ZENER 8000

Instruction Sheet

Part Number:	AQ08204
	AF08204 (fitted to Drive)
Description:	Option Board: Ethernet MODBUS/TCP
Compatibility:	ZENER 8000
	ECODRIVE 8000
Kit Includes:	1x Option Board
	Mylar insulation
	Plastic/nylon Screw
	(Cable & gland terminal kit optional)

Optional
IP66 Gland Plate terminal kit

Summary:

This Ethernet option card is required for MODBUS/TCP communications Protocol. THE ZENER 8000 checks for the presence of this card in one of its option slots. If detected, the ZENER 8000 will enable the menu & parameters specifically for MODBUS/TCP.

A maximum of two (2) option boards can be fitted per drive, either Left or Right position. Only One Ethernet option can be fitted, in either the Left or Right Slot.

MODBUS / TCP:

The ZENER 8000 implements MODBUS/TCP as described in Modbus-IDA.ORG documents:

- MODBUS Messaging on TCP/IP implementation guide V1.0a
- MODBUS Application Protocol Specification V1.1b

Why Modbus TCP/IP?

When it comes to choosing a network for your device, Modbus TCP/IP offers several significant advantages:

- **Simplicity:** Modbus TCP/IP simply takes the Modbus instruction set and wraps TCP/IP around it. Development costs are exceptionally low. Minimum hardware is required, and development is easy under any operating system.
- **Standard Ethernet:** There are no exotic chipsets required and you can use standard PC Ethernet cards to talk to your newly implemented device. You are no longer tied to one vendor for support, but benefit from the thousands of developers out there who are making Ethernet and the Internet the networking tools of the future.
- Modbus TCP/IP shares the same physical and data link layers of traditional IEEE 802.3 Ethernet and uses the same TCP/IP suite of protocols, it remains fully compatible with the already installed Ethernet infrastructure of cables, connectors, network interface cards, hubs, and switches.
- **Open:** The specification is available free of charge for download, and there are no subsequent licensing fees required for using Modbus or Modbus TCP/IP protocols.
- **Availability of many devices:** Interoperability among different vendors' devices and compatibility with a large installed base of Modbus-compatible devices makes Modbus an excellent choice.

Specification:

Network interface:	Industry standard RJ45 connector
	10/100 Mbps
	Auto MDI / MDIX
Physical Network:	Ethernet
Protocol:	MODBUS/TCP
Cable:	Category (CAT) 5, 5e or 6
Run Signal:	From Terminals or Network
Speed Reference:	Various selectable sources or Network
Local override:	Selectable from Digital inputs
Parameters:	IP address
	IP mask

MODBUS Functions:

The MODBUS memory model for the ZENER 8000 has separate blocks for Discrete Inputs, Coils, Input registers and holding registers. The following MODBUS Function Codes are supported:

- Function Code 01: Read Coils
- Function Code 02: Read Discrete Inputs
- Function Code 03: Read Holding Registers
- Function Code 04: Read Input Registers
- Function Code 05: Write Single Coil
- Function Code 06: Write Single Register
- Function Code 07: Read Exception Status
- Function Code 08: Diagnostics, Sub Codes 0,2,10...18,20
- Function Code 15: Write Multiple Coils
- Function Code 16: Write Multiple Holding Registers
- Function code 43: Read device Identification, Sub Code 14

Reference Documentation:

The MODBUS memory model for the ZENER 8000 has separate blocks for Discrete Inputs, Coils, Input registers and holding registers. See the MODBUS appendix in the ZENER 8000 instruction manual for details on addresses and sizes of each block.

Further Information:

For detailed information on functionality and programming refer to the instruction manual for the ZENER 8000.

Installation

⚠️ There are hazardous voltages inside the ZENER 8000 whenever it is connected to an electrical supply and for some time afterwards.

Before touching anything inside the ZENER 8000 enclosure or other equipment connected to the terminals, disconnect all sources of electrical power, wait at least 11 minutes for capacitors within the ZENER 8000 to discharge to less than 50VDC and then ensure by measurement, that there are no hazardous voltages (AC or DC) present.

All chassis (except CHA IP30)

Steps:

1. Safely Isolate. Ensure all power sources have been removed for at least 11 minutes and remain that way for the rest of the installation.
2. Remove the front door, and remove screws/nuts securing the display assembly and remove.
3. Remove the screws securing the control board and remove.
4. Turn the control board over and plug the option board into the one of the available slots. The right slot if available is recommended (looking from top side) for this option.
5. Lay the insulation sheet on top of the exposed metalwork where the control board sits.
6. Remove the spacer where the option board now sits.
7. Reposition the control board assembly and fix into place. A plastic screw is provided where the option is fitted on the right side.
8. Refit covers and the ZENER 8000 is now ready to re-connect power.

IP30 CHA Installation

Steps:

1. Safely Isolate. Ensure all power sources have been removed for at least 11 minutes and remain that way for the rest of the installation.
2. Remove the plastic terminal cover and the screw (2) on the top side of the chassis must also be removed.
3. Remove the screws securing the control board and remove.
4. Remove the front screw securing the control board assembly in place and remove the control board assembly.
5. Turn the control board over and plug the option board into the one of the available slots. The right slot if available is recommended (looking from top side) for this option.
6. Lay the insulation sheet on top of the exposed metalwork where the control board sits.
7. Remove the spacer that where the option board now sits.
8. Reposition the control board assembly and fix into place. A plastic screw is provided where the option is fitted on the right side.
9. Refit covers and the ZENER 8000 is now ready to re-connect power.

NOTE:
This option board can be placed in either the left or right slot. The preferred location is the right slot to allow for the Extended Features Option to be fitted in the left slot.