



Scope

ATevo Series Battery Chargers.

Summary

ATevo Series Battery Chargers may optionally be equipped with serial and/or Ethernet communications modules. This document explains how these options can be beneficial and answers frequently asked questions.

Benefits of ATevo Communications Options

ATevo Series Battery Chargers may optionally be equipped with up to three (3) Serial Communications Modules and/or one (1) Ethernet Communications Module. Both allow the user to use a SCADA, Supervisory Control and Data Acquisition system, or other remote monitoring system to do everything that the user can do at the charger's front panel. When firmware updates are made, new status, measurements, and controls automatically become available remotely through the communications module(s).

With a communications option installed, a user can view or change:

- **Meters:** Voltage, current, battery temperature, and other parameters.
- **Setpoints:** Float Voltage, Equalize Voltage, Low DC Voltage Alarm threshold, and all other setpoints.
- **Status:** Forced Load Share Enabled, Temperature Probe Installed, and others.
- **Charger Mode:** Float Mode or Equalize Mode.
- **Equalize Method:** Manual, Timer, or Auto.
- **Alarms:** DC Output Failure, Positive Ground Fault, and all other alarms.

Frequently Asked Questions (FAQ)

At a minimum, what should I monitor with a communications system?

It is recommended that you at least monitor the voltage and current that are displayed on ATevo's front panel and be notified whenever the alarms that have dedicated LEDs on the ATevo front panel, including the Common Alarm, become activate. A complete discussion of alarm meanings can be found in [JD5088-00 ATevo Alarms](#).



Which should I use – the Serial Communications Module(s) or Ethernet Communications Module?

The choice depends on your needs for 5 factors: transmission distance, number of devices, number of protocols required, ease of connection, and speed (to be discussed later).

Serial communications can transmit information by cable a maximum of 4,000 feet. Ethernet communications can connect to the Internet or Company Intranets for data transmission across the globe. Serial communications can connect up to 32 chargers/devices to a network and use only one protocol (language) at a time. Ethernet can connect to many more devices and can communicate via multiple protocols simultaneously. Serial communications will require some wiring skill when making connections to the module terminal block; Ethernet requires only a plug-in connection.

Which protocol (language) should I use? Modbus or DNP3?

Modbus has been a trusted industrial protocol for many years. It has many free tools available to simulate both ends of a connection. With Modbus, the network will periodically check the status of the charger via queries. This means that it is possible for some time to pass after a charger alarm has occurred before it is discovered by the remote monitoring or SCADA system.

DNP3 protocol was developed specifically for the utility industry. DNP3 can be configured with unsolicited messaging, so that a charger alarm gets passed immediately to the remote monitoring or SCADA system. DNP3 protocol also allows the system to query the charger periodically. ATevo supports DNP3 Level 2, which offers some advanced features.

Refer to Section 5 (DNP3) and Section 6 (Modbus) of [ATEvo Communications Manual](#) for further details about how to implement the protocols with ATevo.

What speeds can be achieved with each Communications module?

Using either protocol, ATevo's Serial Communications Module offers five (5) different baud speed (bits/second) choices: 9600, 19200, 38400, 576000, and 115200. For comparison with Ethernet speeds, ATevo's Serial Communications Module offers a top speed of 0.1152×10^6 or 0.1152 Mbps.

ATEvo's Ethernet Communications Module will communicate at 10 and 100 Mbps, which ranges from 86.8 to 868 times the speed offered by the Serial Communications Module.



How do you connect to a Serial Communications Module?

Up to 3 serial communications ports on ATevo may be equipped with a Serial Communications Module. Each module supports serial connection using either RS-232 or RS-485.

RS-232 is a standard serial connection used for computer systems limited to a maximum cable length of 50 feet. It only permits 2 devices to be connected and is more susceptible to electrical noise than RS-485 networks.

For industrial applications, RS-485 is recommended. RS-485 can have a maximum cable length of 4,000 feet and is designed to be immune to electrically noisy environments. RS-485 will also allow up to 32 devices, including chargers, to be connected to the network. Each charger is assigned an address so that the network knows which charger it is communicating with.

For applications where charger redundancy is required, and it is desired that all parallel chargers share the load equally, one of the Serial Communications Modules on each charger must be devoted to communication between chargers with RS-485 wiring and configuration. This is discussed further in your ATevo model's Operations Manual in Section 13 Forced Load Sharing.

How do you connect to the Ethernet Communications Module?

You connect the ATevo Charger to the Ethernet Communications Module in the same way that you connect a laptop to an Ethernet network in an office, via a cable with RJ45 connectors on both ends. One end connects to the Ethernet Communications Module; the other end connects to the Ethernet network hub, switch, or SCADA master.

Can fiber optics be used with the communications modules?

Yes. Section 3.1 of [ATEvo Communications Manual](#) describes how this can be accomplished with the Serial Communications Modules, and Section 3.2 describes how it can be done with the Ethernet Communications Module.

How do you configure each Communications Module?

Hardware configuration – selecting the number of wires used when connecting either RS-232 or RS-485 – must be made using jumpers on the Serial Communications Module as described in Section 3.1 of [ATEvo Communications Manual](#). Software configuration is done using ATevo's front panel controls as discussed in Section 4.1 (Serial Communications) or Section 4.2 (Ethernet Communications) of [ATEvo Communications Manual](#).



If the only thing I want to do remotely is see alarms, not control the charger, can't I do that with the Common Alarm?

The Common Alarm is an aggregate alarm that is triggered by other active alarms. The user can configure which alarms will do so. The Common Alarm may be wired for remote monitoring, however the Common Alarm does not indicate which alarm was activated, as do either of the optional communications modules.

Will the communications modules work with my existing SCADA system?

Yes. When properly connected and configured, either of the communications modules will allow your SCADA to monitor or control a charger, just as it does for other devices in the facility. Although SCADA software comes in many different versions, SCADA software communicates with the industrial protocols that ATevo uses – Modbus and DNP3. The SCADA software must be configured to poll (or request) the charger's data and write to the setpoint and control registers/points. HindlePower does not sell or maintain SCADA systems.

Can communications modules be added to an ATevo in the field?

Yes. The modules plug into existing ports on the charger. Hardware configuration is easily done using jumpers on the module. Software configuration takes a few minutes using ATevo's front panel controls.

References

Additional information is available from the following sources:

- [ATevo Communications Manual](#)
- [JD5088-00 – ATevo Alarms](#)
- [Operations Manual \(6-25 Adc, Single Phase Inputs\)](#)
- [Operations Manual \(30-100 Adc, Single Phase Inputs\)](#)
- [Operations Manual \(All Three Phase Inputs\)](#)
- [Charge! – Everything You Always Wanted to Know About Stationary Chargers](#)