

# Weeder Technologies Data Acquisition and Control plugin for XTension

version 1.0

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The Weeder plugin supports the connection of any combination of the **Weeder Analog Input (WTADC-M)** and **Digital IO modules (WTDIO-M)** to XTension. The Weeder plugin is included in the 6.0 version of XTension in demo mode and can be unlocked by purchasing a serial number for \$39.95 usd from:

After receiving your serial number you can unlock the demo by selecting the “Enter Plugin Serial Numbers” from the File menu.

You can read about and purchase the weeder cards from:

<http://www.weedtech.com/>

They are RS232 serial based and so will also require a USB/Serial adaptor, but you can daisy chain as many as 6 on a single serial adaptor. Being serial you can also extend the cabling to them by a significantly longer distance than a USB cable, even with a USB extender. So don't look at this as a limitation but as a feature. I can recommend the use of any FTDI chipset usb/serial adaptor with OSX and these can often be had for under \$20 even not on sale.

Weeder modules require that you set a letter address for each board via dip switches, this overlaps nicely with the X10 address scheme used in XTension. Each chain of Weeder boards should be lettered A-F and their inputs/outputs will then correspond to the unit codes of those letters.

Weeder modules are excellent quality and inexpensive devices for data capture and control and while they ship without a case they do not require any kit building skills to use. I have been extremely happy with the quality and design of the modules that I own and can easily recommend them to XTension users.

## **Setting up the interface:**

To setup a chain of weeder modules open XTension's preferences window, and in the communications tab click the “New Device” button. Select “weeder” from the Device popup menu. Also select the serial port to which this weeder or weeders are connection. The device configuration pane is then shown.

## **Polling Interval:**

Weeder cards require that they be polled by the program for changes in state. For most use the default polling interval will be fine, but given a very slow or a very fast machine, or a need for faster response to a digital input change you can adjust this. Faster polling results in more data, but uses more CPU time. On any modern machine the extra load really shouldn't cause a problem, but no need to waste it if you don't need it.

## **Setting up a Digital I/O card:**

The weeder digital IO card (WTDIO-M) has 14 input/output lines. Upon startup all are treated as inputs. As soon as you send a on or off for a unit it will be converted to an output so you can use any combination of inputs and outputs with Xtension. During the interface startup though you might want to script the re-sending of the current database values to any output lines that you're using to guarantee that they are in the state you expect after a restart. As of version 1.0 only the in/out features of the card are supported though it has many other capabilities, if there is something else on the list that you'd like to see

implemented please let me know. You can learn more at the [weedtech.com](http://weedtech.com) site or by downloading the data sheet directly for this module here: [wtdio-m.pdf](#)

The weeder digital I/O card might be the perfect device to replace an old hard wired security system or to just provide low voltage LED indicator control or any number of great things. Send me an email about what you've done with it and I'll write future articles on the [MacHomeAutomation.com](http://MacHomeAutomation.com) site.

The lines are numbered 1-14, so if this card has an address of "A" then to control it, or read from it you would create a unit with it's interface set to the interface you created above and a unit code corresponding to the line number. A1 would be the first line, A14 the last.

### **Setting up the Analog Input card:**

The weeder analog input module (WTADC-M) is an excellent solution for reading analog voltage levels, or the outputs from light sensors or analog temperature sensors. The supported module has 8 inputs that can be configured either as a single ended measurement between the input and ground or can be setup as 4 differential inputs with a much higher resistance to noise and longer cable lengths. XTension supports either type of reading but the entire card must be read either as double or single ended. Here I use only the single ended mode. When creating units, the house code is the letter code you assigned to the module via it's dip switches and the unit number is the input line number.

When you select a device type of "analog input" from the popup on the weeder setup dialog the "configure device" button will be enabled to let you work with the Weeder Analog Input Configuration window. Here you can set the read to "single ended" or "double ended"

You can download the Analog Input card data sheet here [wtadc-m.pdf](#)

### **Hysteresis Buffer Size:**

The plugin has the ability to store some number of readings from the card, throw away readings far out of range and perform some hysteresis on the remaining ones in the buffer. If you are having problems with noise on long cable runs then increasing this number will help to eek out the real value in the noise. It can also average the value over a rapidly changing value. Like the gas gauge of a car that changes very slowly even when your gas is sloshing around.

### **Significant Change:**

Each input has a separate Significant Change value. The analog card is capable of reading voltages from 0 to 4095 mV. entering a value of 1 here would mean that any change is reported to the unit. Putting 500 into this field the unit wont change value until the voltage has changed by half a volt from the pervious reported value. Generally a small value will help remove noise and unwanted fluctuations. Putting 4001 in this field would disable the input line as it cannot change that much.

### **Scale:**

The value is multiplied by the Scale factor. For example a reading of half a volt would be reported by the weeder as 500. If you assign it a .1 scale factor the unit value would be set to 50. This is particularly useful for things like analog temperature sensors where the output might be 456 but the temperature is actually 45.6 so a scale of .1 would make the unit display the temperature instead of the millivolts.

### **Bias:**

The bias is added or subtracted from the final scaled value. If you have a remote temperature sensor that looses some voltage on the long cable you can figure out a correction factor and enter it here.

Future articles on MacHomeAutomation.com will address building analog temperature and light and other sensors that can be used with this card.

### **Using the analog input module:**

Using an analog input card this sensitive can be frustrating. It can be very sensitive to bad power supplies or other induced noise. It has a wide power supply range from 8 to 30 VDC but dont be tempted to just use any old wall wort you find in the bottom drawer. Use a good quality DC supply or the USB/Serial adaptor to power the board. Any unused inputs will swing wildly causing a huge amount of updating of the unit in XTension. Tie any unused inputs to ground and/or set their significant change to 4001.

Though each USB/serial adaptor instance of a weeder chain in XTension can only support 6 cards, you can create as many instances of the plugin as you like but each one will require it's own serial adaptor.