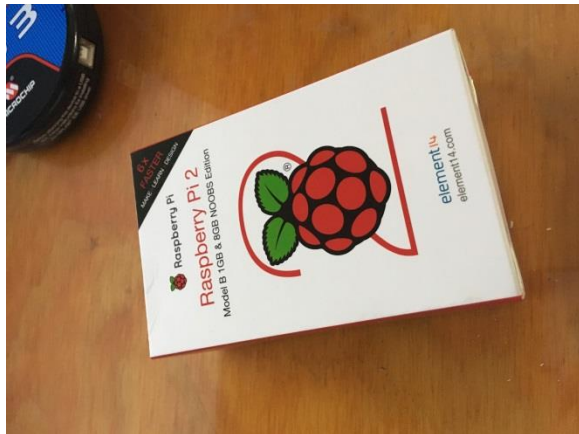**STEP 1:** Get a Raspberry PI 2 or 3

STEP 2: Power on and connect to a network

STEP 3: Download from www.rikmed.com the Python files to your Raspberry PI in the ZIP file and extract.

OpenBAS

Go to Mircom OpenBAS web page.

Building Automation Systems **Mircom**

Download most recent software for OpenBAS NX controllers v2.70.1 @ 27/July/2017
Configurator revision history
New Arduino Query Protocol rev.C...
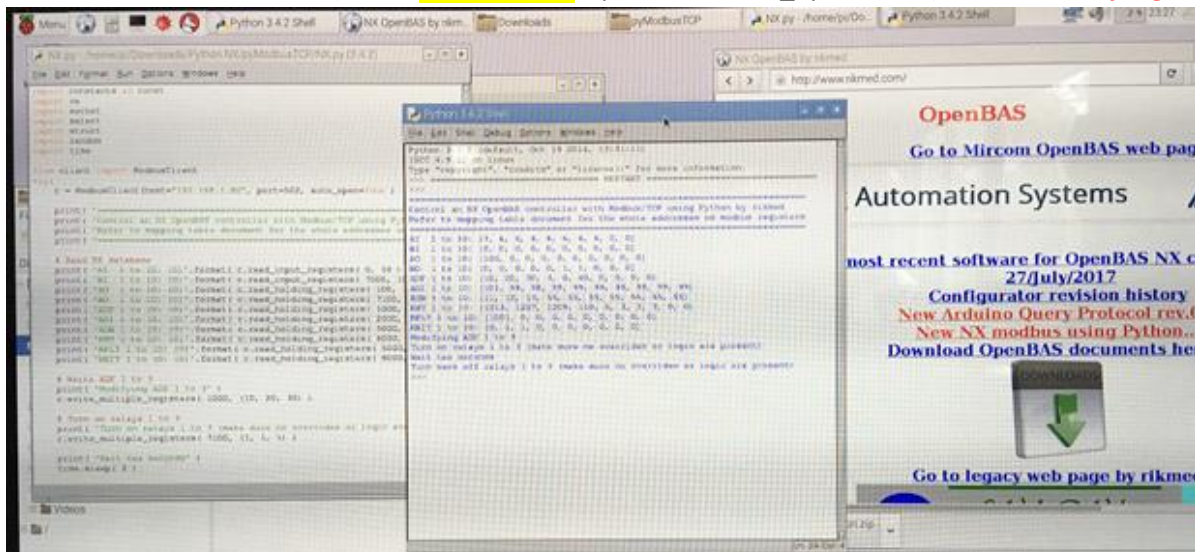New NX modbus using Python...
Download OpenBAS documents here...

DOWNLOADS

STEP 4: Open Python and load the **NX.py** file and modify the IP address to match your NX controller

LINE 11:   c = ModbusClient(host="192.168.1.80", port=502, auto_open=True) **and RUN the program**

The NX controller mapping table is shown below, for this application us the column for **modbus/TCP**

OpenBAS field bus mapping

Data Types (Standard variables in BLACK / Dual core variables in RED)	PLC type	Protocol mapping for Metasys N2-BUS (VND, Addresses: 1..254)	Protocol mapping for Modbus RTU (Addresses: 1..250)	Protocol mapping for Modbus TCP (Addresses: IP)	Protocol mapping for BacNET MS/TP & IP, B-SA (smart Actuator), Addresses: 5..127 (max master)
Analog inputs — EA-1..40		AI-1..40 / AI-41..255 = RES_FLT-41..255	Read (0x03) input registers 0001.. 0040 / Read (0x04) holding reg.(alter.) 40101.. 40140	Read (0x03) input registers 0001.. 0040 / Read (0x04) holding reg.(alter.) 40101..40140	Analog value object type 1..40
Binary inputs — EB-1..40 / EB-101..228 = RES_BIT2-1..128		BI-1..40	Read (0x02) discrete inputs 0001.. 0040 / Read (0x01) coils (alternate) 00101..00140	Read (0x03) input registers 7001.. 7040 / Read (0x04) holding reg.(alter.) 47001..47040	Binary value object type 1..40
Analog outputs — SA-1..10		AO-1..10 / AO-51.255 = RMT-51..255	Rd (0x04) / Wr (0x06) holding register 40001..40010	Rd (0x04) / Wr (0x06) holding register 41001..40110	Analog value object type 101..110
Binary outputs — SB-1..40 / SB-129..255 = RES_BIT2-129.255		BO-1..40	Rd (0x01) / Wr (0x05) coils 00001..00040	Read (0x03) input registers 7101.. 7140 / Rd/Wr(0x04/0x10) holding reg.(alter.) 47101..47140 1..60 Write Coils	Binary value object type 101..140
Lighting groups — GR_ILUM-1..20 (SB-41...60)		BO-41..60	Rd (0x01) / Wr (0x05) coils 00041..00060	Rd (0x01) / Wr (0x05) coils 00041..00060	Binary value object type 141..160
Floats 32 bits EEPROM — ADF-1..100		ADF-1..100 (CS-OBJECT)	Rd (0x04) / Wr (0x06) holding register 41001..41100 (INT-16)	Rd (0x04) / Wr (0x06) holding register 41001..41100 (INT-16)	Analog value object type 1001..1100
Words 16 bits EEPROM — ADI-1..100		ADI-1..100 (CS-OBJECT)	Rd (0x04) / Wr (0x06) holding register 42001..42100	Rd (0x04) / Wr (0x06) holding register 42001..42100	Analog value object type 2001..2100 (float)
Bytes 8 bits EEPROM — ADB-1..100		n.d	Rd (0x04) / Wr (0x06) holding register 43001..43100 (INT-16)	Rd (0x04) / Wr (0x06) holding register 43001..43100 (INT-16)	Analog value object type 3001..3100 (float)
System timers — TMR-1..16		ADI-101..116 (CS-OBJECT)	Read (0x04) holding register 44001..44016	Read (0x04) holding register 44001..44016	Analog value object type 4001..4016
RES_FLT result float register RAM 32 bits — RES FLT-1..40 / RES-FLT-41..255		ADF-101..140 (CS-OBJECT) / AI-41..255	Rd (0x04) / Wr (0x06) holding register 45001..45040 (int) 45041..45255 (int) r_only	Rd (0x04) / Wr (0x06) holding register 45001..45040 (int) 45041..45255 (int) r_only	Analog value object type 5001..5040 5041..5255 r_only
RES_BIT restult bit RAM 1 bit — RES_BIT-1..255		n.d	Rd (0x01) / Wr (0x05) coils 01001..01255 01256..01512	Read (0x03) input registers 8001.. 8255 / Rd/Wr(0x04/0x10) holding reg.(alter.) 48001..48255	Binary value object type 1001..1255 1256..1512
Remote points via field busses — RMT-1..50 / RMT-51..255		ADF-181..230 (CS-OBJECT) / AO-51..255	Rd (0x04) / Wr (0x06) holding register 46001..46050 (int) 46051..46255 (int) r_only	Rd (0x04) / Wr (0x06) holding register 46001..46050 (int) 46051..46255 (int) r_only	Analog value object type 6001..6050 6051..6255 r_only
Analog input calibration values — CALIB_AI-1..40		ADF-141..180 (CS-OBJECT)	n.d		n.d
Analog input type selector — TYPE_AI-1..40		n.d	n.d		n.d

Noted for controllers with dual core

Note 1: Result registers RES-FLT-41..255 can be mapped as remote points into COM2 and/or COM3 deppending on COM3's setup.
Alternate mapping for N2-OPEN and Opto-22 protocols, mapping of remote points RMT-51..255 is into analog outputs AO-51..255.

Note 2: Registers RES-BIT2-1..255 used to store PLC3 results can be mapped into PLC's 1 and 2 as:
RES_BIT1..128 maps into (Binary inputs) BI-101..228
RES_BIT129..255 maps into (Binary outputs) BO-129...255

Note 3: Result registers RES-FLT-41..255 can be mapped as remote points into COM2 and/or COM3 deppending on COM3's setup.
Alternate mapping for N2-OPEN and Opto-22 protocols, mapping of remote points RMT-51..255 is into analog outputs AO-51..255.
They can be modified using WRITE or OVERRIDE commands.