

### 6.3 03 (0x03) Read Holding Registers

This function code is used to read the contents of a contiguous block of holding registers in a remote device. The Request PDU specifies the starting register address and the number of registers. In the PDU Registers are addressed starting at zero. Therefore registers numbered 1-16 are addressed as 0-15.

The register data in the response message are packed as two bytes per register, with the binary contents right justified within each byte. For each register, the first byte contains the high order bits and the second contains the low order bits.

#### Request

Function code	1 Byte	<b>0x03</b>
Starting Address	2 Bytes	0x0000 to 0xFFFF
Quantity of Registers	2 Bytes	1 to 125 (0x7D)

#### Response

Function code	1 Byte	<b>0x03</b>
Byte count	1 Byte	2 x N*
Register value	N* x 2 Bytes	

\*N = Quantity of Registers

#### Error

Error code	1 Byte	<b>0x83</b>
Exception code	1 Byte	01 or 02 or 03 or 04

Here is an example of a request to read registers 108 – 110:

Request		Response	
Field Name	(Hex)	Field Name	(Hex)
Function	<b>03</b>	Function	<b>03</b>
Starting Address Hi	<b>00</b>	Byte Count	<b>06</b>
Starting Address Lo	<b>6B</b>	Register value Hi (108)	<b>02</b>
No. of Registers Hi	<b>00</b>	Register value Lo (108)	<b>2B</b>
No. of Registers Lo	<b>03</b>	Register value Hi (109)	<b>00</b>
		Register value Lo (109)	<b>00</b>
		Register value Hi (110)	<b>00</b>
		Register value Lo (110)	<b>64</b>

The contents of register 108 are shown as the two byte values of 02 2B hex, or 555 decimal. The contents of registers 109–110 are 00 00 and 00 64 hex, or 0 and 100 decimal, respectively.

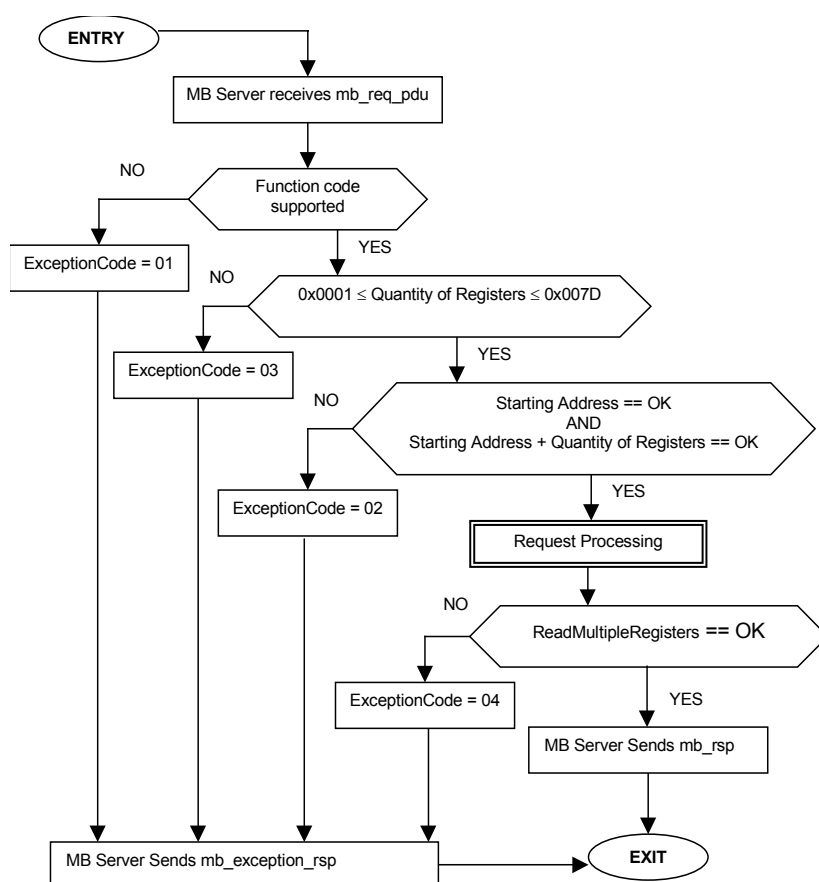


Figure 13: Read Holding Registers state diagram

#### 6.4 04 (0x04) Read Input Registers

This function code is used to read from 1 to approx. 125 contiguous input registers in a remote device. The Request PDU specifies the starting register address and the number of registers. In the PDU Registers are addressed starting at zero. Therefore input registers numbered 1-16 are addressed as 0-15.

The register data in the response message are packed as two bytes per register, with the binary contents right justified within each byte. For each register, the first byte contains the high order bits and the second contains the low order bits.

##### Request

Function code	1 Byte	0x04
Starting Address	2 Bytes	0x0000 to 0xFFFF
Quantity of Input Registers	2 Bytes	0x0001 to 0x007D

##### Response

Function code	1 Byte	0x04
Byte count	1 Byte	2 x N*
Input Registers	N* x 2 Bytes	

\*N = Quantity of Input Registers

##### Error

Error code	1 Byte	0x84
Exception code	1 Byte	01 or 02 or 03 or 04

Here is an example of a request to read input register 9:

Request		Response	
Field Name	(Hex)	Field Name	(Hex)
Function	04	Function	04
Starting Address Hi	00	Byte Count	02
Starting Address Lo	08	Input Reg. 9 Hi	00