

GEN6 CUBE 작업지도서

Leaf Controller Test

(ACE-FLN-GEN-LT-001)

D I S P A T h	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	2 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan								
	09.03	09.03	09.03	Process		PCS Ver		Prepared by		Revision Ver	0

Revision

ED.	Content	Date	Note
0	Tạo mới	2021.09.03	

DISPATCH	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	3 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan	Process		PCS Ver		Prepared by		Revision Ver	0
	09.03	09.03	09.03								

Step 1 – Power Supply for Chiller, HVAC, Sensor DL10

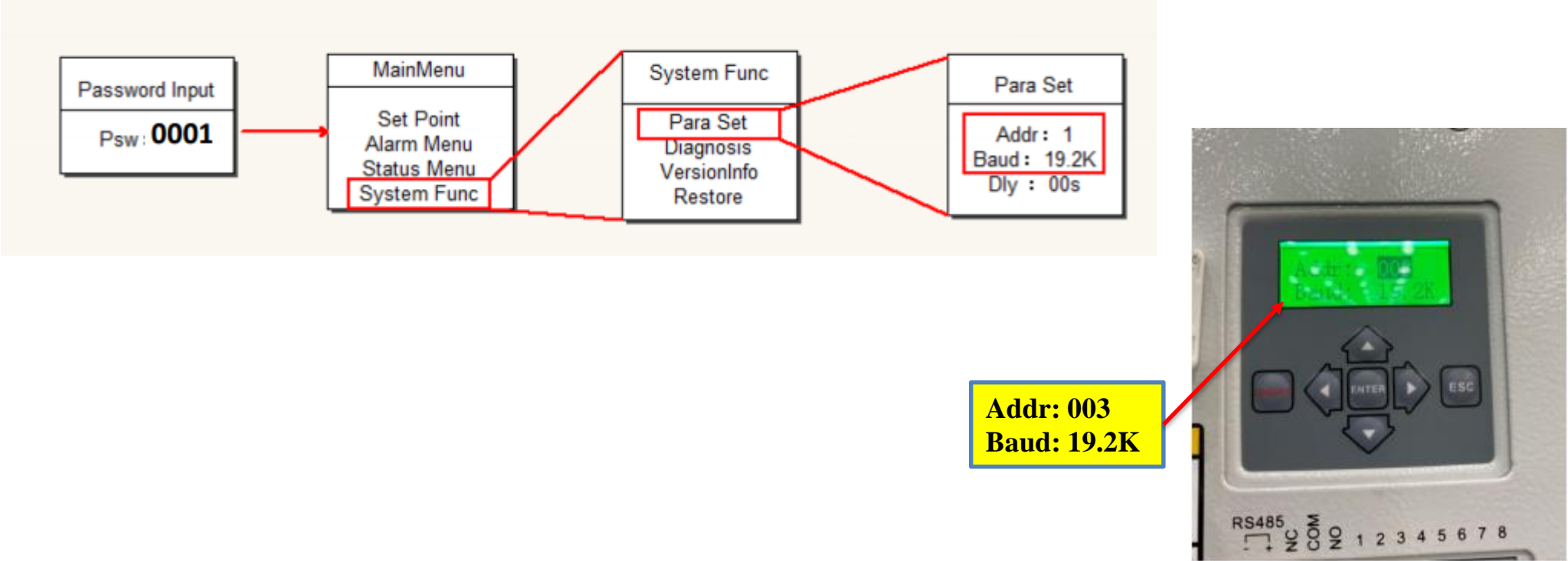
Step 2 – Set up Chiller Parameter:
Monitor Addr: 1
Monitor Baud Rate: 19200



Cài đặt theo thứ tự hướng dẫn

DISPATCH	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	4 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan	Process		PCS Ver		Prepared by		Revision Ver	0
	09.03	09.03	09.03								

Step 3 – Set up HAVC
 parameter Addr: 003
 Baud: 19.2K



Cài đặt theo thứ tự hướng dẫn

DISPATCH	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	5 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan	Process		PCS Ver		Prepared by		Revision Ver	0
	09.03	09.03	09.03								

Step 4 – Set up Sensor DL 10: connect USB RS485 to RS485 of Cube

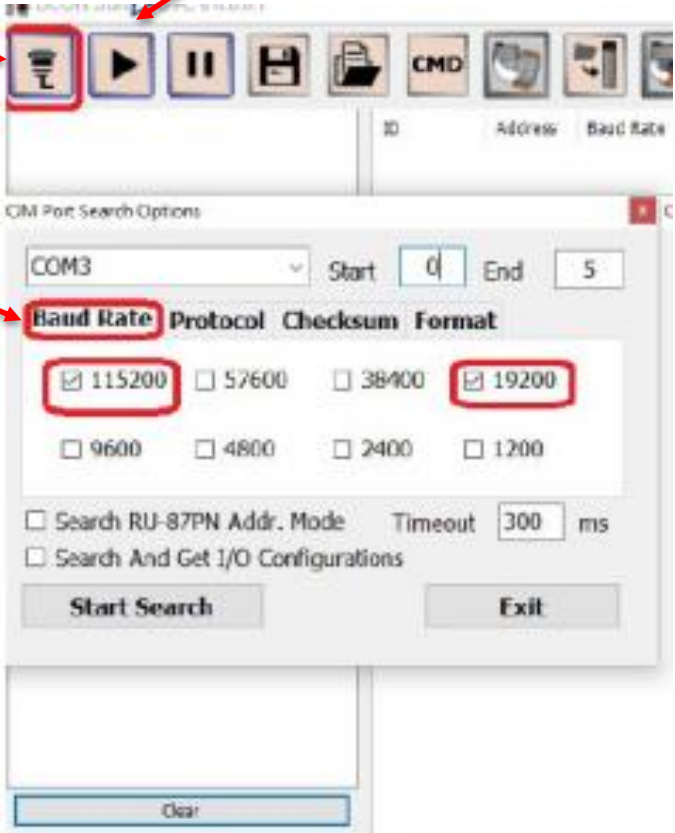
Step 5 – Open software DCON Utility



1.Config search

2. Set up para

3. Search



Cài đặt theo thứ tự hướng dẫn

DISPATCH	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	6 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan	Process		PCS Ver		Prepared by		Revision Ver	0
	09.03	09.03	09.03								

Step 6 – Set up parameter

1. When found DL, click Stop Search

2. Click on DL10

3. Click Configuration

4. Address = 5; Baud Rate = 19200

The screenshot shows the DL10 Firmware configuration interface. The main table lists the following data:

ID	Address	Baud Rate	Checksum	Format	Status	Description	Comments
DL10	1[01h]	115200	Disabled	N,8,1	Remote I/O	[Modbus RTU]1*Humidity + 1*Temperature	Supported

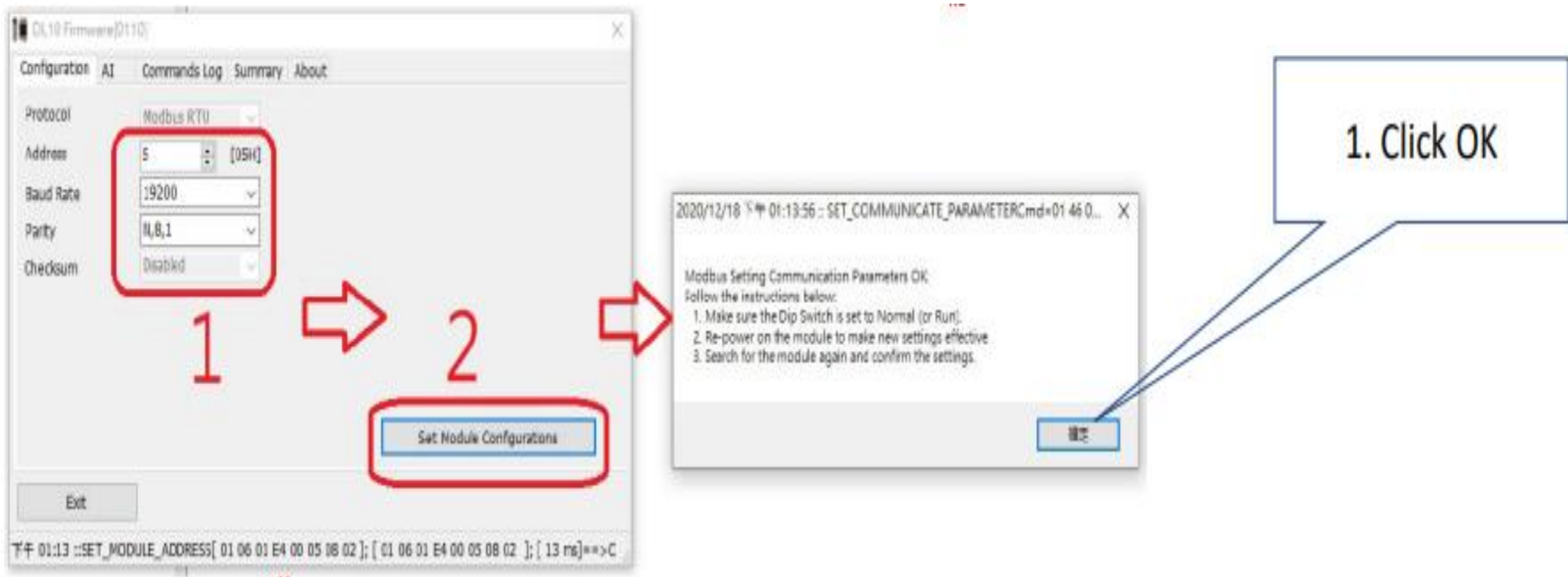
The configuration window for DL10 Firmware (ID110) is open, showing the following settings:

- Protocol: Modbus RTU
- Address: 5 [05H]
- Baud Rate: 19200
- Parity: N,8,1
- Checksum: Disabled

Cài đặt theo thứ tự hướng dẫn

D I S P A T h	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	7 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan	Process		PCS Ver		Prepared by		Revision Ver	0
	09.03	09.03	09.03								

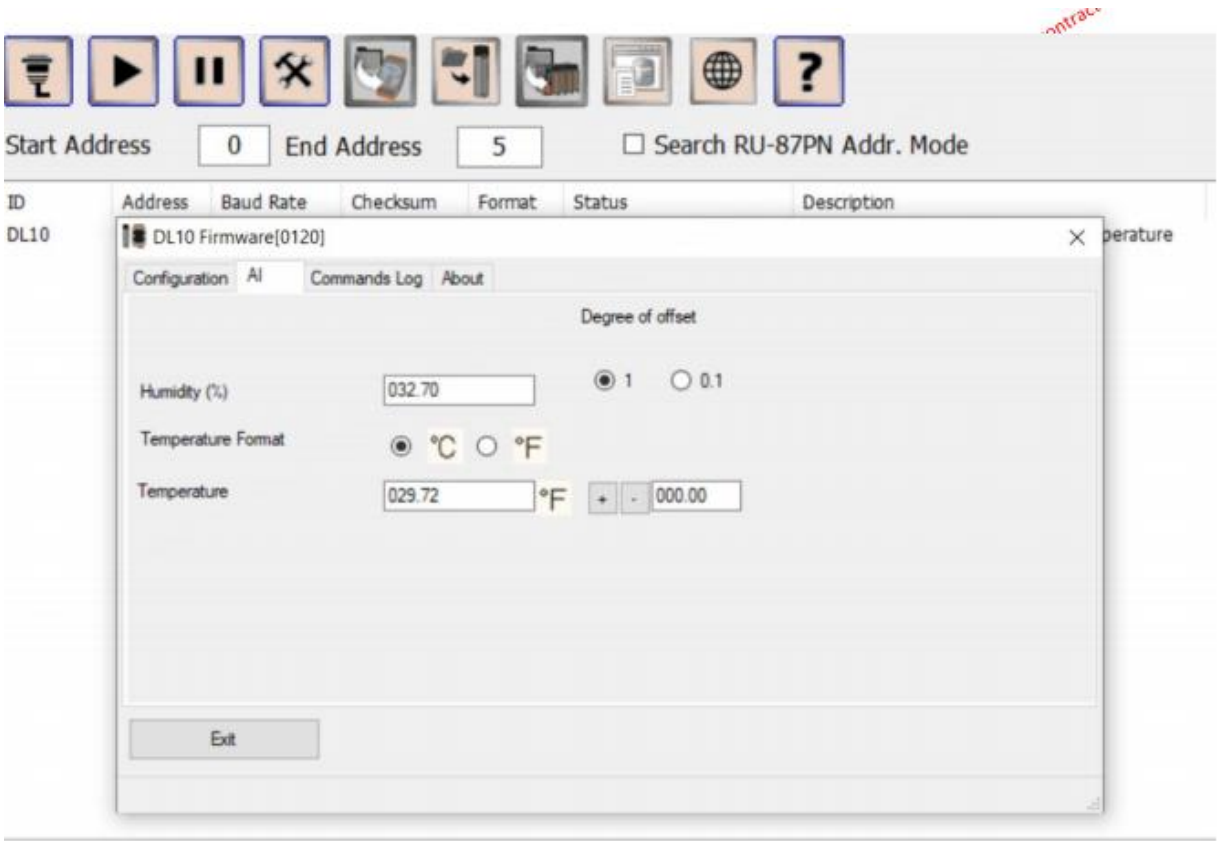
- Step 7 – Click OK, Turn off Breaker CB6, wait 30 seconds
- Step 8 – Remove blank SD Card from Banana, insert master image SD Card
- Step 9 - Turn on DL10



Cài đặt theo thứ tự hướng dẫn, Sau khi cài xong DL10 thì tắt CB6 để lưu lại cài đặt DL10

DISPATCH	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	8 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan								
	09.03	09.03	09.03	Process		PCS Ver		Prepared by		Revision Ver	0

Step 8 – Search DL again, until found DL10 with Address = 5; Baud rate = 19200
Click AI Tab to see temperature and humidity is OK



DISPATCH	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	9 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan	Process		PCS Ver		Prepared by		Revision Ver	0
	09.03	09.03	09.03								

- Step 10 – After program installed from SD Card to eMMC
- Step 11 – Command: shutdown –h now; wait 30 seconds
- Step 11 – Pull out plug, insert blank SD Card into Banana, power on Banana
- Step 12 – Until see the image on the right

Ethernet set up in LAN Network Adapter (1 time)

General

You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.

☐ Obtain an IP address automatically

☒ Use the following IP address:

IP address:

192 . 168 . 2 . 10

Subnet mask:

255 . 255 . 255 . 0

Default gateway:

192 . 168 . 2 . 1

☐ Obtain DNS server address automatically

☒ Use the following DNS server addresses:

Preferred DNS server:

.

Alternate DNS server:

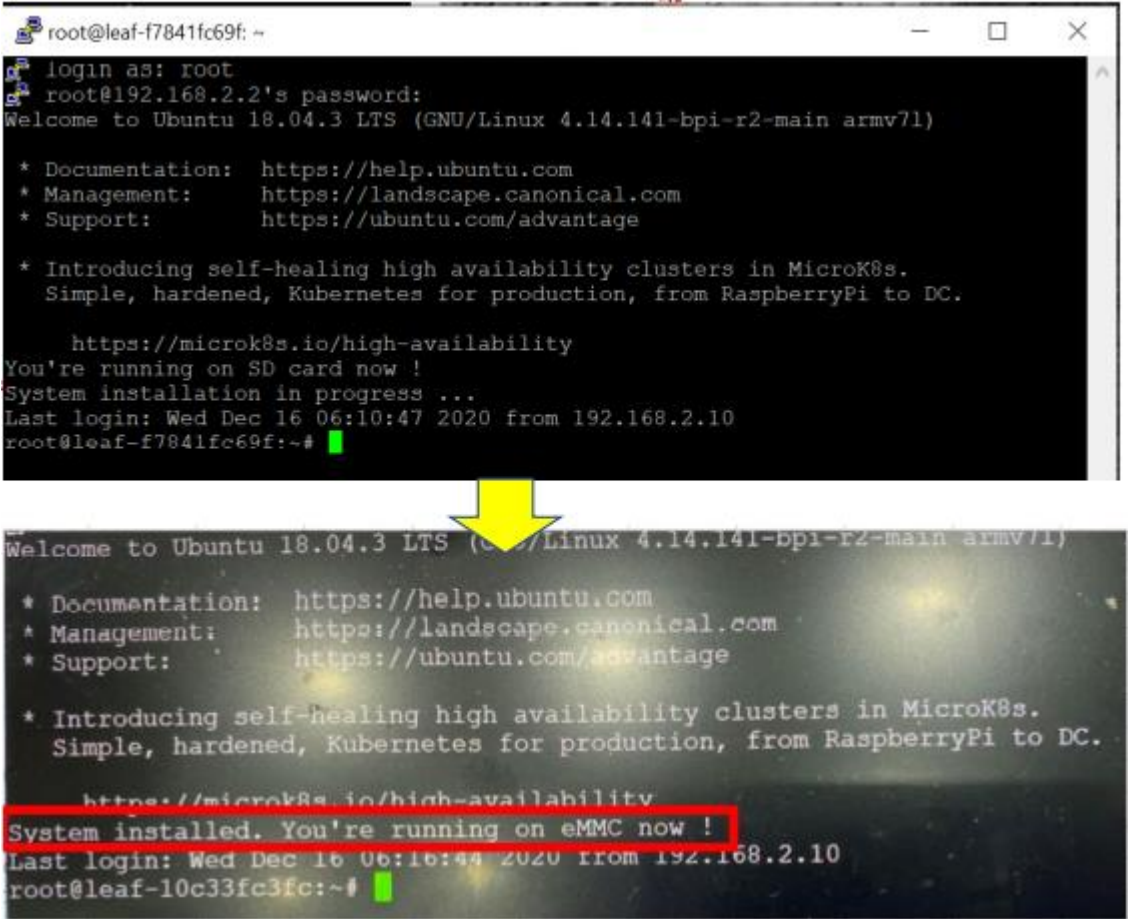
.

☐ Validate settings upon exit

Advanced...

OK



Cancel



Update banana thành công

D I S P A T h	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	10 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan	Process		PCS Ver		Prepared by		Revision Ver	0
	09.03	09.03	09.03								

Step 11 – Open PuTTY Program

Category:

- Session
 - Logging
- Terminal
- Keyboard
- Bell
- Features
- Window
 - Appearance
 - Behaviour
 - Translation
- Selection
 - Colours
- Connection
 - Data
 - Proxy
 - Telnet
 - Rlogin
 - SSH
 - Serial

Basic options for your PuTTY session

Specify the destination you want to connect to

Host Name (or IP address)

192.168.2.2

Port

22

Connection type:

☐ Raw
 ☐ Telnet
 ☐ Rlogin
 ☒ SSH
 ☐ Serial

Load, save or delete a stored session

Saved Sessions

Banana Pi R2 Mannheim

Banana Pi (COM4)
 Banana Pi (COM5)
 Banana Pi (COM6)
 Banana Pi (COM7)
 Banana Pi R2-1
 Banana Pi R2-1 DEPLCENTR
 Banana Pi R2 Mannheim

Load

Save

Delete

Close window on exit:

☐ Always
 ☐ Never
 ☒ Only on clean exit

About

Help

Open

Cancel

Host Name 192.168.2.2

Port 22

Click open

Unauthorized disclosure, delivery, distribution, replication, modification and use of any information contained in this work instruction (including attachments) to third parties is strictly prohibited.
 The usage is restricted for communication only between Fluence and ACE.

DISPATCH	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	11 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan	Process		PCS Ver		Prepared by		Revision Ver	0
	09.03	09.03	09.03								

Step 12 – Access to Banana Pi by PuTTY

User: root
Password: root

```
root@leaf-dc2b2f355c: ~
login as: root
root@192.168.2.2's password:
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.14.141-bpi-r2-main armv7l)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

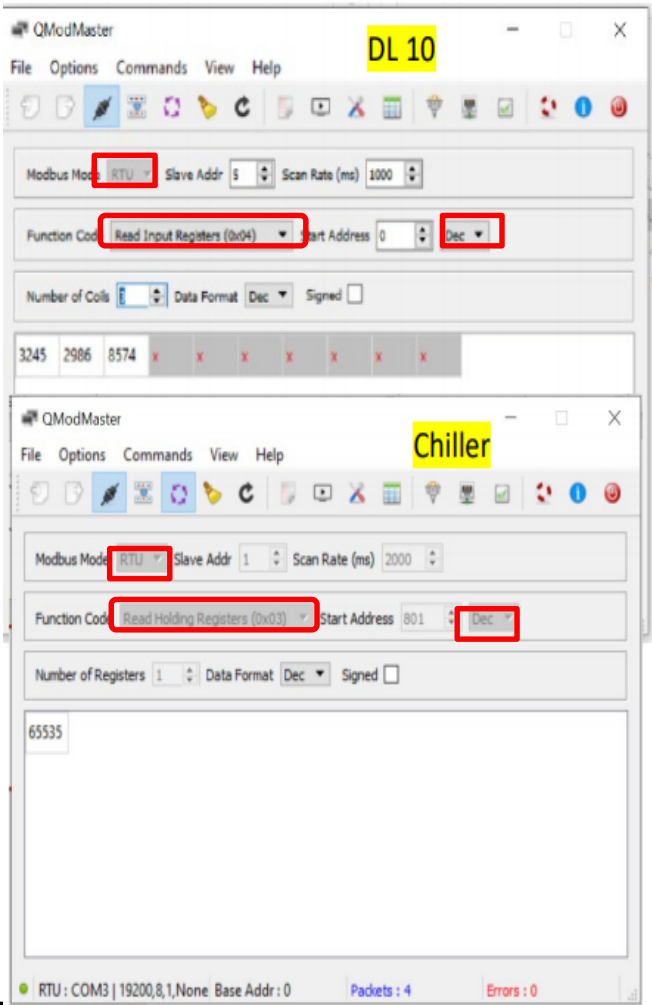
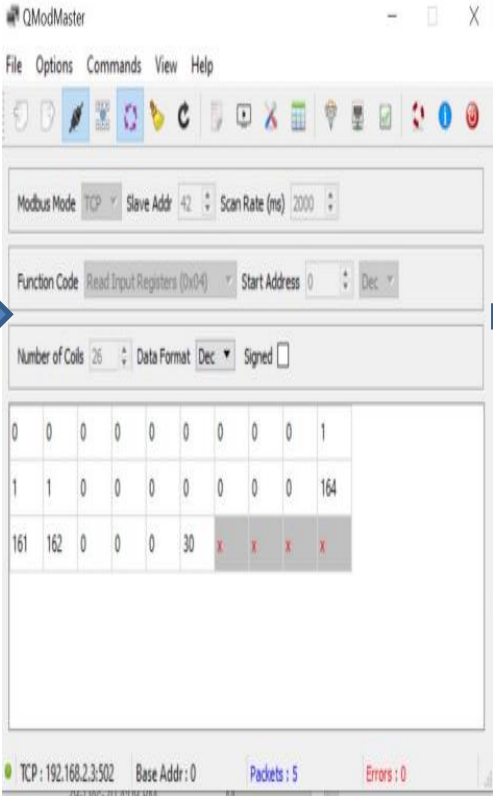
Last login: Mon Jul 20 10:01:22 2020 from 192.168.178.80
root@leaf-dc2b2f355c:~#
```

- Step 13 – Upload Sketch to Controllino
controllino_upload.sh Arduino_Blink.hex
- Step 14 – Reset Controllino
controllino_reset.sh
- Step 15 – Serial monitor to Controllino
controllino_stty.sh 115200
Ctr-Z
- Step 16 – DS18B20 Temperature sensors
controllino_upload.sh Arduino_TempSensor_DS18B20.hex
Test DS18B20 : controllino_stty.sh 115200
Ctr-Z
- Step 17 – Leak sensor
controllino_upload.sh Controllino_Leakagesensor.hex
Test: controllino_stty.sh 115200
Ctrx-Z
- Step 18 – Door Switch sensor
controllino_upload.sh Controllino_DoorSwitch.hex
Test: controllino_stty.sh 115200
Ctrx-Z
- Step 19 – F-Stop
controllino_upload.sh Controllino_EStop.hex
Test: controllino_stty.sh 115200
Ctrx-Z
- Step 20 – Upload Leaf Controller
controllino_upload.sh LeafController.hex
Test output: controllino_stty.sh 115200

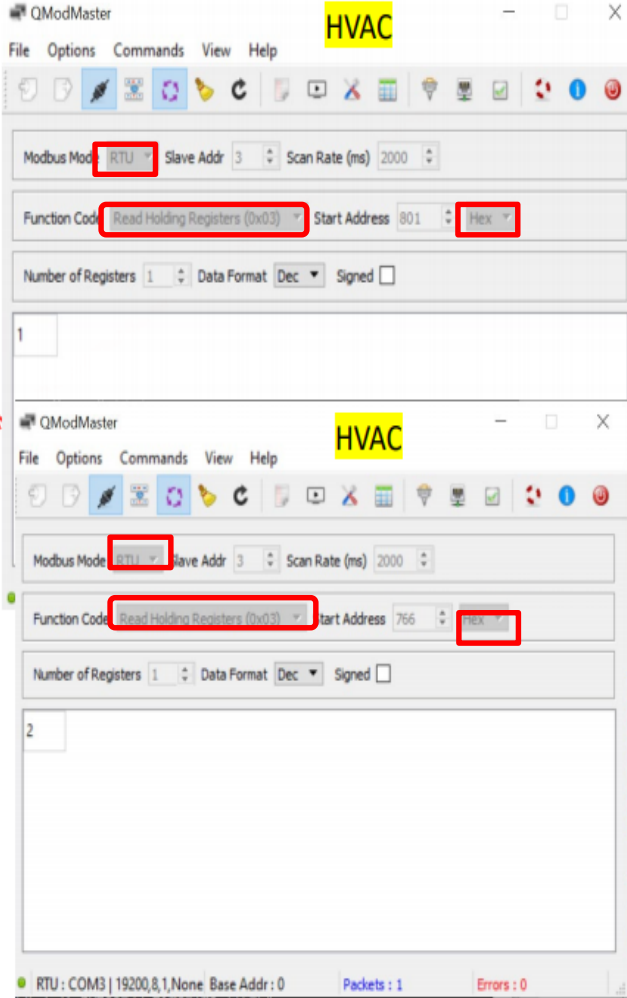
Làm theo hướng dẫn

DISPATCH	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	12 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan	Process		PCS Ver		Prepared by		Revision Ver	0
	09.03	09.03	09.03								

Step 21 – Test with QmodMaster



nong Fluence staff and au



Test with QmodMaster

DISPATCH	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	13 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan	Process		PCS Ver		Prepared by		Revision Ver	0
	09.03	09.03	09.03								

Step 22 – See the below table

Door:
0 – open
1 - close

Temp Sensor 2

Temp Sensor 1

Temp Sensor 3

This email/document is only intended for internal distribution

0	0	0	0	0	0	0	0	0	1
1	1	0	0	0	0	0	0	0	164
161	162	0	0	0	30	x	x	x	x

Kiểm tra Temp sensor

D I S P A T h	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	14 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan	Process		PCS Ver		Prepared by		Revision Ver	0
	09.03	09.03	09.03								

Step 23 – UPS

Find UPS

upsc -l

Result: Init SSL without certificate database

Eaton5p

Request of All UPS Status 

upsc eaton5p

UPS Battery Capacity  Init SSL without certificate database 7.20

upsc eaton5p battery.capacity

UPS Battery Charge  Init SSL without certificate database 100

upsc eaton5p battery.charge

UPS Input Voltage  Init SSL without certificate database 227.3

upsc eaton5p input.voltage

UPS Input Frequency  Init SSL without certificate database 49.9

upsc eaton5p input.frequency

```
Init SSL without certificate database
battery.capacity: 7.20
battery.charge: 100
battery.charge.low: 20
battery.charge.restart: 0
battery.charger.status: floating
battery.energysave: no
battery.energysave.delay: 300
battery.energysave.load: 5
battery.protection: yes
battery.runtime: 7400
battery.type: PbAc
battery.voltage: 27.1
battery.voltage.nominal: 24
device.mfr: EATON
device.model: 5P 850
device.serial: G115K44007
device.type: ups
driver.name: usbhid-ups
driver.parameter.pollfreq: 30
driver.parameter.pollinterval: 2
driver.parameter.port: auto
driver.parameter.synchronous: no
driver.version: 2.7.4
driver.version.data: MGE HID 1.39
driver.version.internal: 0.41
input.current: 0.10
```

Check if all connected devices to Eaton UPS are switched off. upscmd -u upsuser -p ups eaton5p load.off

Check if all connected devices to Eaton UPS are switched on. upscmd -u upsuser -p ups eaton5p load.on

Chect UPS outlet 1 loadd

Response

off upscmd -u upsuser -p ups eaton5p outlet.1.load.off

ok

Chect UPS outlet 1 loadd on

Response

upscmd -u upsuser -p ups eaton5p outlet.1.load.on

ok

Chect UPS outlet 1 loadd on upscmd -u upsuser -p ups eaton5p outlet.2.load.off

Response

Chect UPS outlet 1 loadd on

ok

upscmd -u upsuser -p ups eaton5p outlet.2.load.on

Response

Thông số UPS

DISPATCH	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	15 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan								
	09.03	09.03	09.03	Process		PCS Ver		Prepared by		Revision Ver	0

Step 24 – Modbus testing controllino_modbus.py controllino

Example Output

```
# ===== New Data ===== #

# ===== Controllino (Input Registers) ===== #
      address  value writeaccess
signal_name
door1           0         0         ro
door2           1         0         ro
reserved1        2         0         ro
CoreIMD          3         0         ro
fStopButton      4         0         ro
bmsFstopButton   5         0         ro
preFirePanelSignalPoint 6         0         ro
mainFstop        7         0         ro
fstopK1Relay     8         0         ro
fstopPushButton  9         1         ro
leakageSens     10        1         ro
powerSupp       11        1         ro
spf             12         0         ro
ups             13         0         ro
hvac            14         0         ro
mvTransPress    15         0         ro
mvTransOilLevel 16         0         ro
mvTransOilTemp  17         0         ro
mvTransWindingTemp 18         0         ro
tempSens1       19        190        ro
tempSens2       20        196        ro
tempSens3       21        190        ro
reserved11      22         0         ro
reserved12      23         0         ro
reserved13      24         0         ro
heartbeat       25       46938        ro
```

Step 25 – Chiller controllino_modbus.py chiller1

```
Example Output

# ===== New Data ===== #

# ===== Chiller 1 ===== #
      address  value writeaccess
signal_name
systemOnOff           1024         1         rw
modeSelection          1025         2         rw
waterTempSet          35596        180         rw
hysteresisSet          35598         30         rw
flowRateSelection     38921         0         rw
supplyWaterTemp        40960        189         ro
returnWaterTemp        40962        193         ro
environmentTemp        40973       32767         ro
outletHighWaterTemp    45312         0         ro
outletLowWaterTemp     45313         0         ro
outletWaterTempSensFail 45314         0         ro
returnWaterTempSensFail 45316         0         ro
heatingFail            45323         32         ro
pumpFail               45329         32         ro
inverterComFail        45333         0         ro
highSystemPressAlarm   45340         0         ro
highOutletPressAlarm   45360         0         ro
WaterReplenishmentAlarm 45362         0         ro
sysHighVoltageLock     45367         0         ro
sysLowVoltageLock      45368         0         ro
exhaustGasHighTempLock 45369         0         ro
inverterOverCurrentLock 45370         0         ro
inverterOverTempLock   45371         0         ro
inverterOverVoltLock   45372         0         ro
inverterUnterVoltLock  45373         0         ro
inverterPhaseLossLock  45374         0         ro
inverterOtherFaultLock 45375         0         ro
heatingFaultLock       45378         32         ro
pumpCommandSpeed       41473        790         ro
heartbeat              32772        255         ro
id                     36864        255         rw
baudrate               35337        255         rw
```

Thông số chiller

DISPATCH	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	16 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan								
	09.03	09.03	09.03	Process		PCS Ver		Prepared by		Revision Ver	0

Step 26 – HVAC controllino_modbus.py hvac1

Example Output

```
# ===== New Data ===== #

# ===== Hvac 1 ===== #
      address  value writeaccess
signal_name
softwareVersion      0      255      ro
unitRunningStatus    256      1      ro
internalFanStatus     257      1      ro
externalFanStatus     258      0      ro
compressorStatus      259      0      ro
heaterStatus          260      0      ro
emergencyFanStatus    261      2      ro
evapTemp              1280     193      ro
outdoorTemp           1281    2000      ro
condenserTemp         1282     188      ro
indoorTemp             1283     198      ro
humidity               1284     120      ro
dischargeTemp         1285    2000      ro
acRunningCurrent      1286   32767      ro
acInputVoltage         1287      0      ro
dcInputVoltage         1288      0      ro
highTempAlarm         1536      0      ro
lowTempAlarm          1537      0      ro
highHumidAlarm        1538      0      ro
lowHumidAlarm         1539      0      ro
coilFreezeProtection  1540      0      ro
highExhaustTempAlarm  1541      0      ro
evapTempSensFail      1542      0      ro
outdoorTempSensFail   1543      0      ro
condensTempSensFail   1544      0      ro
indoorTempSensFail    1545      0      ro
exhaustTempSensFail   1546      0      ro
humidSensFail         1547      0      ro
internalFanFailAlarm  1548      0      ro
externalFanFailAlarm  1549      0      ro
compressorFailAlarm   1550      0      ro
heaterFailAlarm        1551      0      ro
emergencyFanFailAlarm  1552      0      ro
hpAlarm               1553      0      ro
lpAlarm               1554      0      ro
waterAlarm            1555      0      ro
fireAlarm             1556      0      ro
gatingAlarm           1557      0      ro
```

Thông số HVAC

Step 27 – DL10 controllino_modbus.py dl10

Example Output

```
# ===== New Data ===== #

# ===== DL10 ===== #
      address  value writeaccess
signal_name
dl10Humid              0    5212      ro
dl10TempC              1    2253      ro
dl10TempF              2    7255      ro
Shutdown of Client Readout Thread and Server
```

Thông số DL10

DISPATCH	Prepared	Checked	Approved	Model	GEN6 CUBE CATL	DOC-ID	ACE-FLN-GEN-LT-001	Page	17 / 17 Page	Creation Date	2021.09.03
	Lee Jeong Wook	Jack	Logan								
	09.03	09.03	09.03	Process		PCS Ver		Prepared by		Revision Ver	0

Step 28 – Eaton UPS controllino_modbus.py ups

Example Output

```
# ===== UPS ===== #
                                address  value writeaccess
signal_name
battery_capacity                0      72           ro
battery_charge                  1     100           ro
battery_charge_low              2      20           ro
battery_charge_restart          3       0           ro
battery_charger_status          4     255           ro
battery_energysave              5       0           ro
battery_energysave_delay        6     300           ro
battery_energysave_load         7       5           ro
battery_protection              8       1           ro
battery_runtime                 9    6200           ro
battery_type                    10      0           ro
battery_voltage                 11     263           ro
battery_voltage_nominal         12      24           ro
device_mfr                      13       0           ro
device_model                    14       0           ro
device_serial                   15     255           ro
device_type                     16       0           ro
driver_name                     17       0           ro
driver_parameter_pollfreq       18      30           ro
driver_parameter_pollinterval   19       2           ro
driver_parameter_port           20       0           ro
driver_parameter_synchronous    21       0           ro
driver_version                  22     274           ro
driver_version_data             23       0           ro
driver_version_internal         24       4           ro
input_current                   25       4           ro
input_frequency                 26     599           ro
input_frequency_extended        27       0           ro
input_frequency_nominal         28      60           ro
input_sensitivity               29       0           ro
```

Thông số UPS