

BSG Viper Mk-I

Lighting Circuits

Description	LED Type	Expected Current (ma)	Order
Guns	1 - 1.8mm Orange	5	
Wing Strobes	1 – 1.8mm Red	5	
Engines	9 – 5mm Blue	75 - 180	
Cockpit Panels	4 – 1206 Cool White 1- Z Cool White	60	5
Cockpit MultiColor	1 - 3mm Round	15	
Cockpit Target/Prog LED	1 – 1.8mm Yellow or Orange	5	
Pilot Helmet	1 - Z Warm White	15	
Battle Damage/Short Circuit	1 – Z Ice Blue	15	
Night Light (Base Stand)	1 - 3mm Bright White Barrel	15	

OLED Power (20ma + 5ma for Zener?): 3.3v reg built in, can run on 5v

Fiber Optics

Wing strobes: 3 x .5mm, 0.25 x 2 (Cockpit)

Guns: 2 x 0.75mm

Panel Multicolors: 0.25mm x 2, 1mm x1

Panel – Green Blink LED: 1mm x 1, 0.25mm x 2

Panel – Yellow Blink LED: 1mm x 1, 0.25mm x 2, 0.5mm x1

Prog / Target: Org Pico LED

MOSFET Drivers

- 1) Engines
- 2) Night Light LED
- 3) Power2: Multi-color LED/Other Solids, Blinkers
- 4) Guns
- 5) Battle Damage

Battery: 1080MA Lipo Cell

Painting Guide

Part	Instruction Color	Alt Color Option
Primers		Black & Gray
Panel Lines		Brown vs Gray or Black?
Cockpit	Gray	Neutral Gray XF-53
<ul style="list-style-type: none"> - Panels/Pieces - Pilot Head Rest - Dry Brush 	Black / Switches -Silver	Nato Black (XF-69) Leather Brown Sky Gray XF-19
Canopy	Body color	Vallejo Liquid Mask Aluminum
Engine Exhausts / Intakes <ul style="list-style-type: none"> - Dry Brush - Engine side detail - Intake Fans - Exhaust Exterior - Exhaust Inner Ring 	Silver w/ Copper detail Silver Gray Gray	German Gray Lead Belcher, Nuln Oil for highlights Aluminum XF-16 Copper XF-6 Titanium Silver X-32 Lead Belcher Titanium Silver X-32 German Gray XF-63 German Gray XF-63
Rear Fuselage	Gray	Sky Gray XF-19 Details: Aluminum Titanium Gold Copper
Connecting Components		Dark Sea Gray XF-54
Guns <ul style="list-style-type: none"> - Body - Barrel 	Metallic dark gray	Body Color Gun Metal X-10 Titan Gold X-31 Lead Belcher
Nose Cone Interior = Grill	Pale Gray Silver	Sky Gray XF-19
Nose Cap Ext	Gray	Neutral Gray XF-53
Front Side Panels	Gray	Dark Sea Gray XF-54
Side Insert Detail	Metallic Dark Gray w/ Silver detail	Aluminum XF-16 Titan Gold X-31 Copper Lead Belcher
Pilot Body		

<ul style="list-style-type: none"> - Boots - Pants/Shirt - Jacket - Gun Belt - Gun - Head/Hands - Stick - Helmet - Shade, all parts 	<ul style="list-style-type: none"> Black Tan Brown Leather/Gold buckles Brown Black Flesh Black Gold Emblem Yellow Gold Base Black gloss trim 	<ul style="list-style-type: none"> T Semi-Gloss Black - enamel Light Brown XF93 MM Leather - enamel MM Brass Red Brown XF-64 Flat Black XF-1 Kislev Flesh T Flat Gun Metal Gold Leaf X-12 Dark Yellow XF-60 Semi-Gloss Black X-18 Mortarion Grime
Weathering Body		<ul style="list-style-type: none"> Hull Red, Flat Black Oils Tamiya Weathering Kit B/D Chipping effect on edges

Gloss Top Coat for decals and prior to weathering (Aqua Gloss)

Flat for final finish (Klear Kote – Flat)

Front Landing Gear door supports:

- ~ 2mm back
- ~ 1mm front

Sound SD Card

Copy the mp3 folder to the sd card
mp3

- 0001_BSG theme song.mp3
- 0002_Viper launch sequence.mp3
- 0003_BSG theme song clip.mp3
- 0004_target aquired.mp3
- 0005_target hit.mp3
- 0006_guns.mp3

ATMega Connections

Select Custom Board
ATMega168 or 328

Burn boot loader to set external crystal

Set Arduino as ISP

Load program using “Upload Using Programmer” option

PWM pins:

D3 (PD3)	D5 (PD5)	D6 (PD6)	D9 (PB1)	D10 (PB2)	D11 (PB3)
5	11	12	15	16	17

Verify Pins!

Blink Pin: D13, PB5, Pin 19

20ma max per pin / 100ma total all pins

Viper Mk-I Operation:

Stored Settings:

- Night Light Level
- Night Light – Last State
- Audio (DF) Volume

Programming (Button Press)

1. Night Light Mode On/Off, Adjust Brightness (*Hold button*)
 2. Motion Sensor Enable/Disable, also wake up from sleep mode when enabled
 3. Volume level adjustment +/- 5 single press, Variable level (*Hold Button*)
 4. Sleep Mode Enable/Disable
 - a. Enabled: Motion disabled
 - b. Disabled: System restarted, Motion enabled
- Press button number of times to select mode. Holding the button on the number of presses to use a variable setting mode.

Data Pin Connections

ATMega168/328 (28 pin DIP)

- ~ PWM pins
- Colored sections share a MOSFET driver on the ATMega Dev Board
- Pin 1-3 (RST, TX, RX) No MOSFET driver connection

10k Reset Pull Up	1 (PC6) RST	28 (PC5) D19/A5	SCL – OLED – Org Blk V-, Red V+
N/C	2 (PD0) RX D0	27 (PC4) D18/A4	SDA – OLED - Gray
N/C	3 (PD1) TX D1	26 (PC3) D17/A3 Q12	Panel 4 LED
Prog Sw In (Active High)	4 (PD2) D2	25 (PC2) D16/A2 Q11	Panel 3 LED
Motion Sensor In (SR602, Active High => 4.7k ohm)	5 (~PD3) D3	24 (PC1) D15/A1 Q7	Panel 2 LED
Wing tip strobe LED	6 (PD4) D4 Q14	23 (PC0) D14/A0 Q10	Panel 1 LED
VCC	7	22	GND
GND	8	21	ARef, - 1uf Cap to GND
Crystal	9	20	VCC
Crystal	10	19 (PB5) D13 Q6	Console LED Target/Prog (Blink LED)
Flash Damage (60 ohm @ 12ma)	11 (~PD5) D5 Q15	18 (PB4) D12	RX -> Sound TX (3) - Yel
Night Light LED Blu -, Wht +	12 (~PD6) D6 Q20	17 (~PB3) D11 Q2	LED Power2 - Grn - (Multicolor/Solids)
LED Power1 (Helmet)	13 (PD7) D7 Q16	16 (~PB2) D10 Q5	Guns
TX -> Sound RX (2) - Grn	14 (PB0) D8	15 (~PB1) D9 Q1	Engine LEDs (~ 27 ohm @ 20ma)



Connection: Resistor - Q B/G



Connection: Q C/D

Typical Current Range:

Min: 46ma

Ave: 185ma

Max: 250ma

Sleep: 70ma

Cockpit Panel Connector (Back Side)

7 – Grn All on (-)	6 – Blk Ctrl (-)	5 Helmet (-)	4 Pan 4 (LF-)	3 Pan 3 (RF-)	2 Pan 2 (LB-)	1 – Org Pan 1 (RB-)	Red V+
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References

Available kits from other sources, notes, useful YouTube links:

Moebius Colonial Viper, Model #940

Photoetch

\$24.95, Part#:PGX175 Scale:1/32

https://www.paragrafix.biz/product_detail.asp?MainCat=Photoetch&SubCat=blank&PPartNum=PGX175

Lighting Kit #34.99

Catalog #: 18VCT01

Theme #1: Battlestar Galactica

3 engine

1 cockpit

Other kit, sold out

3 x Blue LEDs for Engines

2 x Green SMD LEDs for Cockpit

1 x White LED for Console Backlight

1 x Yellow LED with 6 x 0.75mm fibre guides for instruments (Flashing)

1 x Control Board with programmed ATtiny85 (Atmel/Microchip) processor.

wing tips to flash, a bundle of .5mm fiber optics were attached to a flashing red led.

These fiber optics were then glued along the wing, and fit inside grooves that were carved into the inside of the wings

so that the fiber optics could illuminate the wing tips. White glue was used to glue down the fiber optics to prevent the fiber optics from being damaged.

<https://www.instructables.com/LED-Lit-BSG-Viper-Mk-II-Model-Build/#:~:text=To%20get%20the%20wing%20tips%20to%20flash%2C%20a,the%20fiber%20optics%20could%20illuminate%20the%20wing%20tips.>

Light and Sound Kit \$95

<https://www.starling-tech.com/index1.php?id=tos-viper>

1x Fully assembled TOS Viper Life Force board.

1x 3AAA battery holder with wired switch.

Sound board contains a 1/8" sound out jack that you may attach to a set of amplified speakers.

10x Pre-wired LEDs.

1x wired activation button/reed switch.

4x 2pin JST connectors.

Optional 4.5v wall adapter with harness can be purchased separately.

1 PDF manual emailed after purchase.

Flickering white LEDs for running engine effect.

Red and Green running lights

White Strobe marker lights

Cockpit lights in Red, Green, Yellow and White, pick any three and use fiber optics to light instruments.

YouTube

<https://www.youtube.com/watch?v=LkB7fble07U>

https://video.search.yahoo.com/video/play;_ylt=AwrS32ETyJpgSXQAIUlsnIIQ;_ylu=c2VjA3NyBHNSawN2aWQEdnRpZAMEZ3BvcwMyMA--?p=Battlestar+Galactica+Colonial+Viper&vid=bc76157c3af76524d112169e58d0d9ac&turl=https%3A%2F%2Ftse2.mm.bing.net%2Fth%3Fid%3DOVP.6dRMCEfY2wq5DBnEG4pJtgEsDh%26pid%3DApi%26h%3D225%26w%3D300%26c%3D7%26rs%3D1&rurl=https%3A%2F%2Fwww.youtube.com%2Fwatch%3Fv%3DUM4sG5yAZ1M&tit=Completing+the+Moebius+1%2F32+scale+Mark+I+Colonial+Viper&c=19&h=225&w=300&l=697&sigr=Q1y96YeZ.Y8Y&sig=I_EJmjoF4o0R&sigi=KTVGJPbBuAj&age=1398055989&fr2=p%3As%2Cv%3Av&hsimp=yhs-att_001&hspart=att&tt=b

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