

RS-485 – rugged differential bus (our house bus)

electrical standard, not a data format · differential · multi-drop

HOW IT WORKS

NOT a message format – an electrical UPGRADE for UART. Instead of one wire vs ground, it sends the signal as the DIFFERENCE between two wires (A and B). Noise hits both wires equally and cancels out → it survives long, noisy cable runs and many devices on one pair.

THE WIRES

A, B = the differential pair · GND

Termination (120 Ω) at the two physical ENDS of the bus only

A transceiver chip (THVD1450 / ADM2587E) converts UART ↔ A/B

KEY FACTS

Long runs (100s of m), many nodes (multi-drop), great noise immunity.

Half-duplex: one device talks at a time (a direction-control pin).

DMX and our house bus are both "UART carried over RS-485".

WHERE WE USE IT

The physical layer of the whole modular system: every module taps the A/B "house bus" via a THVD1450 and talks our byte protocol (DIP-addressed). DMX uses the isolated flavor (ADM2587E). It's the proven, cheap, rugged way to wire many modules together over a ribbon.