



BRMO 80 / MB-TCP

User Manual

Réf : **MU-BRMO 80-MB-TCP-1.4-EN**

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About this document

After a short presentation of the BRMO 80 family products, this document explains how to use a BRMO 80 / MB-TCP (Modbus-TCP version).

Document History

- 1.0 : first draft
- 1.1 : add annexes
- 1.2 : modify mode order
- 1.3 : add address information
- 1.4 : change product reference with new Ethernet connector (4 pins D coded M12)

Glossary

CRC : Cyclical Redundancy Check
EAS : Electronic Article Surveillance
RTU : Remote Terminal Unit

Important User Information

Information in this document is not binding.

BALOGH Company reserves the right to modify our product in line with our policy of continuous product development.

BALOGH Company will not be responsible of possible consequences or errors due to worst use of the product. The use of this device must ensure that all the necessary steps have been taken to verify that the application meets all performance and safety requirements.

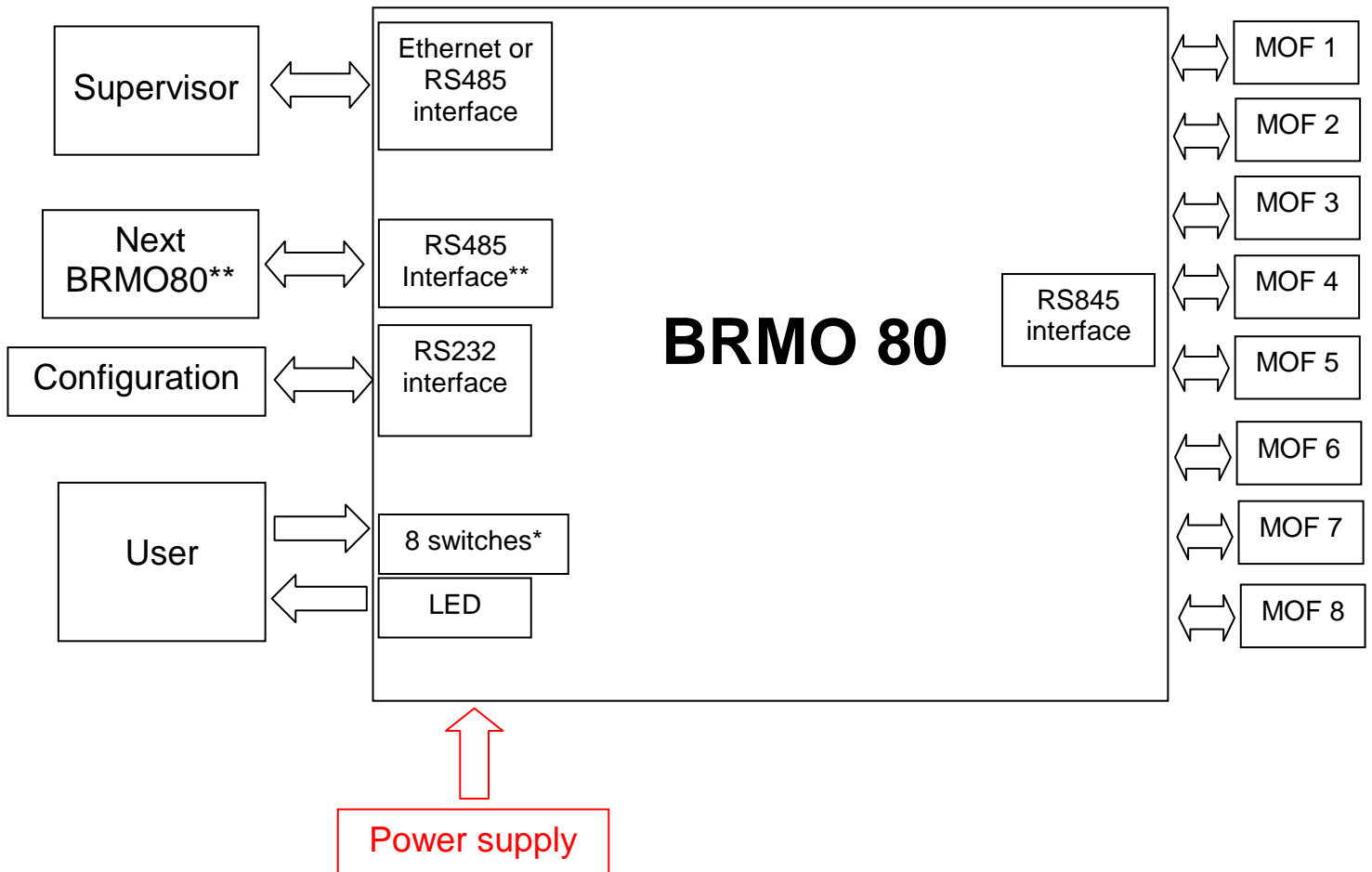
1 ABOUT THE BRMO 80 FAMILY

The BRMO 80 products are divided into 2 field bus applications:

1. Ethernet with Modbus-TCP and EthernetIP protocols
2. RS485 with Modbus RTU protocol

These 2 products offer high performance to dialog with multiple Balogh RFID readers (MOF). Automatic identifications are ensured by these products.

The figure below illustrates the basic properties of the BRMO 80:



*Switches are only present on Ethernet version (IP addressing)

**this interface to chain BRMO 80 is only available on RS485 version

Supervisor: an automate application that sends commands and consults responses

Configuration: an RS232 host (PC with RS232) that read/change configuration and read traces

User: user that changes switches (IP address) and watch led

MOFs: RFID readers dialog with TAGs

Next BRMO 80: only in RS485 product, possibility to chain BRMO80 devices

The rest of the document gives the presentation for the Ethernet Modbus-TCP version.

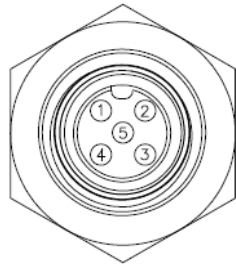
2 CONNECTION

Connectors are based on M12 standard:



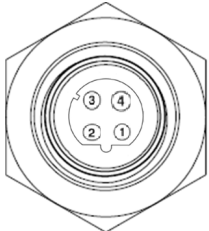
8 connectors M12 5 pins female for the 8 readers

Pin	RS485
1	+ 24V
2	A
3	B
4 et 5	0V



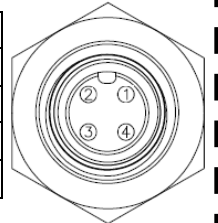
Connector M12 4 pins female D coded for Ethernet

Pin	Ethernet
1	TD+
2	RD+
3	TD-
4	RD-



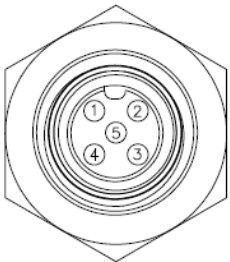
Connector M12 4 pins male for power supply

Pin	RS232
1	+ 24V
2	nc
3	nc
4	0V



Connector M12 5 pins female for configuration

Pin	RS232
1	nc
2	Rx
3	Tx
4	0V
5	nc



LED

8 switches (IP address)

3 INTERFACES

3.1 POWER SUPPLY

This interface uses a M12 4 pins male connector to power the BRMO 80.

It is required to use a regulated 24 VDC on pin 1 and the GND on pin 4.

The maximum power consumption may vary with number of readers connected.

The next table presents the typical and maximum consumption for a BRMO 80 product, a MOF932 reader and MOF100 reader:

product	Consumption (mA)	Typical	Maximal
BRMO 80		68	120
MOF932		105	120
MOF100		93	100

A BRMO 80 can drive from 2 to 8 FRID MOF readers. The next table presents the prevision of consumption in the 4 configurations:

Product	Consumption (mA)	Typical	Maximal
BRMO 80 with 2 MOF932		278	360
BRMO 80 with 8 MOF932		908	1080
BRMO 80 with 2 MOF100		254	320
BRMO 80 with 8 MOF100		812	920

During initialization, peaks of current occurs that's why a 1,5 A power supply is recommended.

3.2 ETHERNET

Ethernet uses a M12 4 pins D coded female connector to be interface with the supervisor.

A standard 10/100 Mbps link can be used.

The Ethernet IP address can be configured by switches (default address is 192.168.0.x) for the last digit (see 4.3 chapter to configure all LAN parameters).

The used protocol is **Modbus/TCP** where all requests are sent via TCP on registered **port 502**.

BRMO 80 / MB-TCP responds to all Modbus/TCP "unit identifier" (slave address) number.

Differentiation between BRMO 80 products are only done with their IP address.

Read/write multiple register Modbus/TCP commands (0x03 and 0x10) are supported, please consult chapter 5 to manage Modbus/TCP commands.

3.3 CONFIGURATION

Configuration port is a M12 5 pins female connector.

The communication uses a standard RS232 link configured:

- at 9600 bauds
- with 8 bits data
- no parity
- 1 stop bit.

3.4 MOF READERS

MOF RFID readers are connected via a M12 5 pins female connector.

The communication uses a standard RS485 link configured:

- at 57600 bauds
- with 8 bits data
- no parity
- 1 stop bit.

As reader dialogues with Modbus RTU protocol, each MOF reader must have a unique slave number from 1 to 8 (at maximum).

If only 5 readers were configured and installed, they must take slave numbers from 1 to 5.

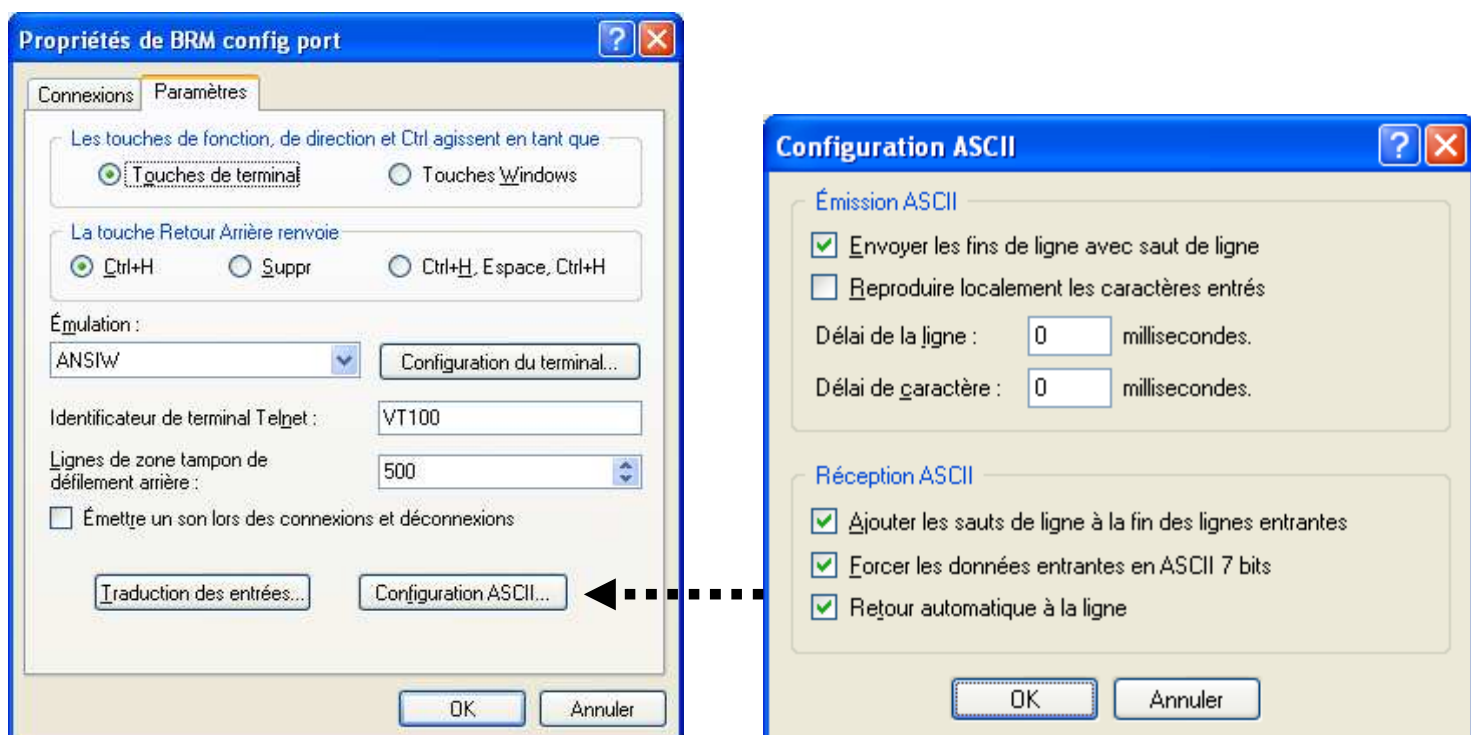
4 CONFIGURATION OF BRMO 80 / MB-TCP

To configure the device, user must ensure that the BRMO 80 is powered (led is green) and connected to a PC with a serial port com.

The entire configuration can be done with a Terminal.

4.1 HYPERTERMINAL CONNECTION

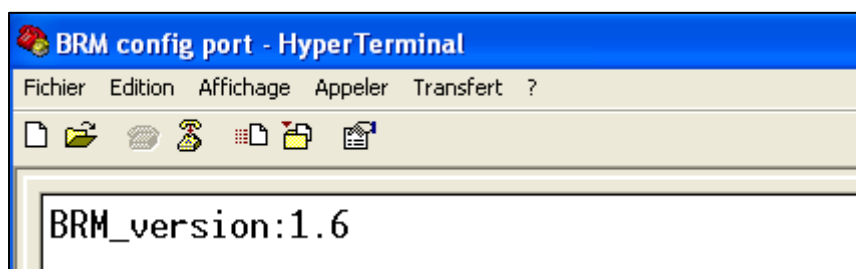
Launch HyperTerminal application in: Start->Programms->Accessory->Communication
Once the right port com selected, configure the parameters like that:



4.2 DIALOG COMMANDS

2 commands can be used to dialog with the product:

- send "v" to ask the firmware version



In this example the version is 1.6.

- send "r" to have the current configuration of the BRMO 80

```

BALOGH BRMO80-Ethernet v1.6 configuration :
-----
NETWORK PARAMETERS
  IP addr on LAN : 192.168.0.4
  LAN subnet mask : 255.255.255.0
  Network gateway addr : 0.0.0.0
  Device MAC addr : 00-30-11-04-44-B6
  IP addr configured with switch : on
READER PARAMETERS
  Reader number : 2
  BRMO80 mode : 1
  Auto size read : 8
  Auto high block addr read : 0x20
  Auto low block addr read : 0x00
SERVICING PARAMETER
  Output traces : off
  
```

All these parameters are explained in the next chapter.

4.3 CONFIGURATION PARAMETERS

Network parameters

- **IP address** : give the current IP address on the LAN Ethernet
- **Subnet mask** : give the current subnet mask
- **Gateway address** : give the current gateway address
- **Device MAC address** : give the product MAC address (cannot be changed)
- **IP addr configured with switch** : with this parameters user can enable/disable switches use to configure last digit of IP address

MOF Reader parameters

- **Reader number**: give the number of MOF RFID reader that can be used on the BRMO 80. This reader number must be between 2 and 8.
- **BRMO 80 mode** : give the current mode used by the BRMO 80 (see chapter 6 to used BRMO 80 modes). The number must be from 0 to 2.
- **Auto size read** : this size is given in byte and it is only used when BRMO 80 is configured in an auto mode. This parameter cannot be changed.
- **Auto high block addr read**
- **Auto low block addr read** : these 2 parameters cannot be dissociate and give the current address where the auto size read returns automatically data (explanations are given in chapter 6)

Servicing parameter

- **Output traces** : with this parameters user can enable/disable traces use to debug or trace activity in BRMO 80. This traces can be interpreted only with a specific Balogh tool.

To change configuration a specific text file must be sent with the Terminal to the BRMO 80.

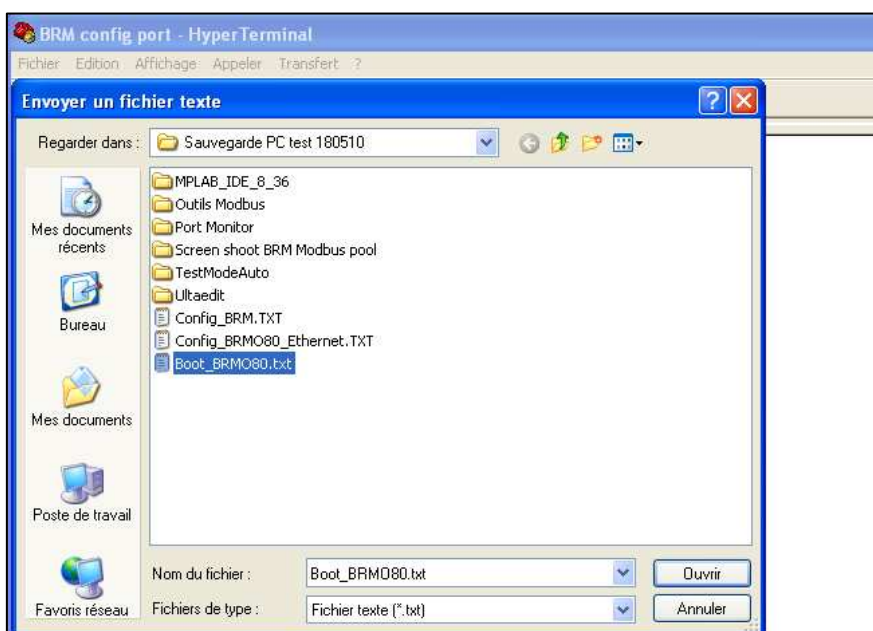
The format of this file cannot be change, only value can be updated.

This format is:

IP addr on LAN : 192.168.0.144
 LAN subnet mask : 255.255.255.0
 Network gateway addr : 0.0.0.0
 IP addr configured with switch : on
 Reader number : 8
 BRMO80 mode : 2
 Auto high block addr read : 0xFF
 Auto low block addr read : 0xFF
 Output traces : off

4.4 CHANGE CONFIGURATION

To send the configuration text file to the BRMO 80, HyperTerminal can be used. In “Transfer->Send text file” menu choose the configuration file like in this example:



In this example the configuration is the one in the precedent chapter.

Once the file is sent the led must blind during 5 seconds in orange and the BRMO 80 restarts. To ensure that the configuration is received, a message must be display on Terminal:

```
Correct configuration => please wait until BRM restarts !
```

A simple read command can confirm that the new configuration is taken into account:

```
BALOGH BRMO80-Ethernet v1.6 configuration :
-----
NETWORK PARAMETERS
  IP addr on LAN : 192.168.0.4
  LAN subnet mask : 255.255.255.0
  Network gateway addr : 0.0.0.0
  Device MAC addr : 00-30-11-04-44-B6
  IP addr configured with switch : on
READER PARAMETERS
  Reader number : 8
  BRMO80 mode : 2
  Auto size read : 8
  Auto high block addr read : 0x20
  Auto low block addr read : 0x00
SERVICING PARAMETER
  Output traces : off
```

Make attention with IP address because in the example in previous page, the last digit sent in IP address is 144. Here when user read the actual configuration the read IP address is 4. This is due to switch and parameter to activate switches.

In fact here the switches are activated that why the IP address set is the one by switches (see the parameters IP addr configured with switch).

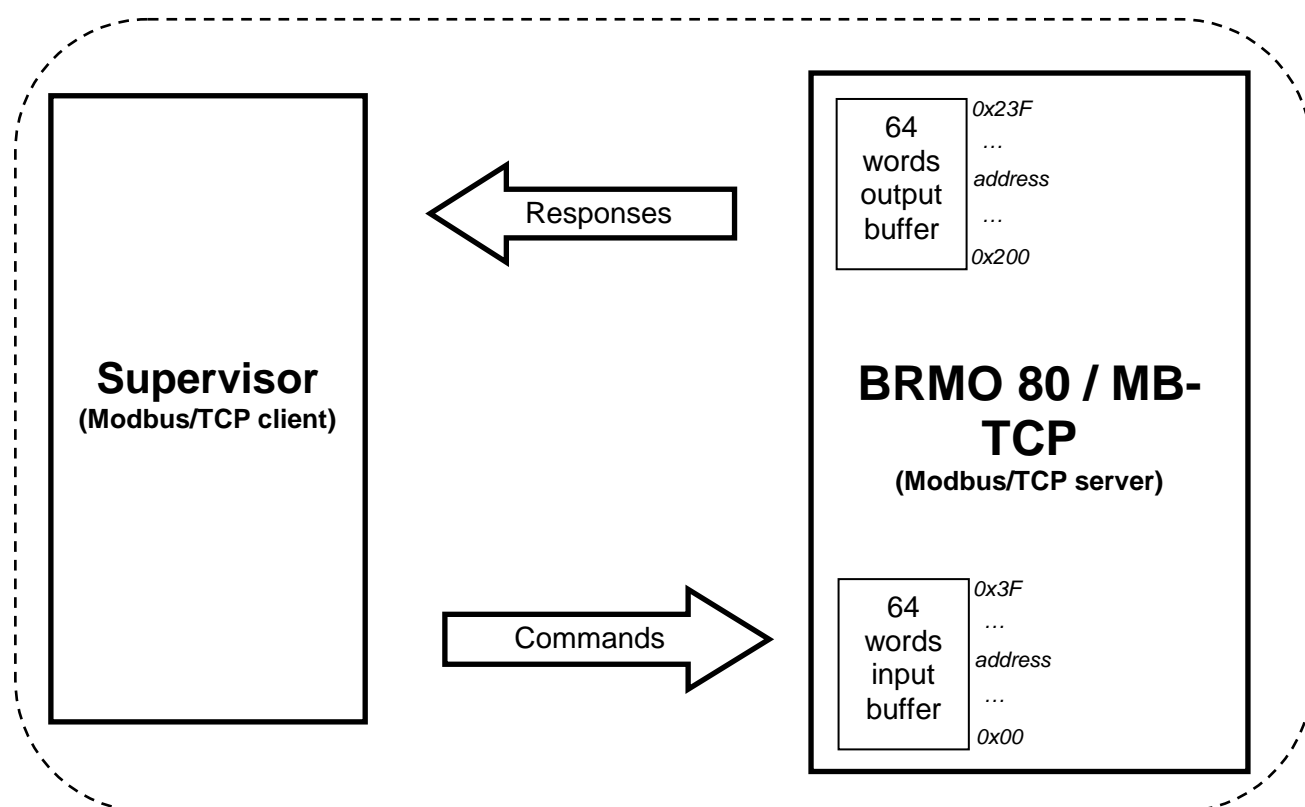
5 IO BUFFER ORGANISATION AND MODBUS/TCP COMMANDS

For each data direction between the supervisor and the BRMO 80 / MB-TCP, a 128 data bytes buffer length is used.

In fact each time the supervisor would send a command, this command is written into the BRMO 80 input buffer. The response will be written by the BRMO 80 in his output buffer.

As the supervisor is the client Modbus/TCP, it is his responsibility to access BRMO 80 input and output buffers.

In Modbus/TCP the protocol can exchange only word that why the IO data size in input and output are 64 words (1 word = 2 bytes).



All requests are sent via TCP on registered **port 502**.

BRMO 80 / MB-TCP responds to all Modbus/TCP "unit identifier" (slave address) number. Differentiation between BRMO 80 products are only done with their IP address.

BRMO 80 / MB-TCP **input buffer** is addressed at **[0x0 ; 0x03F]** and **output buffer** at **[0x200 ; 0x23F]** (*output buffer may be also accessible at [0;0x3F] thanks to 0x04 Modbus read function*).

These **Modbus/TCP function codes** are used to access input and output BRMO 80 / MB-TCP buffer:

- **0x03** : read multiple registers to consult the 64 words output buffer
- **0x10** : write multiple registers to write data into the 64 words input buffer
- **0x0D** : I/O scanning (write and read in each frame)

6 MODES

BRMO 80 has 3 different modes:

- 0 : transparent
- 1 : full master
- 2 : full master with command

Transparent mode is the only mode non automatic.

In fact in mode 1 and 2 the data are in a specific format explained in next chapter.

Transparent mode : supervisor can send read/write commands to each reader through BRMO 80

Full master mode : the BRMO 80 presents (sends) the entire automatic data table when a new activity is detected on a reader

Full master with command mode : the BRMO 80 switches between the full master mode and the transparent mode when read/write commands are initiate by the supervisor

6.1 AUTO DATA MAPPING

Each of the auto mode presents all or a part of this table (each case corresponded a byte):

Reader number 1	0	Read number LSB	Read number MSB	Status byte 0	Status byte 1	Byte 0 Sector or UID	Byte 1 Sector or UID	Byte 2 Sector or UID	Byte 3 Sector or UID	Byte 4 Sector or UID	Byte 5 Sector or UID	Byte 6 Sector or UID	Byte 7 Sector or UID
Reader number 2	0	Read number LSB	Read number MSB	Status byte 0	Status byte 1	Byte 0 Sector or UID	Byte 1 Sector or UID	Byte 2 Sector or UID	Byte 3 Sector or UID	Byte 4 Sector or UID	Byte 5 Sector or UID	Byte 6 Sector or UID	Byte 7 Sector or UID
Reader number 3	0	Read number LSB	Read number MSB	Status byte 0	Status byte 1	Byte 0 Sector or UID	Byte 1 Sector or UID	Byte 2 Sector or UID	Byte 3 Sector or UID	Byte 4 Sector or UID	Byte 5 Sector or UID	Byte 6 Sector or UID	Byte 7 Sector or UID
Reader number 4	0	Read number LSB	Read number MSB	Status byte 0	Status byte 1	Byte 0 Sector or UID	Byte 1 Sector or UID	Byte 2 Sector or UID	Byte 3 Sector or UID	Byte 4 Sector or UID	Byte 5 Sector or UID	Byte 6 Sector or UID	Byte 7 Sector or UID
Reader number 5	0	Read number LSB	Read number MSB	Status byte 0	Status byte 1	Byte 0 Sector or UID	Byte 1 Sector or UID	Byte 2 Sector or UID	Byte 3 Sector or UID	Byte 4 Sector or UID	Byte 5 Sector or UID	Byte 6 Sector or UID	Byte 7 Sector or UID
Reader number 6	0	Read number LSB	Read number MSB	Status byte 0	Status byte 1	Byte 0 Sector or UID	Byte 1 Sector or UID	Byte 2 Sector or UID	Byte 3 Sector or UID	Byte 4 Sector or UID	Byte 5 Sector or UID	Byte 6 Sector or UID	Byte 7 Sector or UID
Reader number 7	0	Read number LSB	Read number MSB	Status byte 0	Status byte 1	Byte 0 Sector or UID	Byte 1 Sector or UID	Byte 2 Sector or UID	Byte 3 Sector or UID	Byte 4 Sector or UID	Byte 5 Sector or UID	Byte 6 Sector or UID	Byte 7 Sector or UID
Reader number 8	0	Read number LSB	Read number MSB	Status byte 0	Status byte 1	Byte 0 Sector or UID	Byte 1 Sector or UID	Byte 2 Sector or UID	Byte 3 Sector or UID	Byte 4 Sector or UID	Byte 5 Sector or UID	Byte 6 Sector or UID	Byte 7 Sector or UID

In fact each MOF reader has one line in this table. The size of the table depends of the reader number configured.

For each MOF reader, the information saved in this table is:

- The reader number
- A null byte use for padding
- 2 bytes that give the number of read applies in this reader
- 2 bytes that give the status of the reader (See reader technical notice)
- 8 bytes of data automatically read when a TAG is present in front of a MOF reader

The 8 data bytes automatically retrieved can be:

- 8 memory bytes in the TAG with the data base address composed with the parameters "Auto high block addr read" and "Auto low block addr read" (see configuration parameters of the BRMO 80).
- the UID(unique identifier) of the TAG. The specific address 0x2000 is interpreted by the BRMO 80 as UID automatic data read.

Each time a TAG is present in front of a MOF reader, the read number is increased and the data is read.

6.2 TRANSPARENT MODE

In this mode the Supervisor can read/write directly a MOF reader.

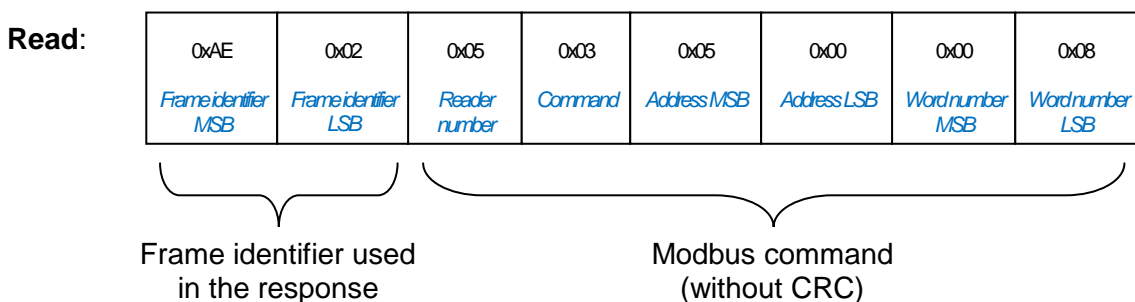
In fact in the MOF readers network connected to BRMO 80, each reader has a unique slave number (see protocol protocol Modbus RTU and chapter 3.4).

To read/write, the supervisor must use Standard Modbus RTU (using without CRC bytes) commands. These commands are sent at the 0x0000 address into the BRMO 80 / MB-TCP input buffer.

A frame identifier in 2 bytes is used at the beginning of the command.

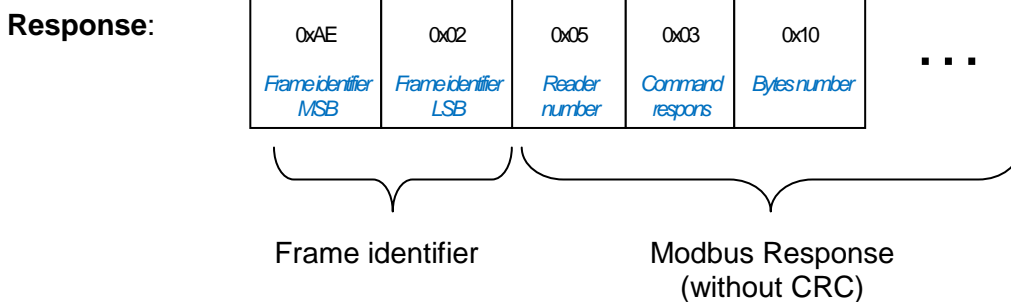
The same identifier is sent into the response to differentiate frames.

For example this is 2 commands below, the first is a read:



This frame number 0xAE02 (44546) is a read command on the reader 5 at the address 0x500 and for 8 words long.

For response, if a TAG is presented in front of the reader 5, a correct response (see exemple below) could be transferred, and if no TAG is presented a wrong response will be sent.



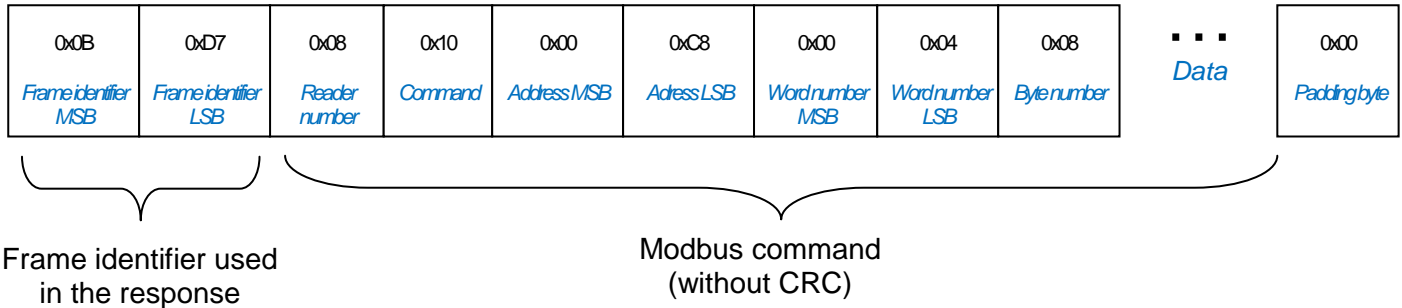
Here is a correct response to the read command where data are not represented.

Request responses to read/write commands are written into the BRMO 80 / MB-TCP output buffer at the 0x200 address.

As BRMO 80 / MB-TCP is a Modbus/TCP server, it is the client responsibility to retrieve data.

BRMO 80 / MB-TCP

Write example command:

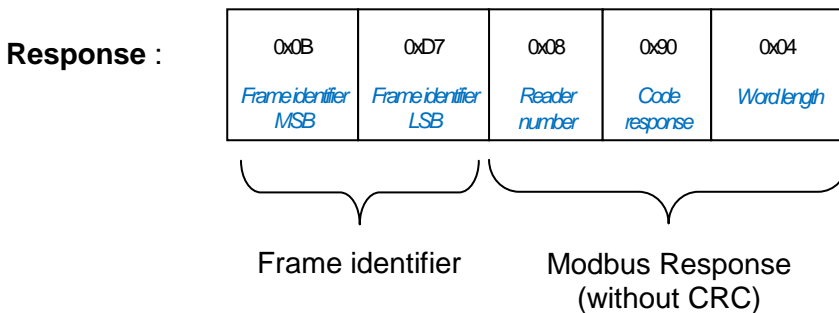


This frame number 0xBD7 (3031) is a write command on reader number 8 at the address 0xC8 for 4 words long (here the 4 data words are not represented).

As standard Modbus RTU command, the Modbus/TCP is based on data word long (2 bytes). That's why the last byte (null value) is a padding one. It is not interpreted in the command but it is necessary to have when an even number of bytes must be transferred.

In response to a write command the result (positive or not) will be sent into the BRMO 80 / MB-TCP output buffer at the 0x200 address.

For example, the write command response could be:



In this mode, exchange data length could be 112 bytes length at maximum (56 words).

Read and write examples with the Modbus/TCP server "Modbus Poll" are provided in annexes 2 and 3.

6.3 FULL MASTER MODE

In this mode, BRMO 80 / MB-TCP writes the full automatic data table (112 bytes length) each time a new activity has been detected on a MOF reader. Each time a TAG arrives in the field of a MOF reader or every time a TAG leaves the field of a MOF reader, the full table is presented into the BRMO80 / MB-TCP output buffer at the 0x200 address.

In this case none command can be answer by the supervisor. But it only consults the BRMO 80 / MB-TCP output buffer to get the actual state of the automatic reader table.

An example is given in annex 4.

6.4 FULL MASTER MODE WITH COMMAND

This is the default mode when BRMO 80 / MB-TCP first starts after production.

This mode presents the entire automatic reader table each time a new activity is detected in front of a reader. This behavior is similar to “full master” mode, but in this mode supervisor can send read/write command like in “transparent” mode.

To differentiate automatic reader table and result of read/write commands, a frame identifier is added at the beginning of the automatic reader table, these 2 bytes (1 word) are 0xFF and 0xFF.
See annex 5 to have an example.

By default in this mode, the “full master” functioning is applied (automatic reader data table presented).

When a new read/write command is sent by the supervisor (see chapter 6.2 for command format) to the BRMO 80, the transparent mode is the active mode. In this case the automatic reader table is not presented to the BRMO output buffer.

To retrieve again automatic reader table (full master mode), the supervisor must send a specific read command (to leave “transparent” mode).
This specific command is a read command sent to the reader 1 in 0xFFFF address where the length is not taken into account.

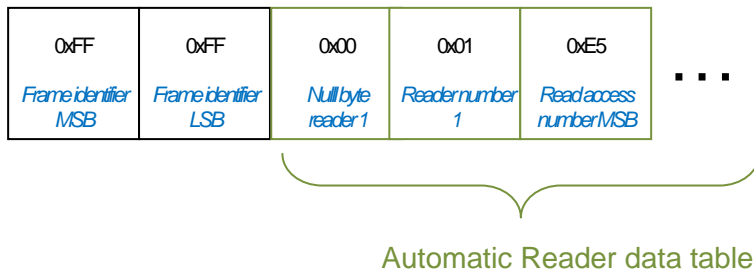
In response BRMO 80 / MB-TCP returns the automatic reader table and leave “transparent” mode.

For example this read command can be:

0xF0	0x52	0x01	0x03	0xFF	0xFF	0x00	0x02
<i>Frame identifier MSB</i>	<i>Frame identifier LSB</i>	<i>Reader number</i>	<i>Command</i>	<i>AddressMSB</i>	<i>AddressLSB</i>	<i>Wordnumber MSB</i>	<i>Wordnumber LSB</i>

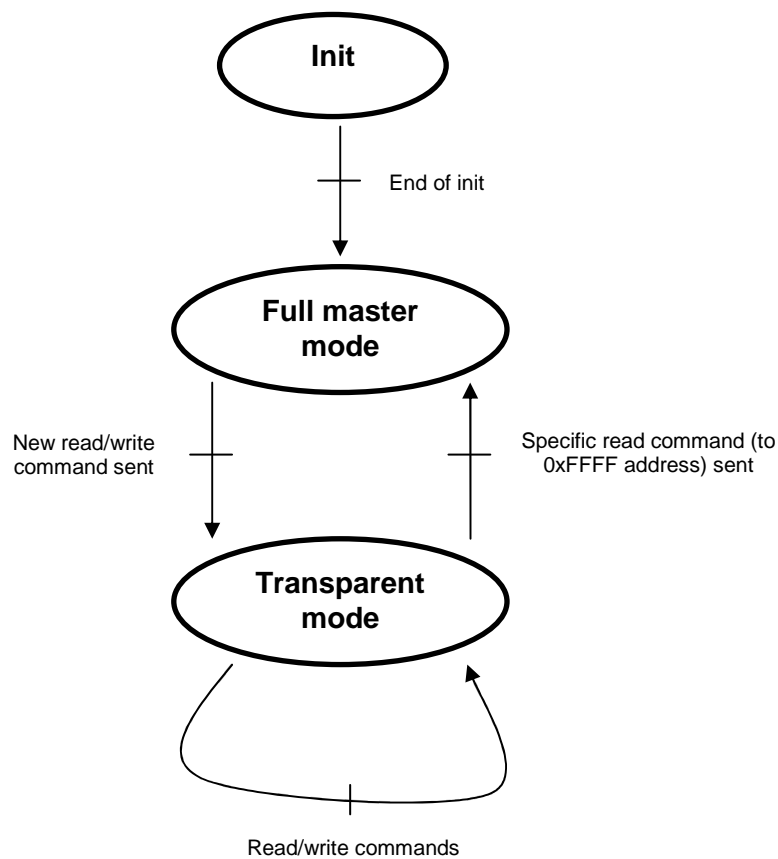
BRMO 80 / MB-TCP

The answer is provided in BRMO 80 output buffer at address 0x200:



An example of this specific read command sent with Modbus Poll is given in annex 6.

This state machine presents the management of the 2 modes mixed:



7 ANNEXE

7.1 ANNEX 1: ASCII TABLE

décimal	octal	hexadécimal	caractère	décimal	octal	hexadécimal	caractère
0	00	0	NUL	64	100	40	@
1	001	01	SOH	65	101	41	A
2	002	02	STX	66	102	42	B
3	003	03	ETX	67	103	43	C
4	004	04	EOT	68	104	44	D
5	005	05	ENQ	69	105	45	E
6	006	06	ACK	70	106	46	F
7	007	07	BEL	71	107	47	G
8	010	08	BS	72	110	48	H
9	011	09	HT	73	111	49	I
10	012	0A	LF	74	112	4A	J
11	013	0B	VT	75	113	4B	K
12	014	0C	FF	76	114	4C	L
13	015	0D	CR	77	115	4D	M
14	016	0E	SOH	78	116	4E	N
15	017	0F	SI	79	117	4F	O
16	020	10	DLE	80	120	50	P
17	021	11	DC1	81	121	51	Q
18	022	12	DC2	82	122	52	R
19	023	13	DC3	83	123	53	S
20	024	14	DC4	84	124	54	T
21	025	15	NAK	85	125	55	U
22	026	16	SYN	86	126	56	V
23	027	17	ETB	87	127	57	W
24	030	18	CAN	88	130	58	X
25	031	19	EM	89	131	59	Y
26	032	1A	SUB	90	132	5A	Z
27	033	1B	ESC	91	133	5B	[
28	034	1C	FS	92	134	5C	\
29	035	1D	GS	93	135	5D]
30	036	1E	RS	94	136	5E	^
31	037	1F	US	95	137	5F	_
32	040	20	SP	96	140	60	`
33	041	21	!	97	141	61	a
34	042	22	"	98	142	62	b
35	043	23	#	99	143	63	c
36	044	24	\$	100	144	64	d
37	045	25	%	101	145	65	e
38	046	26	&	102	146	66	f
39	047	27	'	103	147	67	g
40	050	28	(104	150	68	h
41	051	29)	105	151	69	i
42	052	2A	*	106	152	6A	j
43	053	2B	+	107	153	6B	k
44	054	2C	,	108	154	6C	l
45	055	2D	-	109	155	6D	m
46	056	2E	.	110	156	6E	n
47	057	2F	/	111	157	6F	o
48	060	30	0	112	160	70	p
49	061	31	1	113	161	71	q
50	062	32	2	114	162	72	r
51	063	33	3	115	163	73	s
52	064	34	4	116	164	74	t
53	065	35	5	117	165	75	u
54	066	36	6	118	166	76	v
55	067	37	7	119	167	77	w
56	070	38	8	120	170	78	x
57	071	39	9	121	171	79	y
58	072	3A	:	122	172	7A	z
59	073	3B	;	123	173	7B	{
60	074	3C	<	124	174	7C	
61	075	3D	=	125	175	7D	}
62	076	3E	>	126	176	7E	~
63	077	3F	?	127	177	7F	DEL

7.2 ANNEX 2: 112 BYTES READ COMMAND WITH MODBUS POLL

Read request (identifier 0xEED4) in 0x0000 on the reader number 1 has responded (the beginning data is at address 0x02) in BRMO 80 / MB-TCP transparent mode.

Response frame identifier

Correct response from reader 1, read response (0x03) of 112 bytes (0x70). Data bytes are 0x01, 0x02, 0x03 ...

16: Write multiple registers (HEX)

Slave ID: 1
Address: 0
Quantity: 4

000 = 0xEED4
001 = 0x0103
002 = 0x0000
003 = 0x0038

Read request number 0xEED4 on reader number 1 for 56 data words long (0x38)

	Alias	00000	Alias	00020	Alias	00040
0		0xEED4		0x3637		0x7677
1		0x0103		0x3839		0x7879
2		0x7001		0x4041		0x8081
3		0x0203		0x4243		0x8283
4		0x0405		0x4445		0x8485
5		0x0607		0x4647		0x8687
6		0x0809		0x4849		0x8889
7		0x1011		0x5051		0x9091
8		0x1213		0x5253		0x9293
9		0x1415		0x5455		0x9495
10		0x1617		0x5657		0x9697
11		0x1819		0x5859		0x9899
12		0x2021		0x6061		0xA0A1
13		0x2223		0x6263		0xA2A3
14		0x2425		0x6465		0xA4A5
15		0x2627		0x6667		0xA6A7
16		0x2829		0x6869		0xA8A9
17		0x3031		0x7071		0xB0B1
18		0x3233		0x7273		0xB200
19		0x3435		0x7475		0x0000

7.3 ANNEX 3: 112 BYTES WRITE COMMAND WITH MODBUS POLL

Write request (identifier 0x5544) in 0x0000 on the reader number 1 has responded in BRMO 80 / MB-TCP transparent mode.

The screenshot shows the Modbus Poll interface with a table of data and a dialog box for writing multiple registers. The table has columns for 'Alias' and 'Value'. The dialog box is titled '16: Write multiple registers (HEX)' and shows a list of registers with their values. A 'Response ok' dialog box is also visible.

	Alias	Value	Alias	Value	Alias	Value
0	00000	0x5544	00020	0x3637	00040	0x7677
1		0x0110		0x3839		0x7879
2		0x0000		0x4041		0x8081
3		0x0038		0x4243		0x8283
4		0x0405		0x4445		0x8485
5		0x0607		0x4647		0x8687
6		0x0809		0x4849		0x8889
7		0x1011		0x5051		0x9091
8		0x1213		0x5253		0x9293
9		0x1415		0x5455		0x9495
10		0x1617		0x5657		0x9697
11		0x1819		0x5859		0x9899
12		0x2021		0x6061		0xA0A1
13		0x2223		0x6263		0xA2A3
14		0x2425		0x6465		0xA4A5
15		0x2627		0x6667		0xA6A7
16		0x2829		0x6869		0xA8A9
17		0x3031		0x7071		0xB0B1
18		0x3233		0x7273		0xB200
19		0x3435		0x7475		0x0000

16: Write multiple registers (HEX)

Slave ID: 1

000 = 0x5544
 001 = 0x0110
 002 = 0x0000
 003 = 0x0038
 004 = 0x7001
 005 = 0x0203
 006 = 0x0405
 007 = 0x0607
 008 = 0x0809
 009 = 0x1011
 010 = 0x1213
 011 = 0x1415

Response ok

OK

Response frame identifier

Correct response on reader 1, write command response (0x10) of 56 words (0x38)

Write request number 0x5544 on reader 1 of 56 data words long (0x38) with data 0x01, 0x02 ...

7.4 ANNEX 4: READER TABLE ACCESS IN FULL MASTER MODE WITH MODBUS POLL

Full table access in full master mode.

The screenshot shows the Modbus Poll interface with a table of reader data. The status bar at the top indicates: Tx = 15354; Err = 24; ID = 1; F = 04; SR = 10ms.

	Alias	00000	Alias	00020	Alias	00040
0		0x0100		0x0000		0x0000
1		0x0200		0x0400		0x0000
2		0x0088		0x0100		0x0700
3		0xE007		0x0088		0x0100
4		0x0000		0xE008		0x0088
5		0x0176		0x0111		0xE004
6		0x3747		0x1B55		0x0100
7		0x0200		0x11A2		0x002B
8		0x0000		0x0500		0x0C0A
9		0x0080		0x0000		0x0800
10		0x0000		0x0080		0x0100
11		0x0000		0x0000		0x008D
12		0x0000		0x0000		0xE007
13		0x0000		0x0000		0x0000
14		0x0300		0x0000		0x0176
15		0x0000		0x0600		0x3747
16		0x0088		0x0000		0x0000
17		0x0000		0x0080		0x0000
18		0x0000		0x0000		0x0000
19		0x0000		0x0000		0x0000

Annotations:

- Directly automatic data bytes without identifier because none command are needed.
- On this reader 1 there were 2 TAG reads
- The status 0x88 signifies that there is no TAG present in front of the reader 1. Follow the 8 UID bytes of the last TAG accessed.
- The status 0x8D signifies that there is a TAG present in front of the reader 8. Follow the 8 UID bytes of the actual TAG.

Note that no command is needed to have automatic reader table.

7.5 ANNEX 5: AUTOMATIC READER TABLE IN FULL MASTER MODE WITH COMMAND (WITH MODBUS POLL)

All automatic reader information in the table:

Specific frame identifier in this mode for the automatic reader data table

With the status 0x89, supervisor has the information that TAGs are presented in front of readers 2, 3 and 4

	Alias	00000	Alias	00020	Alias	00040
0		0xFFFF		0x0506		0x0000
1		0x0100		0x0708		0x0000
2		0x0000		0x0400		0x0000
3		0x0088		0x0100		0x0700
4		0x0000		0x0089		0x0000
5		0x0000		0xEEEF		0x0088
6		0x0000		0xF0F1		0x0000
7		0x0000		0xF2F2		0x0000
8		0x0200		0xF3F3		0x0000
9		0x0300		0x0500		0x0000
10		0x0089		0x0000		0x0800
11		0x000A		0x0088		0x0000
12		0x000B		0x0000		0x0088
13		0x1D1D		0x0000		0x0000
14		0x1D1D		0x0000		0x0000
15		0x0300		0x0000		0x0000
16		0x0100		0x0600		0x0000
17		0x0089		0x0000		0x0000
18		0x0102		0x0088		0x0000
19		0x0304		0x0000		0x0000

7.6 ANNEX 6: SPECIFIC READ COMMAND IN FULL MASTER MODE WITH COMMAND (WITH MODBUS POLL)

To leave the “transparent” behavior in this mode, the specific read command must be sent:

The screenshot shows the Modbus Poll interface with a table of registers and a dialog box for writing multiple registers.

Alias	00000	Alias	00020	Alias	
0	0xFFFF		0x0000		0
1	0x0100		0x0000		0
2	0x0300		0x0000		0
3	0x0089		0x0000		0
4	0xE008		0x0000		0
5	0x0007		0x0000		0
6	0x5427		0x0000		0
7	0xD4B1		0x0000		0
8	0x0200		0x0000		0
9	0x1E00		0x0000		0
10	0x0088		0x0000		0
11	0xE008		0x0000		0
12	0x0007		0x0000		0
13	0x5427		0x0000		0
14	0xD4B1		0x0000		0
15	0x0000		0x0000		0
16	0x0000		0x0000		0
17	0x0000		0x0000		0
18	0x0000		0x0000		0
19	0x0000		0x0000		0

The dialog box "16: Write multiple registers (HEX)" has the following fields:

- Slave ID: 1
- Address: 0
- Quantity: 4
- Registers list:
 - 000 = 0xD7E4
 - 001 = 0x0103
 - 002 = 0xFFFF
 - 003 = 0x0004

0xFFFF is the frame identifier in the response.

With the status 0x89, supervisor has the information that a TAG is presented in front of reader 1

Read command number 0xD7E4 on reader number 1 of 4 words to the 0xFFFF.
The important parameters are the reader number at 1 and the address accessed 0xFFFF.