

Modbus RTU Troubleshooting Cheat Sheet

Official Technical Reference Guide | Valtoris Connectivity Solutions

1. Modbus Exception Codes (Diagnostic Reference)

Code	Meaning	Field Solution & Action
0x01	Illegal Function	Function code not supported by slave. Check the device's specific register map.
0x02	Illegal Address	Data address does not exist. Apply -1 Offset for Zero-based memory systems.
0x03	Illegal Value	The written data is outside the hardware's acceptable engineering limits.
0x0B	Gateway Timeout	No response from serial bus. Verify A/B wiring polarity and Slave Unit ID.

2. RS485 Physical Layer & Bus Stability

Wiring Polarity	Verify D+ (A) and D- (B) connections. Inverted polarity is the #1 cause of silent failures.
Termination	Active 120Ω resistors are required at the terminal nodes for long-distance runs (>100m).
Jitter / Gap	Ensure 3.5-char silent intervals. 9600bps requires >4ms; 19200bps requires >2ms.

3. Data Framing: Common Industry Mismatches

Serial Config	Data Bits	Parity	Stop Bits	Note
8-N-1	8	None	1	De-facto industry default for most sensors.
8-N-2	8	None	2	Modbus.org Official Standard for None Parity.
8-E-1	8	Even	1	Commonly used in Siemens/Schneider PLC environments.

Valtoris 1CH-RS232/485/422-ETH (V)

Reliable 3-in-1 Industrial Serial-to-Ethernet Gateway

MSRP: \$32.00

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