

PUTSI™ PC Simulator

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For Software Revision: 1.1

Table of Contents

List of Figures	ii
List of Tables	ii
Document Revision History.....	iii
Additional Documents	iii
Reference Documents.....	iv
Glossary of Terms.....	iv
Intellectual Property Notice.....	v
Disclaimer.....	v
Release notes	vi
Introduction	- 1 -
Installation	- 1 -
Connection.....	- 1 -
Startup	- 2 -
Setting an A/D Value.....	- 5 -
Setting a Pin Value	- 5 -

List of Figures

Figure 1 Startup Screen.....	- 2 -
Figure 2 Comm port setup dialog	- 3 -
Figure 3 Background comm port activated.....	- 3 -
Figure 4 Configured Simulator	- 4 -
Figure 5 ADC value dialog box.....	- 5 -
Figure 6 Set pin value dialog box	- 5 -

List of Tables

Table 1 Revision History.....	iii
Table 2 Additional Documents.....	iii
Table 3 Files for installation	- 1 -
Table 4 Status indicator coloring	- 4 -

Document Revision History

Date	Rev	Description
Apr, 2024	1.0	Initial Release

Table 1 Revision History

Additional Documents

Number	Title
PUTSI	PUTSI Wi-Fi Telemetry

Table 2 Additional Documents

Reference Documents

- [1] gnu.org, "General Public Licence," [Online]. Available: <https://www.gnu.org/licenses/gpl-3.0.en.html>. [Accessed 25th February 2018].

Glossary of Terms

PBX	Private Branch Exchange. A node in a telephone network that provides connectivity for a series of local extensions to a set of trunks.
VOIP	Voice over Internet Protocol. A system where telephone calls are placed, and audio is exchanged using the Internet Protocol.
PUTSI	PIC USB Telemetry System Interface
Wi-Fi	Wireless Fidelity implementing the IEEE 802.11x standards.
USRP	Universal Software Radio Peripheral
UDP	User Datagram Protocol
SMS	Simple messaging system
USB	Universal Serial Bus
PIC	A series of microcontrollers by MicroChip, Inc.

Intellectual Property Notice

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Disclaimer

This document is a preliminary release for a product still in development and may be subject to change in future revisions. The software may be subject to unpredictable behaviour without notice. You are advised to keep a can of RAID™ Ant, Roach and Program Bug killer handy. Spray liberally on the affected area when needed.

Release notes

Initial Release version 1.0:

Released April 2024. Includes the production code from V1.1.

Introduction

This software was created as part of the development process as a proving ground for the PUTSI firmware. It contains the same code as the microcontroller, but instead of the 'real' ports, it uses Windows dialog boxes and screen updates instead.

It can be useful in debugging Allstar applications, and to exercise the functions of the telemetry module. It will be kept in sync with the production code as time goes on.

Installation

There is no formal installation procedure, copy the files from the GitHub directory to a local directory on your PC where you have write access. Ensure that all files are copied, the file names are shown in Table 3.

File Name	Function
AllStarADCSim.exe	Executable code for simulator
pthreads.dll	Multi-threading code dynamic link library.

Table 3 Files for installation

Connection

To connect to Allstar, you will require two USB serial ports, and a back to back modem. These can be purchased at any computer store.

Connect one USB serial port to your PC, and the other to the Allstar system. On the pi it should be listed as 'ttyUSB0'. Modify your rpt.conf file on Allstar to point to this device and ensure that it is properly configured as described in the PUTSI manual.

On the PC, launch the device manager by right-clicking on the windows logo on the taskbar. Determine which COM port is being used.

Before proceeding, ensure that Allstar is not running. Log in as a super-user, and key in the following:

```
service asterisk stop
```

Startup

When first loaded, the status screen will be displayed as shown in Figure 1. The screen is divided into two zones, the upper one is the general status, and the lower one the current pin status. Up to 24 pins can be supported, but Allstar will only use 18 of them.

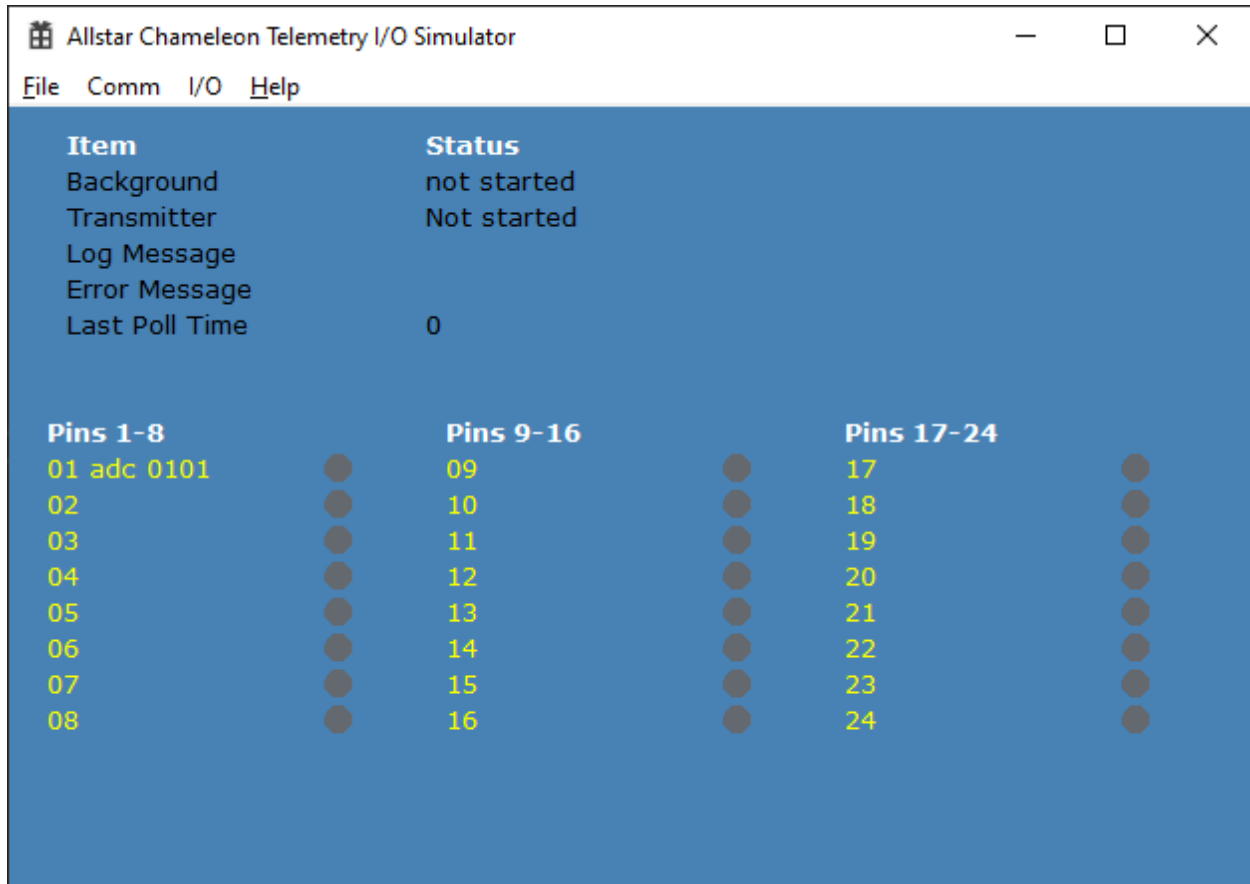


Figure 1 Startup Screen

The software has two main functions, communicating with Allstar in the background, and displaying status and entering data in the foreground. The first step is to start the communication background by selecting the correct comm port. Select the Comm item from the main menu, and the dialog shown in Figure 2 will appear.

Select the appropriate Com port and the background will be started, the status screen will be updated as shown in

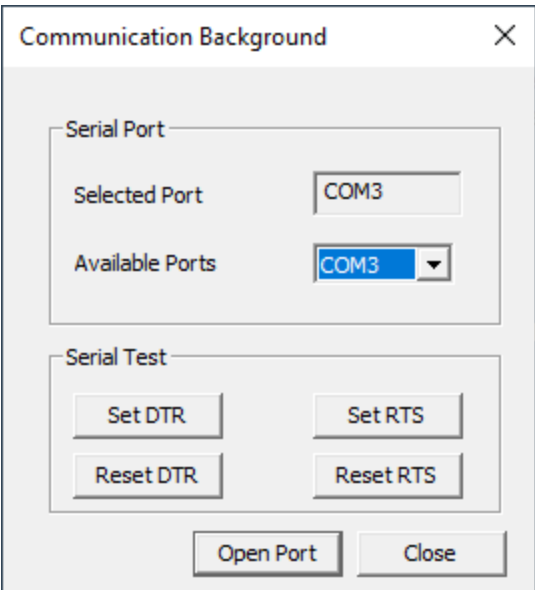


Figure 2 Comm port setup dialog

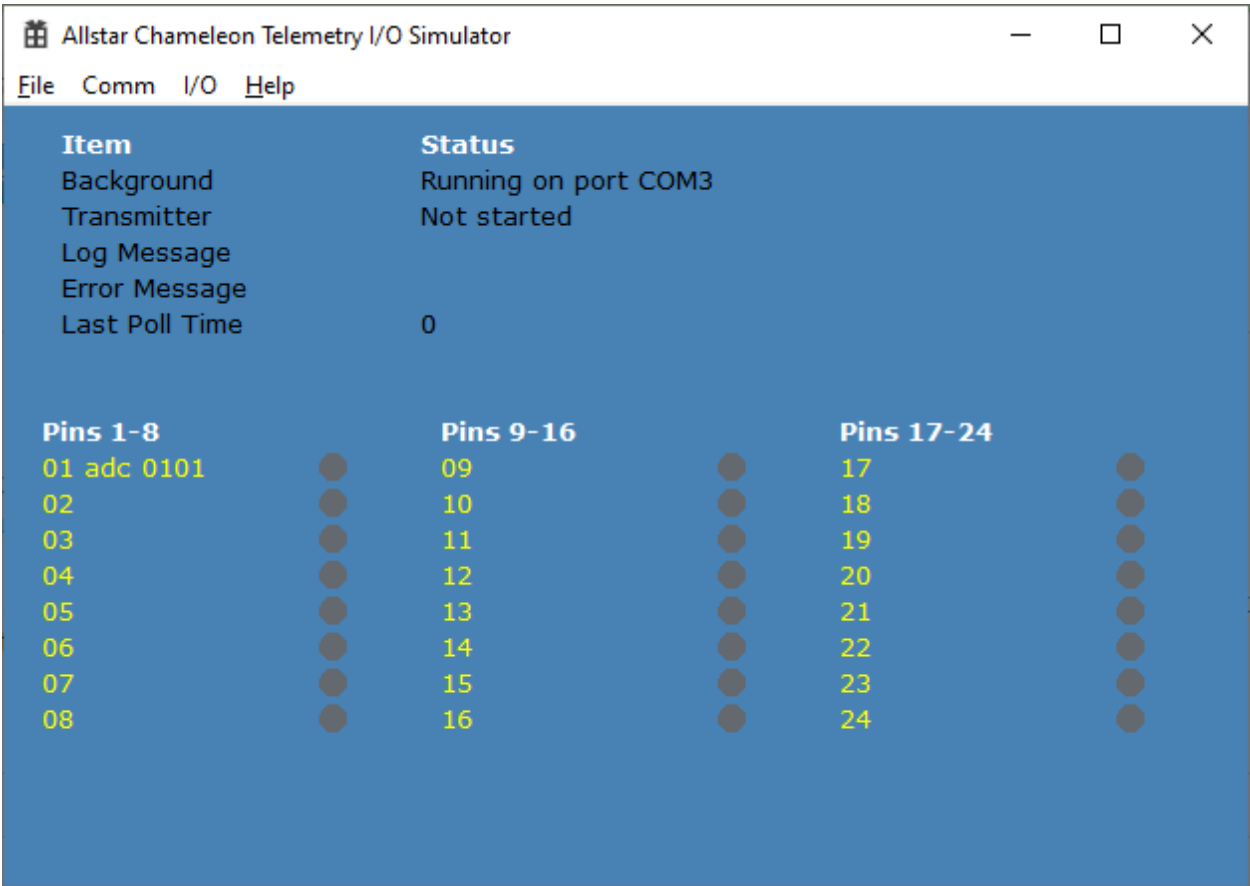


Figure 3 Background comm port activated

Once the background has been started, then Allstar can be restarted. The status screen will reflect the Allstar configuration as illustrated in Figure 4.

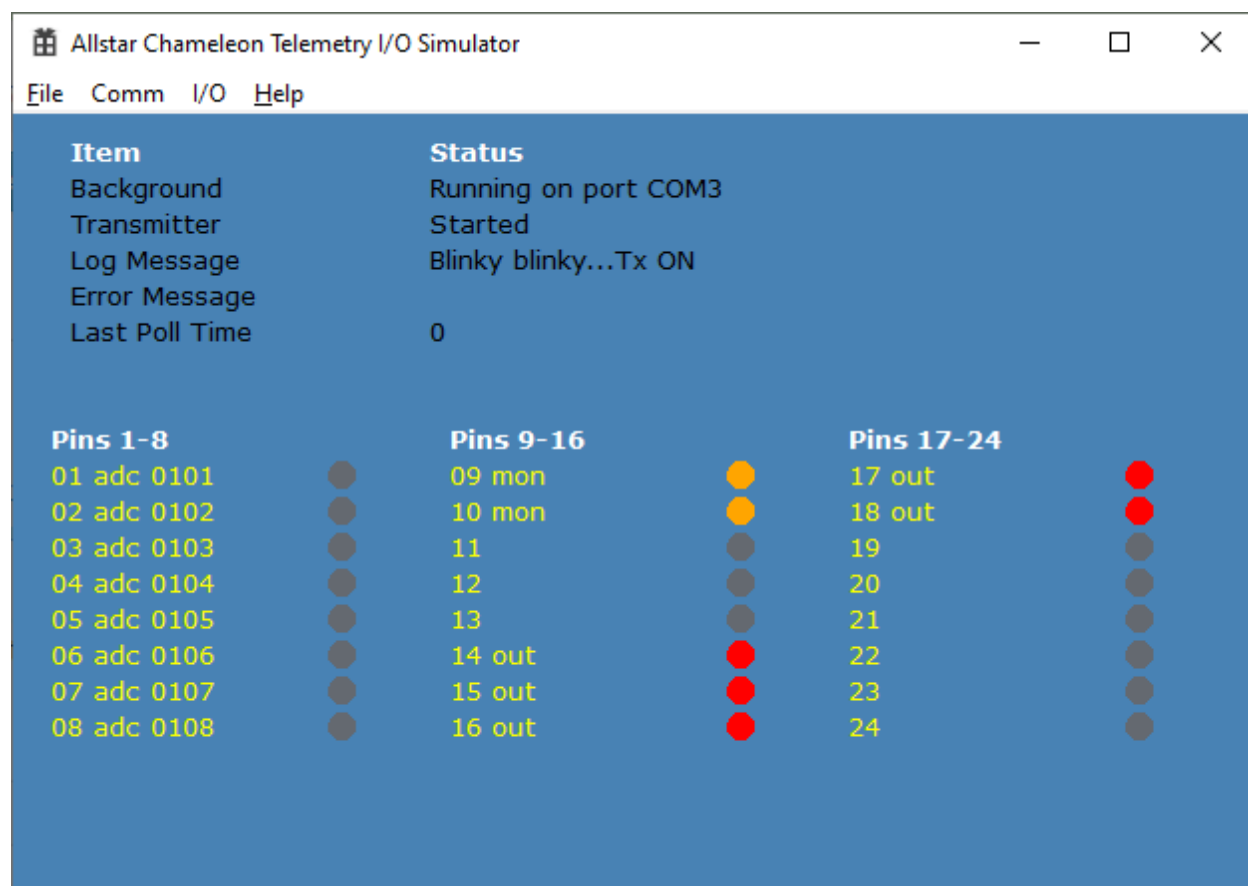


Figure 4 Configured Simulator

The first row, pins 1-8 are configured as ADC inputs, the number associated with it is the current value in hexadecimal. The second row contains the five digital inputs, the first two are in the monitor (alarm) mode, and the remainder are not yet defined. Pins 14 through 18 are outputs.

The colour scheme for the I/O status is shown in Table 4.

Color	Meaning
Orange	In default pullup state
Green	High; binary 1
Red	Low; binary 0

Table 4 Status indicator coloring

Setting an A/D Value

An A/D value can be set from the main menu 'I/O' item, followed by 'Set ADC Value'. Following that the dialog box shown in Figure 5. Select the channel from the Pin drop-down box, then enter the value (in decimal) from the range of 0 to 255, and then click the 'Send Value' button.

This process can be repeated for several pins before closing the dialog. When done, click the 'Close' button.

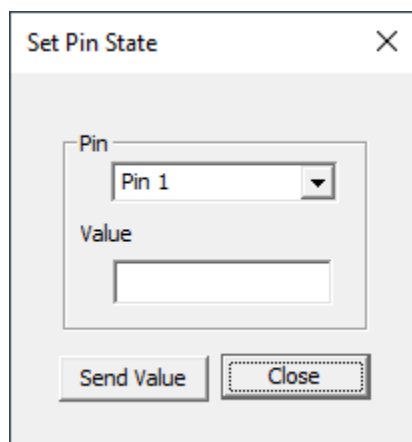


Figure 5 ADC value dialog box

Setting a Pin Value

An input pin can be set from the I/O main menu item, followed by 'Set Input'. The dialog shown in Figure 6 will appear. Select the pin number, then select 'Set High' or 'Set Low'. Select the pin from the drop-down box and click one of the two Set buttons, or close to exit.

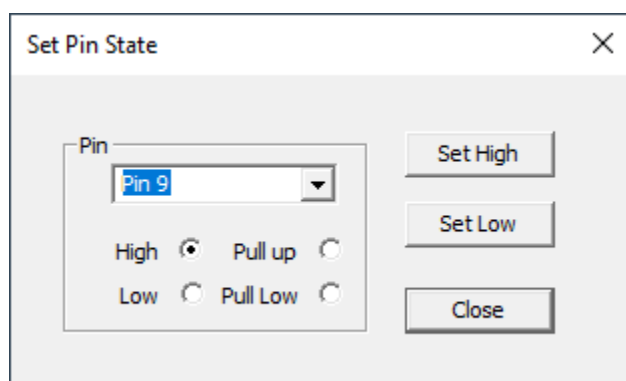


Figure 6 Set pin value dialog box