To add a signed 8-bit delta to a 16-bit value, we need to sign-extend the delta to a full 16 bits. The low byte can be added as normal, but the upper byte needs to be $00 or $ff based on the sign of the low byte.

```
 ; Precalculate the sign-extended high byte in .X
 ldx #$00
 lda delta
 bpl :+
  dex        ; decrement high byte to $ff for a negative delta
:

 ; Normal 16-bit addition
 clc
 adc value   ; .A still holds delta
 sta value
 txa         ; .X is the high byte
 adc value+1
 sta value+1
```

The following version uses only the accumulator, adding 2 bytes and 1 cycle:

```
 ; Standard low byte addition
 clc
 lda delta
 adc value
 sta value

 ; Sign extend the high byte
 lda delta
 and #$80    ; Extract the sign bit
 beq :+      ; If zero, add #$00 (+ carry)
  lda #$ff   ; Else, add $ff (+ carry)
:adc value+1
 sta value+1
```

White Flame