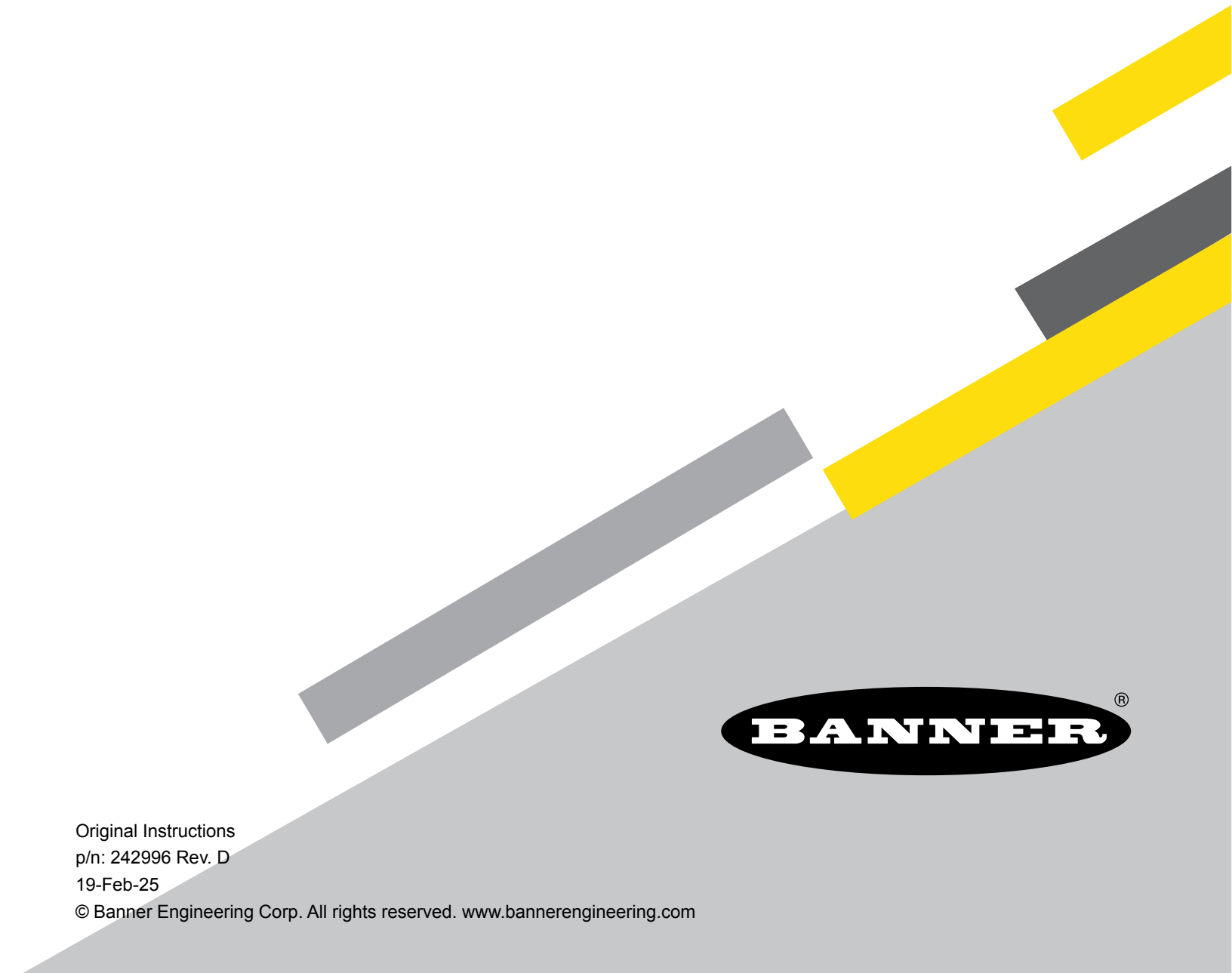
SD50 with Modbus® Status Display Product Manual



Original Instructions
p/n: 242996 Rev. D
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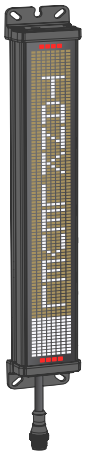
Contents

Chapter Contents

Chapter 1 Features

Provide More Status Information in the Most Helpful Locations



- Easily configurable, versatile display can be installed nearly anywhere, making it a simple yet powerful alternative to complex HMIs and other displays
- Great for displaying takt time, equipment status, assembly sequences, counts, and measurements where they are most useful
- Discrete and IO-Link models integrate into many different systems and applications, especially Banner sensing, safety, and monitoring solutions
- Quick and easy configuration—simply define the desired text and call it via discrete control or process data
- Bright white LED display and multicolored status LEDs legible from 10 meters away inform operators about exactly what is going on so they can respond quickly and accurately
- IP65-rated polycarbonate housing resists impact and condensation to provide clear communication in challenging and changing environmental conditions

1.1 Models

Table 1. Model Key

Series	Height	Style	Display Length	Display Text Color	Control	Connector[1]
SD	50	P	300	W	S	QP
Status Display	50 mm height	P = Pro	300 = 300 mm	W = White	S = Modbus®	QP = 150 mm (6 in) PVC-jacketed cable with a 4-pin M12 male quick-disconnect connector

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

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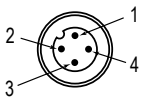
Chapter 2 Wiring

Table 2. SD50 with 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 (-)

Chapter Contents

Chapter 3 Holding Registers

3.1 Modbus Configuration

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
46100	46101	Address	1-254	1-254	1	RW	Yes	
46101	46102	Baud Rate	96 = 9.6k 192 = 19.2k 384 = 38.4k	96 = 9.6k 192 = 19.2k 384 = 38.4k	192	RW	Yes	
46102	46103	Parity	0 = None 1 = Odd 2 = Even	0 = None 1 = Odd 2 = Even	0	RW	Yes	
46103	46104	Stop Bits	1 = 1 Bit 2 = 2 Bits 3 = 1.5 Bits	1 = 1 Bit 2 = 2 Bits 3 = 1.5 Bits	1	RW	Yes	

3.2 Device Information

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
40605-40615	40606-40616	Banner Name	0..65535		Banner Engineering	RO		(10 words/20 Characters)
40616-40631	40617-40632	Product Name	0..65535		SD50P300WS[QP] [Q2PS]	RO		(16 words/32 Characters)
40632	40633	Item H	0..65535	Item Number Split into two 16-bit registers		RO		Banner Item Number
40633	40634	Item L	0..65535			RO		
40634	40635	Serial Number 1 (H)	0..65535			RO		Serial Number
40635	40636	Serial Number 2	0..65535			RO		
40636	40637	Serial Number 3	0..65535			RO		
40637	40638	Serial Number 4 (L)	0..65535			RO		
40638	40639	Firmware PN H	0..65535	230038 Split into two 16-bit registers	3	RO		
40639	40640	Firmware PN L	0..65535		33430	RO		
40640	40641	Firmware Version H	0..65535			RO		

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
40641	40642	Firmware Version L	0..65535			RO		
40642	40643	Firmware Build Number H	0..65535			RO		Build
40643	40644	Firmware Build Number L	0..65535			RO		
40644-40659	40645-40660	User Define Tag	0..65535	User writable space	More Sensors. More Solutions.	RW		(16 words/32 Characters), NV

3.3 Run Mode Configuration

Use Run Mode to configure the text, indicator colors, and animations of the output.

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
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 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	Off	RW	No	
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 = 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	Green	RW	No	
42002	42003	Run Mode Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	No	

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42003	42004	Run Mode Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	0 = Slow 1 = Standard 2 = Fast 3 = Custom	Slow	RW	No	
42004	42005	Run Mode Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	Normal	RW	No	
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 = 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	Green	RW	No	
42006	42007	Run Mode Color 2 Intensity	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	0 = High 1 = Low 2 = Medium 3 = Off 4 = Custom	High	RW	No	
42007-42022	72008-42023	Run Mode String				RW	No	(15 words/30 Characters)

3.4 Message Mode Configuration

Use Message Mode to configure and save the text, indicator colors, and animations of the fifteen display messages.

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
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 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	Off	RW	No	

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
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 = 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	Green	RW	No	
42002	42003	Message Mode Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	No	
42003	42004	Message Mode Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	0 = Slow 1 = Standard 2 = Fast 3 = Custom	Slow	RW	No	
42004	42005	Message Mode Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	Normal	RW	No	
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 = 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	Green	RW	No	

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42006	42007	Message Mode Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	No	
42007	42008	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 15 = Message 15	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 15 = Message 15	Message 0 (Blank)	RW	No	
42008	42009	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 15 = Message 15	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 15 = Message 15	Message 0 (Blank)	RW	No	

3.5 Level Mode Configuration

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

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42000	42001	Level Mode Value	0-65535		0	RW	No	

3.6 Timer Mode Configuration

Use Timer Mode to count up to or down from a determined value. Register 42713 in General Configuration needs to be set to 65535 to use this mode.

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42000	42001	Run/Pause Input	0 = Off (Paused) 1 = On (Counting)	0 = Off 1 = On	Off	RW	No	
42001	42002	Reset Input	0 = Off 1 = On	0 = Off 1 = On	Off	RW	No	

3.7 Counter Mode Configuration

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

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42000	42001	Count Increment Input	0 = Off 1 = Count Up (Pulse)	0 = Off 1 = Count Up (Pulse)	Off	RW	No	Must be pulsed
42001	42002	Count Decrement Input	0 = Off 1 = Count Up (Pulse)	0 = Off 1 = Count Up (Pulse)	Off	RW	No	Must be pulsed
42002	42003	Reset Input	0 = Off 1 = Reset Count	0 = Off 1 = Reset Count	Off	RW	No	

3.8 Mode

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42200	42201	Mode	0 = Run Mode 1 = Message Mode 2 = Level Mode 3 = Timer Mode 4 = Counter Mode	0 = Run Mode 1 = Message Mode 2 = Level Mode 3 = Timer Mode 4 = Counter Mode	Run Mode	RW	Yes	

3.9 Display Settings

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42300	42301	Text Color	0 = White 1 = Black	0 = White 1 = Black	White	RW	Yes	
42301	42302	Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	Yes	

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42302	42303	Scroll Direction	0 = Towards Connector 1 = Away From Connector	0 = Towards Connector 1 = Away From Connector	Towards Connector	RW	Yes	
42303	42304	Scroll Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	0 = Slow 1 = Standard 2 = Fast 3 = Custom	Standard	RW	Yes	
42304	42305	Mirrored	0 = Not Mirrored 1 = Mirrored	0 = Not Mirrored 1 = Mirrored	Not Mirrored	RW	Yes	
42305	42306	Scroll Mode	0 = Auto 1 = On 2 = Off	0 = Auto 1 = On 2 = Off	Auto	RW	Yes	
42306	42307	Orientation	0 = 0 degrees 1 = 180 degrees 2 = 90 degrees 3 = 270 degrees	0 = 0 degrees 1 = 180 degrees 2 = 90 degrees 3 = 270 degrees	0 degrees	RW	Yes	
42307	42308	Justification	0 = Left 1 = Right 2 = Center	0 = Left 1 = Right 2 = Center	Left	RW	Yes	

3.10 Message Mode Messages

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42400-42415	42401-41416	Message 0 (BLANK)				RW	Yes	(16 words/32 characters)
42416-42431	42417-42432	Message 1			Reset	RW	Yes	(16 words/32 characters)
42432-42447	42433-42448	Message 2			Fault	RW	Yes	(16 words/32 characters)
42448-42463	42449-42464	Message 3			Stop	RW	Yes	(16 words/32 characters)
42464-42479	42465-42480	Message 4			Start	RW	Yes	(16 words/32 characters)
42480-42495	42481-42496	Message 5			Changeover	RW	Yes	(16 words/32 characters)
42496-42511	42497-42512	Message 6			Open	RW	Yes	(16 words/32 characters)
42512-42527	42513-42528	Message 7			Welcome	RW	Yes	(16 words/32 characters)
42528-42543	42529-42544	Message 8			Quality	RW	Yes	(16 words/32 characters)
42544-42559	42545-42560	Message 9			Warning	RW	Yes	(16 words/32 characters)
42560-42575	42561-42576	Message 10			Alarm	RW	Yes	(16 words/32 characters)
42576-42591	42577-42592	Message 11			Break	RW	Yes	(16 words/32 characters)
42592-42607	42593-42608	Message 12			Run	RW	Yes	(16 words/32 characters)
42608-42612	42609-42613	Message 13			Maintenance	RW	Yes	(16 words/32 characters)
42624-42639	42625-42640	Message 14			Closed	RW	Yes	(16 words/32 characters)
42640-42655	42641-42656	Message 15			Material	RW	Yes	(16 words/32 characters)

3.11 Level, Timer, and Counter Mode Registers

The following registers apply to Level Mode, Timer Mode, or Counter Mode.

3.11.1 General Configuration

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42700	42701	Filter Level	0 = None 1 = Low 2 = Medium 3 = High	0 = None 1 = Low 2 = Medium 3 = High	None	RW	Yes	
42701	42702	Hysteresis Level	0 = None 1 = Low 2 = Medium 3 = High	0 = None 1 = Low 2 = Medium 3 = High	None	RW	Yes	
42702-42709	42703-42710	Data Label			Time =	RW	Yes	(8 words/16 characters)
42710	42711	Display Value Enable	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Enabled	RW	Yes	
42711	42712	Display Bar Graph Enable	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Enabled	RW	Yes	
42712	42713	Output Scale Value Low	0-65535		0	RW	Yes	
42713	42714	Output Scale Value High	0-65535		10	RW	Yes	The upper value that the timer counts to
42714	42715	Input Scale Value Low	0-65535		0	RW	Yes	
42715	42716	Input Scale Value High	0-65535		65535	RW	Yes	The value needs to be set to 65535 when using Timer Mode
42716-42717	42717-42718	Value Label			s	RW	Yes	(2 words/4 characters)
42718	42719	Bar Graph Orientation	0 = 0 degrees 1 = 180 degrees 2 = 90 degrees 3 = 270 degrees	0 = 0 degrees 1 = 180 degrees 2 = 90 degrees 3 = 270 degrees	0 degrees	RW	Yes	
42719	42720	Minimal Bar Graph Enable	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Disabled	RW	Yes	
42720	42721	Decimal Places	0-3	0-3	1	RW	Yes	
42721	42722	Display As Time Enable	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Disabled	RW	Yes	

3.11.2 Base Configuration

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42722	42723	Display Override	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Disabled	RW	Yes	
42723-42738	42724-42739	Override String			Base	RW	Yes	(16 words/32 characters)

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
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 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	Off	RW	Yes	
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 = 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	Green	RW	Yes	
42741	42742	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	Yes	
42742	42743	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	0 = Slow 1 = Standard 2 = Fast 3 = Custom	Standard	RW	Yes	
42743	42744	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	Normal	RW	Yes	

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
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 = 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	Green	RW	Yes	
42745	42746	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	Yes	

3.11.3 Threshold 1 Configuration

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42748	42749	Is Enabled	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Enabled	RW	Yes	
42749	42750	Percent	0-100		25	RW	Yes	
42750	42751	Type	0 = Less Than or Equal To 1 = Greater Than	0 = Less Than or Equal To 1 = Greater Than	Less Than or Equal To	RW	Yes	
42751	42752	Threshold Override	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Disabled	RW	Yes	
42752	42753	Display Override	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Disabled	RW	Yes	
42753-42768	42754-42769	Override String			Thresh 1	RW	Yes	(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 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	Off	RW	Yes	

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
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 = 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	Green	RW	Yes	
42771	42772	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	Yes	
42772	42773	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	0 = Slow 1 = Standard 2 = Fast 3 = Custom	Standard	RW	Yes	
42773	42774	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	Normal	RW	Yes	
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 = 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	Green	RW	Yes	

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42775	42776	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	Yes	

3.11.4 Threshold 2 Configuration

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42778	42779	Is Enabled	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Enabled	RW	Yes	
42779	42780	Percent	0-100		50	RW	Yes	
42780	42781	Type	0 = Less Than or Equal To 1 = Greater Than	0 = Less Than or Equal To 1 = Greater Than	Less Than or Equal To	RW	Yes	
42781	42782	Threshold Override	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Disabled	RW	Yes	
42782	42783	Display Override	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Disabled	RW	Yes	
42783-42798	42784-42799	Override String			Thresh 2	RW	Yes	(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 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	Off	RW	Yes	
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 = 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	Green	RW	Yes	

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42801	42802	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	Yes	
42802	42803	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	0 = Slow 1 = Standard 2 = Fast 3 = Custom	Standard	RW	Yes	
42803	42804	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	Normal	RW	Yes	
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 = 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	Green	RW	Yes	
42805	42806	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	Yes	

3.11.5 Threshold 3 Configuration

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42808	42809	Is Enabled	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Enabled	RW	Yes	
42809	42810	Percent	0-100		75	RW	Yes	
42810	42811	Type	0 = Less Than or Equal To 1 = Greater Than	0 = Less Than or Equal To 1 = Greater Than	Less Than or Equal To	RW	Yes	
42811	42812	Threshold Override	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Disabled	RW	Yes	
42812	42813	Display Override	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Disabled	RW	Yes	

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42813-42828	42814-42829	Override String			Thresh 3	RW	Yes	(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 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	Off	RW	Yes	
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 = 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	Green	RW	Yes	
42831	42832	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	Yes	
42832	42833	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	0 = Slow 1 = Standard 2 = Fast 3 = Custom	Standard	RW	Yes	
42833	42834	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	Normal	RW	Yes	

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
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 = 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	Green	RW	Yes	
42835	42836	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	Yes	

3.11.6 Threshold 4 Configuration

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42838	42839	Is Enabled	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Enabled	RW	Yes	
42839	42840	Percent	0-100		100	RW	Yes	
42840	42841	Type	0 = Less Than or Equal To 1 = Greater Than	0 = Less Than or Equal To 1 = Greater Than	Less Than or Equal To	RW	Yes	
42841	42842	Threshold Override	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Disabled	RW	Yes	
42842	42843	Display Override	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Disabled	RW	Yes	
42843-42858	42844-42859	Override String			Thresh 4	RW	Yes	(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 = Off 1 = Steady 2 = Flash 3 = Two Color Flash 4 = 50/50 5 = 50/50 Flash 6 = Intensity Sweep 7 = Two Color Sweep	Off	RW	Yes	

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
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 = 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	Green	RW	Yes	
42861	42862	Color 1 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	Yes	
42862	42863	Speed	0 = Slow 1 = Standard 2 = Fast 3 = Custom	0 = Slow 1 = Standard 2 = Fast 3 = Custom	Standard	RW	Yes	
42863	42864	Pattern	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	0 = Normal 1 = Strobe 2 = 3-Pulse 3 = Random	Normal	RW	Yes	
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 = 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	Green	RW	Yes	

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Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42865	42866	Color 2 Intensity	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	0 = High 1 = Medium 2 = Low 3 = Off 4 = Custom	High	RW	Yes	

3.12 Timer Mode Settings

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
42900	42901	Timer Value	0-65535		10	RW	Yes	The value of this register determines how many seconds the timer takes to count to the Output Scale Value High (Register 42713 in General Configuration)
42901	42902	Timer Unit Type	0 = Seconds 1 = Deciseconds 2 = Centiseconds 3 = Milliseconds	0 = Seconds 1 = Deciseconds 2 = Centiseconds 3 = Milliseconds	Seconds	RW	Yes	
42902	42903	Timer Count Type	0 = Down 1 = Up	0 = Down 1 = Up	Up	RW	Yes	
42903	42904	Enable Auto Reset	0 = Disabled 1 = Enabled	0 = Disabled 1 = Enabled	Disabled	RW	Yes	

3.13 Custom Settings

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
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	1-255		15	RW	Yes	

3.14 Custom Color 1 Configuration

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
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	

3.15 Custom Color 2 Configuration

Modbus Register Address	Address with Offset	Description	I/O Range	Comments	Default	Access	Saved	Notes
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	

3.16 Restore Factory Defaults

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

Chapter Contents

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

260 mA max. at 24 V DC

210 mA max. at 30 V DC

Connections
150 mm (6 in) PVC-jacketed cable with a 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
–20 °C to +50 °C (–4 °F to +122 °F)

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

Environmental Rating
Rated IP65

Suitable for damp locations per UL 2108

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)

Construction
Black polycarbonate housing and end caps

Internal silicone-encapsulated LEDs

Smoky polycarbonate window

Character Limit
Run Mode: 29 characters

All other Modes: 32 characters

Required Overcurrent Protection

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

Overcurrent protection is required to be provided by end product application per the supplied table.

Overcurrent protection may be provided with external fusing or via Current Limiting, Class 2 Power Supply.

Supply wiring leads < 24 AWG shall not be spliced.

For additional product support, go to www.bannerengineering.com.

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

Mounting
M5 and 1/4-20 compatible end caps (not included)

Clip brackets for mounting are available

4.1 FCC Part 15 Class A for Unintentional Radiators

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

(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.

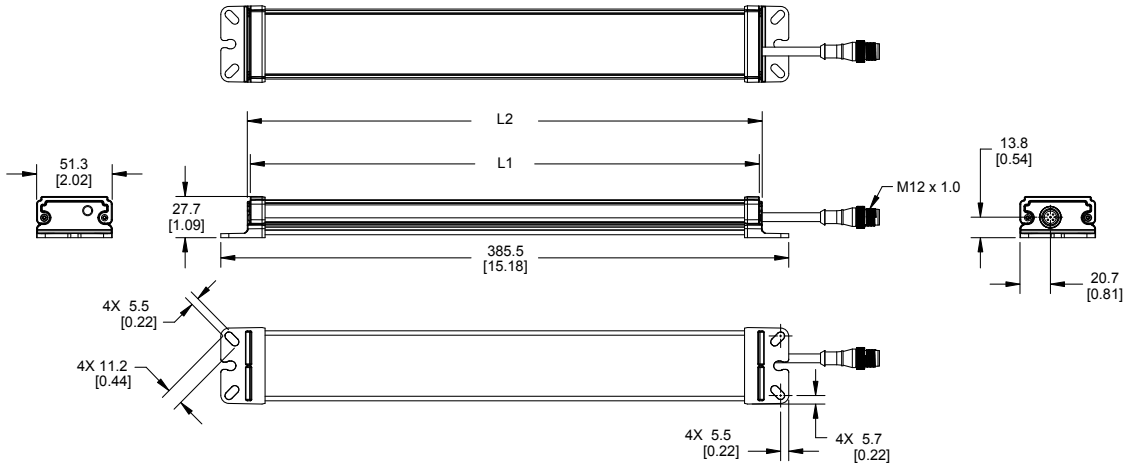
4.2 Industry Canada ICES-003(A)

This device complies with CAN ICES-3 (A)/NMB-3(A). 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(A). 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.

4.3 Dimensions

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

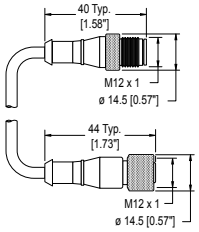
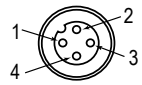
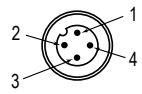


Models	L1	L2
SD50..300..	300 mm (11.81 in)	325 mm (12.8 in)

Chapter Contents

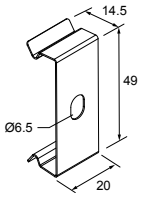
Chapter 5 Accessories

5.1 Cordsets

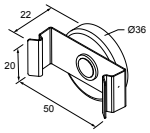
4-pin A-Code Double-Ended M12 Female to M12 Male Cordsets				
Model	**Length**	**Dimensions (mm)**	**Pinouts**	
BC-M12F4-M12M4-22-1	1 m (3.28 ft)		Female  Male 	1 = Brown 2 = White 3 = Blue 4 = Black
BC-M12F4-M12M4-22-2	2 m (6.56 ft)			
BC-M12F4-M12M4-22-5	5 m (16.4 ft)			
BC-M12F4-M12M4-22-8	8 m (26.25 ft)			
BC-M12F4-M12M4-22-10	10 m (30.81 ft)			
BC-M12F4-M12M4-22-15	15 m (49.2 ft)			

5.2 Mounting Brackets

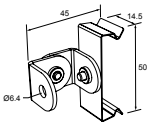
LMBSD50
- Metal mounting bracket kit
- Hardware included



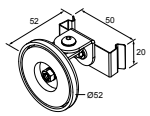
LMBSD50MAG
- Magnetic mounting bracket kit
- Up to 7.26 kg (16 lb) pull
- Hardware included



LMBSD50-180S
- Metal mounting bracket kit with 180-degree rotation
- Stainless steel
- Hardware included



LMBSD50-180SMAG
- Magnetic mounting bracket kit with 180-degree rotation
- Stainless steel
- Up to 7.26 kg (16 lb) pull
- Hardware included



Chapter Contents

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

6.2 Clean with Mild Detergent and Water

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

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

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

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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