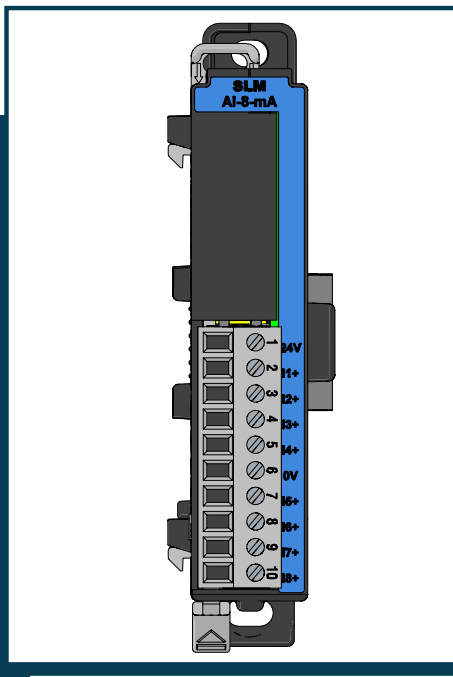


# SLM-AI-8-mA Analog Input

The SLM-AI-8-mA Analog Input Module provides eight current sinking channels for converting 0–20 mA analog signals to digital value of 0–8191 (13-bit) for use with Synergy Logic Micro systems.



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# Technical Specifications

## Input Specifications

<b>Input Channels</b>	8
<b>Module Signal Input Range</b>	0–20 mA
<b>Signal Resolution</b>	13-bit
<b>Resolution Value of LSB (least significant bit)</b>	0–20 mA = 2.44 $\mu$ A per count (1LSB = 1 count)
<b>Data Range</b>	0–8191 counts
<b>Input Type</b>	Sinking, Single-ended (1 common)
<b>Maximum Continuous Overload</b>	$\pm$ 31mA
<b>Input Impedance</b>	243 $\Omega$ , $\pm$ 1%, 1/8W Current Input
<b>Filter Characteristics</b>	Low Pass, -3dB @ 120Hz
<b>Sample Duration Time</b>	2ms per channel (does not include communication and master scan timing)
<b>All Channel Update Rate</b>	20ms
<b>Open Circuit Detection Time</b>	Zero reading within 100ms
<b>Conversion Method</b>	Successive approximation
<b>Accuracy vs. Temperature</b>	$\pm$ 75PPM / $^{\circ}$ C maximum
<b>Maximum Inaccuracy</b>	0.5% of range (including temperature drift)
<b>Linearity Error (end to end)</b>	$\pm$ 0.037% of range Monotonic with no missing codes
<b>Input Stability and Repeatability</b>	$\pm$ 0.024% of range
<b>Maximum Full Scale Calibration Error (Including Offset)</b>	$\pm$ 0.098% of range
<b>Maximum Offset Calibration Error</b>	$\pm$ 0.098% of range
<b>Max Crosstalk at DC, 50Hz and 60Hz</b>	$\pm$ 0.049% of range
<b>Protection Circuit</b>	Edison S500-32-R, 0.032 A fuse
<b>External Power Supply Required</b>	24VDC (-20% / + 25%), 30mA

# General Specifications

## General Specifications

<b>Operating Temperature</b>	0° to 60°C (32° to 140°F)
<b>Storage Temperature</b>	-20° to 70°C (-4° to 158°F)
<b>Humidity</b>	5 to 95% (non-condensing)
<b>Altitude</b>	2,000 meters max
<b>Pollution Degree</b>	2
<b>Environmental Air</b>	Pollution Degree 2 environment, no corrosive gases permitted
<b>Vibration</b>	IEC60068-2-6 (Test Fc)
<b>Shock</b>	IEC60068-2-27 (Test Ea)
<b>Overvoltage Category</b>	II
<b>Field to Logic Side Isolation</b>	1800VAC applied for 1 second
<b>Insulation Resistance</b>	>10MΩ @ 500VDC
<b>Heat Dissipation</b>	1200mW
<b>Enclosure Type</b>	Open Equipment
<b>Module Location</b>	Any I/O position in a Synergy Logic Micro System
<b>Field Wiring</b>	Removable Terminal Block (included)
<b>Terminal Type</b>	10-Position Removable Terminal Block
<b>Weight</b>	71g (2.5 oz)
<b>Agency Approvals</b>	UL 61010 and UL 61010-2-201 File E139594, Canada and USA CE (EN 61131-2 EMC, EN 61010-1 and EN 61010-2-201 Safety)*

\*See CE Declaration of Conformance for details.

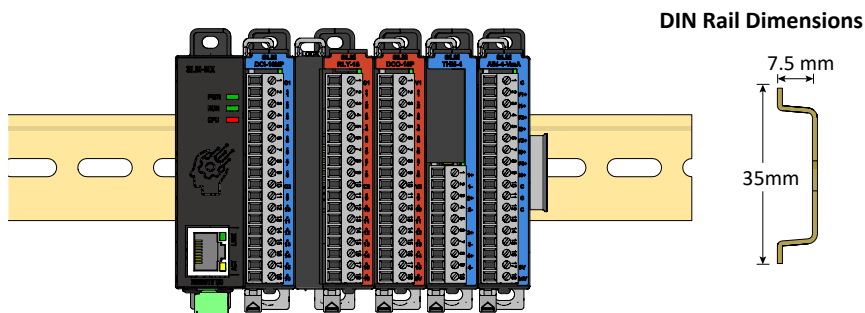
## Removable Terminal Block Specifications

<b>Part Number</b>	Dinkle EC381F-S1672210P
<b>Number of Positions</b>	10 screw terminals
<b>Pitch</b>	3.5 mm
<b>Wire Range</b>	30–16 AWG (0.051–1.31 mm <sup>2</sup> ) Solid / Stranded Conductor 3/64 in (1.2 mm) Insulation Max. 1/4 in (6–7 mm) Strip Length
<b>Conductors</b>	"USE COPPER CONDUCTORS, 75°C" or equivalent.
<b>Screw Driver Width</b>	0.1 in (2.5 mm) Maximum*
<b>Screw Size</b>	M2
<b>Screw Torque</b>	2.5 lb-in (0.28 N·m)



# Mounting Clearances

The Synergy Logic Micro System can be secured within an enclosure or cabinet using mounting rails. Use rails that conform to DIN EN standard 50022. The rails are approximately 35mm high, with a depth of 7.5 mm.

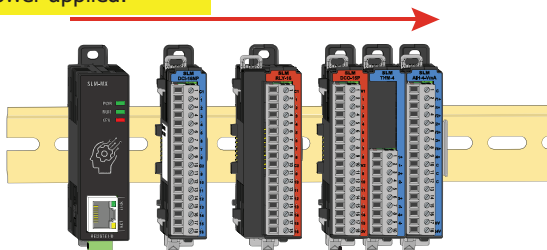


- Provide a minimum clearance of 2 inches (50mm) on all sides of the assembled system to allow proper airflow.
- Allow extra clearance for door-mounted operator panels, push buttons, lights, and other items.
- Maintain a minimum of 3 inches (76mm) of vertical clearance between the module(s) and any wire duct.
- Ensure a minimum of 7.2 inches (183mm) of vertical distance from chassis to chassis in a multiple unit installation.

# Installation

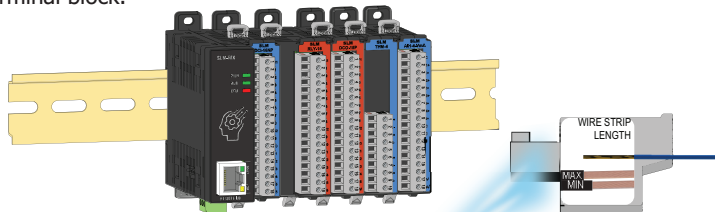
**WARNING:** Do not add or remove modules with field power applied.

**Step One:** With latch in "locked" position, align connectors on the side of each module and stack by pressing together.

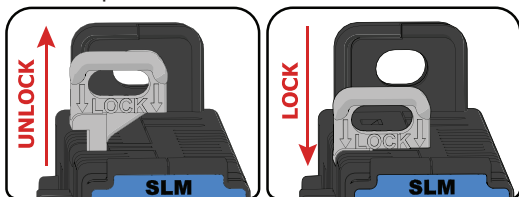


Ensure all latches are secure after modules are connected.

**Step Two:** Attach field wiring using the removable terminal block.



**Step Three:** To unstack modules, pull locking latch up into the unlocked position and then pull modules apart.



# Installation

## **Mounting within an Enclosure:**

Your selection of a proper enclosure is important to ensure the safe and proper operation of your Synergy Logic Micro System. Applications for the system vary and may require additional hardware considerations. The minimum considerations for enclosures include:

- Conformance to electrical standards
- Protection from the elements in an industrial environment
- Common ground reference
- Not exceeding the specified maximum ambient temperature
- Access to the equipment
- Security or restricted access
- Sufficient space for proper installation and maintenance of the equipment.

## **Mounting Position:**

Mount the Synergy Logic Micro system horizontally, as shown in the cabinet illustration on the following page, to provide proper ventilation. Do NOT mount vertically, upside down, or on a flat horizontal surface.

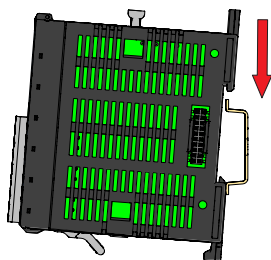
## **Temperature Considerations:**

The Synergy Logic Micro System enclosure should be installed in an environment that falls within the specified equipment operating temperature range. If the environment temperature deviates above or below the specified operating temperature range, measures such as cooling or heating the enclosure should be taken to remain within the range specification.

# Installation

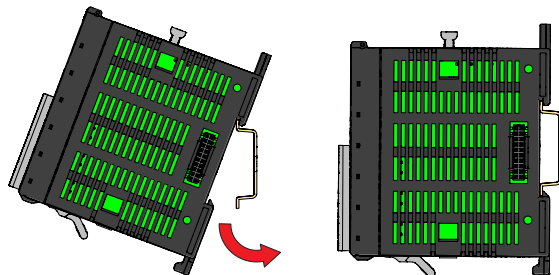
Follow the steps below to mount Synergy Logic Micro System modules onto DIN rail.

## STEP 1

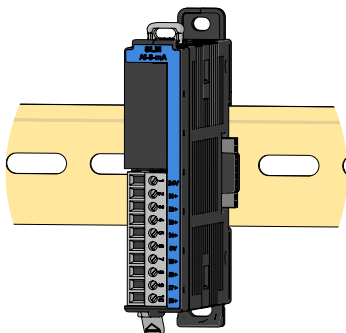


Insert DIN rail in mounting slots.

## STEP 2

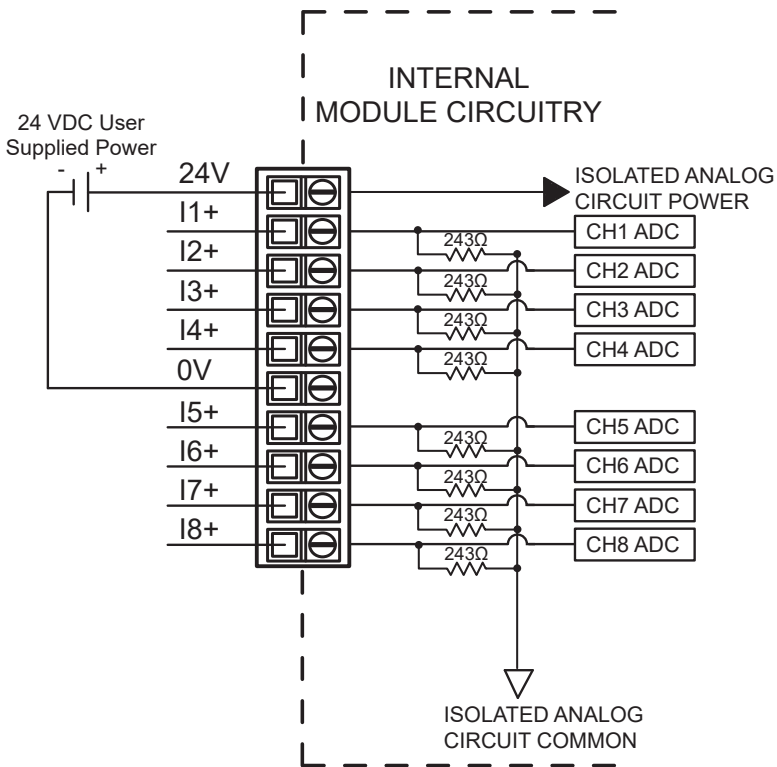


Rotate module ensuring clip snaps onto rail.



Module securely mounted on DIN rail.

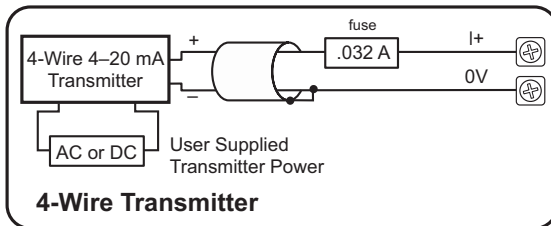
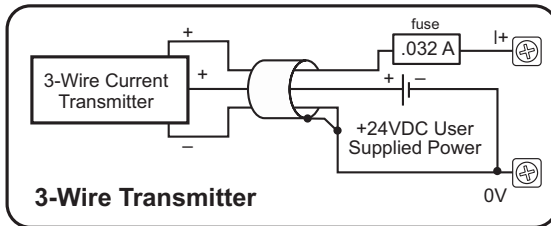
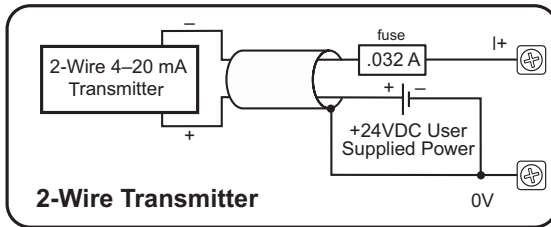
## Schematic & Wiring Diagram





## Current Input Circuits

An Edison S500-32-R 0.032 A fast-acting fuse is recommended for current loops.



Note: Do not connect both ends of shield.

# Safety Precautions

Follow the manufacturer's guidelines for thermal management to prevent overheating.

**WARNING:** Thank you for choosing Synergy Logic equipment. Prior to installation or operation, carefully read this publication and any relevant materials. To mitigate potential safety risks, comply with local and national codes governing equipment installation and operation. Ensure adherence to the National Fire Code, National Electrical Code, and codes from the National Electrical Manufacturer's Association (NEMA) at a minimum. Local regulatory offices can provide additional guidance on codes and standards. Failure to comply may result in equipment damage or serious injury. Our products are not intended for High Risk Activities and do not come with a warranty for such applications. For warranty and safety details, refer to our Limited Warranty and Limitation of Liability statement which can be found at [www.synergy-logic.com](http://www.synergy-logic.com). For inquiries or additional information, contact us at [support@synergy-logic.com](mailto:support@synergy-logic.com). Synergy Logic reserves the right to modify products and publications without notice.

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To obtain warranty service, technical support, product inquiries and additional information, please email us at **support@synergy-logic.com**

NOTE: Do not return parts directly to Synergy Logic without first obtaining return authorization.

Unauthorized returns can result in unavoidable delays.