

CHAPTER 3

Connecting sensors and execution devices

KJE555 - PLC

Sinking-Sourcing Concept

- PLC has input and output lines through which it is connected to a system it directs
- Input can be keys, switches, sensors while outputs are led to different devices from simple signalization lights to complex communication modules

Sinking-Sourcing Concept (2)

- Two terms most frequently mentioned when discussing connections to inputs or outputs are "*sinking*" and "*sourcing*"
- These two concepts are very important in connecting a PLC correctly with external environment

Sinking-Sourcing Concept (3)

- The most brief definition of these two concepts would be:
SINKING = Common GND line (-)
SOURCING = Common VCC line (+)
- Inputs and outputs which are either sinking or sourcing can conduct electricity only in one direction, so they are only supplied with direct current

Sinking-Sourcing Concept (4)

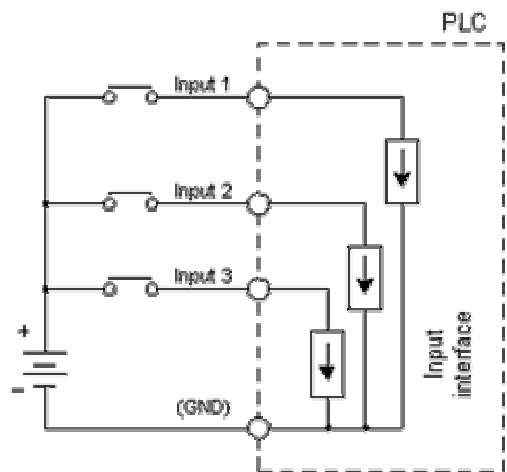
- Each input or output has its own return line, so 5 inputs would need 10 screw terminals on PLC controller housing
- Instead, we use a system of connecting several inputs to one return line as in the following picture. These common lines are usually marked "**COMM**" on the PLC controller housing

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Sinking-Sourcing Concept (5)

Connecting several inputs to a common line



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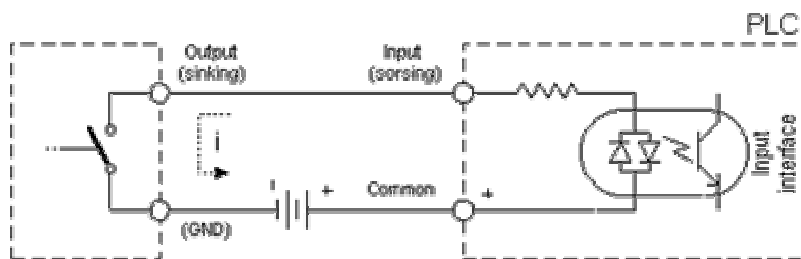
Input lines

- Example can be connection of external device such as proximity sensor
- Sensor outputs can be different depending on a sensor itself and also on a particular application
- Following pictures display some examples of sensor outputs and their connection with a PLC controller

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Input lines (2)

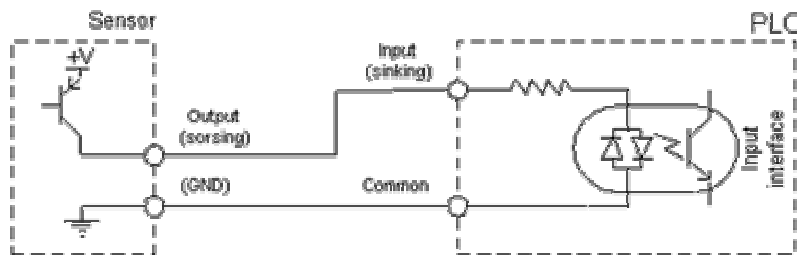


Connecting sensors with sinking output to a PLC controller sourcing input

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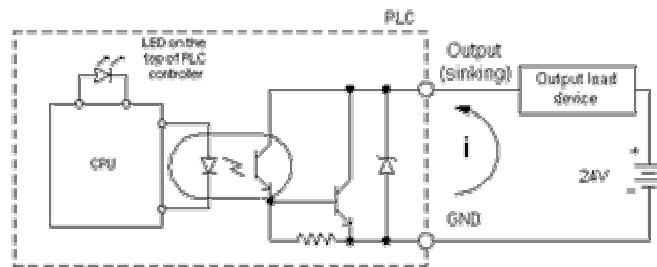
Input lines (3)



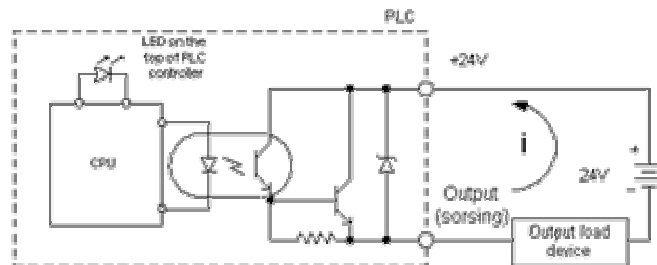
Connecting sensors with a sourcing output to a PLC controller sinking input

Output lines

- The following two pictures display a realistic way how a PLC manages external devices
- It ought to be noted that a main difference between these two pictures is a position of "output load device"
- By "output load device" we mean some relay, signalization light or similar



Connecting output load device to a sinking PLC controller output



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Connecting output load device to a sourcing PLC controller output

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Output lines (3)

- How something is connected with a PLC output depends on the element being connected
- In short, it depends on whether this element of output load device is activated by a positive supply pole or a negative supply pole

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END OF CHAPTER 3