

### Description

The Holjeron Motor Starter Controller for the Smart Distributed System provides a convenient method to distribute motor control in a System installation.

The Motor Starter Controller provides four (4) inputs and two (2) outputs. The outputs can be interlocked with the inputs. This allows for changes in inputs to automatically turn off one or both outputs, and then report to the host controller that the outputs have been turned off and why.

The Motor Starter Controller can also be put in reversing mode, which prevents both outputs from being energized simultaneously or a motor from being reversed until a timer expires.

The Motor Starter Controller can be DIN rail mounted, or mounted directly to a back panel. Its compact size keeps required panel space to a minimum.

### Warranty/Remedy

Seller warrants its products to be free from defects in design, material and workmanship under normal use and service. Seller will repair or replace without charge any such products it finds to be so defective on its return to Seller within 18 months after date of shipment by Seller. **The foregoing is in lieu of all other expressed or implied warranties (except title), including those of merchantability and fitness for a particular purpose.** The foregoing is also purchaser's sole remedy and is in lieu of all other guarantees, obligations, or liabilities or any consequences incidental, or punitive damages attributable to negligence or strict liability, all by way of example.

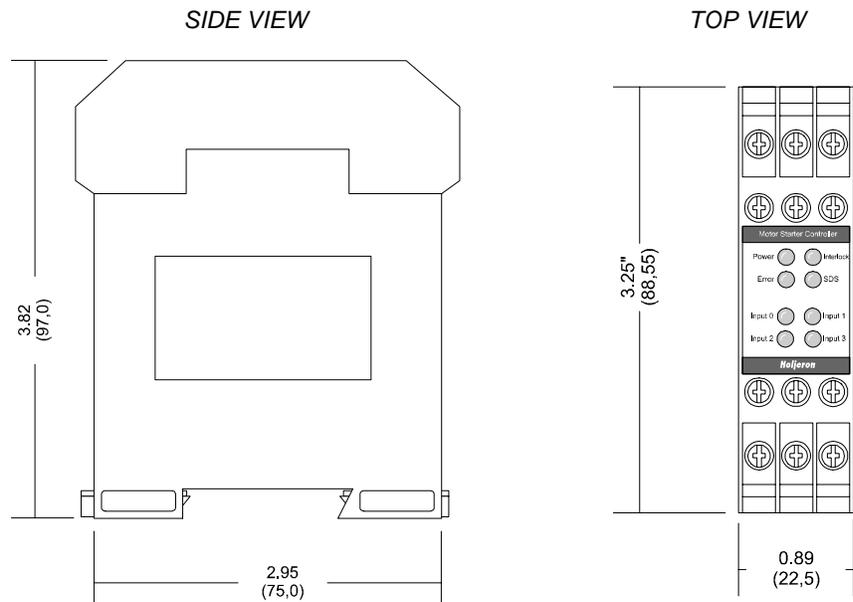
While Holjeron provides application assistance, personally and through our literature, it is up to the customer to determine the suitability of the product in the application.

All information contained herein, including illustrations, specifications and dimensions, is believed to be reliable as of the date of publication, but is subject to change without notice.

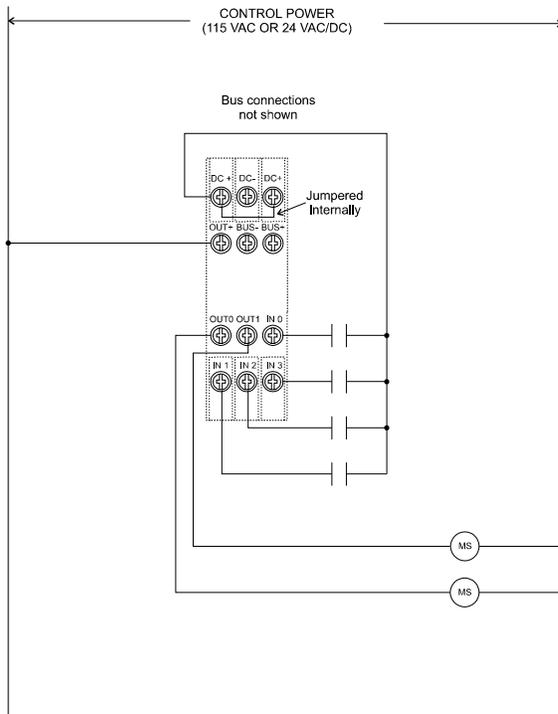
### Specifications

Part Number	Motor Starter Controller	MSC-SDS142		
<b>Electrical</b>	SDS Voltage Range	11-25 VDC		
	Current Consumption	50 mA plus inputs		
	Data Rates	125, 250, 500 and 1000 kbps		
<b>Inputs</b>	Type	Open collector		
	Number	Four (4)		
	Voltage Range	12-24 VDC		
	Maximum Current	20 mA per input		
<b>Outputs</b>	Type	Relay		
	Number	Two (2)		
	Voltage Range	10-30 VDC, 24-240 VAC		
	Maximum Current	500 mA		
<b>Environmental</b>	Temperature	Storage	-30° to 70° C (-22° to 158° F)	
		Operating	0° to 60° C (32° to 140° F)	
	Humidity		5-95% RH, non-condensing	
	Vibration		2G at 10 to 500 Hz	
	Shock		10G	
<b>Physical</b>	Dimensions		3.82" H x 3.25" W x 0.89" W	
	Weight		8 oz	
	Color		Light Gray	
	Case Material		Polycarbonate and ABS	
	Mounting		DIN rail or back panel mount	
	Terminations		Captive screws, finger-safe	
	Indication	Power		Green
		Interlock		Green
Error			Red	
	SDS		Green	
	Inputs (4)		Green	

### Dimensions



**Wiring**



**Configuration**

The Motor Starter Controller can be configured using several tools. The information below summarizes the configuration tools available and hardware requirements for each tool.

**Honeywell hand-held activator**

The Honeywell activator does not supply enough power by itself. The SDS bus must have external power applied.

**PC Control/Network Manager**

Requires a Honeywell PC Interface Card with separate bus power.

**Holjeron Device Manager for SDS**

Requires an HSIM Portable (RS-232 to CAN converter) that connects to the serial port of a personal computer. The bus OR the HSIM Portable must have power.

**Quick Start**

*The following steps are the minimum configuration steps required to install a Motor Starter Controller.*

**Device Address**

Set the address of the device. All units are shipped from the factory as **address 126**.

**Note:** *Set the address before attaching a Motor Starter Controller to a complete bus. Otherwise, multiple devices may reside at the default address of 126.*

**Configuration Options**

*The following steps are a guide to help the commissioning process to ensure the product will function as desired. Default values are shown in bold type-face.*

**Input Event Mode**

Most systems will require a Motor Starter Controller to generate an event whenever one or more inputs change state. This requires the **Unsolicit Mode (attribute 6)** be enabled by setting its value to 1. Other options are to disable change of value events (Unsolicit Mode = 0) or use the Cyclic Timer (Attribute 10) by setting it to some non-zero value. The Cyclic Timer will transmit the input variable on an interval equal to the value in the Cyclic Timer attribute times 10 milliseconds (0.01 seconds).

Another I/O function that might be important is the **Output Watchdog Timer (attribute 50)**. When set to some value other than **0** the Output Watchdog Timer will cause the physical output to be set to a normalized state if there are no SDS messages to the Motor Starter Controller in the time allotted (value in Attribute 50 times 10 milliseconds). The normal state is defined by **Default Output (attribute 51)**, where **0** in a bit location represents a default state of off and a value of 1 in a bit location represents a default state of on.

**Reversing Mode**

**Reversing Mode (attribute 62)**, when disabled (**0**), allows the outputs to be controlled independently.

When enabled (1) and the host controller attempts to energize both outputs simultaneously an illegal data error will be returned by the motor starter controller. The **Dwell Timer (attribute 67)** is also active when the Reversing Mode is enabled. The Dwell Timer prevents the host controller from instantaneously reversing a motor by delaying a command to energize an output by the time entered in the Dwell Timer attribute (in 0.10 millisecond increments). When the Dwell Timer expires, the Motor Starter Controller will execute the change of output command automatically.

### Interlock Settings

**Output 0 Interlock Timer (attribute 63) and Output 0 Interlock Mask (attribute 64)** allows the user to determine which inputs should be interlocked with output 0 and how long the Motor Starter Controller should wait after the output has been instructed to be energized before checking the interlock condition. Each bit in the Interlock Mask attribute corresponds directly with a physical input (see the Input Variable description in the Operation section).

**Output 1 Interlock Timer (attribute 65) and Output 1 Interlock Mask (attribute 66)** work the same as described above, expect apply to output 1.

An interlock is cleared by writing the default a value to the output equal to the value in the default output attribute.

### Baud Rate Settings

Verify the **Baud Rate (attribute 1)** is configured correctly for the application. In most cases the default value (autobaud) will provide the desired results. The following are the possible values for the baud rate:

*Baud Rate (Attribute 1)*

Value	Baud Rate
0	Autobaud
1	1 megabaud
2	500 kilobaud
3	250 kilobaud
4	125 kilobaud

### Tag Names

**Tag Name (attribute 56)** is a 32-character string that the user can enter to describe the functionality and/or location of the Motor Starter Controller.

### Operation

#### Input Variable

Attribute 18 functions as the input attribute for the Motor Starter Controller. Whenever an event is generated that reports the state of inputs, the data in attribute 18 will be passed.

#### Input Variable Bit Definitions

Bit	Name	Description
0	Input 0	State of physical input 0
1	Input 1	State of physical input 1
2	Input 2	State of physical input 2
3	Input 3	State of physical input 3
4	Interlock 0	High (1) when output 0 has been de-energized due to the loss of one or more interlocked inputs.
5	Interlock 1	Same as bit 4, except applies to output 1.
6	Dwell 0	High (1) when output 0 has been instructed to be energized but is being delayed by the dwell timer. The bit will reset to 0 when the dwell timer has expired and output 0 has been energized.
7	Dwell 1	Same as bit 6, except applies to output 1

#### Output Variable

Attribute 34 contains the information for the outputs.

#### Output Variable Bit Definitions

Bit	Name	Description
0	Output 0	Controls the state of physical output 0
1	Output 1	Controls the state of physical output 1

**Note: An interlock condition is cleared by writing a value to an output bit that is equal to the default output stored in attribute 51.**

### Diagnostics

The Diagnostics Register (attribute 9) is a single byte and contains only the minimum diagnostics required for the Smart Distributed System.

#### Diagnostic Register Bit Definitions

Bit	Name	Description
0	CHKSUM	ROM checksum error
1	WDOG	Output watchdog timer expired
2	BUSOFF	Off us communications error
3	DEVERR	Fatal component error
4	NODE	Missing node detected
5	RSVD	Reserved
6	RSVD	Reserved
7	EPRM	EEPROM error detected

### Attributes

ID	Description	R/W	Data Type	Size	Count	Default
0	Network Data Descriptor	R	Unsigned	Byte	6	12,01,07,22,81,02 [hex]
1	Baud Rate	R	Unsigned	Byte	1	0 [autobaud]
2	Object Model	R	Unsigned	Byte	5	1, 41, 5, 4, 1
3	Vendor Id	R	Unsigned	Word	1	9 [Holjeron]
4	Logical Address	R	Unsigned	Byte	1	125
6	Unsolicit Mode	W	Boolean	Undef	1	1 [enabled]
7	Software Version	R	Character	Undef	12	
8	Diagnostic Counter	R	Unsigned	Byte	1	
9	Diagnostic Register	W	Unsigned	Byte	1	
10	Cyclic Timer	W	Unsigned	Word	1	0 [disabled]
11	Serial Number	R	Unsigned	Long	1	
12	Date Code	R	Character	Undef	4	
13	Catalog Listing	R	Character	Undef	32	MSC-SDS142
14	Vendor	R	Character	Undef	32	Holjeron
15	Description	W	Character	Undef	32	Motor Starter Controller
18	Input Variable	R	Boolean	Undef	8	
34	Output Variable	W	Boolean	Undef	2	00
50	Output Watchdog Timer	W	Unsigned	Word	1	0 [disabled]
51	Default Output	W	Boolean	Undef	2	00
55	Manufacturing Codes	R	Unsigned	Byte	1	36
56	Tag Name	W	Character	Undef	32	
60	Input NO/NC	W	Boolean	Undef	4	0000 (N.O.)
62	Reversing Mode	W	Boolean	Undef	1	0 [disabled]
63	Output 0 Interlock Timer	W	Unsigned	Word	1	0 [disabled]
64	Output 0 Interlock Mask	W	Boolean	Undef	4	0000 [no interlocks]
65	Output 1 Interlock Timer	W	Unsigned	Word	1	0 [disabled]
66	Output 1 Interlock Mask	W	Boolean	Undef	4	0000 [no interlocks]
67	Dwell Timer	W	Unsigned	Word	1	0 [disabled]

### Actions

ID	Description	Request Data	Response Data
0	NOOP	---	---
1	Change Address	New logical address	
2	Self Test	---	---
6	Clear All Errors	---	---
8	Enroll Logical Device	Address	Vendor Id, Serial Number
10	Change Baud Rate	New baud rate (0...4)	
51	Force State	Input variable value	
52	Unforce States		
53	Read Attribute Descriptor	Attribute Id	Attribute ID, Attribute Desc
57	Password	Password	
60	Reset Factory Defaults		

### Events

ID	Description	Event Data
0	Diagnostic Event	Number of enabled diagnostic bits in attribute 9
3	End-Of-Timer	Attribute, Input variable
6	Change of Value	Attribute, Input variable
7	NOOP	---