

프로웰

PLC 이더넷 PC 통신 테스트 설명서

2024.12.12



프로웰



PLC 이더넷 IP 세팅

기본 설정 - FEnet

기본 설정 보안 설정 시간 동기화 EIP 주기 서버 설정 고급 설정

TCP/IP 설정

국번: 0

미디어: 포트1: AUTO 포트2: AUTO

IP 주소: 192 . 168 . 0 . 100

서브넷 마스크: 255 . 255 . 255 . 0

게이트웨이: 192 . 168 . 0 . 1

DNS 서버: 0 . 0 . 0 . 1

☐ DHCP ☐ Relay ☐ OPC UA

전용 접속 개수: 3 (1 - 16)

수신 타임아웃 시간설정

클라이언트 동작시: 60 ☒ x1s ☐ x10ms

서버 동작시: 15 ☒ x1s ☐ x10ms

드라이버 설정

서버 모드: 모드버스 서버

모드버스 설정

RAPiEnet 설정: Disable

확인 취소

수정하면 파이썬 코드 수정이 필요

PLC 세팅

PLC 모드버스 세팅

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DNS 서버:

☐ DHCP

전용 접속 개수:

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클라이언트 동작시:

서버 동작시:

드라이버 설정

서버 모드: 모드버스 서버

모드버스 설정

RAPiNet 설정: Disable

Modbus 설정

비트 읽기 영역 시작 주소: P00000

비트 쓰기 영역 시작 주소: P01000

워드 읽기 영역 시작 주소: D00000

워드 쓰기 영역 시작 주소: P0300

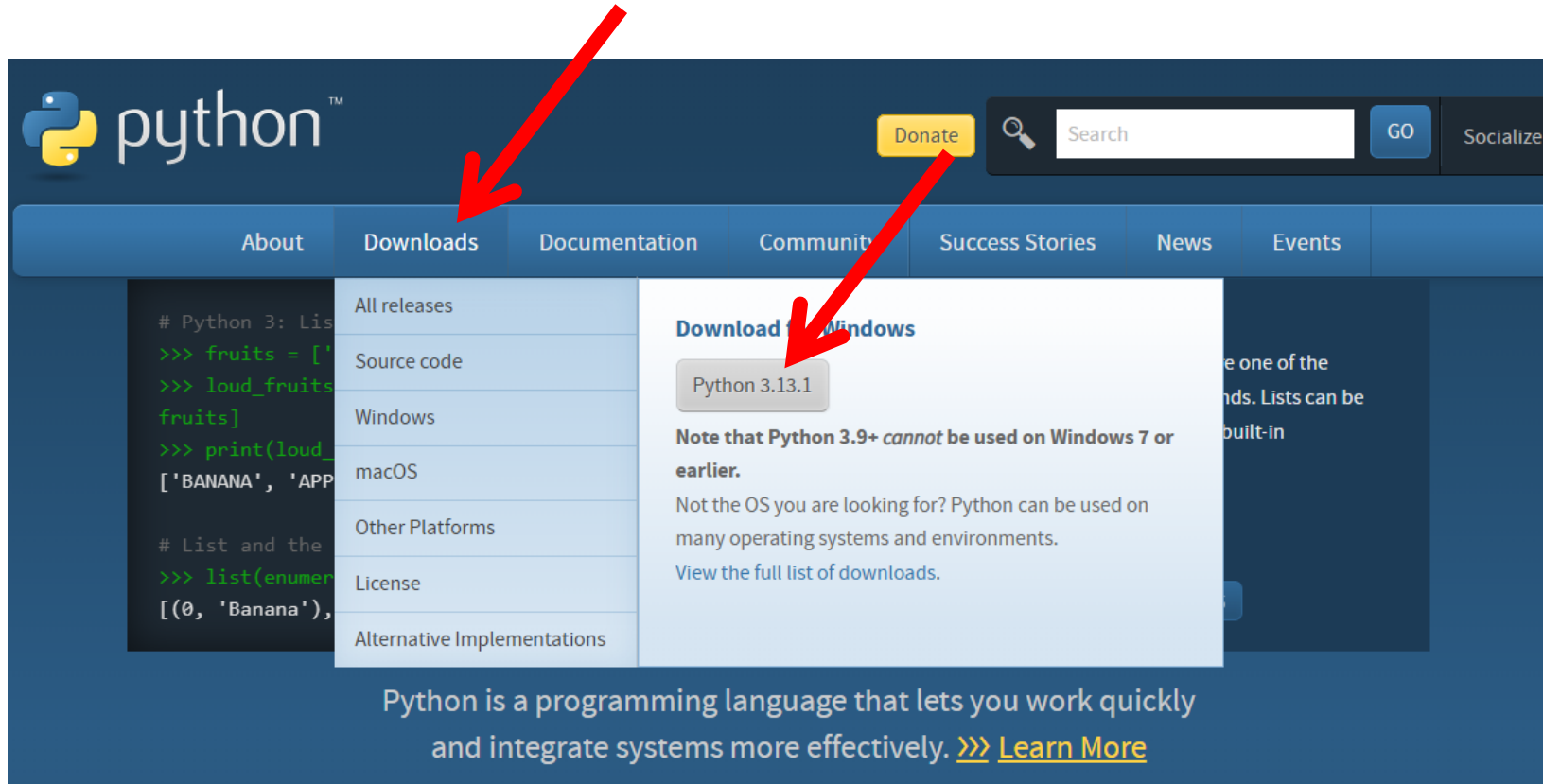
확인 취소

어드레스맵 기준
40000번 기입

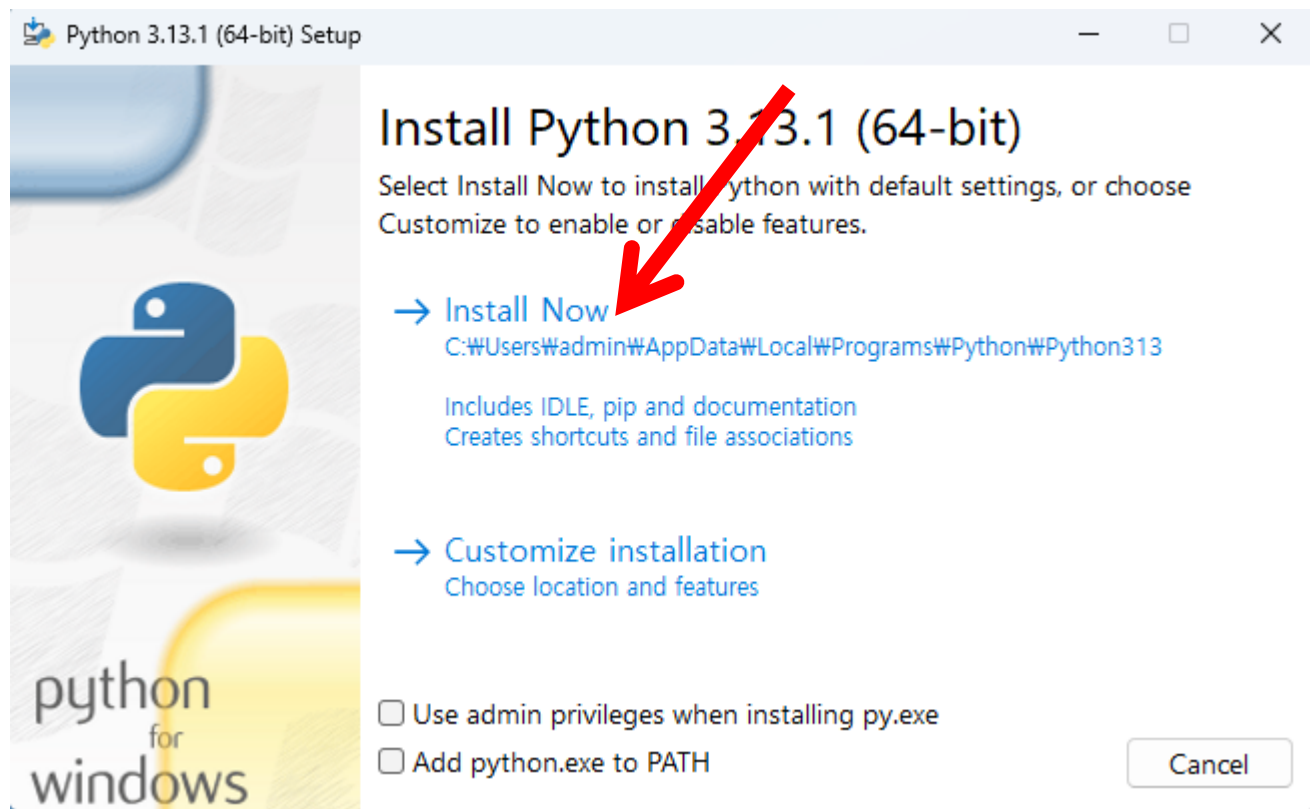
7. IoT Address Map (PLC -> IoT)

Register	Register Name	Range	Unit	Data Type	특성
40001	Main Power R Phase Voltage PV	0 ~ 16000	V	UINT	W
40002	Main Power S Phase Voltage PV	0 ~ 16000	V	UINT	W
40003	Main Power T Phase Voltage PV	0 ~ 16000	V	UINT	W
40004	Pump #1 R Phase Current PV	0 ~ 16000	A	UINT	W
40005	Pump #1 S Phase Current PV	0 ~ 16000	A	UINT	W
40006	Pump #1 T Phase Current PV	0 ~ 16000	A	UINT	W
40007	Pump #1 Vibration PV	0 ~ 16000	cm/sec²	UINT	W
40008	Pump #1 Bearing Temperature	0 ~ 16000	°C	UINT	W
40009	Pump #1 Motor Temperature	0 ~ 16000	°C	UINT	W
40010	Pump #1 Prediction Data	0 ~ 16000	°C	UINT	W
40011	Pump #2 R Phase Current PV	0 ~ 16000	A	UINT	W
40012	Pump #2 S Phase Current PV	0 ~ 16000	A	UINT	W
40013	Pump #2 T Phase Current PV	0 ~ 16000	A	UINT	W
40014	Pump #2 Vibration PV	0 ~ 16000	cm/sec²	UINT	W
40015	Pump #2 Bearing Temperature	0 ~ 16000	°C	UINT	W
40016	Pump #2 Motor Temperature	0 ~ 16000	°C	UINT	W
40017	Pump #2 Prediction Data	0 ~ 16000	°C	UINT	W
40018	Pump #3 R Phase Current PV	0 ~ 16000	A	UINT	W
40019	Pump #3 S Phase Current PV	0 ~ 16000	A	UINT	W
40020	Pump #3 T Phase Current PV	0 ~ 16000	A	UINT	W
40021	Pump #3 Vibration PV	0 ~ 16000	cm/sec²	UINT	W
40022	Pump #3 Bearing Temperature	0 ~ 16000	°C	UINT	W
40023	Pump #3 Motor Temperature	0 ~ 16000	°C	UINT	W
40024	Pump #3 Prediction Data	0 ~ 16000	°C	UINT	W
40025	Pump #4 R Phase Current PV	0 ~ 16000	A	UINT	W
40026	Pump #4 S Phase Current PV	0 ~ 16000	A	UINT	W
40027	Pump #4 T Phase Current PV	0 ~ 16000	A	UINT	W
40028	Pump #4 Vibration PV	0 ~ 16000	cm/sec²	UINT	W
40029	Pump #4 Bearing Temperature	0 ~ 16000	°C	UINT	W
40030	Pump #4 Motor Temperature	0 ~ 16000	°C	UINT	W
40031	Pump #4 Prediction Data	0 ~ 16000	°C	UINT	W
40032	Pump #5 R Phase Current PV	0 ~ 16000	A	UINT	W
40033	Pump #5 S Phase Current PV	0 ~ 16000	A	UINT	W
40034	Pump #5 T Phase Current PV	0 ~ 16000	A	UINT	W
40035	Pump #5 Vibration PV	0 ~ 16000	cm/sec²	UINT	W
40036	Pump #5 Bearing Temperature	0 ~ 16000	°C	UINT	W
40037	Pump #5 Motor Temperature	0 ~ 16000	°C	UINT	W
40038	Pump #5 Prediction Data	0 ~ 16000	°C	UINT	W
40039	Pump #6 R Phase Current PV	0 ~ 16000	A	UINT	W
40040	Pump #6 S Phase Current PV	0 ~ 16000	A	UINT	W
40041	Pump #6 T Phase Current PV	0 ~ 16000	A	UINT	W
40042	Pump #6 Vibration PV	0 ~ 16000	cm/sec²	UINT	W
40043	Pump #6 Bearing Temperature	0 ~ 16000	°C	UINT	W
40044	Pump #6 Motor Temperature	0 ~ 16000	°C	UINT	W
40045	Pump #6 Prediction Data	0 ~ 16000	°C	UINT	W
40046	Pump #7 R Phase Current PV	0 ~ 16000	A	UINT	W
40047	Pump #7 S Phase Current PV	0 ~ 16000	A	UINT	W
40048	Pump #7 T Phase Current PV	0 ~ 16000	A	UINT	W
40049	Pump #7 Vibration PV	0 ~ 16000	cm/sec²	UINT	W
40050	Pump #7 Bearing Temperature	0 ~ 16000	°C	UINT	W
40051	Pump #7 Motor Temperature	0 ~ 16000	°C	UINT	W
40052	Pump #7 Prediction Data	0 ~ 16000	°C	UINT	W
40053	Pump #8 R Phase Current PV	0 ~ 16000	A	UINT	W
40054	Pump #8 S Phase Current PV	0 ~ 16000	A	UINT	W
40055	Pump #8 T Phase Current PV	0 ~ 16000	A	UINT	W
40056	Pump #8 Vibration PV	0 ~ 16000	cm/sec²	UINT	W
40057	Pump #8 Bearing Temperature	0 ~ 16000	°C	UINT	W
40058	Pump #8 Motor Temperature	0 ~ 16000	°C	UINT	W
40059	Pump #8 Prediction Data	0 ~ 16000	°C	UINT	W

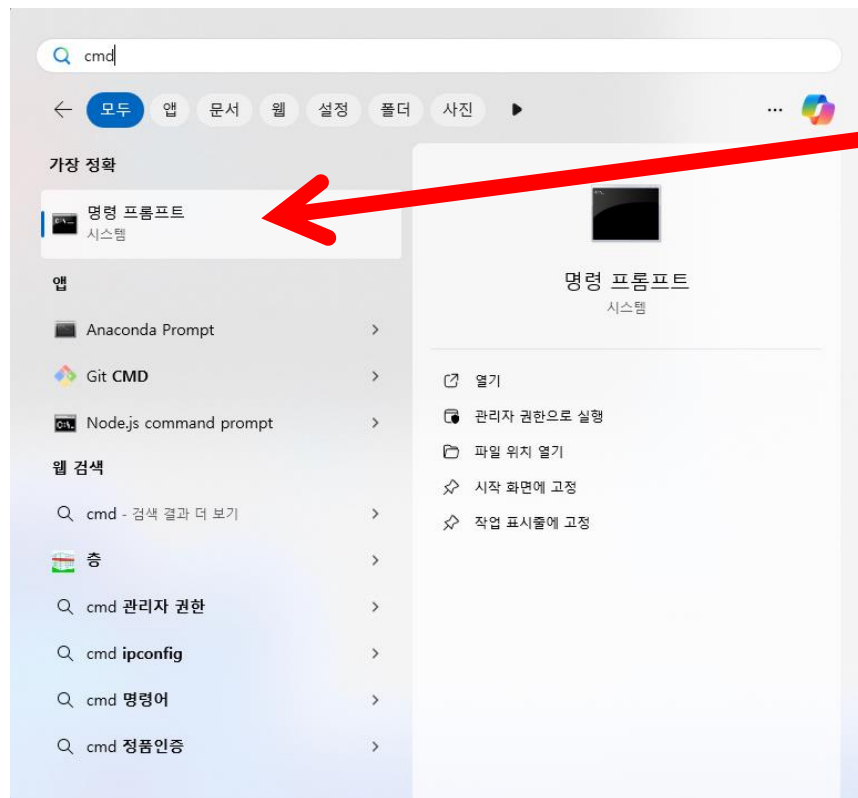
파이썬 설치



파이썬 설치



파이썬 라이브러리 설치



```
명령 프롬프트
Microsoft Windows [Version 10.0.22631.4602]
(c) Microsoft Corporation. All rights reserved.

C:\Users\admin>pip install pyqt5 pyqtgraph
Collecting pyqt5
  Downloading PyQt5-5.15.11-cp38-abi3-win_amd64.whl.metadata (2.1 kB)
Collecting pyqtgraph
  Using cached pyqtgraph-0.13.7-py3-none-any.whl.metadata (1.3 kB)
Collecting PyQt5-sip<13,>=12.15 (from pyqt5)
  Downloading PyQt5_sip-12.16.0-cp313-cp313-win_amd64.whl.metadata (439 bytes)
Collecting PyQt5-Qt5<5.16.0,>=5.15.2 (from pyqt5)
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Collecting numpy>=1.22.0 (from pyqtgraph)
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  Downloading PyQt5-5.15.11-cp38-abi3-win_amd64.whl (6.9 MB)
    6.9/6.9 MB 7.8 MB/s eta 0:00:00
  Using cached pyqtgraph-0.13.7-py3-none-any.whl (1.9 MB)
  Downloading numpy-2.2.0-cp313-cp313-win_amd64.whl (12.6 MB)
    12.6/12.6 MB 5.0 MB/s eta 0:00:00
  Downloading PyQt5_Qt5-5.15.2-py3-none-win_amd64.whl (50.1 MB)
    50.1/50.1 MB 3.6 MB/s eta 0:00:00
  Downloading PyQt5_sip-12.16.0-cp313-cp313-win_amd64.whl (57 kB)
Installing collected packages: PyQt5-Qt5, PyQt5-sip, numpy, pyqtgraph, pyqt5
Successfully installed PyQt5-Qt5-5.15.2 PyQt5-sip-12.16.0 numpy-2.2.0 pyqt5-5.15.11 pyqtgraph-0.13.7

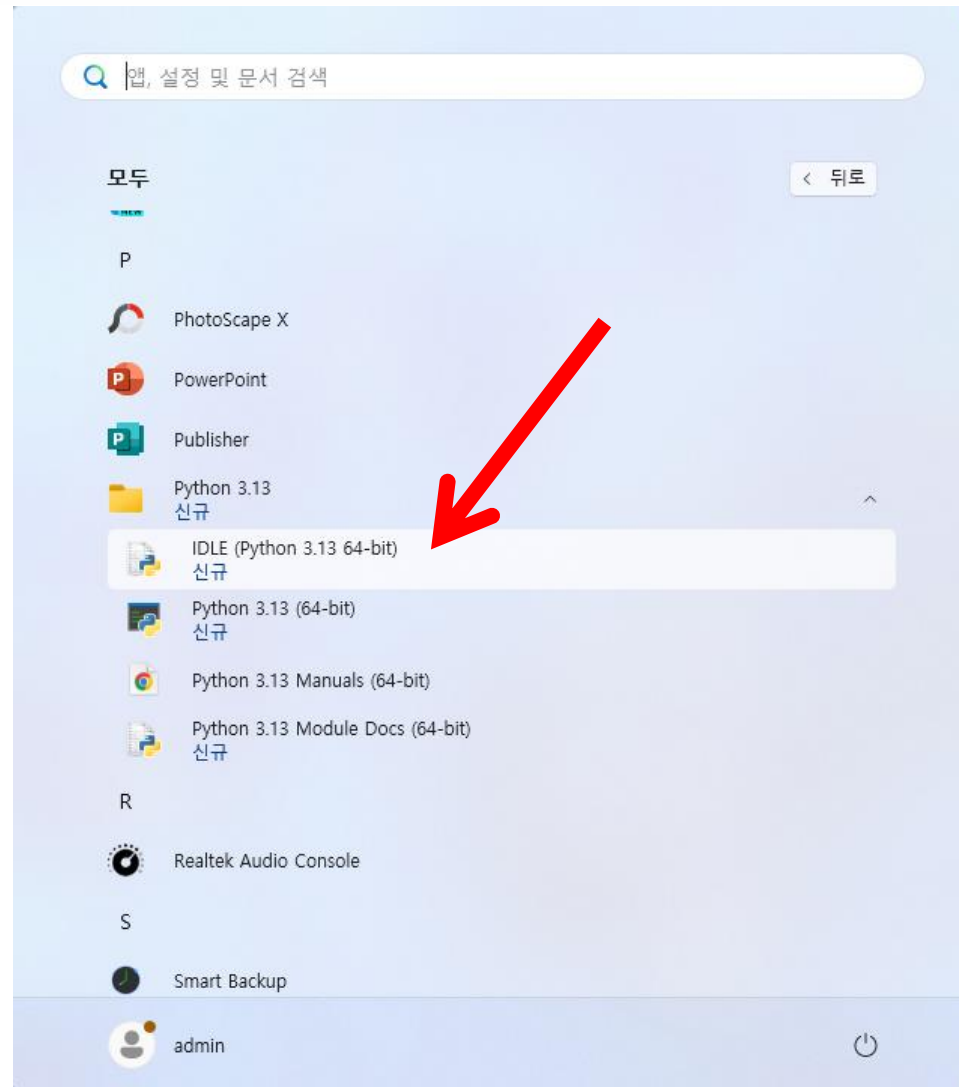
C:\Users\admin>
```

pip install pyqt5 pyqtgraph

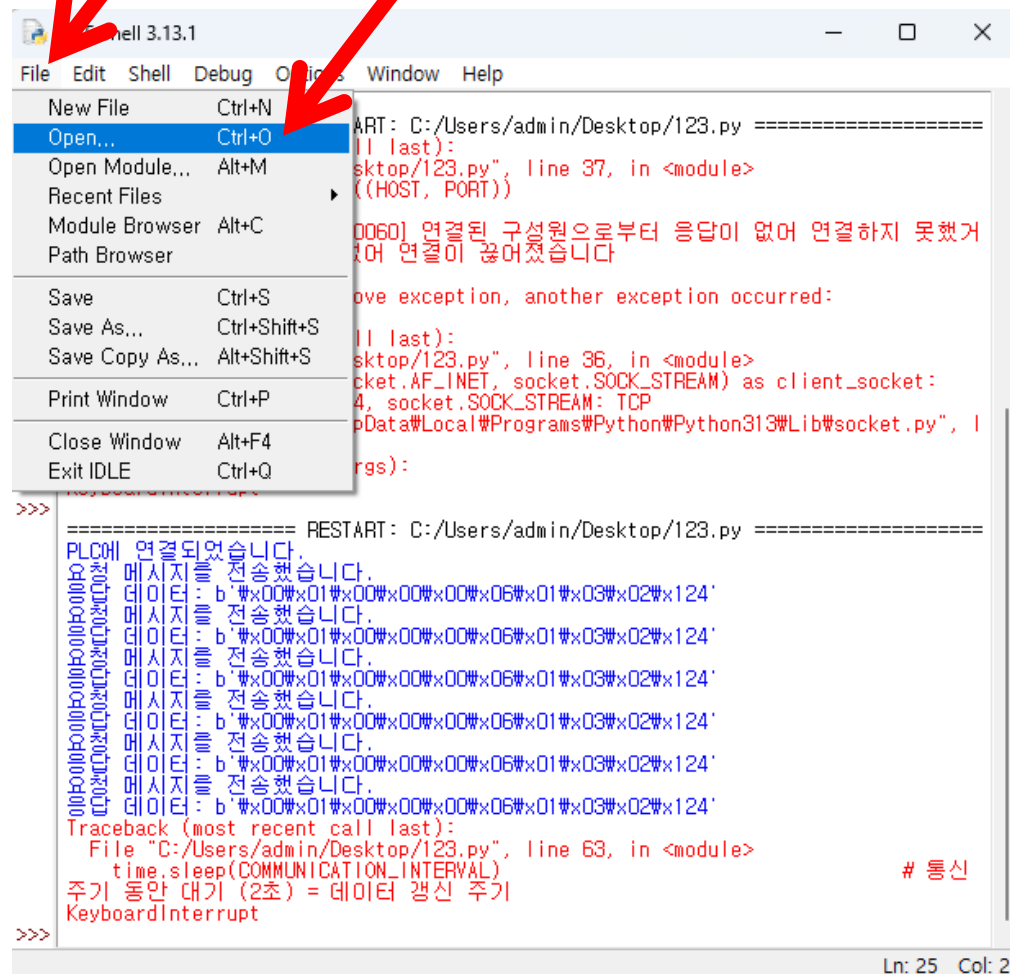
띄어쓰기 주의

파이썬 세팅

파이썬 실행

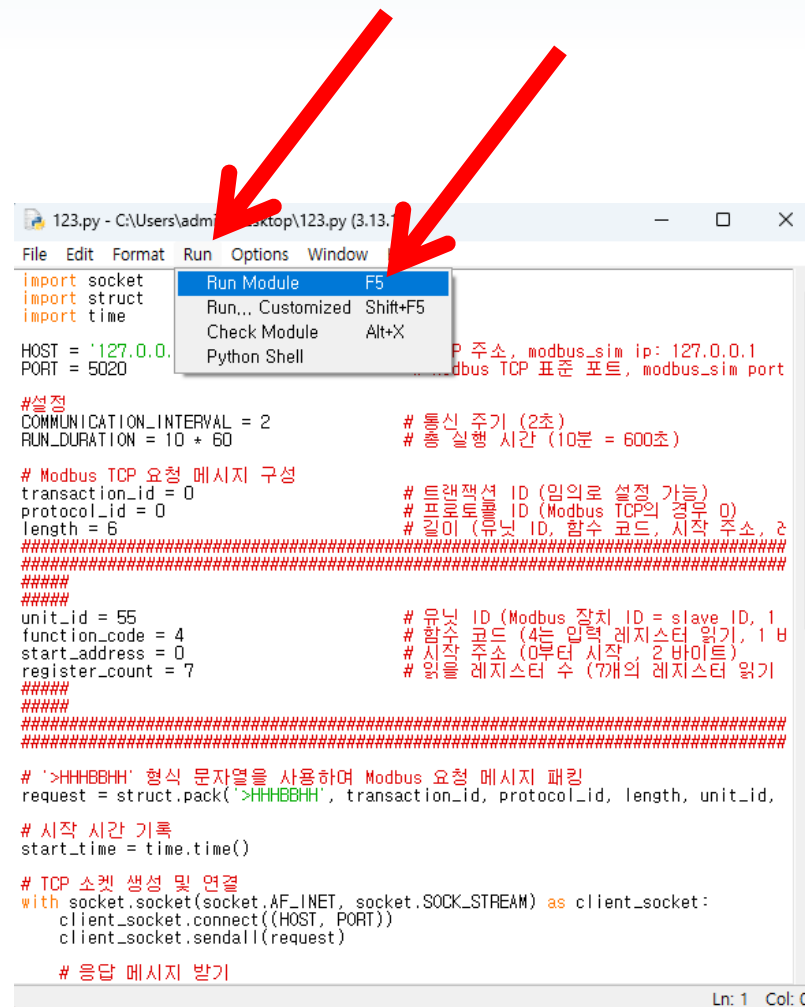


파이썬 실행



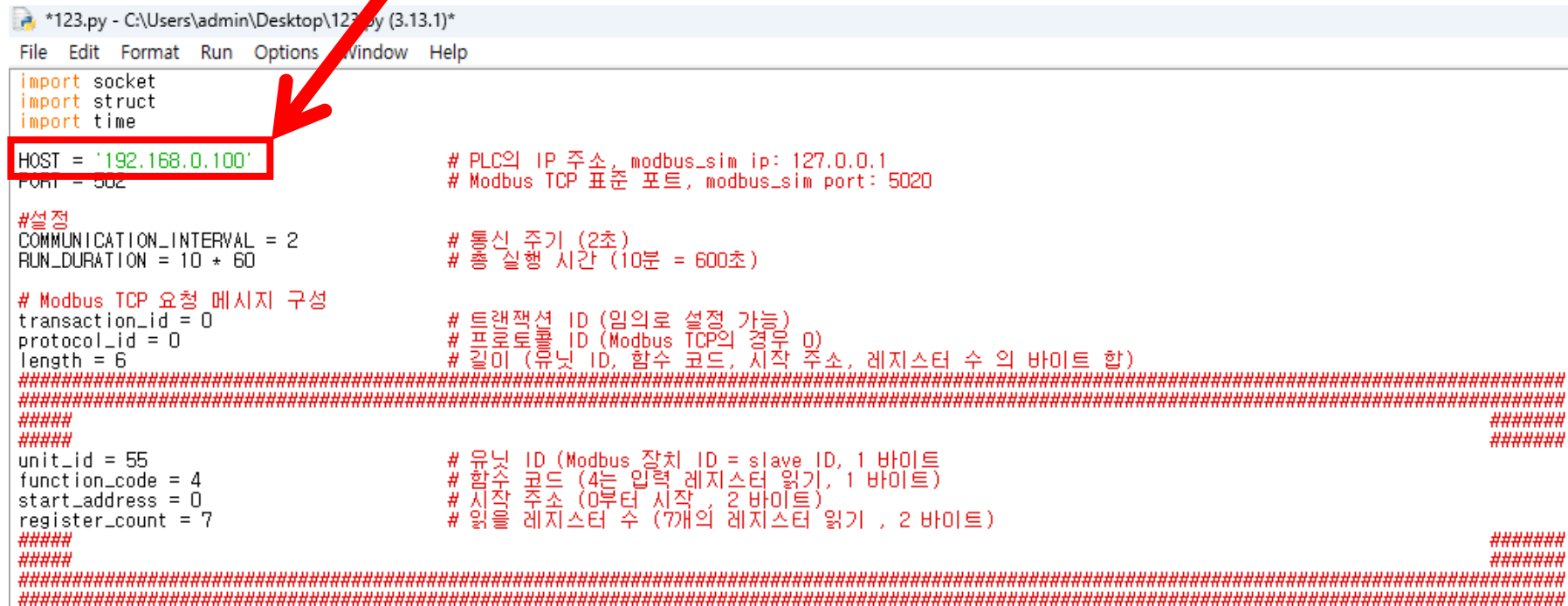
파이썬 세팅

파이썬 실행



파이썬 코드 수정할 부분

PLC측 이더넷 ip 주소 변경시 수정할 것



```
*123.py - C:\Users\admin\Desktop\123.py (3.13.1)*
File Edit Format Run Options Window Help

import socket
import struct
import time

HOST = '192.168.0.100'
PORT = 502

# PLC의 IP 주소, modbus_sim ip: 127.0.0.1
# Modbus TCP 표준 포트, modbus_sim port: 5020

# 설정
COMMUNICATION_INTERVAL = 2
RUN_DURATION = 10 * 60

# 통신 주기 (2초)
# 총 실행 시간 (10분 = 600초)

# Modbus TCP 요청 메시지 구성
transaction_id = 0
protocol_id = 0
length = 6

# 트랜잭션 ID (임의로 설정 가능)
# 프로토콜 ID (Modbus TCP의 경우 0)
# 길이 (유닛 ID, 함수 코드, 시작 주소, 레지스터 수 의 바이트 합)

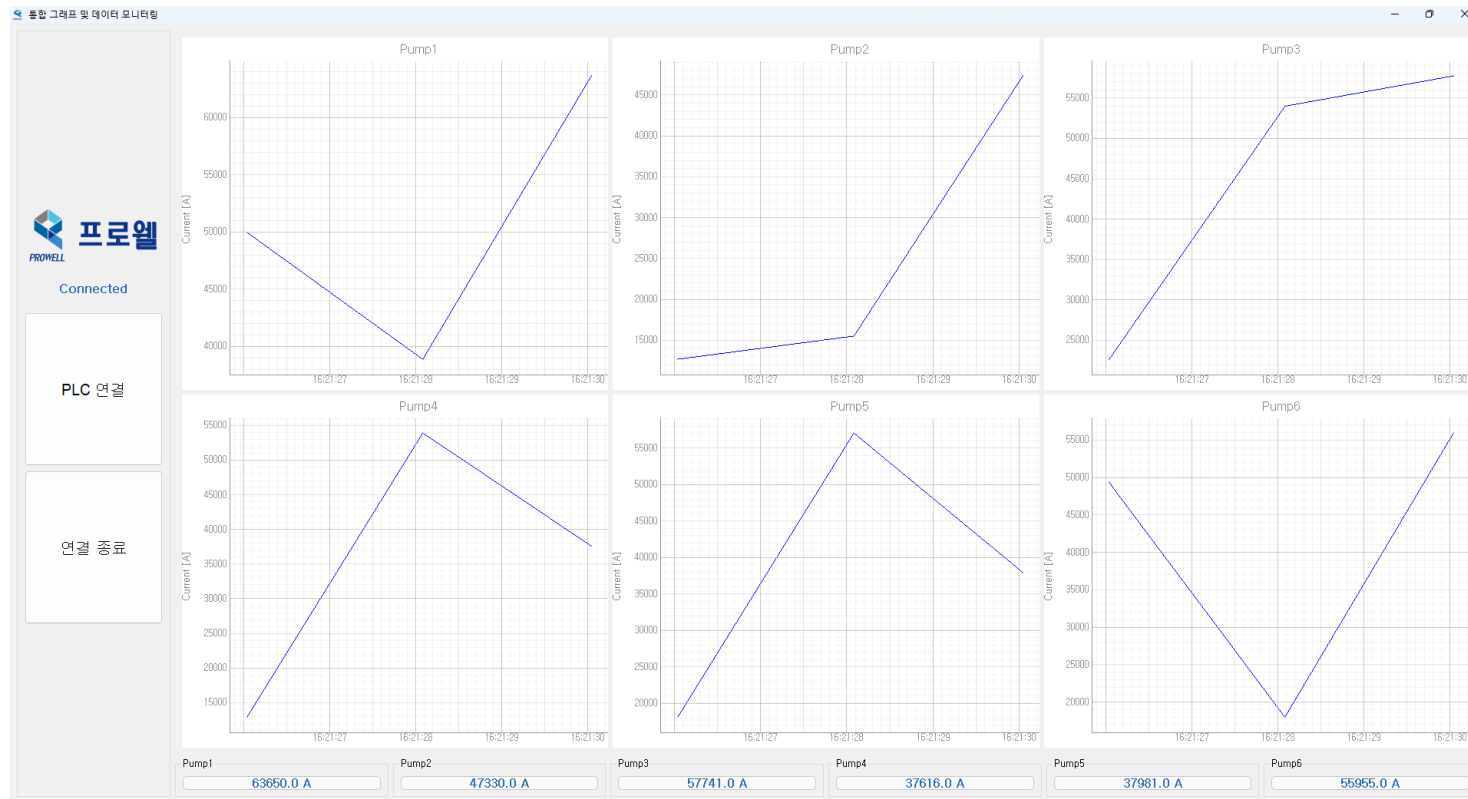
#####
#####
#####

unit_id = 55
function_code = 4
start_address = 0
register_count = 7

# 유닛 ID (Modbus 장치 ID = slave ID, 1 바이트)
# 함수 코드 (4는 입력 레지스터 읽기, 1 바이트)
# 시작 주소 (0부터 시작, 2 바이트)
# 읽을 레지스터 수 (7개의 레지스터 읽기, 2 바이트)

#####
#####
#####
```

출력 결과 정상 출력 결과



2초에 한번 새로운 값이 갱신됨.

1000개의 값이 그래프로 표시됨.

33분부터 오래된 값은 사라지고
새로운 값이 들어옴.

출력 결과

정상 출력 결과

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40059	Pump #8 Prediction Data	0 ~ 16000		UINT	W

PLC 40000번 부터 불러와서
5번째(40004), 12번째(40011),
19번째, 26번째, 33번째, 40번째 값
이 차례대로 그래프에 표시됨.

5 페이지

이상입니다.
감사합니다.

2024.12.12

