



Modbus Exception Codes

All

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Overview

The following information is taken from the Modicon Web site (modbus.org) and the Modbus application protocol manual.

Exception Responses

Programming or operation errors are those involving illegal data in a message, no response from the PC to its interface unit, or difficulty in communicating with a slave. These errors result in an exception response from either the master computer software (Modbus Communications Handler) or the PC Slave, depending on the type of error. The exception response codes are listed below. When a PC slave detects one of these errors, it sends a response message to the master consisting of the slave address, function code, error code and error check fields. To indicate that the response is a notification of an error, the high order bit of the function code is set to 1.

Code Dec/Hex	Name	Meaning
01/0x01	Illegal Function	The Function Code received in the query is not an allowable action for the server (or slave). This may be because the function code is only applicable to newer devices, and was not implemented in the unit selected. It could also indicate that the server (or slave) is in the wrong state to process a request of this type, for example because it is not configured and is being asked to return register values.
02/0x02	Illegal Data Address	The data address received in the query is not an allowable address for the server (or slave). More specifically, the combination of reference number and transfer length is invalid. For a controller with 100 registers a request of offset 96 and a length of 5 will generate exception 02.
03/0x03	Illegal Data Value	The value contained in the query data field is not an allowable value for the server (or slave). This indicates a fault in the structure of the remainder of a complex request, such as that the implied length is incorrect. It specifically does NOT mean that a data item submitted for storage in a register has a value outside the expectation of the application program, since the MODBUS protocol is unaware of the significance of any particular value of any particular register.

Code Dec/Hex	Name	Meaning
04/0x04	Failure In Associated Device	An Unrecoverable error occurred while the server (or slave) was attempting to perform the requested action. (See Note 1)
05/0x05	Acknowledge	Specialized in conjunction with programming commands. The server (or slave) has accepted the request and is processing it, but long duration of time will be required to do so. This response is returned to prevent a timeout error from occurring in the client (or master). The client (or master) can next issue a poll program complete message to determine if processing is completed.
06/0x06	Busy, Rejected Message	Specialized use in conjunction with programming commands. The server (of slave) is engaged in processing a long-duration program command. The client (or master) should retransmit the message later when the server (or slave) is free.
07/0x07	NAK – Negative Acknowledgement	The program function just requested cannot b performed. Issue poll to obtain detailed device dependent error information. Valid for Program/Poll 13 and 14 only.
08/0x08	Memory Parity Error	Specialized use in conjunction with function codes 20 and 21 and reference type 6, to indicate that the extended file area failed to pass a consistency check. The server (or slave) attempted to read record file, but detected a parity error in the memory. The client (or master) can retry the request, but service may be required on the server (or slave) device.
10/0x0A	Gateway Path Unavailable	Specialized use in conjunction with gateways. Indicates that the gateway was unable to allocate an internal communication path from the input port to the out port for processing the request.
11/0x0B	Gateway Target Device Failed to respond	Specialized use in conjunction with gateways. Indicates that no response was obtained from the target device. Usually means that the device is not present on the network.