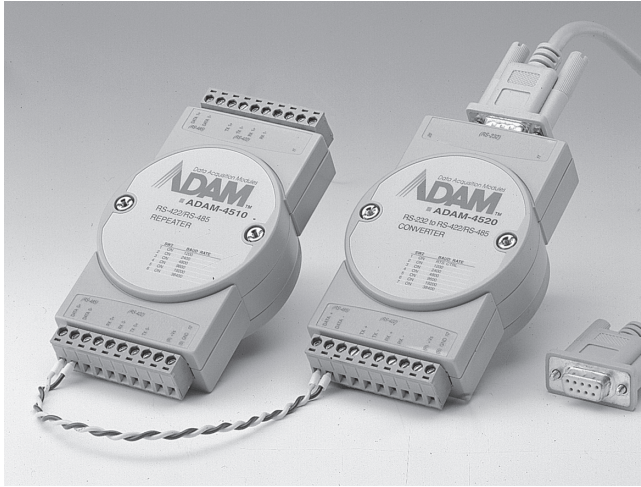# ADAM-4510/4510S
ADAM-4520/4522
ADAM-4521

Isolated RS-422/485 Repeater

Isolated RS-232 to 422/485 Converter

Addressable RS-422/485 to RS-232 Converter

Features

- Automatic RS-485 data flow control
- 1000 V_{DC} (ADAM-4521)/3000 V_{DC} (ADAM-4510S/4520) isolation protection
- Surge protection RS-485 data line
- Transmission speed up to 115.2 Kbps
- Networking up to 1200 meters (4000 feet)
- Reserved space for termination resistors
- Power and data flow indicator for troubleshooting
- Power requirement: +10 to +30 V_{DC}
- Mounts easily on a DIN-rail, panel or piggyback

ADAM-4521 only

- RS-232 and RS-485 can be set to different baud rates
- Watchdog timer function
- Software configurable to either addressable or non-addressable mode
- All communication setups stored in EEPROM

Introduction

Most industrial computer systems come with standard RS-232 serial ports. Though widely accepted, RS-232 has limited transmission speed, range and networking capabilities. The RS-422 and RS-485 standards overcome these limitations by using differential voltage lines for data and control signals. The ADAM-4520/4522 converter lets you take advantage of RS-422 and RS-485 on systems originally equipped with RS-232. It transparently converts RS-232 signals into isolated RS-422 or RS-485 signals. You do not need to change your PC's hardware or your software. The ADAM-4520/4522 lets you easily build an industrial grade, long distance communication system with standard PC hardware.

The ADAM-4521 is an intelligent RS-422/485 to RS-232 converter specifically designed to connect RS-422/485 devices to an RS-232 network. RS-232 is the most common transmission standard. Although widely available on most computer systems, measurement equipment, PLCs, and industrial devices, its transmission speed, communication distance, and especially networking capability are limited due to unbalanced transmission. The ADAM-4521 addressable converter solves this problem and lets you easily build up an RS-485 network with your RS-232 devices by assigning each one an address for easier communication.

The ADAM-4510/4510S repeater simply amplifies, or boosts, existing RS-422/485 signals to enable them to cover longer distances. It extends the communication distance by 1200 m (4000 ft.) or increases the maximum number of connected nodes by 32.

Built-in Intelligence

The ADAM-4521 is equipped with a built-in microprocessor, which uses two UARTs and automatically processes data before transmitting it to the RS-232 device. This allows the ADAM-4521 to handle different baud rates between RS-232 devices and the RS-485 network. The microprocessor also verifies whether the data is transmitted with the appropriate address, which enables each RS-232 device on the RS-485 network to communicate with your PC over long distances.

An RS-485 Network with Automatic Data Flow Control Using RS-232 Software

The RS-485 standard supports half-duplex communication. This means that a single pair of wires is used to both transmit and receive data. Handshaking signals such as RTS (Request To Send) are normally used to control the direction of the data flow. A special I/O circuit in the ADAM-4510/4510S/4520/4521/4522 automatically senses the direction of the data flow and switches the transmission direction. No handshaking signals are necessary—you can build an RS-485 network with just two wires. This RS-485 control is completely transparent to the user. Software written for half-duplex RS-232 works without modification.

Specifications

Common

- **Power Requirement** — Uregulated +10 ~ +30 V_{DC}. Module protected from power reversals
- **Case** — ABS with captive mounting hardware
- **Accessories (supplied)** — ABS DIN-rail mounting adapter, Nylon DIN-rail mounting adapter (ADAM-4521 only) SECC panel mounting bracket
- **Plug-in Screw Terminal Wiring** — Accepts AWG 1- #12 or 2- #14 ~ #22 (0.5 to 2.5 mm²) wires
- **Operating Temperature** — -10 ~ 70° C (14 ~ 158° F)
- **Dimensions** — 60 x 120 mm (2.36" x 4.41")

ADAM-4510/4510S

- **Transmission Speeds (bps)** — 1200, 2400, 4800, 9600, 19.2 k, 38.4 k, 57.6 k, 115.2 k (switchable)
- **Isolation Voltage** — 3000 V_{DC} (ADAM-4510S only)
- **RS-422/RS-485 Interface Connector** — Plug-in screw terminal
- **Power Consumption** — 1.4 W @ 24 V_{DC}

ADAM-4520/4521/4522

- **Transmission Speed (bps)** — 300, 600 (ADAM-4521 only), 1200, 2400, 4800, 9600, 19.2 k, 38.4 k, 57.6 k 115.2 k, RTS control and RS-422 mode (switchable)
- **Isolation Voltage** — 3000 V_{DC} (ADAM-4520 only)
- **RS-232 Interface Connector** — Female DB9
- **RS-422/RS-485 Interface Connector** — Plug-in screw terminal
- **Power Consumption** — 1.2 W (ADAM-4520/4522) 1 W @ 24 V_{DC} (ADAM-4521)

Ordering Information

- **ADAM-4510** — RS-422/RS-485 repeater
- **ADAM-4510S** — Isolated RS-422/RS-485 repeater
- **ADAM-4520** — Isolated RS-232 to RS-422/485 converter
- **ADAM-4522** — RS-232 to RS-422/485 converter
- **ADAM-4521** — Addressable RS-422/485 to RS-232 Converter with 1000 V_{DC} Isolation

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All product specifications are subject to change without notice