Numato relay board for controlling ATVs

Foreward

The following short document outlines small python3 program that can be used to control power to ATVs. I don't like python and it doesn't like me, so don't be too critical of coding style. Can I get some brackets and semi-colons please?

Numato board

This software is written for the 32 relay ethernet board only. I am unsure if it would work on some of their other relay board options. The communications method used to talk to the board is through telnet.

Numato relay naming convention

Numato refers to their relays in communications as 0-9 and A-V, which yields 32 relays. If you want the first relay, it is zero. If you want the 32nd relay, it is V.

Relay setup

Numato has hookups for normally open and normally close. The code is setup to compensate for it assuming you setup the variable "RelaySetup" to reflect the state of your setup. This way you can just turn on a relay without regard to remembering if you hooked the power output to the NO or NC output from the relay. For instance, if relay 0 and 1 are NC and NO respectively and you issue a command to turn them both on, it will be handled properly.

Command line group parameters

The following are a command line group, i.e. have to be issued exclusively:

- "-r", "--reset": This argument resets the whole relay module
  - python3 numato.py --reset
- "-ka", "--kill_all": This argument will turn off power to all relays
  - python3 numato.py --kill_all
- "-ao", "--all_on": This argument will turn on power to all relays
  - python3 numato.py --all_on
- "-pca", "--power_cycle_all": This argument will power cycle all relays
  - python3 numato.py --power_cycle_all
  - python3 numato.py --power_cycle_all --ignore_off
- "-pc", "--power_cycle": This argument will power cycle relays specified by the -d option
  - python3 numato.py --power_cycle -d 01AV
  - python3 numato.py --power_cycle -d 0123456789 --ignore_off
- "-s", "--status": This argument returns the status of relays and their powered state specified by the -d option
  - python3 numato.py --status -d 01AV
- "-po", "--power_options": This argument allows you specify power options in a string that will be applied to relays specified by the -d option. Valid values are 0 for off, 1 for on and 3 for power cycle

    - python3 numato.py --power_options 0130 -d 01AV

Command line options

The following are command line options that can be used on their own or with the command line parameters specified prior:

- "-d", "--devices": Devices to be used for -pc, -s and -po parameter
    - Valid values for relays are 0-9 and A-V
    - A few shortcuts are provided for doing banks of relays at once. With my shit internet I can't just bring them all on at the same time and expect many to login successfully
        - Z is a shortcut for all devices
            - python3 numato.py --status -d Z
        - W is a shortcut for half of devices
            - W1: 0123456789ABCDEF
            - W2: GHIJKLMNOPQRSTUV
            - python3 numato.py --status -d W1
        - Y is a shortcut for banks of 4
            - Y1: 01234567
            - Y2: 89ABCDEF
            - Y3: GHIJKLMN
            - Y4: OPQRSTUV
            - python3 numato.py --status -d Y1
        - X is a shortcut for banks of 8
            - X1: 0123
            - X2: 4567
            - X3: 89AB
            - X4: CDEF
            - X5: GHIJ
            - X6: KLMN
            - X7: OPQR
            - X8: STUV
            - python3 numato.py --status -d X2
- "-dy", "--delay": Delay to add between operations, default 0.1 seconds. Can be used to pause between powering on devies.
    - python3 numato.py --status -d Z --delay 30
- "-w", "--wait": Delay to wait after commands due to telnet communications, default is 0.2 seconds. Minimum value allowed is 0.1 seconds.
- "-ip", "--ip_address": IP address of the relay board, defaults to my value of 192.168.8.5, but feel free to change the value in your copy of the code. Since I now own 2 of the boards, will prove useful
- "-off", "--off_first": Turn off devices prior to other operations. Essentially a power cycle.
- '-si', '--silent': Suppress all feedback except exit codes
- '-ti', '--timeout': Timeout for initial connection to board via telnet, default of 5 seconds
- '-port', '--port': Port to be used for telnet, default of 23

- '-user', '--username': Username to authenticate with the board, defaults to admin
- '-pwd', '--password': Password to authenticate with the board, defaults to admin
- '-io', '--ignore_off': Tell the code to ignore devices that are currently off. This could be used if you don’t run all your devices 24/7, but do want to power cycle just the ones currently running.
    - python3 numato.py --power_cycle -d Z --ignore_off