

Questions on PLC Wiring

Point: X

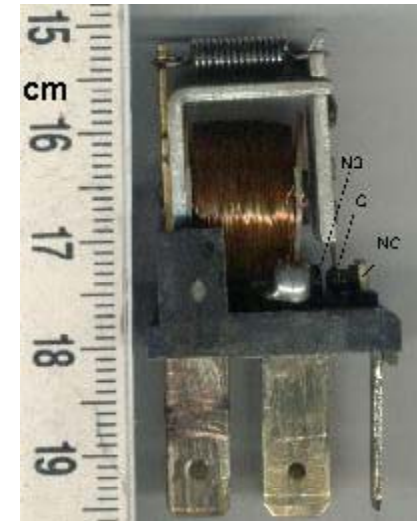
Relay

Point: X

Q1

Which of the following statements about a mechanical relay is true?

- a) It consists of contacts and coil.
- b) The figure shows a single pole, double throw relay.
- c) When voltage is provided to the coil, the coil generates magnetic force.
- d) The magnetic force pulls a mechanical pole from a normally closed contact toward the contact close to the coil; therefore, the normally closed contact becomes open and the normally open contact become closed.
- e) All the above statements are true.

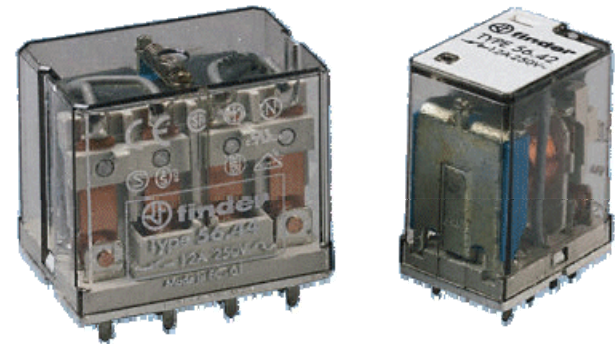


Point: 3

Q2

What does a mechanical relay consist of? Select a correct answer from following:

- a) normally open contacts, normally closed contacts
- b) coil, normally open contacts, normally closed contacts
- c) normally open contacts
- d) normally closed contacts
- e) none of the above

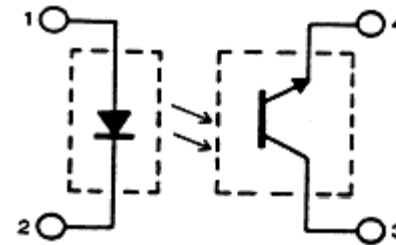


Point: 2

Q3

Which of the following statements about a solid state relay is correct?

- a) It consists of an LED and a transistor.
- b) This are no moving parts in the assembly.
- c) It can be switched faster than a mechanical relay.
- d) It is more reliable than a mechanical relay.
- e) All the above statements are correct.

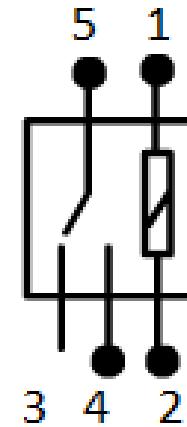


Point: 3

Q4

In the following relay schematic, what do terminals 1 and 2 represent?

- a) Coil
- b) Normally open contacts
- c) Normally closed contacts
- d) Open contacts
- e) None of the above

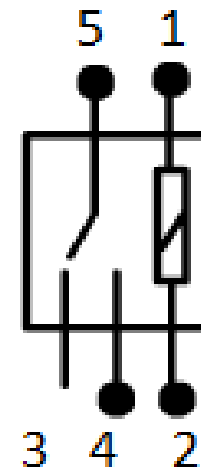


Key:

Q5

In the following relay schematic, what do terminals 5 and 3 represent?

- a) Coil
- b) Normally open contacts
- c) Normally closed contacts
- d) Closed contacts
- e) None of above



Key:

Q6

In the following relay schematic, what do terminals 5 and 4 represent?

- a) Coil
- b) Normally open contacts
- c) Normally closed contacts
- d) Closed contacts
- e) None of above



Key:

Q7

What's the primary function of a control relay in interfacing I/O devices to a programmable logic controller (PLC)?

- a) Serves as bridging device for different power requirements in the I/O devices and PLC
- b) Used as an Input
- c) Used as an output
- d) Used as an output and an input
- e) None of the above

Proximity sensor

Point: X

Q8

Proximity sensors are designed to detect the presence of an object. Based on the detecting principle, what are two different kinds of proximity sensors?

- a) capacitive and inductive
- b) NPN and PNP
- c) Input and output
- d) SPDT and DPDT
- e) none of the above

Key:

Point: 1

Q8

What are two different types of inductive proximity sensors?

- a) capacitive and inductive
- b) NPN and PNP
- c) input and output
- d) SPDT and DPDT
- e) none of above

Key:

Point: 1

Q9

Which of the following is correct about a capacitive proximity sensor?

- a) Senses the proximity of conductive and non-conductive objects by inductance change
- b) Senses the proximity of conductive and non-conductive objects by capacitance change
- c) Senses the proximity of conductive and non-conductive objects by voltage change
- d) Senses the proximity of conductive and non-conductive objects by current change
- e) None of the above

Key:

Point: 1

Q10

How does an inductive proximity sensor work? Select a correct answer from following:

- a) Senses the proximity of conductive and non-conductive objects by inductance change
- b) Senses the proximity of conductive and non-conductive objects by capacity change
- c) Senses the proximity of conductive and non-conductive objects by voltage change
- d) Senses the proximity of conductive and non-conductive objects by current change
- e) None of the above

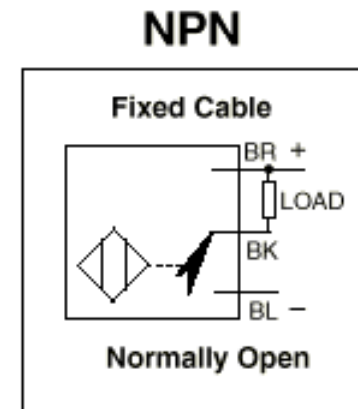
Key:

Point: 1

Q11

Based on this schematic of a NPN normally open proximity sensor, select the answer that correctly describes the terminals.

- a) BR: + voltage, BL: - voltage, BK: induced + voltage
- b) BL: + voltage, BR: - voltage, BK: induced + voltage
- c) BR: + voltage, BK: - voltage, BL: induced + voltage
- d) BK: + voltage, BL: - voltage, BR: induced + voltage
- e) None of the above

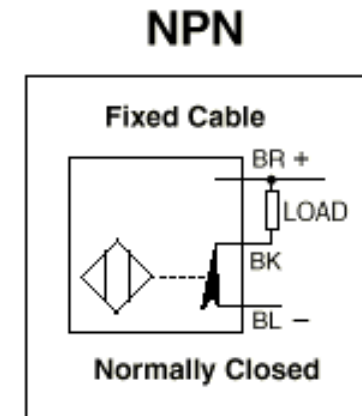


Key:

Q12

Based on this schematic of a NPN normally closed proximity sensor, select the answer that correctly describes the terminals.

- a) BR: + voltage, BL: - voltage, BK: induced + voltage
- b) BL: + voltage, BR: - voltage, BK: induced + voltage
- c) BR: + voltage, BK: - voltage, BL: induced + voltage
- d) BK: + voltage, BL: - voltage, BR: induced + voltage
- e) None of the above

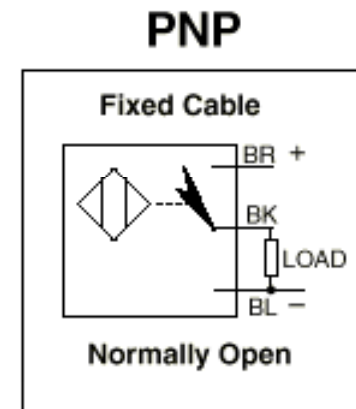


Key:

Q13

Based on this schematic of a PNP normally open proximity sensor, select the answer that correctly describes the terminals.

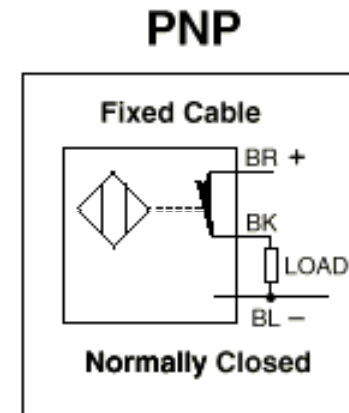
- a) BR: + voltage, BL: - voltage, BK: induced + voltage
- b) BL: + voltage, BR: - voltage, BK: induced + voltage
- c) BR: + voltage, BK: - voltage, BL: induced + voltage
- d) BK: + voltage, BL: - voltage, BR: induced + voltage
- e) None of the above



Q14

Based on this schematic of a PNP normally open proximity sensor, select the answer that correctly describes the terminals.

- a) BR: + voltage, BL: - voltage, BK: induced + voltage
- b) BL: + voltage, BR: - voltage, BK: induced + voltage
- c) BR: + voltage, BK: - voltage, BL: induced + voltage
- d) BK: + voltage, BL: - voltage, BR: induced + voltage
- e) None of the above



Point: 2

Key:

Q15

Which of the following statements about a sourcing and sinking proximity sensor is correct?

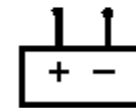
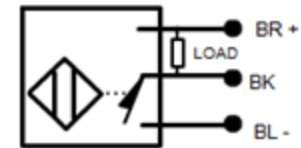
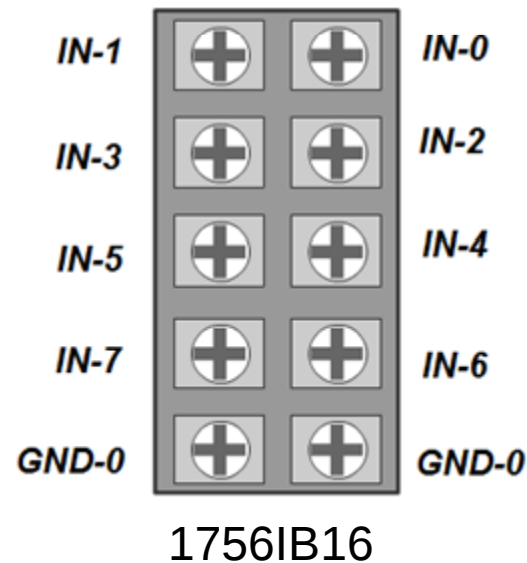
- a) Sourcing provides a path to the positive (+) terminal, sinking provides a path to the negative (-) terminal.
- b) Sourcing provides a path to the negative (-) terminal, sinking provides a path to the positive (+) terminal.
- c) Sourcing provides a path to input, sinking provides a path to output.
- d) Sourcing provides a path to output, sinking provides a path to input.
- e) None of the above

Key:

Q16

Select the correct wiring diagram to interface a NPN normally open sensor to the 1756IB16 module.

- a) BK ->GND0, BL->(-), (+)->BR->In0
- b) IN0->BL->GND0->(+) ->BR
- c) IN0-C->(+) ->BK->GND0->BL
- d) (-) ->GND0, BL->(-), (+)->BR->In0
- e) None of the above

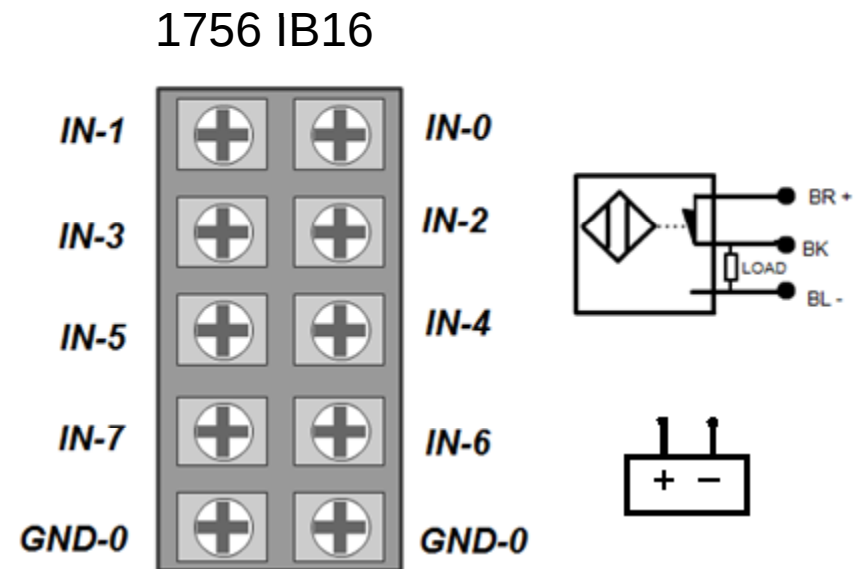


Key:

Q17

Select the correct wiring diagram to interface a normally closed PNP sensor to the 1756IB16 module.

- a) IN0->BL->GND0->(+) ->BR
- b) IN0->(+) ->BK->GND0->BL
- c) BK->BR,BL->GND0->(-), (+) ->IN-0
- d) BK->IN-0, BL->GND0->(-), (+) ->BR
- e) None of the above



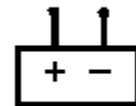
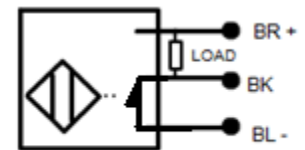
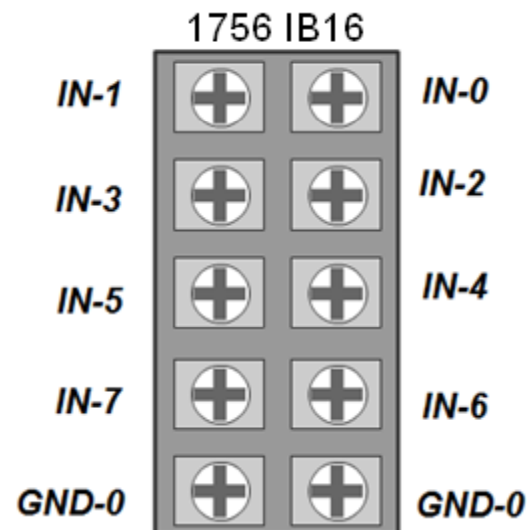
Key:

Point: 3

Q18

Select the correct wiring diagram to interface a normally closed NPN sensor to the 1756IB16 module.

- a) IN0->BL->GND0->(+) ->BR
- b) IN0->GND0, BL->(-), (+)->BR->BK
- c) IN0->(+) ->BK->GND0->BL
- d) BK->GND0, BL->(-), (+)->BR->IN0
- e) None of the above



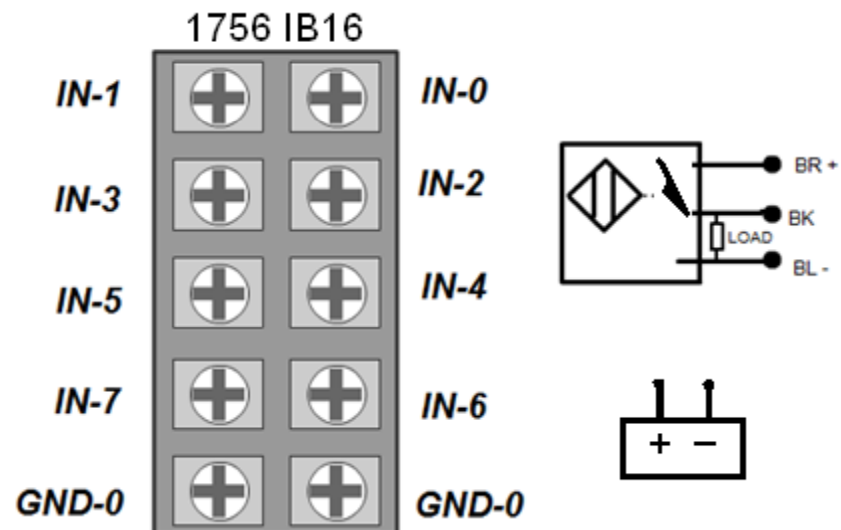
Key:

Point: 3

Q19

Select the correct wiring diagram to interface a normally open PNP sensor to the 1756IB16 module.

- a) IN0->BL->GND0->(+) ->BR
- b) BK->IN0, BL->GND0->- , (+)->BR
- c) IN0->(+) ->BK->GND0->BL
- d) BK->IN0, BL->GND0->BR, (+)->(-)
- e) None of the above



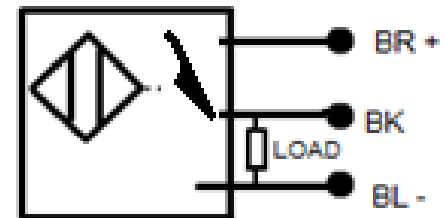
Key:

Point: 3

Q20

Based on this schematic of a normally open PNP inductive proximity sensor, what is the reason for providing voltage to the BRN and BLU terminals?

- a) to power the coil
- b) to generate magnetic force
- c) The air serves as the core
- d) to enable inductance creation as an object moves closer to the proximity of the sensor
- e) all of the above

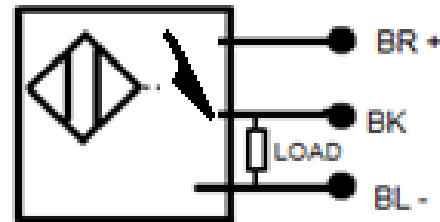


Key:

Q21

For this normally open PNP proximity sensor, which terminal induces a positive voltage when a metal object is within the sensing range?

- a) BLU
- b) BLK
- c) BRN
- d) ORG
- e) Load



Key:

Point: 1

Q22

What is the basic structure of an inductive proximity sensor?

- a) Two closed plates
- b) A small semiconductor and a pair of leads sealed in a teflon tube
- c) A coil of wire wrapped around a core
- d) Two twisted dissimilar metal wires
- e) None of the above

Point: 2

Key:

Q23

What kind of object can a capacitive sensor sense?

- a) Metal object
- b) Plastic object
- c) Metal or plastic object
- d) Liquid form
- e) Metal, plastic, or liquid object

Point: 2

Key:

Optical sensor

Point: X

Q24

What are the categories of industrial optical sensors?

- a) PNP and NPN
- b) Input and output
- c) Optical reflector and optical interrupter
- d) Photo eye and through beam
- e) None of above

Point: 1

Key:

Q25

What is a photo eye?

- a) A photo sensor that uses changes in inductance to sense the proximity of an object.
- b) A photo sensor that uses changes in capacitance to sense the proximity of an object.
- c) A photo sensor that has a separate emitter and receiver that can be placed in a line to allow an object to be detected when it passes through.
- d) A photo sensor that has an emitter and a receiver positioned side by side so that a reflective object can reflect light from the emitter to energize the receiver.
- e) None of the above

Point: 2

Key:

Q26

What is through beam photo sensor?

- a) A photo sensor that uses changes in inductance to sense the proximity of an object.
- b) A photo sensor that uses changes in capacitance to sense the proximity of an object.
- c) A photo sensor that has a separate emitter and receiver that can be placed in a line to allow an object to be detected when it passes through.
- d) A photo sensor that has an emitter and a receiver positioned side by side so that a reflective object can reflect light from the emitter to energize the receiver.
- e) None of the above

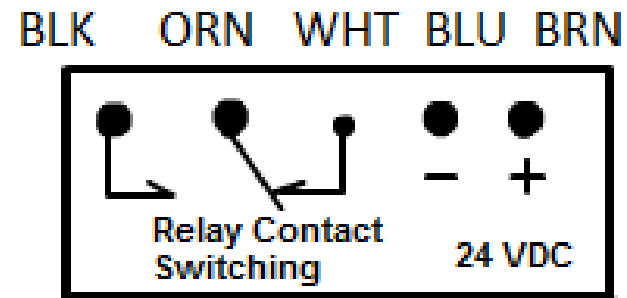
Key:

Point: 2

Q27

On this diagram of a retro-reflective photo switch, what does ORN mean?

- a) Positive terminal of power supply
- b) Normally open contact
- c) COM
- d) Normally closed contact
- e) Negative terminal of power supply



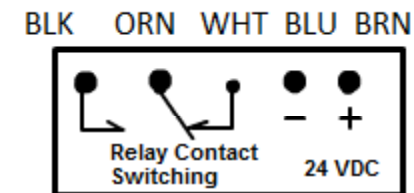
Point: 1

Key:

Q28

On this diagram of a retro-reflective photo switch, what do ORN and WHT mean?

- a) Positive terminal of power supply
- b) Normally open contact
- c) COM
- d) Normally closed contact
- e) Negative terminal of power supply

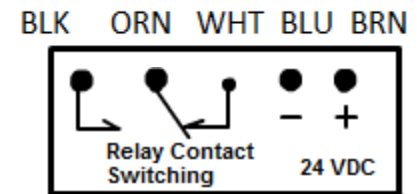


Point: 1

Key:

Q29

- On this diagram of a retro-reflective photo switch, what do ORN and BLK mean?
 - a) Positive terminal of power supply
 - b) Normally open contact
 - c) COM
 - d) Normally closed contact
 - e) Negative terminal of power supply



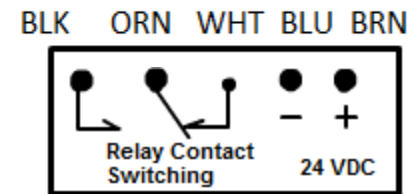
Point: 1

Key:

Q30

On this diagram of a retro-reflective photo switch, what does BLU mean?

- a) Connect to the positive terminal of power supply
- b) Normally open contact
- c) COM
- d) Normally closed contact
- e) Connect to the negative terminal of power supply

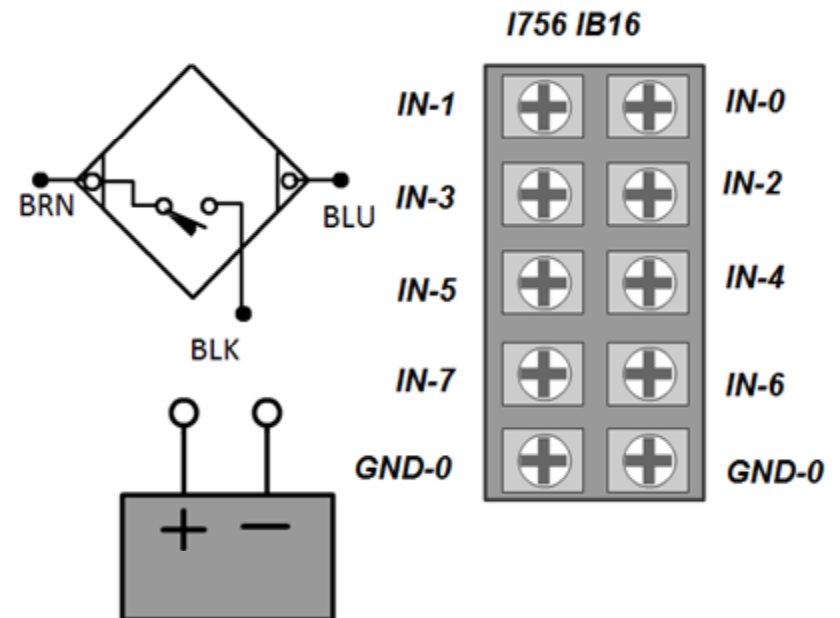


Key:

Q31

Select the correct wiring diagram to interface a photo eye sensor to the 1756IB16 module?

- a) BLK->GND0, BLU->IN0->(-), (+)->BRN
- b) IN0->BL->GND0->(+) ->BR
- c) IN0->(+) ->BK->GND0->BL
- d) BLK->IN0, BLU->GND0->(-), (+)->BRN
- e) None of the above

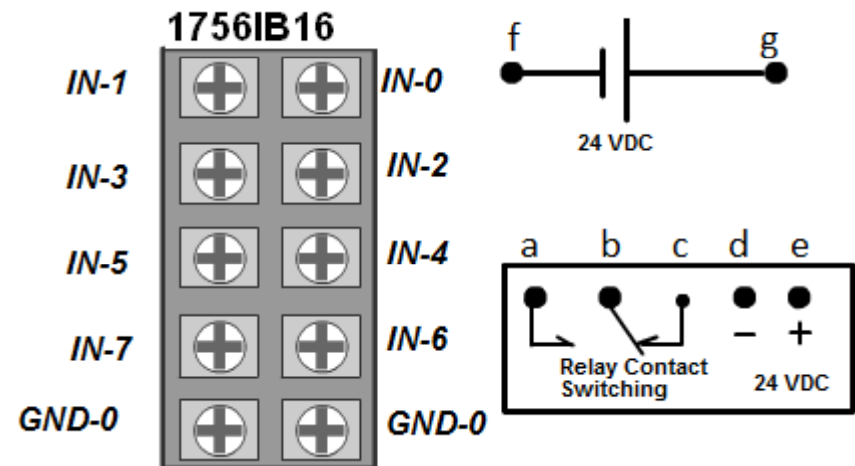


Key:

Q32

Select the correct wiring diagram to interface a normally closed photo eye sensor to the 1756IB16 module?

- a) $g \rightarrow e, d \rightarrow f \rightarrow \text{GND0}, b \rightarrow e, \text{IN0} \rightarrow c$
- b) $g \rightarrow e, d \rightarrow f \rightarrow \text{GND0}, b \rightarrow e, \text{IN0} \rightarrow a$
- c) $g \rightarrow e, d \rightarrow f \rightarrow \text{GND0}, b \rightarrow e, \text{IN0} \rightarrow a$
- d) $g \rightarrow e, d \rightarrow f \rightarrow \text{GND0}, b \rightarrow e, \text{IN0} \rightarrow a$
- e) None of the above

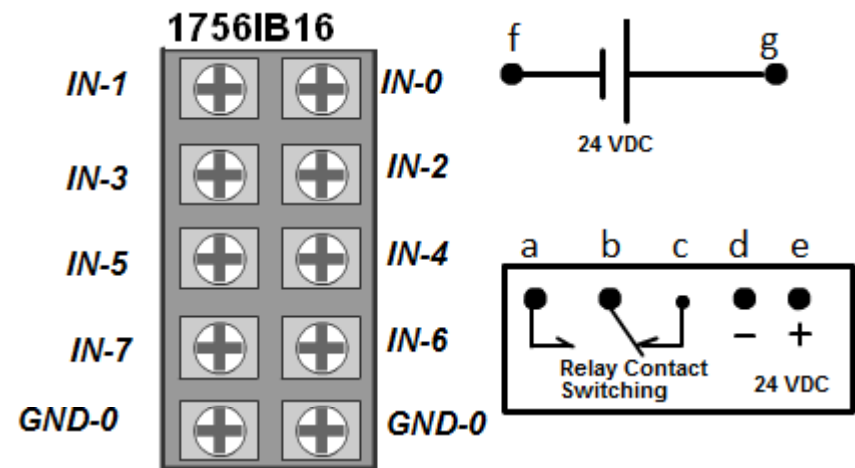


Key:

Q33

Select the correct wiring diagram to interface a normally open photo eye sensor to the 1756IB16 module?

- a) $g \rightarrow e, d \rightarrow f \rightarrow \text{GND0}, b \rightarrow e, \text{IN0} \rightarrow c$
- b) $g \rightarrow e, d \rightarrow f \rightarrow \text{GND0}, b \rightarrow e, \text{IN0} \rightarrow a$
- c) $g \rightarrow e, d \rightarrow f \rightarrow \text{GND0}, b \rightarrow e, \text{IN0} \rightarrow a$
- d) $g \rightarrow e, d \rightarrow f \rightarrow \text{GND0}, b \rightarrow e, \text{IN0} \rightarrow a$
- e) None of the above



Key:

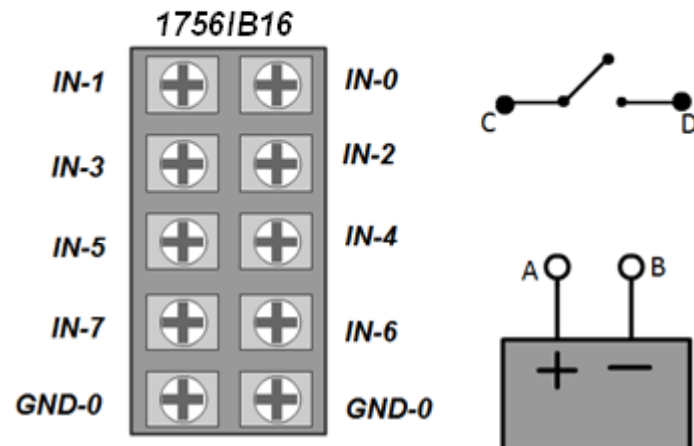
I/O modules

Point: X

Q34

Select the correct wiring diagram for interfacing the switch to the 1756IB16 module .

- a) IN0-C
- b) IN0-C-D-GND0-A-B
- c) IN0-C-D-A-GND0-B
- d) IN0-C-D-A-B-GND0
- e) None of the above

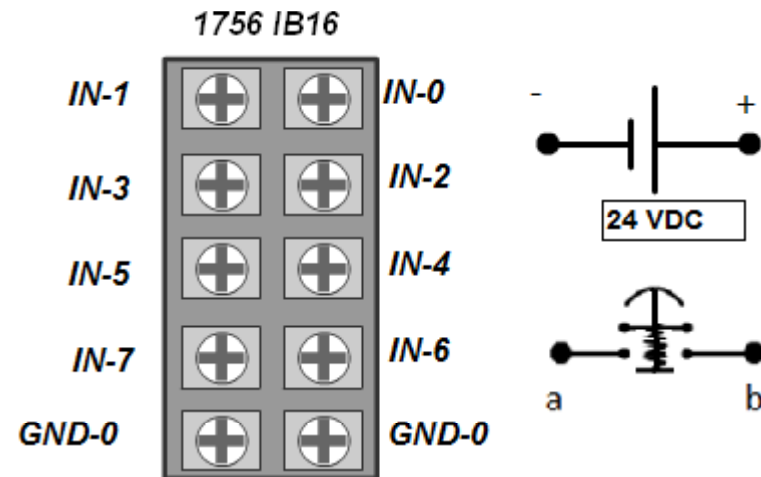


Key:

Q35

Select the correct wiring diagram for interfacing the push button to the 1756IB16 module .

- a) IN0->C
- b) IN0->(-)->(+) ->b->a->GND0
- c) IN0->(-)->(+) ->b->a->GND0
- d) IN0->(-)->(+) ->b->GND0
- e) None of the above

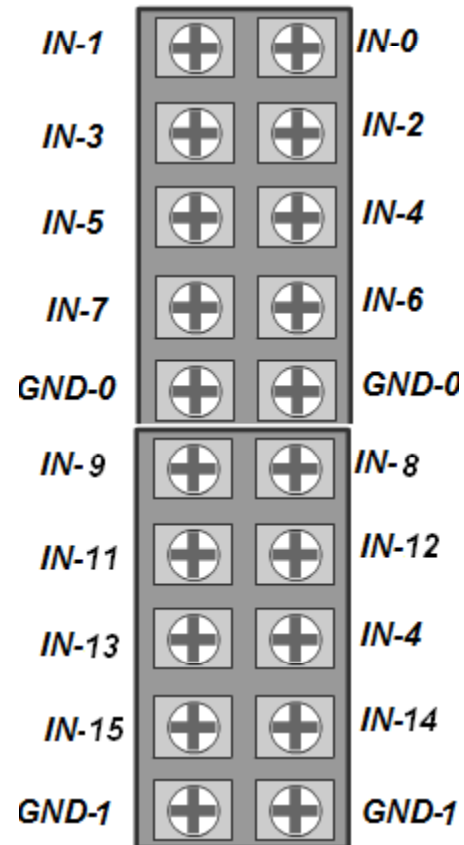


Key:

Q36

Which is the common ground for IN-0 to IN-7?

- a) GND-0
- b) GND-1
- c) Neither GND-0 or GND-1
- d) Both GND-0 and GND-1
- e) None of the above

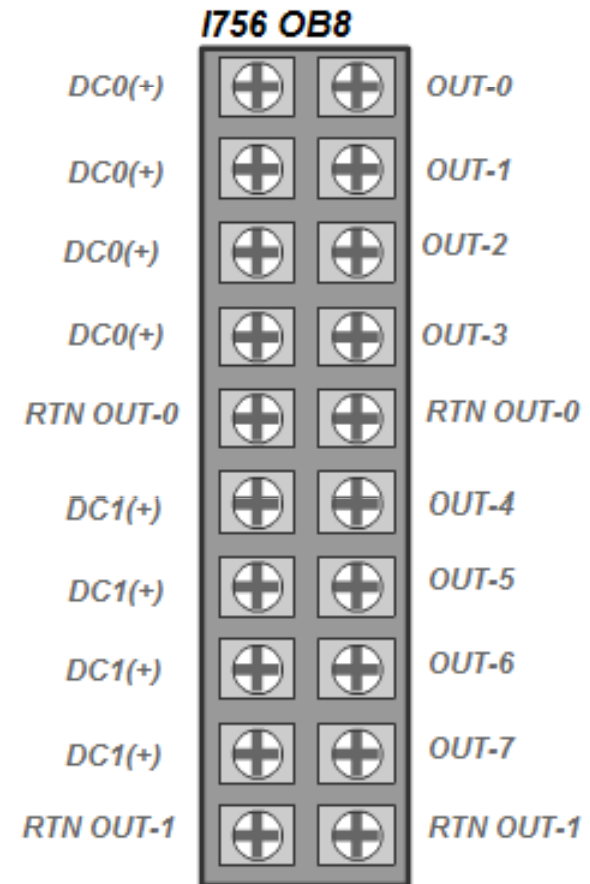


Key:

Q37

Which is the common terminal for OUT-0 to OUT-3?

- a) DC0(+)
- b) DC1(+)
- c) RTN OUT-0
- d) RTN OUT-1
- e) None of the above



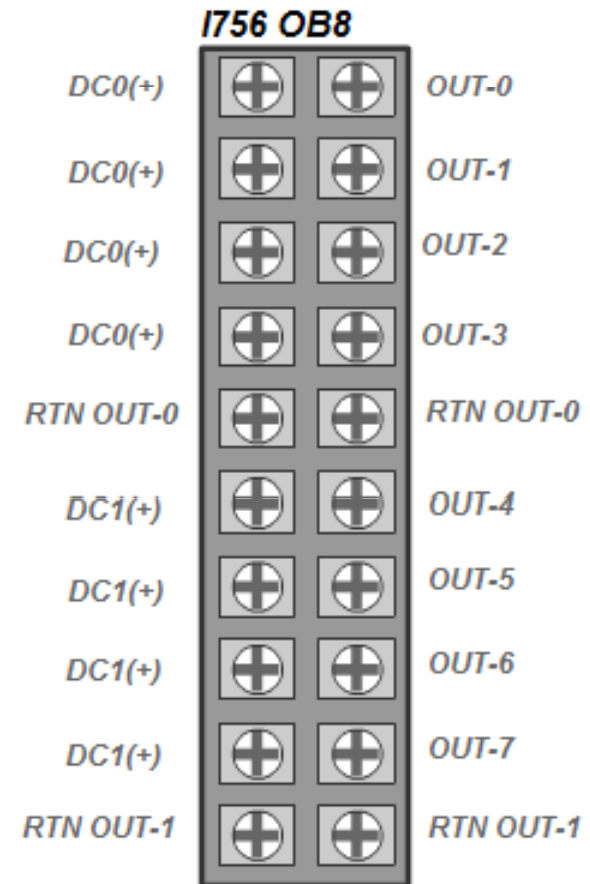
Key:

Point: 3

Q37

Which is the common terminal for OUT-5 to OUT-7?

- a) DC0(+)
- b) DC1(+)
- c) RTN OUT-0
- d) RTN OUT-1
- e) None of the above



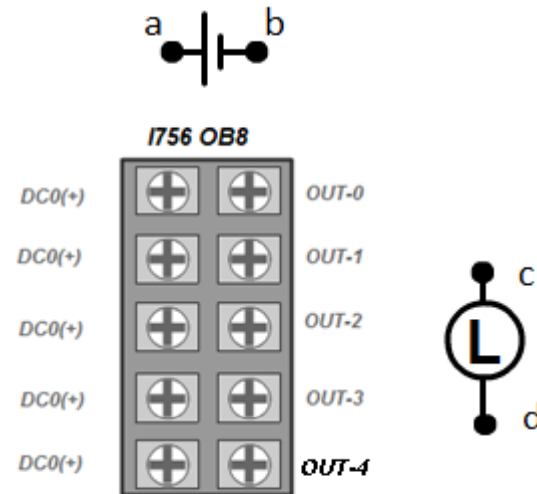
Key:

Point: 3

Q38

Select the correct wiring diagram for interfacing the light with a 1756OB8 module

- a) out0-c
- b) out0-c-d-a-b
- c) out0-c-d-b-a-DC0(+)
- d) out0-c-d-DC0(+)
- e) None of the above

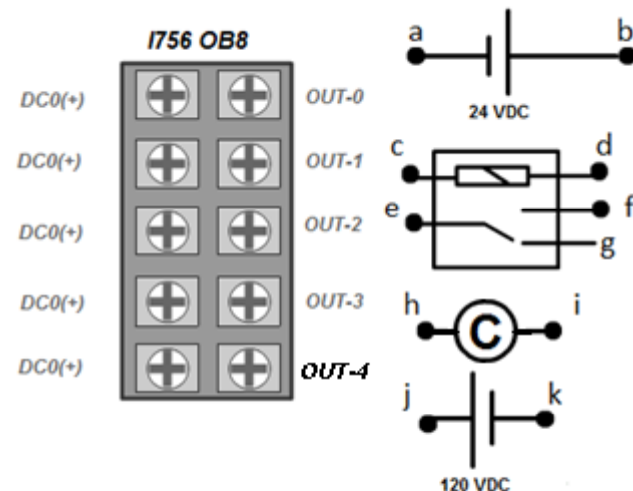


Key:

Q39

- A conveyer system is driven by 120V DC and the 1756OB8 module uses 24 VDC. How do you wire the output module with conveyer system through a relay?

- DC0(+)-d-c-OUT0, e-h-i-f
- DC0(+)-b-a-d-c-OUT0, e-h-i-k-j-f
- DC0(+)-b-a-d-c-OUT0, e-h-i-f
- DC0(+)-a-b-d-c-OUT0, e-h-i-f
- None of the above



Key:

Point: 5

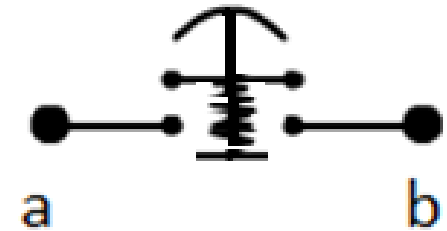
PB and SW

Point: X

Q40

What does this symbol mean?

- a) Normally closed spring return push button
- b) Normally open push button
- c) Normally open spring return push button
- d) Normally closed push button
- e) None of the above

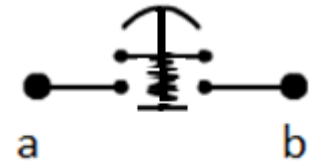


Point: 1

Key:

Q41

Which of the following statements about this normally open spring return push button is NOT correct?



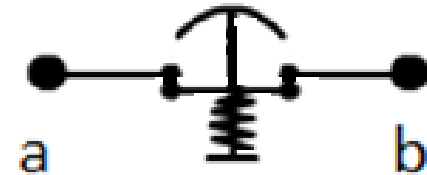
- a) In the default state, the a,b contact is open.
- b) When you push the button, the a,b contact becomes closed.
- c) When you push and release, the a,b contact will go back to open state.
- d) When you push and hold the button down, the a,b contact will stay closed.
- e) None of the above

Point: 3

Key:

Q42

What does this symbol mean?



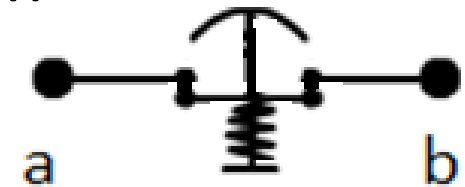
- a) Normally closed spring return push button
- b) Normally open push button
- c) Normally open spring return push button
- d) Normally closed push button
- e) None of the above

Point: 1

Key:

Q43

Which of the following statements about this normally closed spring return push button is NOT correct?

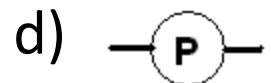
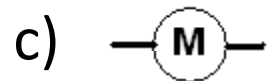
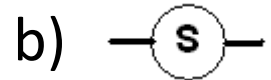
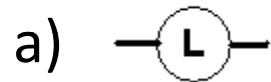


- a) In the default state, the a,b contact is closed
- b) When you push the button, the a,b contact becomes open
- c) When you push and release the button, the a,b contact will go back to a closed state.
- d) When you push and hold down the button, the a,b contact will stay open
- e) None of the above

Key:

Q44

Which symbol represents a painting machine?



e) None of above

Point: 2

Key:

Q45

Which symbol represents a motor?

- b) 
- c) 
- d) 
- e) 

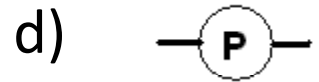
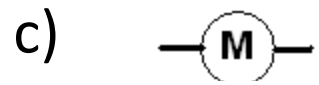
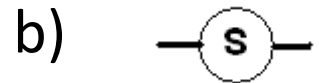
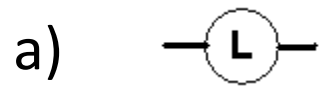
None of above

Point: 2

Key:

Q46

Which symbol represents a light?



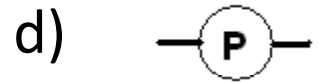
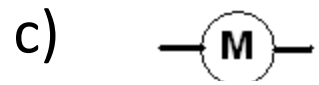
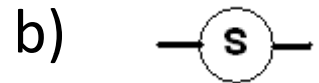
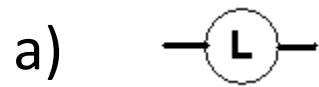
e) None of above

Point: 2

Key:

Q47

Which symbol represent a solenoid?



e) None of above

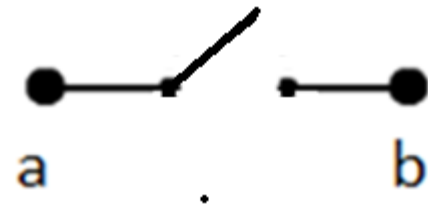
Point: 2

Key:

Q48

What does this symbol mean?

- a) Normally closed spring return push button
- b) Normally open push button
- c) Normally open spring return push button
- d) Normally open switch
- e) None of the above



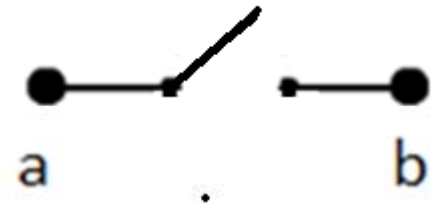
Point: 1

Key:

Q49

Which of the following statements about this symbol is NOT correct?

- a) It is a normally open switch
- b) In the default state, the a,b contact is open
- c) When you turn the switch, the a,b contact becomes close
- d) When you turn and release the switch, the a,b contact will be in a open state.
- e) When you turn and hold on to the switch, the a,b contact will stay close



Point: 3

Key:

Q50

What does this symbol mean?

- a) Normally closed spring return push button
- b) Normally closed switch
- c) Normally open spring return push button
- d) Normally open switch
- e) None of the above



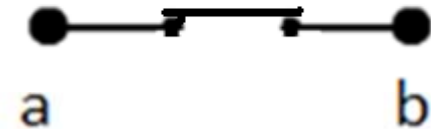
Point: 1

Key:

Q51

Which of the following statements about this symbol is correct?

- a) It is a normally open switch
- b) In the default state, the a,b contact is open
- c) When you turn the switch, the a,b contact becomes close
- d) When you turn and release the switch, the a,b contact will be in a open state.
- e) When you turn and hold on to the switch, the a,b contact will stay close



Key:

Point: 3