Advantech ADAM-4520

Isolated RS-232 to RS-422/485 converter

VERIFIED ENGINEERING FACTS / 27 distinct technical points

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

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

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 during replacement and verify a round-trip exchange.

What should be retained before swapping an ADAM-4520 in an existing network?
Photograph the original unit's SW1/SW2 positions, RS-232 connector and field-terminal labels. The module is not host-addressable for these settings, so restore the documented data format and speed or mode before connecting the replacement, then test two-way traffic.

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.

How can an engineer distinguish an RS-422 wiring issue from a baud-setting issue on ADAM-4520?
First 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 with a known message before changing other settings.

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 then the field side separately; avoid changing framing until the supply and physical wiring have been checked.

What should be checked if ADAM-4520 passes data in one direction but not the other on an RS-485 link?
Confirm the 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 the receive wiring, remote device or link configuration.

Why can ADAM-4520 communicate at the bench yet fail after installation on a long field cable?
Inspect the cable type, route, grounding and end-device wiring. The manufacturer recommends shielded twisted pair for RS-485 and states a network reach up to 1,200 m; the achievable link still depends on the installed cable and electrical environment. Confirm the error rate under the actual operating conditions.

What evidence would confirm an ADAM-4520 installation after commissioning?
Record the 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.

Manufacturer references: Advantech ADAM-4510/S, ADAM-4520 and ADAM-4521 data sheet, 2021 | Advantech ADAM-4510/4510S/4520 Startup Manual, Edition 9

Technical enquiry

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