K50 I/O Touch Control with Display Product Manual

Original Instructions
p/n: 247574 Rev. A
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ПРОМЭЛЕКТРОНИКА/ sales@prom-elec.com

Contents

Chapter 1 Product Overview 3
Models 3
Pro Editor 4
Full Preview Connection (Required) 4
PICK Models 4
PULS Models 5
Analog Models (UI4 and UI5) 6
Features 7

Chapter 2 Wiring 8

Chapter 3 Specifications 9
FCC Part 15 Class B for Unintentional Radiators 10
Industry Canada ICES-003(B) 10
Dimensions 11

Chapter 4 Accessories 12
Pro Editor Hardware 12
Cordsets 12
Splitter Cordset 13
Flange Accessory 13
Brackets 14
Wash-Down Cover 15

Chapter 5 Product Support and Maintenance 16
Clean with Mild Detergent and Water 16
Repairs 16
Contact Us 16
Banner Engineering Corp Limited Warranty 16

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Chapter Contents

Models 3
Pro Editor 4
Features 7

Chapter 1 Product Overview

50 mm Multicolor RGB Touch Button with Integral 4-Digit, 14 Segment Display



- 4-Digit, 14-segment LED display
- Two independent touch areas
- Excellent immunity to false triggering by water spray, oils, and other foreign materials
- Rated IP67 and IP69K per ISO 20653
- Can be actuated with bare hands or gloves
- Programming with Pro Editor gives full access to color, animation, and threshold settings
- Output settings, including on and off delays, output function, and output parameters are also available with Pro Editor
- On-board analog, PWM, PFM, and discrete outputs enable control of core applications such as VFD speed, dimming LED lights, or signaling part-picking details

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

Family	Style	Activation Method	Housing	Display	Mode	Connector[1]
K50	**P**	**T**	**C**	**D4**	**PICK**	**Q**
K50 = 50 mm diameter indicator	P = Pro	T = Touch	C = Compact	D4 = 4-Digit LED display	PICK = Pick-to-Light PULS = PWM/PFM UI4 = 0 V to 10 V (4 mA to 20 mA) dimming on the Black wire (Pin 4) UI5 = 0 V to 10 V (4 mA to 20 mA) dimming on the Gray wire (Pin 5)	Q = Integral 4-pin M12 male quick-disconnect connector Q2PS = Dual 240 mm (9.45 in) PVC-jacketed cables with 5-pin M12 male and female quick-disconnect connectors[2]

[1] Models with a quick-disconnect connector require a mating cordset.
[2] Q2PS is available for UI4 models only.

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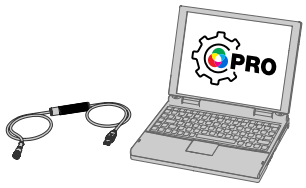
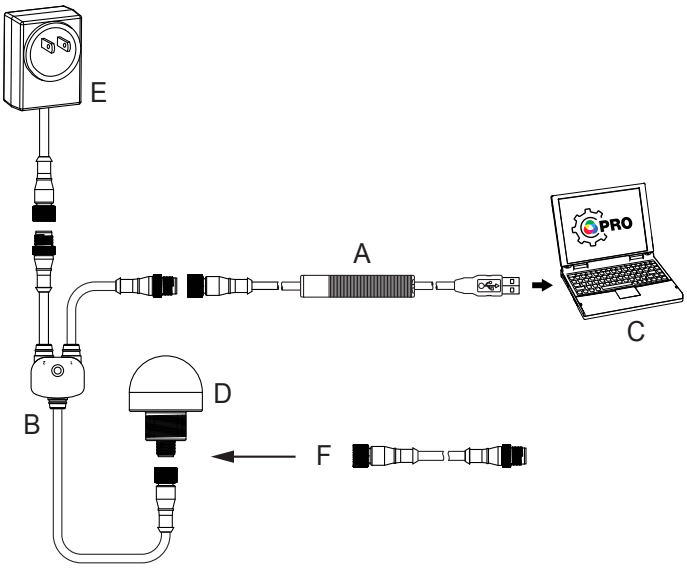
Pro Editor



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.

Full Preview Connection (Required)

The full preview connection must be used for the K50 I/O Touch Control with Display.

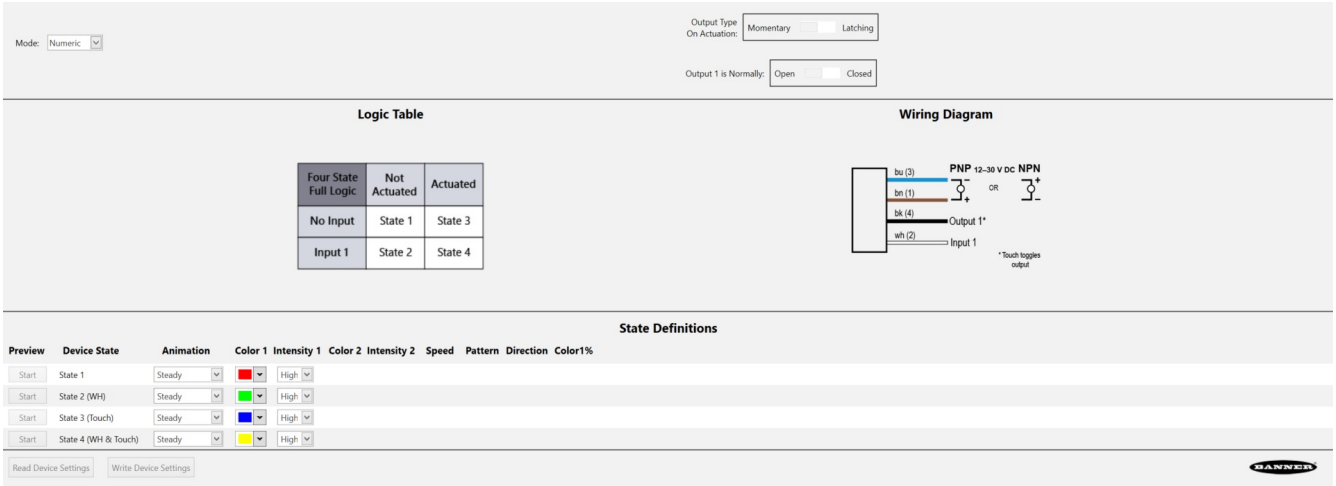


A = Pro Converter Cable (MQDC-506-USB)
B = Splitter (CSB-M1251FM1251M)
C = PC running Pro Editor software
D = Any Banner Pro Series-enabled device (K50 shown)
E = Power Supply (PSW-24-1, PSW-24-2, or PSD-24-4)
F = 8-Pin to 5-Pin Double-Ended Cordset (MQDC-801-5M-PRO), required for 8-Pin models

PICK Models

PICK models can be configured to change text, color, and animation based on system input or user touch, and generate a discrete output when touched - ideal for interactive tasks like part picking and confirmation.

PICK Model Configuration Options in Pro Editor (numeric shown)



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Mode

Determine if the Display shows a numeric value or alphanumeric display text
Numeric: Shows a numeric value and allows change through a touch sequence
Alpha: Shows alphanumeric text, only changed in Pro Editor

Output Type On Actuation

Momentary Mode: The output is toggled only while the touch button is pressed
Latching Mode: The output toggles each time the touch button is pressed

Output 1 is Normally

Open Mode: The output is turned ON with touch input
Closed Mode: The output is turned OFF with touch input

Four-State Logic

If power is on using the blue and brown wires:

State 1: Input Inactive, Touch Inactive
State 2: Input Active, Touch Inactive
State 3: Input Inactive, Touch Active
State 4: Input Active, Touch Active

Defaults:

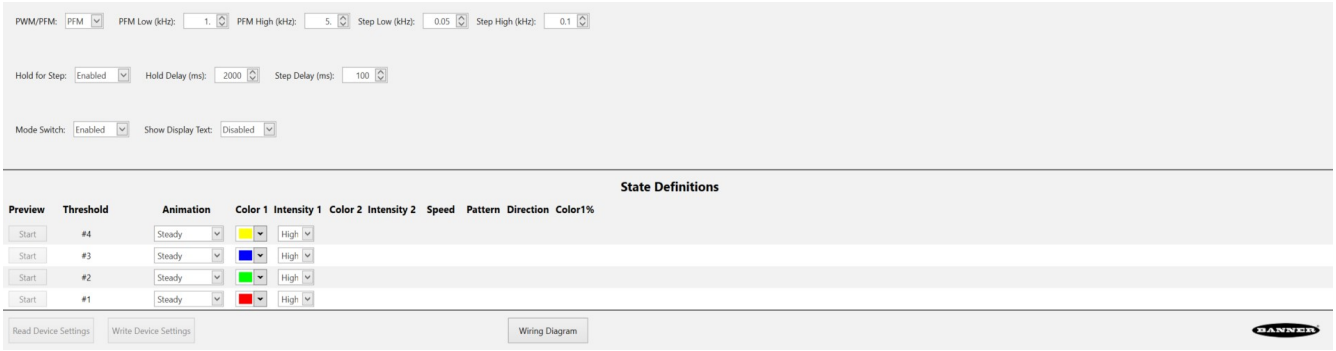
State	LEDs	Display
State 1	Off	Off
State 2	Green	PICK
State 3	Red	ERR
State 4	Yellow	GOOD

Each state can be programmed for a specific animation, color, and animation settings

PULS Models

Pulsed models generate selectable PWM or PFM signals to control devices like Banner's PWM-enabled WLS28 lights or in other PWM- or PFM-controllable devices.

PULS Model Configuration Options in Pro Editor (PFM shown)



PWM/PFM

Select between PWM (Pulse Width Modulation) Control and PFM (Pulse Frequency Modulation) Control

PWM Control

Set the minimum and maximum values of the PWM range
Determine the step size of each touch
Signal Inverted: Enable or disable if the signal is inverted

PFM Control

Set the minimum and maximum values of the PFM range
Step Low: Determine the step size for the frequency change for each touch below 1 kHz
Step High: Determine the step size for the frequency change for each touch above 1 kHz

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Hold for Step

Allow the holding of the touch button to cycle through multiple steps

Hold Delay

The amount of time the touch button is held before stepping begins

Step Delay (ms)

The amount of time between each step when held

Mode Switch

Enable switching between PWM and PFM by holding both touch buttons

Show Display Text

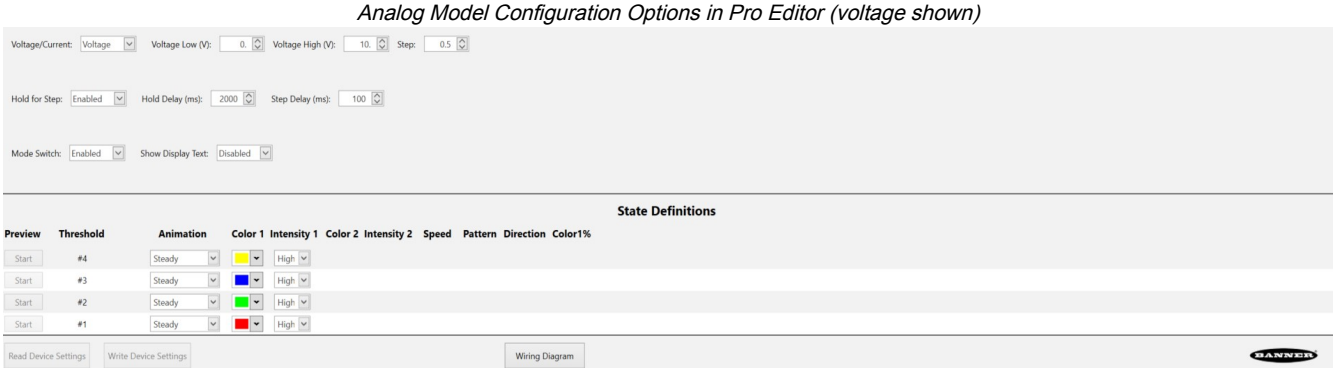
Enable a custom display text for each threshold rather than the output value when the Display text is blank

Each threshold can be programmed for a specific animation, color, and animation settings

Analog Models (UI4 and UI5)

Analog models provide selectable 0 V to 10 V, or 4 mA to 20 mA, outputs for smooth dimming, speed control, or other analog-driven applications.

Analog Model Configuration Options in Pro Editor (voltage shown)



Voltage/Current

Select either voltage or current as the output

Analog Control

Set the maximum ranges of the output: 0 V to 10 V, or 4 mA to 20 mA

Determine the step size of each touch

Hold for Step

Allow the holding of the touch button to cycle through multiple steps

Hold Delay

The amount of time the touch button is held before stepping begins

Step Delay (ms)

The amount of time between each step when held

Mode Switch

Enable switching between voltage and current by holding both touch buttons

Show Display Text

Enable a custom display text for each threshold rather than the output value when the Display text is blank

Each threshold can be programmed for a specific animation, color, and animation settings

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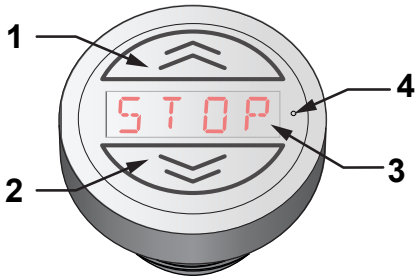
Features

K50 I/O Touch Control with Display Features



1. Sensor 1:
    - PICK models: Touch for output
    - PULS and Analog models: Touch for increase
2. Sensor 2:
    - PICK models: Touch for output
    - PULS and Analog models: Touch for decrease
3. Display
4. Reference Mark: This will always be on the right side of the light, and is a fiducial for orientation when the display is off.

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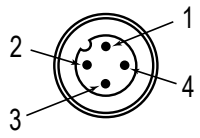
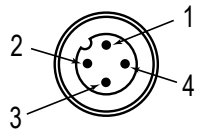
Chapter Contents

Chapter 2 Wiring

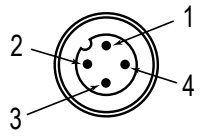
PICK Models

4-pin M12 Male	Pin	Wire Color	PNP Type	NPN Type
	1	brown	Power: 12 V DC to 30 V DC	Power: 0 V DC
	2	white	Job Input: 12 V DC to 30 V DC	Job Input: 0 V DC
	3	blue	Common: 0 V DC	Common: 12 V DC to 30 V DC
	4	black	Output: 12 V DC to 30 V DC	Output: 0 V DC

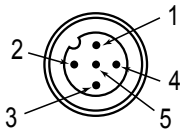
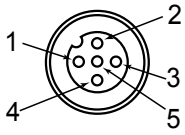
PULS Models

4-pin M12 Male	Pin	Wire Color	Connection
	1	brown	Power: 12 V DC to 30 V DC
	2	white	Not used
	3	blue	Common: 0 V DC
	4	black	Output: PWM/PFM

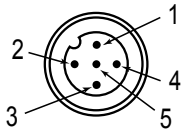
UI4 Quick-Disconnect Models

4-pin M12 Male	Pin	Wire Color	Connection
	1	brown	Power: 18 V DC to 30 V DC
	2	white	Not used
	3	blue	Common: 0 V DC
	4	black	Output: 0 V DC to 10 V DC, or 4 mA to 20 mA

UI4 Dual Cable Models

5-pin M12 Male	5-pin M12 Female	Pin	Wire Color	Connection
		1	brown	Power: 18 V DC to 30 V DC
		2	white	Not used
		3	blue	Common: 0 V DC
		4	black	Output: 0 V DC to 10 V DC, or 4 mA to 20 mA
		5	gray	Not used

UI5 Models

5-pin M12 Male	Pin	Wire Color	Connection
	1	brown	Power: 18 V DC to 30 V DC
	2	white	Not used
	3	blue	Common: 0 V DC
	4	black	Not used
	5	gray	Output: 0 V DC to 10 V DC, or 4 mA to 20 mA

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Chapter Contents

FCC Part 15 Class B for Unintentional Radiators 10
Industry Canada ICES-003(B)..... 10
Dimensions..... 11

Chapter 3 Specifications

Supply Voltage

PICK and PULS models: 12 V DC to 30 V DC

Analog models: 18 V DC to 30 V DC

Supply Current

225 mA maximum current at 12 V DC

150 mA maximum current at 18 V DC

100 mA maximum current at 24 V DC

85 mA maximum current at 30 V DC

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Touch Dwell Time

If touch dwells for longer than 60 seconds, the output reverts to the untouched state

Touch Response Time

300 ms maximum

Operating Conditions

–40 °C to +50 °C (–40 °F to +122 °F)

Humidity: 90% at +50 °C maximum relative humidity (non-condensing)

Storage: –40 °C to +70 °C (–40 °F to +158 °F)

Environmental Rating

IP67, IP69K per ISO 20653

Dual cable (Q2PS) models must be installed to protect the cable and cable entrance from high-pressure spray to meet IP69K.

Leakage Current Immunity

400 µA

Certifications

Banner Engineering BV
Park Lane, Culliganlaan 2F bus 3
1831 Diegem, BELGIUM

Turck Banner LTD Blenheim House
Blenheim Court
Wickford, Essex SS11 8YT
GREAT BRITAIN

Mounting

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

Construction

Base and Dome: Polycarbonate

Mounting Nut: Polybutylene terephthalate (PBT)

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

Integral 4-pin M12 male quick-disconnect connector, or dual 240 mm (9.45 in) PVC-jacketed cables with 5-pin M12 male and female quick-disconnect connectors, depending on model

Models with a quick disconnect require a mating cordset

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.

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

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Default Indicator Characteristics

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	Color Coordinates[3]		Lumen Output (Typical at 25 °C)
		x	y	
Green	522	0.154	0.700	3.2
Red	620	0.689	0.309	1.7
Yellow	576	0.477	0.493	4.7
Blue	466	0.140	0.054	0.6
White	5700K	0.328	0.337	4.7
Cyan	493	0.170	0.340	3.6
Magenta	–	0.379	0.172	2.1
Amber	589	0.556	0.420	3.2
Rose	–	0.515	0.220	1.9
Lime Green	562	0.388	0.561	3.9
Sky Blue	486	0.155	0.247	3.8
Orange	599	0.616	0.370	2.5
Violet	–	0.217	0.089	1.2
Spring Green	508	0.177	0.536	3.3

FCC Part 15 Class B for Unintentional Radiators

(Part 15.105(b)) 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. 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 dealer or an experienced radio/TV technician for help.

(Part 15.21) Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

Industry Canada ICES-003(B)

This device complies with 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.

Cet appareil est conforme à la norme NMB-3(B). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

[3] Refer to the CIE 1931 (x,y) Chromaticity Diagram to show equivalent color with indicated color coordinates. Actual coordinates may differ ± 5%.

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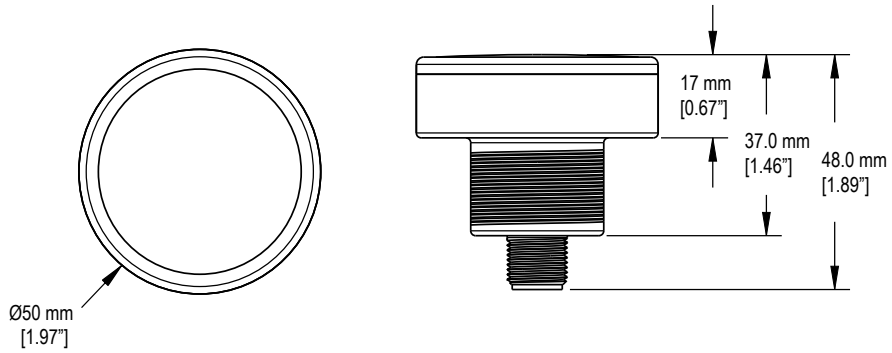
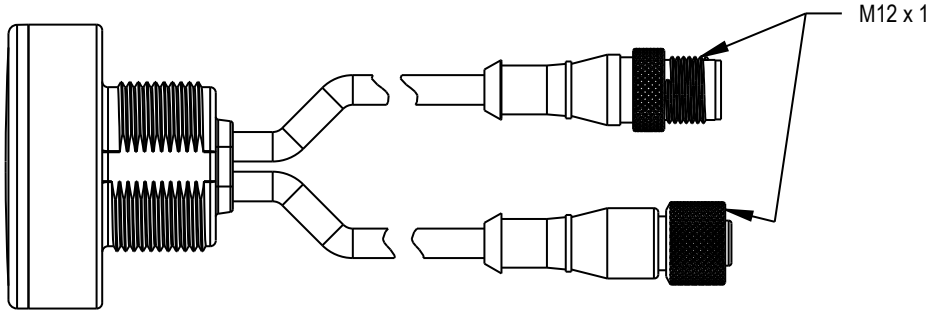
Dimensions

All measurements are listed in millimeters [inches], unless noted otherwise. The measurements provided are subject to change.

Quick-Disconnect Models



Dual Cable Models



NOTE: The dual cable models' dimensions are functionally identical to the quick-disconnect model.

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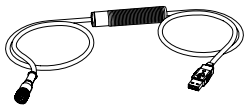
Chapter Contents

Pro Editor Hardware 12
Cordsets 12
Splitter Cordset 13
Flange Accessory 13
Brackets 14
Wash-Down Cover 15

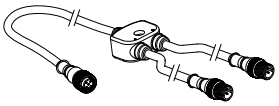
Chapter 4 Accessories

Pro Editor Hardware

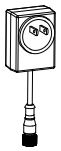
MQDC-506-USB
- Pro Converter Cable
- 1.83 m (6 ft) length 5-pin M12 quick disconnect to Device and USB to PC
- Required for connection to the configuration software



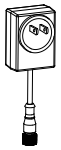
CSB-M1251FM1251M
- 5-pin parallel Y splitter (Male-Male-Female)
- For full Pro Editor preview capability
- Requires external power supply, sold separately



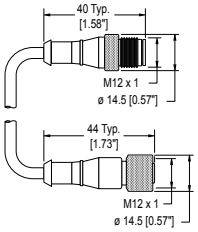
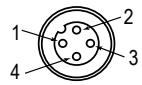
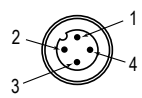
PSW-24-1
- 24 V DC, 1 A power supply
- 2 m (6.5 ft) PVC cable with M12 quick disconnect
- Provides external power with splitter cable, sold separately



PSW-24-2
- 24 V DC, 2 A power supply
- 3.5 m (11.5 ft) PVC cable with M12 quick disconnect
- Provides external power with splitter cable, sold separately



Cordsets

4-pin A-Code Double-Ended M12 Female to M12 Male Cordsets				
Model	**Length**	**Dimensions (mm)**	**Pinouts**	
BC-M12F4-M12M4-22-1	1 m (3.28 ft)		Female  Male 	1 = Brown 2 = White 3 = Blue 4 = Black
BC-M12F4-M12M4-22-2	2 m (6.56 ft)			
BC-M12F4-M12M4-22-3	3 m (9.84 ft)			
BC-M12F4-M12M4-22-4	4 m (13.12 ft)			
BC-M12F4-M12M4-22-5	5 m (16.4 ft)			
BC-M12F4-M12M4-22-10	10 m (30.81 ft)			
BC-M12F4-M12M4-22-15	15 m (49.2 ft)			

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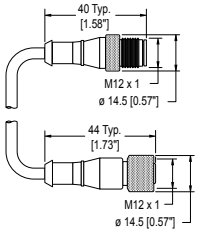
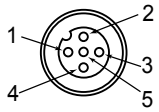
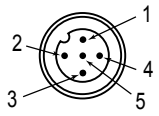
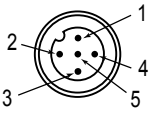
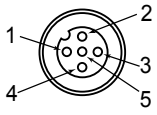
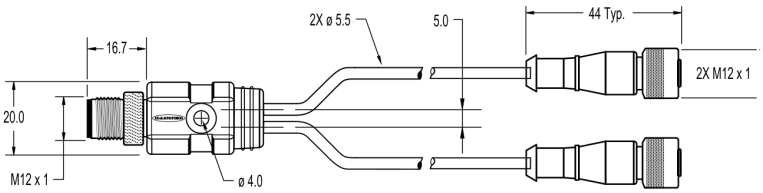
5-pin Double-Ended M12 Female to M12 Male Cordsets				
Model	**Length**	**Dimensions (mm)**	**Pinouts**	
BC-M12F5-M12M5-22-1	1 m (3.28 ft)		Female  Male 	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Gray
BC-M12F5-M12M5-22-2	2 m (6.56 ft)			
BC-M12F5-M12M5-22-5	5 m (16.4 ft)			
BC-M12F5-M12M5-22-8	8 m (26.25 ft)			
BC-M12F5-M12M5-22-10	10 m (30.81 ft)			
BC-M12F5-M12M5-22-15	15 m (49.2 ft)			

Splitter Cordset

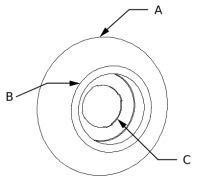
5-Pin M12 Female to M12 Male Rounded Junction Splitter Cordsets				
Model	**Length**	**Style**	**Pinout (Male)**	**Pinout (Female)**
CSRB-M1250M125.47M125.73	Trunk (male): 0 m Branches (female): 0.14 m (0.46 ft) and 0.22 m (0.72 ft)	Straight		
CSRB-M1253.28M1253.28M1253.28	Trunk (female): 1 m (3.28 ft) Branches (male): 1 m (3.28 ft)			
			1 = Brown 2 = White 3 = Blue	4 = Black 5 = Gray

Flange Accessory

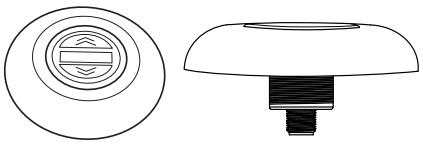
LMF3050B

- 30 mm hole for mounting indicators or touch buttons
- Mounts flush to a flat surface to allow a gradual transition to the device
- Black polycarbonate material

Height: 18.8
Hole size: A = ø 100, B = ø 51.2, C = ø 30.5



LMF3050B with K50 Pro Touch Mounted Inside



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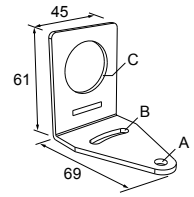
Brackets

SMB30A

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

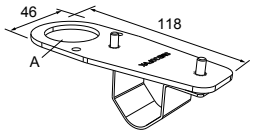
Hole center spacing: A to B=40
Hole size: A=ø 6.3, B= 27.1 × 6.3, C=ø 30.5



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

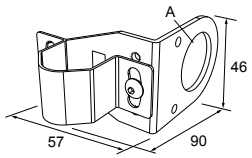
Hole size: A= ø 31



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

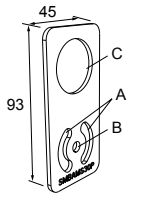
Hole size: A = ø 30.5



SMBAMS30P

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

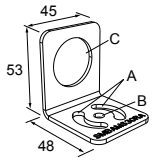
Hole center spacing: A=26.0, A to B=13.0
Hole size: A=26.8 × 7.0, B=ø 6.5, C=ø 31.0



SMBAMS30RA

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

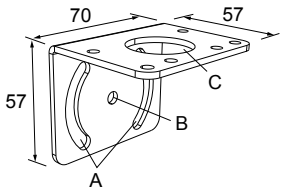
Hole center spacing: A=26.0, A to B=13.0
Hole size: A=26.8 × 7.0, B=ø 6.5, C=ø 31.0



SMB30MM

- 12-gauge 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 × 7, B = ø 6.4, C = ø 30.1



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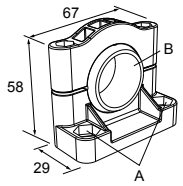
SMB30SC

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

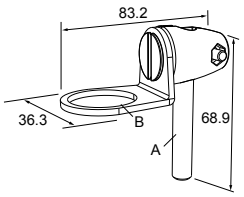
Hole center spacing: A=ø 50.8
Hole size: A=ø 7.0, B=ø 30.0



SMB30FA

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

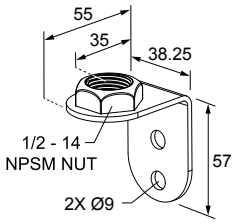
Bolt thread: SMB30FA, A= 3/8 - 16 × 2 in; SMB30FAM10, A= M10 - 1.5 × 50
Hole size: B= ø 30.1



LMBE12RA35

- Direct mounting of stand-off pipe, with common bracket type
- Zinc-plated steel
- 1/2-14 NPSM nut
- Mounting distance from the wall to the center of the 1/2-14 NPSM nut is 35 mm

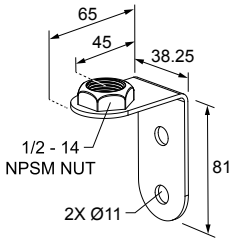
Hole center spacing: 20.0



LMBE12RA45

- Direct mounting of stand-off pipe, with common bracket type
- Zinc-plated steel
- 1/2-14 NPSM nut
- Mounting distance from the wall to the center of the 1/2-14 NPSM nut is 45 mm

Hole center spacing: 35.0

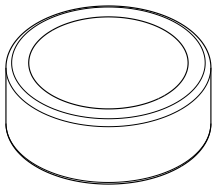


All measurements are listed in millimeters [inches], unless noted otherwise. The measurements provided are subject to change.

Wash-Down Cover

WC-K50C Washdown Cover

- FDA-grade silicone
- Fits K50 compact touch buttons
- IP67 and IP69K rated



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Chapter Contents

Clean with Mild Detergent and Water 16
Repairs 16
Contact Us 16
Banner Engineering Corp Limited Warranty 16

Chapter 5 Product Support and Maintenance

Clean with Mild Detergent and Water

Wipe down the device with a soft cloth that has been dampened with a mild detergent and warm water solution.

Repairs

Contact Banner Engineering for troubleshooting of this device. **Do not attempt any repairs to this Banner device; it contains no field-replaceable parts or components.** If the device, device part, or device component is determined to be defective by a Banner Applications Engineer, they will advise you of Banner's RMA (Return Merchandise Authorization) procedure.

> **IMPORTANT:** If instructed to return the device, pack it with care. Damage that occurs in return shipping is not covered by warranty.

Contact Us

Banner Engineering Corp. headquarters is located at: 9714 Tenth Avenue North | Plymouth, MN 55441, USA | Phone: + 1 888 373 6767

For worldwide locations and local representatives, visit www.bannerengineering.com.

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