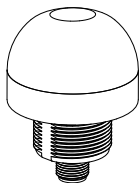


# K50 Pro with Optical Sensor



## Datasheet

50 mm Programmable Multicolor RGB Device with Optical Sensor



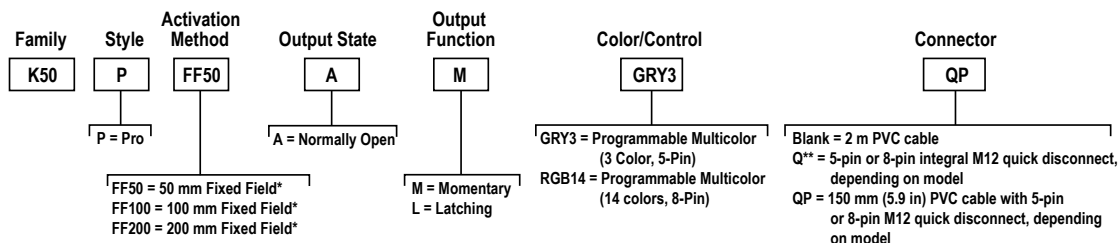
- Programmable using Banner's Pro Editor software and Pro Converter Cable
- Up to 14 default colors with flash input in one unit
- Devices are completely self-contained—no controller needed
- Rated IEC IP67 and IP69K per DIN 40050-9
- Immune to ambient light, EMI, and RFI interference
- 12 V DC to 30 V DC operation



### WARNING:

- **Do not use this device for personnel protection**
- Using this device for personnel protection could result in serious injury or death.
- This device does not include the self-checking redundant circuitry necessary to allow its use in personnel safety applications. A device failure or malfunction can cause either an energized (on) or de-energized (off) output condition.

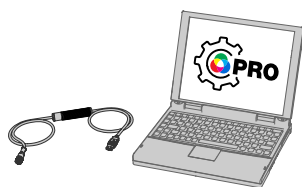
## Models



\* Cutoff distance varies from specified range based on target and tolerances

\*\*Models with a quick disconnect require a mating cordset

## Pro Editor



Use Banner's Pro Editor software and Pro Converter Cable to create custom configurations by selecting different colors, flash patterns, and animations.

For more information visit [www.bannerengineering.com/proeditor](http://www.bannerengineering.com/proeditor).



# Wiring Diagrams

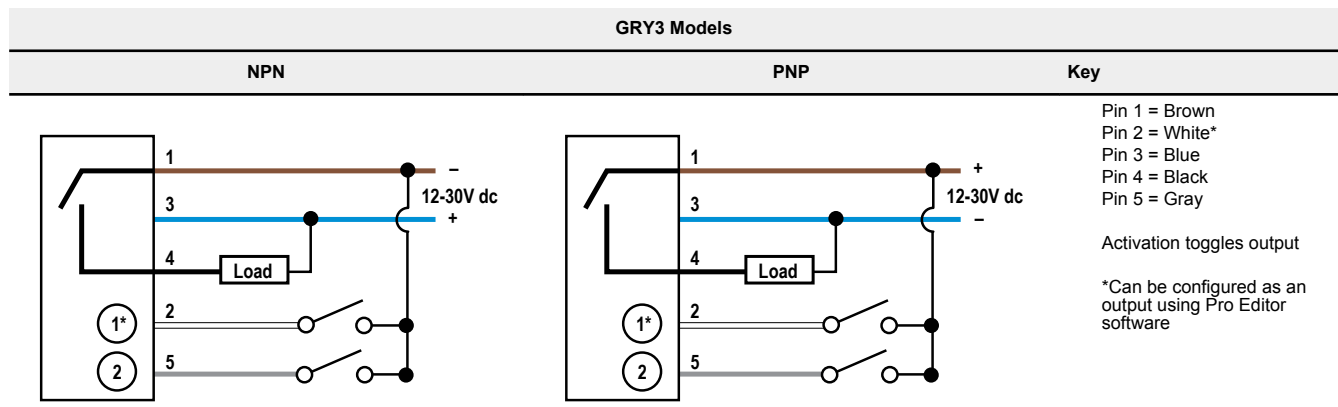


Table 1: GRY3 Multicolor Color/Function Definition

	Green	Yellow	Red
Input 1	X	X	
Input 2		X	X

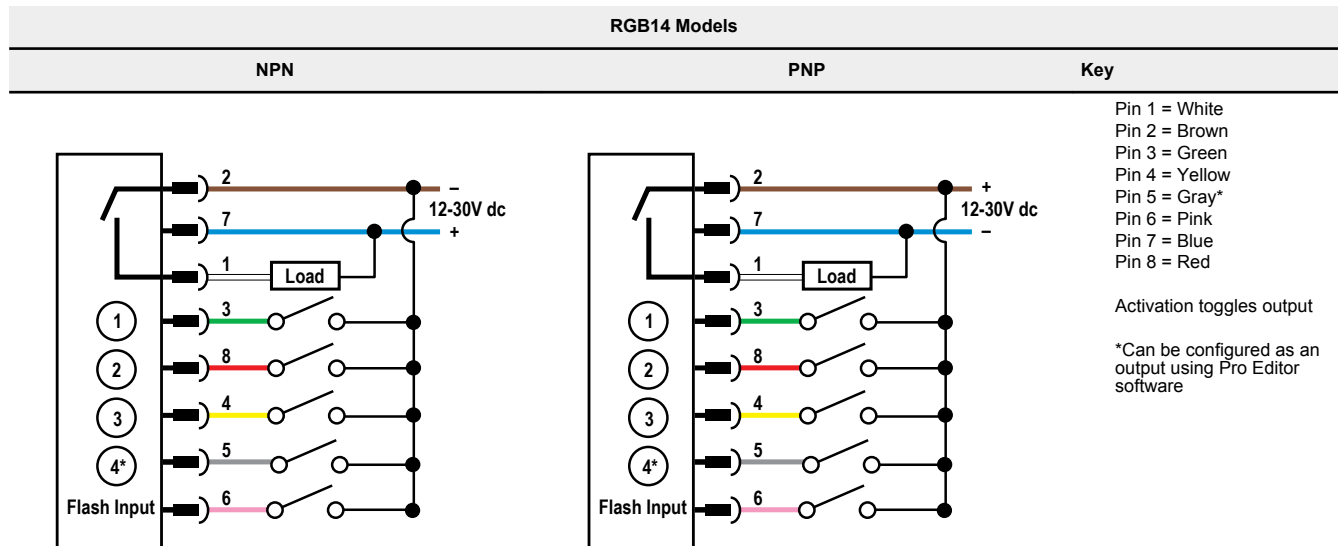


Table 2: RGB Multicolor Color/Function Definition

	Red	Yellow	Green	Cyan	Blue	Magenta	White	Amber	Rose	Lime Green	Orange	Sky Blue	Violet	Spring Green
Input 1	X	X				X	X		X		X		X	
Input 2		X	X	X			X			X	X			X
Input 3				X	X	X	X					X	X	X
Input 4								X	X	X	X	X	X	X

# Specifications

### Supply Voltage

12 V DC to 30 V DC

### Supply Current

150 mA maximum current at 12 V DC (exclusive of load)

### Supply Protection Circuitry

Protected against reverse polarity and transient voltages

### Leakage Current Immunity

400 µA

### Output Rating

Maximum load: 150 mA  
 ON-state saturation voltage: < 2 V DC at 10 mA; <2.5 V DC at 150 mA  
 OFF-state leakage current: <10 µA at 30 V DC

### Output Response Time

Power-Up Delay: 500 milliseconds maximum  
 Input Response: 40 milliseconds maximum  
 Output Response: 300 milliseconds maximum

### Operating Conditions

-40 °C to +50 °C (-40 °F to +122 °F)  
**Humidity:** 90% at +50 °C maximum relative humidity (non-condensing)

### Environmental Rating

**Standard Models:** IEC IP67, IP69K per DIN 40050-9  
 Cabled models also meet IP69K per DIN 40050-9 if the cable and cable entrance are protected from high-pressure spray

### Mounting

M30 × 1.5 threaded base, maximum torque 4.5 N·m (40 in·lbf)

### Default Indicator Characteristics

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	Color Coordinates <sup>1</sup>		Lumen Output (Typical at 25 °C)
		x	y	
Green	522	0.154	0.700	14.2
Red	620	0.689	0.309	7.1
Yellow	576	0.477	0.493	20.5
Blue	466	0.140	0.054	4.0
White	5700K	0.328	0.337	21.6
Cyan	493	0.170	0.340	15.8
Magenta	-	0.379	0.172	9.5
Amber	589	0.556	0.420	13.5
Rose	-	0.515	0.220	7.8
Lime Green	562	0.388	0.561	18.4
Sky Blue	486	0.155	0.247	16.8
Orange	599	0.616	0.370	10.4
Violet	-	0.217	0.089	8.3
Spring Green	508	0.177	0.536	14.6

### Pro Editor Configuration

Connection to Pro Editor software enables control of:

- **Animation:** Steady, Flash, Two Color Flash, 50/50, 50/50 Rotate, Chase, Intensity Sweep, Demo
- **Color:** Green, Red, Yellow, Blue, White, Cyan, Magenta, Amber, Rose, Lime Green, Orange, Sky Blue, Violet, Spring Green
- **Intensity:** Low, Medium, High
- **Speed:** Slow, Standard, Fast
- **Output State:** Normally Open, Normally Closed, Momentary, Latching, On Delay, Off Delay
- **Logic Type:** Three State Advanced Control (F2 Mode), Seven State Advanced Control (F2 Mode), Four State Full Logic (Custom)
- One pin configurable as either an input or an output

Pro Converter Cable required to interface between PC and indicator, see accessories

### Construction

Standard Model Base, Dome, and Nut: Polycarbonate

### Vibration and Mechanical Shock

Meets IEC 60068-2-6 requirements (Vibration: 10 Hz to 55 Hz, 1.0 mm amplitude, 5 minutes sweep, 30 minutes dwell)  
 Meets IEC 60068-2-27 requirements (Shock: 30G 11 ms duration, half sine wave)

### Connections

5-pin or 8-pin integral M12 quick disconnect, 2 m (6.5 ft) integral PVC cable, or 5-pin or 8-pin 150 mm (5.9 inch) PVC cable with a M12 quick disconnect, depending on model  
 Models with a quick disconnect require a mating cordset

### Storage

-40 °C to +70 °C (-40 °F to +158 °F)

### Required Overcurrent Protection



**WARNING:** Electrical connections must be made by qualified personnel in accordance with local and national electrical codes and regulations.

Overcurrent protection is required to be provided by end product application per the supplied table.  
 Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.  
 Supply wiring leads < 24 AWG shall not be spliced.  
 For additional product support, go to [www.bannerengineering.com](http://www.bannerengineering.com).

Supply Wiring (AWG)	Required Overcurrent Protection (Amps)
20	5.0
22	3.0
24	2.0
26	1.0
28	0.8
30	0.5

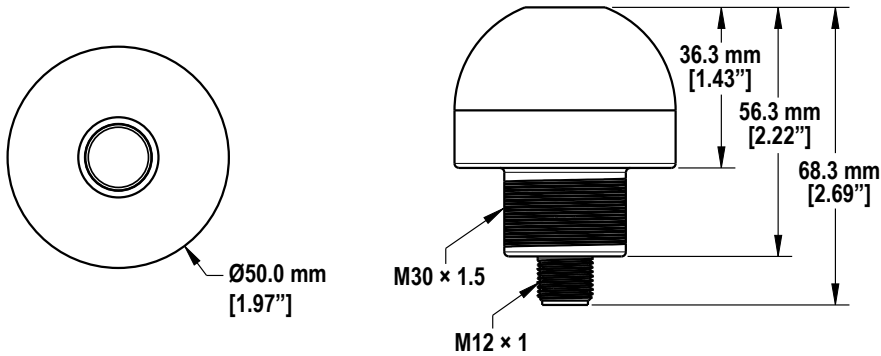
### Certifications



<sup>1</sup> Refer to the CIE 1931 (x,y) Chromaticity Diagram to show equivalent color with indicated color coordinates. Actual coordinates may differ ± 5%.

## Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise.



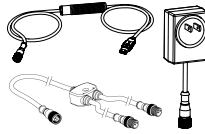
## Accessories

### Pro Editor Hardware

#### PRO-KIT

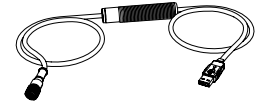
Includes:

- Pro Converter Cable (MQDC-506-USB)
- Splitter (CSB-M1251FM1251M)
- Power Supply (PSW-24-1)



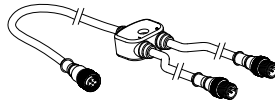
#### MQDC-506-USB

- Pro Converter Cable
- 1.83 m (6 ft) M12 quick disconnect to Device and USB to PC
- Required for connection to Pro Editor



#### CSB-M1251FM1251M

- 5-pin parallel Y splitter (Male-Male-Female)
- For full Pro Editor preview capability
- Requires external power supply, sold separately



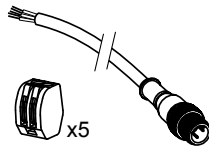
#### PSW-24-1

- 24 V DC, 1 A power supply
- 2 m (6.5 ft) PVC cable with M12 quick disconnect
- Provides external power with splitter cable, sold separately



#### ACC-PRO-CABLES

- Mating accessory for cabled and terminal models
- 150 mm (6 inch) PVC cable with M12 quick disconnect
- Lever wire nuts included (qty 5)
- Required to connect cabled models to Pro Converter Cable, sold separately



#### MQDC-801-5M-PRO

- 8-pin to 5-pin double-ended cordset
- 0.31 m (1 ft) PVC cable with M12 quick disconnects
- Required to connect 8-pin Pro Series-enabled devices to Pro Converter Cable (MQDC-506-USB), sold separately



## Cordsets

5-Pin Threaded M12 Cordsets—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC1-501.5	0.5 m (1.5 ft)	Straight		<p>1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray</p>
MQDC1-506	2 m (6.5 ft)			
MQDC1-515	5 m (16.4 ft)			
MQDC1-530	9 m (29.5 ft)			

5-Pin Threaded M12 Cordsets—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC1-506RA	2 m (6.5 ft)	Right-Angle		
MQDC1-515RA	5 m (16.4 ft)			
MQDC1-530RA	9 m (29.5 ft)			

5-Pin Threaded M12 Stainless Steel Washdown Cordsets—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC-WDSS-0506	2 m (6.56 ft)	Straight		<p>1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray</p>
MQDC-WDSS-0515	5 m (16.4 ft)			
MQDC-WDSS-0530	9 m (29.5 ft)			

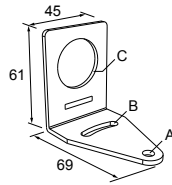
8-Pin Threaded M12 Cordsets with Open-Shield—Single Ended				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC2S-806	2.04 m (6.7 ft)	Straight		<p>1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Gray 6 = Pink 7 = Blue 8 = Red</p>
MQDC2S-815	5.04 m (16.54 ft)			
MQDC2S-830	10.04 m (32.95 ft)			
MQDC2S-850	16 m (52.49 ft)	Right-Angle		
MQDC2S-806RA	2 m (6.56 ft)			
MQDC2S-815RA	5 m (16.4 ft)			
MQDC2S-830RA	10 m (32.81 ft)			
MQDC2S-850RA	16 m (52.49 ft)			

8-Pin Threaded M12 Cordsets with Open-Shield—Washdown, Stainless Steel				
Model	Length	Style	Dimensions	Pinout (Female)
MQDC-WDSS-0806	2 m (6.56 ft)	Straight		<p>1 = White 2 = Brown 3 = Green 4 = Yellow 5 = Gray 6 = Pink 7 = Blue 8 = Red</p>
MQDC-WDSS-0815	5 m (16.4 ft)			
MQDC-WDSS-0830	9 m (29.53 ft)			

## Brackets

**SMB30A**

- Right-angle bracket with curved slot for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor
- 12-ga. stainless steel

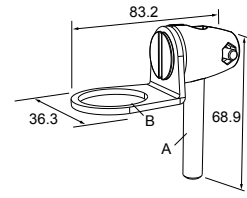


**Hole center spacing:** A to B=40

**Hole size:** A=∅ 6.3, B= 27.1 x 6.3, C=∅ 30.5

**SMB30FA**

- Swivel bracket with tilt and pan movement for precise adjustment
- Mounting hole for 30 mm sensor
- 12-ga. 304 stainless steel
- Easy sensor mounting to extrude rail T-slot
- Metric and inch size bolt available

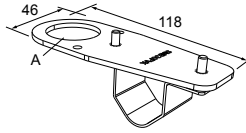


**Bolt thread:** SMB30FA, A= 3/8 - 16 x 2 in; SMB30FAM10, A= M10 - 1.5 x 50

**Hole size:** B= ∅ 30.1

**SMB30FVK**

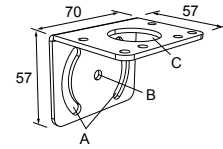
- V-clamp, flat bracket and fasteners for mounting to pipe or extensions
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



**Hole size:** A= ∅ 31

**SMB30MM**

- 12-ga. stainless steel bracket with curved mounting slots for versatile orientation
- Clearance for M6 (¼ in) hardware
- Mounting hole for 30 mm sensor

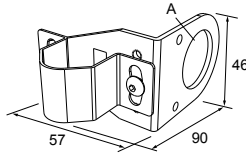


**Hole center spacing:** A = 51, A to B = 25.4

**Hole size:** A = 42.6 x 7, B = ∅ 6.4, C = ∅ 30.1

**SMB30RAVK**

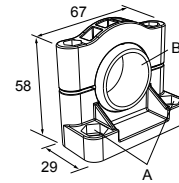
- V-clamp, right-angle bracket and fasteners for mounting sensors to pipe or extrusion
- Clamp accommodates 28 mm dia. tubing or 1 in. square extrusions
- 30 mm hole for mounting sensors



**Hole size:** A = ∅ 30.5

**SMB30SC**

- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included

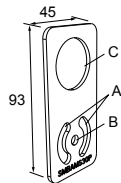


**Hole center spacing:** A=∅ 50.8

**Hole size:** A=∅ 7.0, B=∅ 30.0

**SMBAMS30P**

- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. 300 series stainless steel

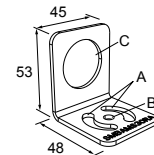


**Hole center spacing:** A=26.0, A to B=13.0

**Hole size:** A=26.8 x 7.0, B=∅ 6.5, C=∅ 31.0

**SMBAMS30RA**

- Right-angle SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-ga. (2.6 mm) cold-rolled steel

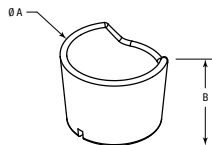


**Hole center spacing:** A=26.0, A to B=13.0

**Hole size:** A=26.8 x 7.0, B=∅ 6.5, C=∅ 31.0

**TC-K50-CL**

- Touch cover



**Diameter:** A = 67 mm

**Height:** B = 42.5 mm

## Banner Engineering Corp Limited Warranty

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Banner Engineering Corp. warrants its products to be free from defects in material and workmanship for one year following the date of shipment. Banner Engineering Corp. will repair or replace, free of charge, any product of its manufacture which, at the time it is returned to the factory, is found to have been defective during the warranty period. This warranty does not cover damage or liability for misuse, abuse, or the improper application or installation of the Banner product.

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This Warranty is exclusive and limited to repair or, at the discretion of Banner Engineering Corp., replacement. **IN NO EVENT SHALL BANNER ENGINEERING CORP. BE LIABLE TO BUYER OR ANY OTHER PERSON OR ENTITY FOR ANY EXTRA COSTS, EXPENSES, LOSSES, LOSS OF PROFITS, OR ANY INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES RESULTING FROM ANY PRODUCT DEFECT OR FROM THE USE OR INABILITY TO USE THE PRODUCT, WHETHER ARISING IN CONTRACT OR WARRANTY, STATUTE, TORT, STRICT LIABILITY, NEGLIGENCE, OR OTHERWISE.**

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For patent information, see [www.bannerengineering.com/patents](http://www.bannerengineering.com/patents).

### FCC Part 15 and CAN ICES-3 (B)/NMB-3(B)

This device complies with part 15 of the FCC Rules and CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions:

1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules and CAN ICES-3 (B)/NMB-3(B). These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the manufacturer.



more sensors, more solutions