

Connect OpenPLC with ScadaBR

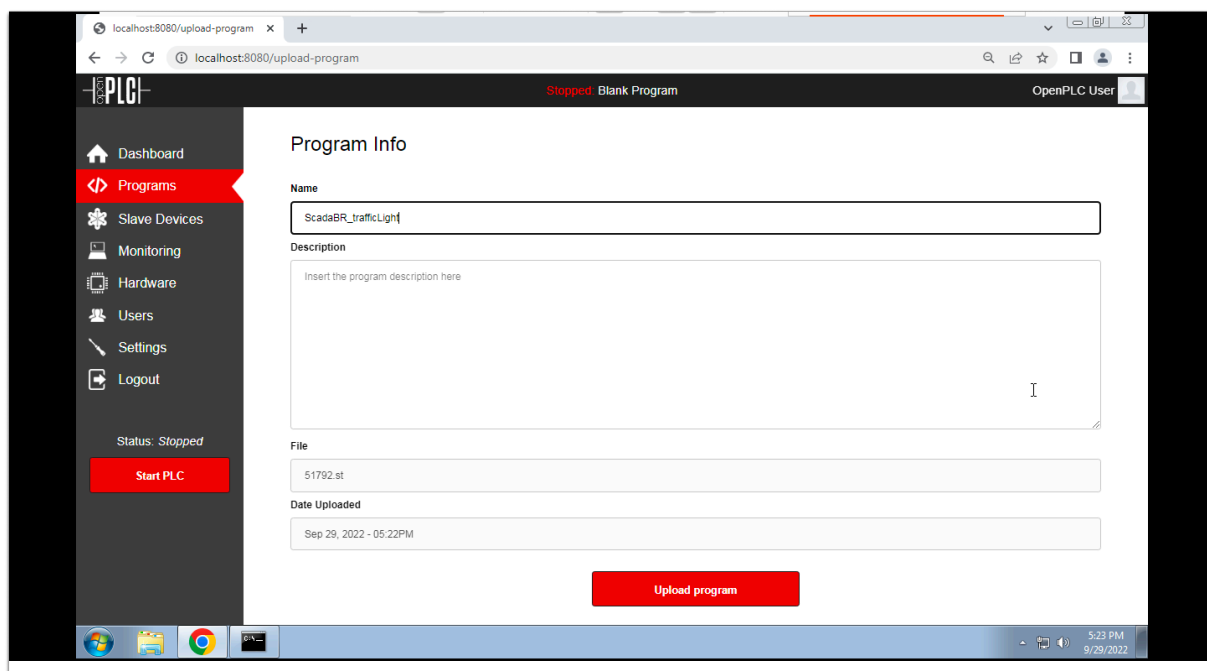
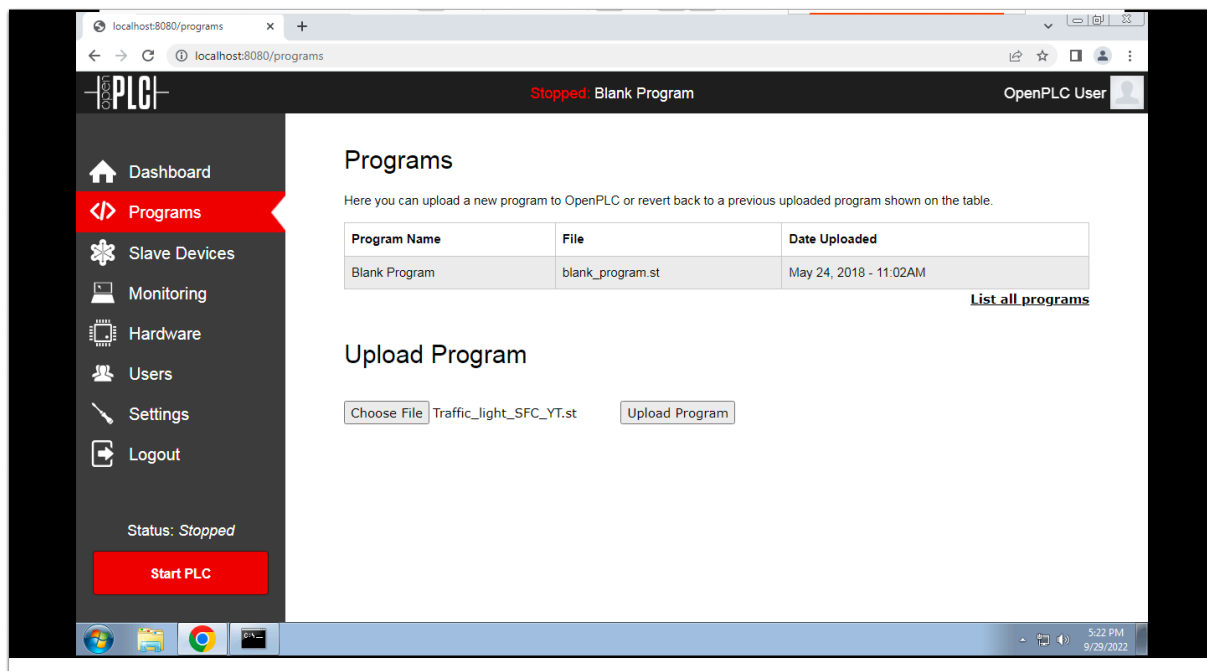
For demonstration, I follow the step in this video.

<https://www.youtube.com/watch?v=bSdW4XXBILo>

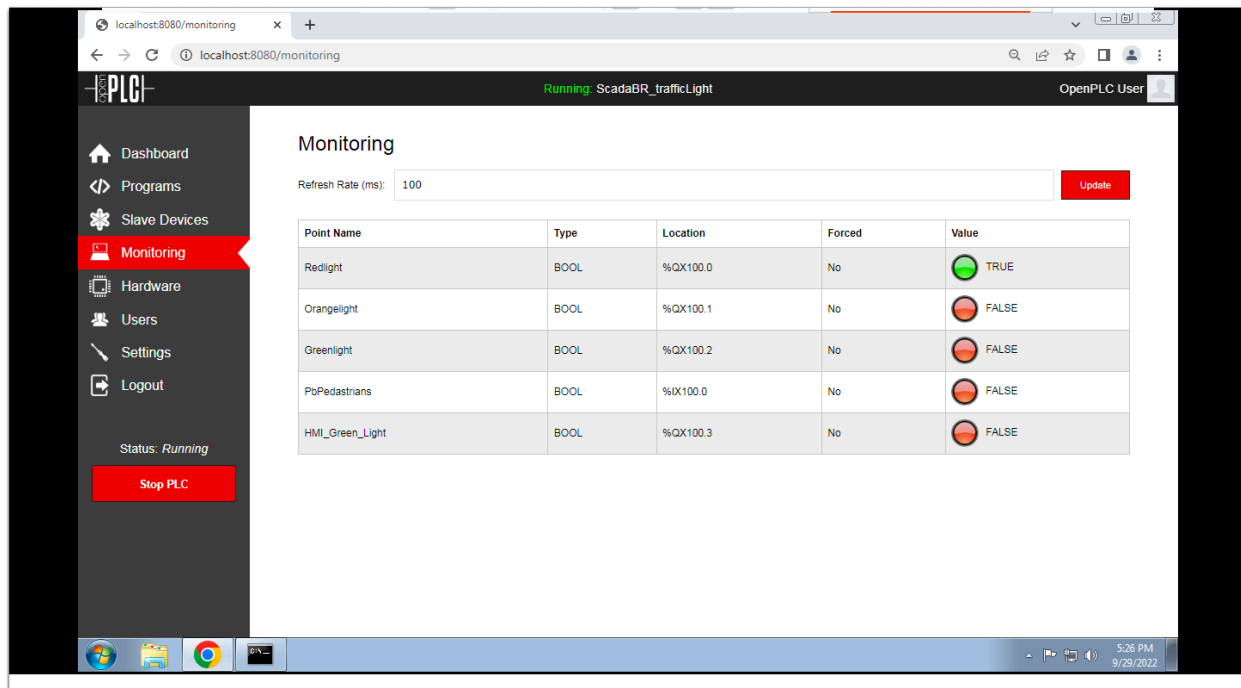
It sets up a traffic light project on OpenPLC, and connect it with ScadaBR.

OpenPLC

First, we upload the traffic light program on OpenPLC Runtime.



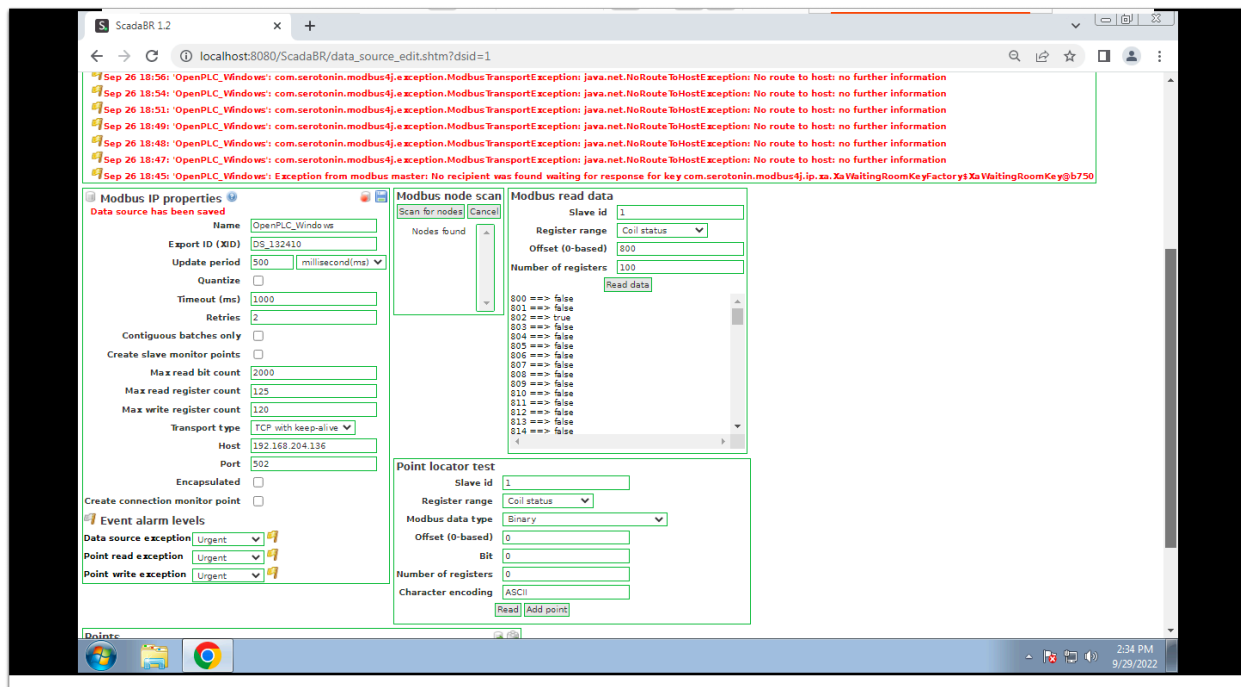
After that, press “Start PLC” and go to Monitoring tab for variable monitoring.



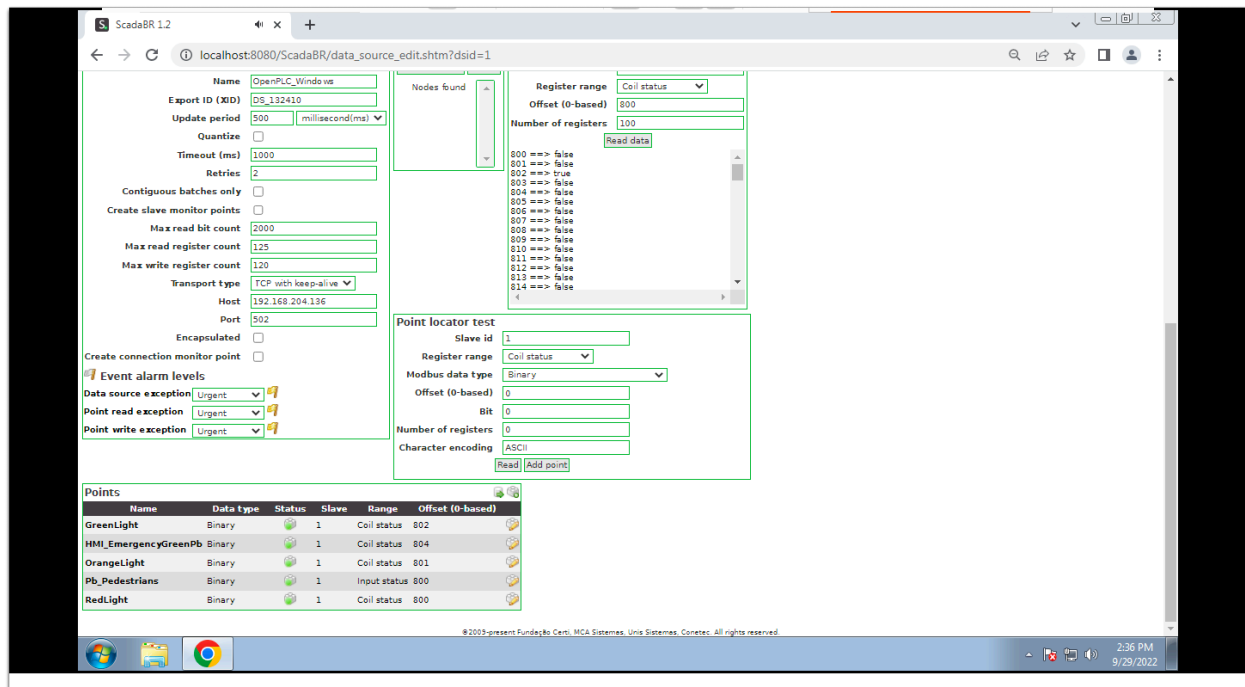
ScadaBR

Select “Data sources”

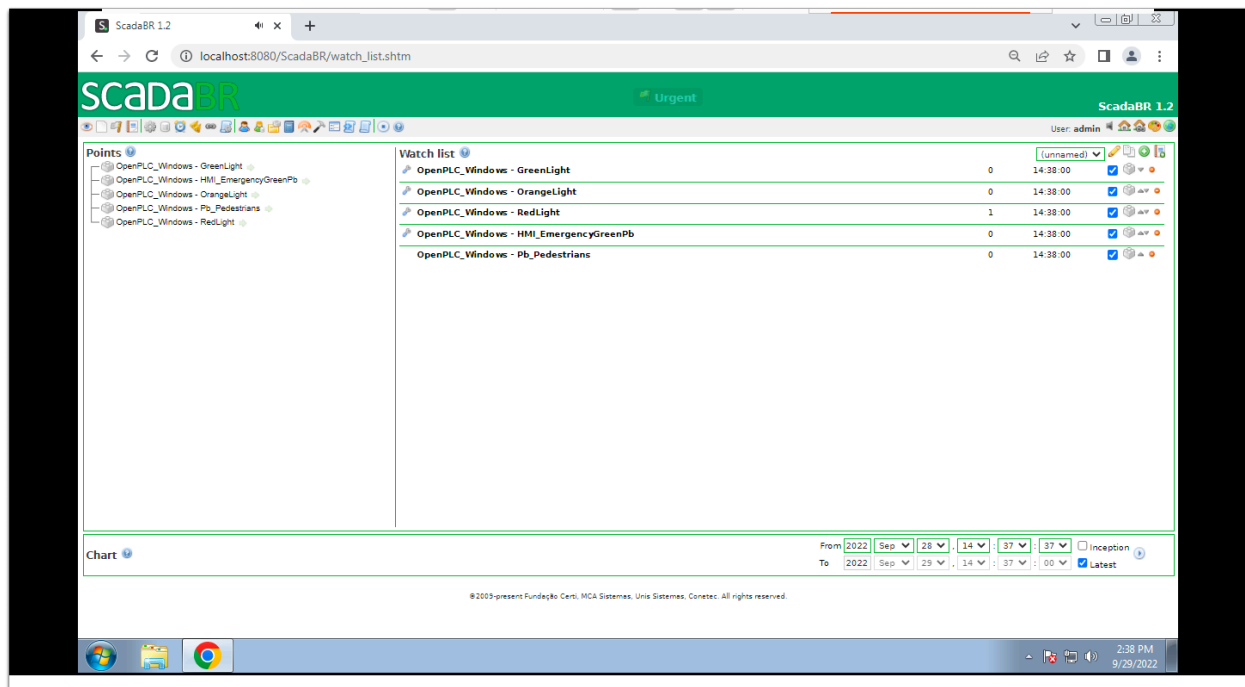
Set up Modbus properties, including Name, Update period, Transport type, and IP address. IP address is the address of machine running OpenPLC.



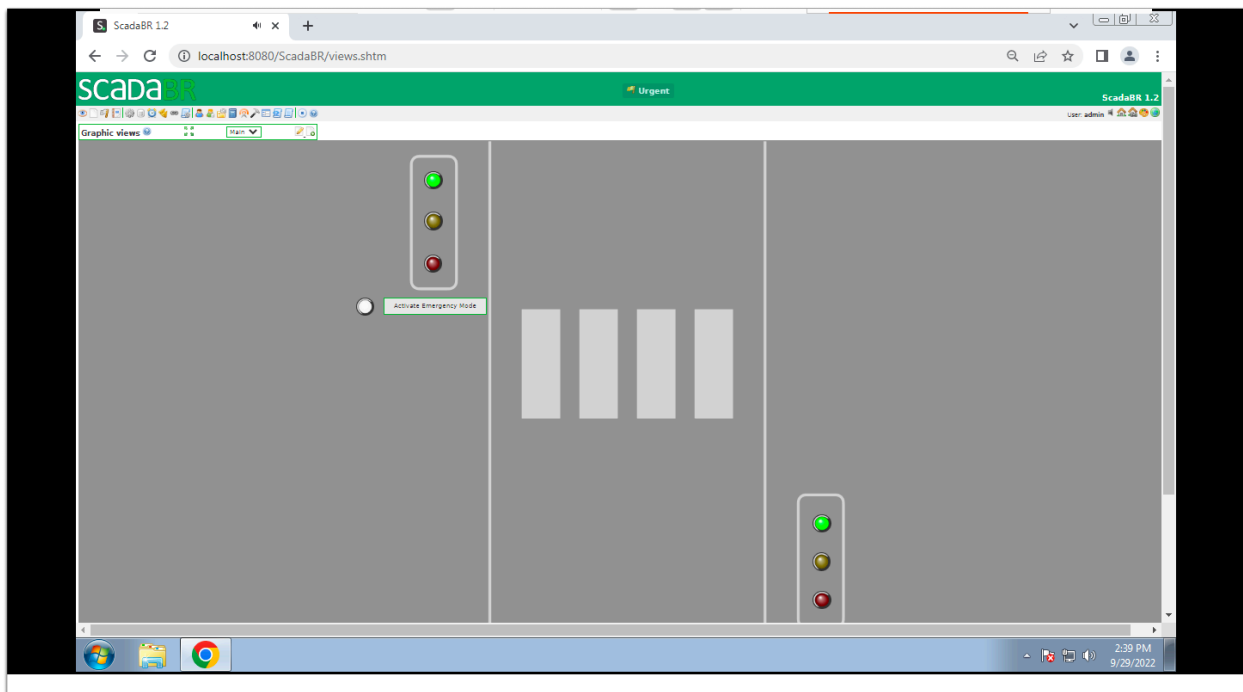
After that, scroll down to add points for monitoring.



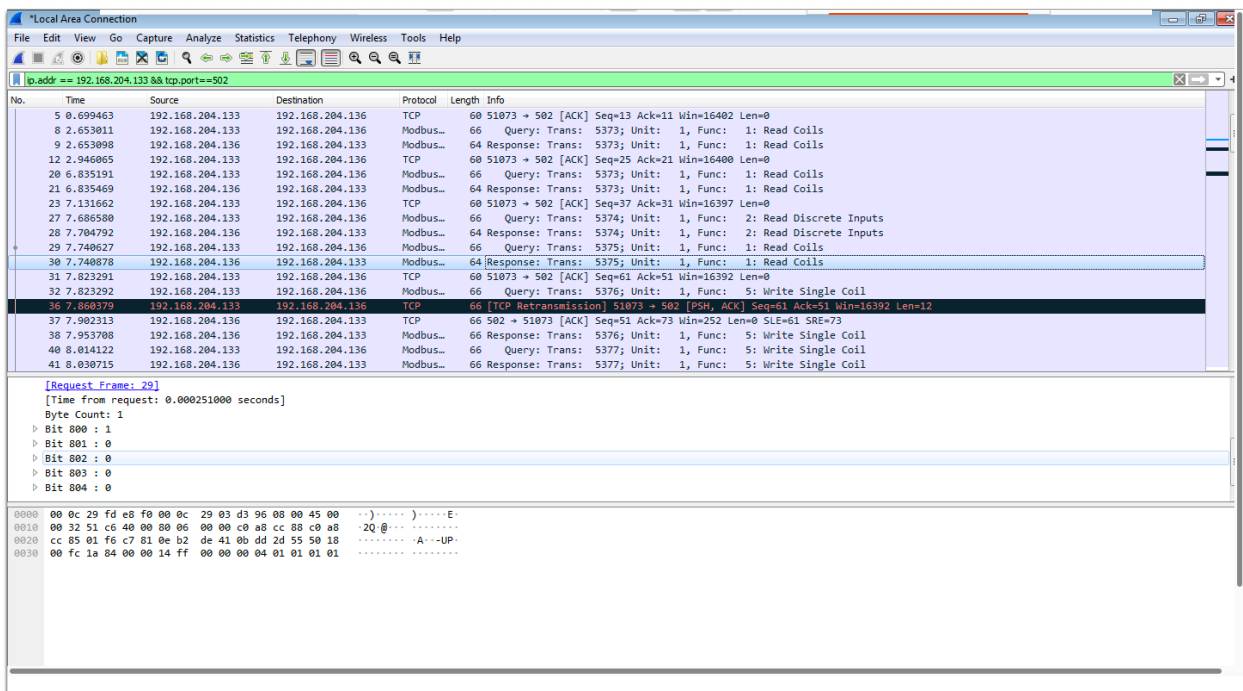
Select “Watch list”, and we can see data coming from OpenPLC on the right hand side.



Go to “Graphical View”, and we can add a background with data point on it to showcase realtime situation.



Here's what I learned from Wireshark. I used Wireshark version 3.2 because it is the last version to support Windows 7. It shows that ScadaBR keeps reading data value (Read Coils) from OpenPLC



When we click “Activate Emergency Mode” in the “Graphical View” from ScadaBR, ScadaBR will write data to OpenPLC (Write Single Coil).

Local Area Connection

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

ip.addr == 192.168.204.133 && tcp.port==502

No.	Time	Source	Destination	Protocol	Length	Info
5	0.699463	192.168.204.133	192.168.204.136	TCP	60	51073 → 502 [ACK] Seq=13 Ack=11 Win=16402 Len=0
8	2.653011	192.168.204.133	192.168.204.136	Modbus...	66	Query: Trans: 5373; Unit: 1, Func: 1: Read Coils
9	2.653098	192.168.204.136	192.168.204.133	Modbus...	64	Response: Trans: 5373; Unit: 1, Func: 1: Read Coils
12	2.946065	192.168.204.133	192.168.204.136	TCP	60	51073 → 502 [ACK] Seq=25 Ack=21 Win=16400 Len=0
20	6.835191	192.168.204.133	192.168.204.136	Modbus...	66	Query: Trans: 5373; Unit: 1, Func: 1: Read Coils
21	6.835469	192.168.204.136	192.168.204.133	Modbus...	64	Response: Trans: 5373; Unit: 1, Func: 1: Read Coils
23	7.131662	192.168.204.133	192.168.204.136	TCP	60	51073 → 502 [ACK] Seq=37 Ack=31 Win=16397 Len=0
27	7.686588	192.168.204.133	192.168.204.136	Modbus...	66	Query: Trans: 5374; Unit: 1, Func: 2: Read Discrete Inputs
28	7.704792	192.168.204.136	192.168.204.133	Modbus...	64	Response: Trans: 5374; Unit: 1, Func: 2: Read Discrete Inputs
29	7.740627	192.168.204.133	192.168.204.136	Modbus...	66	Query: Trans: 5375; Unit: 1, Func: 1: Read Coils
30	7.740878	192.168.204.136	192.168.204.133	Modbus...	64	Response: Trans: 5375; Unit: 1, Func: 1: Read Coils
31	7.823291	192.168.204.133	192.168.204.136	TCP	60	51073 → 502 [ACK] Seq=61 Ack=51 Win=16392 Len=0
32	7.823292	192.168.204.133	192.168.204.136	Modbus...	66	Query: Trans: 5376; Unit: 1, Func: 5: Write Single Coil
36	7.860379	192.168.204.133	192.168.204.136	TCP	66	[TCP Retransmission] 51073 → 502 [PSH, ACK] Seq=61 Ack=51 Win=16392 Len=12
37	7.902313	192.168.204.136	192.168.204.133	TCP	66	502 → 51073 [ACK] Seq=51 Ack=73 Win=252 Len=0 SLE=61 SRE=73
38	7.953708	192.168.204.136	192.168.204.133	Modbus...	66	Response: Trans: 5376; Unit: 1, Func: 5: Write Single Coil
40	8.014122	192.168.204.133	192.168.204.136	Modbus...	66	Query: Trans: 5377; Unit: 1, Func: 5: Write Single Coil
41	8.030715	192.168.204.136	192.168.204.133	Modbus...	66	Response: Trans: 5377; Unit: 1, Func: 5: Write Single Coil

▸ Internet Protocol Version 4, Src: 192.168.204.133, Dst: 192.168.204.136
 ▸ Transmission Control Protocol, Src Port: 51073, Dst Port: 502, Seq: 61, Ack: 51, Len: 12
 ▸ Modbus/TCP
 ▸ Modbus
 .000 0101 = Function Code: Write Single Coil (5)
 Reference Number: 804
 Data: ff00
 Padding: 0x00

```

0000 00 0c 29 03 d3 96 00 0c 29 fd e8 f0 08 00 45 00  --).....).....E
0010 00 34 67 21 40 00 00 06 79 43 c0 a8 cc 85 c0 a8  4g!@...yC.....
0020 cc 88 c7 81 01 f6 0b dd 2d 55 0e b2 de 4b 50 18  .....-U...KP
0030 40 08 4d 81 00 00 15 00 00 00 06 01 05 03 24  @H.....$
0040 ff 00
  
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