Ethernet Modbus/TCP

No configuration required when used as a simple switch with Acromag I/O modules.

900EN-S005
Ethernet Switch:

5-Ports, 10/100Mbps

■ Description

Acromag's five-port Ethernet switch is specially designed for use in industrial applications. Rugged construction and a variety of security features ensure reliable operation under demanding conditions. Internal intelligence enables "connect and go" operation for fast and easy network installation with auto-negotiation of data rate, flow control, and crossover signal compatibility. No configuration is necessary when the 900EN-S005 is used as a simple switch with Acromag I/O modules. For advanced users, this switch offers numerous control functions that are easily configured through DIP-switch settings or programmed using your computer.

Network Communication

Five shielded RJ-45 sockets, 8-pin, 10Base-T / 100Base-TX

Wired MDI-X with automatic MDI-X / MDI crossover

Auto-negotiated 10Mbps or 100Mbps

Auto-negotiated full or half duplex

IEEE 802.3, 802.3u, 802.3x compliance

Power Requirement

15 to 36V DC supply required

Approvals
CE marked. UL, cUL listed (pending).
Class I; Division 2; Groups A, B, C, D (pending).
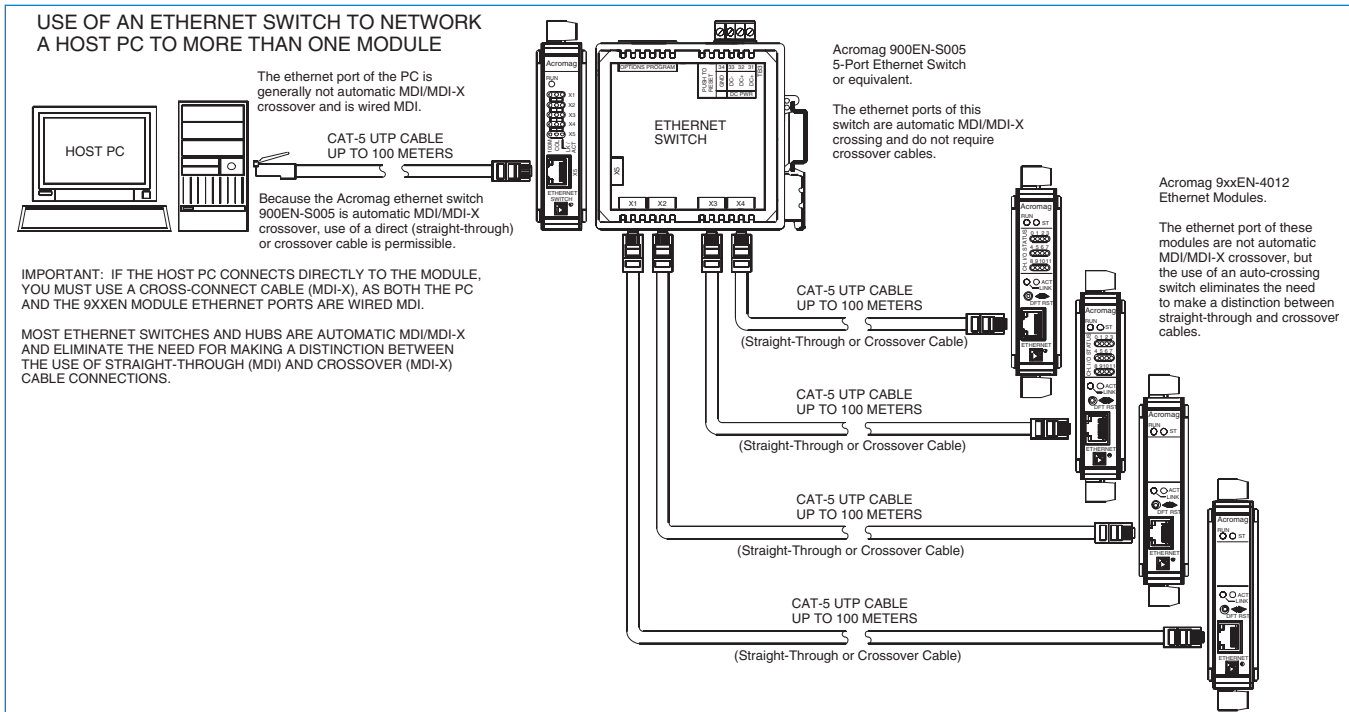
■ Special Features

Industrial-Grade
■ Reliable performance over wide -25 to 70°C ambient temperature range

■ Wide-Range DC-power with redundant power connection for optional standby backup power

■ Hardened for harsh environments to protect from RFI, EMI, ESD, EFT, and surges

■ Fully isolated for safety and increased noise immunity with power-to-network and port-to-port isolation

■ Easy mounting, removal, and replacement with plug-In terminal and DIN-rail mount

High-Performance
■ 10Base-T and 100Base-TX support automatically negotiates 10/100Mbps, half or full duplex with flow controls per IEEE 802.3

■ Store and forward operation for 1024 frames provides integrated address look-up supporting 1K absolute MAC addresses

■ Auto MDI/MDI-X crossover & auto-polarity eliminates special up-link/down-link ports or crossover cables

■ Unmanaged stand-alone operation does not require PC control

■ Broadcast storm protection helps unburden switch resources from excessive broadcast messaging

■ Integrated 128KB (32Kx32-bit) high-speed SRAM frame buffer is shared by all five ports and supports 1.4Gbps memory bandwidth

Advanced Features
■ Three programmable LED's per port provide link, activity, full/half duplex, speed indication

■ Optional DIP-switch programming offers alternative control of switch functions

■ Half-duplex back pressure flow controls defer transmission by other stations to avoid network congestion.

■ Energy miser function shuts down individual port power if no cable is connected to conserve energy

■ Toggle switch reset and default address generator is also useful to invoke DIP switch field programming and to restore communications to a known state

■ Smart address management features automatic address learning, address aging, and address migration

■ Advanced options are programmable via connection to your PC parallel port – LPTx (requires optional configuration cable)

■ Supports virtual LAN definitions with port-based VLAN controls allowing establishment of VLAN groups for additional security between groups and applications (requires optional configuration cable)

■ Queue priority management controls with advanced quality of service (QoS) supports "DiffServ" and IEEE 802.1p-based priority to prioritize different classes of voice, video, and data traffic, plus port-based priority (requires optional configuration cable)

USE OF AN ETHERNET SWITCH TO NETWORK A HOST PC TO MORE THAN ONE MODULE

The ethernet port of the PC is generally not automatic MDI/MDI-X crossover and is wired MDI.

HOST PC

CAT-5 UTP CABLE UP TO 100 METERS

Because the Acromag ethernet switch 900EN-S005 is automatic MDI/MDI-X crossover, use of a direct (straight-through) or crossover cable is permissible.

IMPORTANT: IF THE HOST PC CONNECTS DIRECTLY TO THE MODULE, YOU MUST USE A CROSS-CONNECT CABLE (MDI-X), AS BOTH THE PC AND THE 9XXEN MODULE ETHERNET PORTS ARE WIRED MDI.

MOST ETHERNET SWITCHES AND HUBS ARE AUTOMATIC MDI/MDI-X AND ELIMINATE THE NEED FOR MAKING A DISTINCTION BETWEEN THE USE OF STRAIGHT-THROUGH (MDI) AND CROSSOVER (MDI-X) CABLE CONNECTIONS.

ETHERNET SWITCH

Acromag 900EN-S005 5-Port Ethernet Switch or equivalent.

The ethernet ports of this switch are automatic MDI/MDI-X crossing and do not require crossover cables.

Acromag 9xxEN-4012 Ethernet Modules.

The ethernet port of these modules are not automatic MDI/MDI-X crossover, but the use of an auto-crossing switch eliminates the need to make a distinction between straight-through and crossover cables.

CAT-5 UTP CABLE UP TO 100 METERS
(Straight-Through or Crossover Cable)

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■ Performance

■ Ethernet Interface

Connector
Five shielded RJ-45 sockets, 8-pin, 10BaseT/100BaseTX.

Wiring
Wired MDI-X w/ automatic MDI-X / MDI crossover.

Data Rate
Auto-negotiated, 10Mbps or 100Mbps.

Duplex
Auto-negotiated, Full or Half Duplex.

Compliance
IEEE 802.3, 802.3u, 802.3x.

Port Status Indicators
Three LED's per port - red, yellow, and green. Two selectable indication modes combine speed, link status, activity indication, and duplex indication.

Address Learning
Automatic, stores up to 1K (1024) MAC addresses.

Address Aging
Automatic, 5 minute default, can be disabled.

Address Migration
Automatic.

Broadcast Storm Protection
Disabled (default), but may optionally select a variable receive threshold.

Priority
Transmit all high priority before any low priority (default) with a variable high:low interleave (optional). Optionally select DiffServ, 802.1p, and port-based priority controls.

Virtual LAN
Supports virtual LAN definitions.

Communication Distance
Distance between two devices generally limited to 100 meters. Hubs and switches can extend distance.

Program Interface
DIP-switches and EEPROM/I^2C interfaces allow some operating parameters to be modified and optional modes of operation to be set with or without a PC.

■ Environmental

Ambient Temperature
Operating: -25 to 70°C (-13 to 158°F).
Storage: -40 to 85°C (-40 to 185°F).

Relative Humidity
5 to 95%, non-condensing.

Isolation
Power and network circuits are isolated from each other for common-mode voltages up to 250VAC, or 354V DC off DC power ground, on a continuous basis (will withstand 1500VAC dielectric strength test for one minute without breakdown).

Power Requirements
Non-polarized 15-36V DC SELV.
Consult factory for current draw specifications.

Electromagnetic Interference Immunity (EMI)
Product has demonstrated resistance to digital upset (state change) with interference from switching solenoids, commutator motors, and drill motors.

Regulatory Approvals
Electromagnetic Compatibility (EMC): EN50082-1.
   ESD: EN61000-4-2.
   RFI: EN61000-4-3 and EN50204.
   EFT: EN61000-4-4.
   Surge: EN61000-4-5.
   CRFI: EN61000-4-6.
Emissions: EN50081-1.
   Radiated Emissions: EN55022 Class A.

■ Ordering Info

Models
900EN-S005
Ethernet switch, 5-port

Accessories (See Page 14)
5035-355
Ethernet cable, CAT5, 3 feet long

5035-360
Crossover cable for module configuration, CAT5E, 5 feet long, shielded

5035-365
Configuration cable for advanced features, DB-25 PC parallel port to dual row connector, 4 feet long

PS5R-D24
Power supply (24V DC, 2.1A)