

## Application Note #1109: Choosing I/O Type Sink or Source

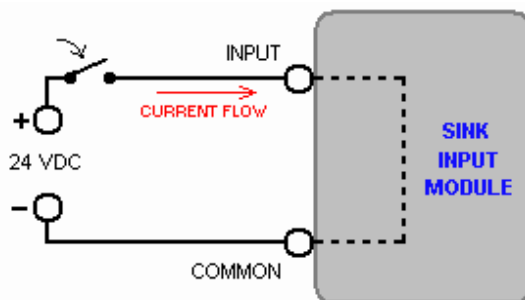
### Introduction

Sink and source refer to the direction of current flow between a point on an I/O module and a connected device. The concept of sink or source applies only to the current flow in DC circuits. Current flow alternates directions in an AC circuit. The design of the external circuit and external devices that will be connected determine whether sink or source I/O are required. If the incorrect type is selected, the circuit may not function properly, not at all, or may be damaged. Sink (**NPN**) inputs and source (**PNP**) outputs are the most common I/O types. Many Pro-face I/O inputs can be connected either sink or source.

***Tip:** Check the documentation for the external device that you are going to connect to determine whether it is a sink or source device.*

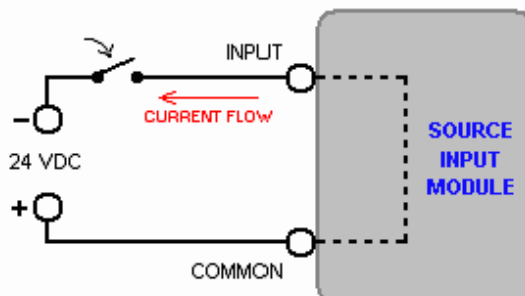
### Description

Sink Input Circuit:



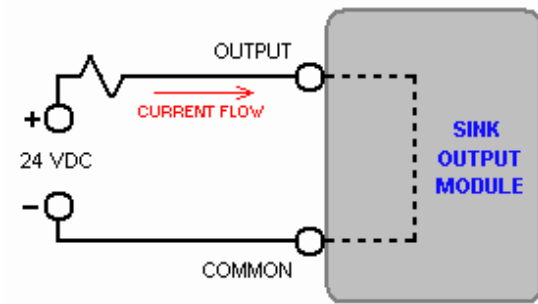
For a sink input module, the current flow is from the external device to the input. Typical choice when connecting to an external sourcing device (PNP) and/or negative common circuits.

Source Input Circuit:



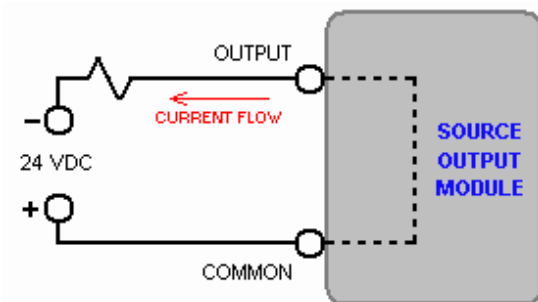
For a source input module, the current flow is from the input to the external device. Typical choice when connecting to external sinking devices (NPN or open collector).

Sink Output Circuit:



For a sink output module, the current flow is from the external device to the output.

Source Output Circuit:



For a source output module, the current flow is from the output to the external device.

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