First steps receiving data from a uPart using a cPart bridge

If you follow the steps below you can easily receive data from a uPart and see the sent data in the Particle Analyser. Please note, that this guide is written for Windows (for device drivers and software for linux see http://particles.teco.edu/software/index.html)!

1) Devices needed

uPart







2) Downloading needed software and device drivers

- JDK 1.5 (or higher): <u>http://java.sun.com/javase/downloads/index.jsp</u>
- USB bridge software (Windows installer package, containing binaries and sources) http://particles.teco.edu/software/bridge/USBBridge/sw/v100/usbbridge_v100.msi
- Windows Drivers for the USB bridge: http://particles.teco.edu/software/bridge/USBBridge/sw/v100/usbbridge_v200_driver_libusb.zip
- Particle Analyser: There are 2 versions of the particle analyser available one Delphi implementation that you can get here: <u>particleAnalyzer-20040114.zip</u> and also a Java version which you can download here: <u>pAnalyzer-0.0.5.zip</u> (if you choose to use the Java version which has more features but may crash from time to time there is a <u>Webstart</u> available which dynamically loads all needed classes)

3) Installing the software and device drivers

3.1) Install JDK 1.5

Install the Java Development Kit as described on the Sun page.

3.2) USB bridge software (Windows)

Start usbbridge_v100.msi from your computer and choose 'Typical '

🖶 Tec0 U	SB Bridge	×
Choose Choos	e Setup Type se the setup type that best suits your needs	9
<	Typical Installs the most common program features. Recommended for most users.	
Ĺ	Custom Allows users to choose which program features will be installed and where they will be installed. Recommended for advanced users.	
I	Complete All program features will be installed. Requires the most disk space.	
		1
	<u>B</u> ack Next Cancel	

If finished, you should find a link to the program on your desktop.



3.3) Windows Drivers for the USB bridge

Extract the <u>usbbridge_v200_driver_libusb.zip</u> into a directory of your choice.

Now insert the <u>USBBridge</u> in your USB port. Please note that the receiver (<u>cPart</u>) should be connected on the USB board on top like in the image shown below.



Windows will now request you to select the driver.

Specify the Driver directory you chose earlier. The installation concludes automatically the correct .inf file. Check for the "TecO particle USBBridge [based on libusb]" in the Device Manager. It should read like the following:



If you have already installed an older version of the USBBridge driver, pleas update it:

TecO part	icle USB Bridge	[based ob libusb] Properties
General	Driver	
¢	TecO particle US	B Bridge [based ob libusb]
	Driver Provider:	TecO
	Driver Date:	Not available
	Driver Version:	62640.0.0.0
	Digital Signer:	Not digitally signed
Details. the drive	Driver Details	er files for this device, click Uninstall. To update e, click Update Driver.
		OK Cancel

3.4 Particle Analyser

Depending on the version you downloaded the installation is slightly different.

3.4.1) Delphi implementation

Extract <u>particleAnalyzer-20040114.zip</u> to a directory of your choice. You will find the executable in the following directory: 2004_01_14\ParticleAnalyzer\Analyzer.exe.

3.4.2) Java implementation

Extract pAnalyzer-0.0.5.zip to a directory of your choice. In that directory you will find a run.bat to execute it.

3.4.3) Java Webstart

Click on <u>Webstart</u> and follow the instructions on screen. You need to accept the certificate in order to use it. After the installation all the files are stored in a temporary folder for offline usage.

4.) Starting the applications

4.1) uPart

To start a uPart simply insert a 3 volt lithium manganese battery in the battery slot of the uPart.



4.2) USBBridge program

Start the USB bridge program via the link on your desktop:



Switch it to "uPart" and press the "Start" button.	Start a uPart (if not done yet) by inserting a batterie and check for incomming data.
🛓 USBridge 📃 📕	🛃 USBridge
File Properties Options	File Properties Options
TEECOD Telecooporation Office University of Karlsruhe http://www.teco.edu	Telecooporation Office University of Karlsruhe http://www.teco.edu
Settings	Settings
5556 Listen Port	5556 Listen Port
5555 Send Port	5555 Send Port
uPart 💽	uPart
RF->PC	RF->PC
Total Bytes : 0	Total Bytes : 98
Total Packets : 0	Total Packets : 2
CRC Errors : 0	CRC Errors : 0
CRC Ok : 0	CRC Ok : 2
PC->RF	PC->RF
Net recvd Bytes : 0	Net recvd Bytes : 0
Net recvd Packets : 0	Net recvd Packets : 0
RF sent Bytes : 0	RF sent Bytes : 0
RF sent Packets : 0	RF sent Packets : 0

4.3 Particle Analyser

3.4.1) Delphi implementation

Execute Analyzer.exe in the program directory

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											Ē		U h	niversity o ttp://www.	of Karl w.tecc
												Event Bytes		022000	512
										_	F	Active: Byte 1:	Byte 2:	Type: SAU	- -
											E	141	136	SLI :	
												÷ 98	209	DSB	
												Particle Filter			
							_					Particle ID 255.255.255.2	255.255.25	5.255.25	5
-															
					. ,	+++					T.F				
Scop Uni	e Parameti t:	ers Minimum Va	alue: Ma	ximum'	Value:	Disp	lav Moc	le:	Me	asurem	ent Intervall				_
Da	ta	• 0	25	5		Pea	k	-		13	ms				
Uni Da	t ta	Minimum Va	alue: Ma 25	ximum 5	Value:	Disp Pea	lay Moc k	le:		13	ms				

Switch to the tab Settings and check if the ports are correctly entered as shown below. Note: The USB bridge software listens on port 5556 and sends any received RF packets to the local network on port 5555 where the particle analyser grabs them. So the listen and send port must be in reverse order.

Now press the Start button and switch to the console view where the incoming packets are shown.

Console		-	-	-			refresh rate	e 😨 500 ms	207	
Sender ID 1.2.3.4.0.5.0.221	Seq.	Тур	Тур 94	Type AMP	Data 19 2 132 31	Time 14:04:52	Date 17.01.2	Location	\triangleright	University of Karls http://www.teco.
									Event Bytes Active: Byte 1: 214 141 103 Particle Filter Particle ID 255.255.255.2	Byte 2: Type: Initial Sector Se

3.4.2) Java implementation && Java Webstart

Execute the run.bat in the install folder or the ParticleAnalyzer link which should be on the desktop (otherwise you have use the <u>Webstart</u> link). The first start might take some time because the Java virtual machine has to be loaded (as you may know from other applications).

Please check if the ports are set correctly and press Start.

🜌 TeCO Parl	ticle Analy	/zer					
Console	Scope	SendToParticle				TC	
Consol	e				settings		قط عد ا
	A	cl Tuples	SeqNr	SrcId	11	University	of Karlsruhe
					10-1	Start	Clear
						Coop Mr	twork
						Scan Ne	etwork
						all contextes	
						socket Setti	nas
						receive Dort	5555
						send Port	5556
						update Delay	40 ÷

After a packet has been received it will be shown in the list and the ID of the sender uPart is on the right side. If you click on the ID you can filter and show only the selected uPart. In this example I activated 2 uParts.

Console Scope SendToParticle Console settings amp 19 2132 31 43 26 155 03 1175 31 477 979 15 63 0111 15 127 0 0 1.2.3.4.0.5.0.21 Stop 1.2.3.4.0.5.0.221 Stop 1.2.3.4.0.5.1.66	🌌 TeCO Pa	rticle Analyzer			
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Act Tuples SeqNr Stold amp 19 2 132 31 43 26 155 0 31 175 31 47 79 78 15 63 0 111 15 127 0 0 1.2.3.4.0.5.1.66 Stop Clear mp 19 2 132 31 0 23 245 0 0 47 15 207 47 191 15 207 31 159 95 159 59 1.2.3.4.0.5.0.221 Scan Network Scan Network aff contextes • 1.2.3.4.0.5.0.221 • 1.2.3.4.0.5.0.221 • 1.2.3.4.0.5.1.66 scan Network aff contextes • 1.2.3.4.0.5.0.221 • 1.2.3.4.0.5.0.221 • 1.2.3.4.0.5.1.66 • 5.2.5.1.66 • 5.2.5.1.66	Conso	le		settings	
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socket Settings receive Port 5555 send Port 5556					- 1.2.3.4.0.5.0.221
socket Settings receive Port 5555 send Port 5556					► 1.2.3.4.0.5.1.66
socket Settings receive Port 5555 send Port 5556					
socket Settings receive Port 5555 send Port 5556					
socket Settings receive Port 5555 send Port 5556					
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receive Port 5555 send Port 5556					socket Settings
send Port 5556					receive Port 5555
					send Port 5556
update Delay 40-					update Delay 40 ÷

Note: Every USB bridge is broadcasting any data received via RF to the local network. If you have 2 bridges running you might receive duplicates!

4) Congratulations! It should work now!

For more information about <u>ACL tuples</u> or how to use the libparticle framework to write client applications see the <u>documentation</u> at the <u>particle website</u>.