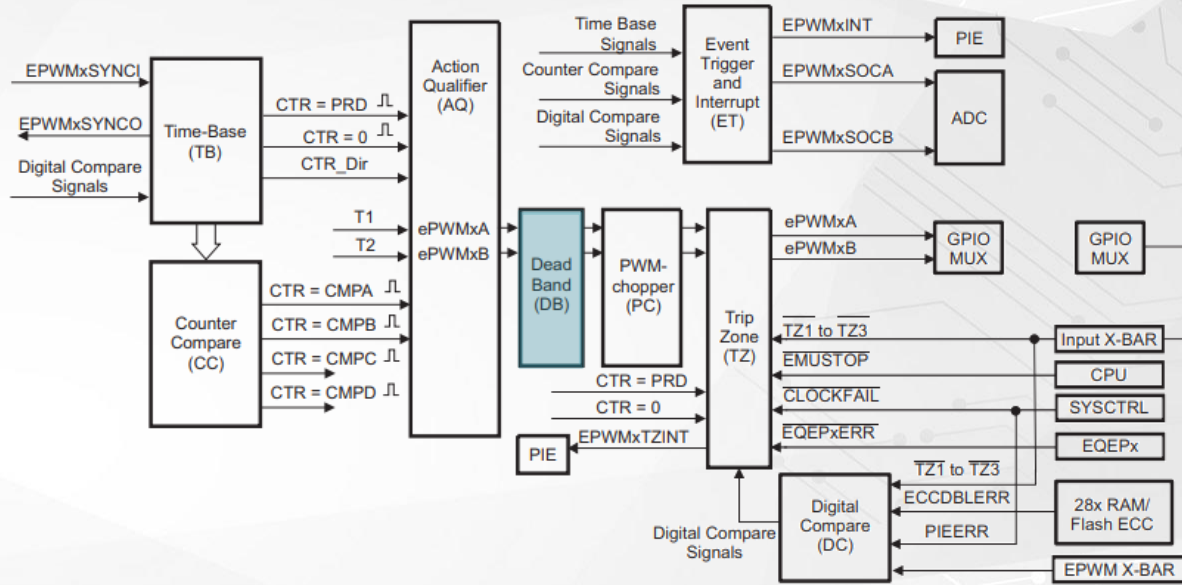


ePWM Dead-Band Submodule

C2000 Enhanced Pulse Width Modulator (ePWM) Series

Dead-Band (DB) Submodule

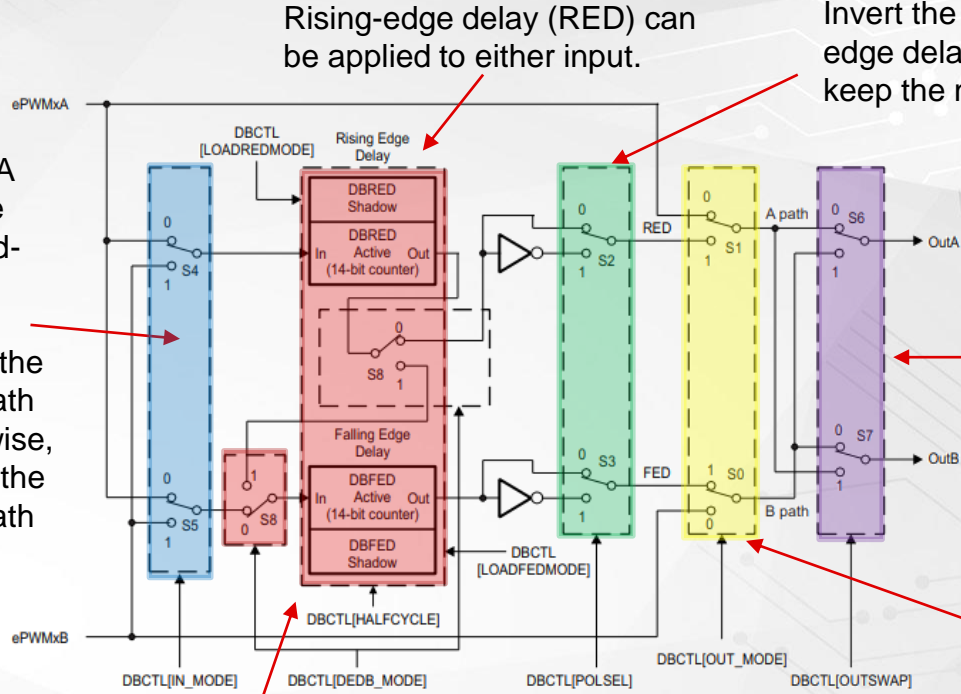
- Add programmable custom delay to rising/falling or both rising and falling edges
- Program signal pairs



Dead-Band Submodule: Deeper Look

Both the EPWMxA and EPWMxB are inputs to the Dead-Band submodule

EPWMxA can be the input for both A path and B path. Likewise, EPWMxB can be the input for both A path and B path.



Rising-edge delay (RED) can be applied to either input.

Invert the signal after rising/falling edge delay has been applied or keep the non-inverted signal.

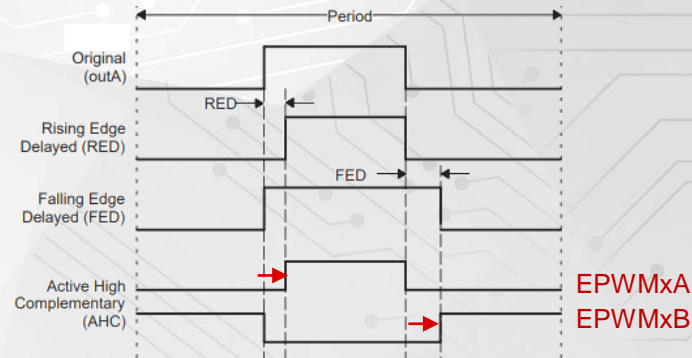
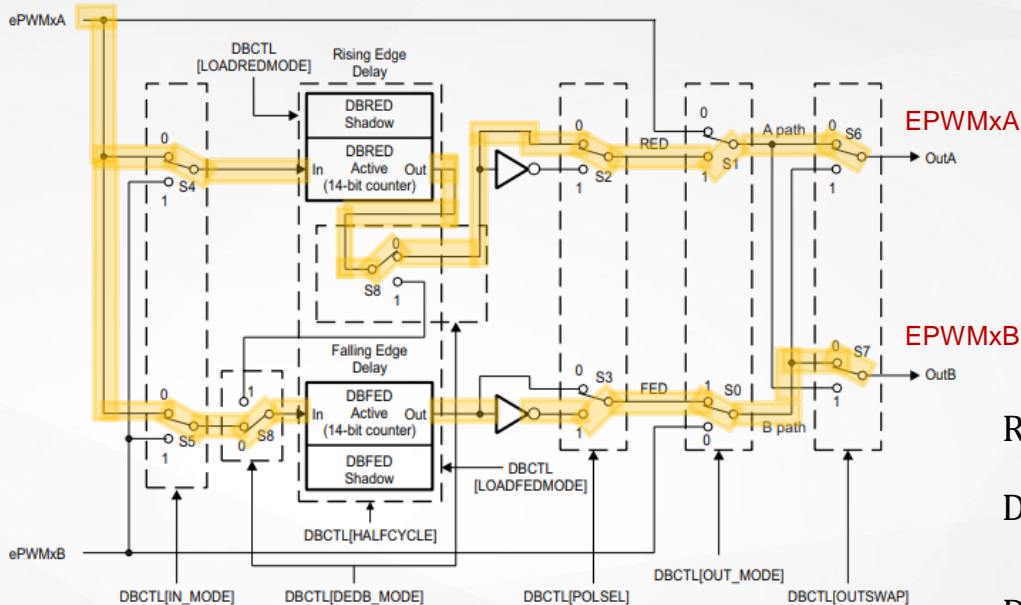
Swap the outputs
EPWMxA can be A path or B path
EPWMxB can be A path or B path

Bypass the Dead-Band features for EPWMxA/B outputs or keep the Dead-Band outputs

Falling-edge delay (FED) can be applied to either input or the signal with rising-edge delay

Dead-Band Submodule: Utilizing Dead-Band Features

Example: How do I generate active high complementary (AHC) signals with a 200 ns rising-edge delay and a 400 ns falling-edge delay?



$$RED = DBRED * T_{TBCLK}$$

$$FED = DBFED * T_{TBCLK}$$

$$DBRED = \frac{RED}{T_{TBCLK}}$$

$$DBFED = \frac{FED}{T_{TBCLK}}$$

$$DBRED = \frac{200 \text{ ns}}{20 \text{ ns}} = 10$$

$$DBFED = \frac{400 \text{ ns}}{20 \text{ ns}} = 20$$

Dead-Band Submodule: Utilizing Dead-Band Features - Programming

We saw how to set the dead-band switches and how to calculate the DBRED and DBFED values. How do we program this?

EPWM Dead-Band

Common Dead-Band Modes Mode for the Dead-Band Submodule

Active High	SETUP THE DEAD-BAND MODULE
Active Low	SETUP THE DEAD-BAND MODULE
Active High Complementary	SETUP THE DEAD-BAND MODULE
Active Low Complementary	SETUP THE DEAD-BAND MODULE
Dual Edge Delay Mode	SETUP THE DEAD-BAND MODULE

Rising Edge Delay Input	Input signal is ePWMA
Falling Edge Delay Input	Input signal is ePWMA
Rising Edge Delay Polarity	DB polarity is not inverted
Falling Edge Delay Polarity	DB polarity is inverted
Enable Rising Edge Delay	<input checked="" type="checkbox"/>
Rising Edge Delay Value	10
Enable Falling Edge Delay	<input checked="" type="checkbox"/>
Falling Edge Delay Value	20
Swap Output for EPWMxA	<input type="checkbox"/>
Swap Output for EPWMxB	<input type="checkbox"/>

Additional ePWM Resources

- [C2000 Academy](#) with Hands-on Labs
- [TI Precision Labs: PWM Basics Overview](#)
- [TI Precision Labs: Motor Interfaces and PWM Frequencies](#)

- ePWM Application Reports
 - [Flexible PWMs Enable Multi-Axis Drives, Multi-Level Inverters](#)
 - [Using PWM Output as a Digital-to-Analog Converter](#)
 - [Using the ePWM Module for 0% - 100% Duty Cycle Control](#)
 - [Leverage New Type ePWM Features for Multiple Phase Control](#)

Check Video Description for Additional Resources