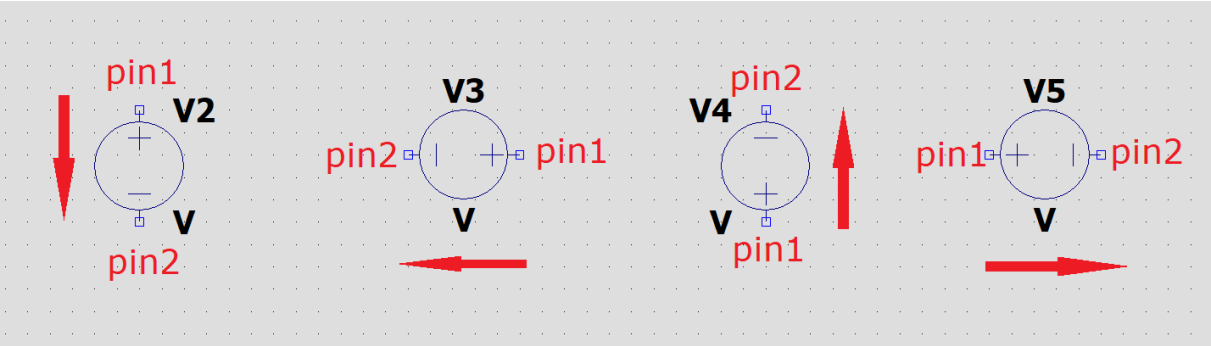
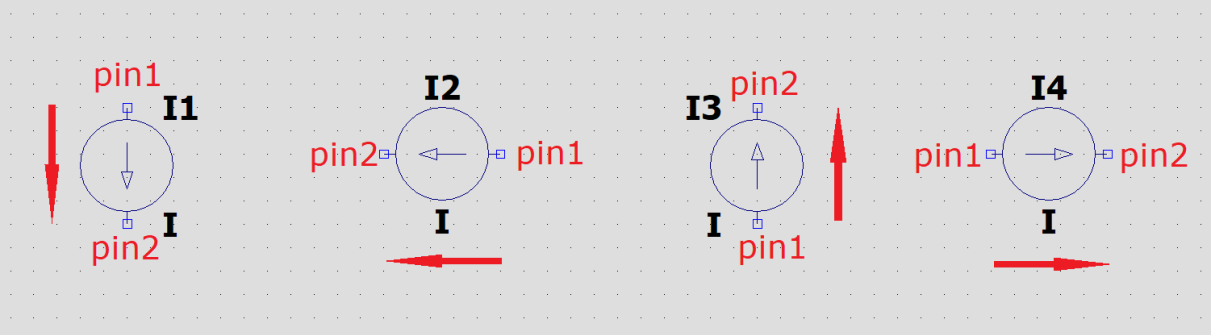
THE DIRECTION OF CURRENT FLOW THROUGH COMPONENTS **09.11.2020**

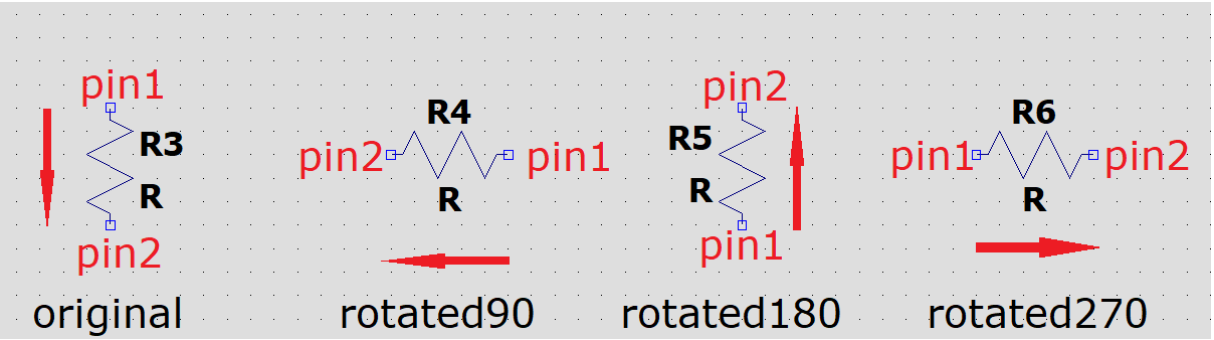
Voltage Source: Current is defined from + to – (from pin1 to pin2). Even if you rotate the component, the current direction stay the same (from + to -).



Current Source: Current is defined in the direction of the arrow in the symbol (from pin1 to pin2).

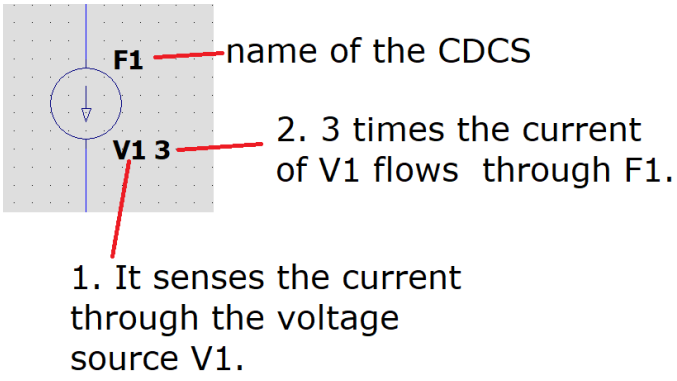


Resistor: Current is defined from pin1 to pin2. It is from up to down when you first call the resistor. If you rotate the symbol you should be careful, the direction of the current changes.

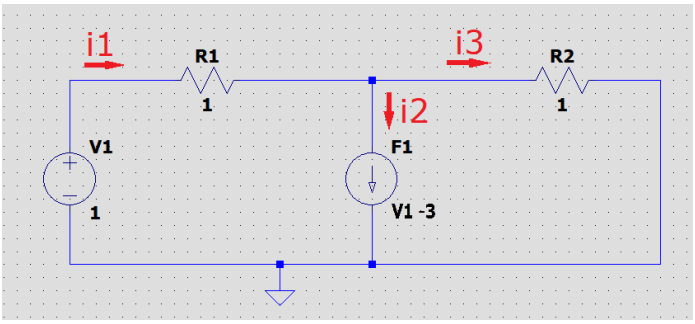


DEPENDENT SOURCES

Current Dependent Current Source: CDCS works by sensing the current through a voltage source and multiply it with the gain.



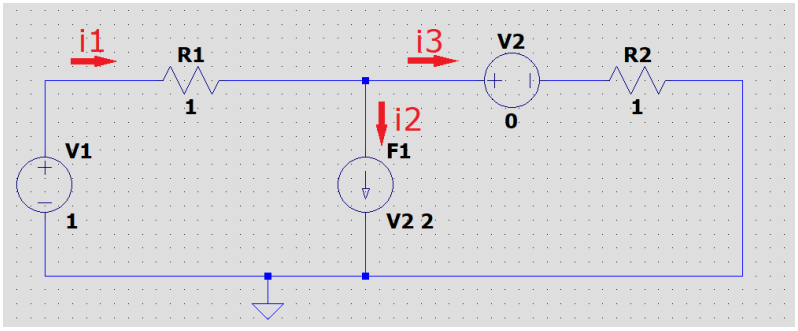
Example 1:



Here the current flows through F1 equals to -3 times the current of V1 (be careful the directions) or 3 times the current of R1.

i2 = 3*i1

Example 2: Let's set the current flows through F1 equals to 2 times the current of R2. However, there is no voltage source at that branch (CDCS senses only the current through a voltage source). So, we can add a dummy voltage source which has 0V series to R2.



Here the current flows through F1 equals to 2 times the current of V2 or R2.

i2 = 2*i3

Note: Current dependent voltage source works in a similar way with CDCS. In other words, it also senses the current through a voltage source and multiply it with the gain.

Note: Voltage dependent current source and voltage dependent voltage source have two pins which senses the voltage different between two nodes. You should connect these pins to necessary nodes and type the gain.