Athena FAQ's

Question's and Answers for Athena Class Microcontrollers

Why can't I use Port 9 on the Perseus as an IO port?

IO port 9 can not be used as an output port on Perseus chips version 10 and below. It may be used as an input port only. On versions 11 and above it may be used as both input and output. You can check the version by issuing the print VERSION command. All chips shipped after November 7th are version 11 or greater.

How many times can the Athena be programmed?

The Athena can be programmed over 1,000,000 times.

What kind of cable do I need to connect to the Athena carrier boards?

You will need a 9 pin male to female straight through cable. This will connect from the serial port on your PC to the Athena carrier board or EZRS232 driver.

How do I shut down the Athena for maximum power save?

Try this

'maximum power save mode

```
RCSTA=0
configio 0,1,2,3,4,5,6,8,9,10,11,12,13,14

sleep
```

What are the specs on the Athena and AthenaHS?

Athena
Power Supply Requirements: 3.5v - 5.5v
Normal Operation No Load: 800ua
Sleep Mode: Less then 1ua
Max Load on IO Port: 25ma
Max Load All Ports: 200ma
Operating Temperature: -40 to +85 centigrade
Clock Speed: 4Mhz
Program Memory: 256 bytes
Total Ram: 64 Bytes
Timers: 1
Command Speed: 15,000 per second
PC Connection Speed: 9600 Baud
IO Ports: Up to 15 input or output
Software Baud Range: 1200 - 9600
UART Baud Range: 9600 - 19200
Program Writes: 1,000,000 Times

AthenaHS
Power Supply Requirements: 3.5v - 5.5v
Normal Operation No Load: 3.7ma
Sleep Mode: Less then 5ua
Max Load on IO Port: 25ma
Max Load All Ports: 200ma
Operating Temperature: -40 to +85 centigrade
Clock Speed: 20Mhz
Program Memory: 256 bytes
Total Ram: 64 Bytes
Timers: 1
Command Speed: 75,000 per second
PC Connection Speed: 9600 Baud
IO Ports: Up to 13 input or output
Software Baud Range: 1200 - 57600
UART Baud Range: 9600 - 115200
Program Writes: 1,000,000 Times

Language Specifications
Variable type: Unsigned 8-bit Integer

Variable Qty: 64
UART Buffer: 80 Bytes
Language Type: Basic
Program Memory Type: KRCompression Flash Technology

A note about KRCompression II Flash Technology. This technology compresses code so that programs taking as much as 2K on other microcontrollers will use as little as 200 bytes on the Athena.

What do I need to program the Athena Chip?

The chips themselves require the following:

- RS232 Driver. Available as kit on website. These are very inexpensive but you can build your own using a RS232 Driver Chip.
- 9 Pin cable, to connect the driver to the PC. This is a straight through cable.
- Compiler Software. Can be downloaded free from website.
- Power Source. The raw chip requires 3.5-5.5v to operate.
- The chip also requires a .1uf and 10uf capacitor and a 10k resistor.

We also have carrier boards available that can eliminate the need to most of the items listed above. For instance the Athena EDU is designed to plug into a breadboard and has a RS232 driver, Connector, 5v Regulator and all required components. It also has a reset button and power LED. The deluxe version comes with Athena chip, misc componets and a breadboard and wire kit.

How do I shutdown the Athena UART to use ports 11 and 12

Issue the command RCSTA = 0. This will shut down the UART and free up Ports 11 and 12.

```
'Example shows how to shutdown UART


  output 11
  output 12

  RCSTA=0 'Turn Shutdown UART here

loop:
  toggle 11
  toggle 12
  pause 200
  goto loop
```

Can the timeout be changed when using the irin command?

The irin command uses the pulsin command internally. Use the PULSEINTIMEOUT register to set the timeout value. The range is 0-255, the higher the number the shorter the timeout. A value of 250 is good for most remotes.

Can port 7 be used to wake up a sleeping Athena? Once woke up I want to read an IR pulse on

the port?

Probably but I will lay odds the IR modules eat more power than the Athena.

You will have to disable the IRQ once the Athena wakes up then enable it again just before you put her to bed.

This should work since the remotes transmit the codes over and over so if you miss the first pass you can catch it on the next.

Can the Athena be setup as a slave on an I2C network?

No it can not. You need to use the Dios for that.

Is it possible to interface the Athena with another chip that uses an SPI interface?

Sure. Use the shiftin and shiftout commands.

Here is an API using SPI to comunicate with an ADC0831.
ADC0831 Interface

Keep in mind the Athena Is always the master.

Can the Athena talk to a parallel LCD?

Yes

The Athena can control LCD's that use the HD44780 controller. It will take 6 ports on the Athena. See the lcdint,lcdwrite commands. The Manual will tell you what ports to connect to. However some LCDs pintout may be different so consult LCD documentation.

The Athena can even be used to make a Serial LCD.

How do I create an random output on 8 LED's when triggered by another pin?

First off make the output ports 0-7 and the trigger port 8. This way you can use the portset command.

Something like this:

```
  dim rnum
  configio 0,1,2,3,4,5,6,7
loop:
  onportgoto 8,loop,changeoutput

changeoutput:
  random 255,rnum
  portset rnum
  goto loop
```

What language do I use to program the Athena?

The Athena is programmed in a very simple version of Basic.

You can download the software and manual for free from the Kronos Robotics web site.

Can I access the servo outputs from an RC Radio?

That would be an easy task for the Athena. You read a channel from and RC reciever using the pulsein command. You could pull the power for the Athena off the reciever as well.

With the command 'i2cout2', what are the high and low byte registers

The Athena is an 8bit device. It can only address 256 bytes of an eeprom at a time. Each address on devices that have more than 256 bytes are broken down into banks.

The low address will allways be 0-255 The high address will be the bank number. For instance Bank 0 would be byte 0-255. Bank 1 would be byte 256-511 and so on.

Once you have hooked up the EEprom you should run the I2cout2 example as follows:

```
'i2cout2/i2cin2 demo
'Writes to a 24LC128 EEprom

const bank0 0
const bank1 1
const bank2 2

dim x,z,y
clearall

for z = 0 to 255
 x = 255 - z
 i2cout2 10,9,160,bank0,z,x
 pause 3
 i2cout2 10,9,160,bank1,z,z
 pause 3
next

for z = 0 to 255
 i2cin2 10,9,160,bank0,z,x
 i2cin2 10,9,160,bank1,z,y
 print z," ",x," ",y
 next
```

If you are not getting the following results you have some the wrong with you circuit.

```
0 255 0
```

1 254 1
2 253 2
3 252 3
4 251 4
5 250 5
.
. It continues
.
253 2 253
254 1 254
255 0 255

If you don't get this look at the following:

1. wiring
2. That you have correct power.
3 That EEprom is powered correctly and not burnt out.
4 Make sure you have .1 and 10uf cap across power leads.
5 Make sure you have 10K resistor holding Atn Lead high.

When I access IO port 10 for output it does not seem to be working. What am I missing?

IO port 10 on the Athena is open drain. Its at a high impendance state when the IO state is high.

In order to drive something you need to pull it high.

A 1K works nice. If driving an LED you may want to use a 100-390 ohm resistor.

How do I access the IO ports 11 and 12?

To access these ports you must shut down the UART. (debug ports) To shutdown the UART set the register RCSTA to 0. RCSTA=0

Once the UART is shutdown you can use the ports as you would any other port. You cannot use debug commands however. Also you may need to isolate these ports when you program the chip.

Here is a short program to blink an LED on the RX lead (port11). You do not need to isolate for programming in this case.

```
output 11

RCSTA=0 'Turn off UART

loop:
 toggle 11
 pause 200
 goto loop
```

Will there be any indication when overflow happens i.e. 200+100 or 4x100?

The Athena has 8-bit unsigned integer math only.

However the Athena has a register called OVERFLOW. This register will be populated with 1 if a overflow in the case of an add or a borrow in the case of a subtract.

Does not work with multiply or divide.

How do I write to Athena RAM with out using variables?

The easyest way is to use the arrayget and arrayset command.

if you want to write to the unused variable space decclare a variable called something like mem. Make sure its the last variable that you declare. Then Use the arrayset to write to the ram starting at the location pointed to by mem.

```
dim mem
arrayset mem,0,25
arrayset mem,1,30
```

The above code will write 25 to the first location and 30 to the next.

Use the arrayget the same way.

What are the Sony IR Codes?

Here are a couple codes:

CH+ 16
CH- 17
VOL+ 18
VOL- 19
TV-VCR 42
ENTER 101
RECORD 29
STOP 24
PAUSE 25
PLAY 26
FFWD 28
RWD 27
MUTE 20
PREV CH 59
KEYPAD 1-9 = Code 0-8
KEYPAD 0 = 9
MENU 96
ON/OFF 21

Some Device Codes

TV=1
VCR1=2
VCR2=7
VCR3=11
DVD=26
SAT/CABLE=23
AMP=16
CD=17
MD/DAT=15
DECK A/B=16
Tuner=13