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Modbus Function Codes

Each command starts with an address followed by a function code. These are used to read data from discrete inputs and input registers. They can also read/write data on coils and holding registers of each Modbus device you address.

The following is a table of object types provided by a Modbus slave device to a Modbus master device:

Object type	Access	Size
Coil	Read-write	1 bit
Discrete input	Read-only	1 bit
Input register	Read-only	16 bits
Holding register	Read-write	16 bits

Modbus Frame

The frame format is composed of an Application Data Unit (ADU), which encloses a Protocol Data Unit (PDU):

- ADU = Address + PDU + Error check
- PDU = **Function code** + Data

Most used Function Codes

Read:
- **01:** Coils (FC=01)
- **02:** Discrete Inputs (FC=02)
- **03:** Multiple Holding Registers (FC=03)
- **04:** Input Registers (FC=04)

Write:
- **05:** Single Coil (FC=05)
- **06:** Single Holding Register (FC=06)
- **0F:** Multiple Coils (FC=15)
- **10:** Multiple Holding Registers (FC=16)

All Modbus Function Codes

The various reading, writing and other operations are categorised as follows. The most primitive reads and writes are shown in bold. A number of sources use alternative terminology, for example Force Single Coil where the standard uses Write Single Coil. Prominent entities within a Modbus slave are:

- Coils (1 bit): readable and writable, states: on/off
- Discrete Inputs (1 bit): readable, states: on/off
- Input Registers (16 bit): readable, essentially measurements and statuses
- Holding Registers (16 bit): readable and writable, essentially configuration values

Function type			Function name	Function code
Data Access	Bit access	Physical Discrete Inputs	**Read Discrete Inputs**	2

		Internal Bits or Physical Coils	**Read Coils**	1
			Write Single Coil	5
			Write Multiple Coils	15
	16-bit access	Physical Input Registers	**Read Input Registers**	4
		Internal Registers or Physical Output Registers	**Read Multiple Holding Registers**	3
			Write Single Holding Register	6
			Write Multiple Holding Registers	16
			Read/Write Multiple Registers	23
			Mask Write Register	22
			Read FIFO Queue	24
	File Record Access		Read File Record	20
			Write File Record	21
Diagnostics			Read Exception Status	7
			Diagnostic	8
			Get Com Event Counter	11
			Get Com Event Log	12
			Report Slave ID	17
			Read Device Identification	43
Other			Encapsulated Interface Transport	43

Contents retrieved from

- https://en.wikipedia.org/wiki/Modbus

More information

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