

SerialOTG

Tested with the following serial adapters:

PL2303, PL2303HX, (PL2303HXN not implemented yet)

FTDI FT232

CP210x

CH341, CH341 (“fake”)

CdcAcm: Original Arduino Uno, Adafruit Feather_M0 and CLUE, Micro:bit, Teensy, OpenCR

Set up methods

Initialize()

IsInitialized()

Open()

Open a serial connection for the adapter. Return true if opened.

Sets default values: baud=9600, parity=none, Rts=0, Dtr=0, (databits=8, Stopbits=1)

returns True if success.

Close()

Properties

IsOpen()

Return true if opened

BaudRate(int baudRate) Return true or false.

BaudRate(). Return baudrate.

Baudrate (300, 600, 1200, 2400, 4800, 9600, 19200, 38400, 57600, 115200)

Parity(int parity). Return true or false.

Parity(). Return parity.

Parity 0=NONE, 1=ODD, 2=EVEN, (3=MARK 4=SPACE)

Dtr(int dtr). Return true or false.

Dtr(). Return Dtr.

Dtr 0, 1

Rts(int rts). Return true or false.

Rts(). Return Rts.

Rts 0, 1

Data handling methods

Available()

Returns current nr of bytes in driver read buffer. 0 if empty.

Flush()

Empty the internal read buffers.

DriverName()

Return driver name. Identifies the USB-Serial adapter. Current results are:

-.UartCdcAcm -.UartCp210x -.UartFtdi -.UartPL2303 -.UartWinCH34x

Communication methods

The extension gives you different possibilities to communicate over a serial line. All read methods returns the characters received up to the moment it is called, except for ReadLn() that collects characters at each call until an eol character is found.

Using UTF-8 string

Read()

Returns UTF-8 string, empty string if nothing to read.

Write(String data)

Write UTF-8 string, return true or false.

Using Hex coded Ascii

ReadHex()

Read bytes from serial line. Return a hex-coded string with each byte represented by 2 characters (0..9 A..F). If no data, return empty string.

WriteHex(string)

Write a hex-coded string as bytes to serial line.

Uses 2 hex digits for each byte. Uses digit 0..9 and A..F so no problem with UTF-8 coding

Using Ascii message

ReadLn()

Read serial line and collect characters up to new_line. If new_line found, return string, else return empty string.

WriteLn(String data)

Write string, append new_line. Return true or false.

Using single byte

ReadByte()

Read a byte as a number 0..255 from serial line, if empty return -1

WriteByte(num)

Write a number 0..255 as a byte to serial line

Using multiple bytes in lists

ReadBytes()

Read unsigned bytes 0..255 from serial line to a list.

WriteBytes(List)

Write unsigned bytes 0..255 in a list, to serial line.

Experimental, may be removed:

Upload(board,filename)

Upload hex file to Arduino.

Boards: 1=UNO, 2=MEGA2560, 3=Nano328, 4=Mini328,

5=Pro/Pro mini 5V 328, 6=Pro/Pro Mini 3.3V 328

Some notes on SerialOTG

Initialize must be called first, before OpenSerial()

First call to Open() detects the adapter and you must allow USB access. Second call opens the serial connection.

Some adapters requires RTS=1 (and/or DTR=1) to communicate. This is true for Arduino Pro Micro, 32U4 chip implementing CdcAcm.

Dtr is used to reset Arduino.

The library functions is executed in the same thread as the calling program. This means that the AI2 UI can be blocked during large transfers or if you uses a wait loop. Use a timer instead of an wait loop.

Internal read and write buffer size is 1024 Bytes. Internal read message buffer for ReadLn() is 256 Bytes.

Read and Write communication methods are independent. You can mix them as you want.

Remember that serial line communication is just a stream of bytes. There is no packet handling. Each byte takes some time to transfer on the line. So if you send a request, then you have to wait for a while, before you get an answer.

You have to add some kind of message handling yourself by timing, message length, content etc.

WriteLn(), ReadLn() implements a kind of message handling. It uses new line character to end an UTF-8 message. Use ASCII char set (7-bit) to avoid problems if you communicate with Arduino.

Close your serial connection before you make any changes to your app or refresh the screen.

If you need to reset the connection from the PC, remove the current instance of the Ai2 Companion in the phone. Do not just restart with the companion icon.