Siemens S7-1200

CPU 1212C AC/DC/Relay

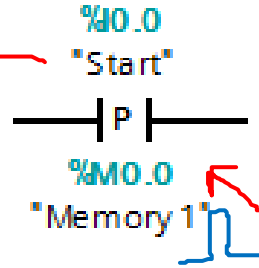
Bit Logic Operations

- **Positive and Negative Edge**
- **Exercise Example**

Code and Compile
Learning Made Easy
www.codeandcompile.com

Bit Logic Instructions in LAD – **Positive & Negative Edge**

Positive Edge – SCAN Operand



The state of this contact is **TRUE** when a positive transition **(OFF to-ON)** is detected on the assigned bit **I0.0.**

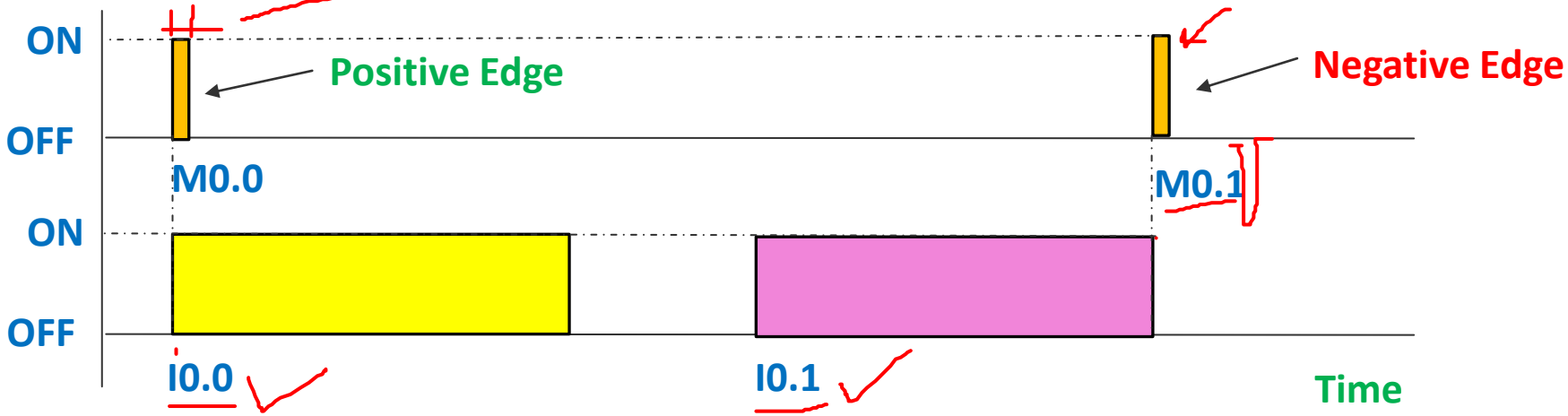
The bit M0.0 will be ON for 1 clock cycle.

Negative Edge - SCAN Operand

The state of this contact is **TRUE** when a positive transition **(ON to-OFF)** is detected on the assigned bit **I0.1.**

The bit M0.1 will be ON for 1 clock cycle.

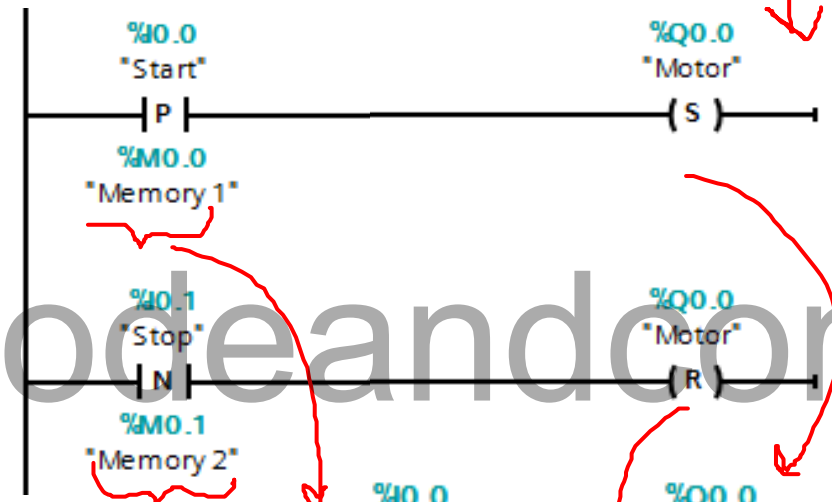
The P & N contact can be located anywhere in the network except the end of a branch.



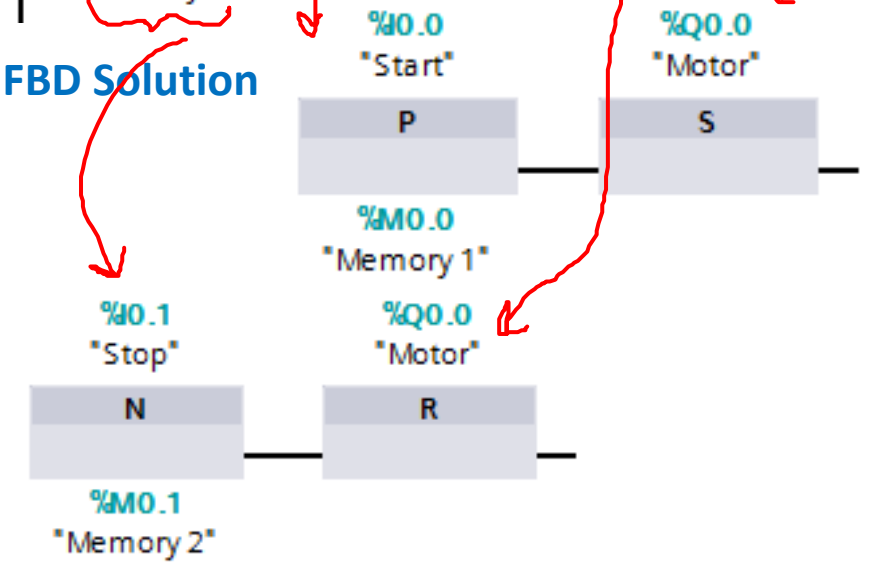
Exercise Example

Write a Logic to latch the motor when I0.0 goes from OFF to ON and unlatch the motor when ~~U~~0.1 goes from ON to OFF.

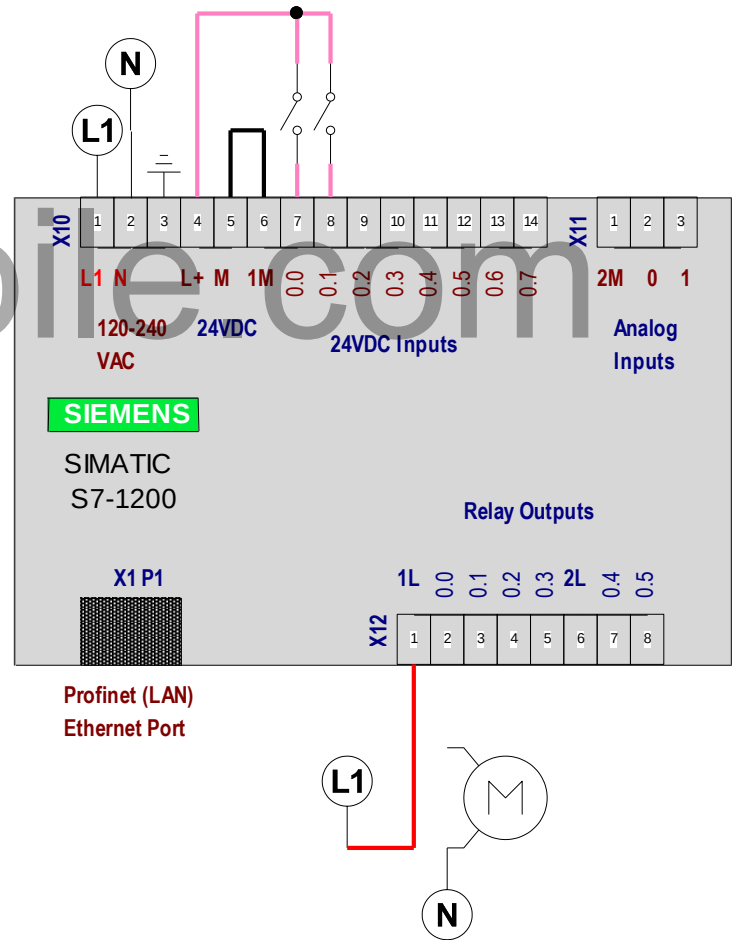
Ladder Solution



FBD Solution

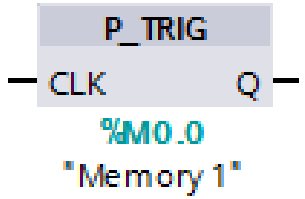


PLC Wiring

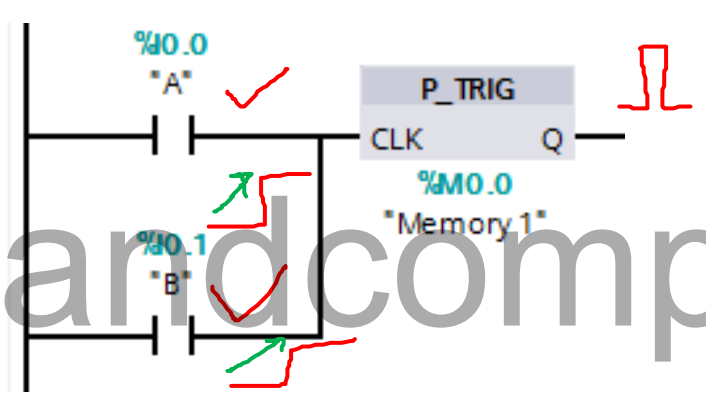


Bit Logic Instructions in LAD – **P_TRIG and N_TRIG**

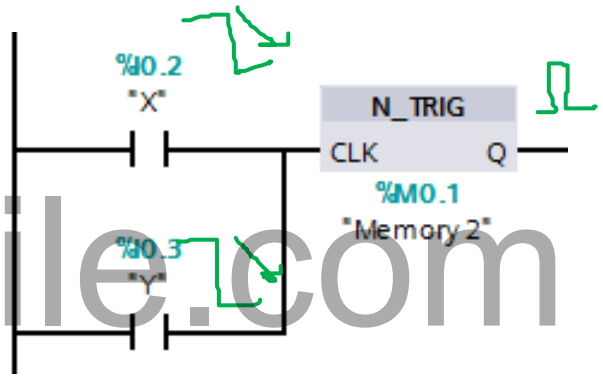
P_TRIG - SCAN RLO



The **Q output power flow** or logic state is **TRUE** when a positive transition **(OFF-to-ON)** is detected on the **CLK power flow in (LAD).**

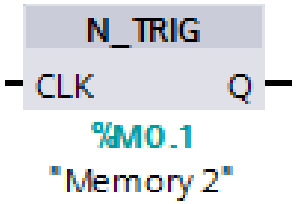


P_TRIG Example



N_TRIG Example

N_TRIG - SCAN RLO



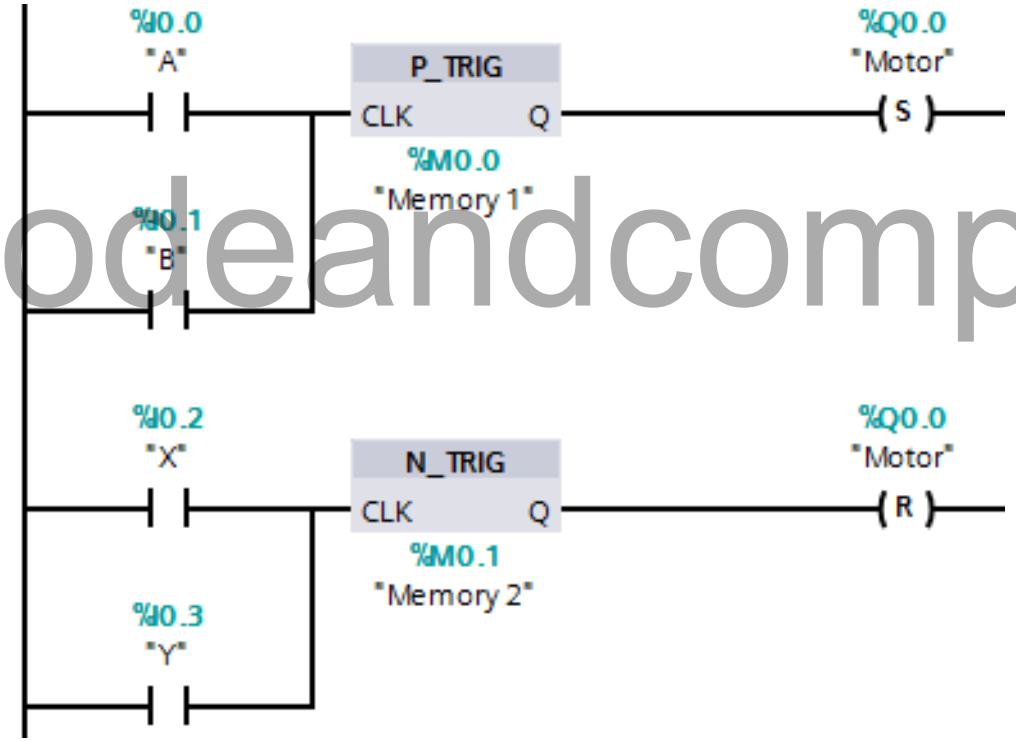
The **Q output power flow** or logic state is **TRUE** when a negative transition **(ON-to-OFF)** is detected on the **CLK power flow in (LAD).**

P_TRIG & N_TRIG instruction cannot be located at the beginning or end of a network

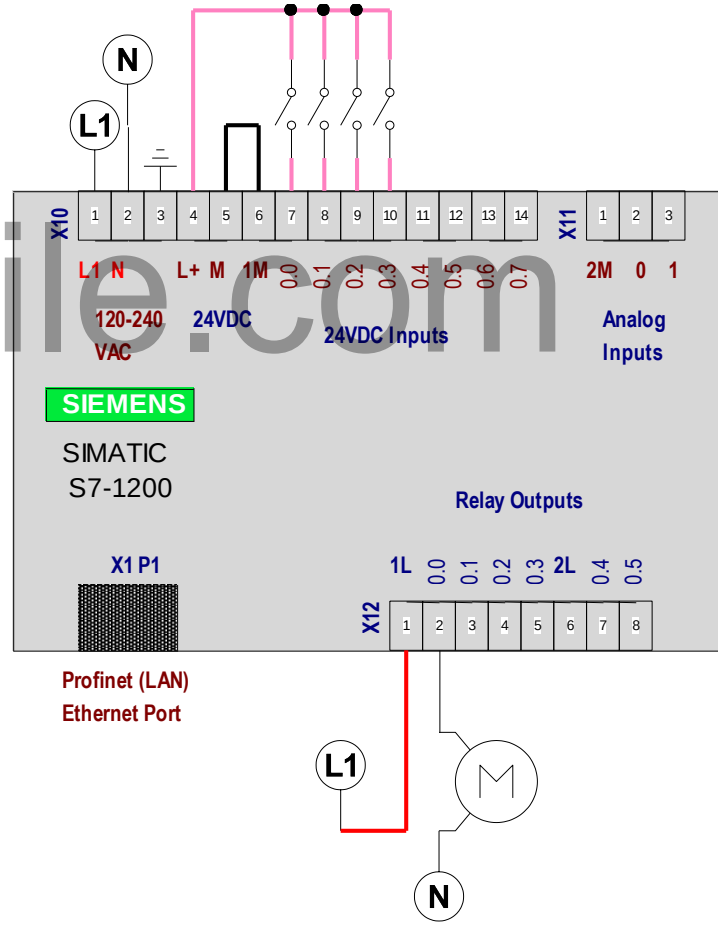
Exercise Example

Write a Logic to latch the motor when either I0.0 or I0.1 goes from OFF to ON and unlatch the motor when either I0.2 or I0.3 goes from ON to OFF.

Ladder Solution



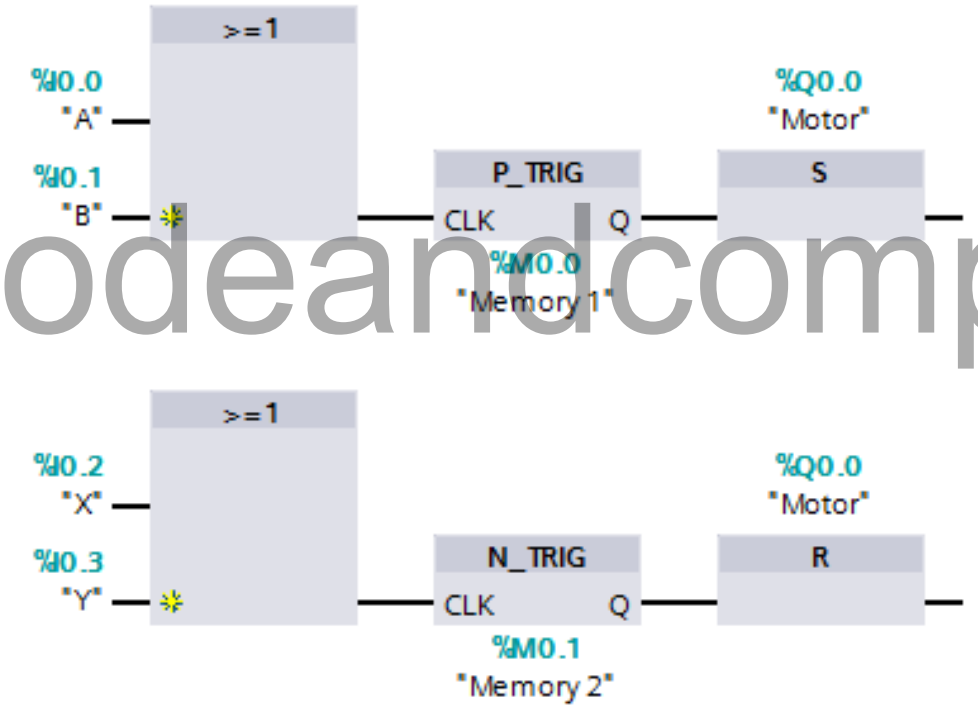
PLC Wiring



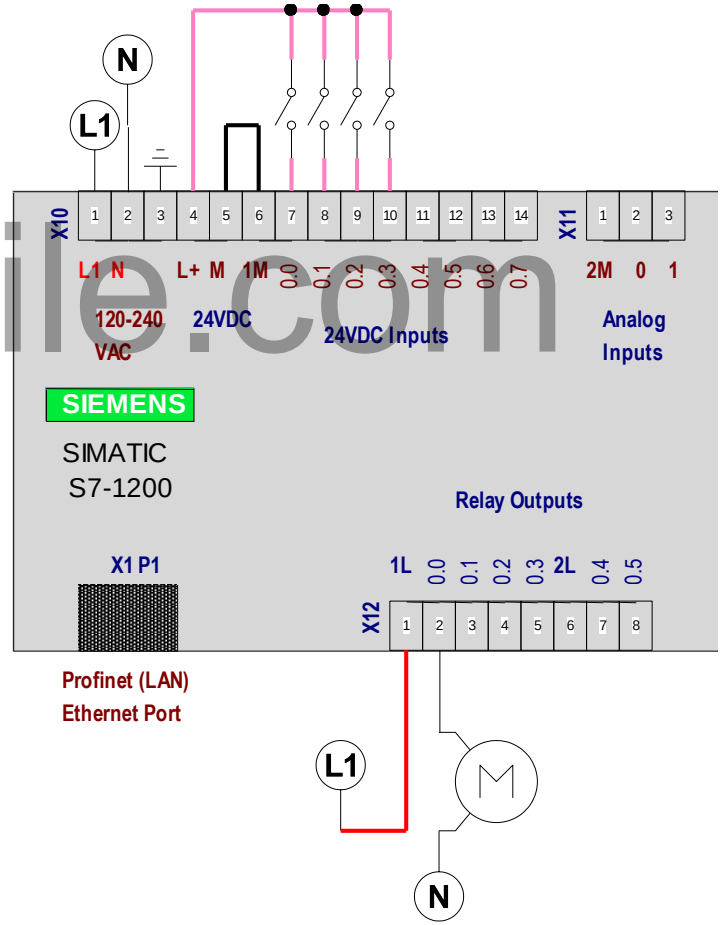
Exercise Example in FBD

Write a Logic to latch the motor when either I0.0 or I0.1 goes from OFF to ON and unlatch the motor when either I0.2 or I0.3 goes from ON to OFF.

FBD Solution



PLC Wiring



What did we learn in this lesson?

- **Positive Edge contact** is **TRUE** when a positive transition **(OFF to-ON)** is detected on its operand.
- **Negative Edge contact** is **TRUE** when a negative transition **(ON to-OFF)** is detected on its operand.
- **P_TRIG contact** is **TRUE** when the instruction detects a change in the result of logic operation (RLO) from **"0" to "1“**
- **N_TRIG contact** is **TRUE** when the instruction detects a change in the result of logic operation (RLO) from **“1" to “0"**

Thank you

Get copy of this presentation in the course!

Code and Compile
Learning Made Easy
www.codeandcompile.com