners and Cameras	Add, remove, and co	
	Scheduled Tasks	Schedule computer ta	
	Security Center	View your current sec	
	Sounds and Audio Devices	Change the sound sc	
	Speech	Change settings for te	
	Symantec LiveUpdate	This applet allows you	
	System	See information about	
	📷 i askbar and Start Menu	Customize the Start M	
	Sa User Accounts	Change user account	
	www.ruows.mrewall	Conligure the wildo	
	wireless Network Setup Wizard	Set up or add to a wir	



Select **HARDWARE** as sown above......The following screen will appear....

System Prope	erties			? >
System	n Restore	Automati	c Updates	Remote
General	I Comp	uterivame [Advanced
Device Ma	anager			
×.	The Device Ma your computer. of any device.	nager lists all the Use the Device N	hardware devices in: 1anager to change th	stalled on e properties
			Device Mar	nager
_ Drivers				
	Driver Signing I compatible with Windows conne	ets you make sur Windows. Windo ects to Windows U	e that installed drivers ws Update lets you s Jpdate for drivers.	s are set up how
	Driver <u>s</u>	Signing	Windows Up	odate
Hardware	Profiles			
<i>~</i>	Hardware profil different hardwa	es provide a way are configurations	for you to set up and	store
			Hardware <u>P</u> i	rofiles
		ОК	Cancel	Apply

Select **DEVICE MANAGER** as shown above..... the following will appear....







Select Prolific USB as shown below and double CLICK

🚔 Device Manager				
Eile Action View Help				
DE ATA/ATAPI controllers				
🖻 🧓 IEEE 1394 Bus host controllers				
🗄 🥪 Imaging devices				
🗄 🦢 Keyboards				
Mice and other pointing devices				
Microsoft Serial BallPoint				
PS/2 Compatible Mouse				
🗄 🐌 Modems				
📄 😟 Monitors				
🕀 🎟 Network adapters				
🖻 🚽 Ports (COM & LPT)				
Communications Port (COM1)				
Communications Port (COM2)				
ECP Printer Port (LPT1)				
Prolific USB-to-Serial Comm Port (COM11)				
🗈 📾 Processors				
📄 🕀 SCSI and RAID controllers	_			

The screen below will appear after double clicking. Please observe that the assigned PORT is 11

 Prolific USB-to-Serial Comm Port (COM11) Properties

Seneral Port Settings Driver Details				
Prolific USB-to-Serial Comm Port (COM11)				
	Device type:	Ports (COM & LPT)		
	Manufacturer:	Prolific		
	Location:	Location 0 (USB-Serial Controller)		
Device status This device is working properly. If you are having problems with this device, click Troubleshoot to start the troubleshooter.				
Troubleshoot				
Device usage:				
Use this device (enable)				
		OK Cancel		

As shown above ...make sure that Device Status shown "working properly" and it is enabled!!

Select **PORT SETTINGS** tab and see the screen below

Prolific USB-to-Serial Comm Port (COM11) Properties	<u>?</u> ×
General Port Settings Driver Details	
Bits per second: 2400	
Data bits: 8	•
Parity: None	-
Stop bits: 1	-
Elow control: None	•
<u>A</u> dvanced <u>R</u> estor	re Defaults
ОК	Cancel

Please match all the values in the windows shown above to the values in your computer

Then click on the **ADVANCED** Tab and observe the screen below

Advanced Settings f	or COM11						? ×
V Use FIFO Select low Select high	buffers (requi er settings to ner settings fo	ires 16550 cc correct conr or faster perfo	impatible UART) ection problems. prmance.				OK Cancel
<u>R</u> eceive Buffer:	Low (1)			—	High (14)	(14)	
<u>T</u> ransmit Buffer:	Low (1)			—-Ţ	High (16)	(16)	
COM <u>P</u> ort Number:	COM11	_					_

The <u>**Com Port number**</u> is shown in the window above. It is "**11**" in my case. Yours will be different. Please record this number because it is the communication port that has been auto-selected at the time of DRIVER INSTALLATION.

This is the port that the USB connection communicates with. Please also match the balance of the settings shown in the window above.

Other examples of selected COM PORTS will follow. They were generated when an other SERIAL to USB converter was installed. This one was EASYSYNC which is one of many other converters available. In this example COM PORT4 has been assigned to be the USB port connection as shown below.



and here are the COM PORT 4 settings

COM4 Pr	operties			1	<u>' ×</u>
Port Se	ettings				
	<u>B</u> its per second:	2400		•	
	<u>D</u> ata bits:	8		•	
	<u>P</u> arity:	None		•	
	<u>S</u> top bits:	1		•	
	<u>F</u> low control:	Hardware		•	
			<u>R</u> estore I	Defaults	
	0	к	Cancel	Apply	

Proceed to set up HYPERTERMINAL and make sure that the PORT information is properly entered in the HYPERTERMINAL settings.

SETTING UP HYPER TERMINAL

Proceed to find and run HYPER TERMINAL as shown below:



Click on the **HYPER TERMINAL** icon to run it as shown below. The following window will appear. Enter "**SERIAL_USB**" for a name or any other one you may choose.



Click "OK"

Connect To
SERIAL_USB
Enter details for the phone number that you want to dial:
Country/region: United States (1)
Ar <u>e</u> a code: 715
Phone number:
Connect using: U.S. Robotics 56K Voice PCI
OK Cancel

Click on "connect using" and observe the COM PORT pull down window open up as shown below:

Connect To			? ×
SERIAL	_USB		
Enter details for	the phone number	r that vou want l	to dial:
Entor dotailo for		r ander your market	
Country/region:	United States (1))	-
Ar <u>e</u> a code:	715		
Phone number:			
Connect using:	U.C. Dahatiaa Et	CK Maine DCI	
connect using.	U.S. Robotics 56	6K Voice PCI	
	COM3 COM1		
	COM4	եյ	
New Connection	n - HyperTerminal all Transfer Help		
-			
Disconnected	Auto detect	Auto detect	SCROLL

In this example we have installed the EASYSYNC Serial to USB converter and the assigned COM PORT is 4. Point to **COM4** and **click**

Connect To	<u>? ×</u>
🧞 SERIAL	USB
Enter details for	the phone number that you want to dial:
<u>C</u> ountry/region:	United States (1)
Ar <u>e</u> a code:	715
Phone number:	
Co <u>n</u> nect using:	U.S. Robotics 56K Voice PCI
	U.S. Robotics 56K Voice PCI
	COM1
	TCP/IP (Wipsock)

The following will appear:

Connect To					
Enter details for the phone number that you want to dial:					
Country/region: United States (1)					
Ar <u>ea</u> code: 715					
Phone number:					
Connect using: COM4					
OK Cancel					

Click on "OK" in above window: The following window will appear:

COM4 Properties	<u>? ×</u>
Port Settings	
<u>B</u> its per second: 2400	
Data bits: 8	
Parity: None	_
Stop bits: 1	_
Elow control: Hardware	•
	<u>R</u> estore Defaults
OK	Cancel Apply

Make sure that you match the settings shown in above window and click"OK"

The following window will appear. Please observe that its title is SERIAL_USB-Hyper Terminal This is now the active window that will display the serial data being sent by the EAGLE Line of controllers. You should see lines of text appear across the screen. THIS IS THE DATA COLLECTED BY THE EAGLE CONTROLLER. New lines will appear as often as 2 seconds or every 6 minutes depending on the selected Jumper settings inside the eagle controller

🏀 SERIAL_USB - HyperTerminal				
<u>E</u> ile <u>E</u> dit <u>V</u> iew <u>C</u> all <u>T</u> ransfer <u>H</u> elp				
RUNTIME COLL-T STOR-T 0:06 64.9 64.9 0:06 65.0 64.9 0:06 65.0 64.9 0:06 65.0 64.9 0:06 65.0 64.9 0:06 65.0 64.9 0:06 65.0 64.9 0:06 65.0 64.9 0:06 65.0 64.9 0:06 65.0 64.9	DIFF-T HILI-T 08.0 157.5 08.0 157.5 08.0 157.5 08.0 157.5 08.0 157.5 08.0 157.5 08.0 157.5	PUMP UP-Lim OFF OFF OFF OFF OFF OFF OFF OFF OFF OFF OFF OFF	FAULT	
0:06 65.0 64.9 0:06 65.0 64.9 0:06 64.9 64.9 0:06 65.0 64.9 0:06 65.0 64.9	08.0 157.6 08.0 157.5 08.0 157.5 08.0 157.6 08.0 157.5	OFF OFF OFF OFF OFF OFF OFF OFF		
RUNTIME CULL-1 STUR-1 0:06 64.9 64.7 0:06 64.9 64.9 0:06 65.0 64.9 0:07 65.0 64.9 0:07 64.9 64.9 0:07 64.9 64.9	DIFF-I HILI-I 08.0 157.5 08.0 157.5 08.0 157.5 08.0 157.5 08.0 157.5 08.0 157.5	PUMP UP-L1m OFF OFF OFF OFF OFF OFF OFF OFF OFF OFF	FHULI	
Connected 0:23:34 Auto detect 240	38-N-1 SCROLL CAPS	NUM Capture Print echo)	

IF you wish to capture the Serial Data into a TEXT FILE then click on "transfer" as shown below

SERIAL_USB - HyperTerminal					
File Edit View Call Transfer Help					
D 😅 🍘 🔏 🗉 Send File					
Capture Text Send Text File Capture to Printer			Ă		
RUNTIME COLL-T STOR-T DIFF 0:06 64.9 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0 0:06 65.0 64.9 08.0	E-T HILI-T PUMP UP-Li 157.5 OFF OFF 157.5 OFF OFF 157.5 OFF OFF 157.5 OFF OFF 157.5 OFF OFF 157.6 OFF OFF 157.6 OFF OFF 157.6 OFF OFF 157.6 OFF OFF 157.6 OFF OFF 157.5 OFF OFF 157.5 OFF OFF	m FAULT			
RUNTIME COLL-T STOR-T DIFF 0:06 64.9 64.7 08.0 0:06 64.9 64.9 08.0 0:06 65.0 64.9 08.0 0:07 65.0 64.9 08.0 0:07 65.0 64.9 08.0 0:07 65.0 64.9 08.0 0:07 64.9 08.0 0 0:07 64.9 08.0 0	E-T HILI-T PUMP UP-Li 157.5 OFF OFF 157.5 OFF OFF 157.5 OFF OFF 157.5 OFF OFF 157.5 OFF OFF 157.5 OFF OFF 157.5 OFF OFF	m FAULT	¥		
Creates a file of all incoming text					
🛃 Start 📗 💽 Inbox - Microsoft Outlook 📗 國 Install th	ne DRIVERS for t	SERIAL_USB - HyperT	« <u>V2</u> 🇞 🕑 7:00 PM		

Then select **"capture text"** as shown below and select a drive/folder you wish to have the **"capture"** file created. DATA capture will continue until it is stopped in the Hyper-T erminal program. The HYPER TERMINAL program can be minimized and RUN IN THE BACKROUND !! This will allow the PC to continue to be used for other tasks unaffected by the DATA CAPTURE.



Here is a brief list of some of the sources for SERIAL to USB converters and their links

www.SewellDirect.com Part No. SW-1301

Mfg. Part No. AP1102



www.emtcompany.com

USB to DB9 Serial Port Adapter Cable



USB to DB9 Serial Port Adapter Cable Our Price: \$9.95 (Free Shipping)

www.easysync-ltd.com

ES-U-1001-A : USB-RS232 with detachable USB cable

\$24.45 \$18.35



** Special promotional offer **



Larger picture

You can conduct your GOOGLE SEARCH as shown below. There are many manufacturers of these converters !



Web

<u>Sign in</u>