EM-346A | TTL-level Modbus

General connection and communication guide

This guide describes the 5 V TTL-level Modbus interface of the EM-346A. Register addresses, supported functions and data formats are provided in a separate, product-specific Modbus register document. Use documentation matching the hardware and firmware version of your driver.

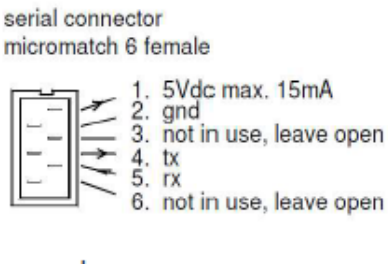
Interface overview

The EM-346A can be connected to a compatible host for point-to-point communication through the onboard red connector. This connector carries a 5 V logic-level serial interface; it is not an RS-485 port. Modbus describes the communication protocol, whereas TTL and RS-485 describe different electrical interfaces.

When an RS-485 bus connection is required, the separate EM-P189 RS-485 adapter can be connected. Some other Electromen devices have an onboard RS-485 port for direct bus connection. Always check the interface available on the specific device.

Connector pinout

Serial connector: 6-position Micro-MaTch female. Identify pin 1 and the connector orientation from the drawing below before wiring. Signal names are given from the driver's point of view.



Pin	Signal	Connection / function
1	+5 V	5 V supply output, maximum 15 mA. See power note below.
2	GND	Signal ground / common reference.
3	Not used	Leave open.
4	TX	Driver transmit output; connect to host RX.
5	RX	Driver receive input; connect to host TX.
6	Not used	Leave open.

Power note: pin 1 is a limited 5 V output, not the driver's main supply input. Do not connect an external 5 V source to this pin. Leave it open unless required by a compatible accessory; the load must not exceed 15 mA.

Direct point-to-point connection

Use a host interface compatible with the EM-346A's 5 V logic levels and serial signal arrangement. For a PC connection, use an adapter confirmed as compatible with this interface. A generic USB-to-serial adapter is not automatically suitable.

Connect driver TX (pin 4) to host RX, driver RX (pin 5) to host TX, and driver GND (pin 2) to host signal ground. Leave pins 3 and 6 open. Check pin 1 and connector orientation against the drawing; do not infer orientation from connector colour alone.

Keep the TTL connection short and route it away from motor leads, switching power cables and other sources of electrical interference. Use the RS-485 adapter when a bus or a longer communication connection is needed.

Electrical precautions

Do not connect RS-485 A/B signals, RS-232 signals or 24 V control signals directly to the red connector. Do not connect 3.3 V logic directly unless signal compatibility has been verified in both directions; use suitable level conversion when required.

Switch off power before making or changing connections. Do not use an adapter's supply pin to power the driver, or connect it to a connector supply pin, unless explicitly permitted by the product documentation. Do not assume that the serial interface provides galvanic isolation.

Connection to an RS-485 bus

Connect the EM-P189 to the EM-346A using the specified cable and connector orientation. Connect the adapter's RS-485 side to the host bus according to the EM-P189 instructions. Conversion takes place in the adapter: the driver-side connection remains TTL-level.

For multiple drivers, provide the required RS-485 interface for each device and assign a unique Modbus device address to each. Follow the adapter instructions for bus wiring, signal reference, shielding, termination and biasing. Do not parallel several red TTL connectors to form an RS-485 bus.

Communication setup

Configure the host to match the driver's documented Modbus serial mode, baud rate, parity, data bits, stop bits and device address. Obtain these values from the product-specific communication documentation; no default settings are specified in this guide.

The host acts as the Modbus client (master): it sends a request and the addressed driver acts as the server (slave), returning a response where required. Allow each transaction to finish or time out before sending the next request. Use the documented timing and retry settings.

For Modbus RTU operation, the host software must handle binary frames, CRC checking and frame timing. A serial terminal sending plain text is not sufficient. Use only functions and registers supported by the EM-346A firmware.

First communication test

Start with one driver and prevent unintended motor movement. Verify the connector pinout, interface compatibility, power supply and communication settings before applying power. Read a documented status or identification register before attempting any control writes.

After a valid response, check the returned value against the register document. Confirm units, scaling, signed values and register-address conventions before using the data. Enable motor commands only after verifying the required control mode and safe operating conditions.

If communication fails, check the selected host port, adapter compatibility, wiring, device address and serial settings. If communication works but motor commands do not, check the selected control mode, enable conditions and driver faults in the product manual. Do not assume that loss of communication automatically stops the motor; verify the documented behaviour and provide the application's required protective measures.

Related documentation

Use this guide together with the EM-346A product manual, the product-specific Modbus register document and, when applicable, the EM-P189 adapter instructions.

Protocol reference: Modbus.org, Modbus over Serial Line Specification and Implementation Guide V1.02 — https://www.modbus.org/file/secure/modbusoverserial.pdf