# Advantech ADAM-4520 Isolated RS-232 to RS-422/485 Converter

IDENTITY, COMMERCIAL FACTS AND SPECIFICATION

## PRODUCT ROLE

Advantech ADAM-4520 converts a host RS-232 connection to an isolated RS-422 or RS-485 field link. Internal direction sensing supports two-wire RS-485 communication without an external flow-control line.

## OFFERED PRODUCT

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| **Manufacturer part number**<br>ADAM-4520 | **Shipping**<br>Swift global dispatch | **Condition**<br>New, original product |
| **Shipping size (est.)**<br>11.2cm x 6.8cm x 4.5cm | **Country of Origin**<br>China | **Ship from**<br>Xiamen, Fujian, China |

## PUBLISHED TECHNICAL SPECIFICATIONS

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| **Manufacturer** | Advantech |
| **Product Category** | General Automation |
| **Spare Part Number** | ADAM-4520 |
| **Weight** | 0.14 kg |
| **Tariff Code** | 8537101190 |
| **Host interface** | RS-232; female DB9 |
| **Field interface** | RS-485 (2-wire) or RS-422 (4-wire) |
| **Field connector** | Plug-in screw terminal; #14-22 AWG |
| **Selectable speed modes** | 1,200 / 2,400 / 4,800 / 9,600 / 19.2k / 38.4k / 57.6k / 115.2k bps |
| **Additional modes** | RTS control and RS-422 |
| **Data format options** | 9, 10, 11 or 12 bits; 10-bit factory setting |
| **Factory baud setting** | 9,600 bps |

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| **RS-485 direction control** | Automatic internal sensing |
| **Isolation voltage** | 3,000 VDC |
| **RS-485 line protection** | Transient suppression |
| **Power input** | 10-30 VDC, unregulated; reverse-polarity protection |
| **Typical power consumption** | 0.8 W at 24 VDC |
| **Maximum power consumption** | 1 W at 24 VDC |
| **Operating temperature** | -10 to +70 deg C |
| **Storage temperature** | -25 to +85 deg C |
| **Operating humidity** | 5-95% RH |
| **Mounting** | DIN-rail adapter or panel |
| **Maximum stated network reach** | 1,200 m with suitable serial cabling |
| **Status indication** | Power and data-flow LEDs |

# Advantech ADAM-4520 Isolated RS-232 to RS-422/485 Converter

BUYER INFORMATION AND SERVICE CONTEXT

## OVERVIEW

Advantech ADAM-4520 bridges a host RS-232 port to an isolated RS-422 or RS-485 field link. Internal data-flow sensing manages two-wire RS-485 transmission direction without a separate flow-control command.
Product type: Isolated serial interface converter
Host connection: Female DB9 RS-232
Field connection: 2-wire RS-485 or 4-wire RS-422 screw terminals
The ADAM-4520 accepts an unregulated, reverse-protected 10–30 VDC supply. Its RS-422/485 side has 3,000 VDC isolation and transient suppression on the RS-485 line; these features protect the interface and must be considered with the installation's grounding and surge design.

SW1 selects 9-, 10-, 11- or 12-bit character framing, with 10 bits as the factory setting. SW2 selects one of eight fixed speeds from 1,200 to 115,200 bps, plus RTS-control and RS-422 modes; the factory speed is 9,600 bps. Match both switches to the host and all field nodes before commissioning.

The plug-in field terminal accepts #14–22 AWG conductors. Power and data-flow LEDs support local diagnosis. The manufacturer's stated 1,200 m reach depends on suitable serial wiring and the actual network design; verify signal integrity at the installed baud rate rather than treating the maximum distance as universal.
Controller platform reference: ADAM isolated serial-converter family. Confirm host framing, field mode and line wiring for this ADAM-4520 installation.

## APPLICATIONS / COMPATIBILITY

System fit: ADAM-4520 translates a host RS-232 connection to a selected two-wire RS-485 or four-wire RS-422 circuit. Match the electrical mode, terminal polarity and protocol framing to both endpoints.

Commissioning context: The applications below describe serial-network roles. Verify the actual host and remote-device configuration; electrical conversion alone does not establish application-protocol compatibility.

RS-232 host to RS-485 multidrop
Connect the host DB9 to a two-wire field segment. Internal direction sensing manages transmit turnaround; check node addressing, termination and biasing in the installed network.

RS-232 host to RS-422 link
Select four-wire mode for separate transmit and receive pairs. Verify pair crossover, common reference and end-device framing before acceptance.

Isolated serial boundary
Use the isolated field interface where host and remote equipment need electrical separation. Coordinate protective earthing, surge measures and shielding with the plant design.

Field service and replacement
Record SW1/SW2 positions, host pin use and field-terminal wiring before exchange. Reproduce the speed and framing, then prove traffic in both directions.

## LIFECYCLE STATUS

Model status: A current manufacturer lifecycle phase for the complete ADAM-4520 identity is unconfirmed. Confirm the current ordering identity before treating another converter revision as interchangeable.

Service planning: Retain the installed converter mode and switch record. Confirm host framing and field topology for any proposed replacement.

Supply status: Apter Power availability and dispatch are confirmed in the quotation separately from manufacturer lifecycle status.

## PRODUCT PRECAUTIONS

Prepare ADAM-4520 with the correct supply, serial mode and host framing. Document switch positions and wiring before replacing a live-network converter.

Confirm supply before connection
Measure the supply at ADAM-4520 terminals under load and keep it within 10-30 VDC. Isolate power before moving conductors.

Verify serial mode
Select two-wire RS-485 or four-wire RS-422 to match the installed field devices and conductor arrangement.

Match the data format
Set SW1/SW2 to the host and remote-node framing and speed; do not assume factory switch positions match the running channel.

Control line loading
Confirm cable routing, shielding, termination and biasing for the actual topology and baud rate.

Inspect terminal work
Use #14-22 AWG conductors at the plug-in field connector. Check polarity and strain relief before restoring power.

Prove communication
Use power and data-flow indicators for first checks, then verify messages in both directions at the operating speed.

## DOWNLOADS

An applicable original manufacturer technical reference or an Apter Power technical reference is listed in Downloads, followed by the Apter Power engineering technical data PDF. The View PDF control opens this complete product information dossier.

## AVAILABLE UNIT DETAILS

Offered unit: Advantech ADAM-4520; New, original product; country of origin China.

Identification: Request a clear label photo and verify the unsuffixed ADAM-4520 marking and installed switch positions before quotation approval.

Included items: Confirm the plug-in terminal block and DIN-rail adapter in the offer; accessories are itemized in the quotation.

Request available-unit photos and details

## ALTERNATIVE NAMES

Advantech ADAM-4520 isolated serial converter
ADAM-4520 RS-232 to RS-422/485 converter

## TECHNICAL NOTES

Configuration: Record SW1 and SW2 positions before replacement. Match the host data format and selected field mode to the installed network.

Connection: Use the DB9 host connector and correctly identified RS-422/485 screw terminals; protect the serial cabling from interference.

Technical reference: Advantech ADAM-4510/S, ADAM-4520 and ADAM-4521 data sheet (2021); ADAM-4510/4510S/4520 Startup Manual, Ed. 9.

# Advantech ADAM-4520 Isolated RS-232 to RS-422/485 Converter

ENGINEERING FAQ AND ORDERING CHECKS

## ENGINEERING QUESTIONS

**Q01 How should ADAM-4520 be configured when the host and field devices use different serial frame lengths?**

Record the installed host framing before replacement. Select 9, 10, 11 or 12 data-format bits with SW1, then make the host port and every connected field device agree; the factory 10-bit format is intended for the standard ADAM network.

**Q02 What should be checked if ADAM-4520 passes data in one direction but not the other on an RS-485 link?**

Confirm field pair polarity and host framing first. During a transmission, compare the data-flow LED with the startup-manual direction table; a return path that never produces its expected indication points to receive wiring, the remote device or link configuration.

**Q03 When would the RTS-control selection on ADAM-4520 be needed?**

Use that selectable mode only if the existing host application intentionally controls transmit direction with RTS. For an ordinary two-wire RS-485 installation, the converter can sense direction internally; preserve the installed SW2 setting and verify a round-trip exchange.

**Q04 How can an engineer distinguish an RS-422 wiring issue from a baud-setting issue on ADAM-4520?**

Confirm whether the field link is four-wire RS-422 or two-wire RS-485 and compare transmit and receive pairs against the wiring diagram. In RS-422 mode the manual says the baud selector need not be set; test both directions before changing other settings.

**Q05 Why can ADAM-4520 communicate at the bench yet fail after installation on a long field cable?**

Inspect cable type, route, shielding and end-device wiring. Advantech recommends shielded twisted pair for RS-485 and states a network reach up to 1,200 m; the achievable link depends on the installed cable and electrical environment. Confirm the error rate under operating conditions.

**Q06 What should be retained before swapping an ADAM-4520 in an existing network?**

Photograph the original unit SW1/SW2 positions, RS-232 connector and field-terminal labels. The module is not host-addressable for these settings, so restore the documented format and speed or mode before connecting the replacement, then test two-way traffic.

**Q07 How should an ADAM-4520 power problem be isolated without confusing it with a serial-link fault?**

Measure the supply at the module terminals under load, observe the power indicator and verify polarity. If power is stable, test the RS-232 host side and field side separately; avoid changing framing until supply and physical wiring have been checked.

**Q08 What evidence would confirm an ADAM-4520 installation after commissioning?**

Record switch positions, field mode, host framing, supply measured at the connector, and successful messages in both directions. Check the data-flow LED against the documented direction states and retain the final wiring record for future replacement.

## WHAT HAPPENS AFTER YOU ENQUIRE / ORDERING VERIFICATION

### Review your reference

Send the complete ADAM-4520 marking and photos of its serial ports and terminal area; include the host interface requirement.

### Match the complete marking

Include ADAM-4520 and any revision or assembly number visible on the unit. Keep the exact reference on your enquiry and quotation.

### Confirm the offer

We confirm the offered ADAM-4520 identity, visible connector condition and included items in the written quotation.

### Check the offered item before ordering

Request available label and connector photos. Have your maintenance team compare the offered ADAM-4520 with the installed equipment and applicable Advantech documentation.

### Arrange dispatch

After quotation approval, we confirm packing, dispatch timing and shipment details for the agreed ADAM-4520 quantity.

**Technical enquiry**

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