



CTL50 Continuous Tower Light with Modbus Product Manual

Original Instructions

p/n: 255155 Rev. A

07-Oct-26

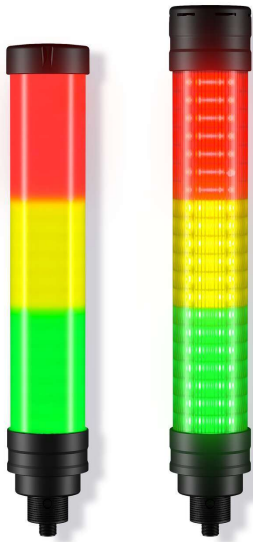
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Chapter 1 Features



- Standardize visual communication across machines and applications with configurable 8-, 12-, and 20-cell models offering up to 20 individually controllable cells
- Adapt appearance as needs change with 14 configurable colors, 17 animations, and adjustable brightness
- Visualize machine status, process values, and operating conditions with built-in Level, Timer, and Counter modes that convert machine and sensor inputs into indication
- Meet the visibility requirements of the environment with diffuse models for a clean, blended appearance and beacon-style models for higher visibility
- Retrofit existing machines and standardize across Modbus® architectures with an integral M12 quick-disconnect connector
- Draw operator attention to status changes with models that add configurable audible alerts to visual indication for alarms, warnings, and process changes
- Install directly in washdown environments with an IP66- and IP69-rated design that needs no additional protective enclosure

1.1 Models

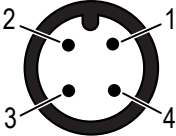
Family	Window	Number of Cells	Audible	Control	Housing Color	Connector ⁽¹⁾
CTL50		20	A	S		Q
50 mm Continuous Tower Light	D = Diffuse BL = Beacon Light	20 = 20 cells 12 = 12 cells 8 = 8 cells	Blank = No audible A = Audible	S = Modbus®	Blank = Black	Q = Integral 4-pin M12 male quick-disconnect connector

1.2 Default Segment Colors

Number of Segments	Colors (Bottom to Top)
1	Red
2	Green, Red
3 (Default Factory Setting)	Green, Yellow, Red
4	Blue, Green, Yellow, Red
5	White, Blue, Green, Yellow, Red
6	Orange, White, Blue, Green, Yellow, Red
7	Magenta, Orange, White, Blue, Green, Yellow, Red

⁽¹⁾ Models with a quick-disconnect connector require a mating cordset.

Chapter 2 Wiring

Integral 4-pin A-Code M12 Male Quick-Disconnect Connector Pinout	Pin	Wire Color	Connection
	1	Brown	12 V DC to 30 V DC
	2	White	RS-485 (+)
	3	Blue	DC common
	4	Black	RS-485 (-)

Chapter 3 Modbus Overview

Modbus® is an open standard serial communication protocol that allows for the bi-directional exchange of data from Modbus-supported devices, such as sensors, that are connected through Modbus back to a main controller or data gathering system. For the latest Modbus protocol and specifications, please visit <https://www.modbus.org/>.



Modbus is used to:

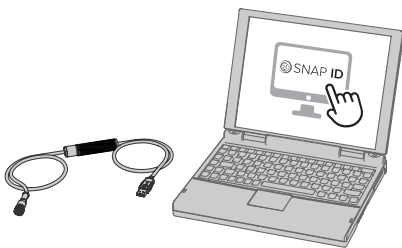
- Monitor and program Modbus-supported devices
- Communicate between Modbus-supported devices
- Monitor field devices using PCs and HMIs

Other advantages to a Modbus system include standardized wiring, remote configuration, simple device replacement, advanced diagnostics, and increased data availability. Because Modbus is an open standard, the devices can be integrated into almost any fieldbus or automation system.

A Modbus system consists of a Modbus client device (client) and a Modbus server device (server), such as a sensor, lighting product, Modbus hub, or actuator. The client device requests data from the server device, which supplies that data. The client can also write information to the servers. In a standard Modbus network, there is one client and up to 247 servers, each with a unique server address from 1 to 247.

The data collected by an individual server device, along with its functions and parameters, are represented in a Modbus register map. The Modbus register map contains information about identification, device parameters, process and diagnostic data, communication properties, and other details. It also defines what the data is, where the data is stored (for example, in which tables and Modbus register addresses), and how the data is stored (data types, byte and word ordering). Some server devices are built with a fixed map, while others allow the user to configure or program a custom map to fit their needs.

3.1 SNAP SIGNAL® Configuration Software



Banner's SNAP SIGNAL® Configuration Software offers an easy way to configure and demonstrate Banner Modbus devices.

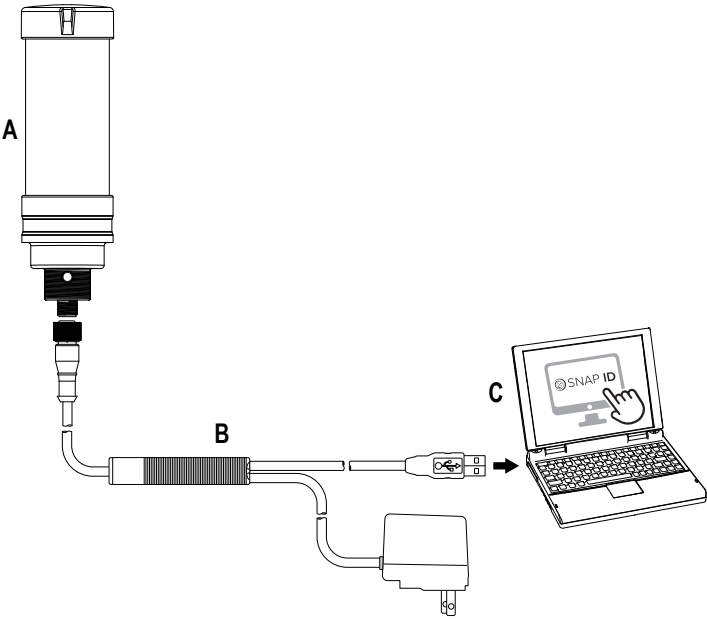
Users have full control of device configuration, the ability to visualize device data, and to demonstrate device features. The easy-to-use software provides a variety of tools and works with Banner Modbus devices.

Download the free SNAP SIGNAL Configuration Software at <https://www.bannerengineering.com/sg/en/products/software/snap-signal-configuration-software.html>.

For instructions on how to use the software to configure Modbus devices, use the SNAP SIGNAL Configuration Software Instruction Manual available from the software by going to **Help > Documentation**. The SNAP SIGNAL Configuration Software Instruction Manual can also be downloaded directly from www.bannerengineering.com.

3.1.1 Connect the CTL50

1. Connect the CTL50 to the female M12 connector of the BWA-UCT-900 adapter.
2. Plug the USB connector of the BWA-UCT-900 into the PC.
3. Plug the power cable of the BWA-UCT-900 into a wall outlet.



A = CTL50 Modbus device
B = BWA-UCT-900 Adapter Cable
C = PC Running SNAP SIGNAL Configuration Software

3.2 Modbus Modes and Descriptions

3.2.1 Run Mode

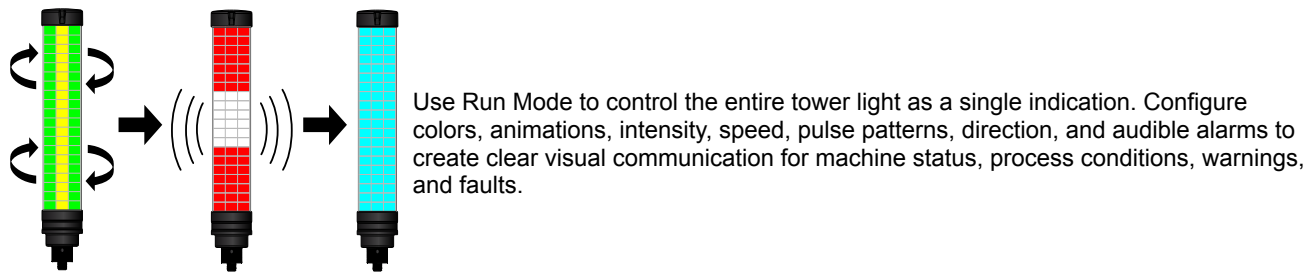
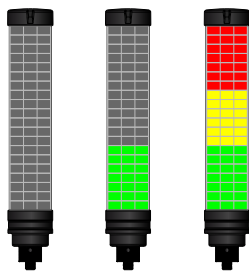


Table 1. Key Registers

Base 0 Address	Description
2200	Operating Mode = Run Mode
2000	Animation
2001	Color 1
2005	Color 2
2009	Direction
2010	Audio Type
2011	Audio Volume

Refer to [Run Mode Input](#) in the Modbus Register Map to configure this mode.

3.2.2 Segment Mode



Use Segment Mode to create tower light indications using Traditional Segment Layouts, Manual Segment Configuration, or AutoSpan. Segments can be independently controlled as Off, On, Flash, or Animation to emulate traditional stack lights or create custom indication schemes.

Traditional Segment Layouts

Automatically divides the tower into a fixed number of evenly sized segments (1–20 segments). This mode provides a simple way to emulate traditional stack light behavior while maintaining consistent segment sizing across the tower.

Manual Segment Configuration

Allows each segment to be assigned a custom width and offset, providing complete control over segment size and location within the tower.

AutoSpan

Automatically divides the available light cells into the selected number of segments and scales those segments proportionally across the span of the device. Segment numbers are displayed from lowest (bottom) to highest (top).

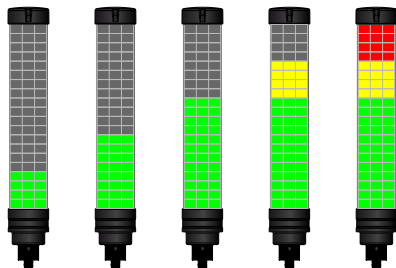
NOTE: See Register 2300 to select a segment layout.

Table 2. Key Registers

Base 0 Address	Description
2200	Operating Mode = Segment Mode
2000-2019	Segment Activation
2300	Segment Mode (Manual, 1-20 Segments, Auto)
2301	Background Color
2302	Background Intensity
2310-2323	Segment 1 Configuration
2324-2337	Segment 2 Configuration
2338-2589	Segments 3-20 follow the same pattern

Refer to [Segment Mode Input](#) in the Modbus Register Map to configure this mode.

3.2.3 Level Mode



Use Level Mode to convert a process value into a visual level indicator. Configure thresholds, colors, animations, threshold markers, filtering, hysteresis, and background indication to highlight operating ranges, warnings, alarms, and process conditions along the entire tower light.

Table 3. Key Registers

Base 0 Address	Description
2200	Operating Mode = Level Mode
2000	Level Value
2606	Full Scale Value

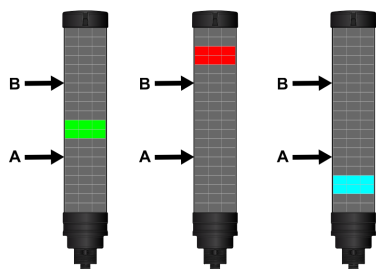
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Base 0 Address	Description
2620-2675	Threshold Configuration

Refer to [Level Mode Input](#) in the Modbus Register Map to configure this mode.

3.2.4 Position Mode (Gauge Mode)



Use Position Mode (Gauge Mode) to visualize a process value as a movable indication band. The position, appearance, thresholds, colors, animations, direction, and background indication can be customized to monitor position, tracking, alignment, process status, and other dynamic machine conditions.

A = Threshold 1
B = Threshold 2

Table 4. Key Registers

Base 0 Address	Description
2200	Operating Mode = Position Mode
2000	Position Value
2710	Main Segment Percent Width
2711-2730	Main and Background Configuration
2740-2793	Threshold Configuration

Refer to [Position Mode Input](#) in the Modbus Register Map to configure this mode.

3.2.5 LED Mode



Use LED Mode for direct control of individual LED groups within the tower light. This mode provides maximum customization by allowing colors to be assigned directly to each LED group, enabling unique visual effects and application-specific indications.

Table 5. Key Registers

Base 0 Address	Description
2200	Operating Mode = LED Mode
2000-2029	LED color assignments
2030	Audio Type
2031	Audio Volume
2800-2810	Custom animation and color settings

Refer to [LED Mode Input](#) in the Modbus Register Map to configure this mode.

3.2.6 Demo Mode

Use Demo Mode to automatically cycle through example configurations and animations that demonstrate the capabilities of the CTL50. This mode is intended for product demonstrations, evaluation, and training.

3.2.7 Timer and Counter Behavior

The CTL50 Continuous Tower Light with Modbus does not include a dedicated Timer Mode or Counter Mode.

Similar functionality can be achieved by updating process values through the controller and displaying them using Level Mode or Position Mode.

Chapter 4 Modbus Register Map

The Modbus Register Map is used to define how data is organized and accessed within a device for communication and control. It provides the information needed for external systems to read device status, configure settings, and send control commands.

4.1 Register Map Overview

The CTL50 has several Modbus registers, grouped by functionality:

- **MODD Registers**—Lists the model name and other identifying names and numbers.
- **Device Information**—Lists the firmware part number and other device-specific information.
- **Restore Defaults**—Restores Modbus configurations to factory settings.
- **Modbus Settings**—Configures Modbus communications.
- **Device Specific Configuration**—Selects the main operation mode of the device.
- **Run Mode Input**—Defines color, intensity, animation, and audio for Run Mode.
- **Segment Mode Input**—Enables or disables a segment and configures audio for Segment Mode.
- **Level Mode Input**—Displays a level based on a scaled input value and configures audio for Level Mode.
- **Position Mode Input**—Displays a position based on a scaled input value and configures the audio for Position Mode.
- **LED Mode Input**—Controls the color of individual LEDs and configures the audio for LED Mode.
- **Custom Animation Configuration**—Defines custom intensity, frequency, orientation, and additional LED Mode settings.
- **Custom Color Configuration**—Defines custom colors for Color 1 and Color 2.

4.2 Key Terms

Base 0 Address

Registers are addressed with the first register starting at zero

Base 1 Address

Registers are addressed with the first register starting at one

Description

Lists the functionality of the register

Holding Register Representation

Lists the allowed values of the register and the definition of those values

Default Value

Lists the factory default value of the register

Saved

Yes: The register value is stored in non-volatile memory, and is preserved when power is cycled

No: The register value is stored in volatile memory, and is reset to the default value when power is cycled

Access

Read Only (RO): The register can be read, but not written to

Read and Write (RW): The register can be read and written to

4.3 MODD Registers

The following registers list the model name and other identifying names and numbers.

See [Register Map Overview](#) for a full list of Modbus register groups.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Access
605-614	605-615	Banner Name	Banner Engineering	RO

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Access
615-631	616-632	Product Name	CTL50 Continuous Tower Light with Modbus	RO
632-633	633-634	Item Number		RO
634-637	635-638	Serial Number		RO
638-639	639-640	Firmware Version		RO
640-641	641-642	Firmware Build Number		RO

4.4 Device Information

The following registers list the firmware part number and other device-specific information.

See [Register Map Overview](#) for a full list of Modbus register groups.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Access
1000	1001	Firmware part number low word	0 to 65,535	RO
1001	1002	Firmware part number high word	0 to 65,535	RO
1002	1003	Software version	0 to 65,535	RO
1003	1004	Build number	0 to 65,535	RO
1004	1005	Part number low word	0 to 65,535	RO
1005	1006	Part number high word	0 to 65,535	RO
1006	1007	Firmware version	0 to 65,535	RO
1007-1022	1008-1023	Model name string	String	RO
1025	1026	Configuration version	0 to 65,535	RO
1026-1041	1027-1042	Date code string	String	RO
1042-1057	1043-1058	Serial number string	String	RO

4.5 Restore Defaults

Use these registers to restore the configurations to factory settings.

See [Register Map Overview](#) for a full list of Modbus register groups.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
6600	6601	Restore factory defaults	0 = Disabled, 1 - 65535 = Enable	0	No	RW
6601	6602	Restore factory defaults key 1	43690(0xAAAA) = Enable	0	No	RW
6602	6603	Restore factory defaults key 2	21845(0x5555) = Enable	0	No	RW

4.6 Modbus Settings

Use these registers to configure Modbus communications.

See [Register Map Overview](#) for a full list of Modbus register groups.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
6100	6101	Modbus device address	1-247	1	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
6101	6102	Communication baud rate	12 = 1200 24 = 2400 48 = 4800 96 = 9600 192 = 19200 384 = 38400 567 = 567000 1152 = 115200 2304 = 230400	192	Yes	RW
6102	6103	Parity mode	0 = None 1 = Odd 2 = Even	0	Yes	RW
6103	6104	Stop bits	1 = 1 2 = 2 3 = 1.5	1	Yes	RW

4.7 Device Specific Configuration

Use this register to select the main operation mode of the device.

See [Register Map Overview](#) for a full list of Modbus register groups.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2200	2201	Operating Mode	0 = Run Mode 1 = Segment Mode 2 = Level Mode 3 = Position Mode 4 = LED Mode 5 = Demo	0	Yes	RW

4.8 Run Mode Input

Use these registers to define color, intensity, animation, and audio for the mode.

See [Register Map Overview](#) for a full list of Modbus register groups.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2000	2001	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = Two Color Shift 5 = 50 / 50 Rotate 6 = Chase 7 = Intensity Sweep 8 = Two Color Sweep 9 = Scroll 10 = Center Scroll 11 = Bounce 12 = Center Bounce 13 = Single End Steady 14 = Single End Flash 15 = Ends Flash 16 = Ends Steady 17 = Spectrum	0	No	RW
2001	2002	Color 1	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	0	No	RW
2002	2003	Color 1 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	No	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2003	2004	Speed	0 = Standard 1 = Fast 2 = Slow 3 = Custom	0	No	RW
2004	2005	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	No	RW
2005	2006	Color 2	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	0	No	RW
2006	2007	Color 2 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	No	RW
2007	2008	Scroll/Bounce Style	0 = Solid 1 = Smooth Tail 2 = Smooth Centered	0	No	RW
2008	2009	Color 1 Percent	0-100	0	No	RW
2009	2010	Direction	0 = Normal, 1 = Backward	0	No	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2010	2011	Audio Type	0 = Off 1 = Pulse 2 = Wobble 3 = Strobe 4 = Whoop 5 = Staccato 6 = Siren 7 = Continuous 1 8 = Continuous 2 9 = Sync 10 = Jingle 11 = Melody 1 12 = Melody 2 13 = Melody 3 14 = Custom	0	No	RW
2011	2012	Audio Volume	0 = Low 1 = Medium-Low 2 = Medium-High 3 = High	0	No	RW

4.8.1 Example: Machine Ready

In this example, which uses the Base 0 address, the CTL50 is configured with a steady green color, indicating normal operation.

```

2200 = 1 (Operating Mode = Run Mode)
2000 = 1 (Animation = Steady)
2001 = 0 (Color 1 = Green, default)
2002 = 0 (Intensity = High, default)
2003 = 0 (Speed = Standard, default)
2010 = 0 (Audio Type = Off, default)

```

4.8.2 Example: Machine Fault

In this example, which uses the Base 0 address, the CTL50 is configured with a flashing red color and siren alarm.

```

2200 = 1 (Operating Mode = Run Mode)
2000 = 2 (Animation = Flash)
2001 = 1 (Color 1 = Red)
2002 = 0 (Intensity = High, default)
2003 = 1 (Speed = Fast)
2010 = 6 (Audio Type = Siren)
2011 = 3 (Audio Volume = High)

```

4.9 Segment Mode Input

Use Segment Mode to enable or disable a segment, and to configure audio for the mode.

See [Register Map Overview](#) for a full list of Modbus register groups.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2000	2001	Segment 1	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2001	2002	Segment 2	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2002	2003	Segment 3	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2003	2004	Segment 4	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2004	2005	Segment 5	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2005	2006	Segment 6	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2006	2007	Segment 7	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2007	2008	Segment 8	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2008	2009	Segment 9	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2009	2010	Segment 10	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2010	2011	Segment 11	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2011	2012	Segment 12	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2012	2013	Segment 13	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2013	2014	Segment 14	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2014	2015	Segment 15	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2015	2016	Segment 16	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2016	2017	Segment 17	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2017	2018	Segment 18	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2018	2019	Segment 19	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW
2019	2020	Segment 20	0 = Off 1 = Basic On 2 = Basic Flash 3 = Animation On	0	No	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2020	2021	Audio Type	0 = Off 1 = Pulse 2 = Wobble 3 = Strobe 4 = Whoop 5 = Staccato 6 = Siren 7 = Continuous 1 8 = Continuous 2 9 = Sync 10 = Jingle 11 = Melody 1 12 = Melody 2 13 = Melody 3 14 = Custom	0	No	RW
2021	2022	Audio Volume	0 = Low 1 = Medium-Low 2 = Medium-High 3 = High	0	No	RW

4.9.1 Segment Mode General Configuration

Use these registers to enable a select number of segments and to set the background color of the light.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2300	2301	Segment Mode	0 = Manual 1 = 1 Segment 2 = 2 Segment 3 = 3 Segment 4 = 4 Segment 5 = 5 Segment 6 = 6 Segment 7 = 7 Segment 8 = 8 Segment 9 = 9 Segment 10 = 10 Segment 11 = 11 Segment 12 = 12 Segment 13 = 13 Segment 14 = 14 Segment 15 = 15 Segment 16 = 16 Segment 17 = 17 Segment 18 = 18 Segment 19 = 19 Segment 20 = 20 Segment 21 = Auto	3	Yes	RW
2301	2302	Manual Background Color	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	13	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2302	2303	Manual Background Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	3	Yes	RW
2303	2304	Animation Sync	0 = Disabled, 1 = Enabled	1	Yes	RW

4.9.2 Segment Mode Segment Settings

Use these registers to configure the color, flash speed, animation, intensity, pattern, and other settings for specific segments.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2310	2311	Segment 1 Basic Color	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	1	Yes	RW
2311	2312	Segment 1 Basic Flash Speed	0 = Standard 1 = Fast 2 = Slow 3 = Custom	0	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2312	2313	Segment 1 Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = Two Color Shift 5 = 50 / 50 Rotate 6 = Chase 7 = Intensity Sweep 8 = Two Color Sweep 9 = Scroll 10 = Center Scroll 11 = Bounce 12 = Center Bounce 13 = Single End Steady 14 = Single End Flash 15 = Ends Flash 16 = Ends Steady 17 = Spectrum	0	Yes	RW
2313	2314	Segment 1 Color 1	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	0	Yes	RW
2314	2315	Segment 1 Color 1 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2315	2316	Segment 1 Speed	0 = Standard 1 = Fast 2 = Slow 3 = Custom	0	Yes	RW
2316	2317	Segment 1 Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW
2317	2318	Segment 1 Color 2	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	1	Yes	RW
2318	2319	Segment 1 Color 2 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	Yes	RW
2319	2320	Segment 1 Scroll/ Bounce Style	0 = Solid 1 = Smooth Tail 2 = Smooth Centered	0	Yes	RW
2320	2321	Segment 1 Color 1 Percent	0-100	50	Yes	RW
2321	2322	Segment 1 Direction	0 = Normal, 1 = Backward	0	Yes	RW
2322	2323	Segment 1 Offset		0	Yes	RW
2323	2324	Segment 1 Width		0	Yes	RW
2324	2325	Segment 2 Basic Color	Same as Segment 1	4	Same as Segment 1	RW
2325	2326	Segment 2 Basic Flash Speed		Same as Segment 1		
2326	2327	Segment 2 Animation				
...	...	Segment 2 ...				
2337	2338	Segment 2 Width				
2338	2339	Segment 3 Basic Color	Same as Segment 1	0	Same as Segment 1	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2339	2340	Segment 3 Basic Flash Speed		Same as Segment 1		
2340	2341	Segment 3 Animation				
...	...	Segment 3 ...				
2351	2352	Segment 3 Width				
2352	2353	Segment 4 Basic Color	Same as Segment 1	0	Same as Segment 1	RW
2353	2354	Segment 4 Basic Flash Speed				
2354	2355	Segment 4 Animation				
...	...	Segment 4 ...				
2365	2366	Segment 4 Width		Same as Segment 1	Same as Segment 1	RW
2366	2367	Segment 5 Basic Color				
2367	2368	Segment 5 Basic Flash Speed				
2368	2369	Segment 5 Animation				
...	...	Segment 5 ...	Same as Segment 1	Same as Segment 1	Same as Segment 1	RW
2379	2380	Segment 5 Width				
2380	2381	Segment 6 Basic Color				
2381	2382	Segment 6 Basic Flash Speed				
2382	2383	Segment 6 Animation	Same as Segment 1	Same as Segment 1	Same as Segment 1	RW
...	...	Segment 6 ...				
2393	2394	Segment 6 Width				
2394	2395	Segment 7 Basic Color				
2395	2396	Segment 7 Basic Flash Speed	Same as Segment 1	0	Same as Segment 1	RW
2396	2397	Segment 7 Animation				
...	...	Segment 7 ...				
2407	2408	Segment 7 Width				
2408	2409	Segment 8 Basic Color	Same as Segment 1	0	Same as Segment 1	RW
2409	2410	Segment 8 Basic Flash Speed				
2410	2411	Segment 8 Animation				
...	...	Segment 8 ...				
2421	2422	Segment 8 Width	Same as Segment 1	Same as Segment 1	Same as Segment 1	RW
2422	2423	Segment 9 Basic Color				
2423	2424	Segment 9 Basic Flash Speed				
2434	2435	Segment 9 Animation				
...	...	Segment 9 ...	Same as Segment 1	Same as Segment 1	Same as Segment 1	RW
2435	2436	Segment 9 Width				
2436	2437	Segment 10 Basic Color				
2437	2438	Segment 10 Basic Flash Speed				
2438	2439	Segment 10 Animation	Same as Segment 1	0	Same as Segment 1	RW
...	...	Segment 10 ...				
2449	2450	Segment 10 Width				
2450	2451	Segment 11 Basic Color				
2451	2452	Segment 11 Basic Flash Speed	Same as Segment 1	0	Same as Segment 1	RW
2452	2453	Segment 11 Animation				
...	...	Segment 11 ...				
2463	2464	Segment 11 Width				
2464	2465	Segment 12 Basic Color	Same as Segment 1	0	Same as Segment 1	RW
2465	2466	Segment 12 Basic Flash Speed				
2466	2467	Segment 12 Animation				
...	...	Segment 12 ...				
2477	2478	Segment 12 Width	Same as Segment 1	0	Same as Segment 1	RW
2478	2479	Segment 13 Basic Color				

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2479	2480	Segment 13 Basic Flash Speed		Same as Segment 1		
2480	2481	Segment 13 Animation				
...	...	Segment 13 ...				
2491	2492	Segment 13 Width				
2492	2493	Segment 14 Basic Color	Same as Segment 1	0	Same as Segment 1	RW
2492	2493	Segment 14 Basic Flash Speed				
2492	2493	Segment 14 Animation				
...	...	Segment 14 ...				
2505	2506	Segment 14 Width	Same as Segment 1	Same as Segment 1		
2506	2507	Segment 15 Basic Color				
2507	2508	Segment 15 Basic Flash Speed				
2508	2509	Segment 15 Animation				
...	...	Segment 15 ...	Same as Segment 1	Same as Segment 1	Same as Segment 1	RW
2519	2520	Segment 15 Width				
2520	2521	Segment 16 Basic Color				
2521	2522	Segment 16 Basic Flash Speed				
2522	2523	Segment 16 Animation	Same as Segment 1	Same as Segment 1	Same as Segment 1	RW
...	...	Segment 16 ...				
2533	2534	Segment 16 Width				
2534	2535	Segment 17 Basic Color				
2535	2536	Segment 17 Basic Flash Speed	Same as Segment 1	0	Same as Segment 1	RW
2536	2537	Segment 17 Animation				
...	...	Segment 17 ...				
2547	2548	Segment 17 Width				
2548	2549	Segment 18 Basic Color	Same as Segment 1	0	Same as Segment 1	RW
2549	2550	Segment 18 Basic Flash Speed				
2550	2551	Segment 18 Animation				
...	...	Segment 18 ...				
2561	2562	Segment 18 Width	Same as Segment 1	Same as Segment 1	Same as Segment 1	RW
2562	2563	Segment 19 Basic Color				
2563	2564	Segment 19 Basic Flash Speed				
2564	2565	Segment 19 Animation				
...	...	Segment 19 ...	Same as Segment 1	Same as Segment 1	Same as Segment 1	RW
2575	2576	Segment 19 Width				
2576	2577	Segment 20 Basic Color				
2577	2578	Segment 20 Basic Flash Speed				
2578	2579	Segment 20 Animation	Same as Segment 1	0	Same as Segment 1	RW
...	...	Segment 20 ...				
2589	2590	Segment 20 Width				

4.9.3 Example: Traditional Tower Light

In this example, which uses the Base 0 address, the CTL50 is configured to mimic a three-tier tower light.

1. Put the device in Segment Mode (default).

2200 = 0 (Operating Mode = Segment Mode)

2. Enable Segment 1, Segment 2, and Segment 3.

2000 = 1 (Segment 1 = Basic On)
 2001 = 1 (Segment 2 = Basic On)
 2002 = 1 (Segment 3 = Basic On)

3. Define the color for each segment.

```

2310 = 0 (Segment 1 Basic Color = Green)
2324 = 4 (Segment 2 Basic Color = Yellow, default)
2338 = 1 (Segment 3 Basic Color = Red)

```

4.10 Level Mode Input

Use Level Mode to display a level based on a scaled input value, and to configure the audio for the mode.

See [Register Map Overview](#) for a full list of Modbus register groups.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2000	2001	Level Value	0..100	0	No	RW
2001	2002	Audio Type	0 = Off	0	No	RW
			1 = Pulse			
			2 = Wobble			
			3 = Strobe			
			4 = Whoop			
			5 = Staccato			
			6 = Siren			
			7 = Continuous 1			
			8 = Continuous 2			
			9 = Sync			
2002	2003	Audio Volume	10 = Jingle	0	No	RW
			11 = Melody 1			
			12 = Melody 2			
			13 = Melody 3			
			14 = Custom			
2002	2003	Audio Volume	0 = Low	0	No	RW
			1 = Medium-Low			
			2 = Medium-High			
			3 = High			

4.10.1 Level Mode General Configuration

Use these registers to set the filter, dominance, SubSegment style, and other settings of the mode.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2600	2601	Background Color	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	13	Yes	RW
2601	2602	Background Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	3	Yes	RW
2602	2603	Dominance	0 = Non-Dominant 1 = Dominant 2 = Full Dominant	0	Yes	RW
2603	2604	SubSegment Style	0 = Steady, 1 = Analog	1	Yes	RW
2604	2605	Filter Level	0 = None 1 = Low 2 = Medium 3 = High	0	Yes	RW
2605	2606	Hysteresis Level	0 = None 1 = Low 2 = Medium 3 = High	0	Yes	RW
2606	2607	Full Scale Value		100	Yes	RW
2607	2608	Tick Marks Type	0 = Off 1 = Non-Dominant 2 = Dominant	0	Yes	RW

4.10.2 Level Mode Base Configuration

Use these registers to set the colors, animations, and other settings for the mode.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2610	2611	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = Two Color Shift 5 = 50 / 50 Rotate 6 = Chase 7 = Intensity Sweep 8 = Two Color Sweep 9 = Scroll 10 = Center Scroll 11 = Bounce 12 = Center Bounce 13 = Single End Steady 14 = Single End Flash 15 = Ends Flash 16 = Ends Steady 17 = Spectrum	1	No	RW
2611	2612	Color 1	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	0	No	RW
2612	2613	Color 1 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	No	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2613	2614	Speed	0 = Standard 1 = Fast 2 = Slow 3 = Custom	0	No	RW
2614	2615	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	No	RW
2615	2616	Color 2	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	1	No	RW
2616	2617	Color 2 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	No	RW
2617	2618	Scroll/Bounce Style	0 = Solid 1 = Smooth Tail 2 = Smooth Centered	0	No	RW
2618	2619	Color 1 Percent	0-100	50	No	RW
2619	2620	Direction	0 = Normal, 1 = Backward	0	No	RW

4.10.3 Level Mode Threshold Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2620	2621	Threshold 1 IsEnabled	0 = Disabled, 1 = Enabled	0	Yes	RW
2621	2622	Threshold 1 Percent	0-100	20	Yes	RW
2622	2623	Threshold 1 Type	0 = Less than or Equal To, 1 = Greater than or Equal To	0	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2623	2624	Threshold 1 Override	0 = Disabled, 1 = Enabled	0	Yes	RW
2624	2625	Threshold 1 Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = Two Color Shift 5 = 50 / 50 Rotate 6 = Chase 7 = Intensity Sweep 8 = Two Color Sweep 9 = Scroll 10 = Center Scroll 11 = Bounce 12 = Center Bounce 13 = Single End Steady 14 = Single End Flash 15 = Ends Flash 16 = Ends Steady 17 = Spectrum	0	Yes	RW
2625	2626	Threshold 1 Color 1	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	0	Yes	RW
2626	2627	Threshold 1 Color 1 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2627	2628	Threshold 1 Speed	0 = Standard 1 = Fast 2 = Slow 3 = Custom	0	Yes	RW
2628	2629	Threshold 1 Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW
2629	2630	Threshold 1 Color 2	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	1	Yes	RW
2630	2631	Threshold 1 Color 2 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	Yes	RW
2631	2632	Threshold 1 Scroll/ Bounce Style	0 = Solid 1 = Smooth Tail 2 = Smooth Centered	0	Yes	RW
2632	2633	Threshold 1 Color 1 Percent	0-100	50	Yes	RW
2633	2634	Threshold 1 Direction	0 = Normal, 1 = Backward	0	Yes	RW
2634	2635	Threshold 2 IsEnabled	Same as Threshold 1	Same as Threshold 1	Same as Threshold 1	Same as Threshold 1
2635	2636	Threshold 2 Percent				
2636	2637	Threshold 2 Type				
...	...	Threshold 2 ...				
2647	2648	Threshold 2 Direction	Same as Threshold 1	Same as Threshold 1	Same as Threshold 1	Same as Threshold 1
2648	2649	Threshold 3 IsEnabled				
2649	2650	Threshold 3 Percent				
2650	2651	Threshold 3 Type				
...	...	Threshold 3 ...				

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2661	2662	Threshold 3 Direction				
2662	2663	Threshold 4 IsEnabled	Same as Threshold 1	Same as Threshold 1	Same as Threshold 1	Same as Threshold 1
2663	2664	Threshold 4 Percent				
2664	2665	Threshold 4 Type				
...	...	Threshold 4 ...				
2675	2676	Threshold 4 Direction				

4.10.4 Example: Tank Level Indicator

In this example, which uses the Base 0 address, the CTL50 is configured to show the process level on the light.

1. Put the device in Level Mode.

```
2200 = 2 (Operating Mode = Level Mode)
```

2. Configure the background indication.

```
2600 = 13 (Background Color = White, default)
2601 = 1 (Background Intensity = Low)
```

3. Configure level animation and color.

```
2610 = 14 (Animation = Level Steady)
2611 = 0 (Color 1 = Green, default)
```

4.10.5 Example: Threshold-Based Level

In this example, which uses the Base 0 address, the CTL50 is configured to show a steady green indication until the level exceeds 80%, at which point the indication changes to flashing red.

1. Put the device in Level Mode.

```
2200 = 2 (Operating Mode = Level Mode)
```

2. Configure Threshold 1 to flash red at or greater than 80%.

```
2620 = 1 (Threshold 1 IsEnabled = Enabled)
2621 = 80 (Threshold 1 Percent = 80%)
2622 = 1 (Threshold 1 Type = Greater Than or Equal To)
2624 = 2 (Threshold 1 Animation = Flash)
2625 = 1 (Threshold 1 Color 1 = Red)
```

4.11 Position Mode Input

Use Position Mode to display a position value based on a scaled input value, and to configure the audio for the mode.

See [Register Map Overview](#) for a full list of Modbus register groups.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2000	2001	Position Value	0..100	0	No	RW
2001	2002	Style	0 = Style 1, 1 = Style 2	0	No	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2002	2003	Audio Type	0 = Off 1 = Pulse 2 = Wobble 3 = Strobe 4 = Whoop 5 = Staccato 6 = Siren 7 = Continuous 1 8 = Continuous 2 9 = Sync 10 = Jingle 11 = Melody 1 12 = Melody 2 13 = Melody 3 14 = Custom	0	No	RW
2003	2004	Audio Volume	0 = Low 1 = Medium-Low 2 = Medium-High 3 = High	0	No	RW

4.11.1 Position Mode Base Configuration

Use these registers to set the colors, animations, and other settings for the mode.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2710	2711	Main Segment Percent Width	0-100	20	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2711	2712	Main Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = Two Color Shift 5 = 50 / 50 Rotate 6 = Chase 7 = Intensity Sweep 8 = Two Color Sweep 9 = Scroll 10 = Center Scroll 11 = Bounce 12 = Center Bounce 13 = Single End Steady 14 = Single End Flash 15 = Ends Flash 16 = Ends Steady 17 = Spectrum	1	Yes	RW
2712	2713	Main Color 1	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	0	Yes	RW
2713	2714	Main Color 1 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2714	2715	Main Speed	0 = Standard 1 = Fast 2 = Slow 3 = Custom	0	Yes	RW
2715	2716	Main Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW
2716	2717	Main Color 2	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	1	Yes	RW
2717	2718	Main Color 2 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	Yes	RW
2718	2719	Main Scroll/Bounce Style	0 = Solid 1 = Smooth Tail 2 = Smooth Centered	0	Yes	RW
2719	2720	Main Color 1 Percent	0-100	50	Yes	RW
2720	2721	Main Direction	0 = Normal, 1 = Backward	0	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2721	2722	Background Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = Two Color Shift 5 = 50 / 50 Rotate 6 = Chase 7 = Intensity Sweep 8 = Two Color Sweep 9 = Scroll 10 = Center Scroll 11 = Bounce 12 = Center Bounce 13 = Single End Steady 14 = Single End Flash 15 = Ends Flash 16 = Ends Steady 17 = Spectrum	1	Yes	RW
2722	2723	Background Color 1	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	13	Yes	RW
2723	2724	Background Color 1 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	1	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2724	2725	Background Speed	0 = Standard 1 = Fast 2 = Slow 3 = Custom	0	Yes	RW
2725	2726	Background Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW
2726	2727	Background Color 2	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	9	Yes	RW
2727	2728	Background Color 2 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	1	Yes	RW
2728	2729	Background Scroll/ Bounce Style	0 = Solid 1 = Smooth Tail 2 = Smooth Centered	0	Yes	RW
2729	2730	Background Color 1 Percent	0-100	50	Yes	RW
2730	2731	Background Direction	0 = Normal, 1 = Backward	0	Yes	RW

4.11.2 Position Mode Threshold Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2740	2741	Threshold 1 IsEnabled	0 = Disabled, 1 = Enabled	1	Yes	RW
2741	2742	Threshold 1 Percent	0-100	20	Yes	RW
2742	2743	Threshold 1 Type	0 = Less than or Equal To, 1 = Greater than or Equal To	0	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2743	2744	Threshold 1 Main Segment Percent Width	0 = Disabled, 1 = Enabled	20	Yes	RW
2744	2745	Threshold 1 Main Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = Two Color Shift 5 = 50 / 50 Rotate 6 = Chase 7 = Intensity Sweep 8 = Two Color Sweep 9 = Scroll 10 = Center Scroll 11 = Bounce 12 = Center Bounce 13 = Single End Steady 14 = Single End Flash 15 = Ends Flash 16 = Ends Steady 17 = Spectrum	1	Yes	RW
2745	2746	Threshold 1 Main Color 1	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	1	Yes	RW
2746	2747	Threshold 1 Main Color 1 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2747	2748	Threshold 1 Main Speed	0 = Standard 1 = Fast 2 = Slow 3 = Custom	0	Yes	RW
2748	2749	Threshold 1 Main Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW
2749	2750	Threshold 1 Main Color 2	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	4	Yes	RW
2750	2751	Threshold 1 Main Color 2 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	Yes	RW
2751	2752	Threshold 1 Main Scroll/ Bounce Style	0 = Solid 1 = Smooth Tail 2 = Smooth Centered	0	Yes	RW
2752	2753	Threshold 1 Main Color 1 Percent	0-100	50	Yes	RW
2753	2754	Threshold 1 Main Direction	0 = Normal, 1 = Backward	0	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2754	2755	Threshold 1 Background Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = Two Color Shift 5 = 50 / 50 Rotate 6 = Chase 7 = Intensity Sweep 8 = Two Color Sweep 9 = Scroll 10 = Center Scroll 11 = Bounce 12 = Center Bounce 13 = Single End Steady 14 = Single End Flash 15 = Ends Flash 16 = Ends Steady 17 = Spectrum	1	Yes	RW
2755	2756	Threshold 1 Background Color 1	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	13	Yes	RW
2756	2757	Threshold 1 Background Color 1 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	1	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2757	2758	Threshold 1 Background Speed	0 = Standard 1 = Fast 2 = Slow 3 = Custom	0	Yes	RW
2758	2759	Threshold 1 Background Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW
2759	2760	Threshold 1 Background Color 2	0 = Green 1 = Red 2 = Orange 3 = Amber 4 = Yellow 5 = Lime Green 6 = Spring Green 7 = Cyan 8 = Sky Blue 9 = Blue 10 = Violet 11 = Magenta 12 = Rose 13 = White 14 = Custom 1 15 = Custom 2	9	Yes	RW
2760	2761	Threshold 1 Background Color 2 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	Yes	RW
2761	2762	Threshold 1 Background Scroll/Bounce Style	0 = Solid 1 = Smooth Tail 2 = Smooth Centered	0	Yes	RW
2762	2763	Threshold 1 Background Color 1 Percent	0-100	50	Yes	RW
2763	2764	Threshold 1 Background Direction	0 = Normal, 1 = Backward	0	Yes	RW
2770	2771	Threshold 2 IsEnabled	Same as Threshold 1	1	Same as Threshold 1	RW
2771	2772	Threshold 2 Percent		80		RW
2772	2773	Threshold 2 Type		1		RW
2773	2774	Threshold 2 Main Segment Percent Width		20		RW
2774	2775	Threshold 2 Main Animation		1		RW
2775	2776	Threshold 2 Main Color 1		1		RW
2776	2777	Threshold 2 Main Color 1 Intensity		0		RW
2777	2778	Threshold 2 Main Speed		0		RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2778	2779	Threshold 2 Main Pattern		0		RW
2779	2780	Threshold 2 Main Color 2		4		RW
2780	2781	Threshold 2 Main Color 2 Intensity		0		RW
2781	2782	Threshold 2 Main Scroll/ Bounce Style		0		RW
2782	2783	Threshold 2 Main Color 1 Percent		50		RW
2783	2784	Threshold 2 Main Direction		1		RW
2784	2785	Threshold 2 Background Animation		13		RW
2785	2786	Threshold 2 Background Color 1		0		RW
2786	2787	Threshold 2 Background Color 1 Intensity		0		RW
2787	2788	Threshold 2 Background Speed		0		RW
2788	2789	Threshold 2 Background Pattern		0		RW
2789	2790	Threshold 2 Background Color 2		0		RW
2790	2791	Threshold 2 Background Color 2 Intensity		0		RW
2791	2792	Threshold 2 Background Scroll/ Bounce Style		0		RW
2792	2793	Threshold 2 Background Color 1 Percent		50		RW
2793	2794	Threshold 2 Background Direction		0		RW

4.11.3 Example: Position Mode

In this example, which uses the Base 0 address, the CTL50 is configured with a moving blue indicator, which shows carriage location.

1. Put the device in Position Mode.

```
2200 = 2 (Operating Mode = Position Mode)
```

2. Configure the main indication.

```
2710 = 15 (Main Segment Width = 15%)
2711 = 1 (Main Animation = Steady, default)
2712 = 9 (Main Color = Blue)
```

3. Configure the background indication.

```
2721 = 1 (Background Animation = Steady, default)
2722 = 13 (Background Color = White, default)
2723 = 1 (Background Intensity = Low, default)
```

4.12 LED Mode Input

Use LED Mode to individually control the color of the LEDs.

See [Register Map Overview](#) for a full list of Modbus register groups.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2000	2001	Color LED 0, 1, 2, 3 (4 bits each)	0 = Green	0	No	RW
2001	2002	Color LED 4, 5, 6, 7 (4 bits each)	1 = Red		No	RW
...	...	...	2 = Orange		No	RW
2028	2029	Color LED 112, 113, 114, 115 (4 bits each)	3 = Amber		No	RW
2029	2030	Color LED 116, 117, 118, 119 (4 bits each)	4 = Yellow		No	RW
			5 = Lime Green			
			6 = Spring Green			
			7 = Cyan			
			8 = Sky Blue			
			9 = Blue			
			10 = Violet			
			11 = Magenta			
			12 = Rose			
			13 = White			
			14 = Custom 1			
			15 = Custom 2			
2030	2031	Audio Type	0 = Off	0	No	RW
			1 = Pulse			
			2 = Wobble			
			3 = Strobe			
			4 = Whoop			
			5 = Staccato			
			6 = Siren			
			7 = Continuous 1			
			8 = Continuous 2			
			9 = Sync			
			10 = Jingle			
2031	2032	Audio Volume	11 = Melody 1			
			12 = Melody 2			
			13 = Melody 3			
			14 = Custom			
			0 = Low	0	No	RW
			1 = Medium-Low			
			2 = Medium-High			
			3 = High			

Other settings for LED Mode can be found in [Custom Animation Configuration](#).

4.13 Custom Animation Configuration

Use these registers to define custom intensity, frequency, orientation, and other LED Mode settings.

See [Register Map Overview](#) for a full list of Modbus register groups.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2800	2801	Full LED Control Mode Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0	No	RW
2801	2802	Orientation	0 = Standard, 1 = Inverted	0	No	RW
2802	2803	Custom Intensity	0-100	100	No	RW
2803	2804	Custom Frequency (0.5-25.5)	5-255	10	No	RW
2804	2805	Number of LEDs per group in Full LED Control Mode	1-3	1	No	RW

4.14 Custom Color Configuration

Use these registers to define custom colors for Color 1 and Color 2.

See [Register Map Overview](#) for a full list of Modbus register groups.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
2805	2806	Custom Color 1 Red	0-255	0	No	RW
2806	2807	Custom Color 1 Green	0-255	0	No	RW
2807	2808	Custom Color 1 Blue	0-255	0	No	RW
2808	2809	Custom Color 2 Red	0-255	0	No	RW
2809	2810	Custom Color 2 Green	0-255	0	No	RW
2810	2811	Custom Color 2 Blue	0-255	0	No	RW

Chapter 5 Specifications

Supply Voltage and Current

Voltage: 12 V DC to 30 V DC

Maximum Current:

Voltage (V DC)	20 Cell Device (mA)	12 Cell Device (mA)	8 Cell Device (mA)	Per Cell (mA)
12	830	410	390	42
18	550	280	260	28
24	410	210	200	21
30	330	170	165	17

NOTE: If calculating the maximum current for a 2-segment configuration, each cell will consume half of the current in the table above. If configured as a 3-segment configuration, it will consume a third, and so on. Per-cell values are for the smallest cell width configurable.

Maximum Current for Audible:

High: 40 mA
Med-High: 25 mA
Med-Low: 15 mA
Low: 6 mA

Supply Protection Circuitry

Protected against reverse polarity and transient voltages

Connections

Integral 4-pin M12 male quick-disconnect connector

Models with a quick-disconnect connector require a mating cordset

Construction

Bases, Covers, and Light Cells: Polycarbonate

Operating Conditions

Non-Audible: -40 °C to +50 °C (-40 °F to +122 °F)

Audible: -20 °C to +50 °C (-4 °F to +122 °F)

95% at +50 °C maximum relative humidity (non-condensing)

Environmental Rating

UL Type 1

IP66, IP69

Vibration and Mechanical Shock

Vibration: 10 Hz to 55 Hz, 1.0 mm peak-to-peak amplitude per IEC 60068-2-6

Shock: 15G 11 ms duration, half sine wave per IEC 60068-2-27

Audible Adjustment

Omni-Directional Sealed Audible Alarm: Software adjustable

Audible Alarm

Audible Frequency	2.8 kHz ± 500Hz
	Maximum Intensity at 1 m (SPL) ⁽²⁾
High	99 dB
Med-High	97 dB
Med-Low	92 dB
Low	84 dB

Certifications



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



Advanced Capabilities



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	2.0	30	0.5

⁽²⁾ Up to. Actual SPL varies depending on setup. Ratings reflect maximum on-axis measurement.

Indicator Characteristics

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	Color Coordinates		Lumen Output - Fully Lit			
		X	Y	20 Cell	12 Cell	8 Cell	Per Cell
Blue	465	0.1405	0.0521	22	12	11.9	1.1
Green	512	0.1267	0.6549	89.7	52.8	51.3	4.5
Red	618	0.6888	0.3092	55.1	30.4	28.8	2.8
Orange	602	0.6006	0.3633	61.4	35.1	33	3.1
Amber	592	0.5369	0.4022	65.8	38.1	35.8	3.3
Yellow	579	0.4526	0.4541	72.2	42	39.3	3.6
Lime Green	563	0.3688	0.5058	78.8	45	44.7	3.9
Spring Green	504	0.1294	0.5133	84	47.6	47.9	4.2
Cyan	489	0.1345	0.2973	67.9	38.3	38.9	3.4
Sky Blue	483	0.1366	0.2088	57	31.7	32.8	2.8
Blue	465	0.1405	0.0521	22	12	11.9	1.1
Violet	-	0.2136	0.0864	32.1	16.8	17.1	1.6
Magenta	-	0.3676	0.1652	43.3	24.3	23.3	2.2
Rose	-	0.4985	0.22	49.1	27.1	25.9	2.5
Daylight White	5000K	0.3384	0.3329	65.9	36.4	37.3	3.3

NOTE: If using a 20-cell device in a 2-segment configuration, divide lumen values by 2. If using a 3-segment configuration, divide lumen values by 3, and so on.

5.1 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.

5.2 Industry Canada ICES-003(B)

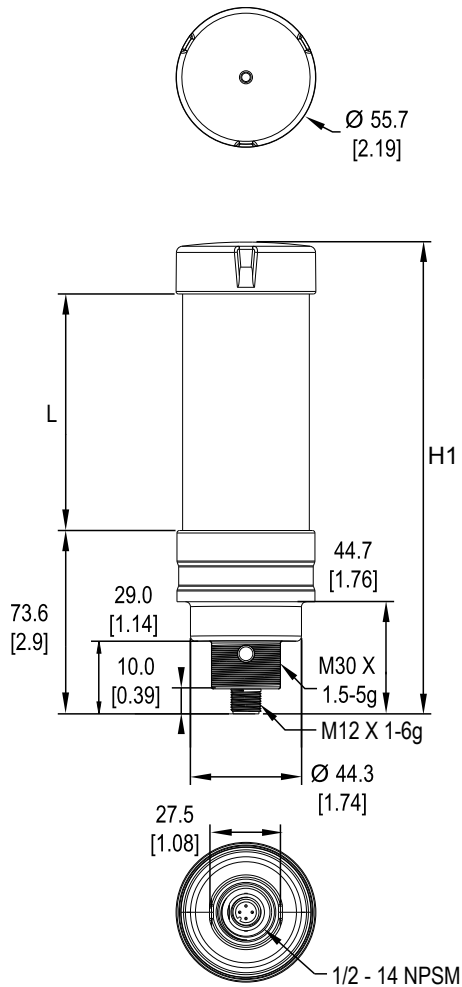
This device complies with CAN ICES-3 (B)/NMB-3(B). Operation is subject to the following two conditions: 1) This device may not cause harmful interference; and 2) This device must accept any interference received, including interference that may cause undesired operation.

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.

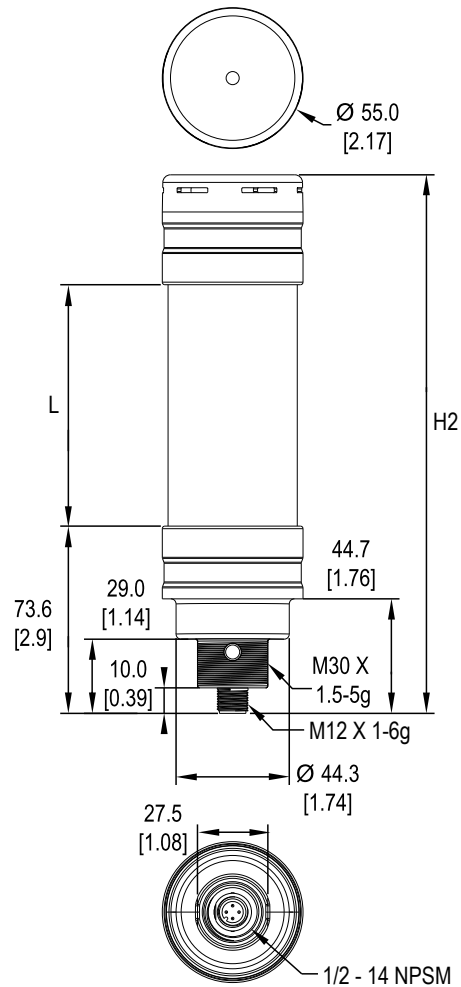
5.3 Dimensions

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

Non-Audible Models



Audible Models



Cells	Tower Height - Non-Audible Models (H1)	Tower Height - Audible Models (H2)	Window Length (L)
20 Cells	332.1	354.3	237.3
12 Cells	236.1	258.3	141.3
8 Cells	188.1	210.3	93.3

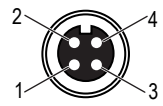
Chapter 6 Accessories

6.1 Cordsets

4-Pin A-Code Single-Ended M12 Female Cordsets (datasheet p/n 235937)				
Model	Length	Dimensions (mm)	Pinout (Female)	
BC-M12F4-22-1	1 m (3.28 ft)			1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused
BC-M12F4-22-2	2 m (6.56 ft)			
BC-M12F4-22-5	5 m (16.4 ft)			
BC-M12F4-22-8	8 m (26.25 ft)			
BC-M12F4-22-10	10 m (30.81 ft)			
BC-M12F4-22-15	15 m (49.2 ft)			
BC-M12F4-22-20	20 m (65.61 ft)			
BC-M12F4-22-25	25 m (82.02 ft)			
BC-M12F4-22-30	30 m (98.42 ft)			

4-Pin A-Code Single-Ended M12 Female Right-Angle Cordsets (datasheet p/n 235937)				
Model	Length	Dimensions (mm)	Pinout (Female)	
BC-M12F4A-22-1	1 m (3.28 ft)			1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused
BC-M12F4A-22-2	2 m (6.56 ft)			
BC-M12F4A-22-5	5 m (16.4 ft)			
BC-M12F4A-22-8	8 m (26.25 ft)			
BC-M12F4A-22-10	10 m (30.81 ft)			
BC-M12F4A-22-15	15 m (49.2 ft)			

4-Pin A-Code Double-Ended M12 Female to M12 Male Cordsets (datasheet p/n 236186)				
Model	Length	Dimensions (mm)	Pinouts	
BC-M12F4-M12M4-22-1	1 m (3.28 ft)		Female 	1 = Brown 2 = White 3 = Blue 4 = Black 5 = Unused
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)		Male 	

4-Pin M12 Female RS-485 to USB Adapter Cordset, with Wall Plug (datasheet p/n 140377)			
Model	Length		Pinout (Female)
BWA-UCT-900	1 m (3.28 ft)		 1 = Brown 2 = White 3 = Blue 4 = Black

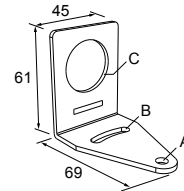
6.2 Mounting Brackets

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

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
- CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)

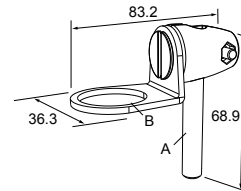
Hole center spacing: A to B=40
Hole size: A=∅ 6.3, B= 27.1 × 6.3, C=∅ 30.5



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
- CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)

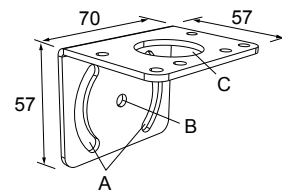
Bolt thread: SMB30FA, A=3/8 - 16 × 2 in; SMB30FAL, A=3/8 - 16 × 4 in; SMB30FAM10, A=M10 - 1.5 × 50
Hole size: B=∅ 30.1



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
- CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)

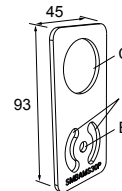
Hole center spacing: A=51, A to B=25.4
Hole size: A=42.6 × 7, B=∅ 6.4, C=∅ 30.1



SMBAMS30P

- Flat SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-gauge 300 series stainless steel
- CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)

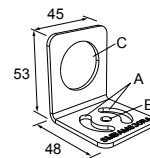
Hole center spacing: A=26.0, A to B=13.0
Hole size: A=26.8 × 7.0, B=∅ 6.5, C=∅ 31.0



SMBAMS30RA

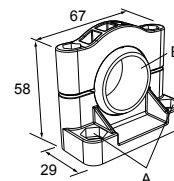
- Right-angle SMBAMS series bracket
- 30 mm hole for mounting sensors
- Articulation slots for 90°+ rotation
- 12-gauge (2.6 mm) cold-rolled steel
- CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)

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

**SMB30SC**

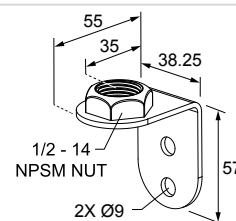
- Swivel bracket with 30 mm mounting hole for sensor
- Black reinforced thermoplastic polyester
- Stainless steel mounting and swivel locking hardware included
- CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)

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

**LMBE12RA35**

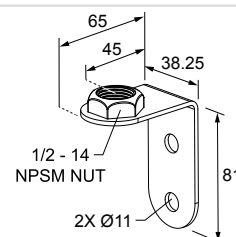
- Direct mounting of stand-off pipe, with common bracket type
- Zinc-plated steel
- 1/2-14 NPSM nut
- Mounting distance from the wall to the center of the 1/2-14 NPSM nut is 35 mm
- CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)

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
- CAD Files: [DXF](#), [PDF](#), [IGS](#), [STP](#)

Hole center spacing: 35.0

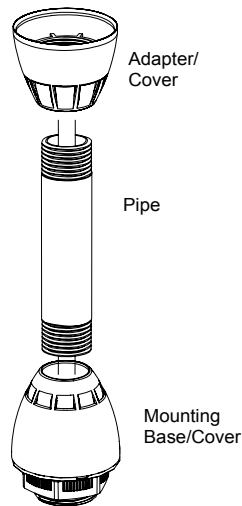


6.3 LMB Sealed Right-Angle Bracket

Model	Description	
LMB30RA - Black polycarbonate CAD Files: DXF , PDF , IGS , STP LMB30RAC - Gray polycarbonate CAD Files: DXF , PDF , IGS , STP	• Direct-Mount Models • Bracket kit with base, 30 mm adapter, set screw, fasteners, O-rings, and gaskets.	
LMBE12RA - Black polycarbonate CAD Files: DXF , PDF , IGS , STP LMBE12RAC - Gray polycarbonate CAD Files: DXF , PDF , IGS , STP	• Pipe-Mount Models • Bracket kit with base, 1/2-14 pipe adapter, set screw, fasteners, O-rings, and gaskets • For use with stand-off pipe (listed and sold separately)	

6.4 Elevated Mount System

Table 6. Example Assembly



This example uses:

1. Adapter/Cover
2. Pipe
3. Mounting Base

Other compatible parts are listed in the following tables.

Adapters/Covers

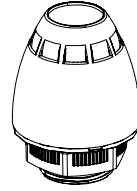
Adapter/Cover Model	Description	
SA-M30TE12 - Black acetal	- Streamlined black acetal or white UHMW stand-off pipe adapter/cover - Adapter from 30 mm light base to ½ in. NPSM/DN15 pipe - Typically used for the CL50 Column Light, TL50 Tower Light, and K50 series - Mounting hardware included - CAD files: DXF, PDF, IGS, STP	
SA-M30TE12C - White UHMW		

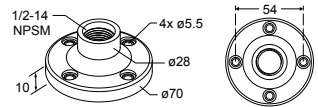
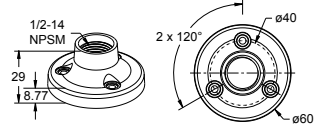
Pipes

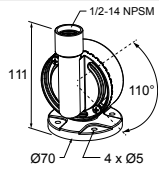
Black Anodized Aluminum, ½ In. NPT Pipe Models	Clear Anodized Aluminum, ½ In. NPT Pipe Models	Description
SOP-E12-150A , 150 mm (6 in) long	SOP-E12-150AC , 150 mm (6 in) long	- Elevated-use stand-off pipe - Threaded at both ends - Compatible with most industrial environments - CAD Files: SOP-E12-150A: DXF, PDF, IGS, STP SOP-E12-300A: DXF, PDF, IGS, STP SOP-E12-600A: DXF, PDF, IGS, STP SOP-E12-900A: DXF, PDF, IGS, STP
SOP-E12-300A , 300 mm (12 in) long	SOP-E12-300AC , 300 mm (12 in) long	
SOP-E12-600A , 600 mm (24 in) long	-	
SOP-E12-900A , 900 mm (36 in) long	SOP-E12-900AC , 900 mm (36 in) long	

304 Stainless Steel, ½ In. NPT Pipe Models	Description
SOP-E12-150SS , 150 mm (6 in) long	- Elevated-use stand-off pipe - Threaded at both ends - Compatible with most industrial environments - CAD Files: SOP-E12-150x: DXF, PDF, IGS, STP SOP-E12-300x: DXF, PDF, IGS, STP SOP-E12-600x: DXF, PDF, IGS, STP SOP-E12-900x: DXF, PDF, IGS, STP
SOP-E12-300SS , 300 mm (12 in) long	
SOP-E12-600SS , 600 mm (24 in) long	
SOP-E12-900SS , 900 mm (36 in) long	

Bottom Covers and Mounting Bases

Mounting Base Model	Description	
SA-E12M30 - Black acetal	- Streamlined black acetal or white UHMW mounting base adapter/cover - Adapter from ½ in. NPSM/DN15 pipe to 30 mm (1-3/16 in) drilled hole - Mounting hardware included - CAD files: DXF, PDF, IGS, STP	
SA-E12M30C - White UHMW		

Pipe Mounting Flange			
Model	Description	Construction	
SA-F12	- Elevated-use stand-off pipes (½ in, NPSM/DN15) - M5 mounting hardware and nitrile gasket included	Die-cast zinc base with black paint	
SA-F12-3	- Elevated-use stand-off pipes (½ in, NPSM/DN15) - M4 mounting hardware and nitrile blend gasket included	Black Polycarbonate	

Foldable Mounting Brackets			
Model	Description	Construction	
SA-FFB12	- For use with 1/2 inch stand-off pipes - Stainless steel hardware	Black polycarbonate	
SA-FFB12C		Gray polycarbonate	

6.5 Power Supply

PSW-24-1 24 V DC, 1 A Class 2 UL Listed power supply 100 V AC to 240 V AC 50/60 Hz input 2 m (6.5 ft) PVC cable with M12 quick disconnect - Includes Type A (US, Canada, Japan, Puerto Rico, Taiwan), Type C (Germany, France, South Korea, Netherlands, Poland, Spain, Turkey), Type G (United Kingdom, Ireland, Singapore, Vietnam), and Type I (China, Australia, New Zealand) AC detachable input plugs	
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Chapter 7 Product Support and Maintenance

7.1 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.

7.2 Repairs and Translations (No Field-Replaceable Parts)

English

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.

Obtain assistance with product repairs by contacting your local Banner Engineering Corp distributor or by calling Banner directly at (763) 544-3164. Access literature translated into your native language on the Banner website at www.bannerengineering.com or contact Banner directly at (763) 544-3164.

Deutsch

Wenden Sie sich zur Fehlerbehebung dieses Geräts an Banner Engineering. **Versuchen Sie nicht, Reparaturen an diesem Banner-Gerät vorzunehmen. Das Gerät enthält keine am Einsatzort auszuwechselnden Teile oder Komponenten.** Wenn ein Banner-Anwendungstechniker zu dem Schluss kommt, dass dieses Gerät, ein Teil oder eine Komponente davon defekt ist, erhalten Sie von dem Techniker Erläuterungen zu Banners RMA-Verfahren (Return Merchandise Authorization) für die Warenrückgabe.

WICHTIG: Wenn Sie der Techniker anweist, das Gerät zurückzusenden, verpacken Sie es bitte sorgfältig. Transportschäden bei der Rücksendung werden von der Garantie nicht abgedeckt.

Unterstützung bei Produktreparaturen erhalten Sie von Ihrem örtlichen Banner Engineering Corp Händler oder direkt von Banner unter Tel. (763) 544-3164. Die in Ihrer Muttersprache übersetzte Literatur finden Sie auf der Banner-Website unter www.bannerengineering.com oder kontaktieren Sie Banner direkt unter Tel. (763) 544-3164.

Français

Pour plus d'informations sur le dépannage du produit, contactez Banner Engineering. **Ne tentez pas de réparer ce dispositif Banner. Il ne contient aucun composant ou pièce qui puisse être remplacé sur place.** Si un ingénieur de Banner conclut que le dispositif ou l'une de ses pièces ou composants est défectueux, il vous informera de la procédure à suivre pour le retour des produits (RMA).

Important : Si vous devez retourner le dispositif, emballez-le avec soin. Les dégâts occasionnés pendant le transport de retour ne sont pas couverts par la garantie.

Pour vous aider lors de la réparation de produits, contactez votre distributeur Banner local ou appelez directement Banner au (763) 544-3164. La documentation traduite dans votre langue est disponible sur le site internet de Banner www.bannerengineering.com ou contactez directement Banner au (763) 544-3164.

Italiano

Per le procedure di individuazione e riparazione dei guasti di questo dispositivo, contattare Banner Engineering. **Non tentare di riparare questo dispositivo Banner, in quanto non contiene parti o componenti sostituibili dall'utente.** Se il dispositivo, una parte del dispositivo o un componente del dispositivo viene riscontrato difettoso da un tecnico Banner, il nostro personale vi comunicherà la procedura da seguire per ottenere l'autorizzazione al reso.

Importante: Se si ricevono istruzioni di rispedire il dispositivo al produttore, imballarlo con cura. I danni dovuti al trasporto non sono coperti dalla garanzia.

Per assistenza nelle riparazioni dei prodotti, contattare il distributore locale Banner Engineering Corp o contattare direttamente Banner al numero (763) 544-3164. È possibile accedere alla documentazione tradotta nella propria lingua madre sul sito Web Banner all'indirizzo www.bannerengineering.com o contattare direttamente Banner al numero (763) 544-3164.

Español

Comuníquese con Banner Engineering para solucionar de problemas de este dispositivo. **No intente ninguna reparación a este dispositivo de Banner, contiene piezas o componente que no se pueden cambiar en terreno.** Si algún ingeniero de aplicaciones de Banner determina que el dispositivo, alguna de las piezas o alguno de los componentes del dispositivo está defectuoso, le informará el procedimiento de autorización de devolución de mercancía (RMA, por sus siglas en inglés) de Banner.

Importante: Si se le solicita devolver el dispositivo, empáquelo con cuidado. Puede haber daños durante el envío de devolución que no estén cubiertos por la garantía.

Para reparaciones de productos, por favor contacte a su distribuidor local de Banner Engineering o llame a Banner directamente al 00 1 (763) 544-3164. Vea la literatura traducida en su idioma en el sitio web Banner en www.bannerengineering.com o comuníquese con Banner directamente al 00 1 (763) 544-3164.

中国人

如需对本装置进行故障排查, 请联系邦纳。请勿尝试自行维修该邦纳装置; 本装置不包含任何可在现场更换的部件或组件。若经邦纳应用工程师确认设备、设备部件或组件存在缺陷, 他们将告知您邦纳退货授权 (RMA) 流程。

重要注意事项: 如被要求退回装置, 请妥善包装后寄回。退货运输过程中发生的损坏不在保修范围内。

请联系当地的 Banner Engineering Corp 经销商或直接致电 Banner +1 (763) 544-3164, 以获得产品维修帮助。请访问邦纳网站 www.bannerengineering.com 或直接拨打 +1 (763) 544-3164 联系邦纳, 获取翻译成您母语的资料。

한국인

이 장치의 문제를 해결하려면 Banner Engineering에 문의하십시오. 이 Banner 장치에는 현장에서 교체할 수 있는 부품 또는 구성품이 없으므로 수리를 시도하지 마십시오. Banner 애플리케이션 엔지니어가 장치, 장치 부품 또는 장치 구성품에 결함이 있는 것으로 판정하면, Banner의 RMA(제품 반송 승인)절차에 대해 안내해 드립니다.

중요: 제품을 반송하도록 안내 받으셨다면 잘 포장해주시십시오. 반송 도중에 발생한 손상은 보증 서비스가 적용되지 않습니다.

제품 수리에 대한 지원은 지역 Banner Engineering Corp 대리점에 문의하거나 Banner에 직접 (763) 544-3164로 문의하실 수 있습니다. 사용자의 모국어로 번역된 자료는 Banner 웹사이트 www.bannerengineering.com에서 액세스하거나 Banner에 직접 (763) 544-3164로 문의하실 수 있습니다.

日本語

この装置のトラブルシューティングについては、バナーエンジニアリングにお問い合わせください。このバナー装置には、現場では交換できない部品またはコンポーネントが含まれているため、修理を試みてもいけません。バナーのアプリケーションエンジニアが装置、装置の部品、または装置のコンポーネントに欠陥があると判断した場合、バナーのRMA（返品承認）手続きについてお知らせします。

重要： 返品を指示された場合は、装置を丁寧に梱包してください。返品時に発生した破損は保証の対象外となります。

製品の修理については、最寄りのBanner Engineering Corp代理店にお問い合わせいただくか、米国+1 (763) 544-3164まで直接お電話でお問い合わせください。バナーのウェブサイト（www.bannerengineering.com）でお客様の言語に翻訳された資料にアクセスするか、米国+1 (763) 544-3164まで直接お電話でお問い合わせください。

čeština

Pro řešení problémů se zařízením kontaktujte společnost Banner Engineering. **Neprovádějte žádné opravy zařízení Banner. Neobsahují žádné komponenty nebo části, které by byly vyměnitelné.** Pokud je zařízení, jeho část nebo díl označen technikem společnosti Banner jako poškozený, bude Vám doporučeno vyplnit reklamční RMA protokol.

Důležité: Pokud byl vydán požadavek na vrácení zařízení, pečlivě ho zabalte. Poškození vzniklé při dopravě není považováno za záruční opravu.

Pokud produkt potřebuje opravu, vyžádejte si pomoc od místního distributora společnosti Banner Engineering Corp nebo přímo na telefonním čísle (763) 544-3164. Dokumentaci přeloženou do vašeho jazyka si vyhledejte na webových stránkách společnosti Banner na adrese www.bannerengineering.com nebo se obraťte přímo na společnost Banner na telefonním čísle (763) 544-3164.

Polski

W celu rozwiązania problemów z urządzeniem należy skontaktować się z działem technicznym firmy Banner Engineering. **Pod żadnym pozorem nie próbuj naprawiać tego urządzenia firmy Banner; nie zawiera ono części ani elementów, które można wymieniać samodzielnie.** Jeśli urządzenie, jego część lub element zostaną uznane za wadliwe przez inżyniera technicznego Banner, poinformuje on użytkownika o firmowej procedurze zwrotu towaru (RMA) firmy Banner.

Ważne: Jeśli urządzenie ma zostać zwrócone, należy je starannie zapakować. Uszkodzenia powstałe podczas odsyłki nie są objęte gwarancją.

Aby uzyskać pomoc w zakresie naprawy produktu, należy skontaktować się z lokalnym dystrybutorem Banner Engineering Corp lub zadzwonić bezpośrednio do firmy Banner pod numer (763) 544-3164. Dostęp do literatury przetłumaczonej na swój język ojczysty można uzyskać na stronie internetowej firmy Banner pod adresem www.bannerengineering.com lub kontaktując się bezpośrednio z firmą Banner pod numerem (763) 544-3164.

Português

Entre em contato com a Engenharia da Banner para a solução de problemas deste dispositivo. **Não tente fazer nenhum reparo neste dispositivo Banner; ele não contém peças ou componentes substituíveis em campo.** Se um técnico de aplicações da Banner determinar que o dispositivo, peça ou componente do dispositivo está com defeito, ele o informará sobre o procedimento de RMA (Autorização de Devolução de Mercadoria) da Banner.

Importante: Se for instruído a devolver o dispositivo, embale-o com cuidado. Os danos ocorridos no transporte de devolução não são cobertos pela garantia.

Obtenha assistência para reparos do produto entrando em contato com o distribuidor local da Banner Engineering Corp ou ligando diretamente para a Banner no telefone (763) 544-3164. Acesse a literatura traduzida para seu idioma nativo no site da Banner em www.bannerengineering.com ou entre em contato diretamente com a Banner pelo telefone (763) 544-3164.

Türkçe

Bu cihazda sorun giderme işlemleri için Banner Engineering ile iletişime geçin. **Bu Banner cihazını onarmaya çalışmayın; cihaz sahada değiştirilebilir parça veya bileşen içermez.** Bir Banner Uygulama Mühendisi tarafından cihazın, cihazın bir parçasının veya bir cihaz bileşeninin kusurlu olduğu tespit edilirse, Banner RMA (İade Mal Yetkilendirme) prosedürü hakkında bilgilendirilirsiniz.

ÖNEMLİ: İade etmeniz istenirse, cihazı dikkatli bir şekilde paketleyin. İade nakliyesinde meydana gelecek hasarlar garanti kapsamında değildir.

Yerel Banner Engineering Corp distribütörünüzle iletişime geçerek veya doğrudan (763) 544-3164 numaralı telefondan Banner'ı arayarak ürün onarımlarıyla ilgili yardım alın. Ana dilinize çevrilmiş dokümanlara www.bannerengineering.com adresindeki Banner web sitesinden erişilebilir veya (763) 544-3164 numaralı telefondan doğrudan Banner ile iletişime geçebilirsiniz.

7.3 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.

7.4 Banner Engineering Corp Limited Warranty

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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