EZ-LIGHT K50 Modbus Series Special Product Model: K50MLDGRY-88107

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Datasheet
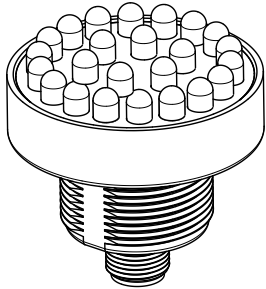
Modbus Registers

The EZ-LIGHT uses the holding registers table for providing read/write access to configuration data. The holding registers are defined in the 40000-49999 address range.

The input registers table is used for providing read-only access to system status data. The input registers are defined in the 30000-39999 address range. EZ-Light employs a direct addressing scheme. For example, the input register at address 30000 is accessed by reading address 30000 (0x7530) directly; the starting address is not an offset.

Supported Modbus Functions

Functions	Output Status
03	Reading holding registers
04	Read input registers
06	Write single registers
08	See *Diagnostics, Function 8 (0x08)* on page 3 for supported commands.
16 (0x10)	Write multiple registers
23 (0x17)	Read/write multiple registers

Holding Registers

Address	Description	Holding Register Representation
40001	Modbus slave address	4 (default); 1 through 247
40002	Baud	0 = 9.6k
		1 = 19.2k (default)
		2 = 38.4k
40003	Parity	0 = even
		1 = odd
		2 = none (default)
40004	Stop bits	1 = 1 stop bit (default)
		2 = 2 stop bits

Address	Description	Holding Register Representation
40005	Configuration Select	0 = No flash configuration (default) 1 = Configuration 1 2 = Configuration 2 3 = Configuration 3
40006	Modbus Settings Policy	0 = Apply After Power Cycle (default) 1 = Apply After Write
40100	Color 1 Input Register	0 = Color Inactive (power on value) 1 = Color Active
40101	Color 2 Input Register	0 = Color Inactive (power on value) 1 = Color Active
40102	Color 3 Input Register	0 = Color Inactive (power on value) 1 = Color Active

Three Color No Priority Function Table

Color 1	Color 2	Color 3	LED Function
0	0	0	Light off
1	0	0	Color 1 on
0	1	0	Color 2 on
0	0	1	Color 3 on
1	1	0	Color 1 and 2 on*
1	0	1	Color 1 and 3 on*
0	1	1	Color 2 and 3 on*
1	1	1	Colors 1, 2, and 3 on*

* Multiple colors on will be dimmer than when a single color is on.

Input Registers

The following information registers (31000–31022) must be read as a block. They cannot be read as single registers.

Address	Description	Input Register Representation
31000	Low word firmware part number	Example: 0x0002A734 (hex) = 173876 (dec)
31001	High word firmware part number	High word=0x0002; Low word = 0xA734
31002	Firmware version	Bits 7–4 = Major Version Bits 3–0 = Minor Version Example:0x0012 is version 1.2
31003	Build number	0–0xFFFF (hex) = 0–65535 (dec)
31004	Low word model number	Example: 0x0001582B (hex) = 88107 (dec)
31005	High word model number	High word=0x0001, Low word = 0x582B
31006	Model version	Bits 7–4 = Major Version Bits 3–0 = Minor Version Example: 0x0012 is version 1.2

Address	Description	Input Register Representation
31007	Low word configuration number	Example: 0x0002C115 (hex) = 180501 (dec)
31008	High word configuration number	High word=0x0002, Low word:0xC115
31009	Configuration version	Bits 7–4 = Major Version Bits 3–0 = Minor Version Example: 0x0012 is version 1.2
31013–31013	Date code, 8 bytes	
31014	Low Word Flash Config 1 Part Number	0xFFFFFFFF (hex) = No flash configuration
31015	High Word Flash Config 1 Part Number	
31016	Flash Config 1 Version	Bits 7-4=Major Version Bits 3-0=Minor Version 0x00FF = No flash version
31017	Low Word Flash Config 2 Part Number	0xFFFFFFFF (hex) = No flash configuration
31018	High Word Flash Config 2 Part Number	
31019	Flash Config 2 Version	Bits 7-4=Major Version, Bits 3-0=Minor Version, 0x00FF = No flash version
31020	Low Word Flash Config 3 Part Number	0xFFFFFFFF (hex) = No flash configuration
31021	High Word Flash Config 3 Part Number	
31022	Flash Config 3 Version	Bits 7-4=Major Version Bits 3-0=Minor Version 0x00FF = No flash version
32000	Bus Message Count	Returns same value as Diagnostic Function sub-function 11 (0x0B)
32001	Bus Communication Error Count	Returns same value as Diagnostic Function sub-function 12 (0x0C)
32002	Bus Exception Error Count	Returns same value as Diagnostic Function sub-function 13 (0x0D)
32003	Server Message Count	Returns same value as Diagnostic Function sub-function 14 (0x0E)
32004	Server NAK Count	Returns same value as Diagnostic Function sub-function 16 (0x10)
32005	Bus Character Overrun Count	Returns same value as Diagnostic Function sub-function 18 (0x12)
32006	Buffer Overrun Count	Returns the count of the number of times that a buffer overrun has occurred

Diagnostics, Function 8 (0x08)

Subfunction	Description	
0	Return Query Data	
1	Restart Communications Option	Not supported
2	Return Diagnostic Register	Returns value of 0, any other value is an internal error condition
10 (0x0A)	Clear Counters and Diagnostic Register	
11 (0x0B)	Return Bus Message Count	
12 (0x0C)	Return Bus Communication Error Count	
13 (0x0D)	Return Bus Exception Error Count	

Subfunction	Description	
14 (0x0E)	Return Server Message Count	
15 (0x0F)	Return Server No Response Count	Not supported
16 (0X10)	Return Server NAK Count	
17 (0X11)	Return Server Busy Count	Not supported
18 (0x12)	Return Bus Character Overrun Count	
20 (0x14)	Clear Overrun Counter and Flag	

Example Commands and Responses

For these examples, the slave address is 4.

Write Color 1 Active

Master	04109CA400010200011DED	
Response	04109CA400016E2F	

Write Color 1 Inactive

Master	04109CA40001020000DC2D	
Response	04109CA400016E2F	

Write Configuration Registers

Master	04109C4100060C000400010002000100000000099F5	Write three registers: Slave address 1, 19200 baud, no parity, one stop bit, no flash configs, apply after power cycle.
Response	04109C4100063E1A	
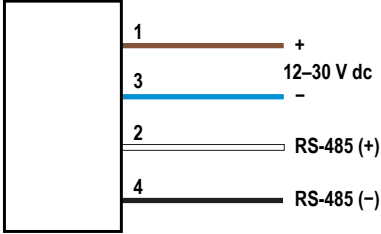
Read Configuration Registers

Master	04039C410006BBD9	Read registers : Slave address, baud, parity, stop bits, flash config, Modbus settings policy.
Response	04030C000400010002000100000000050D3	Response with slave address 4, 19200 baud, no parity, one stop bit, no flash configs, apply after power cycle.

Read Input Registers

Master	040479180017290A	Command to read all info registers.
Response	04042EA734000200110001582B00010011C11500020011A12FC4BD7FCC40E4FFFFFFFF00FFFFFFFFFFF00FFFFFFFFFFF00FFC9C3	

Wiring

	Pins	Color
1 —— + 3 —— 12–30 V dc − 2 —— RS-485 (+) 4 —— RS-485 (−)	1	Brown
	2	White
	3	Blue
	4	Black

Specifications

Supply Voltage and Current
12 to 30 V dc
110 mA at 12 V dc; 70 mA at 30 V dc

Supply Protection Circuitry
Protected against reverse polarity and transient voltages

Communication
Interface: RS-485 Serial
Protocol: Modbus RTU

Construction
Housing: polycarbonate
Translucent dome: polycarbonate
Mounting Nut: PBT

Connections
4-conductor PVC cable, 15 feet long

Environmental Rating
IEC IP67 and IEC IP69K

Operating Conditions
−40 °C to +50 °C (−40 °F to +122 °F)
90% at +50 °C maximum relative humidity (non-condensing)
Storage: −40 °C to +70 °C (−40 °F to +158 °F)

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