AutoGro manual 5-15-23

General Raspberry Pi setup instructions

To turn on ssh remote access:

    sudo raspi-config

To bring Pi software current:

    sudo apt update
    sudo apt full-upgrade
    sudo apt clean

Configure Pi static ip address:

    Edit /etc/dhcp.conf
    Look at examples inside of the file
    Wifi adapter is wlan0
    Ethernet adapter is eth0
        interface wlan0
        static ip_address = x.x.x.x
        Etc with other values - gateway etc

AutoGro software install and configuration

AutoGro runs as the pi user (default user for Raspberry Pi installs)

Python code should be copied to /home/pi/bin/AutoGro/

AutoGro scripts should be copied to /home/pi/bin/AutoGro/scripts/

All scripts should have the execute bit set
    chmod 755 * (inside of scripts directory)

From scripts directory (this sets AutoGro to start automatically at Pi boot time)
    cp rc.local /etc/

From scripts directory (this sets a scheduled task to wrap all the logs at midnight)
    crontab crontab.pi
    crontab -l (this should show a midnight task called wrap)

AutoGro requires the Python library to support the AtoD chip the MCP3008

sudo pip3 install adafruit-circuitpython-mcp3xxx

Description of scripts

clean - ran by user to cleanup / delete all logs
crontab.pi - this is the crontab entry to schedule cleanup of AutoGro logs
go - run by user to start AutoGro in foreground
cc.local - copied to /etc/ to start AutoGro automatically at Pi boot time
start - used by rc.local to start AutoGro automatically
start2 - used by start to restart AutoGro if the main Python task fails
wrap - used to wrap all running at logs by crontab (at midnight by default)

Description of Python source files:

AutoGro.py - main AutoGro file, this is the run that is started
AGconfig.py - common functions and configuration parameters
AGsensors.py - main sensor routines. This is started as a thread by AutoGro.py

AutoGro runtime configuration

Basic AutoGro configuration can be done by changing constants at the top of AGconfig.py.
Each constant is documed within the source code. Among other configurations is the amount of
time between water cycles, how long each cycle runs, etc. AutoGro must be restarted to pick up
changes to AGconfig.py

Starting / Stopping AutoGro

***AutoGro has no protection from multiple copies running at one time.   Unpredictable
results will result if more than one copy is running.***
ps -ef | grep AutoGro - should only list one running AutoGro

With the above default install, AutoGro is started automatically by rc.local and various scripts.

Since AutoGro is restarted automatically when it is killed or crashes, special actions must be
taken to turn AutoGro off for diagnostics or research.

To stop AutoGro, from scripts directory:

mv start .start
Then reboot the Pi
        sudo reboot

When the Pi reboots, AutoGro will not be running.
A user can start AutoGro by hand:

From the scripts folder run ./go or python3 AutoGro.py from AutoGro directory

To start AutoGro automatically again, from scripts directory:
      mv .start start (the reverse of stopping AutoGro)
      Then reboot the Pi
            sudo reboot

<u>Description of AutoGro running logs (these are wrapped at midnight with default install)</u>

      AGerror.log - All AutoGro runtime errors
      AGpump.log - Detailed pump status
      AGsensors.log - Detailed sensor status
      (TimeStamp, SoilSensor Raw Value, SoilSensor Percent….Water Quality pH)
      AGsys.log - Main AutoGro log with brief logging
      AutoGroStart.log - By default a copy of AGsys.log vai stdout redirect)
      sensor_json.log - JSON values being passed to sensor web API
      AGpump.csv - CSV file with pump details
      AGsensors.csv - CSV file with sensor details
      last_start_time - the timestamp on this file indicates when AutoGro was auto started

<u>Viewing logs</u>

AutoGro logs are all plain text files. They can be viewed with any ASCII editor - nano

Logs can be monitor in real-time, from /home/pi/bin/Autogro/
      tail -f log name