

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 a 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 logs by crontab (at midnight by default)

Description of Python source files:

AutoGro.py - main AutoGro file, this is the python file that starts AutoGro
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 documented 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
```

Description of AutoGro running logs (these are wrapped at midnight with default install)

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 via 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

Viewing logs

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