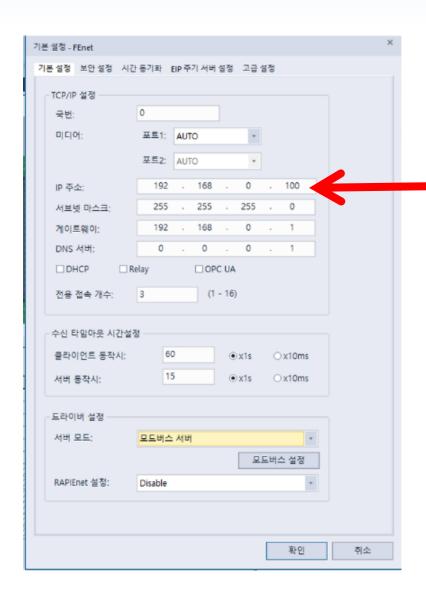
프로웰 PLC 이더넷 PC 통신 테스트 설명서

2024.12.12



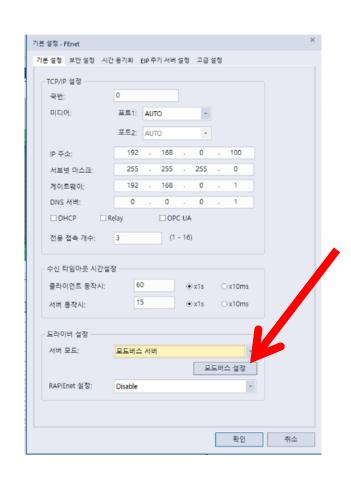


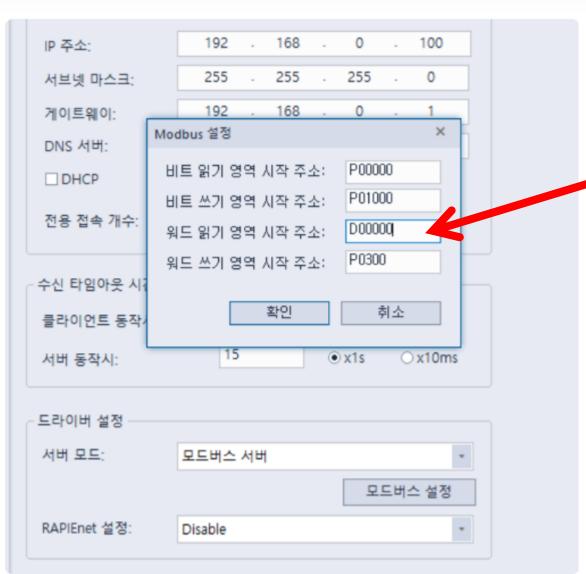
PLC 이더넷 IP 세팅



수정하면 파이썬 코드 수정이 필요

PLC 모드버스 세팅

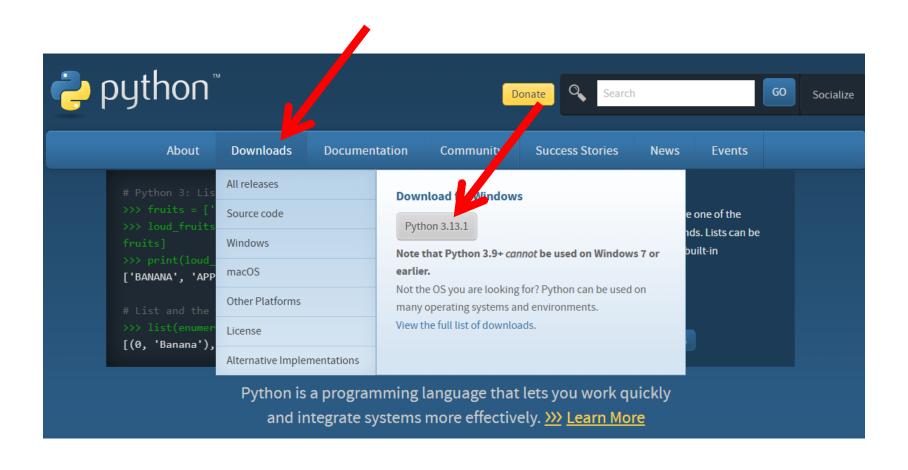




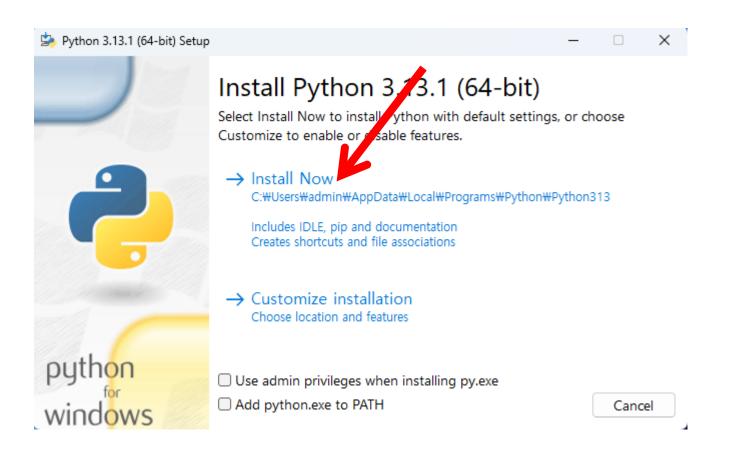
어드레스맵 기준 40000번 기입

Main Power F Phase Voltage PV Main P Main F Phase Current PV Pump et 19 Main P Phase P Main P Phase P Main P Phase P Main P P Phase P Main P P P Phase P Main P P P P Phase P Main P P P P P P P P P P P P P P P P P P P	0 - 16000 0 - 16000	V V V A A A A A A A A A A Cm/sec²	UINT UINT UINT UINT UINT UINT UINT UINT	W W W W W W W W W W W W W W W W W W W
Main Power F Phase Voltage PV Pumpe 11 6 Phase Current PV Pumpe 12 6 Phase Current PV Pumpe 13 6 Phase Current PV Pumpe 14 1 Phase Pumpe 14 Phase Pumpe 15 Phase Current PV Pumpe 15 6 Phase Current PV Pumpe 15 Phase Pumpe 14 Phase Pumpe 15 Phase P	0 ~ 16000 0 ~ 16000	V A A A A A A A A A Crm/sec²	UINT UINT UINT UINT UINT UINT UINT UINT	W W W W W W
Pump # 18 Phase Current PV Pump # 19 Phase Current PV Pump # 11 Phase Current PV Pump # 11 Phase Current PV Pump # 10 Phase Do PV Pump # 10 Phase Pump # 10 Ph	0 ~ 16000 0 - 16000 0 ~ 16000	A A A Cm/sec² °C C A A A Cm/sec² °C C C C C C C C C C C C C C C C C C C	UINT UINT UINT UINT UINT UINT UINT UINT	W W W W W
Fungs 41 Fhase Current PV Jump 41 Fhase Current PV Jump 41 Floridon Floridon Jump 42 Floridon Floridon Jump 42 Floridon Floridon Jump 42 Floridon FV Jump 42 Floridon PV Jump 42 Floridon PV Jump 43 Floridon PV Jump 44 Floridon FV Jump 44 Floridon FV Jump 45 Floridon FV Jump 45 Floridon FV Jump 45 Floridon FV Jump 45 Floridon FV Jump 48 Floridon	0 - 16000 0 - 16000	A A Cm/sec² °C °C A A A Cm/sec² °C C	UINT UINT UINT UINT UINT UINT UINT UINT	W W W W W
Pump # 1 Phase Current PV Pump # 1 Brase Current PV Pump # 1 Motor Temperature Pump # 1 Prediction Data Pump # 2 Phase Current PV Pump # 2 Phase Current PV Pump # 2 Brase Current PV Pump # 2 Prediction PV Pump # 2 Prediction Data Pump # 2 Prediction Data Pump # 3 P	0 ~ 16000 0 ~ 16000	A cm/sec² A A A Cm/sec² C SC	UINT UINT UINT UINT UINT UINT UINT UINT	W W W W
Pump #1 Worston PV Pump #1 Bearing Temperature Pump #1 Motor Temperature Pump #1 Motor Temperature Pump #1 Prediction Data Pump #2 F Phase Current PV Pump #2 F Phase Current PV Pump #2 T Phase Current PV Pump #2 T Phase Current PV Pump #2 Worston PV Pump #2 Motor PV Pump #3 Motor PV Pump #4 Motor PV Pum	0 ~ 16000 0 ~ 16000	cm/sec² ¹C A A A Cm/sec²	UINT UINT UINT UINT UINT UINT UINT UINT	W W W W
Pump a H Bearing Temperature Pump a H Moor Temperature Pump a H Moor Temperature Pump a H Prediction Data Pump a R P Nate Current PV Pump a R P Nate P N	0 ~ 16000 0 ~ 16000	A A A Cm/sec²	UINT UINT UINT UINT UINT UINT	W W W
Pump #1 Motor Temperature Pump #1 Prediction Data Pump #2 F Shate Current FV Pump #2 Whate F Shate F	0 ~ 16000 0 ~ 16000	A A A cm/sec²	UINT UINT UINT UINT UINT	W
Pump # 1 Prediction Data Pump #2 R Phase Current VV Pump #2 R Phase Current PV Pump #2 T Phase Current PV Pump #2 S Phase Current PV Pump #2 Bearing Tender PV Pump #2 Wordson PV Pump #2 Wordson PV Pump #2 Wordson PV Pump #2 Mortor Temperature Pump #2 Prediction Data Pump #3 R Phase Current TV	0 ~ 16000 0 ~ 16000 0 ~ 16000 0 ~ 16000 0 ~ 16000 0 ~ 16000 0 ~ 16000	A A A cm/sec²	UINT UINT UINT UINT	W
Pump #2 R Phase Current PV Pump #2 S Phase Current PV Pump #2 T Phase Current PV Pump #2 T Vibration PV Pump #2 Wibration PV Pump #2 Bearing Temperature Pump #2 Bearing Temperature Pump #2 Prediction Data Pump #3 R Phase Current PV	0 ~ 16000 0 ~ 16000 0 ~ 16000 0 ~ 16000 0 ~ 16000 0 ~ 16000	A A cm/sec²	UINT UINT UINT	W
Pump #2 S Phase Current PV Pump #2 T Phase Current PV Pump #2 Vibration PV Pump #2 Searing Temperature Pump #3 Dearing Temperature Pump #4 Prediction Data Pump #3 R Phase Current PV	0 ~ 16000 0 ~ 16000 0 ~ 16000 0 ~ 16000 0 ~ 16000	A A cm/sec²	UINT	W
Pump #2 T Phase Current PV Pump #2 Vibration PV Pump #2 Bearing Temperature Pump #2 Bearing Temperature Pump #2 Prediction Data Pump #3 R Phase Current PV	0 ~ 16000 0 ~ 16000 0 ~ 16000 0 ~ 16000	A cm/sec²	UINT	
Pump #2 Vibration PV Pump #2 Bearing Temperature Pump #2 Motor Temperature Pump #2 Prediction Data Pump #3 R Phase Current PV	0 ~ 16000 0 ~ 16000 0 ~ 16000	cm/sec²		W
Pump #2 Bearing Temperature Pump #2 Motor Temperature Pump #2 Prediction Data Pump #3 R Phase Current PV	0 ~ 16000 0 ~ 16000	*C	UINT	
Pump #2 Motor Temperature Pump #2 Prediction Data Pump #3 R Phase Current PV	0 ~ 16000			W
Pump #2 Prediction Data Pump #3 R Phase Current PV			UINT	W
Pump #3 R Phase Current PV	0 16000	€	UINT	W
Pump #3 R Phase Current PV			UINT	W
	0 ~ 16000	A	UINT	W
Pump #3 S Phase Current PV	0 ~ 16000	A	UINT	W
Pump #3 T Phase Current PV	0 ~ 16000	A	UINT	W
Pump #3 Vibration PV	0 ~ 16000	cm/sec²	UINT	W
Pump #3 Bearing Temperature	0 ~ 16000	*C	UINT	W
				W
		-		W
		Α		W
				W
				W
				W
				W
				W
				W
		Α		W
				W
				W
				W
				W
				W
		_		W
		-		W
				W
				W
				W
				W
				W
		_		W
		-		W
				W
				W
				W
				- ×
		1		W
		-		W
				W
				W
				W
				W
				W
		*C		W
	Pump #3 Motor Temperature Pump #3 Prediction Data Pump #4 R Phase Current PV Pump #4 S Phase Current PV Pump #4 T Phase Current PV	Number 19 Nation Temperature 0 - 18000	Nump et 3 Prizes Current PV	Nump et Phase Current PV

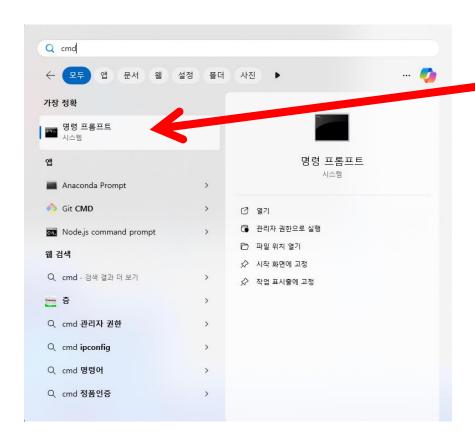
파이썬 설치



파이썬 설치



파이썬 라이브러리 설치

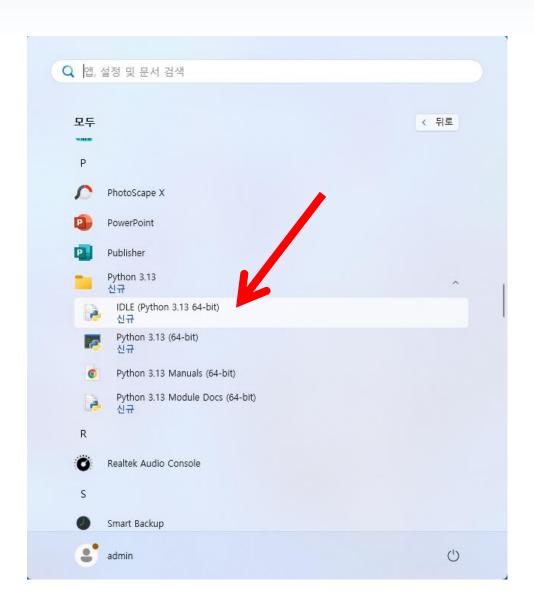


```
∞. 명령 프롬프트
 Microsoft Windows [Version 10.0.22631.4602]
(c) Microsoft Corporation. All rights reserved.
 C:\Users\admin>pip install pyqt5 pyqtgraph
 Collecting pyqt5
   Downloading PyQt5-5.15.11-cp38-abi3-win_amd64.whl.metadata (2.1 kB)
Collecting pyqtgraph
Using cached pyqtgraph-0.13.7-py3-none-any.whl.metadata (2.1 kB)
Collecting pyqts-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)
Downloading PyQt5, (from pyqt5)
Downloading PyQt5, (from pyqt5)
Collecting numpy=1.22.0 (from pyqtgraph)
Downloading numpy-2.2.0-cp313-cp313-win_amd64.whl.metadata (60 kB)
 Downloading PyQt5-5.15.11-cp38-abi3-win_amd64.whl (6.9 MB)
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)
                                                                                      eta 0:00:00
 Downloading PyQt5_Qt5-5.15.2-py3-none-win_amd64.whl (50.1 MB)
                                                                                       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 실행



CHAPTER 01

파이썬 세팅

파이썬 실행

```
hell 3.13.1
                                                                            \times
               Debug
File Edit Shell
                              Window Help
  New File
                 Ctrl+N
                             ART: C:/Users/admin/Desktop/123.py ==============
                 Ctrl+0
  Open.,
                               l last):
                           sktop/123.py", line 37, in <module>
, ((HOST, PORT))
  Open Module,...
                 Alt+M
  Recent Files
  Module Browser Alt+C
                             DO60] 연결된 구성원으로부터 응답이 없어 연결하지 못했거
(어 연결이 끊어졌습니다
  Path Browser
  Save
                 Ctrl+S
                             ove exception, another exception occurred:
                 Ctrl+Shift+S
  Save As...
                              | last):
                 Alt+Shift+S
  Save Copy As...
                             sktop/i23.py", line 36, in <module>
cket.AF_INET, socket.SOCK_STREAM) as client_socket:
  Print Window
                 Ctrl+P
                              4, socket.SOCK_STREAM: TCP
                             pĎata#Local#Programs#Python#Python313#Lib#socket.py", I
  Close Window
                 Alt+F4
                              rgs):
                 Ctrl+Q
  Exit IDLE
>>>
   Traceback (most recent call last):
    File "C:/Users/admin/Desktop/123.py", line 63, in <module>
time.sleep(COMMUNICATION_INTERVAL)
주기 동안 대기 (2초) = 데이터 갱신 주기
                                                                             # 통신
    KeyboardInterrupt
>>>
                                                                           Ln: 25 Col: 2
```

CHAPTER 01

파이썬 세팅

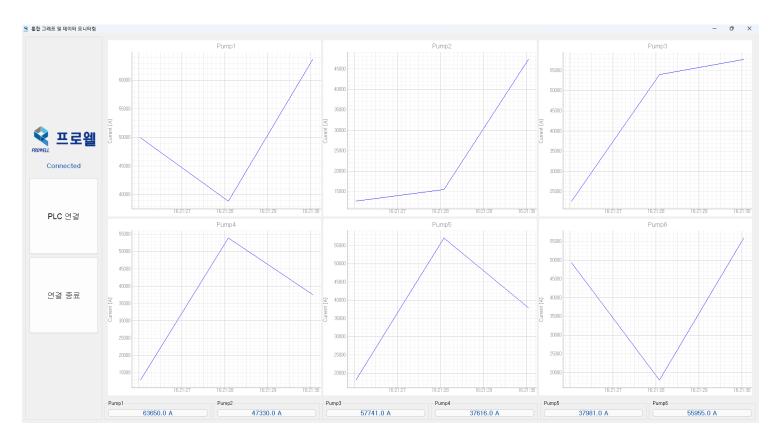
파이썬 실행

```
123.py - C:\Users\admi
                        sktop\123.py (3.13.1
                                                                      \times
File Edit Format Run Options Window
import socket
import struct
                   Run,,, Customized Shift+F5
import time
                   Check Module
                                            P 주소, modbus_sim ip: 127.0.0.1
dbus TCP 표준 포트, modbus_sim port
HOST = '127.0.0.
                  Python Shell
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
# E랜잭션 ID (임의로 설정 가능)
protocol_id = 0 # 프로토콜 ID (Modbus TCP의 경우 0)
length = 6 # 길이 (유닛 ID, 함수 교도, 시작 주소, 2
#####
#####
                                      # 묘닛 ID (Modbus 장치 ID = slave ID, 1
# 함수 코드 (4는 입력 레지스터 읽기, 1 번
# 시작 주소 (0부터 시작, 2 반이트)
# 읽을 레지스터 수 (7개의 레지스터 읽기
unit_id = 55
function\_code = 4
start_address = 0
register_count = 7
#####
# '>HHHBBHH' 형식 문자열을 사용하며 Modbus 요청 메시지 패킹 request = struct.pack('>HHHBBHH', transaction_id, protocol_id, length, unit_id,
# 시작 시간 기록
start_time = time.time()
# TCP 소켓 생성 및 연결
with socket.socket(socket.AF_INET, socket.SOCK_STREAM) as client_socket:
    client_socket.connect((HOST, PORT))
    client_socket.sendall(request)
    # 응답 메시지 받기
                                                                      Ln: 1 Col: 0
```

파이썬 코드 수정할 부분

PLC측 이더넷 ip 주소 변경시 수정할 것

```
🚵 *123.py - C:\Users\admin\Desktop\122
                                 Jy (3.13.1)*
File Edit Format Run Options
                               Vindow Help
import socket
import struct
import time
HOST = '192.168.0.100'
                                        # PLC의 IP 주소, modbus_sim ip: 127.0.0.1
# Modbus TCP 표준 포트, modbus_sim port: 5020
FVNI - 50Z
                                        # 통신 주기 (2초)
# 총 실행 시간 (10분 = 600초)
COMMUNICATION_INTERVAL = 2
RUN_DURATION = 10 * 60
# Modbus TCP 요청 메시지 구성
                                        # 트랜잭션 ID (임의로 설정 가능)
# 프로토콜 ID (Modbus TCP의 경우 0)
# 길이 (유닛 ID, 함수 코드, 시작 주소, 레지스터 수 의 바이트 합)
transaction_id = 0
protocol_id = 0
length = 6
#####
                                                                                                                                           #######
#####
                                              ID (Modbus 장치 ID = slave ID, 1 바이트
- 코드 (4는 압력 레지스터 읽기, 1 바이트)
- 주소 (0부터 시작 , 2 바이트)
- 레지스터 수 (7개의 레지스터 읽기 , 2 바이트)
unit_id = 55
function\_code = 4
start_address = 0
register\_count = 7
#####
                                                                                                                                           #######
```



2초에 한번 새로운 값이 갱신됨.

1000개의 값이 그래프로 표시됨.

33분부터 오래된 값은 사라지고 새로운 값이 들어옴.

정상 출력 결과

Register	Register Name	Range	Unit	Data Type	속성
40001	Main Power R Phase Voltage PV	0 ~ 16000	V	UINT	W
10002	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	Α	UINT	W
40006	Pump #1 T Phase Current PV	0 ~ 16000	A	UINT	W
40007	Pump #1 Vibration PV	0 ~ 16000	cm/sec ²	UINT	W
40008	Pump #1 Bearing Temperature	0 ~ 16000	~	UINT	W
40009	Pump #1 Motor Temperature	0 ~ 16000	°⊂	UINT	W
40010	Pump #1 Prediction Data	0 ~ 16000		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/sec ²	UINT	W
40015	Pump #2 Bearing Temperature	0 ~ 16000	℃	UINT	W
40016	Pump #2 Motor Temperature	0 ~ 16000	°⊂	UINT	W
40017	Pump #2 Prediction Data	0 ~ 16000		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/sec ²	UINT	W
40022	Pump #3 Bearing Temperature	0 ~ 16000	°⊂	UINT	W
40023	Pump #3 Motor Temperature	0 ~ 16000	°⊂	UINT	W
40024	Pump #3 Prediction Data	0 ~ 16000		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/sec ²	UINT	W
40029	Pump #4 Bearing Temperature	0 ~ 16000	°⊂	UINT	W
40030	Pump #4 Motor Temperature	0 ~ 16000	°⊂	UINT	W
40031	Pump #4 Prediction Data	0 ~ 16000		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/sec ²	UINT	W
40036	Pump #5 Bearing Temperature	0 ~ 16000	°⊂	UINT	W
40037	Pump #5 Motor Temperature	0 ~ 16000	℃	UINT	W
40038	Pump #5 Prediction Data	0 ~ 16000		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/sec ²	UINT	W
40043	Pump #6 Bearing Temperature	0 ~ 16000	℃	UINT	W
10044	Pump #6 Motor Temperature	0 ~ 16000	°⊂	UINT	W
40045	Pump #6 Prediction Data	0 ~ 16000		UINT	W
40046	Pump #7 R Phase Current PV	0 ~ 16000	A	UINT	W
10047	Pump #7 S Phase Current PV	0 ~ 16000	A	UINT	W
10048	Pump #7 T Phase Current PV	0 ~ 16000	A	UINT	W
10049	Pump #7 Vibration PV	0 ~ 16000	cm/sec ²	UINT	W
10050	Pump #7 Bearing Temperature	0 ~ 16000	℃	UINT	W
10051	Pump #7 Motor Temperature	0 ~ 16000	℃	UINT	W
10052	Pump #7 Prediction Data	0 ~ 16000	\perp	UINT	W
10053	Pump #8 R Phase Current PV	0 ~ 16000	A	UINT	W
10054	Pump #8 S Phase Current PV	0 ~ 16000	A	UINT	W
10055	Pump #8 T Phase Current PV	0 ~ 16000	A	UINT	W
10056	Pump #8 Vibration PV	0 ~ 16000	cm/sec ²	UINT	W
10057	Pump #8 Bearing Temperature	0 ~ 16000	℃	UINT	W
0058	Pump #8 Motor Temperature	0 ~ 16000	°⊂	UINT	W
10059	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.

이상입니다. 감사합니다.

2024.12.12

