



# K100 Programmable Display Beacon Product Manual

Original Instructions

p/n: 245810 Rev. A

11-Aug-25

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# Contents

|   |           |
|---|-----------|
| <b>Chapter 1 Features .....</b>   | <b>3</b>  |
| Models .....  | 3         |
| <b>Chapter 2 Wiring.....</b>  | <b>4</b>  |
| <b>Chapter 3 Pro Editor Configuration for the K100 Programmable Display Beacon.....</b> | <b>5</b>  |
| Discrete Control.....   | 5         |
| Basic I/O State .....   | 6         |
| Advanced I/O State .....  | 6         |
| I/O Block I/O State .....   | 7         |
| Sequence Mode .....   | 7         |
| Timer Mode.....   | 7         |
| Counter Mode.....   | 8         |
| Measure Mode.....   | 9         |
| Pulse Control .....   | 10        |
| Demo Mode .....   | 10        |
| Factory Reset .....   | 10        |
| Display Settings.....   | 10        |
| <b>Chapter 4 Specifications .....</b>   | <b>12</b> |
| FCC Part 15 Class B for Unintentional Radiators.....                                    | 13        |
| Industry Canada ICES-003(B).....  | 13        |
| Dimensions.....   | 14        |
| <b>Chapter 5 Accessories.....</b>   | <b>15</b> |
| Cordsets .....  | 15        |
| Brackets.....   | 15        |
| Elevated Mount System.....  | 16        |
| Pro Editor Hardware .....   | 16        |
| <b>Chapter 6 Product Support and Maintenance .....</b>                                  | <b>17</b> |
| UTF-8 Encoding Table and Unicode Characters .....                                       | 17        |
| Clean with Mild Detergent and Warm Water .....  | 21        |
| Repairs .....   | 21        |
| Contact Us.....   | 22        |
| Banner Engineering Corp Limited Warranty .....  | 22        |

Chapter Contents

Models ..... 3

Chapter 1

Features

The K100 Programmable Display Beacon provides diagnostics and indication for control engineers and OEMs who need to improve the interaction between operators and equipment to drive response speed and productivity improvements.



- Easily configurable, versatile display can be installed nearly anywhere, making it a simple yet powerful alternative to complex HMIs and other displays
- Great for displaying takt time, equipment status, assembly sequences, counts, and measurements where they are most useful
- Discrete models integrate into many different systems and applications, especially Banner sensing, safety, and monitoring solutions
- Quick and easy configuration—simply define the desired text and call it via discrete control or process data
- Bright white LED display and multicolored beacon LEDs legible from 10 meters away inform operators about exactly what is going on so they can respond quickly and accurately
- IP66- and IP69K per ISO 20653-rated polycarbonate housing resists impact and condensation to provide clear communication in challenging and changing environmental conditions

Models

Model Key

| Series           | Style       | Type              | Voltage    | Color            | Control                  | Audible                           | Connector <sup>(1)</sup>                               |
|------------------|-------------|-------------------|------------|------------------|--------------------------|-----------------------------------|--|
| K100P            | D           | BL                |            | RGB              | D15                      |                                   | Q  |
| K100P = K100 Pro | D = Display | BL = Beacon Light | Blank = DC | RGB = Multicolor | D15 = Discrete 15 states | Blank = No Audible<br>A = Audible | Q = Integral 5-pin M12 male quick-disconnect connector |

<sup>(1)</sup> Models with a quick-disconnect connector require a mating cordset.

Chapter Contents

Chapter 2

Wiring

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Wiring

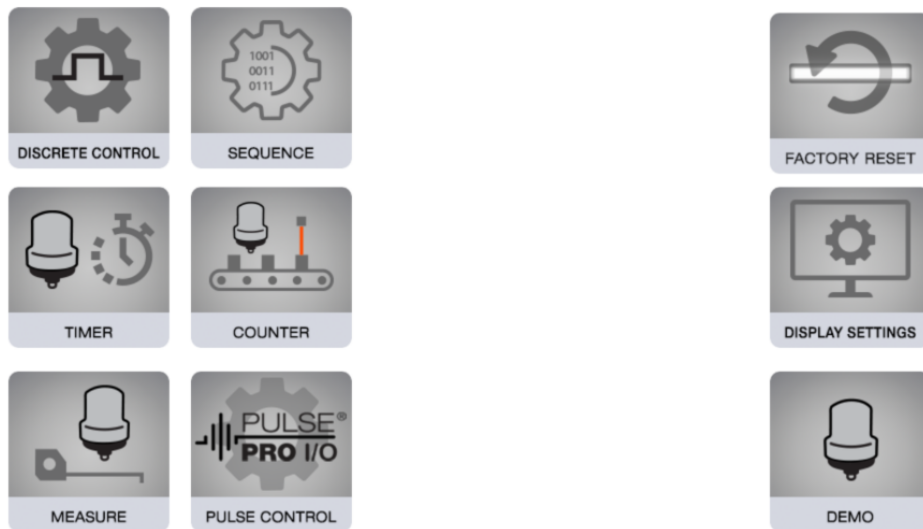
| 5-Pin Male M12 Pinout   | Pinout Key and Wiring   |
|---|---|
|  | <div>1. Brown - Input 2</div> <div>2. White - Input 3</div> <div>3. Blue - DC Common</div> <div>4. Black - Input 1</div> <div>5. Gray - Input 4</div> |

## Chapter Contents

|                       |    |
|-----------------------|----|
| Discrete Control..... | 5  |
| Sequence Mode .....   | 7  |
| Timer Mode .....      | 7  |
| Counter Mode.....     | 8  |
| Measure Mode .....    | 9  |
| Pulse Control.....    | 10 |
| Demo Mode.....        | 10 |
| Factory Reset.....    | 10 |
| Display Settings..... | 10 |

## Chapter 3 Pro Editor Configuration for the K100 Programmable Display Beacon

## Applications



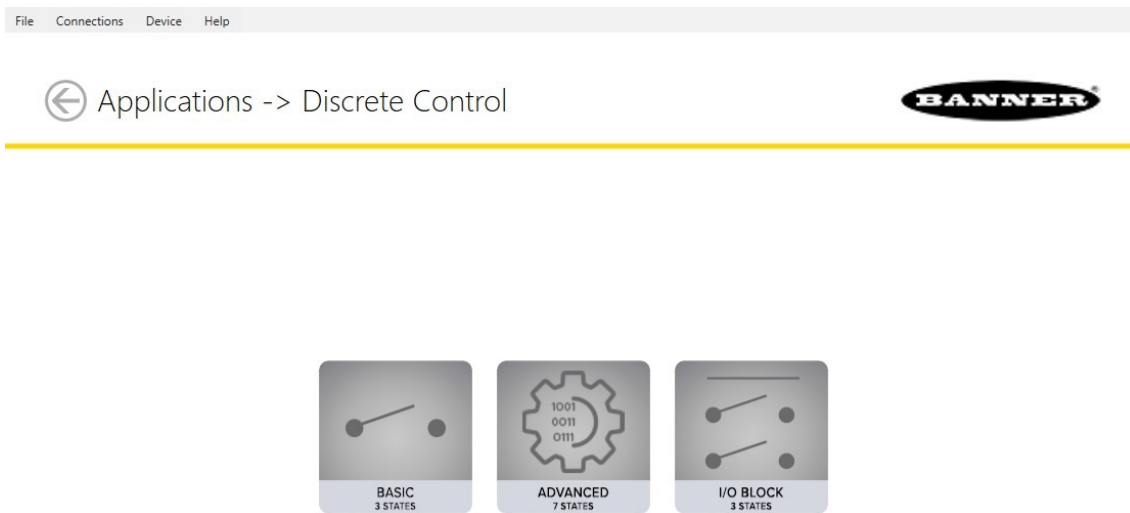
Banner's Pro Editor software offers an easy way to configure Pro Series-enabled indication, touch, and illumination devices, allowing users full control of device states and device logic modes. The easy-to-use configuration software provides a variety of tools and capabilities to solve a wide range of applications such as indicating machine status or warm-up time, indicating unique steps in an assembly process, or incorporating status information into touch buttons.

Setup any Pro Series-enabled device using the free Pro Editor software, available for download at [www.bannerengineering.com/proeditor](http://www.bannerengineering.com/proeditor).

### Discrete Control

Selecting the Discrete Control tile displays three I/O State tiles:

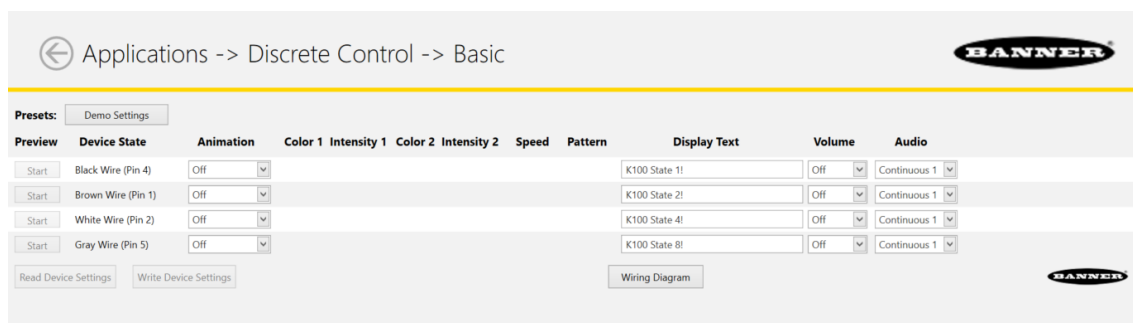
- Basic
- Advanced
- I/O Block



### Basic I/O State

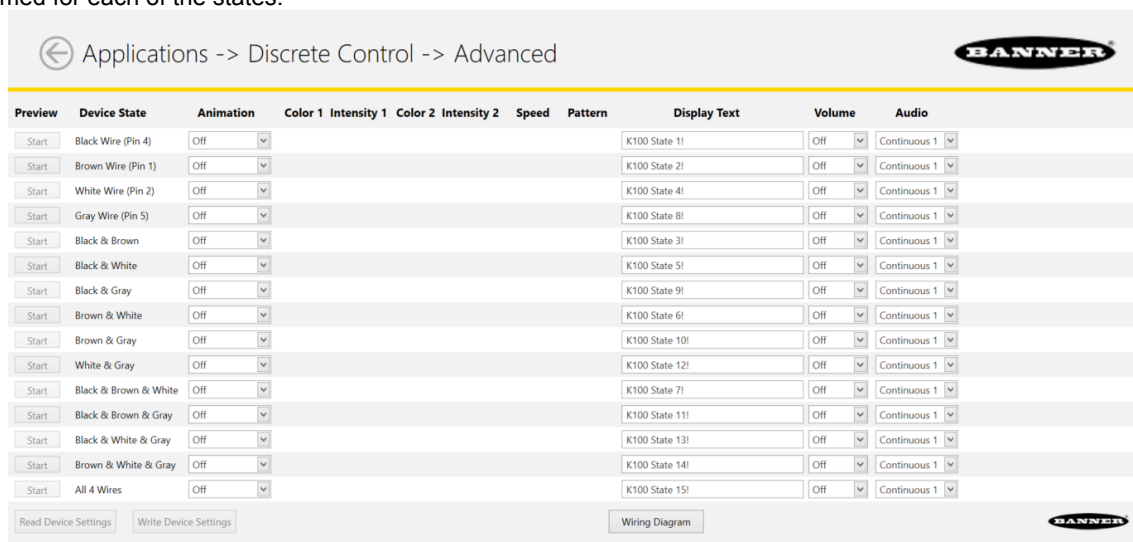
Basic four-state control. Configurations made in Basic I/O State assign one wire to one state, with the following override control:

- Pin 1 (Brown) overrides Pin 4 (Black)
- Pin 2 (White) overrides Pins 1 and 4 (Brown and Black)
- Pin 5 (Gray) overrides Pins 1, 2, and 4 (Brown, White, and Black)



### Advanced I/O State

Advanced, default I/O state, with fifteen state options for maximum configuration ability. Configurations made in Advanced I/O State assign binary wiring combinations of all valid inputs to each state. Both the indication LEDs and the display text can be programmed for each of the states.



I/O Block I/O State

Three-state control for use with I/O block. Configurations made in I/O Block assign state to the black, white, and combination of black and white wires for use with the I/O blocks, for which power (brown) and common (blue) are always on for five-pin connections.

← Applications -> Discrete Control -> I/O Block

Start

Black (Pin 4)

Off

Start

White (Pin 2)

Off

Start

Black & White

Off

Read Device Settings

Write Device Settings

Wiring Diagram

| Preview | Device State | Animation | Color 1 | Intensity 1 | Color 2 | Intensity 2 | Speed | Pattern | Display Text  | Volume | Audio        |
|---------|--------------|-----------|---------|-------------|---------|-------------|-------|---------|---------------|--------|--------------|
|         |              |           |         |             |         |             |       |         | K100 State 3! | Off    | Continuous 1 |
|         |              |           |         |             |         |             |       |         | K100 State 6! | Off    | Continuous 1 |
|         |              |           |         |             |         |             |       |         | K100 State 7! | Off    | Continuous 1 |

Sequence Mode

Sequence Mode allows up to sixteen states that a single input can control. A pulse on the input wire moves the K100 Pro to the next state.

← Applications -> Sequence

Presets: Demo Settings

Reset State Input: Disabled

Next State Input: Disabled

First Animation: 1

Last Animation: 16

| Preview | State | Animation | Color 1 | Intensity 1 | Color 2 | Intensity 2 | Speed | Pattern | Display Text   | Volume | Audio        |
|---------|-------|-----------|---------|-------------|---------|-------------|-------|---------|----------------|--------|--------------|
| Start   | 1     | Off       |         |             |         |             |       |         | K100 State 0!  | Off    | Continuous 1 |
| Start   | 2     | Off       |         |             |         |             |       |         | K100 State 1!  | Off    | Continuous 1 |
| Start   | 3     | Off       |         |             |         |             |       |         | K100 State 2!  | Off    | Continuous 1 |
| Start   | 4     | Off       |         |             |         |             |       |         | K100 State 3!  | Off    | Continuous 1 |
| Start   | 5     | Off       |         |             |         |             |       |         | K100 State 4!  | Off    | Continuous 1 |
| Start   | 6     | Off       |         |             |         |             |       |         | K100 State 5!  | Off    | Continuous 1 |
| Start   | 7     | Off       |         |             |         |             |       |         | K100 State 6!  | Off    | Continuous 1 |
| Start   | 8     | Off       |         |             |         |             |       |         | K100 State 7!  | Off    | Continuous 1 |
| Start   | 9     | Off       |         |             |         |             |       |         | K100 State 8!  | Off    | Continuous 1 |
| Start   | 10    | Off       |         |             |         |             |       |         | K100 State 9!  | Off    | Continuous 1 |
| Start   | 11    | Off       |         |             |         |             |       |         | K100 State 10! | Off    | Continuous 1 |
| Start   | 12    | Off       |         |             |         |             |       |         | K100 State 11! | Off    | Continuous 1 |
| Start   | 13    | Off       |         |             |         |             |       |         | K100 State 12! | Off    | Continuous 1 |
| Start   | 14    | Off       |         |             |         |             |       |         | K100 State 13! | Off    | Continuous 1 |
| Start   | 15    | Off       |         |             |         |             |       |         | K100 State 14! | Off    | Continuous 1 |
| Start   | 16    | Off       |         |             |         |             |       |         | K100 State 15! | Off    | Continuous 1 |

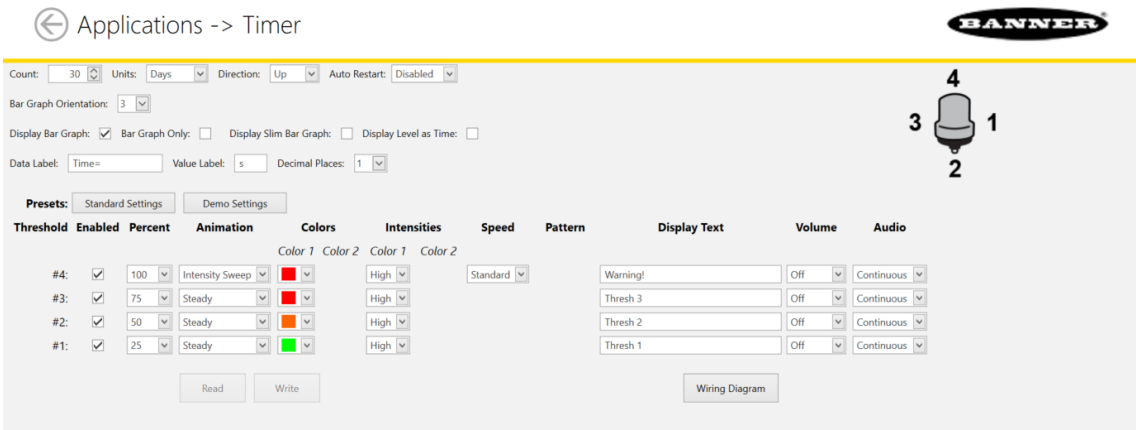
Read Device Settings

Write Device Settings

|                   |   |
|-------------------|---|
| Reset State Input | Choose the desired input wire to restart the K100 Pro to the First Animation as chosen in the dropdown menu.        |
| Next State Input  | Choose the desired input wire to move K100 Pro to the next state in the series until the Last Animation is reached. |
| First Animation   | Choose the initial state to display as the sequence is initiated.   |
| Last Animation    | Choose the final state to include in the sequence.  |

Timer Mode

Set a total time and up to four thresholds. Start and stop the timer counting up or down with discrete control. Colors change across threshold values.

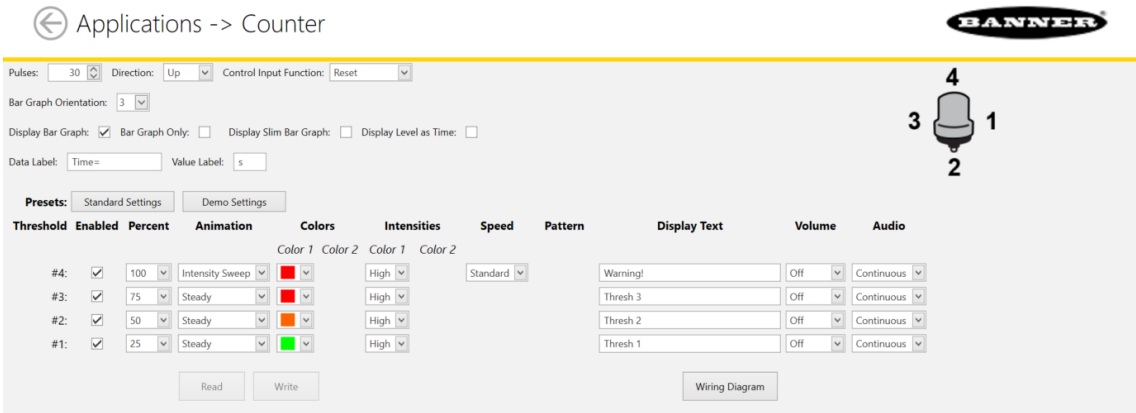


|               |  |
|---------------|--|
| Count Seconds | The total time of the timer.   |
| Direction     | Up: Counts up from zero to Count Seconds.<br>Down: Counts down from Count Seconds to zero. |
| Reset Input   | Enable or disable the input wire to reset the timer to the initial value.                  |
| Auto Restart  | The timer loops back to the original value automatically when it reaches its final value.  |

|                        |   |
|------------------------|---|
| Bar Graph Orientation  | Determine the starting side of the bar graph.   |
| Decimal Places         | Determine the number of decimal places displayed on the Count Value.  |
| Display Graph Only     | Only display the bar graph, and not the numerical Count Value.  |
| Display Bar Graph      | Display the bar graph across the full display.  |
| Display Slim Bar Graph | Display the bar graph as a single line of LEDs.   |
| Display Level as Time  | Display the time in HH:MM:SS format without data labels.  |
| Data Label             | Text that displays before the Count Value.  |
| Value Label            | Text that displays after the Count Value to indicate the units displayed. This can be up to three characters. |
| Standard Settings      | Reset the K100 Pro to predetermined settings.   |

Counter Mode

Set a total count and up to four thresholds. Discrete, rising edge pulses count up or down. Colors change across threshold values.



|        |   |
|--------|---|
| Pulses | Determine the number of counts that are either counted up to or counted down from, depending on the chosen direction. |
|--------|---|

Continued on page 9



Continued from page 8

|                    |   |
|--------------------|---|
| <b>Direction</b>   | Up: Counts from zero to Pulses.<br>Down: Counts from Pulses to zero.      |
| <b>Reset Input</b> | Enable or disable the input wire to reset the count to the initial value. |

|                               |   |
|-------------------------------|---|
| <b>Bar Graph Orientation</b>  | Determine the starting side of the bar graph.   |
| <b>Decimal Places</b>         | Determine the number of decimal places displayed on the Count Value.  |
| <b>Display Graph Only</b>     | Only display the bar graph, and not the numerical Count Value.  |
| <b>Display Bar Graph</b>      | Display the bar graph across the full display.  |
| <b>Display Slim Bar Graph</b> | Display the bar graph as a single line of LEDs.   |
| <b>Data Label</b>             | Text that displays before the Count Value.  |
| <b>Value Label</b>            | Text that displays after the Count Value to indicate the units displayed. This can be up to three characters. |
| <b>Standard Settings</b>      | Reset the K100 Pro to predetermined settings.   |

## Measure Mode

Measure Mode uses the K100 Pro to display a measurement as either PWM control or PFM control.

← Applications -> Measure

The screenshot shows the Banner K100 Pro configuration interface for Measure Mode. It includes a top navigation bar with the Banner logo. The main configuration area is divided into several sections: PWM/PFM settings (Pulse-Width/Frequency Modulation), Output Scale Value Low/High, Bar Graph Orientation, Display Bar Graph/Only/Slim Bar Graph, Data Label, Value Label, and Decimal Places. Below these are Presets (Standard Settings, Demo Settings) and a detailed section for Thresholds, Animation, Colors, Intensities, Speed, Pattern, Display Text, Volume, and Audio. The Thresholds section shows four thresholds (#1 to #4) with checkboxes for enabling them, and settings for Percent, Animation, Colors, and Intensities. The Display Text section shows settings for Warning!, Thresh 3, Thresh 2, and Thresh 1. The Volume and Audio sections show settings for Off/On and Continuous/Other. A Wiring Diagram icon is located at the bottom right.

|                                |  |
|--------------------------------|--|
| <b>PWM/PFM</b>                 | PWM: Pulse-Width Modulation.<br>PFM: Pulse-Frequency Modulation.                                 |
| <b>PWM/PFM Low</b>             | The lowest frequency of the input range.   |
| <b>PWM/PFM High</b>            | The highest frequency of the input range.  |
| <b>Filter Level</b>            | The level of filtering used to minimize the effects of noise on the output.                      |
| <b>Hysteresis Level</b>        | The level of lag between the measurement thresholds to minimize the flickering at switch points. |
| <b>Output Scale Value Low</b>  | The low-end value of the output translated from the input frequency.                             |
| <b>Output Scale Value High</b> | The high-end value of the output translated from the input frequency.                            |

|                               |   |
|-------------------------------|---|
| <b>Bar Graph Orientation</b>  | Determine the starting side of the bar graph.   |
| <b>Decimal Places</b>         | Determine the number of decimal places displayed on the Count Value.  |
| <b>Display Graph Only</b>     | Only display the bar graph, and not the numerical value.  |
| <b>Display Bar Graph</b>      | Display the bar graph across the full display.  |
| <b>Display Slim Bar Graph</b> | Display the bar graph as a single line of LEDs.   |
| <b>Data Label</b>             | Text that displays before the Count Value.  |
| <b>Value Label</b>            | Text that displays after the Count Value to indicate the units displayed. This can be up to three characters. |
| <b>Standard Settings</b>      | Reset the K100 Pro to predetermined settings.   |

# Pulse Control

Selecting the Pulse Control tile displays up to sixteen states that correspond to input frequencies on the white wire. The number of states (1) and input characteristics (2) are user-defined. Ranges are calculated (3).

Applications -> Pulse Control

1

2

3

Number of States: 16

PWM/PFM: PFM

PFM Low: 100

PFM High: 600

| Preview | State | Animation | Color 1 | Intensity 1 | Color 2 | Intensity 2 | Speed | Pattern | Display Text   | Range (Hz) | Volume | Audio        |
|---------|-------|-----------|---------|-------------|---------|-------------|-------|---------|----------------|------------|--------|--------------|
| Start   | 1     | Off       |         |             |         |             |       |         | K100 State 0!  | 100 - 131  | Off    | Continuous 1 |
| Start   | 2     | Off       |         |             |         |             |       |         | K100 State 1!  | 131 - 163  | Off    | Continuous 1 |
| Start   | 3     | Off       |         |             |         |             |       |         | K100 State 2!  | 163 - 194  | Off    | Continuous 1 |
| Start   | 4     | Off       |         |             |         |             |       |         | K100 State 3!  | 194 - 225  | Off    | Continuous 1 |
| Start   | 5     | Off       |         |             |         |             |       |         | K100 State 4!  | 225 - 256  | Off    | Continuous 1 |
| Start   | 6     | Off       |         |             |         |             |       |         | K100 State 5!  | 256 - 288  | Off    | Continuous 1 |
| Start   | 7     | Off       |         |             |         |             |       |         | K100 State 6!  | 288 - 319  | Off    | Continuous 1 |
| Start   | 8     | Off       |         |             |         |             |       |         | K100 State 7!  | 319 - 350  | Off    | Continuous 1 |
| Start   | 9     | Off       |         |             |         |             |       |         | K100 State 8!  | 350 - 381  | Off    | Continuous 1 |
| Start   | 10    | Off       |         |             |         |             |       |         | K100 State 9!  | 381 - 413  | Off    | Continuous 1 |
| Start   | 11    | Off       |         |             |         |             |       |         | K100 State 10! | 413 - 444  | Off    | Continuous 1 |
| Start   | 12    | Off       |         |             |         |             |       |         | K100 State 11! | 444 - 475  | Off    | Continuous 1 |
| Start   | 13    | Off       |         |             |         |             |       |         | K100 State 12! | 475 - 506  | Off    | Continuous 1 |
| Start   | 14    | Off       |         |             |         |             |       |         | K100 State 13! | 506 - 538  | Off    | Continuous 1 |
| Start   | 15    | Off       |         |             |         |             |       |         | K100 State 14! | 538 - 569  | Off    | Continuous 1 |
| Start   | 16    | Off       |         |             |         |             |       |         | K100 State 15! | 569 - 600  | Off    | Continuous 1 |

Read

Write

Wiring Diagram

|                  |   |
|------------------|---|
| Number of States | Determine the number of states from 1 to 16.  |
| PWM/PFM          | Select either PWM (Pulse Width Modulation) or PFM (Pulse Frequency Modulation) as the device's input. |
| PWM/PFM Low      | Determine the low end of the input signal range.  |
| PWM/PFM High     | Determine the high end of the input signal range.   |

# Demo Mode


Activate Demo Mode on the device to cycle through various modes automatically as a demonstration.

# Factory Reset

Restore the K100 Pro to default settings.

# Display Settings

Display Settings are a type of advanced settings that are accessible across all Applications.


Advanced Settings

### Display Settings

Text Color: White

Brightness: High

Scroll Direction: CCW

Scroll Speed: Standard

Scroll Mode: Auto

Connector Orientation: Bottom

Text Justification: Left

Mirror: Disabled

Repeat Display Value: Disabled

Deadspace: Disabled

Confirm

|                              |   |
|------------------------------|---|
| <b>Text Color</b>            | Configure the primary text color as either white or black.  |
| <b>Brightness</b>            | Control the brightness of the display text.   |
| <b>Scroll Direction</b>      | Scroll the display text either clockwise or counterclockwise when looking at the top of the device.   |
| <b>Scroll Speed</b>          | Control the speed the display text scrolls.   |
| <b>Scroll Mode</b>           | Auto: Scrolls if the number of characters is greater than fourteen.<br>Off: Does not scroll the display text.<br>On: Scrolls the display text regardless of the number of characters.   |
| <b>Connector Orientation</b> | Determine the orientation of the connector when installed. The display text automatically adjusts to the correct orientation.   |
| <b>Text Justification</b>    | Control the alignment of the display text: left, right, or center.  |
| <b>Mirror</b>                | Enable this setting to reverse the display text so that it can be read in a mirror.   |
| <b>Repeat Display Value</b>  | Display the dynamic value of Timer, Counter, or Measure Mode multiple times around the device for increased visibility.<br>The value repeats the maximum number of times allowed by the display size. As the size of the value increases, the device updates the number of times the value is displayed. The Data Label should be blank when this setting is enabled. |
| <b>Deadspace</b>             | Enable this setting to add a blank space at the end of the display to separate scrolling text.  |

## Chapter Contents

|   |    |
|---|----|
| FCC Part 15 Class B for Unintentional Radiators ..... | 13 |
| Industry Canada ICES-003(B).....                      | 13 |
| Dimensions.....                                       | 14 |

## Chapter 4 Specifications

### Supply Voltage

12 V DC to 30 V DC

Use only with a suitable Class 2 power supply (UL) or SELV power supply (CE)

### Supply Current

550 mA max. at 12 V DC

270 mA max. at 24 V DC

220 mA max. at 30 V DC

### Supply Protection Circuitry

Protected against reverse polarity and transient voltages

### Leakage Current Immunity

400  $\mu$ A

### Indicator Response Time

On response: 325 ms (max)

Off response: 20 ms (max)

### Connections

Integral 5-pin M12 male quick-disconnect connector

Models with a quick-disconnect connector require a mating cordset

Do not spray cable with high-pressure sprayer or cable damage will result

### Operating Temperature

-40 °C to +50 °C (-40 °F to +122 °F)

### Storage Temperature

-40 °C to +70 °C (-40 °F to +158 °F)

### Environmental Rating

Rated IP66 and IP69K per ISO 20653

UL Type 4X

### 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: 15G 11 ms duration, half sine wave)

Impact: IK10 (60068-2-75)

### Audible Characteristics

Sound Intensity at 2.5 KHz, at 1 m (typical):

Low volume setting: 93 dB

Medium volume setting: 96 dB

High volume setting: 101 dB

### Character Limit

Discrete Control: 29 characters

All other modes: 32 characters

### Construction

Black polycarbonate housing

Smoky polycarbonate dome

### Certifications



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



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

### Mounting

M36 x 2 threaded base, maximum torque 5 N·m (44 inch-lbf)

Interior 3/4-14 NPT thread

Mounting nut included

## Indicator Characteristics

| Color        | Dominant Wavelength (nm) or Color Temperature (CCT) | Color Coordinates <sup>(2)</sup> |        | Lumen Output (Typical at 25 °C) |
|--------------|---|----------------------------------|--------|---------------------------------|
|              |   | x                                | y      |                                 |
| Green        | 523   | 0.159                            | 0.6987 | 30.4                            |
| Red          | 620   | 0.6895                           | 0.3087 | 14.6                            |
| Orange       | 599   | 0.5992                           | 0.3752 | 17.7                            |
| Amber        | 588   | 0.535                            | 0.4223 | 19.8                            |
| Yellow       | 575   | 0.4518                           | 0.4834 | 22.4                            |
| Lime Green   | 560   | 0.3655                           | 0.5471 | 25                              |
| Spring Green | 506   | 0.1572                           | 0.5171 | 26.6                            |
| Cyan         | 491   | 0.1565                           | 0.3201 | 21.3                            |
| Sky Blue     | 484   | 0.1443                           | 0.2271 | 16.8                            |
| Blue         | 467   | 0.1371                           | 0.0555 | 5.4                             |
| Violet       | 415   | 0.2141                           | 0.0904 | 7.9                             |
| Magenta      | -   | 0.3661                           | 0.1644 | 11.4                            |
| Rose         | -   | 0.4976                           | 0.2201 | 12.9                            |
| White        | 5500K   | 0.3309                           | 0.3385 | 41.7                            |

## 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)

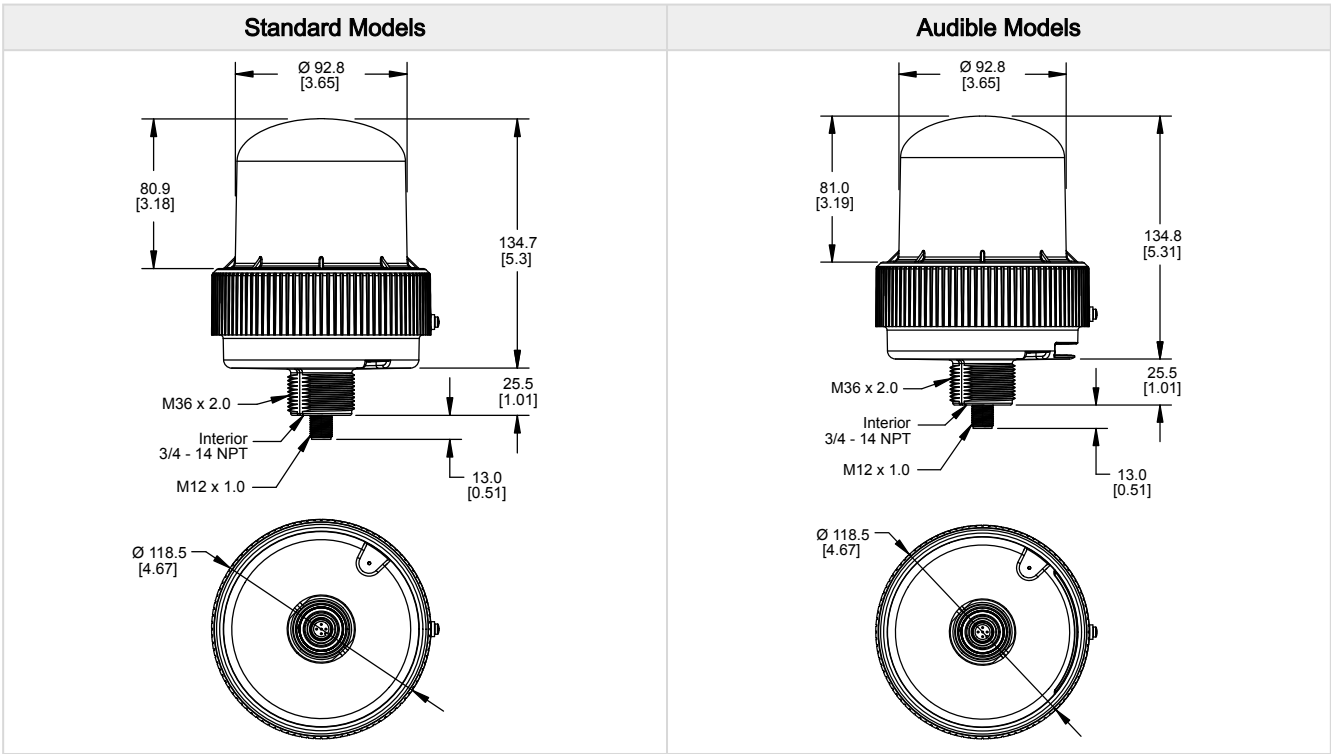
This device complies with CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

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.

<sup>(2)</sup> Refer to CIE 1931 chromaticity diagram or color chart, to show equivalent color with indicated color coordinates. Actual coordinates may differ by 10%.

# Dimensions

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



|                       |    |
|-----------------------|----|
| Chapter Contents      |    |
| Cordsets              | 15 |
| Brackets              | 15 |
| Elevated Mount System | 16 |
| Pro Editor Hardware   | 16 |

# Chapter 5      Accessories

## Cordsets

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




| 5-pin A-Code Double-Ended M12 Female to M12 Male Cordsets |                 |                 |                           |  |
|---|-----------------|-----------------|---------------------------|--|
| Model   | Length          | Dimensions (mm) | Pinouts                   |  |
| BC-M12F5-M12M5-22-1                                       | 1 m (3.28 ft)   |                 | <p>Female</p> <p>Male</p> | <p>1 = Brown<br/>2 = White<br/>3 = Blue<br/>4 = Black<br/>5 = Gray</p> |
| 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)  |                 |                           |  |

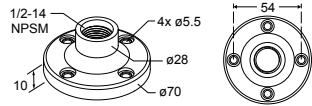
| 5-pin A-Code Double-Ended M12 Female Right-Angle to M12 Male Right-Angle Cordsets |                 |                 |                           |  |
|---|-----------------|-----------------|---------------------------|--|
| Model   | Length          | Dimensions (mm) | Pinouts                   |  |
| BC-M12F5A-M12M5A-22-1   | 1 m (3.28 ft)   |                 | <p>Female</p> <p>Male</p> | <p>1 = Brown<br/>2 = White<br/>3 = Blue<br/>4 = Black<br/>5 = Gray</p> |
| BC-M12F5A-M12M5A-22-2   | 2 m (6.56 ft)   |                 |                           |  |
| BC-M12F5A-M12M5A-22-5   | 5 m (16.4 ft)   |                 |                           |  |
| BC-M12F5A-M12M5A-22-8   | 8 m (26.25 ft)  |                 |                           |  |
| BC-M12F5A-M12M5A-22-10  | 10 m (30.81 ft) |                 |                           |  |
| BC-M12F5A-M12M5A-22-15  | 15 m (49.2 ft)  |                 |                           |  |

## Brackets

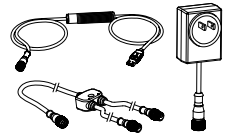
|  |  |
|--|--|
| <p><b>LMB36RA</b></p> <ul style="list-style-type: none"><li>Indicator light right-angle mounting</li><li>36 mm mounting hole</li><li>Stainless steel</li></ul> |  |
|--|--|

## Elevated Mount System

| Model                                   |   |  | Features   | Components  |
|---|---|--|--|---|
| Black Anodized Aluminum<br>½ in. NPT    | Black Anodized Aluminum<br>½ in. NPT    | Clear Anodized Aluminum<br>½ in. NPT     |  |   |
| <b>SOP-E34-150A</b> 150 mm (6 in) long  | <b>SOP-E12-150A</b> 150 mm (6 in) long  | <b>SOP-E12-150AC</b> 150 mm (6 in) long  | <ul style="list-style-type: none"> <li>Elevated-use stand-off pipe</li> <li>Black anodized aluminum or clear anodized aluminum surface</li> <li>Threaded at both ends</li> <li>Compatible with most industrial environments</li> </ul> |  |
| <b>SOP-E34-300A</b> 300 mm (12 in) long | <b>SOP-E12-300A</b> 300 mm (12 in) long | <b>SOP-E12-300AC</b> 300 mm (12 in) long |  |   |
| <b>SOP-E34-600A</b> 600 mm (24 in) long | <b>SOP-E12-600A</b> 600 mm (24 in) long | —  |  |   |
| <b>SOP-E34-900A</b> 900 mm (36 in) long | <b>SOP-E12-900A</b> 900 mm (36 in) long | <b>SOP-E12-900AC</b> 900 mm (36 in) long |  |   |
| <b>SA-M36E12</b>                        |   |  | <ul style="list-style-type: none"> <li>Adapter from M36 thread to 12-14 NPSM thread</li> <li>Streamlined black plastic mounting base adapter/cover</li> <li>Drilled hole</li> </ul>  |  |
| <b>SA-M36SOP</b>                        |   |  | <ul style="list-style-type: none"> <li>M36 thread adapter with clearance for ¾ pipe mount</li> <li>Streamlined black plastic mounting base adapter/cover</li> <li>Drilled hole</li> </ul>  |  |

| Pipe Mounting Flange |  |                                     |   |
|----------------------|--|-------------------------------------|---|
| Model                | Description  | Construction                        |   |
| <b>SA-F12</b>        | <ul style="list-style-type: none"> <li>Elevated-use stand-off pipes (½ in, NPSM/DN15)</li> <li>M5 mounting hardware and nitrile gasket included</li> </ul> | Die-cast zinc base with black paint |  |

## Pro Editor Hardware

|  |   |
|--|---|
| <b>PRO-KIT</b><br>Includes: <ul style="list-style-type: none"> <li>Pro Converter Cable (MQDC-506-USB)</li> <li>Splitter (CSB-M1251FM1251M)</li> <li>Power Supply (PSW-24-1)</li> </ul> |  |
|--|---|



## Chapter Contents

|  |    |
|--|----|
| UTF-8 Encoding Table and Unicode Characters..... | 17 |
| Clean with Mild Detergent and Warm Water .....   | 21 |
| Repairs .....                                    | 21 |
| Contact Us.....                                  | 22 |
| Banner Engineering Corp Limited Warranty.....    | 22 |

## Chapter 6 Product Support and Maintenance

### UTF-8 Encoding Table and Unicode Characters

| Unicode Code Point | Character | UTF-8 (hex.) | Name              |
|--------------------|-----------|--------------|-------------------|
| U+0020             |           | 20           | SPACE             |
| U+0021             | !         | 21           | EXCLAMATION MARK  |
| U+0022             | "         | 22           | QUOTATION MARK    |
| U+0023             | #         | 23           | NUMBER SIGN       |
| U+0024             | \$        | 24           | DOLLAR SIGN       |
| U+0025             | %         | 25           | PERCENT SIGN      |
| U+0026             | &         | 26           | AMPERSAND         |
| U+0027             | '         | 27           | APOSTROPHE        |
| U+0028             | (         | 28           | LEFT PARENTHESIS  |
| U+0029             | )         | 29           | RIGHT PARENTHESIS |
| U+002A             | *         | 2a           | ASTERISK          |
| U+002B             | +         | 2b           | PLUS SIGN         |
| U+002C             | ,         | 2c           | COMMA             |
| U+002D             | -         | 2d           | HYPHEN-MINUS      |
| U+002E             | .         | 2e           | FULL STOP         |
| U+002F             | /         | 2f           | SOLIDUS           |
| U+0030             | 0         | 30           | DIGIT ZERO        |
| U+0031             | 1         | 31           | DIGIT ONE         |
| U+0032             | 2         | 32           | DIGIT TWO         |
| U+0033             | 3         | 33           | DIGIT THREE       |
| U+0034             | 4         | 34           | DIGIT FOUR        |
| U+0035             | 5         | 35           | DIGIT FIVE        |
| U+0036             | 6         | 36           | DIGIT SIX         |
| U+0037             | 7         | 37           | DIGIT SEVEN       |
| U+0038             | 8         | 38           | DIGIT EIGHT       |
| U+0039             | 9         | 39           | DIGIT NINE        |
| U+003A             | :         | 3a           | COLON             |
| U+003B             | ;         | 3b           | SEMICOLON         |
| U+003C             | <         | 3c           | LESS-THAN SIGN    |
| U+003D             | =         | 3d           | EQUALS SIGN       |
| U+003E             | >         | 3e           | GREATER-THAN SIGN |

Continued on page 18

Continued from page 17

| Unicode Code Point | Character | UTF-8 (hex.) | Name                   |
|--------------------|-----------|--------------|------------------------|
| U+003F             | ?         | 3f           | QUESTION MARK          |
| U+0040             | @         | 40           | COMMERCIAL AT          |
| U+0041             | A         | 41           | LATIN CAPITAL LETTER A |
| U+0042             | B         | 42           | LATIN CAPITAL LETTER B |
| U+0043             | C         | 43           | LATIN CAPITAL LETTER C |
| U+0044             | D         | 44           | LATIN CAPITAL LETTER D |
| U+0045             | E         | 45           | LATIN CAPITAL LETTER E |
| U+0046             | F         | 46           | LATIN CAPITAL LETTER F |
| U+0047             | G         | 47           | LATIN CAPITAL LETTER G |
| U+0048             | H         | 48           | LATIN CAPITAL LETTER H |
| U+0049             | I         | 49           | LATIN CAPITAL LETTER I |
| U+004A             | J         | 4a           | LATIN CAPITAL LETTER J |
| U+004B             | K         | 4b           | LATIN CAPITAL LETTER K |
| U+004C             | L         | 4c           | LATIN CAPITAL LETTER L |
| U+004D             | M         | 4d           | LATIN CAPITAL LETTER M |
| U+004E             | N         | 4e           | LATIN CAPITAL LETTER N |
| U+004F             | O         | 4f           | LATIN CAPITAL LETTER O |
| U+0050             | P         | 50           | LATIN CAPITAL LETTER P |
| U+0051             | Q         | 51           | LATIN CAPITAL LETTER Q |
| U+0052             | R         | 52           | LATIN CAPITAL LETTER R |
| U+0053             | S         | 53           | LATIN CAPITAL LETTER S |
| U+0054             | T         | 54           | LATIN CAPITAL LETTER T |
| U+0055             | U         | 55           | LATIN CAPITAL LETTER U |
| U+0056             | V         | 56           | LATIN CAPITAL LETTER V |
| U+0057             | W         | 57           | LATIN CAPITAL LETTER W |
| U+0058             | X         | 58           | LATIN CAPITAL LETTER X |
| U+0059             | Y         | 59           | LATIN CAPITAL LETTER Y |
| U+005A             | Z         | 5a           | LATIN CAPITAL LETTER Z |
| U+005B             | [         | 5b           | LEFT SQUARE BRACKET    |
| U+005C             | \         | 5c           | REVERSE SOLIDUS        |
| U+005D             | ]         | 5d           | RIGHT SQUARE BRACKET   |
| U+005E             | ^         | 5e           | CIRCUMFLEX ACCENT      |
| U+005F             | _         | 5f           | LOW LINE               |
| U+0060             | `         | 60           | GRAVE ACCENT           |
| U+0061             | a         | 61           | LATIN SMALL LETTER A   |
| U+0062             | b         | 62           | LATIN SMALL LETTER B   |
| U+0063             | c         | 63           | LATIN SMALL LETTER C   |
| U+0064             | d         | 64           | LATIN SMALL LETTER D   |
| U+0065             | e         | 65           | LATIN SMALL LETTER E   |
| U+0066             | f         | 66           | LATIN SMALL LETTER F   |
| U+0067             | g         | 67           | LATIN SMALL LETTER G   |
| U+0068             | h         | 68           | LATIN SMALL LETTER H   |

Continued on page 19

Continued from page 18

| Unicode Code Point | Character | UTF-8 (hex.) | Name                                      |
|--------------------|-----------|--------------|---|
| U+0069             | i         | 69           | LATIN SMALL LETTER I                      |
| U+006A             | j         | 6a           | LATIN SMALL LETTER J                      |
| U+006B             | k         | 6b           | LATIN SMALL LETTER K                      |
| U+006C             | l         | 6c           | LATIN SMALL LETTER L                      |
| U+006D             | m         | 6d           | LATIN SMALL LETTER M                      |
| U+006E             | n         | 6e           | LATIN SMALL LETTER N                      |
| U+006F             | o         | 6f           | LATIN SMALL LETTER O                      |
| U+0070             | p         | 70           | LATIN SMALL LETTER P                      |
| U+0071             | q         | 71           | LATIN SMALL LETTER Q                      |
| U+0072             | r         | 72           | LATIN SMALL LETTER R                      |
| U+0073             | s         | 73           | LATIN SMALL LETTER S                      |
| U+0074             | t         | 74           | LATIN SMALL LETTER T                      |
| U+0075             | u         | 75           | LATIN SMALL LETTER U                      |
| U+0076             | v         | 76           | LATIN SMALL LETTER V                      |
| U+0077             | w         | 77           | LATIN SMALL LETTER W                      |
| U+0078             | x         | 78           | LATIN SMALL LETTER X                      |
| U+0079             | y         | 79           | LATIN SMALL LETTER Y                      |
| U+007A             | z         | 7a           | LATIN SMALL LETTER Z                      |
| U+007B             | {         | 7b           | LEFT CURLY BRACKET                        |
| U+007C             |           | 7c           | VERTICAL LINE                             |
| U+007D             | }         | 7d           | RIGHT CURLY BRACKET                       |
| U+007E             | ~         | 7e           | TILDE                                     |
| U+00A0             |           | c2 a0        | NO-BREAK SPACE                            |
| U+00A1             | ¡         | c2 a1        | INVERTED EXCLAMATION MARK                 |
| U+00A2             | ¢         | c2 a2        | CENT SIGN                                 |
| U+00A3             | £         | c2 a3        | POUND SIGN                                |
| U+00A4             | ¤         | c2 a4        | CURRENCY SIGN                             |
| U+00A5             | ¥         | c2 a5        | YEN SIGN                                  |
| U+00A6             | ¦         | c2 a6        | BROKEN BAR                                |
| U+00A7             | §         | c2 a7        | SECTION SIGN                              |
| U+00A8             | ¨         | c2 a8        | DIAERESIS                                 |
| U+00A9             | ©         | c2 a9        | COPYRIGHT SIGN                            |
| U+00AA             | ª         | c2 aa        | FEMININE ORDINAL INDICATOR                |
| U+00AB             | «         | c2 ab        | LEFT-POINTING DOUBLE ANGLE QUOTATION MARK |
| U+00AC             | ¬         | c2 ac        | NOT SIGN                                  |
| U+00AD             |           | c2 ad        | SOFT HYPHEN                               |
| U+00AE             | ®         | c2 ae        | REGISTERED SIGN                           |
| U+00AF             | —         | c2 af        | MACRON                                    |
| U+00B0             | °         | c2 b0        | DEGREE SIGN                               |
| U+00B1             | ±         | c2 b1        | PLUS-MINUS SIGN                           |
| U+00B2             | ²         | c2 b2        | SUPERSCRPT TWO                            |
| U+00B3             | ³         | c2 b3        | SUPERSCRPT THREE                          |

Continued on page 20

Continued from page 19

| Unicode Code Point | Character | UTF-8 (hex.) | Name                                       |
|--------------------|-----------|--------------|--|
| U+00B4             | ´         | c2 b4        | ACUTE ACCENT                               |
| U+00B5             | µ         | c2 b5        | MICRO SIGN                                 |
| U+00B6             | ¶         | c2 b6        | PILCROW SIGN                               |
| U+00B7             | ·         | c2 b7        | MIDDLE DOT                                 |
| U+00B8             | ¸         | c2 b8        | CEDILLA                                    |
| U+00B9             | ¹         | c2 b9        | SUPERSCRIPT ONE                            |
| U+00BA             | º         | c2 ba        | MASCULINE ORDINAL INDICATOR                |
| U+00BB             | »         | c2 bb        | RIGHT-POINTING DOUBLE ANGLE QUOTATION MARK |
| U+00BC             | ¼         | c2 bc        | VULGAR FRACTION ONE QUARTER                |
| U+00BD             | ½         | c2 bd        | VULGAR FRACTION ONE HALF                   |
| U+00BE             | ¾         | c2 be        | VULGAR FRACTION THREE QUARTERS             |
| U+00BF             | ¿         | c2 bf        | INVERTED QUESTION MARK                     |
| U+00C0             | À         | c3 80        | LATIN CAPITAL LETTER A WITH GRAVE          |
| U+00C1             | Á         | c3 81        | LATIN CAPITAL LETTER A WITH ACUTE          |
| U+00C2             | Â         | c3 82        | LATIN CAPITAL LETTER A WITH CIRCUMFLEX     |
| U+00C3             | Ã         | c3 83        | LATIN CAPITAL LETTER A WITH TILDE          |
| U+00C4             | Ä         | c3 84        | LATIN CAPITAL LETTER A WITH DIAERESIS      |
| U+00C5             | Å         | c3 85        | LATIN CAPITAL LETTER A WITH RING ABOVE     |
| U+00C6             | Æ         | c3 86        | LATIN CAPITAL LETTER AE                    |
| U+00C7             | Ç         | c3 87        | LATIN CAPITAL LETTER C WITH CEDILLA        |
| U+00C8             | È         | c3 88        | LATIN CAPITAL LETTER E WITH GRAVE          |
| U+00C9             | É         | c3 89        | LATIN CAPITAL LETTER E WITH ACUTE          |
| U+00CA             | Ê         | c3 8a        | LATIN CAPITAL LETTER E WITH CIRCUMFLEX     |
| U+00CB             | Ë         | c3 8b        | LATIN CAPITAL LETTER E WITH DIAERESIS      |
| U+00CC             | Ì         | c3 8c        | LATIN CAPITAL LETTER I WITH GRAVE          |
| U+00CD             | Í         | c3 8d        | LATIN CAPITAL LETTER I WITH ACUTE          |
| U+00CE             | Î         | c3 8e        | LATIN CAPITAL LETTER I WITH CIRCUMFLEX     |
| U+00CF             | Ï         | c3 8f        | LATIN CAPITAL LETTER I WITH DIAERESIS      |
| U+00D0             | Ð         | c3 90        | LATIN CAPITAL LETTER ETH                   |
| U+00D1             | Ñ         | c3 91        | LATIN CAPITAL LETTER N WITH TILDE          |
| U+00D2             | Ò         | c3 92        | LATIN CAPITAL LETTER O WITH GRAVE          |
| U+00D3             | Ó         | c3 93        | LATIN CAPITAL LETTER O WITH ACUTE          |
| U+00D4             | Ô         | c3 94        | LATIN CAPITAL LETTER O WITH CIRCUMFLEX     |
| U+00D5             | Õ         | c3 95        | LATIN CAPITAL LETTER O WITH TILDE          |
| U+00D6             | Ö         | c3 96        | LATIN CAPITAL LETTER O WITH DIAERESIS      |
| U+00D7             | ×         | c3 97        | MULTIPLICATION SIGN                        |
| U+00D8             | Ø         | c3 98        | LATIN CAPITAL LETTER O WITH STROKE         |
| U+00D9             | Ù         | c3 99        | LATIN CAPITAL LETTER U WITH GRAVE          |
| U+00DA             | Ú         | c3 9a        | LATIN CAPITAL LETTER U WITH ACUTE          |
| U+00DB             | Û         | c3 9b        | LATIN CAPITAL LETTER U WITH CIRCUMFLEX     |
| U+00DC             | Ü         | c3 9c        | LATIN CAPITAL LETTER U WITH DIAERESIS      |
| U+00DD             | Ý         | c3 9d        | LATIN CAPITAL LETTER Y WITH ACUTE          |

Continued on page 21

Continued from page 20

| Unicode Code Point | Character | UTF-8 (hex.) | Name                                 |
|--------------------|-----------|--------------|--------------------------------------|
| U+00DE             | þ         | c3 9e        | LATIN CAPITAL LETTER THORN           |
| U+00DF             | ß         | c3 9f        | LATIN SMALL LETTER SHARP S           |
| U+00E0             | à         | c3 a0        | LATIN SMALL LETTER A WITH GRAVE      |
| U+00E1             | á         | c3 a1        | LATIN SMALL LETTER A WITH ACUTE      |
| U+00E2             | â         | c3 a2        | LATIN SMALL LETTER A WITH CIRCUMFLEX |
| U+00E3             | ã         | c3 a3        | LATIN SMALL LETTER A WITH TILDE      |
| U+00E4             | ä         | c3 a4        | LATIN SMALL LETTER A WITH DIAERESIS  |
| U+00E5             | å         | c3 a5        | LATIN SMALL LETTER A WITH RING ABOVE |
| U+00E6             | æ         | c3 a6        | LATIN SMALL LETTER AE                |
| U+00E7             | ç         | c3 a7        | LATIN SMALL LETTER C WITH CEDILLA    |
| U+00E8             | è         | c3 a8        | LATIN SMALL LETTER E WITH GRAVE      |
| U+00E9             | é         | c3 a9        | LATIN SMALL LETTER E WITH ACUTE      |
| U+00EA             | ê         | c3 aa        | LATIN SMALL LETTER E WITH CIRCUMFLEX |
| U+00EB             | ë         | c3 ab        | LATIN SMALL LETTER E WITH DIAERESIS  |
| U+00EC             | ì         | c3 ac        | LATIN SMALL LETTER I WITH GRAVE      |
| U+00ED             | í         | c3 ad        | LATIN SMALL LETTER I WITH ACUTE      |
| U+00EE             | î         | c3 ae        | LATIN SMALL LETTER I WITH CIRCUMFLEX |
| U+00EF             | ï         | c3 af        | LATIN SMALL LETTER I WITH DIAERESIS  |
| U+00F0             | ð         | c3 b0        | LATIN SMALL LETTER ETH               |
| U+00F1             | ñ         | c3 b1        | LATIN SMALL LETTER N WITH TILDE      |
| U+00F2             | ò         | c3 b2        | LATIN SMALL LETTER O WITH GRAVE      |
| U+00F3             | ó         | c3 b3        | LATIN SMALL LETTER O WITH ACUTE      |
| U+00F4             | ô         | c3 b4        | LATIN SMALL LETTER O WITH CIRCUMFLEX |
| U+00F5             | õ         | c3 b5        | LATIN SMALL LETTER O WITH TILDE      |
| U+00F6             | ö         | c3 b6        | LATIN SMALL LETTER O WITH DIAERESIS  |
| U+00F7             | ÷         | c3 b7        | DIVISION SIGN                        |
| U+00F8             | ø         | c3 b8        | LATIN SMALL LETTER O WITH STROKE     |
| U+00F9             | ù         | c3 b9        | LATIN SMALL LETTER U WITH GRAVE      |
| U+00FA             | ú         | c3 ba        | LATIN SMALL LETTER U WITH ACUTE      |
| U+00FB             | û         | c3 bb        | LATIN SMALL LETTER U WITH CIRCUMFLEX |
| U+00FC             | ü         | c3 bc        | LATIN SMALL LETTER U WITH DIAERESIS  |
| U+00FD             | ý         | c3 bd        | LATIN SMALL LETTER Y WITH ACUTE      |
| U+00FE             | þ         | c3 be        | LATIN SMALL LETTER THORN             |
| U+00FF             | ÿ         | c3 bf        | LATIN SMALL LETTER Y WITH DIAERESIS  |

## Clean with Mild Detergent and Warm Water

Wipe down the device with a soft cloth dampened with a mild detergent and warm water solution. Do not use any other chemicals for cleaning.

## 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. | 9714 Tenth Avenue North | Plymouth, MN 55441, USA | Phone: + 1 888 373 6767

For worldwide locations and local representatives, visit [www.bannerengineering.com](http://www.bannerengineering.com).

## Banner Engineering Corp Limited Warranty

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

