

Modbus Messaging on the TCP/IP Profile



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Introduction

The communication functions are the same as those described in the communication functions on Modbus.

Installation Principle

Although a remote Modbus station does not have an X-Way format address, each communication function will use an X-Way format address to designate a remote IP station.

For each remote Modbus station, you must configure the pair in the correspondence table (IP address, {network.station} X-Way) where:

- network: network number of the local X-Way station
- station: 100 to 164 = logical number of the X-Way station

For example, the X-Way address {2.108} is associated with the IP address 139.160.2.8.

This address will only be used by the local Premium module. It is not sent over the network.

In the case of a remote Premium station configured with the Modbus protocol, you should give an X-Way station address that takes the number of the local station and increments it by 100.

Sending Communication Functions

When the application sends communication functions to a remote device connected to Modbus via a serial-link Ethernet/Modbus gateway, the function address must be one of the following:

`ADDR('{network number. station number}0.0.0.Modbus destination address')`

where:

- *network number* and *station number* correspond to the X-Way address of the Ethernet/Modbus gateway
- *Modbus destination address* corresponds to the Modbus slave address

This syntax supports Modbus addresses in the range 0...253. On the Ethernet network, the Modbus TCP/IP frame will be sent to the gateway with the Modbus address coded in the Unit_Id field.

In the case the Unit_Id code is 254 or 255, for example to address TSX ETG100 gateway, the following syntax should be used:

`ADDR('{network number. station number}0.0.254.255')` to access the local variables of the TSX ETG100.

or

`ADDR('{network number. station number}0.0.254.Modbus destination address')`.

Data Exchange

The following requests are addressed to the device with which you wish to perform variable read or write operations:

Modbus Request	Modbus Function Code	Equivalent UNI-TE Function
Read bits	16#01	READ_VAR
Read words (up to 125 registers)	16#03	READ_VAR
Write a bit or n bits	16#0F	WRITE_VAR
Write a word or n words	16#06 or 16#10	WRITE_VAR
Read input bits	16#02	SEND_REQ
Read input words	16#04	SEND_REQ

NOTE:

The timeout value for `READ_VAR` is user-configurable as follows:

- If you enter a 0 as the timeout value, the block will never timeout.
- If you enter a non-zero value, the block will timeout at the non-zero value you entered.

NOTE: In server mode only, an ETY module can support function code 16#16, allowing it to mask the writing of a specified word.

Correspondence of Object Types

This table describes object type correspondence between a Premium PLC and a Momentum or Quantum PLC:

Premium Objects	Quantum or Momentum Objects
%MW: internal words	4x... memory area
%M: internal bits	0x... memory area
%IW: input words	3x... memory area
%I: input bits	1x... memory area

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