### Introduction

Most of the new laptops have built-in Bluetooth radio. The olders can be easily upgraded with USB port Bluetooth modules. With Bluetooth connection we can control our telescope mount without cable.

We offer you the **Ursa Minor Bluetooth Interface** to control your telescope mount:



This Bluetooth interface can be ordered with different connectors to different telescope mounts:

- Merlin, Autotrack, Supatrak, Autotrack dobson
- Skywatcher NEQ3, NEQ5, HEQ5
- Skywatcher EQ6

The Bluetooth Interface has two versions:

- Version 1.0: Providing remote telescope operation.
- Version 2.0: Same as the first but providing DSLR camera exposure control additonaly.



These Bluetooth modules can be connected directly to the mount not to the hand controller. Connect them to the hand controller socket of the mount. The operation with the Ursa Minor Planetarium program is similar as the connection made by wire.

On the module, there is a reset button and a status led. The led can indicate the following states of the connection:

Dark

The module is not powered. Please check the power connections of the mount! Fast blinking (2Hz)

The module is not paired to any computer. In this case it doesn't accept connections, but it is ready to be discovered by a computer.

Slow blinking (1Hz)

The module is paired with a computer. It is ready to accept connections. If you press the reset button, the module will forget the pairing, and comes back to unpaired state (fast blinking).

Continuous lighting

Connection established with a computer. It indicates that a program (typically the Ursa Minor Skytour or Pro) built the connection to control the telescope.

Second version of the Bluetooth interface has two additional LEDs to indicate focus and exposition control of DSLR camera.

## **Configuring the Bluetooth interface (Old method with Toshiba software)**

Before the first usage you should perform these steps:

1. Plug the module into handcontroller socket of the mount, and plug the 12V power cable into mount's power input connector. The led on the Bluetooth module will flash at 2Hz. It means, that the module is not paired with the computer. If the led flashes slowly, please push the reset button.

2. enable Bluetooth services on the computer. This can be done by choose "Enable Bluetooth radio" item from the menu as shown:



- 3. Choose "Add new connection" to make connection with the new device. Really it wont't make a connection, just discover and register the Bluetooth interface and make the "pairing". Pairing means that the interface and the computer will exchange some parameters (device address, etc...) between them.
- 4. The computer starts locating Bluetooth interfaces. The following window will appear showing the located devices:

Add New Connection Wi Select a device	izard	X
	Please choose the Bluetooth device you wish to use.  Bluetooth device  Device Name  Chip CAD <u>Refresh</u>	
	< <u>V</u> issza <u>T</u> ovább > Mégse	

5. Obviously the list can be different and depends on what kind of devices are in the range. From the list choose "Chip CAD" device. This name belongs to the Bluetooth telescope interface module.

6. At the next step the computer will ask you to give a password. In this case it is "0000" (four zeroes).

	Bluetooth Passkey (PIN):	****	
2	(If left blank, the default F	PIN will be used.)	
	Request Device		
	Bluetooth Device Address:	00:0A:84:01:BE:E7	
	Bluetooth Device Name:	Chip CAD	
		OK Cance	 

7. The computer will register the device and assign a COM port number to it. It can be anything in COM1 - COM255 range, but typically it is around COM40. You should memorize it, because it is needed by Ursa Minor program later.



Now we have finished the registration (the pairing method), and the led on the front of the interface switched to slow blinking.

You should do this setup process only once. The connection with the Ursa Minor program is exactly the same as connecting with wires. The only difference is the COM port number.

# Checking the COM port assignment (Old method with Toshiba software)

Windows makes the COM port assignment during the pairing method (as mentioned above). Sometimes you would like to re-check it, which COM port number belongs to the Bluetooth adapter. This can be easily done:

1. Click by the right mouse button on the Bluetooth icon on the taskbar. Choose "Bluetooth Settings" from the popup menu.



2. A window will appear, showing registered bluetooth devices. Locate the "Chip CAD" device.

😔 Bluetooth Settings	
Bluetooth View Help	
🛞 Bluet	ooth'
Chip CAD	
New Connection	

3. Right click on "Chip CAD" and choose the "Detail..." option from menu.

Bluetooth Settings	-D×
Bluetooth View Help	
	😵 Bluetooth
Connect	
Disconnect	
Delete	
Detail	
Create Shortcut on Desktop	
Rename	
Change Icon	
New Decail.	Delete
Connection	

4. In the dialog window, you can find the "port name" (In this example it is COM40).

tails of Chip CAD		2
Information		]
Device Name:	Chip CAD	
Device Address:	00:0A:84:01:BE:F6	
Device Class:	Uncategorized devi	ces
Service Class:	Serial Port	
Service Name:	SPP slave	
Provider Name:	None	
Setting		
Port Name:	COM40	
Auto Connect:	On	
Options		
Start application	after establishing conne	ection
Application path:		
		Browse
UK	Cancel	Apply

### **Configuring the Bluetooth interface (On newer computers)**

This chapter illustrates how can you set up the Bluetooth interfce. You should do this only once. Before start these steps please connect the Bluetooth interface to the telescope mount, switch on the power and press the button on the Bluetooth interface. the LED should flash fast. (2 Hz)

1. Click by the right mouse button on the Bluetooth icon on the taskbar. Choose "Add a Bluetooth Device" from the popup menu.



2. Bluetooth setup wizard starts. Press the "Next" button.



3. The program starts to search available Bluetooth devices and lists them in the window as shown on the follwing image. The "Serial Adapter" belongs to the Ursa Minor Bluetooth Interface. Choose this and press "Next".

etooth Device Selection	
Select a device Remote devices must be in For assistance in making a re device's documentation.	Discoverable mode for this computer to find them. emote device discoverable, refer to the remote
Serial Adaptor	
Search Again	Show all devices
<u>Search Again</u> If the device you are looking for i operational. On some devices, yo discoverable.	Show all devices
	< <u>B</u> ack <u>N</u> ext > Cancel

4. Now the services provided by the device are listed in the next window. The Ursa Minor Bluetooth Interface provides only one service. This is called "Dev B" and currently highlighted with blue background.

uetooth Service Selection	
Select the services you are interes The following services are available	sted in. through the selected Bluetooth Device.
Select the service that you want to a	access on the selected device.
🔲 📎 Dev B	<u>~</u>
Establish a virtual serial por Bluetooth device. The conr application that supports th	rt connection with a remote nection can then be used by any Configure ne COM port number assigned.
<u>R</u> efresh	<u>×</u>
	< <u>B</u> ack Finish Cancel

5. Check the checkbox at the "Dev B" and press "Configure" button.

Bluetooth Service Selection
Select the services you are interested in. The following services are available through the selected Bluetooth Device.
Select the service that you want to access on the selected device. (Connect to this service).
🔽 🏷 Dev B
Establish a virtual serial port connection with a remote Bluetooth device. The connection can then be used by any application that supports the COM port number assigned.
<u>R</u> efresh
< <u>B</u> ack <u>N</u> ext > Cancel

6. The default settings are displayed in the window. We don't need to modify them, but we should memorize the COM port number. In this case: COM7. Click the "Ok" button.

Bluetooth Properties	X
General	
Serial Adaptor Dev B	
Secure connection	
COM Port: COM7	
OK Cancel A	pply

7. The device is registered now, but not connected. The following message informs us, that the device's settings can be accessible in "My Bluetooth Spaces" window. Before

use the device, we need to connect it. The next capter describes the method of connection.



#### **Connecting to the Bluetooth device (On newer computers)**

After the registration is done (described in previous chapter) you may have to do this before using the bluetooth Interface.

1. Click by the right mouse button on the Bluetooth icon on the taskbar. Choose "Explore my Bluetooth Places" from the popup menu.

Explore My Bluet	ooth Place
Add a Bluetooth Dev	/ice
Bluetooth Configura	tion
Quick Connect	
Disable Bluetooth Ra	adio

2. A window appears showing registered Bluetooth devices. In your case there may be other devices such as mobile phones etc...



3. Choose the "Serial Adapter" and click with the right mouse button on it. Coose the "Connect Dev B" from the popup menu. Just a note: The "Dev B" represents the service provided by the Bluetooth interface. During the configuration, at the step 5 we could see this.



4. Now the computer ask us to give the pin code. The code is for newer bluetooth interfaces is "1234". for old ones: "0000". After typing the code, press "Next".



5. The popup window informs us thet the connection is in progress. It won't be longer then few seconds.



6. The connection is built up successfully. Please memorize the com port number.

Dev B	<u>?×</u>
	The Bluetooth serial port COM7 is now configured to connect to the device Serial Adaptor.
	The Application that will use this connection must be configured to use COM7.
	The application may be started at any time.
	Do not display this message again
	( <u> </u>

7. The green arrows signal just below the icon of the "Serial Adaptor" indicates the connection.



Now the connection is built, you can use the Telescope mount with Ursa Minor or Papywizard program.