



ASTROMI.CH

PBox Manual

Table of Contents

Introduction	3
System Requirements	4
General Requirements	4
Windows Operating Systems	4
Other Operating Systems	4
PBox usage	5
Windows Application	6
Control-Section	6
Pulse button	6
Close button	6
Log-Section	6
Scripting	7
Hardware information	8
Microprocessor	8
Application Interface	8
Serial Port settings	8
Protocol	8
Commands	9
Query Firmware-Version	9
Query Device-type	9
Start pulse	9
Troubleshooting	9

Introduction

Thank you for purchasing PBox (short for PowerBox), a small, self-contained device that allows you to remotely turn on / off your 10Micron Mount.

Because of the small size of PBox, it can be used in both mobile astronomy as well as stationary setups inside an observatory.

PBox is self-declared CE conform according to EN 61326-1 Class B
PBox is also ROHS compliant.

System Requirements

PBox was tested on WindowsXP, Windows 7 and Windows 10 in a mix of 32-bit and 64-bit versions. It is assumed that the Windows OS is updated to the latest patches and updates.

General Requirements

Windows Operating Systems

- Windows 10
- Windows 8 / 8.1
- Windows 7
 - No further requirements, in case the FTDI Driver is missing or overwritten by the Windows update process, please reinstall the one from the FTDI website (<http://www.ftdichip.com/Drivers/VCP.htm>)
- WindowsXP
 - Service Pack 3
 - .Net Framework 4.0
 - FTDI Driver (<http://www.ftdichip.com/Drivers/VCP.htm>)

Other Operating Systems

Although untested, PBox should work on Mac or Linux operating Systems. It may be necessary to install the proper driver that is available from FTDI (see link above). For a description of the command protocol, please refer to Section [Application Interface](#).

PBox usage

Using PBox is as easy as connecting it with your computer using the optional USB-Cable and launching the application. Upon insertion, Windows will recognize PBox as a new Com-Port and make it available to the system.

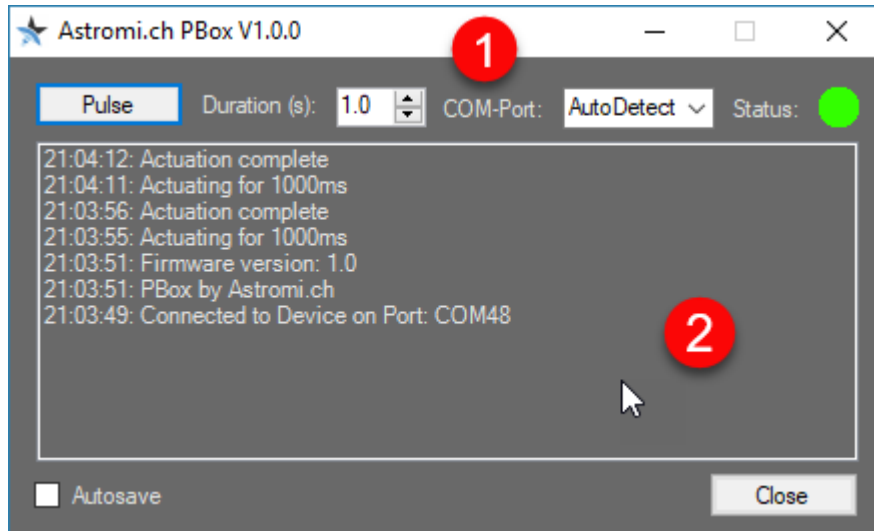
On older Windows Versions or other Operating Systems it might be necessary to install the proper FTDI Driver before the device becomes available.

Please use the cable that you received together with your mount for connecting the mount's control box with PBox.

Note: When you plug the remote power control cable into the mount's computer, it will be powered on if power is available, even without any pulse from PBox.

Windows Application

The Software that is provided together with PBox collects the data from the hardware and displays it in a small graphical user interface that can be split up into two main sections, which are described below.



Control-Section

The control section indicates the connection status to PBox by the green or red dot on the right side. You can either choose to have the windows application auto detect your PBox, or specify a port to connect to. Once the connection is established, the “Pulse” button becomes active.

Pulse button

Starts a pulse for the time specified in the duration window. The Mount expects a pulse between one and two seconds to either be turned on or off.

Close button

Closes the application.

Log-Section

The Log-Window shows information related to the connection and the pulses that are executed. Checking the “Autosave” checkbox automatically saves the log to your Documents\Astromi\PBox\Log folder.

Scripting

The windows application can also be started thru command line. In that mode, no GUI will be shown.

The following example demonstrates command line usage.

Pbox.exe -P COM48 -T 1500

The following command line arguments are recognized:

-P	Port
COM48	Look for PBox on COM48 You can also use «AutoDetect» instead of specifying the Com-Port
-T	Pulse length
1500	Actuate relay for 1500ms
-Help	Displays help

Hardware information

Microprocessor

The “heart” of PBox is an Atmel ATmega328P microprocessor that interfaces with the Sensor over the I²C protocol. It features 32KB of flash memory, 1KB of EEPROM and 23 general-purpose I/O lines.

Application Interface

This section provides information about how to interface with PBox from your own application or script.

Serial Port settings

Use the following settings to connect to PBox and start receiving data:

Baud: 38400
Data-Bits: 8
Parity: None

Protocol

PBox uses, for compatibility reasons, the NMEA 0183 Protocol that various navigation devices use.

PBox sends data from the sensor in the following format:

\$LOG: Firmware version: 1.0*00<cr><lf>

This breaks down into the following, more readable format:

\$	Start of sentence
LOG	Indication that this is a message directed to the Log-Window
Firmware version: 1.0	The firmware version of the device
*00	Checksum

Commands

The following commands are supported by the firmware:

Query Firmware-Version

:fwget*

:fwget	Query the Firmware version
*	End of message indicator

Query Device-type

:devicetype*

:devicetype	Query the devicetype
*	End of message indicator

Start pulse

:pulse,1000*

:pulse	Start a pulse
1000	Actuate relay for 1000ms
*	End of message indicator

Troubleshooting

If your PBox does not work as expected, please check the following:

- Verify in Device Manager the FTDI Serial Port shows up. Install / reinstall the driver if necessary (<http://www.ftdichip.com/Drivers/VCP.htm>)