K100 Programmable Display Beacon with Modbus® Product Manual

Original Instructions
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1.1 Models 3

Chapter 1 Features

The K100 Programmable Display Beacon with Modbus 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
- Modbus® control allows access to full color and advanced animations
- 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
- Wireless communication facilitates remote monitoring and control

1.1 Models

Table 1. Model Key

Series	Style	Type	Voltage	Color	Control	Audible	Connector[1]
K100P	**D**	**BL**		**RGB**	**S**		**Q**
K100P = K100 Pro	D = Display	BL = Beacon Light	Blank = DC	RGB = Multicolor	S = Modbus	Blank = No Audible A = Audible	Q = Integral 4-pin M12 male quick-disconnect connector

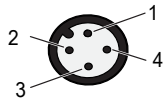
[1] Models with a quick-disconnect connector require a mating cordset.

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Chapter 2 Wiring

Table 2. Modbus Wiring

4-Pin Male M12 Pinout	Pinout Key and Wiring
	1. Brown - 12 V DC to 30 V DC 2. White - RS-485 (+) 3. Blue - DC Common 4. Black - RS-485 (-)

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Chapter 3 Modbus Register Map

3.1 Holding Register Column Definitions

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

3.2 Device Information

The following registers list the model name and other device-specific information.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
40605-40615	40606-40616	Banner Name		Banner Engineering	Yes	RO
40616-40631	40617-40632	Product Name		See Device	Yes	RO
40632	40633	Item H	Item Number is split into two 16-bit registers	See Device	Yes	RO
40633	40634	Item L		See Device	Yes	RO
40634	40635	Serial Number 1 (H)		See Device	Yes	RO
40635	40636	Serial Number 2		See Device	Yes	RO
40636	40637	Serial Number 3		See Device	Yes	RO
40637	40638	Serial Number 4 (L)		See Device	Yes	RO
40638	40639	Firmware PN H	230038 is split into two 16-bit registers	See Device	Yes	RO
40639	40640	Firmware PN L		See Device	Yes	RO
40640	40641	Firmware Version H		See Device	Yes	RO
40641	40642	Firmware Version L		See Device	Yes	RO

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
40642	40643	Firmware Build Number H		See Device	Yes	RO
40643	40644	Firmware Build Number L		See Device	Yes	RO
40644-40659	40645-40660	User-Defined Tag	User writable space	More Sensors. More Solutions.	Yes	RW

3.3 Modbus Configuration

Use these registers to configure Modbus communications.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
46100	46101	Address	1-254	1	Yes	RW
46101	46102	Baud Rate	96 = 9.6k 192 = 19.2k 384 = 38.4k	192	Yes	RW
46102	46103	Parity	0 = None 1 = Odd 2 = Even	0	Yes	RW
46103	46104	Stop Bits	1 = 1 Bit 2 = 2 Bits 3 = 1.5 Bits	1	Yes	RW

3.4 Operation Mode

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

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
42200	42201	Operation Mode	0 = Run Mode 1 = Message Mode 2 = Level Mode 3 = Timer Mode 4 = Counter Mode	0	Yes	RW

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3.4.1 Run Mode

Use one register to activate the defined device state. Use additional non-volatile registers to define color, intensity, animation, and display message.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42000	42001	Run Mode Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	No	RW	
42001	42002	Run Mode 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 = Daylight White 14 = Custom 1 15 = Custom 2	0	No	RW	
42002	42003	Run Mode Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	No	RW	
42003	42004	Run Mode Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	0	No	RW	
42004	42005	Run Mode Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	No	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42005	42006	Run Mode 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 = Daylight White 14 = Custom 1 15 = Custom 2	0	No	RW	
42006	42007	Run Mode Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	No	RW	
42007	42008	Run Mode Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	No	RW	For non-audible models, this register is part of the Run Mode String
42008	42009	Run Mode Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	No	RW	For non-audible models, this register is part of the Run Mode String

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42009-42023	42010-42024	Run Mode String	Example: Register 42009: 0x4241 (hex) = BA Register 42010: 0x4E4E (hex) = NN Register 42011: 0x4552 (hex) = ER	0x0000	No	RW	(15 words/ 30 Characters)

3.4.2 Message Mode

Use one register to activate the defined device state. Use additional non-volatile registers to define color, intensity, animation, and display saved messages.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42000	42001	Message Mode Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	No	RW	
42001	42002	Message Mode 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 = Daylight White 14 = Custom 1 15 = Custom 2	0	No	RW	
42002	42003	Message Mode Color 1 Intensity	0 = High 1 = Medium 2 = Low 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	Comments
42003	42004	Message Mode Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	0	No	RW	
42004	42005	Message Mode Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	No	RW	
42005	42006	Message Mode 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 = Daylight White 14 = Custom 1 15 = Custom 2	0	No	RW	
42006	42007	Message Mode Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	No	RW	
42007	42008	Message Mode Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	No	RW	For non-audible models, this register is Message Mode Message 2

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42008	42009	Message Mode Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	0	No	RW	For non-audible models, this register is Message Mode Message 1
42009	42010	Message Mode Message 1	0 = Message 0 (Blank) 1 = Message 1 2 = Message 2 3 = Message 3 4 = Message 4 5 = Message 5 6 = Message 6 7 = Message 7 8 = Message 8 9 = Message 9 10 = Message 10 11 = Message 11 12 = Message 12 13 = Message 13 14 = Message 14	0	No	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42010	42011	Message Mode Message 2	0 = Message 0 (Blank) 1 = Message 1 2 = Message 2 3 = Message 3 4 = Message 4 5 = Message 5 6 = Message 6 7 = Message 7 8 = Message 8 9 = Message 9 10 = Message 10 11 = Message 11 12 = Message 12 13 = Message 13 14 = Message 14	0	No	RW	

Message Mode Messages

Use the following registers to define each of the fifteen available messages.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42400-42415	42401-42416	Message 0 (BLANK)			Yes	RW	(16 words/ 32 characters)
42416-42431	42417-42432	Message 1		Reset	Yes	RW	(16 words/ 32 characters)
42432-42447	42432-42448	Message 2		Fault	Yes	RW	(16 words/ 32 characters)
42448-42463	42449-42464	Message 3		Stop	Yes	RW	(16 words/ 32 characters)
42464-42479	42465-42480	Message 4		Start	Yes	RW	(16 words/ 32 characters)
42480-42495	42481-42496	Message 5		Changeover	Yes	RW	(16 words/ 32 characters)
42496-42511	42497-42512	Message 6		Open	Yes	RW	(16 words/ 32 characters)
42512-42527	42513-42528	Message 7		Welcome	Yes	RW	(16 words/ 32 characters)
42528-42543	42529-42544	Message 8		Quality	Yes	RW	(16 words/ 32 characters)
42544-42559	42545-42590	Message 9		Warning	Yes	RW	(16 words/ 32 characters)
42560-42575	42561-42576	Message 10		Alarm	Yes	RW	(16 words/ 32 characters)

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42576-42591	42577-42592	Message 11		Break	Yes	RW	(16 words/ 32 characters)
42592-42607	42593-42608	Message 12		Run	Yes	RW	(16 words/ 32 characters)
42608-42623	42609-42624	Message 13		Maintenance	Yes	RW	(16 words/ 32 characters)
42624-42639	42625-42640	Message 14		Closed	Yes	RW	(16 words/ 32 characters)
42640-42655	42641-42656	Message 15		Material	Yes	RW	(16 words/ 32 characters)

3.4.3 Level Mode

Use Level Mode to display a level based on a scaled input value.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
42000	42001	Level Mode Value	0-65535	0	No	RW

Level Mode General Configuration

Use these registers to set the filter, labels, bar graph, and other settings of Level Mode.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42700	42701	Filter Level	0 = None 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42701	42702	Hysteresis Level	0 = None 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42702-42709	42703-42710	Level Mode Data Label		Time =	Yes	RW	(8 words/ 16 characters)
42710	42711	Level Mode Value	0 = Disabled 1 = Enabled	1	Yes	RW	
42711	42712	Level Mode Bar Graph	0 = Disabled 1 = Enabled	1	Yes	RW	
42712	42713	Output Scale Value Low	0-65535	0	Yes	RW	
42713	42714	Output Scale Value High	0-65535	10	Yes	RW	
42714	42715	Input Scale Value Low	0-65535	0	Yes	RW	
42715	42716	Input Scale Value High	0-65535	65535	Yes	RW	
42716-42717	42717-42718	Level Mode Value Label		s	Yes	RW	(2 words/4 characters)

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42718	42719	Level Mode Display Orientation	0 = 0 degrees 1 = 180 degrees 2 = 90 degrees 3 = 270 degrees	0	Yes	RW	
42719	42720	Level Mode Minimal Bar Graph	0 = Disabled 1 = Enabled	0	Yes	RW	
42720	42721	Level Mode Decimal Places	0-3	1	Yes	RW	
42721	42722	Level Mode Display As Time	0 = Disabled 1 = Enabled	0	Yes	RW	

Level Mode Base Configuration

Use these registers to set the colors, animations, and audible for Level Mode.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42722	42723	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42723-42738	42724-42739	Override String		Base	Yes	RW	(16 words/ 32 characters)
42739	42740	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	
42740	42741	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42741	42742	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42742	42743	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42743	42744	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	
42744	42745	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42745	42746	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42746	42747	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42747	42748	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

Level Mode Threshold 1 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42748	42749	Is Enabled	0 = Disabled 1 = Enabled	1	Yes	RW	
42749	42750	Percent	0-100	25	Yes	RW	
42750	42751	Type	0 = Less Than or Equal To 1 = Greater Than	0	Yes	RW	
42751	42752	Threshold Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42752	42753	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42753-42768	42754-42769	Override String		Thresh 1	Yes	RW	(16 words/ 32 characters)
42769	42770	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42770	42771	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42771	42772	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42772	42773	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42773	42774	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42774	42775	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42775	42776	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42776	42777	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42777	42778	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

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Level Mode Threshold 2 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42778	42779	Is Enabled	0 = Disabled 1 = Enabled	1	Yes	RW	
42779	42780	Percent	0-100	25	Yes	RW	
42780	42781	Type	0 = Less Than or Equal To 1 = Greater Than	0	Yes	RW	
42781	42782	Threshold Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42782	42783	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42783-42798	42784-42799	Override String		Thresh 1	Yes	RW	(16 words/ 32 characters)
42799	42800	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	
42800	42801	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42801	42802	Color 1 Intensity	0 = High 1 = Medium 2 = Low 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	Comments
42802	42803	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42803	42804	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	
42804	42805	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42805	42806	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42806	42807	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42807	42808	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

Level Mode Threshold 3 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42808	42809	Is Enabled	0 = Disabled 1 = Enabled	1	Yes	RW	
42809	42810	Percent	0-100	25	Yes	RW	
42810	42811	Type	0 = Less Than or Equal To 1 = Greater Than	0	Yes	RW	
42811	42812	Threshold Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42812	42813	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42813-42828	42814-42829	Override String		Thresh 1	Yes	RW	(16 words/ 32 characters)
42829	42830	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42830	42831	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42831	42832	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42832	42833	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42833	42834	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42834	42835	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42835	42836	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42836	42837	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42837	42838	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

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Level Mode Threshold 4 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42838	42839	Is Enabled	0 = Disabled 1 = Enabled	1	Yes	RW	
42839	42840	Percent	0-100	25	Yes	RW	
42840	42841	Type	0 = Less Than or Equal To 1 = Greater Than	0	Yes	RW	
42841	42842	Threshold Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42842	42843	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42843-42858	42844-42859	Override String		Thresh 1	Yes	RW	(16 words/ 32 characters)
42859	42860	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	
42860	42861	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42861	42862	Color 1 Intensity	0 = High 1 = Medium 2 = Low 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	Comments
42862	42863	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42863	42864	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	
42864	42865	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42865	42866	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42866	42867	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42867	42868	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

3.4.4 Timer Mode

Use these registers to set the inputs and value of Timer Mode.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
42000	42001	Run/Pause Input	0 = Off (Paused) 1 = On (Counting)	0	No	RW
42001	42002	Reset Input	0 = Off 1 = On	0	No	RW
42900	42901	Timer Value	0-65535		Yes	RW

Timer Mode Settings

Use these registers to set the units, direction, and reset of Timer Mode.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
42901	42902	Timer Unit Type	0 = Days 1 = Hours 2 = Minutes 3 = Seconds	0	Yes	RW
42902	42903	Timer Count Type	0 = Down 1 = Up	0	Yes	RW
42903	42904	Enable Auto Reset	0 = Disabled 1 = Enabled	0	Yes	RW

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Timer Mode General Configuration

Use these registers to set the filter, labels, bar graph, and other settings of Timer Mode.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42700	42701	Filter Level	0 = None 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42701	42702	Hysteresis Level	0 = None 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42702-42709	42703-42710	Timer Mode Data Label		Time =	Yes	RW	(8 words/ 16 characters)
42710	42711	Timer Mode Value	0 = Disabled 1 = Enabled	1	Yes	RW	
42711	42712	Timer Mode Bar Graph	0 = Disabled 1 = Enabled	1	Yes	RW	
42712	42713	Output Scale Value Low	0-65535	0	Yes	RW	
42713	42714	Output Scale Value High	0-65535	10	Yes	RW	
42714	42715	Input Scale Value Low	0-65535	0	Yes	RW	
42715	42716	Input Scale Value High	0-65535	65535	Yes	RW	
42716-42717	42717-42718	Timer Mode Value Label		s	Yes	RW	(2 words/4 characters)
42718	42719	Timer Mode Display Orientation	0 = 0 degrees 1 = 180 degrees 2 = 90 degrees 3 = 270 degrees	0	Yes	RW	
42719	42720	Timer Mode Minimal Bar Graph	0 = Disabled 1 = Enabled	0	Yes	RW	
42720	42721	Timer Mode Decimal Places	0-3	1	Yes	RW	
42721	42722	Timer Mode Display As Time	0 = Disabled 1 = Enabled	0	Yes	RW	

Timer Mode Base Configuration

Use these registers to set the colors, animations, and audible of Timer Mode.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42722	42723	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42723-42738	42724-42739	Override String		Base	Yes	RW	(16 words/ 32 characters)

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42739	42740	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	
42740	42741	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42741	42742	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42742	42743	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42743	42744	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42744	42745	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42745	42746	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42746	42747	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42747	42748	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

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Timer Mode Threshold 1 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42748	42749	Is Enabled	0 = Disabled 1 = Enabled	1	Yes	RW	
42749	42750	Percent	0-100	25	Yes	RW	
42750	42751	Type	0 = Less Than or Equal To 1 = Greater Than	0	Yes	RW	
42751	42752	Threshold Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42752	42753	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42753-42768	42754-42769	Override String		Thresh 1	Yes	RW	(16 words/ 32 characters)
42769	42770	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	
42770	42771	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42771	42772	Color 1 Intensity	0 = High 1 = Medium 2 = Low 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	Comments
42772	42773	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42773	42774	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	
42774	42775	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42775	42776	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42776	42777	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42777	42778	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

Timer Mode Threshold 2 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42778	42779	Is Enabled	0 = Disabled 1 = Enabled	1	Yes	RW	
42779	42780	Percent	0-100	25	Yes	RW	
42780	42781	Type	0 = Less Than or Equal To 1 = Greater Than	0	Yes	RW	
42781	42782	Threshold Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42782	42783	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42783-42798	42784-42799	Override String		Thresh 1	Yes	RW	(16 words/ 32 characters)
42799	42800	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42800	42801	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42801	42802	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42802	42803	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42803	42804	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42804	42805	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42805	42806	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42806	42807	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42807	42808	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

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Timer Mode Threshold 3 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42808	42809	Is Enabled	0 = Disabled 1 = Enabled	1	Yes	RW	
42809	42810	Percent	0-100	25	Yes	RW	
42810	42811	Type	0 = Less Than or Equal To 1 = Greater Than	0	Yes	RW	
42811	42812	Threshold Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42812	42813	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42813-42828	42814-42829	Override String		Thresh 1	Yes	RW	(16 words/ 32 characters)
42829	42830	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	
42830	42831	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42831	42832	Color 1 Intensity	0 = High 1 = Medium 2 = Low 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	Comments
42832	42833	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42833	42834	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	
42834	42835	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42835	42836	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42836	42837	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42837	42838	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

Timer Mode Threshold 4 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42838	42839	Is Enabled	0 = Disabled 1 = Enabled	1	Yes	RW	
42839	42840	Percent	0-100	25	Yes	RW	
42840	42841	Type	0 = Less Than or Equal To 1 = Greater Than	0	Yes	RW	
42841	42842	Threshold Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42842	42843	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42843-42858	42844-42859	Override String		Thresh 1	Yes	RW	(16 words/ 32 characters)
42859	42860	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42860	42861	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42861	42862	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42862	42863	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42863	42864	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42864	42865	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42865	42866	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42866	42867	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42867	42868	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

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3.4.5 Counter Mode

Use Counter Mode to count up or down from a value based on an input signal.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42000	42001	Count Increment Input	0 = Off, 1 = Count Up (Pulse)	0	No	RW	Must be pulsed
42001	42002	Count Decrement Input	0 = Off, 1 = Count Down (Pulse)	0	No	RW	Must be pulsed
42002	42003	Reset Input	0 = Off, 1 = Reset Count	0	No	RW	
43000	43001	Count Value			No	RO	Combined into a 32-bit floating-point value output
43001	43002	Count Value			No	RO	

Counter Mode General Configuration

Use these registers to set the labels, filtering, bar graph, and other settings of Counter Mode.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42700	42701	Filter Level	0 = None 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42701	42702	Hysteresis Level	0 = None 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42702-42709	42703-42710	Counter Mode Data Label		Time =	Yes	RW	(8 words/ 16 characters)
42710	42711	Counter Mode Value	0 = Disabled 1 = Enabled	1	Yes	RW	
42711	42712	Counter Mode Bar Graph	0 = Disabled 1 = Enabled	1	Yes	RW	
42712	42713	Output Scale Value Low	0-65535	0	Yes	RW	
42713	42714	Output Scale Value High	0-65535	10	Yes	RW	
42714	42715	Input Scale Value Low	0-65535	0	Yes	RW	
42715	42716	Input Scale Value High	0-65535	65535	Yes	RW	
42716-42717	42717-42718	Counter Mode Value Label		s	Yes	RW	(2 words/4 characters)
42718	42719	Counter Mode Display Orientation	0 = 0 degrees 1 = 180 degrees 2 = 90 degrees 3 = 270 degrees	0	Yes	RW	
42719	42720	Counter Mode Minimal Bar Graph	0 = Disabled 1 = Enabled	0	Yes	RW	
42720	42721	Counter Mode Decimal Places	0-3	1	Yes	RW	
42721	42722	Counter Mode Display As Time	0 = Disabled 1 = Enabled	0	Yes	RW	

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Counter Mode Base Configuration

Use these registers to set the color, animations, and audible of the Counter Mode.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42722	42723	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42723-42738	42724-42739	Override String		Base	Yes	RW	(16 words/ 32 characters)
42739	42740	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	
42740	42741	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42741	42742	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42742	42743	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42743	42744	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	
42744	42745	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42745	42746	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42746	42747	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42747	42748	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

Counter Mode Threshold 1 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42748	42749	Is Enabled	0 = Disabled 1 = Enabled	1	Yes	RW	
42749	42750	Percent	0-100	25	Yes	RW	
42750	42751	Type	0 = Less Than or Equal To 1 = Greater Than	0	Yes	RW	
42751	42752	Threshold Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42752	42753	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42753-42768	42754-42769	Override String		Thresh 1	Yes	RW	(16 words/ 32 characters)
42769	42770	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42770	42771	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42771	42772	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42772	42773	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42773	42774	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42774	42775	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42775	42776	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42776	42777	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42777	42778	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

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Counter Mode Threshold 2 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42778	42779	Is Enabled	0 = Disabled 1 = Enabled	1	Yes	RW	
42779	42780	Percent	0-100	25	Yes	RW	
42780	42781	Type	0 = Less Than or Equal To 1 = Greater Than	0	Yes	RW	
42781	42782	Threshold Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42782	42783	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42783-42798	42784-42799	Override String		Thresh 1	Yes	RW	(16 words/ 32 characters)
42799	42800	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	
42800	42801	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42801	42802	Color 1 Intensity	0 = High 1 = Medium 2 = Low 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	Comments
42802	42803	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42803	42804	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	
42804	42805	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42805	42806	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42806	42807	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42807	42808	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

Counter Mode Threshold 3 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42808	42809	Is Enabled	0 = Disabled 1 = Enabled	1	Yes	RW	
42809	42810	Percent	0-100	25	Yes	RW	
42810	42811	Type	0 = Less Than or Equal To 1 = Greater Than	0	Yes	RW	
42811	42812	Threshold Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42812	42813	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42813-42828	42814-42829	Override String		Thresh 1	Yes	RW	(16 words/ 32 characters)
42829	42830	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42830	42831	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42831	42832	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42832	42833	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42833	42834	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42834	42835	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42835	42836	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42836	42837	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	
42837	42838	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

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Counter Mode Threshold 4 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42838	42839	Is Enabled	0 = Disabled 1 = Enabled	1	Yes	RW	
42839	42840	Percent	0-100	25	Yes	RW	
42840	42841	Type	0 = Less Than or Equal To 1 = Greater Than	0	Yes	RW	
42841	42842	Threshold Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42842	42843	Display Override	0 = Disabled 1 = Enabled	0	Yes	RW	
42843-42858	42844-42859	Override String		Thresh 1	Yes	RW	(16 words/ 32 characters)
42859	42860	Animation	0 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	0	Yes	RW	
42860	42861	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42861	42862	Color 1 Intensity	0 = High 1 = Medium 2 = Low 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	Comments
42862	42863	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW	
42863	42864	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = SOS 4 = Random	0	Yes	RW	
42864	42865	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 = Daylight White 14 = Custom 1 15 = Custom 2	0	Yes	RW	
42865	42866	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW	
42866	42867	Audible Volume	0 = Off 1 = Low 2 = Medium 3 = High	0	Yes	RW	

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42867	42868	Audible Type	0 = Pulse 1 = Wobble 2 = Strobe 4 = Whoop 5 = Stacatto 6 = Siren 8 = Continuous 1 9 = Continuous 2 16 = Jingle 17 = Melody 1 18 = Melody 2 19 = Melody 3 20 = Custom	8	Yes	RW	

3.5 Display Settings

Use these registers to set the general Display Settings for the device.

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
42300	42301	Text Color	0 = White 1 = Black	0	Yes	RW
42301	42302	Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0	Yes	RW
42302	42303	Scroll Direction	0 = Away From Connector 1 = Towards Connector	0	Yes	RW
42303	42304	Scroll Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	1	Yes	RW
42304	42305	Mirrored Text	0 = Disable 1 = Enabled			
42305	42306	Scroll Mode	0 = Auto 1 = On 2 = Off			
42306	42307	Orientation	0 = 0 Degrees 1 = 180 Degrees 2 = 90 Degrees 3 = 270 Degrees			

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
42307	42308	Justification	0 = Left 1 = Right 2 = Center	0	Yes	RW

3.6 Custom Settings

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access	Comments
42904	42905	Custom Intensity	0-100	100	RW	Yes	
42905	42906	Custom Flash Rate (dHz)	1-255	10	RW	Yes	
42906	42907	Custom Display Intensity	0-100	100	RW	Yes	
42907	42908	Custom Display Scroll Speed	0-255	15	RW	Yes	
42308	42309	Deadspace Enable	0 = Disabled 1 = Enabled	0	RW	Yes	
42309	42310	Repeat Display Value	0 = Disabled 1 = Enabled	0	RW	Yes	
42310	42311	Deadspace Value	0 to 77	0	RW	Yes	This value is the number of columns that remain off at the end of the display

3.6.1 Custom Color 1 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
42908	42909	Custom Color 1 Red	0-255	255	RW	Yes
42909	42910	Custom Color 1 Green	0-255	255	RW	Yes
42910	42911	Custom Color 1 Blue	0-255	255	RW	Yes

3.6.2 Custom Color 2 Configuration

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
42911	42912	Custom Color 2 Red	0-255	255	RW	Yes
42912	42913	Custom Color 2 Green	0-255	255	RW	Yes
42913	42914	Custom Color 2 Blue	0-255	255	RW	Yes

3.6.3 Custom Audio Settings

Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
42914	42915	Type	0 = Beep 1 = Sweep 2 = Tone	0	Yes	RW

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Base 0 Address	Base 1 Address	Description	Holding Register Representation	Default Value	Saved	Access
42915	42916	Sweep Type	0 = Up 1 = Down 2 = Up Down 3 = Down Up	0	Yes	RW
42916	42917	Frequency 1	0 = Off 1 = Low 2 = Standard 3 = High	0	Yes	RW
42917	42918	Frequency 2	0 = Off 1 = Low 2 = Standard 3 = High	0	Yes	RW

3.7 Factory Reset

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
46600	46601	Factory Reset	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	0	RW	Yes	Restores configuration to factory settings when 1 is written

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Chapter Contents

4.1 FCC Part 15 Class B for Unintentional Radiators 57
4.2 Industry Canada ICES-003(B) 57
4.3 Dimensions 58

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 µA

Indicator Response Time
On response: 325 ms (max)

Off response: 20 ms (max)

Connections
Integral 4-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
Run Mode: 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.

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

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Indicator Characteristics

Color	Dominant Wavelength (nm) or Color Temperature (CCT)	Color Coordinates[2]		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

4.1 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.

4.2 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.

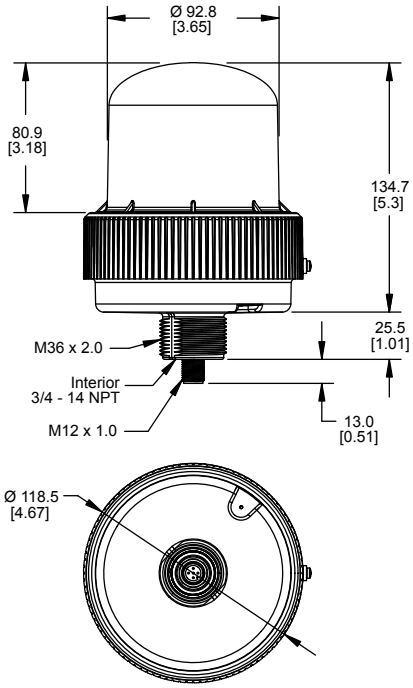
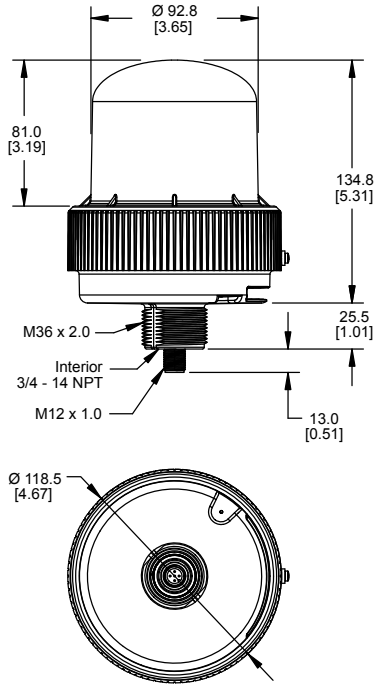
Cet appareil est conforme à la norme NMB-3(B). Le fonctionnement est soumis aux deux conditions suivantes : (1) ce dispositif ne peut pas occasionner d'interférences, et (2) il doit tolérer toute interférence, y compris celles susceptibles de provoquer un fonctionnement non souhaité du dispositif.

[2] Refer to CIE 1931 chromaticity diagram or color chart, to show equivalent color with indicated color coordinates. Actual coordinates may differ by 10%.

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4.3 Dimensions

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

Standard Models	Audible Models
	

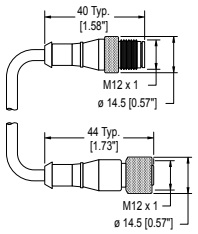
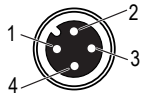
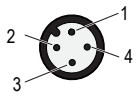
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5.2 Brackets 59
5.3 Elevated Mount System 60

Chapter 5 Accessories

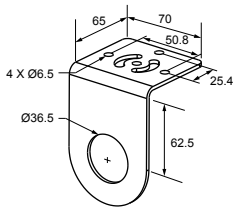
5.1 Cordsets

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

5.2 Brackets

LMB36RA

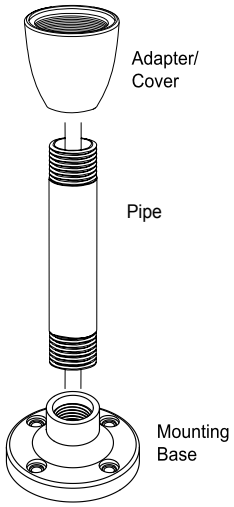
- Indicator light right-angle mounting
- 36 mm mounting hole
- Stainless steel



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5.3 Elevated Mount System

Table 3. Elevated Mount System (1/2" Pipes)

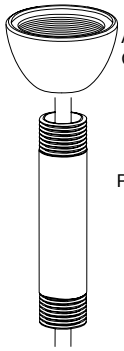


Adapter/Cover Model	Description
SA-M36E12	• Adapter from M36 thread to ½-14 NPSM thread • Streamlined black plastic mounting base adapter/cover • Drilled hole

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
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	

Mounting Base Model	Description
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

Table 4. Elevated Mount System (3/4" Pipes)



Adapter/Cover Model	Description
SA-M36SOP	• M36 thread adapter with clearance for ¾ pipe mount • Streamlined black plastic mounting base adapter/cover • Drilled hole

Black Anodized Aluminum, ¾ in. NPT Pipe Models	Description
SOP-E34-150A, 150 mm (6 in) long	• Elevated-use stand-off pipe • Threaded at both ends • Compatible with most industrial environments
SOP-E34-300A, 300 mm (12 in) long	
SOP-E34-600A, 600 mm (24 in) long	
SOP-E34-900A, 900 mm (36 in) long	

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Chapter 6 Product Support and Maintenance

6.1 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
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

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Unicode Code Point	Character	UTF-8 (hex.)	Name
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
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

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Unicode Code Point	Character	UTF-8 (hex.)	Name
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	SUPERSCRIPT TWO
U+00B3	³	c2 b3	SUPERSCRIPT THREE
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

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Unicode Code Point	Character	UTF-8 (hex.)	Name
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
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

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6.2 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.

6.3 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.

6.4 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.

6.5 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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