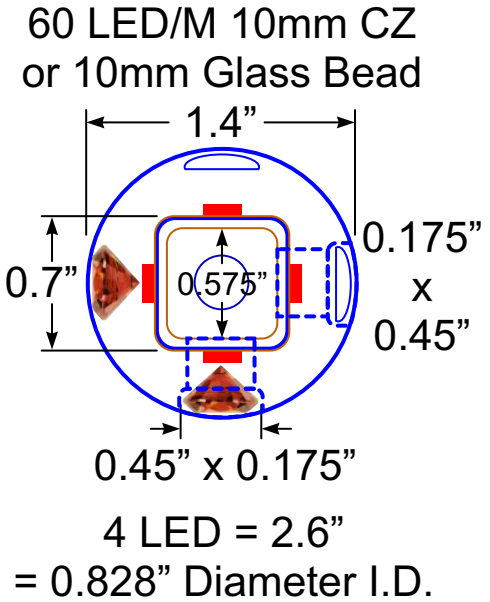
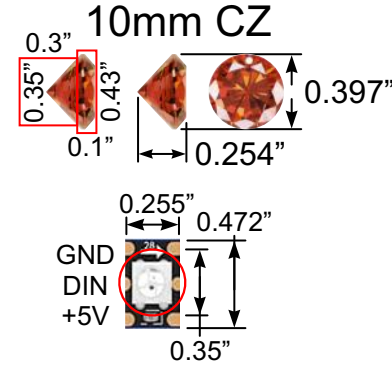
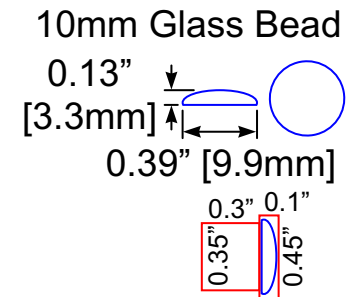


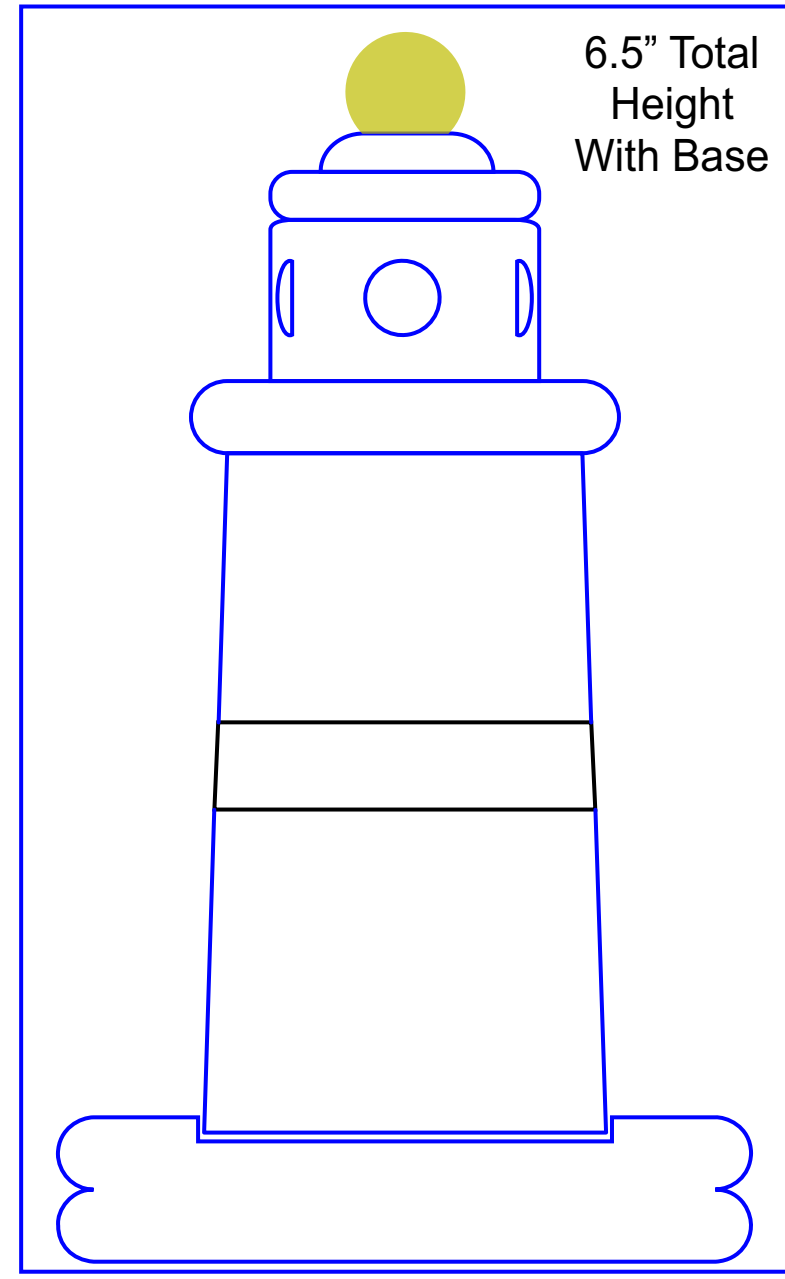
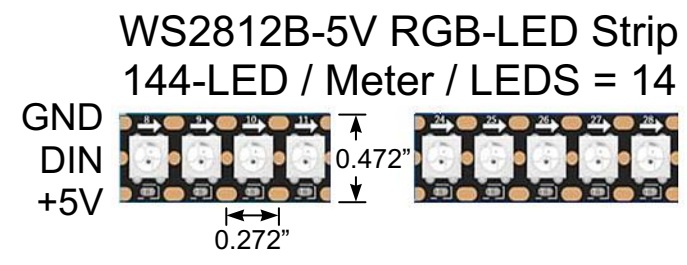
SMALL VERSION

Drill 5/8" Brass Ball Scale: 1 to 1
 M5 x 7/16" Depth & Cut
 16 Threads with M6 x 1mm Bottoming Tap
 For Pot Stem Cut M6 x 1mm x 12 Threads

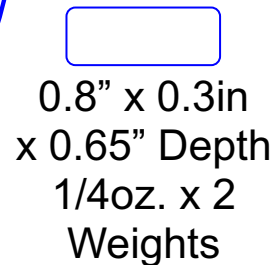
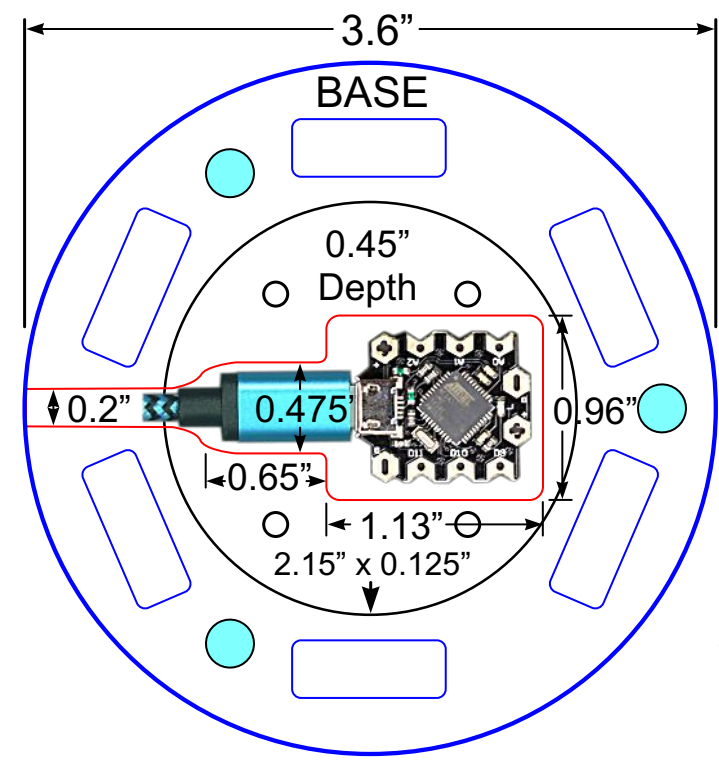


0.46" x 0.4" for 11mm OD x 0.4" H
 Brass Insert Tapped M10 x 0.75

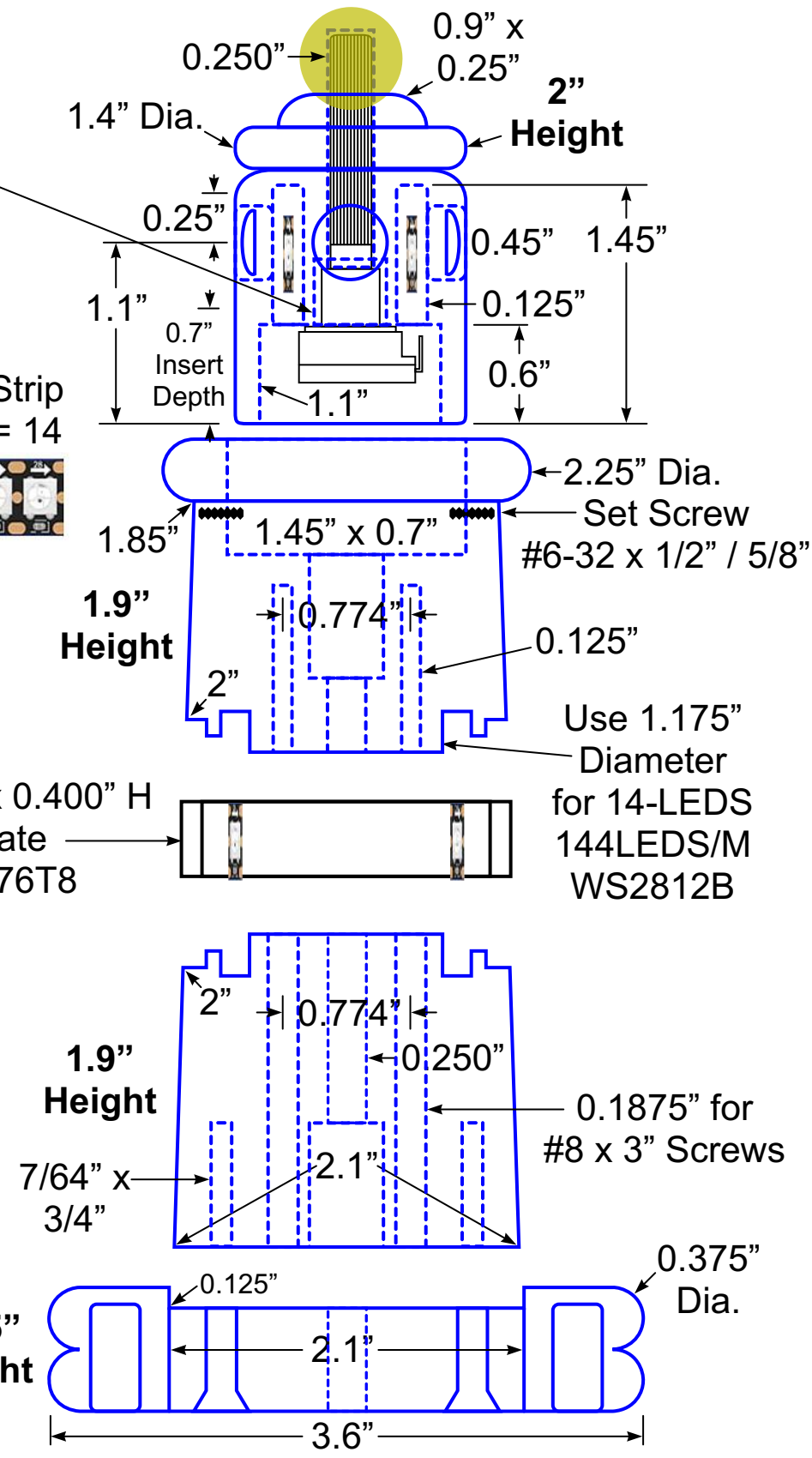
For Brass Insert Drill Out 11mm OD
 x 9mm ID Brass Tube with 3/8" Drill
 to a Depth of 5/8", Tap 16 Threads
 with M10 x 0.75 Tap, and
 Then Cut to 0.4" Length



For #8 x 1-1/4" Flat Head Screws Drill
 Lighthouse Lower Section with 7/64" Drill

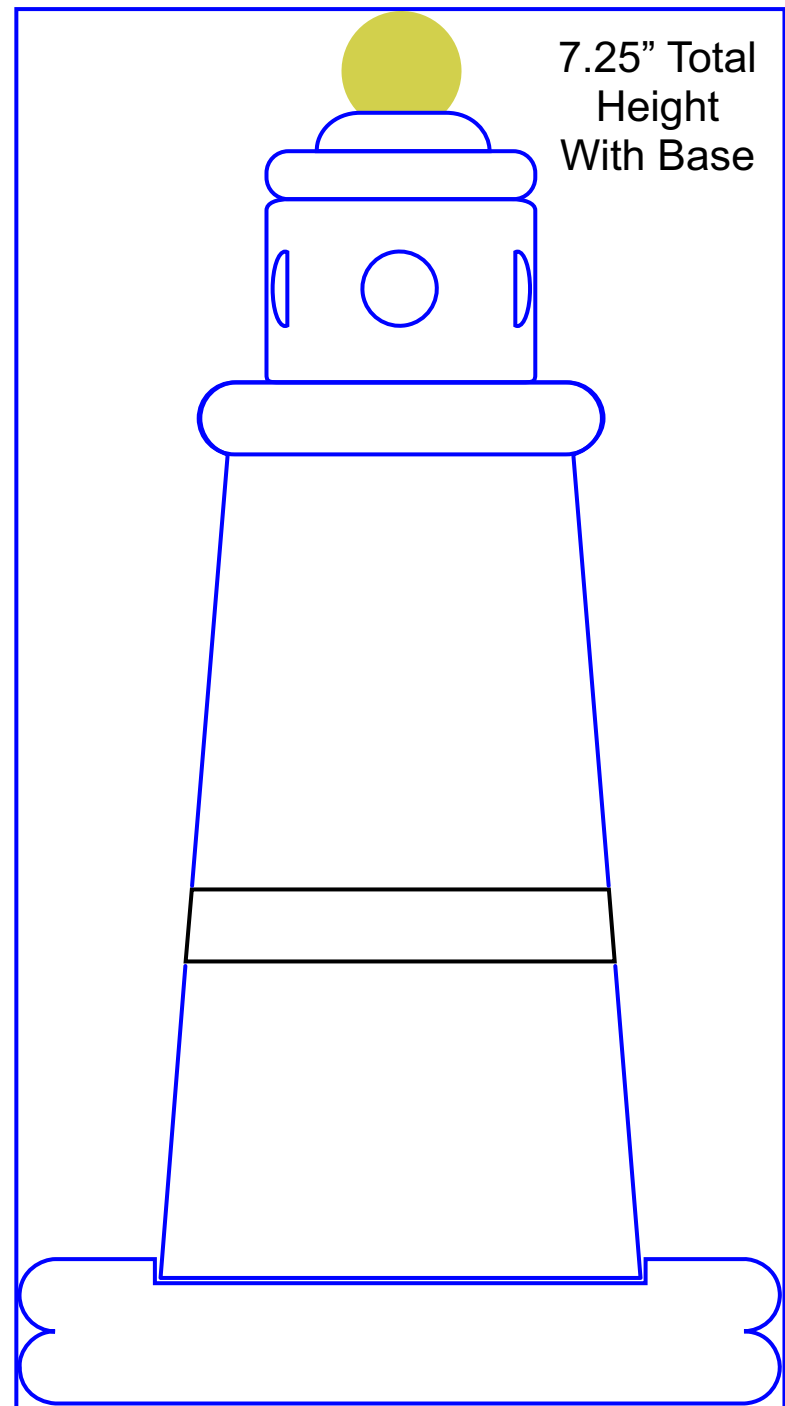
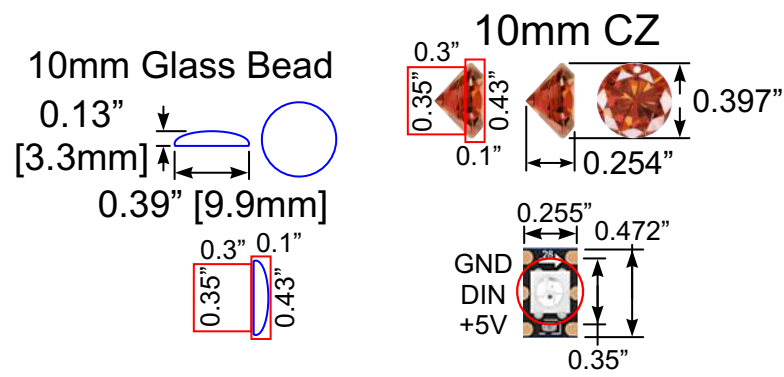


2" OD x 1.75" ID x 0.400" H
 Polycarbonate
 McMaster 9176T8

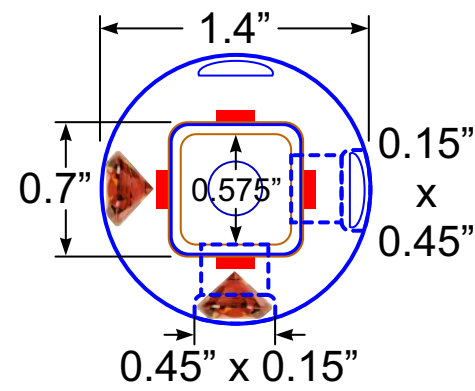


LARGE VERSION

Drill 5/8" Brass Ball M5 x 7/16" Depth
& Cut 16 Threads with M6 x 1mm Bottoming Tap

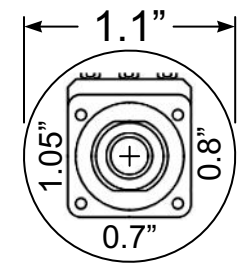
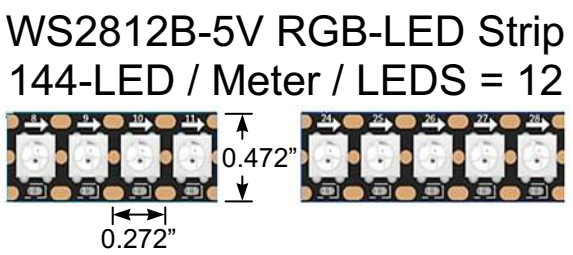
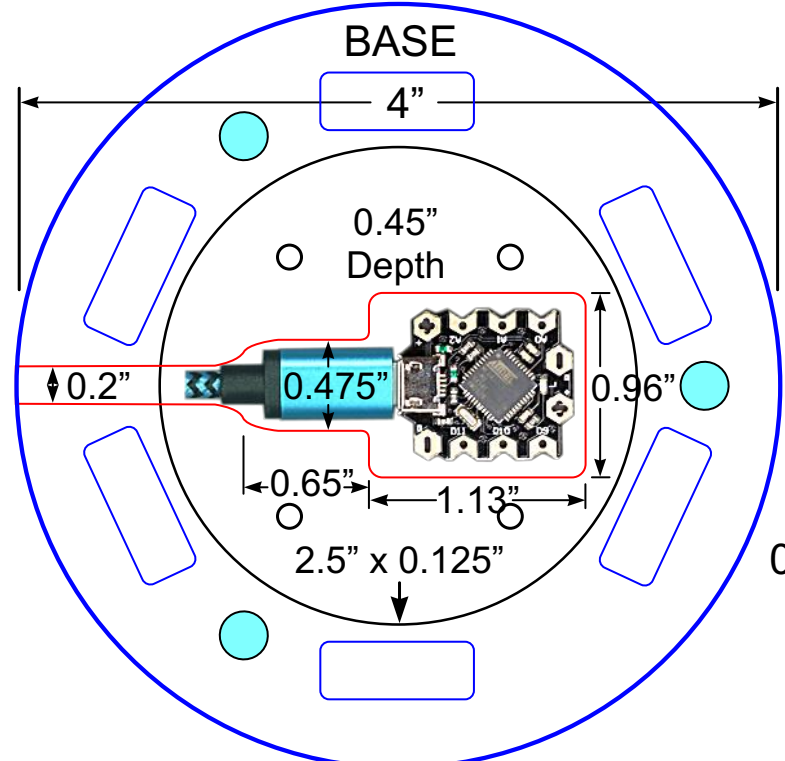


60 LED/M 10mm CZ or 10mm Glass Bead



4 LED = 2.6" = 0.828" Diameter I.D.
= 0.953" O.D. with 1/16" End Mill

For #8 x 1-1/4" Flat Head Screws Drill Lighthouse Lower Section with 7/64" Drill



0.46" x 0.4" for 11mm OD x 0.4" H Brass Insert Tapped M10 x 0.75

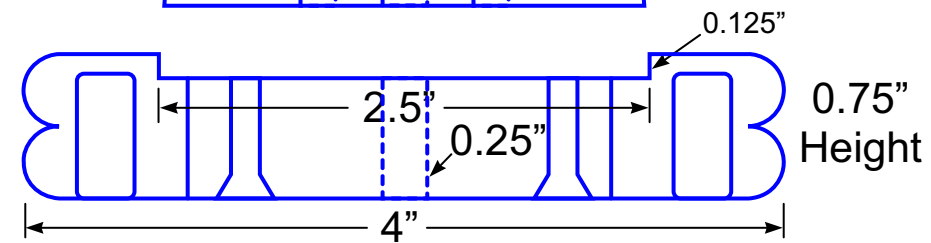
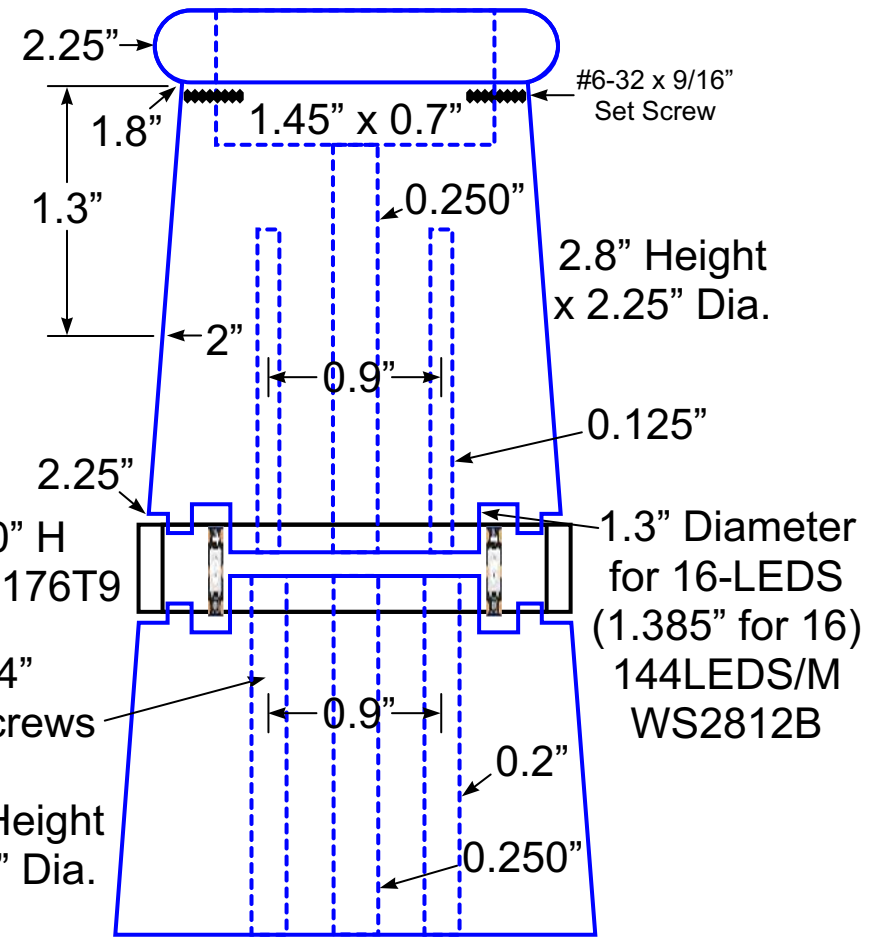
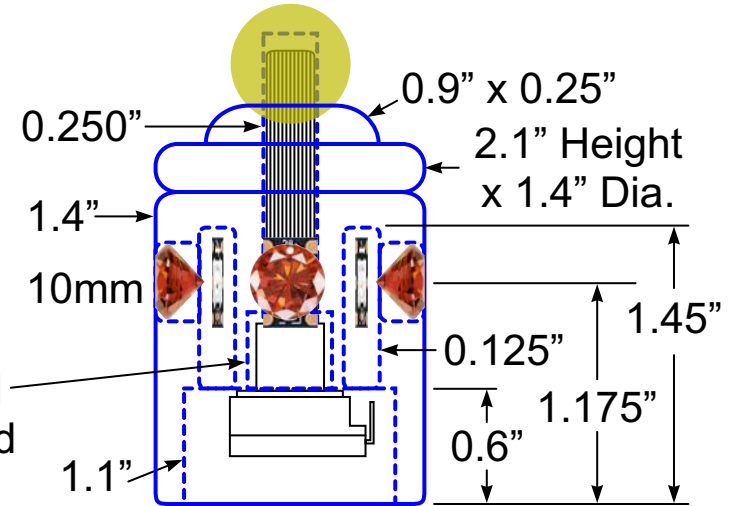
For Brass Insert Drill Out 11mm OD x 9mm ID Brass Tube with 3/8" Drill to a Depth of 5/8", Tap 16 Threads with M10 x 0.75 Tap, and Then Cut to 0.4" Length

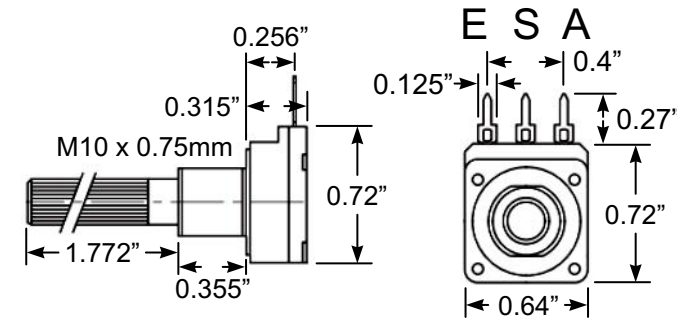
2.25" OD x 2" ID x 0.400" H Polycarbonate McMaster 9176T9

(4) #10 x 4" Sheetrock Screws

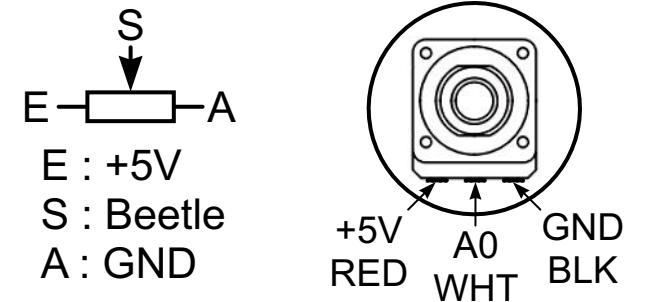
1.9" Height x 2.5" Dia.

0.8" x 0.3in 1/4oz. x 2 Weights



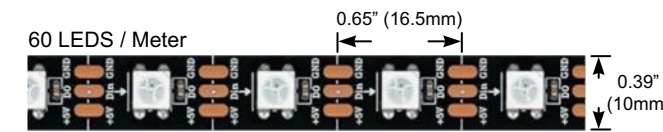
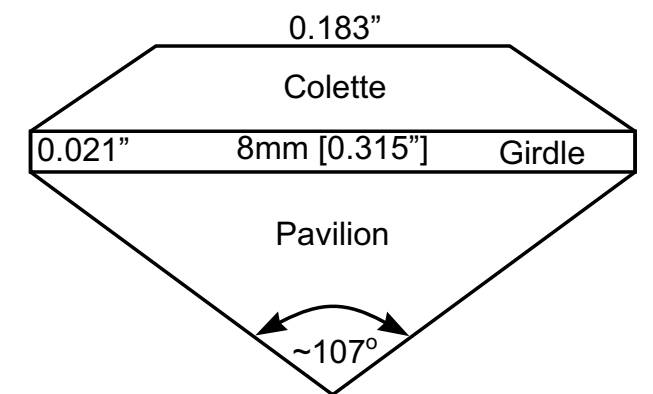
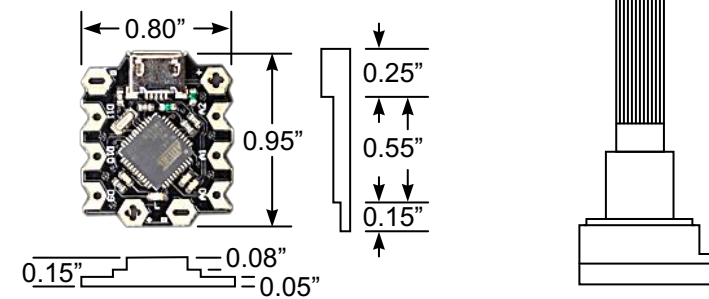


250Ω Potentiometer with 1.772" (45mm)
Adjustment Post Length

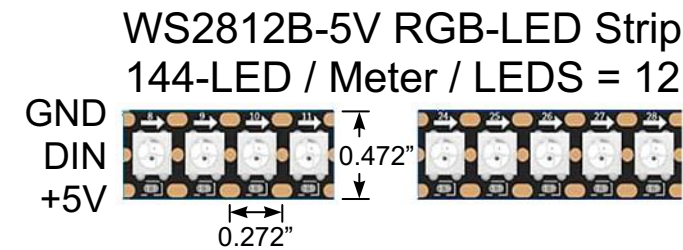


Wiring Top View
Full Counter-Clockwise for LEDs Off

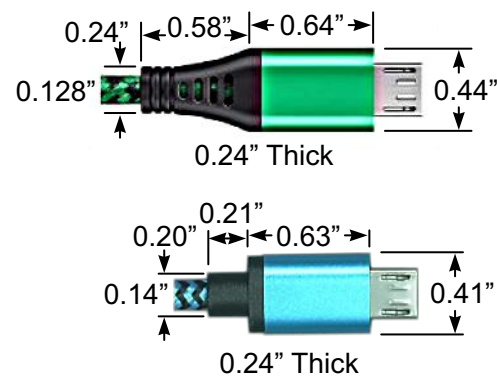
DFRobot Beetle DFR0280
Microcontroller Card



60 LEDs / METER / 0.105" THICK
LEDS = 4
Core Diameter = 0.828" : Circumference = 2.6"



(Scale 10 to 1)
8mm Stuller Round CZ
0.317" Maximum Diameter
0.183" = Table Diameter
0.183" = Total Height
0.045" = Colette Height
0.021" = Girdle Height
0.117" = Pavilion Height

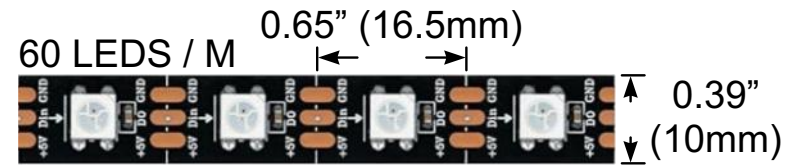


Acceptable USB-Micro Male Connector Heads

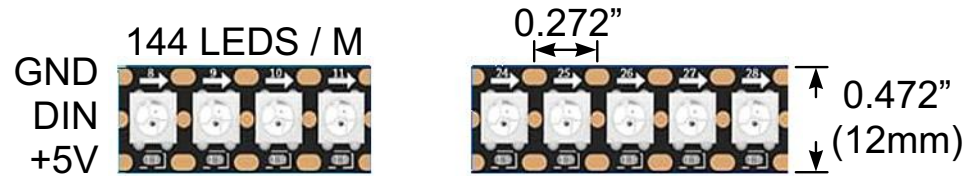
https://www.amazon.com/gp/product/B0CHN XFZ8C/ref=ppx_yo_dt_b_search_asin_title?ie=UTF8&th=1

https://www.amazon.com/dp/B07T1PS8SF?smid=A2WT7OEFRCWMXV&ref_=chk_typ_imgToDp&th=1

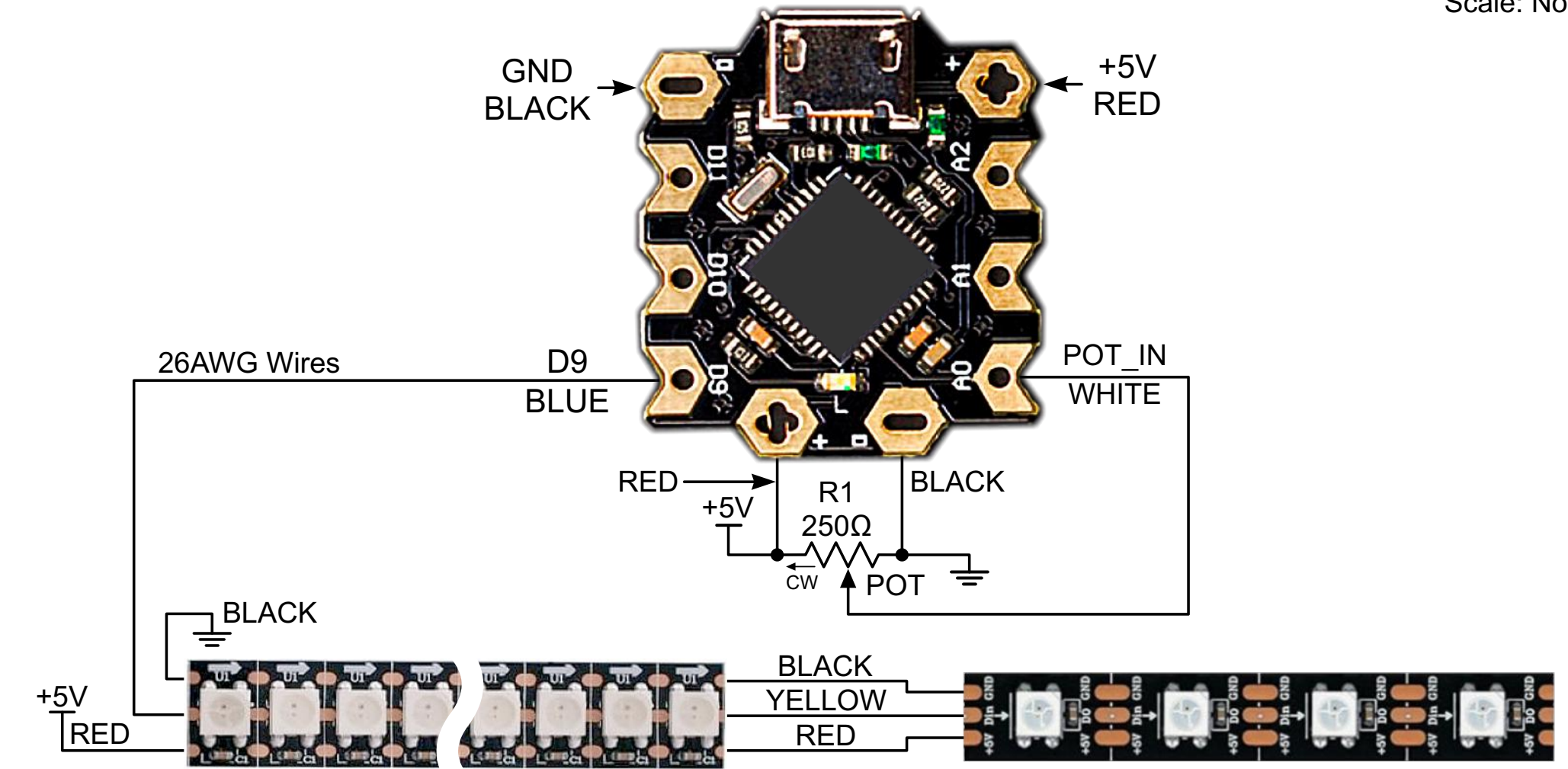
WS2812B-5V RGB-LED Strips



60 LEDs / METER : 0.105" THICK : LEDs = 4
Core Diameter = 0.828" : Circumference = 2.6"



144 LEDs / METER : 0.105" THICK : LEDs = 14
Core Diameter = 1.212" : Circumference = 3.808"



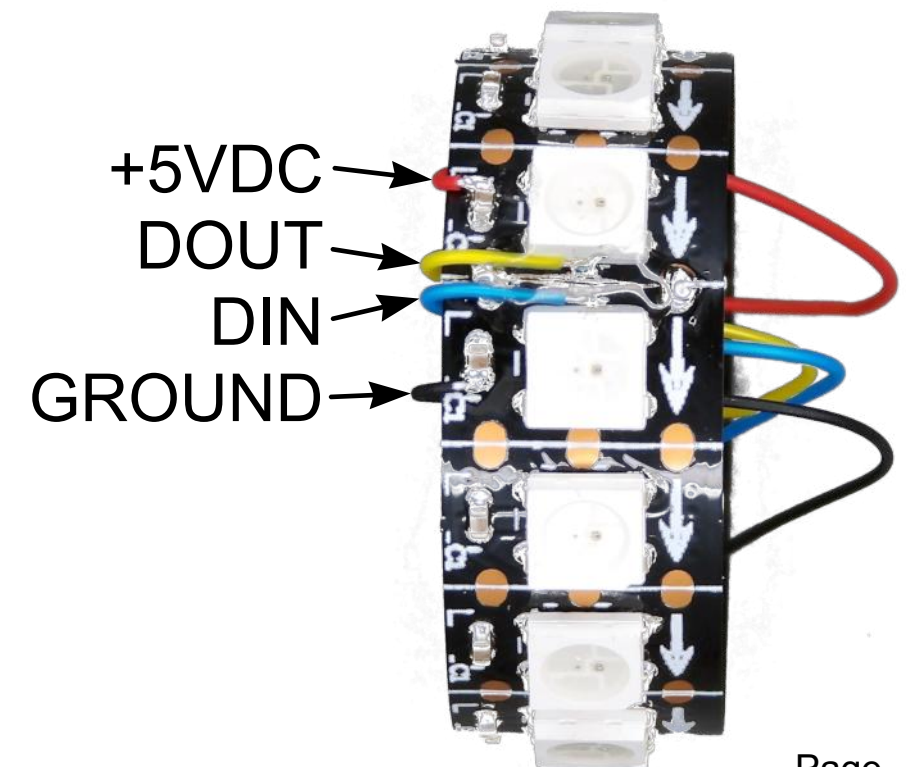
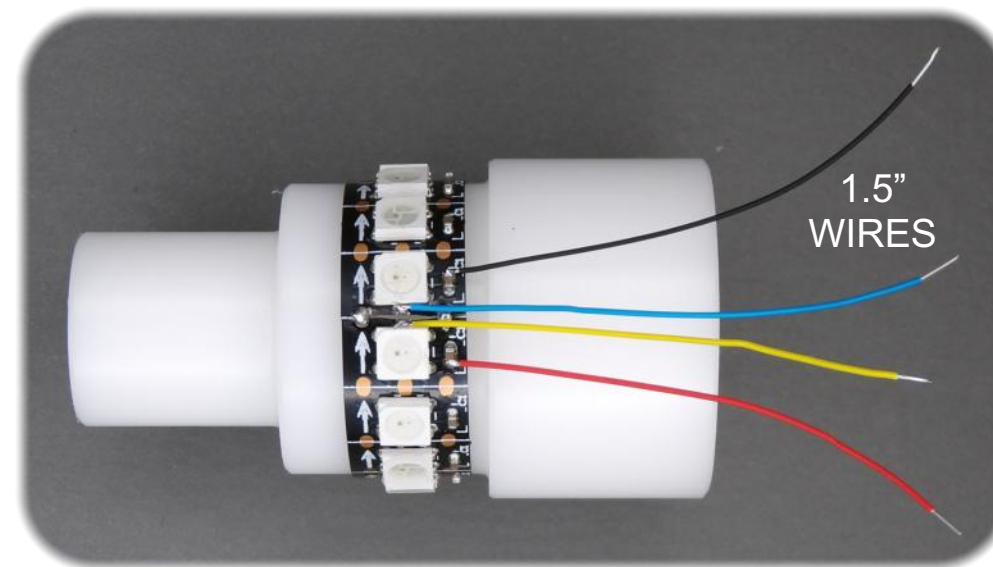
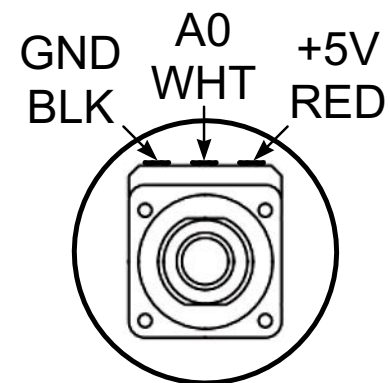
144 LEDs / METER : 14 LEDs FOR SMALL LIGHTHOUSE
(16 LEDs FOR LARGE LIGHTHOUSE)
(Ground Arrow Side Towards Brass Ball)

60 LEDs / METER : 4 LEDs
(Ground Arrow Side Towards Brass Ball)

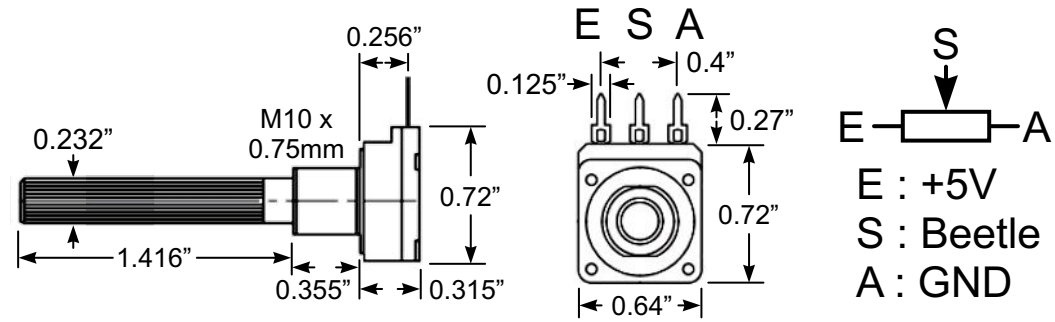
250Ω Potentiometer

Wiring Top View

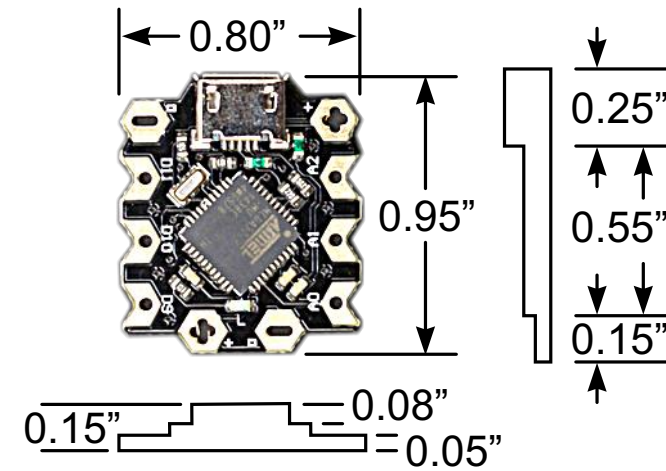
Full Counter-Clockwise for LEDs Off



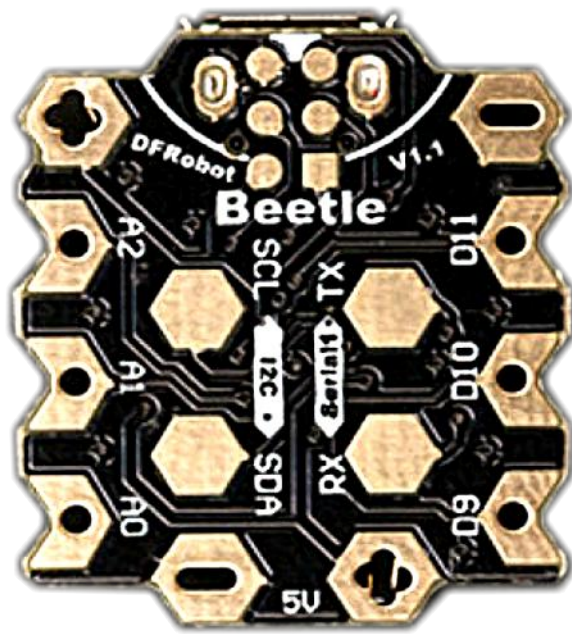
250Ω Potentiometer with 45mm Adjustment Post Length
(ESA Connections As Seen From Post Side)
(Scale: 1 to 1)



DFRobot Beetle DFR0280
Microcontroller Card
(Scale: 1 to 1)



DF Robot's Beetle Pin Assignments:



	PIN	PWM?	PIN NAME	PIN FUNCTIONS
1.	29	YES	D9	PB5 : (ADC12 / OC1A / #OC4B / PCINT5)
2.	30	YES	D10	PB6 : (ADC13 / OC1B / OC4B / PCINT6)
3.	12	YES	D11	PB7 : (#RTS / OC0A / OC1C / PCINT7)
4.	18	YES	D3/SCL	PD0 : (OC0B / SCL / INT0)
5.	19		D2/SDA	PD1 : (SDA / INT1)
6.	20		D0/RX	PD2 : (RXD1 / AIN1 / INT2)
7.	21		D1/TX	PD3 : (TXD1 / INT3)
8.	38		A2	PF5 : (ADC5 / TMS)
9.	37		A1	PF6 : (ADC6 / TDO)
10.	36		A0	PF7 : (ADC7 / TDI)

Total Example Cost = ~ \$42.00**List of Parts for Desktop Lighthouse (Example Cost = \$24.00):**

1. DFRobot Beetle ATMEGA32U4 Eval Board : DigiKey Electronics : DFR0282 : 1 Each : ~ \$10.00
2. 250Ω Single Turn Potentiometer : DigiKey Electronics : PC16SH-10IP06-251A2020-TA : 1 Each : End of Shaft Die Cut M6x1mm Threads : ~ \$3.00
3. Neodymium Cylinder Magnets 3/16" x 1/2" : K&J Magnetics : D38-N52 : Or Amazon : 8 Each : Upper & Lower Magnets : ~ \$4.00
4. Aioneus USB Type-A Male to USB-Micro Male 10' Cable : Amazon : 1 Each : ~ \$2.00
5. Impact Resistant Polycarbonate : 2.25" O.D. x 2" I.D. x 0.125" Wall Thickness x 0.4" Height : McMaster-Carr 9176T9 (12 inch tube) : ~ \$1.00
6. 5/8" Brass Ball : Amazon : 1 Each : Drilled and Tapped for M6x1mm Threads : ~ \$2.00
7. WS2812B 5 Volt DC RGB LED Strip with 60 LEDS Per Meter : Amazon : 1 Each (Cut strip to 4 LEDS) : ~ \$0.50
8. WS2812B 5 Volt DC RGB LED Strip with 144 LEDS Per Meter : Amazon : 1 Each (Cut strip to 12 LEDS) : ~ \$1.50

List of Parts for Lighthouse Base (Example Cost = ~ \$3.00):

1. Hard White Maple Lumber (for example) 5" x 5" x 3/4" : Wood Workers Source (MacBeath Hardwood) : 1 Each : ~ \$2.50
2. SPAX #8 x 1" Zinc Plated Sheet Metal Screws : 4 Each : ~ \$0.25

Wood Options, Stains, and Finish for Lighthouse & Base (Example Cost = ~ \$15.00):

1. Bethlehem Olivewood 1.5" x 1.5" x 12" Spindle Blank : Exotic Woods USA : Olive-002 : 1 Each : ~ \$2.50
2. Bloodwood 2" x 2" x 12" Spindle Blank : PSI : #WX06-3 : 1 Each : ~ \$1.50
3. Purpleheart 3" x 3" x 12" Spindle Blank : Exotic Wood Zone or Exotic Woods USA : PH-004 : 1 Each : ~ \$12.50
4. Red Heart 1.5" x 1.5" x 12" Spindle Blank : PSI #WX016-2 or Exotic Woods USA : RH-002 : 1 Each : ~ \$2.00
5. Yellowheart 2" x 2" x 12" Spindle Blank : Exotic Woods USA : YH-004 : 1 Each : ~ \$2.50
6. Wood Prep Prior to Staining : Zinsser 854 Clear Wax Free Seal-Coat Sanding Sealer : Home Depot : Cut Half Strength with Denatured Alcohol
7. Varathane Oil Based Classic Penetrating Wood Stain : Sedona Red (for example)
8. Minwax Water Based Express Color Wiping Stain & Finish : Emerald Green (for example)
9. Minwax Polycrylic Crystal Clear Topcoat : Semi-Gloss