

## ADAM-4520A

### Robust RS-232 to RS-422/485 Isolated Converter

## Startup Manual

### Packing List

Before you begin installing your module, make sure that the following materials have been included:

- ADAM-4520A
- 1 x DIN-rail mounting bracket (attached to module)
- Startup Manual
- 1 x Panel mounting bracket

If any of the above items are missing or damaged, please contact your distributor or sales representative immediately.

### Declaration of Conformity

#### CE Notification

ADAM-4520A, developed by Advantech Co., Ltd. has passed the CE test for environmental specifications. The test conditions for passing include the equipment being operated within an industrial enclosure. Therefore, in order to protect the ADAM module from being damaged by ESD, we strongly recommend the use of CE-compliant industrial enclosure products.

### Features

- Automatic internal RS-485 bus supervision
- No external flow control signals for RS-485
- Minimum 3000  $V_{DC}$  isolation
- Auto detection on baud rate / data format
- Baud rate up to 115.2 kbps
- Networking up to 4000 feet (1200 m)
- Built-in 120-ohm termination resistors
- Power and data flow indicator for troubleshooting
- Power requirement: +10 to +48  $V_{DC}$
- Mounts easily on DIN-rail or panel

For more information on this and other Advantech products, please visit our website at:

<http://www.advantech.com/>

For technical support and service:

<http://www.advantech.com/support/>

This startup manual is for ADAM-4520A.

Part No. 2043452000

Edition 1

November 2022

### Overview

ADAM-4520A transparently converts RS-232 signals into RS-422 or RS-485.

#### Intelligent RS-485 Control

ADAM-4520A automatically senses the direction of the data flow and switches transmission direction.

#### Isolation

The ADAM-4520A opto-isolators provide 3000  $V_{DC}$  isolation to protect the host computer from ground loops and voltage spikes.

#### Surge Protection

ADAM-4520A offers internal surge-protection on its data lines. Internal high-speed transient suppressors on each data line protect the modules from dangerous voltage levels or spikes.

### Specifications

#### Common

- **Power Requirements:** Unregulated +10 to +48  $V_{DC}$
- **Case:** ABS+PC with captive mounting hardware
- **Accessories (supplied):** DIN-rail mounting adapter, panel mounting bracket
- **Plug-in screw terminal wiring:** Accepts AWG 1-#12 to #22 (0.5 to 2.5 mm)
- **Operating Temperature:** -40 ~ 85 °C (-40 ~ 185 °F)  
**Storage Temperature:** -40 ~ 85 °C (-40 ~ 185 °F)
- **Humidity:** 5 ~ 95%, non-condensing

#### ADAM-4520A

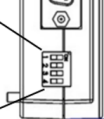
- **Baud rate:** 115.2 kbps, max. (RTS control and RS-422 mode switchable)
- **RS-232 Interface:** Female DB-9
- **RS-422/RS-485 Interface:** Plug-in screw terminal
- **Power Consumption:**  
Typical: 0.6 W @ 24  $V_{DC}$   
Max.: 0.8 W @ 24  $V_{DC}$
- **Isolation Voltage:** 3000  $V_{DC}$

## Switch Settings

The DIP switch (SW1) on the top of ADAM-4520A sets terminal resistors, RS-485 direction, and RS-422/RS-485 mode.

Please refer to the table below to find the SW1 position definitions.

POS	Function	On	Off (Default)
1	Terminal Resistor	120Ω	Open
2			
3	485 DIR	RTS	Auto
4	Mode	RS-422	RS-485



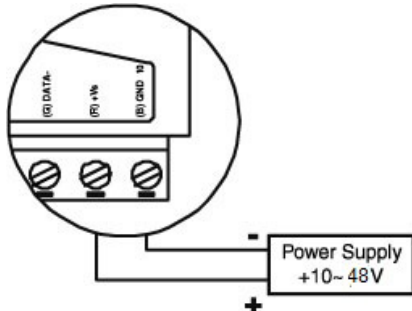
## ADAM-4520A

Data Flow Direction Indicator		LED Status
RS-485	Idle	Green
	RS-232 → RS-485	Dark
	RS-485 → RS-232	Red
RS-422	Idle	Dark
	RS-232 → RS-422	Green
	RS-422 → RS-232	Red

## Application Wiring

### Power Supply

ADAM modules are designed to accept industry standard +24 VDC unregulated power. Operation is guaranteed when using any power supply between +10 and +48 V<sub>DC</sub>. Power ripples must be limited to 200 mV peak-to-peak while the voltage in all cases must be maintained between +10 to +48 V<sub>DC</sub>. All power supply specifications are referenced at the module connector. The power cables should be selected according to the number of modules connected and the length of the power lines. When using a network with long cables, we advise the use of thicker wire to limit the line voltage drop. In addition to serious voltage drops, long voltage lines can also cause interference with communication wires.



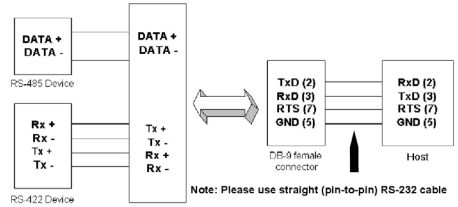
## Application Wiring (Cont.)

### Communication Wiring

We recommend that shielded twisted-pair cables that comply with the EIA RS-485 standard be used with the ADAM network to reduce interference. Only one set of twisted-pair cables is required to transmit both data and RTS signals.

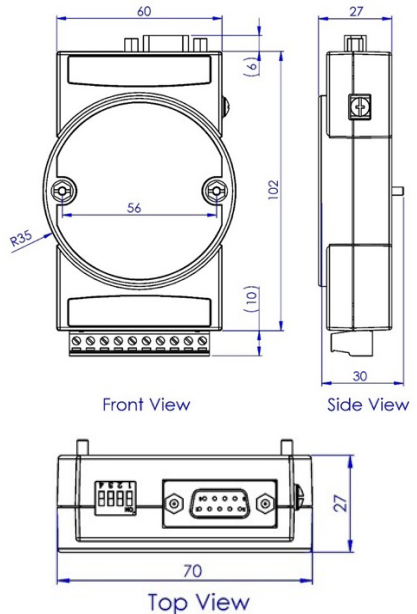
### Basic Configuration Hook-Up

Before placing a module in an existing network, the module should be properly configured. The two following diagrams show typical layouts for both modules.

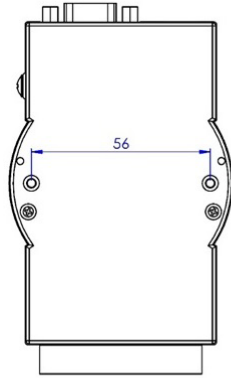


ADAM-4520A Connection Diagram

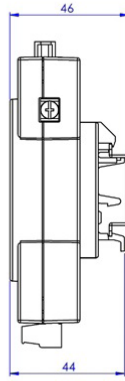
## ADAM Dimensions



**ADAM Dimensions (Cont.)**



Rear View



DIN Rail Mounting Adaptor