Станции ввода-вывода серии ADAM-5000/485, ADAM-5000/TCP, ADAM-5000E, ADAM-5000L/TCP

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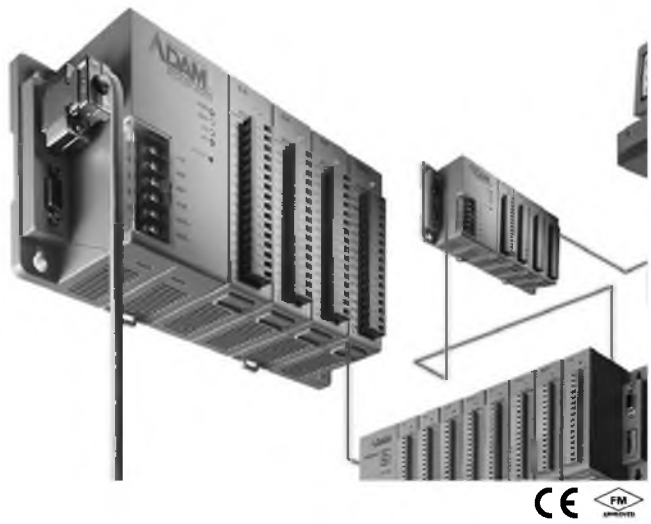
ADAM-5000/485
ADAM-5000E

Distributed DA&C System Based on RS-485



Features

- RS-485 Communication for easy installation and networking
- 4 or 8 slots for up to 128 points data monitoning card control in one module
- Extensive Software support, inclucles windows DLL drivers, OCX drivers, OPC server and popular HMI/SCAPA Software driver.
- Seamlessly inteqrated with easy-to-use ADAMView data acquisition Software.

Introduction

The ADAM-5000/485 and ADAM-5000E systems use the EIA RS-485 communication protocol. This is the industry's most widely used, balanced, bidirectional transmission line standard. The RS-485 was specifically developed for industrial applications to transmit and receive data at high rates over long distances.

Processor

- **CPU** 16-bit microprocessor
- **I/O module capacity** 4 or 8
- **Watchdog Timer** Yes
- **Power Consumption** 1.0 W (ADAM-5000/485)
  4.0 W (ADAM-5000E)

Isolation

- **Communication Isolation** 2500 V_{DC} (ADAM-5000/485)
  3000 V_{DC} (ADAM-5000E)
- **Communication Power Isolation** 3000 V_{DC}
- **I/O Module Isolation** 3000 V_{DC}

Diagnosis

- **Status Display** Power, CPU, communication
- **Self-test** Yes, while on
- **Software Diagnosis** Yes

Communication

- **Network** RS-232 or RS-485 (2-wire) to host
- **Speeds (bps)** 1200, 2400, 4800, 9600, 19.2 k, 38.4 k, 57.6 k, and 115.2 kbps
- **Max. Communication Distance** 4000 feet (1.2 km)
- **Command Format** ASCII command/response protocol
- **Reliability Check** Communication error checking with checksum
- **Asynchronous Data Format** 1 start bit, 8 data bits, 1 stop bit, no parity
- **Maximum Nodes** Up to 256 multi-drop systems per host serial port
- **Protection** Transient suppression on RS-485 communication lines

Power Requirements

- **Unregulated +10 to +30 V_{DC}**
- **Protected against Power Reversal**
- **Power Protection** Transient suppression on power input

Mechanical

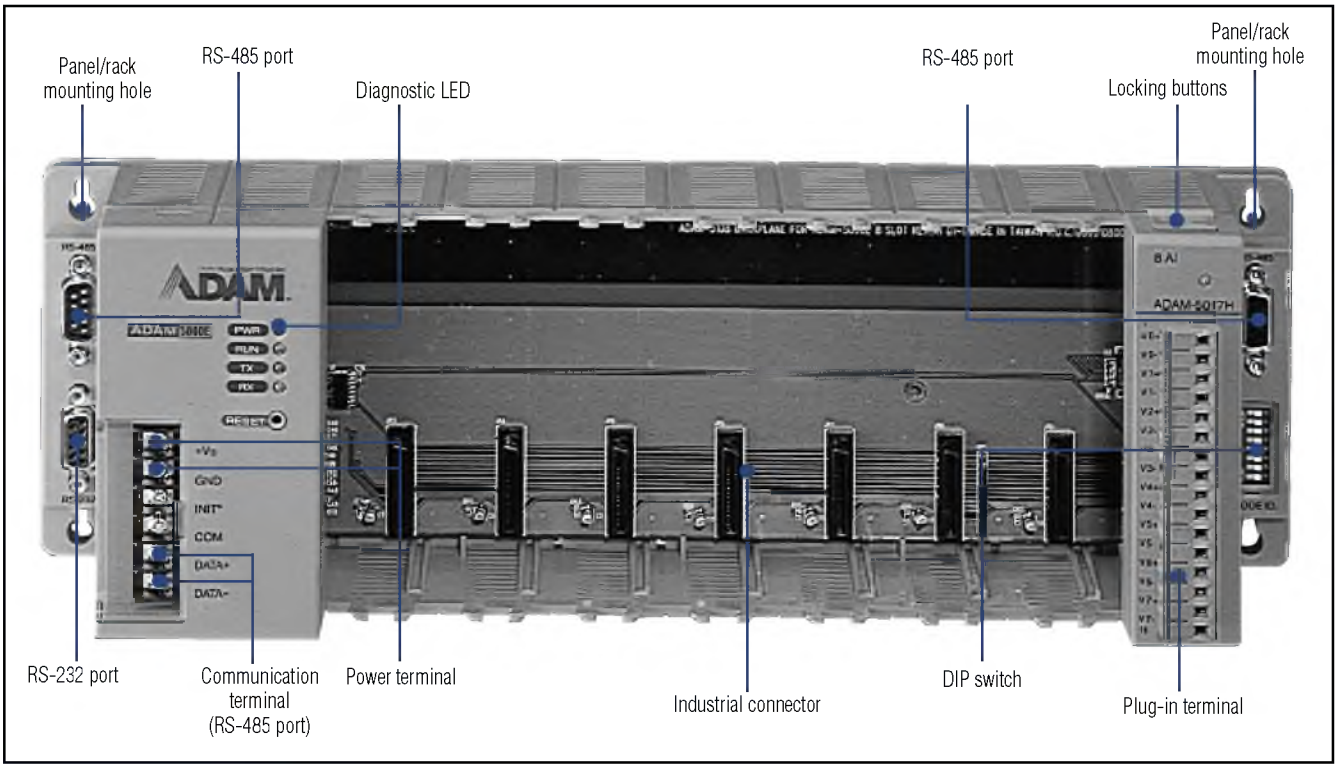
- **Case** KJW with captive mounting hardware
- **Plug-in Screw Terminal Block** Accepts 0.5 mm^2 to 2.5 mm^2, 1 - #12 or 2 - #14 to #22 AWG

Environment

- **Operating Temperature** -10 ~ 70° C (14 ~ 158° F)
- **Storage Temperature** -25 ~ 85° C (-13 ~ 185° F)
- **Humidity** 5 ~ 95%, non-condensing

Ordering Information

- **ADAM-5000/485** Distributed DA&C System Based on RS-485 (4 slot)
- **ADAM-5000E** Distributed DA&C System Based on RS-485 (8 slot)
- **PCLS-OPC/ADM** OPC Server for ADAM-4000/5000 Series (RS-485)
- **PCLS-OCX** ActiveX Control for Data Acquisition and Control
- **PCLS-ADAMVIEW32** ADAMView Data Acquisition Software



Feature Details

Two-wire Communication

The ADAM-5000/485 and ADAM-5000E systems use a single twisted pair of wires to transmit and receive data. Special circuitry ensures clean, reliable communication and suppresses communication line noise. This reduces overall network cost by simplifying installation and minimizing the number of cables, connectors, communication repeaters and filters required.

Surge Protection

High-speed transient suppressors protect the system from dangerous voltage surges or power spikes.

Network Expansion

The ADAM-4510 repeater simply amplifies or boosts existing signals, enabling them to travel over longer distances.

Each repeater allows you to add up to 32 ADAM-5000 units to your network, extending the network by another 4000 feet (1.2 km). Up to 256 ADAM-5000/485, ADAM-5000E units can be connected to a single RS-485 network.

RS-232 to RS-485 Conversion

RS-232 serial ports are standard with most industrial computer systems. Though widely accepted, RS-232 has limited transmission speed, range and networking capabilities. The RS-485 standard overcomes these limitations by using differential voltage lines for data and control signals.

The ADAM-4520's isolated converter lets you take advantage of an RS-485 on an RS-232 system by converting RS-232 signals to RS-485 signals. Software written for half-duplex RS-232 may also be used without modification.

The ADAM-4520 helps you build an industrial grade, long distance communication system with standard PC hardware.

Intelligent RS-485 Data Flow Control

The RS-485 communication protocol will support half-duplex communication. Only two wires are needed for transmitting and receiving data. Handshaking signals such as RTS (Request to Send) normally control the direction of the data flow. A special I/O circuit in the ADAM-4510 and ADAM-4520 senses the data flow direction and automatically switches the transmission direction, making handshaking signals unnecessary. The RS-485 bus control is completely transparent to the user.

Built-in RS-232 Communication

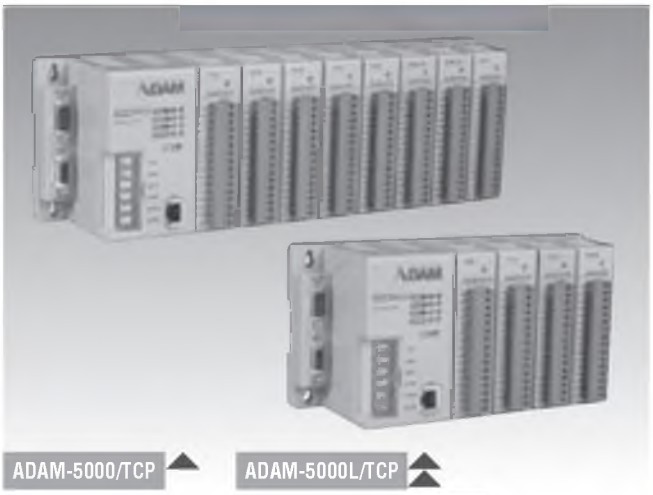
ADAM-5000/485 and ADAM-5000E systems provide up to 64/128 I/O points and an RS-232 port. A host PC can be locally connected to the system to control and monitor simple applications, thereby facilitating local troubleshooting.

ASCII-based Protocol

ADAM-5000 commands are issued in printable ASCII-based format. ADAM applications can be written in any high-level language that supports ASCII string functions, such as C, Pascal or BASIC. ASCII support means you can use virtually any computer to manage your ADAM network.

ADAM-5000L/TCP
4-slot Ethernet-based Distributed DA&C System

ADAM-5000/TCP
8-slot Ethernet-based Distributed DA&C System



CE FCC

Features

- ARM 32-bit RISC CPU
- 10/100Base-T auto-negotiation high-speed communication port
- Supports Modbus/TCP for easy integration
- Supports UDP event handling function
- Up to 100 m communication distance w/o repeater
- Allows remote configuration via Ethernet
- Allows concurrent access for 8 host PCs
- 4 I/O slots for up to 64 points and 8 I/O slots for up to 128 points data monitoring and control
- 1500 V_{DC} isolation for Ethernet communication
- Built-in watchdog timer for system auto-reset
- Windows utility
  - I/O modules configuration and calibration
  - Network auto searching
  - Data stream setting
  - Current status monitoring and alarm trigger
- Provides .NET Class LIB to develop applications

Introduction

ADAM-5000L/TCP and ADAM-5000/TPC are both Ethernet-based I/O systems. Without a repeater, ADAM-5000L/TCP and ADAM-5000/TCP can cover a communication distance up to 100 m. This allows remote configuration via Ethernet and eight PCs can simultaneously access the data. The ADAM-5000L/TCP and ADAM-5000/TCP are the solutions for easy configuration and efficient management. An ideal and cost-effective solution for eAutomation architecture.

Specifications

Control System

- **CPU** 32-bit ARM RISC
- **I/O Slots** ADAM-5000L/TCP: 4
ADAM-5000/TCP: 8
- **Memory** Flash ROM: 512 KB
RAM: 4 MB
- **Operating System** Real-time OS
- **LED Indicators** Power (3.3 V, 5 V)
CPU
Communication (Link, Active, 10/100 Mbps, Tx, Rx)
Battery

Communications (Ethernet)

- **Comm. Distance** 100 meters w/o repeater
- **Comm. Protocol** Modbus/TCP, TCP, UDP, IP, ARP
- **Data Transfer Rate** Up to 100 Mbps
- **Event Response Time** < 5 ms
- **Interface** 1 x 10/100Base-T (RJ-45)
- **Wiring** UTP, category 5 or greater

Communications (Serial)

- **Comm. Distance** RS-485: 1.2 km (4000 feet)
RS-232: 15 m
- **Comm. Protocol** Modbus/RTU
- **Data Transfer Rate** Up to 115.2 kbps
- **Interface** 1 x DB9-M for RS-485
1 x DB9-F for RS-485
1 x DB9-F for RS-232
- **Max. Nodes** 12 (in RS-485 daisy-chain network for Remote I/O connection)

Power

- **Power Consumption** 4.0 W @ 24 Vdc (ADAM-5000L/TCP) (not including I/O modules)
5.0 W @ 24 Vdc (ADAM-5000/TCP) (not including I/O modules)
- **Power Input** Unregulated 10 ~ 30 V_{DC}

Software

- **.NET Class LIB**
- **Windows Utility** Network setting, I/O configuration & calibration, data stream, alarm setting
- **Modbus/TCP OPC Server**

Protection

- **Communication Line Isolation** 3000 V_{DC}
- **I/O Module Isolation** 3000 V_{DC}
- **LAN Communication** 1500 V_{DC}
- **Overvoltage Protection** Yes
- **Power Reversal Protection** Yes

General

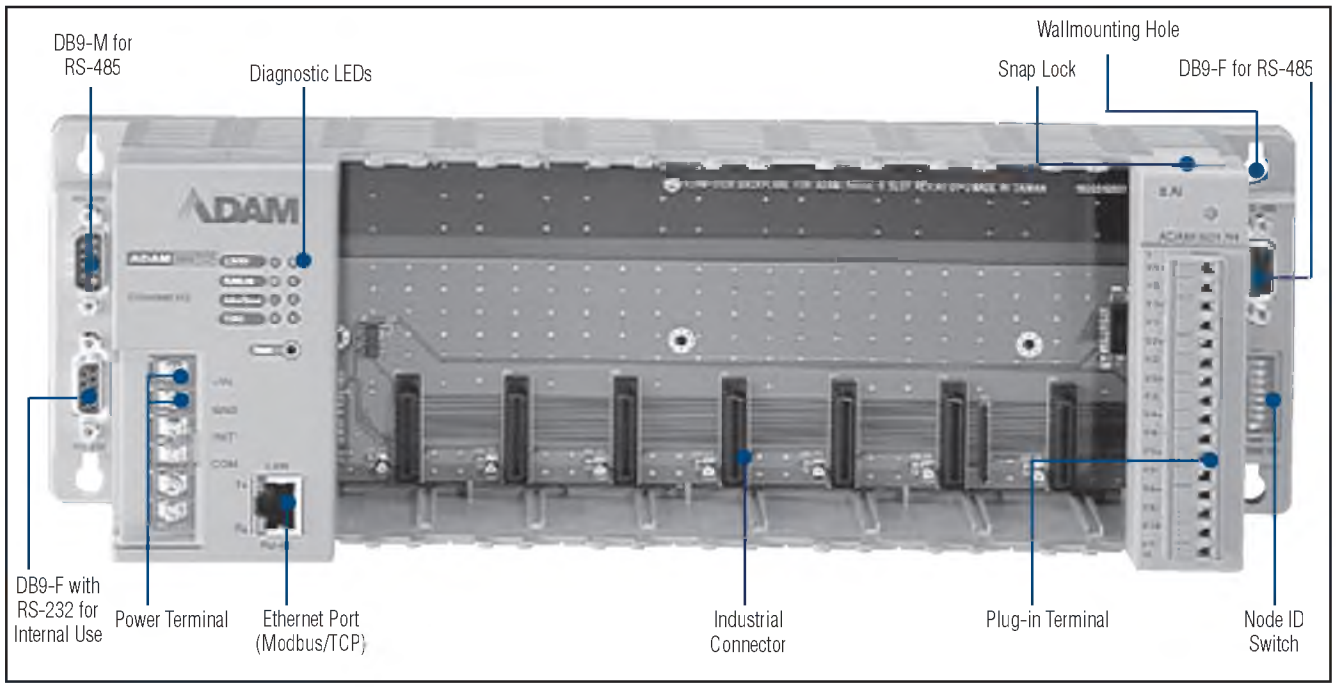
- **Certifications** CE, FCC class A
- **Connectors** 1 x DB9-M/DB9-F/screw terminal for RS-485 (communication)
1 x DB9-F for RS-232 (internal use)
1 x Screw-terminal for power input
1 x RJ-45 for LAN
- **Dimensions (W x H x D)** ADAM-5000L/TPC: 231 x 110 x 75 mm
ADAM-5000/TCP: 355 x 110 x 75 mm
- **Enclosure** ABS+PC
- **Mounting** DIN 35 rail, wall

Environment

- **Humidity** 5 ~ 95%, non-condensing
- **Operating Temperature** - 10 ~ 70° C (14 ~ 158° F)
- **Storage Temperature** - 25 ~ 85° C (-13 ~ 185° F)

Ordering Information

- **ADAM-5000L/TCP** 4-slot Ethernet-based Distributed DA&C System
- **ADAM-5000/TCP** 8-slot Ethernet-based Distributed DA&C System



Feature Details

Communication Network

With a 32-bit RISC CPU, ADAM-5000/TCP and ADAM-5000L/TCP greatly enhances data processing performance and ability, especially in network communication. There is a standard RJ-45 modular jack Ethernet port on the ADAM-5000/TCP and ADAM-5000L/TCP's CPU board, and the field I/O modules are able to link to an Ethernet network directly without any other converter or data gateway. The communication speed can be auto-switched between 10 Mbps and 100 Mbps data transfer rates, depending on the network environment. In addition, ADAM-5000/TCP and ADAM-5000L/TCP can be used as an Ethernet data gateway. It provides an RS-485 interface to integrate serial devices supporting the Modbus/RTU protocol.

Modbus/TCP Protocol

Modbus/TCP is one of the most popular standards used for industrial Ethernet networks. Using this communication protocol, ADAM-5000/TCP and ADAM-5000L/TCP is easy to integrate with any HMI software packages or user-developed applications which support Modbus. Users do not have to prepare a specific driver for the ADAM-5000/TCP and ADAM-5000L/TCP when they install the DA&C system with their own operating application. It reduces required engineering efforts. Moreover, ADAM-5000/TCP and ADAM-5000L/TCP works as a Modbus data server as well. It allows eight PCs or tasks to access its current data simultaneously, no matter if they connect from LAN, an intranet, or the Internet.

Hardware Capacity & Diagnostics

ADAM-5000/TCP and ADAM-5000L/TCP is designed with high I/O capacity and supports all types of ADAM-5000 I/O modules. Providing 8/4 slots for any mixed modules, this DA&C system handles up to 8/4 modules, providing 128/64 I/O points points (only four ADAM-5024s allowed). Different from other main units, the ADAM-5000/TCP and ADAM-5000L/TCP has not only higher I/O capacity, but also smarter diagnostics ability. There are eight indicators on the front case of the CPU module. Users can read the system status clearly, which includes power, CPU, Ethernet link, communication active, communication rate, etc. In addition, there are also Tx and Rx LEDs on the Ethernet port, indicating data sending and receiving.

Event Handling & Data Streaming

Though TCP/IP is the standard communication protocol for Ethernet, data transmission management is still a bottleneck when many clients are on the network at the same time. Therefore, the ADAM-5000/TCP and ADAM-5000L/TCP also supports the UDP protocol to deal with regular data stream broadcasting and event/alarm triggering. These functions will upgrade your system with intelligence and performance.

Isolated Communication

High speed transient suppressors isolate the ADAM-5000/TCP and ADAM-5000L/TCP Ethernet port from dangerous voltage up to 1500 V_{DC} power spikes and avoid surge damage to the whole system.

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