

**HMI to S7300 by MPI**

**Sample application**

## **TABLE OF CONTENTS**

1.	REQUIREMENTS .....	3
2.	ONLINE SIMULATION .....	3
3.	REFERENCE MANUALS .....	8
4.	OPC SERVER CONFIGURATION SCREENS .....	9
5.	HMI CONFIGURATION SCREENS .....	13
6.	RUN APPLICATION IN HMI .....	16
7.	OPC SERVER TESTING .....	18
8.	OPC CLIENT TESTING .....	19

## 1. Requirements

---

### Hardware

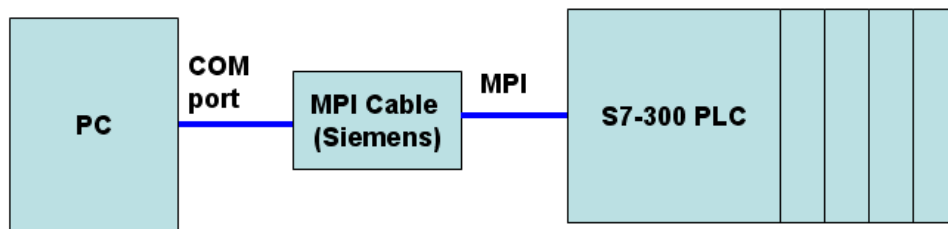
1. HMI 450
2. S7300 PLC
3. 6ES7 972 OCA23-OXAO, MPI/DP TO RS232 CABLE FROM SIEMENS
4. HMI to PC, Ethernet cable (Cross over or straight cable)

### Software

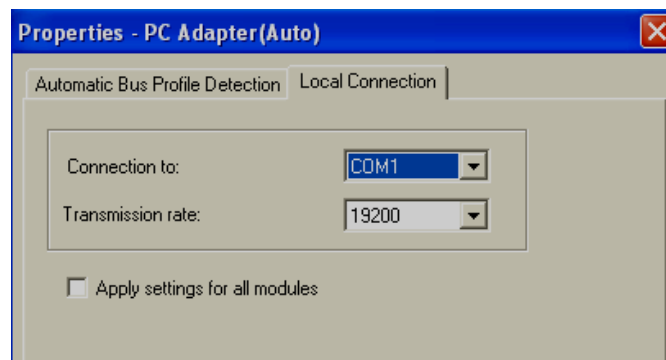
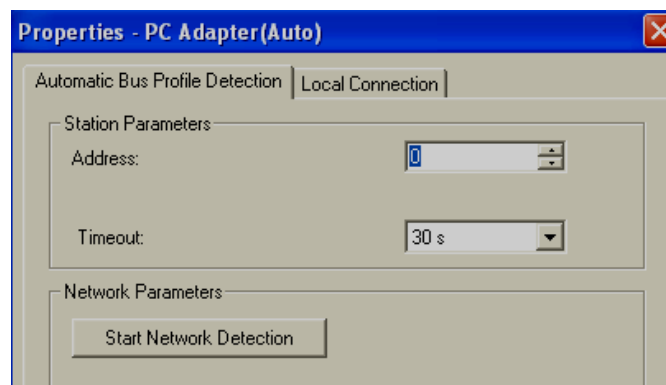
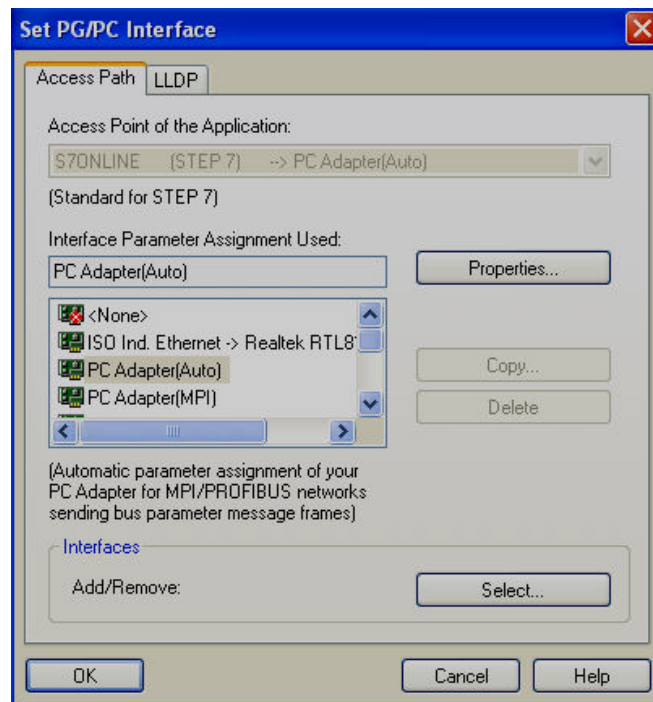
Panel Studio pack V1.0 or later  
Application program: HMI450\_S7300\_MPI  
Simatic Manager, Siemens Software

## 2. Online Simulation

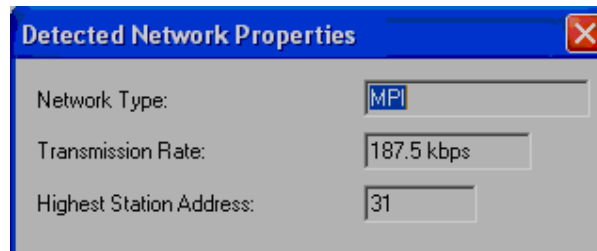
---



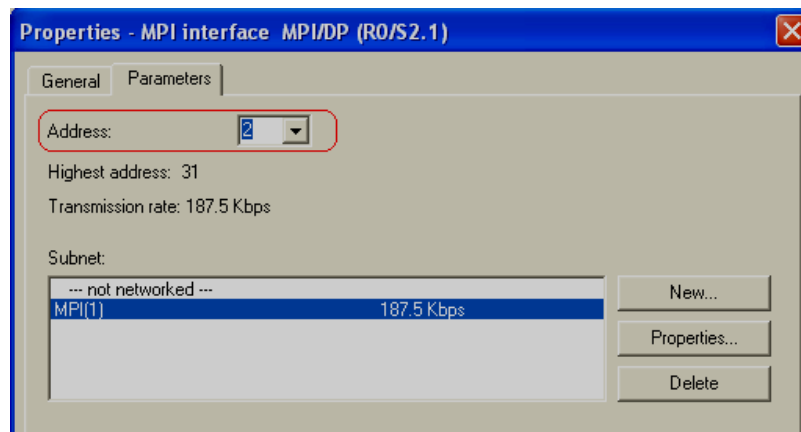
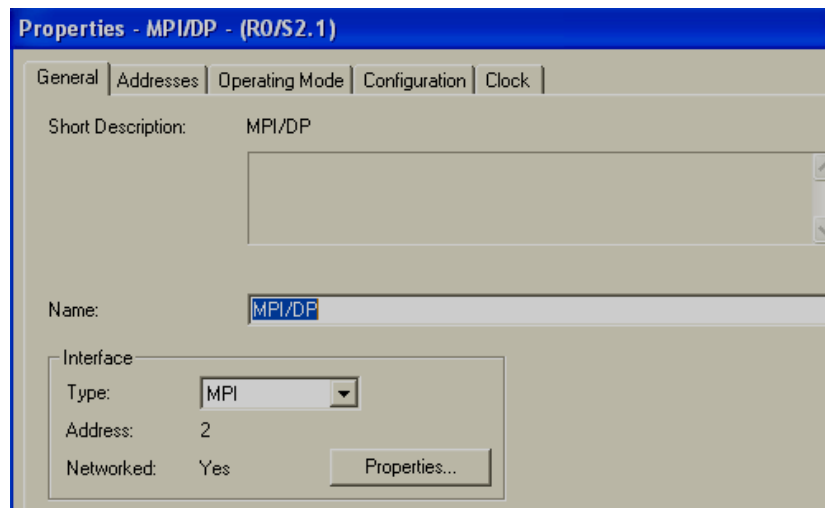
1. Connect Siemens MPI cable between S7300 PLC to PC. Set dip switch to 19.2K baud rate on Siemens MPI cable
2. Set PG/PC interface as below



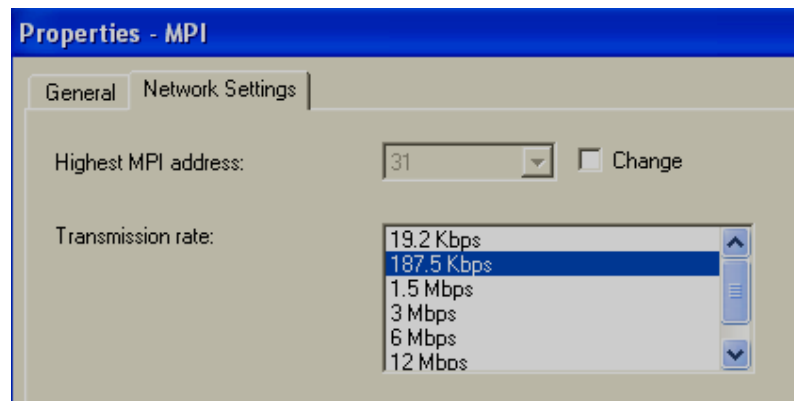
**Note down COM port number and Transmission rate, they need to set in OPC server later. This baud rate must be same as baud rate set on Siemens MPI cable**



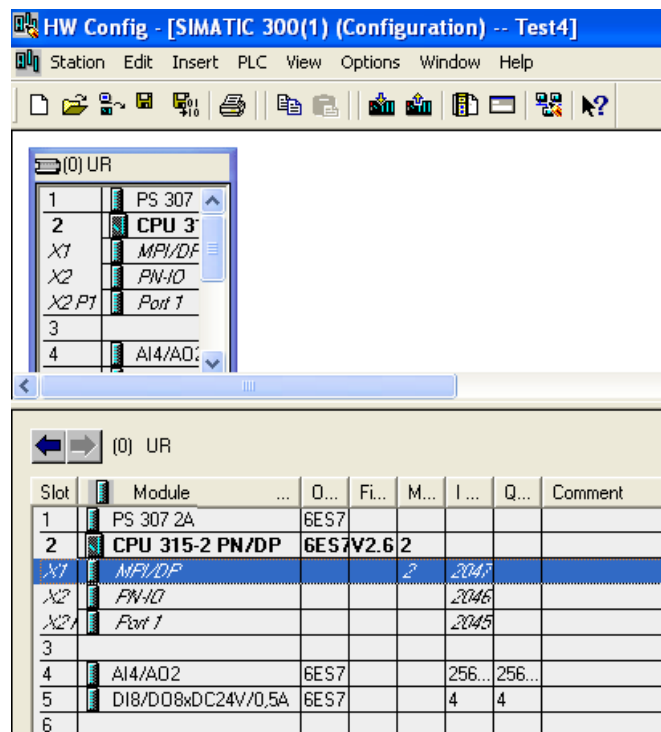
3. Make sure, S7300 PLC setup is as shown below



**Note down MPI address, this address must be set in OPC server later.**



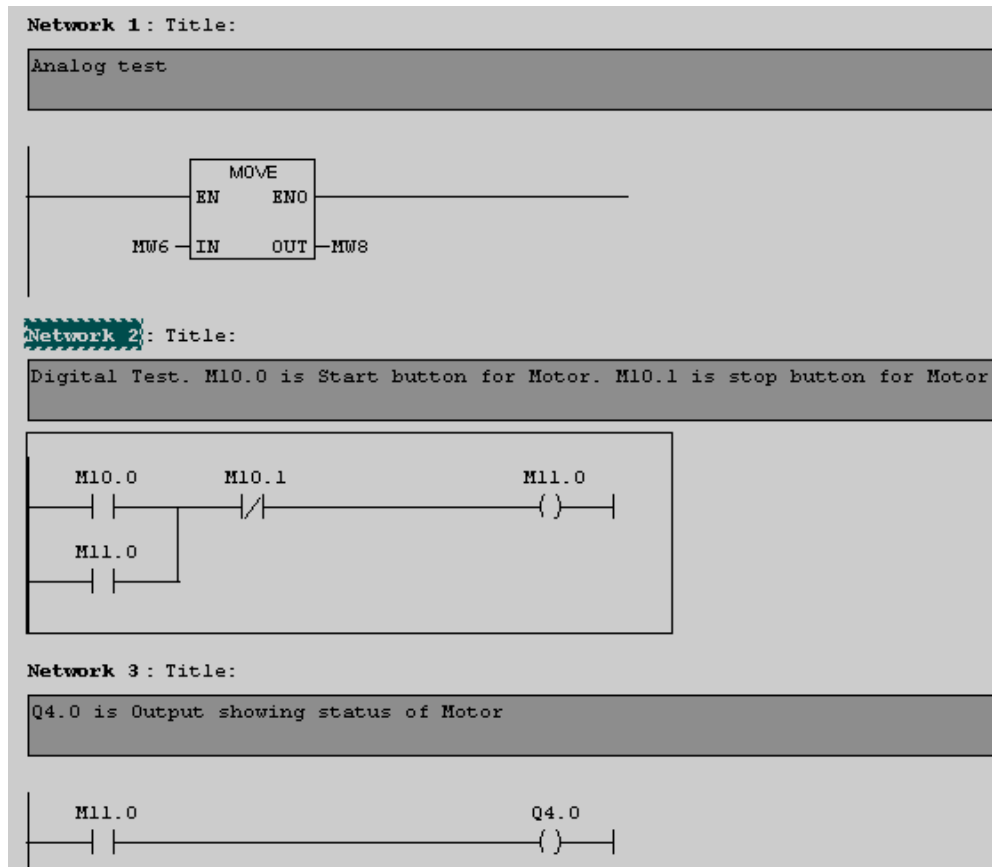
In PLC, on MPI side, you must set 187.5Kbps baud rate as shown above. There is no need to set this baud rate anywhere in OPC server. In OPC server, we need to set baud rate as per MPI cable and PG/PC setup interface only



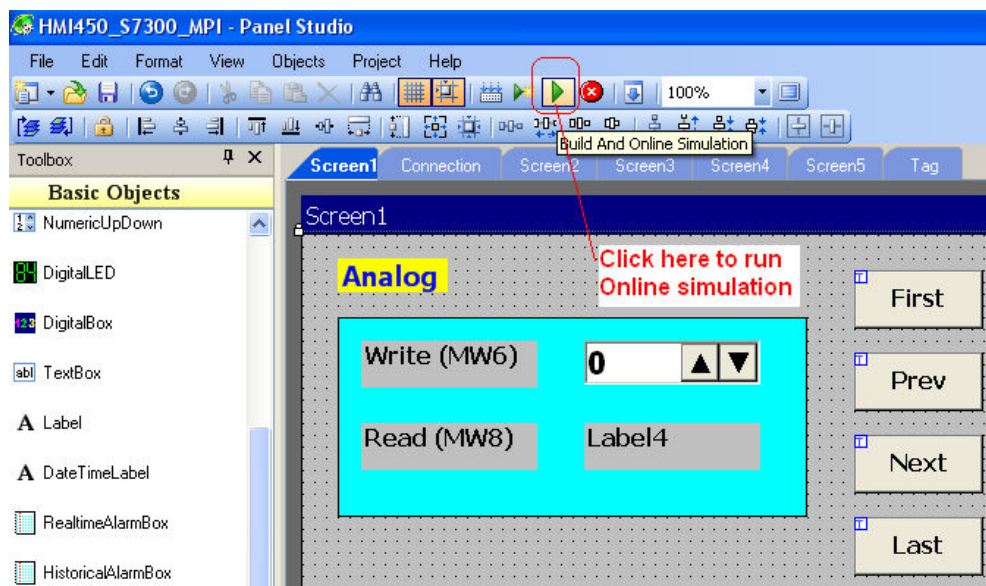
PLC hardware configuration

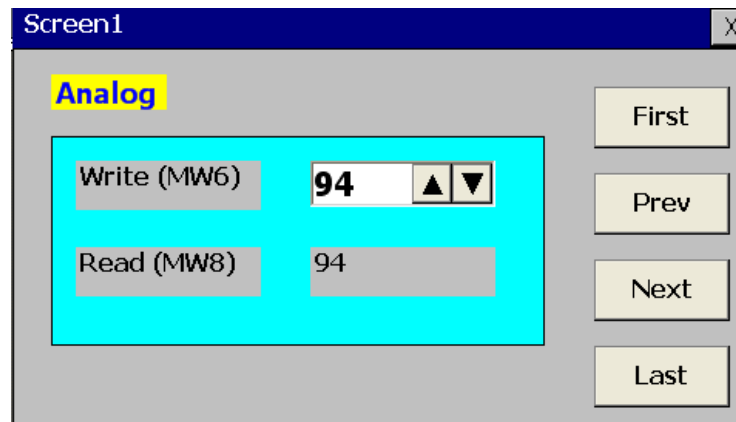
Observe address for DI/DO modules

- Write a small PLC program in OB1 as shown attached and then download to PLC. Make sure PLC is in Run mode

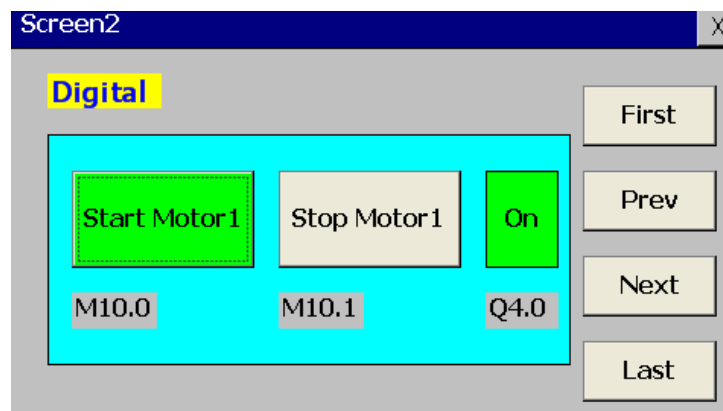


5. Install Panel Studio pack in PC. Open HMI450\_S7300\_MPI.prj Panel Studio application in PC. Run Online simulation as shown below





Use Up/Down arrows and change the value at MW6. It should change at MW8 also because Mov instruction used in PLC program to copy contents from MW6 to MW8



In Screen2, press “Start Motor1” button and check status at Q4.0. Then, press “Stop Motor1” and observe status of Q4.0. Please check PLC program for motor control

### 3. Reference manuals

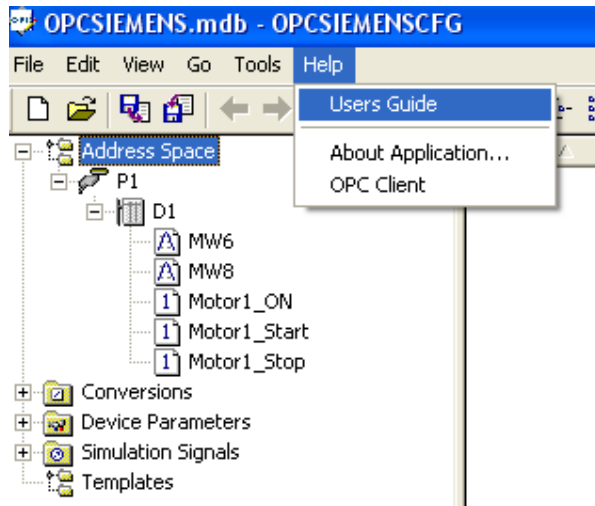
---

#### 1. HMI user manual



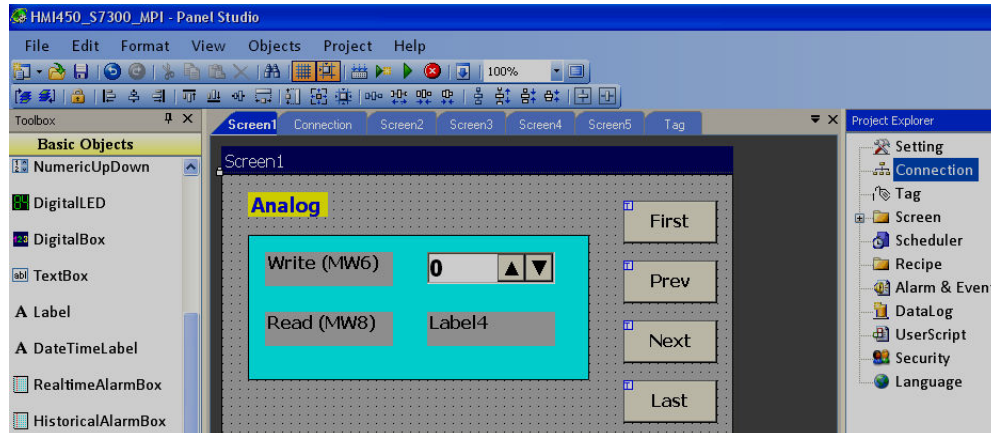
2.Siemens OPC server user manual (This can be accessed from OPC server configuration menu itself as shown below)

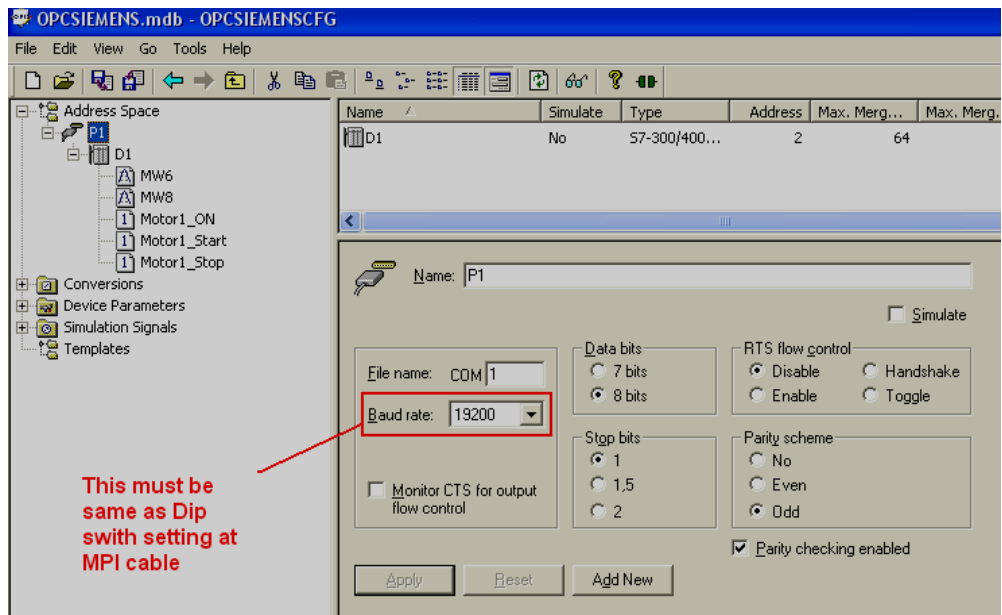
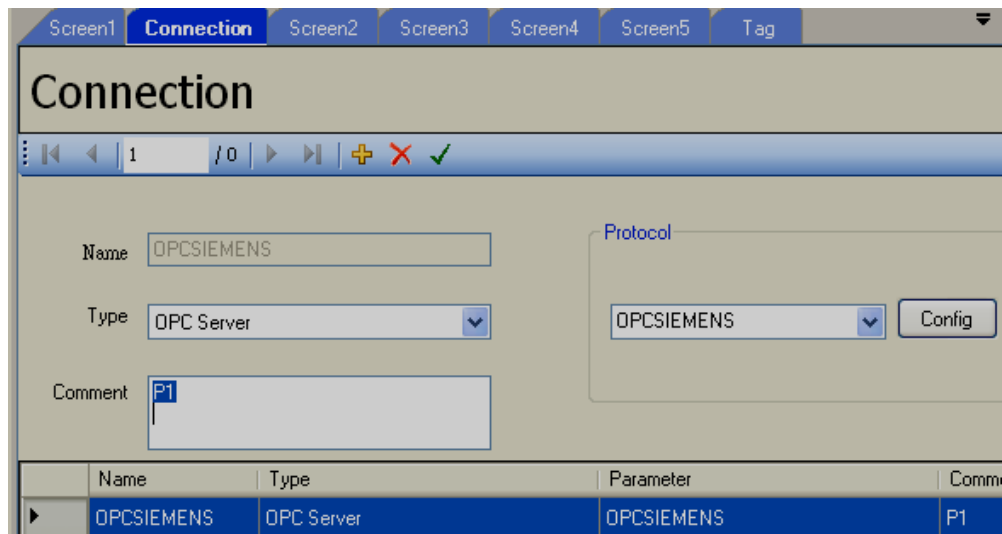




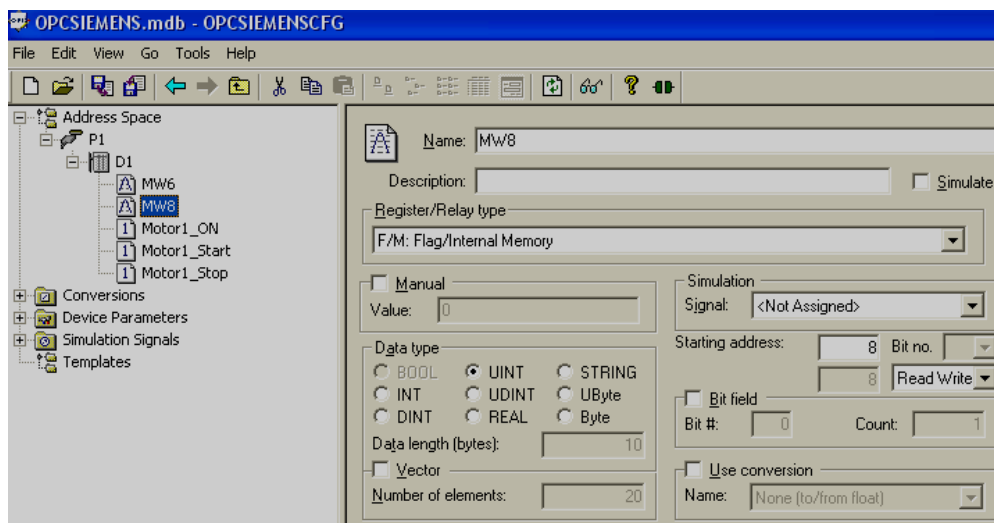
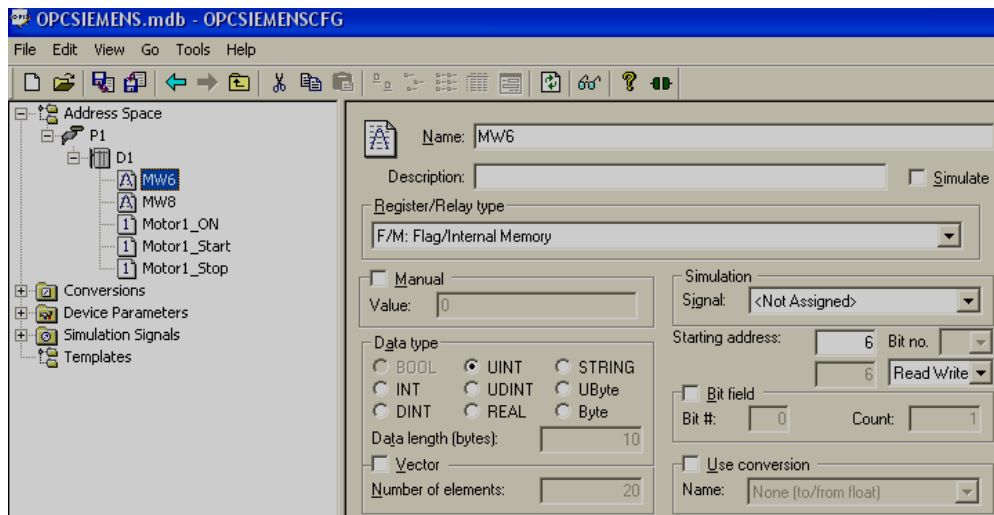
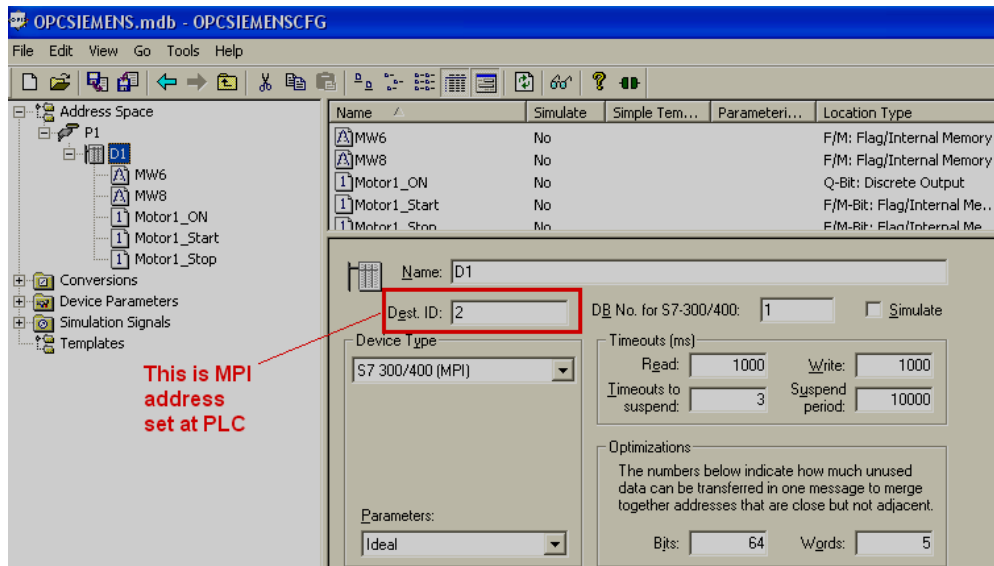
#### 4. OPC Server configuration screens

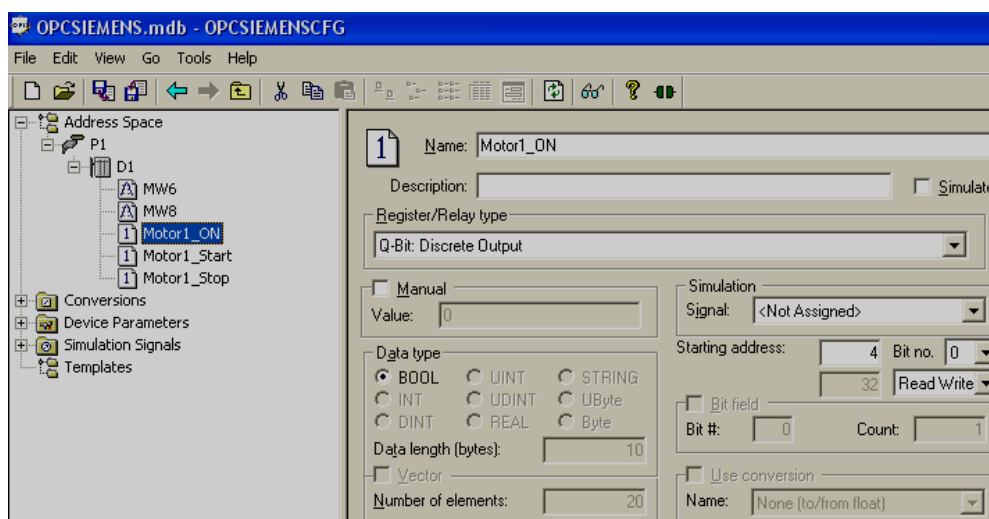
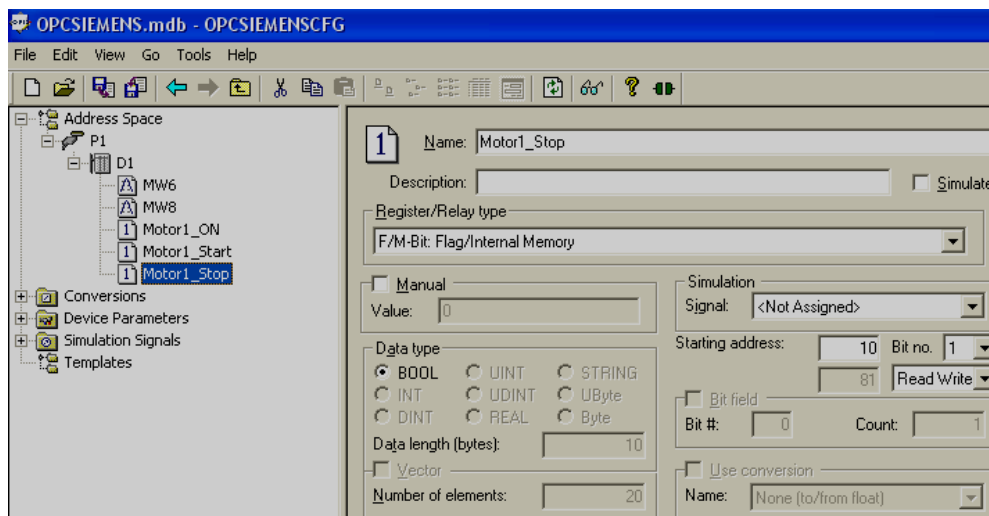
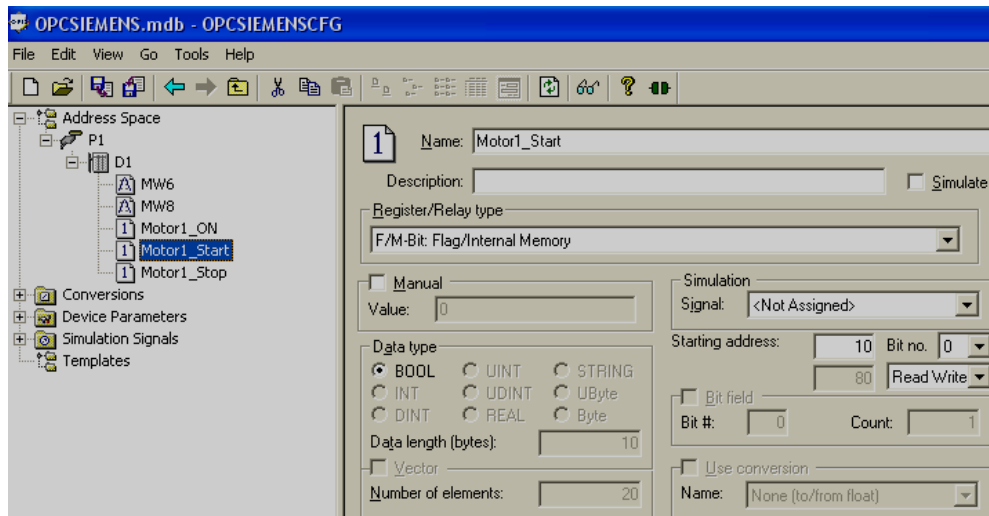
(This is already done in sample application program-all the following pages is for user information only when creating new project)





**COM port number should be same as PG/PC setting interface from Siemens software**





# Tag

User Define

System

9

/ 0

+

×

✓

Connection

OPCSIEMENS

Register

P1.D1.Motor1\_ON

Name

P1\_D1\_Motor1\_ON

Gain

1

Type

Digital

Read/Write

Read & Write

Offset

0

Scan mode

Always

Scan rate

100

ms

Comment

	Connection	Name	Type	Scan mode	Scan rate
▶	OPCSIEMENS	P1_D1_Motor1_ON	Digital	Always	100
	OPCSIEMENS	P1_D1_Motor1_Start	Digital	Always	100
	OPCSIEMENS	P1_D1_Motor1_Stop	Digital	Always	100
	OPCSIEMENS	P1_D1_MW6	Analog	Always	100
	OPCSIEMENS	P1_D1_MW8	Analog	Always	100

Fig: Tag data base in Panel Studio software. Once OPC server configuration is completed, please close OPC server configuration screen and then check tags. All tags defined at OPC server should appear as shown above

## 5. HMI Configuration screens

(This is already done in sample application program-all the following pages is for user information only when creating new project)

Screen1

Analog

Write (MW6)

0

▲▼

Read (MW8)

Label4

First

Prev

Next

Last

Screen1

**Analog**

Write (MW6) 0 ▲ ▼

Read (MW8) Label4

**NumericUpDown1's Properties**

General Common Events

**Appearance**

☐ BackColor

☐ WriteDesignTimeValue

**TextFont**

Name  
Tahoma ▼

Style  
Bold ▼

**Values**

Value  
0

Increment  
1

TagBinding  
P1\_D1\_MW6

Screen1

**Analog**

Write (MW6) 0 ▲ ▼

Read (MW8) Label4

**Label4's Properties**

General Common

**Appearance**

☐ BackColor

Text  
Label4

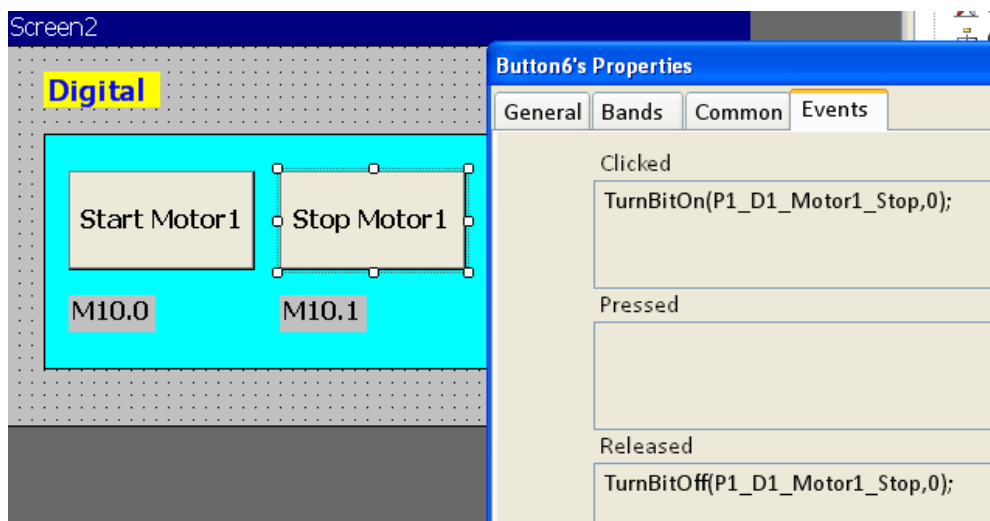
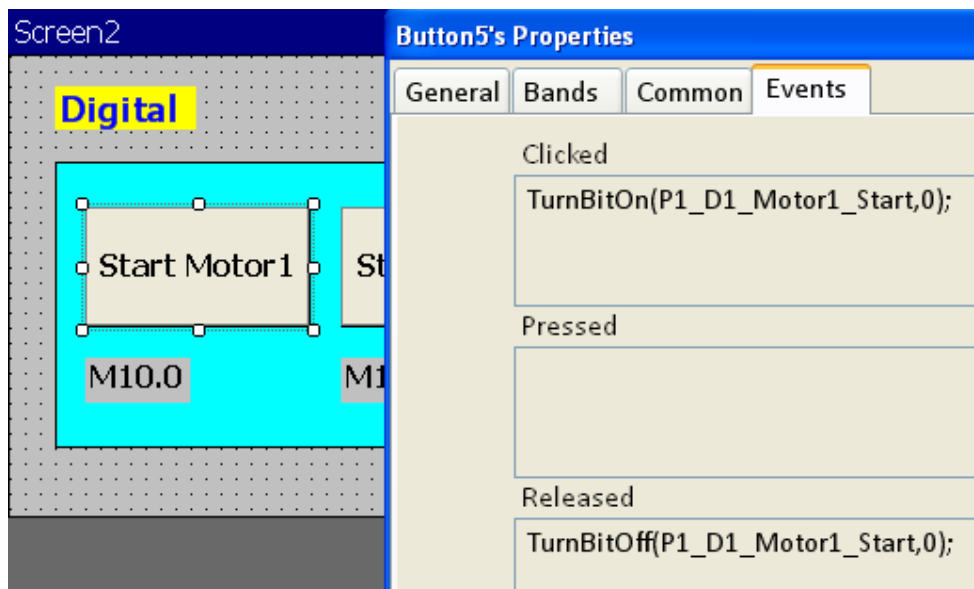
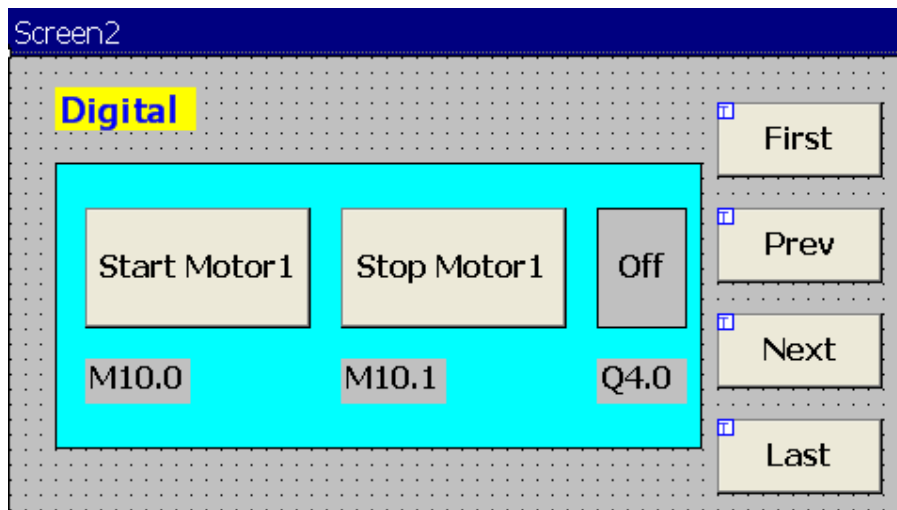
**TextFont**

Name  
Tahoma ▼

Style  
Bold ▼

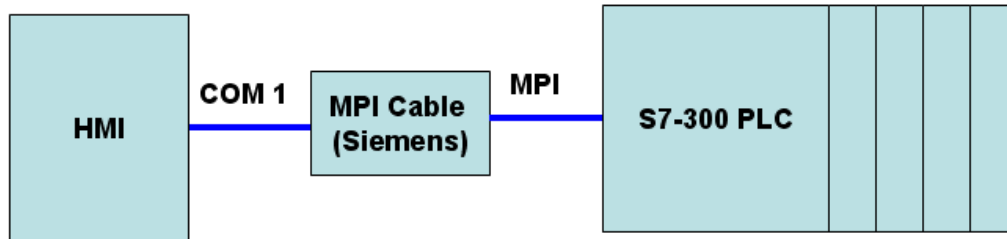
Decimal  
0

TagBinding  
P1\_D1\_MW8



## 6. Run application in HMI

---

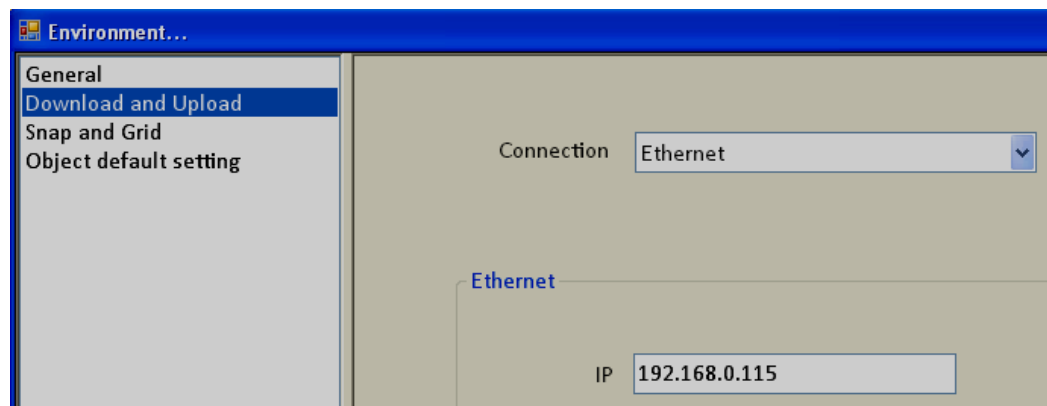
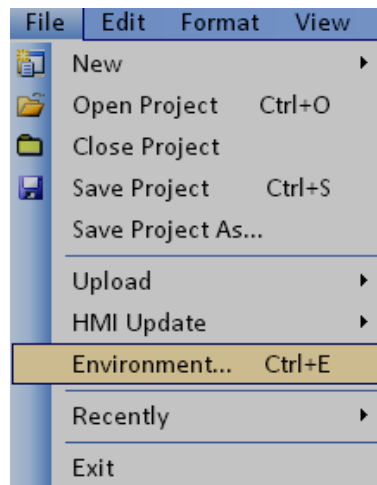


1. Hold your finger at any touch area in HMI and Power on HMI. It should show control center screen



2. Connect MPI Cable from PLC to HMI (COM1) port only
3. In HMI, Press at "System information" and check IP address of HMI from Control Center. For ex: 192.168.0.115
4. From Panel Studio software, enter IP address of HMI as shown below and then download HMI450\_S7300\_MPI application from PC to HMI via Ethernet





5. From Control center at HMI, press "Run"

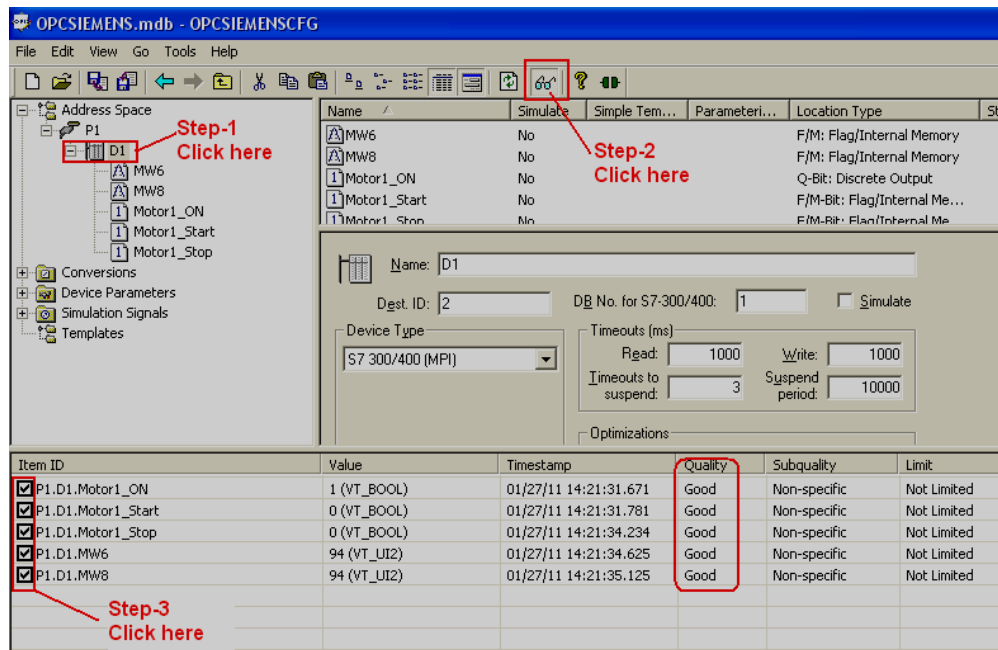
## 7. OPC server testing

(This is for advance users only)

Connect PLC to HMI using Siemens MPI cable

Make sure PLC is in Run mode

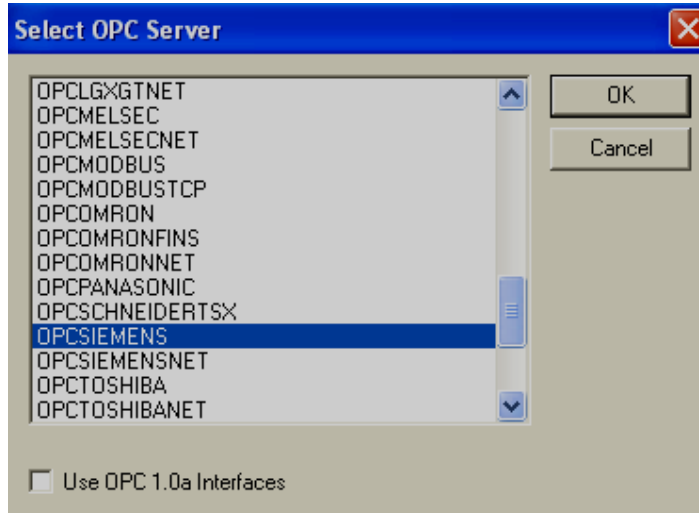
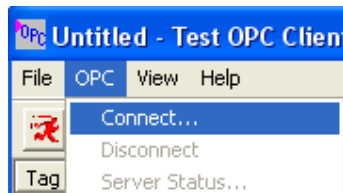
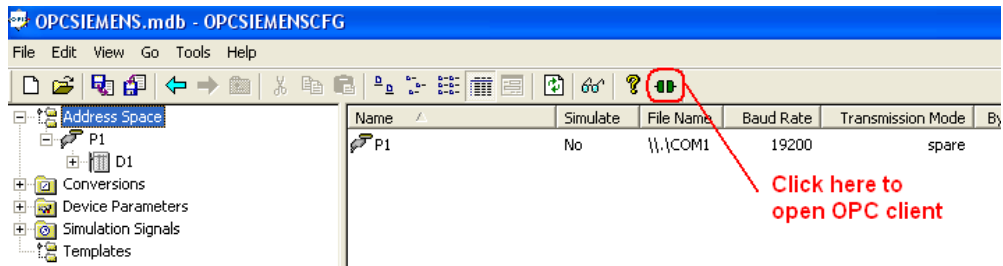
Open OPCSIEMENS Configuration screen

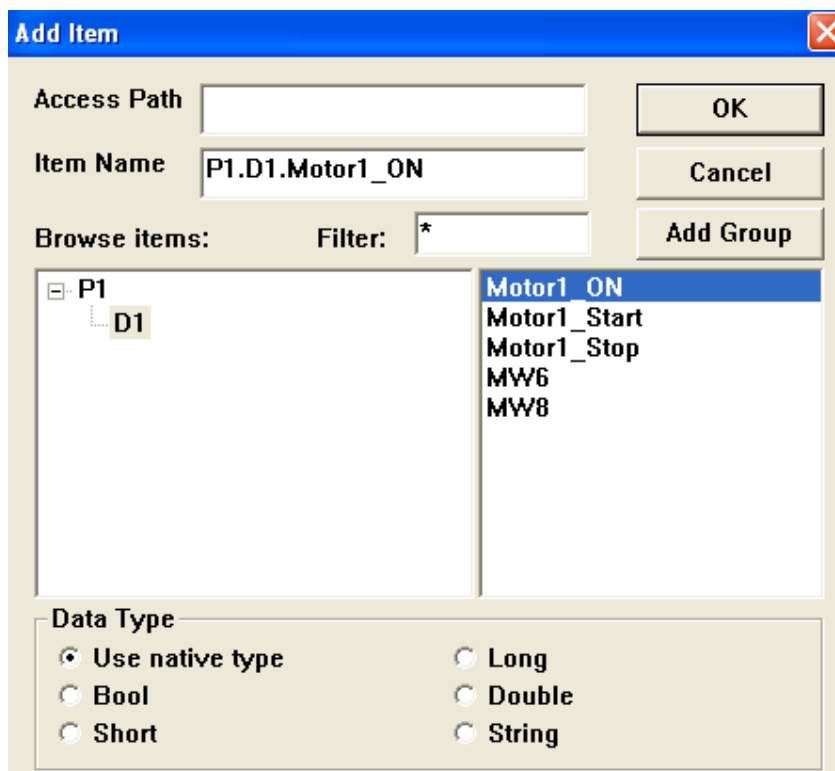
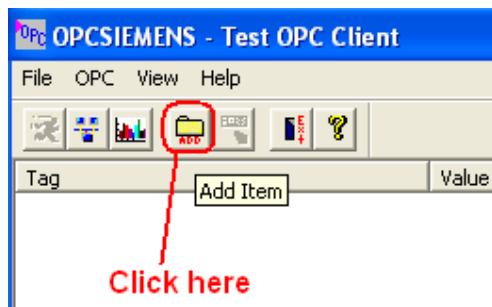


Select the check box then, it should show status of tag in Real time. If quality is good, then, communication is OK. If it is showing "Bad", then, you need to check cable, communication settings in both PLC and OPC server configuration, COM port number in OPC server configuration at PC etc.

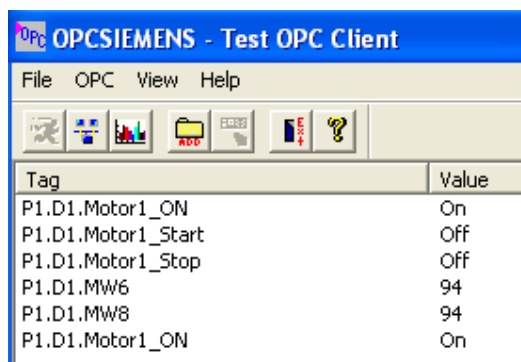
## 8. OPC Client testing

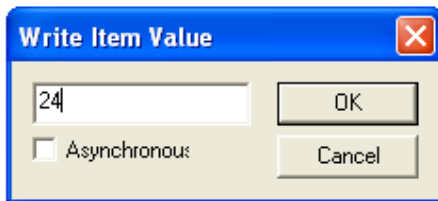
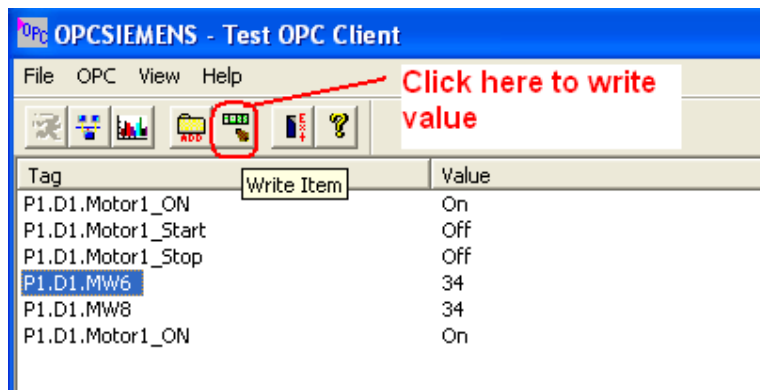
(This is for advance users only)





Select device D1 on left side, click at first Tag say Motor1\_ON and then click at "Add group", then click OK, it will add all the tags of PLC in OPC client for testing purpose





Note: Please be careful while working with Digital IO's. You need to follow the PLC program.

In this case

To Start a Motor

P1.D1.Motor\_Start → Turn ON (Write 1)  
P1.D1.Motor\_Start → Turn OFF (Write 0)

To Stop a Motor

P1.D1.Motor\_Stop → Turn ON (Write 1)  
P1.D1.Motor\_Stop → Turn OFF (Write 0)