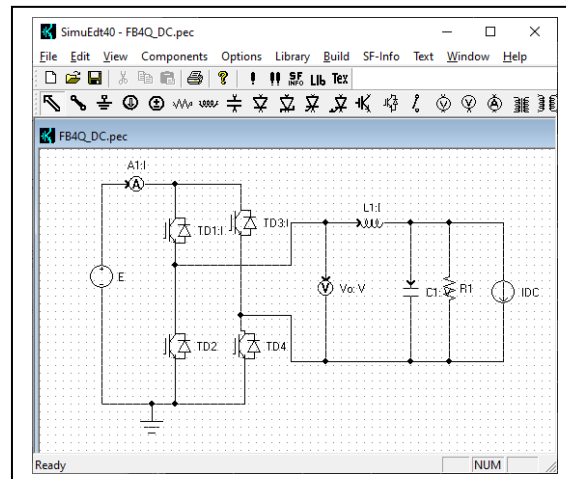


Full bridge four quadrant converter (FB_4Q_OS)

In this converter the magnitude and polarity of both the output voltage and the output current can be controlled. The full bridge converter can operate in all four quadrant of the output current-output voltage plane, and the power flow through the converter can be in either direction.



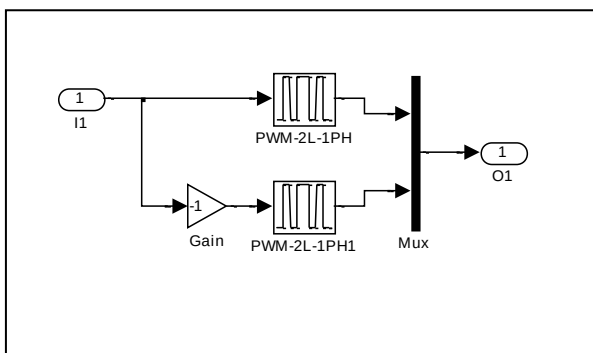
Full bridge four quadrant converter

The figure below shows the **Simulink** model of the full bridge four quadrant converter (FB_4Q_OS) including its control. The constant blocks “E” and “M” deliver the value of the input dc voltage E and the modulation index M respectively. The modulation index is defined as the ratio of the average output voltage V_o to the input voltage E . ($M=V_o/E$).

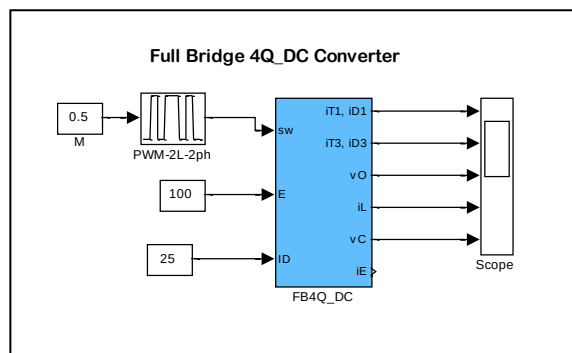
The converter power circuit is modeled using the C-S-function.

In the full bridge four quadrant converters, the polarity of the output voltage is reversible; therefore bipolar triangular waveform should be used for PWM modulation. Two such modulation strategies are possible:

- Bipolar modulation.
- Unipolar modulation.



PWM-modulation



Simulink model of the FB_4Q_OS converter