



# Modbus RTU communication protocol for COMPALARM-E series

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## Modbus RTU protocol

Modbus is a master-slave communication protocol able to support up to 247 slaves organized as a bus or as a star network. The physical link layer can be RS232 for a point to point connection or RS485 for a network.

The communication is half-duplex. The network messages can be Query-Response or Broadcast type.

The Query-Response command is transmitted from the Master to an established Slave and generally it is followed by an answering message.

The Broadcast command is transmitted from the Master to all Slaves and is never followed by an answer.

### GENERIC MESSAGE STRUCTURE:

Start of frame	Address field	Function code	Data field	Error check	End of frame
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START OF FRAME	=	Starting message marker
ADDRESS FIELD	=	Includes device address in which you need to communicate in Query-Response mode. In case the message is a Broadcast type it includes 00.
FUNCTION CODE	=	Includes the operation code that you need to perform.
DATA FIELD	=	Includes the data field.
ERROR CHECK	=	Field for the error correction code.
END OF FRAME	=	End message marker.

### Mode RTU communication frame structure:

START OF FRAME	=	silence on line for time $\geq 4$ characters
ADDRESS FIELD	=	1 character
FUNCTION CODE	=	1 character
DATA FIELD	=	N characters
ERROR CHECK	=	16 bit CRC
END OF FRAME	=	silence on line for time $\geq 4$ characters

### Wait time for response:

Request length	16 Register (64 bytes)	64 Register (128 bytes)
Typical	15 ms	15 ms
Worst case	30 ms	50 ms

Recommended scan rate time:  $\geq 200$  ms

### Reading of the registers [function code 03h]

Reads the binary contents of holding registers (2X references) in the slave.

Broadcast is not supported.

The Query message specified the starting register and quantity of register to be read.

	0° Byte	1° Byte	2-3° Byte	4-5° Byte	6-7° Byte	
Start of Frame	Address Field	Function Code	Start Address	Number of Registers	Check Sum	End of Frame

START OF FRAME	=	Starting message marker.				
ADDRESS FIELD	=	Device address (0x01... 0xF7)		(1 byte).		
FUNCTION CODE	=	Operation code (0x03)		(1 byte).		
START ADDRESS	=	First register address to be read		(2 byte).		
No. OF REGISTERS	=	Number of registers (max 64 bytes) to read		(4 bytes [1 long] for 1 measure value).		
CHECK SUM	=	Check sum.				
END OF FRAME	=	End message marker.				

### WARNING:

It is possible to read more than one variable at the same time (**max 128 bytes**) only if their addresses are consecutive and the variables on the same line cannot be divided.

The register data in the response message are packet 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.

	0° Byte	1° Byte	2° Byte	n° Byte	n+1 - n+2° Byte	
Start of Frame	Address Field	Function Code	Number of Bytes	Data	Check Sum	End of Frame

START OF FRAME	=	Starting message marker.				
ADDRESS FIELD	=	Device address (0x01... 0xF7)		(1byte).		
FUNCTION CODE	=	Operation code (0x03)		(1 Byte).		
No. OF SEND BYTES	=	Number of data bytes (0x00...??)		(1 byte). 1 register requires 2 data bytes.		
DO, D1, ..., Dn	=	data bytes (0x00...??)		(Nr. of register x 2 = n. byte).		
CHECK SUM	=	Check sum.				
END OF FRAME	=	End message marker.				

See the TABLE OF COMPALARM-E REGISTERS and the EXAMPLE.

### Writing of the registers [function code 10h]

Write values into a sequence of holding registers (2X references).

**WARNING:** It is possible to write more than one variable at the same time only if their addresses are consecutive and the variables on the same line cannot be divided. (max of 4 consecutive register on the same message).

	0° Byte	1° Byte	2-3° Byte	4-5° Byte	6° Byte	n° Byte	n+1 - n+2° Byte	
Start of Frame	Address Field	Function Code	Start Address	Number of Registers	Number of Bytes	Data	Check Sum	End of Frame
START OF FRAME								
ADDRESS FIELD					(1 byte).			
FUNCTION CODE					(1 byte).			
START ADDRESS					(2 byte).			
No. OF REGISTER					(2 byte).			
No. OF BYTES					(1 byte): 1register requires 2 data bytes.			
DO, D1, ..., Dn					(1 byte) (Nr. of register x 2 = n. byte).			
CHECK SUM								
END OF FRAME								

The normal response returns the slave address, function code, starting address and quantity of register preset.

	0° Byte	1° Byte	2-3° Byte	4-5° Byte	6-7° Byte	
Start of Frame	Address Field	Function Code	Start Address	Number of Registers	Check Sum	End of Frame
START OF FRAME						
ADDRESS FIELD					(1 byte).	
FUNCTION CODE					(1 byte).	
START ADDRESS					(2 byte).	
No. OF REGISTER					(2 byte).	
ERROR CHECK						
END OF FRAME						

See the TABLE OF EMS REGISTERS and the EXAMPLE.

### BROADCAST COMMAND:

It is possible to send a broadcast command (Address Field equal 0x00) for all write command.

	0° Byte	1° Byte	2-3° Byte	4-5° Byte	6° Byte	n° Byte	n+1 - n+2° Byte	
Start of Frame	0x00	Function Code	Start Address	Number of Registers	Number of Bytes	Data	Check Sum	End of Frame

**RESPONSE:** No Response.

**Diagnostic [function code 08h]**

This function provides a test for checking the communication system.

Broadcast is not supported.

The instrument's protocol has only the sub-function 0 of the diagnostics sub-functions set of the standard modbus protocol.

The Query and the Response messages are the following:

Start of Frame	0° Byte	1° Byte	2-3° Byte	n° Byte	n+1 - n+2° Byte	End of Frame
	Address Field	Function Code	Sub Function	Data	Check Sum	
START OF FRAME	= Starting message marker.					
ADDRESS FIELD	= Device address (0x01...0xF7)			(1 byte).		
FUNCTION CODE	= Operation code (0x08 HEX)			(1 byte).		
SUB FUNCTION	= Sub-function 0 (0x00 0x00)			(2 byte).		
DATA	= Max 10 data bytes.					
CHECK SUM	= Check sum.					
END OF FRAME	= End message marker.					

**RESPONSE:**

Start of Frame	0° Byte	1° Byte	2-3° Byte	n° Byte	n+1 - n+2° Byte	End of Frame
	Address Field	Function Code	Sub Function	Data	Check Sum	
START OF FRAME	= Starting message marker.					
ADDRESS FIELD	= Device address (0x01... 0xF7)			(1 byte).		
FUNCTION CODE	= Operation code (0x08 HEX)			(1 byte).		
SUB FUNCTION	= Sub-function 0 (0x00 0x00)			(2 byte).		
DATA	= Data bytes.					
CHECK SUM	= Check sum.					
END OF FRAME	= End message marker.					

**DIAGNOSTIC EXAMPLE:**

**QUERY**

Field Name	Example (Hex)
Slave Address	0x01
Function Code	0x08
Sub-function Hi	0x00
Sub-function Lo	0x00
Data Hi	0xF1
Data Lo	0xA7
Error Check (CRC)	0x??
	0x??

**RESPONSE**

Field Name	Example (Hex)
Slave Address	0x01
Function Code	0x08
Sub-function Hi	0x00
Sub-function Lo	0x00
Data Hi	0xF1
Data Lo	0xA7
Error Check (CRC)	0x??
	0x??

### Report slave ID [function code 11h]

This function returns the type of the instrument and the current status of the slave run indicator.

Broadcast is not supported.

The Query and the Response messages are the following:

Start of Frame	0° Byte Address Field	1° Byte Function Code	2 - 3° Byte Check Sum	End of Frame
START OF FRAME	= Starting message marker.			
ADDRESS FIELD	= Device address (0x01... 0xF7)		(1 byte).	
FUNCTION CODE	= Operation code (0x11)		(1 byte).	
CHECK SUM	= Check sum.			
END OF FRAME	= End message marker.			

Start of Frame	0° Byte Address Field	1° Byte Function Code	2° Byte Byte Count	3° Byte Slave ID	4° Byte Run Indicator Status	5° - 6° Byte Check Sum	End of Frame
START OF FRAME	= Starting message marker.						
ADDRESS FIELD	= Device address (0x01... 0xF7)			(1 byte).			
FUNCTION CODE	= Operation code (0x11)			(1 byte).			
BYTE COUNT	= Number of data bytes (0x02)			(1 byte).			
SLAVE ID	= Slave ID identifier ( <b>0x65</b> )			(1 byte).			
RUN INDICATOR STATUS	= Run indicator status ( <b>0xFF</b> )			(1 byte).			
DATA	= Data bytes						
CHECK SUM	= Check sum.						
END OF FRAME	= End message marker.						

The normal response has the slave ID identifier (**0x65**) and the run indicator Status (**0xFF**).

### REPORT SLAVE ID EXAMPLE:

#### QUERY

Field Name	Example (Hex)
Slave Address	0xXX
Function Code	0x11
Error Check (CRC)	0x?? 0x??

#### RESPONSE

Field Name	Example (Hex)
Slave Address	0x01
Function Code	0x11
Byte count	0x02
Slave ID	<b>0x65</b>
Run indicator status	0xFF
Error Check (CRC)	0x?? 0x??

### Error message from slave to master

When a slave device receives a not valid query, it does transmit an error message.

Start of Frame	0° Byte Address Field	1° Byte Function Code	2° Byte Error Code	3 - 4° Byte Check Sum	End of Frame
START OF FRAME	= Starting message marker.				
ADDRESS FIELD	= Device address (0x01... 0xF7)		(1 byte).		
FUNCTION CODE	= Operation code with bit 7 high		(1 byte).		
ERROR CODE	= Message containing communication failure		(1 byte).		
CHECK SUM	= Check sum.				
END OF FRAME	= End message marker.				

### ERROR EXAMPLE:

#### QUERY

Field Name	Example (Hex)
Slave Address	0x01
Function Code	0x03
Starting Address Hi	0x00
Starting Address Lo	0x00
Number Of Word Hi	0x00
Number Of Word Lo	0x05
Error Check (CRC)	0x?? 0x??

#### RESPONSE

Field Name	Example (Hex)
Slave Address	0x 01
Function Code	0x83 (1)
Error Code	0x02 (2)
Error Check (CRC)	0x?? 0x??

- (1): Function Code transmitted by master with bit 7 high.  
 (2): Error type:  
 0x01 = Illegal Function.  
 0x02 = Illegal data address.  
 0x03 = Illegal data value.

## COMPALARM-E registers

The following tables shown all the COMPALARM-E registers.

### Main registers

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Type
0100	256	2	DIGITAL INPUTS STATE	R	Bit 00: digital input 1 (1: engaged, 0: open) Bit 01: digital input 2 (1: engaged, 0: open) --- Bit 15: digital input 16 (1: engaged, 0: open)
0102	258	2	LOGIC INPUTS STATE	R	Bit 00: logic input 1 Bit 01: logic input 2 --- Bit 15: logic input 16
0104	260	2	ALARMS STATE	R	Bit 00: channel 1 (1: alarm, 0: normal) [logic state] Bit 01: channel 2 (1: alarm, 0: normal) [logic state] --- Bit 15: channel 16 (1: alarm, 0: normal) [logic state]
0106	262	2	ALARMS SILENCE	R	Bit 00: channel 1 (1: sound active, 0: off) Bit 01: channel 2 (1: sound active, 0: off) --- Bit 15: channel 16 (1: sound active, 0: sound off)
0108	264	2	ALARMS ACKNOWLEDGE	R	Bit 00: acknowledge input 1 (1: ack, 0: no ack) Bit 01: acknowledge input 2 (1: ack, 0: no ack) --- Bit 15: acknowledge input 16 (1: ack, 0: no ack)
010A	266	2	FIRST OUT	R	Bit 00: channel 1 (1: F.O. from this channel, 0: normal) Bit 01: channel 2 (1: F.O. from this channel, 0: normal) --- Bit 15: channel 16 (1: F.O. from this channel, 0: normal)
010C	268	2	VISUAL STATE INPUT 1	R	0: VISUAL OFF 1: VISUAL FIX ON 2: VISUAL SLOW FLASHING 3: VISUAL FAST FLASHING 4: VISUAL INTERMITTENT FLASHING
010E	270	2	VISUAL STATE INPUT 2	R	See VISUAL STATE INPUT 1 register for details
0110	272	2	VISUAL STATE INPUT 3	R	See VISUAL STATE INPUT 1 register for details
0112	274	2	VISUAL STATE INPUT 4	R	See VISUAL STATE INPUT 1 register for details
0114	276	2	VISUAL STATE INPUT 5	R	See VISUAL STATE INPUT 1 register for details
0116	278	2	VISUAL STATE INPUT 6	R	See VISUAL STATE INPUT 1 register for details
0118	280	2	VISUAL STATE INPUT 7	R	See VISUAL STATE INPUT 1 register for details
011A	282	2	VISUAL STATE INPUT 8	R	See VISUAL STATE INPUT 1 register for details
011C	284	2	VISUAL STATE INPUT 9	R	See VISUAL STATE INPUT 1 register for details
011E	286	2	VISUAL STATE INPUT 10	R	See VISUAL STATE INPUT 1 register for details
0120	288	2	VISUAL STATE INPUT 11	R	See VISUAL STATE INPUT 1 register for details
0122	290	2	VISUAL STATE INPUT 12	R	See VISUAL STATE INPUT 1 register for details
0124	292	2	VISUAL STATE INPUT 13	R	See VISUAL STATE INPUT 1 register for details
0126	294	2	VISUAL STATE INPUT 14	R	See VISUAL STATE INPUT 1 register for details
0128	296	2	VISUAL STATE INPUT 15	R	See VISUAL STATE INPUT 1 register for details
012A	298	2	VISUAL STATE INPUT 16	R	See VISUAL STATE INPUT 1 register for details
012C	300	2	OUTPUT STATE	R	Bit 00: output 1 (1: engaged, 0: open) [logic state] Bit 01: output 2 (1: engaged, 0: open) [logic state] Bit 02: output 3 (1: engaged, 0: open) [logic state] Bit 03: output 4 (1: engaged, 0: open) [logic state]
012E	302	2	AUDIBLE STATE (INTERNAL BUZZER)	R	Bit 00: channel 1 (1: alarm, 0: normal) Bit 01: channel 2 (1: alarm, 0: normal) --- Bit 15: channel 16 (1: alarm, 0: normal)
0130	304	2	GROUPS STATE	R	Bit 00: group 1 (1: alarm present in group, 0: no alarm) Bit 01: group 2 (1: alarm present in group, 0: no alarm) --- Bit 15: group 16 (1: alarm present in group, 0: no alarm)

**Main registers read from Slave 1**  
**Main registers read from Slave 2**  
**Main registers read from Slave 3**  
**Main registers read from Slave 4**  
**Main registers read from Slave 5**  
**Main registers read from Slave 6**  
**Main registers read from Slave 7**  
**Main registers read from Slave 8**  
**Main registers read from Slave 9**  
**Main registers read from Slave 10**  
**Main registers read from Slave 11**  
**Main registers read from Slave 12**  
**Main registers read from Slave 13**  
**Main registers read from Slave 14**  
**Main registers read from Slave 15**

from 0x0200 to 0x0229  
 from 0x0300 to 0x0329  
 from 0x0400 to 0x0429  
 from 0x0500 to 0x0529  
 from 0x0600 to 0x0629  
 from 0x0700 to 0x0729  
 from 0x0800 to 0x0829  
 from 0x0900 to 0x0929  
 from 0x0A00 to 0x0A29  
 from 0x0B00 to 0x0B29  
 from 0x0C00 to 0x0C29  
 from 0x0D00 to 0x0D29  
 from 0x0E00 to 0x0E29  
 from 0x0F00 to 0x0F29  
 from 0x1000 to 0x1029

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## Group state

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Type
1100	4352	2	GROUP 1 – ALARM 1 TO 32	R	Bit 00: alarm 1 (1: alarm, 0: open) --- Bit 31: alarm 32 (1: alarm, 0: open)
1102	4354	2	GROUP 1 – ALARM 33 TO 64	R	Bit 00: alarm 33 (1: alarm, 0: open) --- Bit 31: alarm 64 (1: alarm, 0: open)
1104	4356	2	GROUP 1 – ALARM 65 TO 96	R	Bit 00: alarm 65 (1: alarm, 0: open) --- Bit 31: alarm 96 (1: alarm, 0: open)
1106	4358	2	GROUP 1 – ALARM 97 TO 128	R	Bit 00: alarm 97 (1: alarm, 0: open) --- Bit 31: alarm 128 (1: alarm, 0: open)
1108	4360	2	GROUP 1 – ALARM 129 TO 160	R	Bit 00: alarm 129 (1: alarm, 0: open) --- Bit 31: alarm 160 (1: alarm, 0: open)
110A	4362	2	GROUP 1 – ALARM 161 TO 192	R	Bit 00: alarm 161 (1: alarm, 0: open) --- Bit 31: alarm 192 (1: alarm, 0: open)
110C	4364	2	GROUP 1 – ALARM 193 TO 224	R	Bit 00: alarm 193 (1: alarm, 0: open) --- Bit 31: alarm 224 (1: alarm, 0: open)
110E	4366	2	GROUP 1 – ALARM 225 TO 256	R	Bit 00: alarm 225 (1: alarm, 0: open) --- Bit 31: alarm 256 (1: alarm, 0: open)
1110	4368	2	GROUP 2 – ALARM 1 TO 32	R	See GROUP 1
1112	4370	2	GROUP 2 – ALARM 33 TO 64	R	See GROUP 1
1114	4372	2	GROUP 2 – ALARM 65 TO 96	R	See GROUP 1
1116	4374	2	GROUP 2 – ALARM 97 TO 128	R	See GROUP 1
1118	4376	2	GROUP 2 – ALARM 129 TO 160	R	See GROUP 1
111A	4378	2	GROUP 2 – ALARM 161 TO 192	R	See GROUP 1
111C	4380	2	GROUP 2 – ALARM 193 TO 224	R	See GROUP 1
111E	4382	2	GROUP 2 – ALARM 225 TO 256	R	See GROUP 1
1120	4384	2	GROUP 3 – ALARM 1 TO 32	R	See GROUP 1
1122	4386	2	GROUP 3 – ALARM 33 TO 64	R	See GROUP 1
1124	4388	2	GROUP 3 – ALARM 65 TO 96	R	See GROUP 1
1126	4390	2	GROUP 3 – ALARM 97 TO 128	R	See GROUP 1
1128	4392	2	GROUP 3 – ALARM 129 TO 160	R	See GROUP 1
112A	4394	2	GROUP 3 – ALARM 161 TO 192	R	See GROUP 1
112C	4396	2	GROUP 3 – ALARM 193 TO 224	R	See GROUP 1
112E	4398	2	GROUP 3 – ALARM 225 TO 256	R	See GROUP 1
1130	4400	2	GROUP 4 – ALARM 1 TO 32	R	See GROUP 1
1132	4402	2	GROUP 4 – ALARM 33 TO 64	R	See GROUP 1
1134	4404	2	GROUP 4 – ALARM 65 TO 96	R	See GROUP 1
1136	4406	2	GROUP 4 – ALARM 97 TO 128	R	See GROUP 1
1138	4408	2	GROUP 4 – ALARM 129 TO 160	R	See GROUP 1
113A	4410	2	GROUP 4 – ALARM 161 TO 192	R	See GROUP 1
113C	4412	2	GROUP 4 – ALARM 193 TO 224	R	See GROUP 1
113E	4414	2	GROUP 4 – ALARM 225 TO 256	R	See GROUP 1
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11F0	4592	2	GROUP 16 – ALARM 1 TO 32	R	See GROUP 1
11F2	4594	2	GROUP 16 – ALARM 33 TO 64	R	See GROUP 1
11F4	4596	2	GROUP 16 – ALARM 65 TO 96	R	See GROUP 1
11F6	4598	2	GROUP 16 – ALARM 97 TO 128	R	See GROUP 1
11F8	4600	2	GROUP 16 – ALARM 129 TO 160	R	See GROUP 1
11FA	4602	2	GROUP 16 – ALARM 161 TO 192	R	See GROUP 1
11FC	4604	2	GROUP 16 – ALARM 193 TO 224	R	See GROUP 1
11FE	4608	2	GROUP 16 – ALARM 225 TO 256	R	See GROUP 1

**Virtual input state**

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Type
1300	4864	2	ALARM 1 TO 16	R	Bit 00: alarm 1 (1: alarm, 0: open) --- Bit 15: alarm 16 (1: alarm, 0: open)
1302	4866	2	ALARM 17 TO 32	R	Bit 00: alarm 17 (1: alarm, 0: open) --- Bit 15: alarm 32 (1: alarm, 0: open)
1304	4868	2	ALARM 33 TO 48	R	Bit 00: alarm 33 (1: alarm, 0: open) --- Bit 15: alarm 48 (1: alarm, 0: open)
1306	4870	2	ALARM 49 TO 64	R	Bit 00: alarm 49 (1: alarm, 0: open) --- Bit 15: alarm 64 (1: alarm, 0: open)
1308	4872	2	ALARM 65 TO 80	R	Bit 00: alarm 65 (1: alarm, 0: open) --- Bit 15: alarm 80 (1: alarm, 0: open)
130A	4874	2	ALARM 81 TO 96	R	Bit 00: alarm 81 (1: alarm, 0: open) --- Bit 15: alarm 96 (1: alarm, 0: open)
130C	4876	2	ALARM 97 TO 112	R	Bit 00: alarm 97 (1: alarm, 0: open) --- Bit 15: alarm 112 (1: alarm, 0: open)
130E	4878	2	ALARM 113 TO 128	R	Bit 00: alarm 113 (1: alarm, 0: open) --- Bit 15: alarm 128 (1: alarm, 0: open)
1310	4880	2	ALARM 129 TO 144	R	Bit 00: alarm 129 (1: alarm, 0: open) --- Bit 15: alarm 144 (1: alarm, 0: open)
1312	4882	2	ALARM 145 TO 160	R	Bit 00: alarm 145 (1: alarm, 0: open) --- Bit 15: alarm 160 (1: alarm, 0: open)
1314	4884	2	ALARM 161 TO 176	R	Bit 00: alarm 161 (1: alarm, 0: open) --- Bit 15: alarm 176 (1: alarm, 0: open)
1316	4886	2	ALARM 177 TO 192	R	Bit 00: alarm 177 (1: alarm, 0: open) --- Bit 15: alarm 192 (1: alarm, 0: open)
1318	4890	2	ALARM 193 TO 208	R	Bit 00: alarm 193 (1: alarm, 0: open) --- Bit 15: alarm 208 (1: alarm, 0: open)
131A	4892	2	ALARM 209 TO 224	R	Bit 00: alarm 209 (1: alarm, 0: open) --- Bit 15: alarm 224 (1: alarm, 0: open)
131C	4894	2	ALARM 225 TO 240	R	Bit 00: alarm 225 (1: alarm, 0: open) --- Bit 15: alarm 240 (1: alarm, 0: open)
131E	4896	2	ALARM 241 TO 256	R	Bit 00: alarm 241 (1: alarm, 0: open) --- Bit 15: alarm 256 (1: alarm, 0: open)



## Setup Operation Mode

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
2000	8192	2	ALARM NOTIFY	R/W	0: overview [default] 2: showed last alarm 1: showed first alarm 3: loop
2002	8194	2	WINDOWS SIZE	R/W	large: visual 4 channel on screen medium: visual 8 channel on screen small: visual 16 channel on screen [default]
2004	8196	2	MODE	R/W	0: standard 1: inputs expansion (master read this device how slave) 2: repeater
2006	8198	2	SEQUENCE	R/W	0: custom [default] 6: ISA sequence M5 1: ISA sequence A 7: ISA sequence F1M 2: ISA sequence F1A 8: ISA sequence F2M 3: ISA sequence F2A 9: ISA sequence F3M 4: ISA sequence F3A 10: ISA sequence R8 5: ISA sequence M
2008	8200	2	SILENCE TYPE	R/W	0: local 1: global (used in master mode)
200A	8202	2	AUTO SILENCE*	R/W	0: No [default] 1: Yes
200C	8204	2	AUTO SILENCE DELAY*	R/W	1 ÷ 100'000 s [default: 60]
200E	8206	2	ACKNOWLEDGE TYPE	R/W	0: local 1: global (used in master mode - serial connection)
2010	8208	2	AUTO ACKNOWLEDGE*	R/W	0: No [default] 1: Yes
2012	8210	2	AUTO ACKNOWLEDGE DELAY*	R/W	1 ÷ 100'000 s [default: 120]
2014	8212	2	RESET TYPE	R/W	0: local 1: global (used in master mode)
2016	8214	2	AUTO RESET*	R/W	0: No [default] 1: Yes
2018	8216	2	AUTO RESET DELAY*	R/W	1 ÷ 100'000 s [default: 180]
201A	8218	2	RINGBACK AUDIBLE*	R/W	0: No [default] 1: Yes
201C	8220	2	SILENCE INTERLOCK	R/W	0: No [default] 1: Yes
201E	8222	2	SOUND LEVEL (INTERNAL BUZZER)	R/W	0: OFF [default] 1: low 2: high
2020	8224	2	MASTER READ ALARM TEXTS	R/W	Set to 1 to active read alarm texts to slaves
2022	8226	2	VISUAL EXTERNAL SYNC	R/W	0: No [default] 1: Yes
2024	8228	2	POP-UP	R/W	0: disabled [default] 1: enabled "first-last" 2: enabled "rotation"

\*: only for custom sequence

## Setup Alarm Input Order

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
2100	8448	2	INPUT 1	R/W	0: DI-1 [Default] 1: DI-2 --- 15: DI-16
2102	8450	2	INPUT 2	R/W	See INPUT 1 [Default: 1]
2104	8452	2	INPUT 3	R/W	See INPUT 1 [Default: 2]
2106	8454	2	INPUT 4	R/W	See INPUT 1 [Default: 3]
2108	8456	2	INPUT 5	R/W	See INPUT 1 [Default: 4]
210A	8458	2	INPUT 6	R/W	See INPUT 1 [Default: 5]
210C	8460	2	INPUT 7	R/W	See INPUT 1 [Default: 6]
210E	8462	2	INPUT 8	R/W	See INPUT 1 [Default: 7]
2110	8464	2	INPUT 9	R/W	See INPUT 1 [Default: 8]
2112	8466	2	INPUT 10	R/W	See INPUT 1 [Default: 9]
2114	8468	2	INPUT 11	R/W	See INPUT 1 [Default: 10]
2116	8470	2	INPUT 12	R/W	See INPUT 1 [Default: 11]
2118	8472	2	INPUT 13	R/W	See INPUT 1 [Default: 12]
211A	8474	2	INPUT 14	R/W	See INPUT 1 [Default: 13]
211C	8476	2	INPUT 15	R/W	See INPUT 1 [Default: 14]
211E	8478	2	INPUT 16	R/W	See INPUT 1 [Default: 15]

## Setup First-Out

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
D000	53248	2	INPUT 1	R/W	The channel can be recognized as the first. 0: disable                      1: enable [default]
D002	53250	2	INPUT 2	R/W	See INPUT 1
D004	53252	2	INPUT 3	R/W	See INPUT 1
D006	53254	2	INPUT 4	R/W	See INPUT 1
D008	53256	2	INPUT 5	R/W	See INPUT 1
D00A	53258	2	INPUT 6	R/W	See INPUT 1
D00C	53260	2	INPUT 7	R/W	See INPUT 1
D00E	53262	2	INPUT 8	R/W	See INPUT 1
D010	53264	2	INPUT 9	R/W	See INPUT 1
D012	53266	2	INPUT 10	R/W	See INPUT 1
D014	53268	2	INPUT 11	R/W	See INPUT 1
D016	53270	2	INPUT 12	R/W	See INPUT 1
D018	53272	2	INPUT 13	R/W	See INPUT 1
D01A	53274	2	INPUT 14	R/W	See INPUT 1
D01C	53276	2	INPUT 15	R/W	See INPUT 1
D01E	53278	2	INPUT 16	R/W	See INPUT 1
----	----	----	----	----	----
D1FE	53758	2	INPUT 256	R/W	See INPUT 1

## Setup Group of Alarm

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
21A0	8608	2	INPUT 1	R/W	0: group 1 [default] 1: group 2 --- 15: group 16
2152	8610	2	INPUT 2	R/W	See INPUT 1
---	---	---	---	---	---
239E	9118	2	INPUT 256	R/W	See INPUT 1

## Setup Window Alarm

### Setup Window Alarm 1

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
2400	9216	2	COLOR TEXT ALARM	R/W	0: black 1: gray 2: white 3: dark red 4: red 5: orange 6: yellow 7: green 8: dark green 9: sky blue 10: blue 11: dark purple 12: purple
2402	9218	2	COLOR BACKGROUND ALARM	R/W	See COLOR TEXT ALARM
2404	9220	2	COLOR TEXT NO ALARM	R/W	See COLOR TEXT ALARM
2406	9222	2	COLOR BACKGROUND NO ALARM	R/W	See COLOR TEXT ALARM
2408	9224	2	ROW NUMBER	R/W	1: show text only on row 1 2: show texts on rows 1 and 2 3: show texts on rows 1, 2 and 3

<b>Setup Window Alarm 2</b>	from 0x2420 to 0x2409	with same meaning of "Setup Window Alarm 1"
<b>Setup Window Alarm 3</b>	from 0x2440 to 0x2449	with same meaning of "Setup Window Alarm 1"
<b>Setup Window Alarm 4</b>	from 0x2460 to 0x2469	with same meaning of "Setup Window Alarm 1"
-----		
<b>Setup Window Alarm 256</b>	from 0x43E0 to 0x43E9	with same meaning of "Setup Window Alarm 1"

## Setup Window Group

### Setup Window Group 1

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
4400	17408	2	COLOR TEXT – ALARM	R/W	0: black 1: gray 2: white 3: dark red 4: red 5: orange 6: yellow 7: green 8: dark green 9: sky blue 10: blue 11: dark purple 12: purple
4402	17410	2	COLOR BACKGROUND – ALARM	R/W	See "COLOR BACKGROUND – NO ALARM"
4404	17412	2	COLOR TEXT – NO ALARM	R/W	See "COLOR BACKGROUND – NO ALARM"
4406	17414	2	COLOR BACKGROUND – NO ALARM	R/W	See "COLOR BACKGROUND – NO ALARM"
4408	17416	2	ROW NUMBER	R/W	1 ÷ 3

<b>Setup Window Group 2</b>	from 0x4450 to 0x4459	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 3</b>	from 0x44A0 to 0x44A9	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 4</b>	from 0x44F0 to 0x44F9	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 5</b>	from 0x4540 to 0x4549	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 6</b>	from 0x4590 to 0x4599	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 7</b>	from 0x45E0 to 0x45E9	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 8</b>	from 0x4630 to 0x4639	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 9</b>	from 0x4680 to 0x4689	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 10</b>	from 0x46D0 to 0x46D9	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 11</b>	from 0x4720 to 0x4729	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 12</b>	from 0x4770 to 0x4779	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 13</b>	from 0x47C0 to 0x47C9	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 14</b>	from 0x4810 to 0x4819	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 15</b>	from 0x4860 to 0x4869	with same meaning of "Setup Window Group 1"
<b>Setup Window Group 16</b>	from 0x48B0 to 0x48B9	with same meaning of "Setup Window Group 1"

## Setup Digital Input

### Setup Digital Input 1

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
D300	54016	2	NORMALY	R/W	0: input normally open (alarm when input is 1) [default] 1: input normally closed (alarm when input is 0)
D302	54018	2	VALIDATION TIME	R/W	20 ÷ 100'000'000 ms [default: 20] Time after which the change of state of the input is recognized as alarm.
D304	54020	2	TYPE	R/W	Choose the input functionality: 0: alarm input [default]      2: acknowledge      4: state 1: silence                      3: reset                5: sync ext. visual
D306	54022	2	SOURCE	R/W	0: wired                              1: software simulated

Setup Digital Input 2	from 0xD320 to 0xD327	with same meaning of "Setup Digital Input 1"
Setup Digital Input 3	from 0xD340 to 0xD347	with same meaning of "Setup Digital Input 1"
Setup Digital Input 4	from 0xD360 to 0xD367	with same meaning of "Setup Digital Input 1"
Setup Digital Input 5	from 0xD380 to 0xD387	with same meaning of "Setup Digital Input 1"
Setup Digital Input 6	from 0xD3A0 to 0xD3A7	with same meaning of "Setup Digital Input 1"
Setup Digital Input 7	from 0xD3C0 to 0xD3C7	with same meaning of "Setup Digital Input 1"
Setup Digital Input 8	from 0xD3E0 to 0xD3E7	with same meaning of "Setup Digital Input 1"
Setup Digital Input 9	from 0xD400 to 0xD407	with same meaning of "Setup Digital Input 1"
Setup Digital Input 10	from 0xD420 to 0xD427	with same meaning of "Setup Digital Input 1"
Setup Digital Input 11	from 0xD440 to 0xD447	with same meaning of "Setup Digital Input 1"
Setup Digital Input 12	from 0xD460 to 0xD467	with same meaning of "Setup Digital Input 1"
Setup Digital Input 13	from 0xD480 to 0xD487	with same meaning of "Setup Digital Input 1"
Setup Digital Input 14	from 0xD4A0 to 0xD4A7	with same meaning of "Setup Digital Input 1"
Setup Digital Input 15	from 0xD4C0 to 0xD4C7	with same meaning of "Setup Digital Input 1"
Setup Digital Input 16	from 0xD4E0 to 0xD4E7	with same meaning of "Setup Digital Input 1"
Setup Digital Input 17	from 0xD500 to 0xD507	with same meaning of "Setup Digital Input 1"
Setup Digital Input 18	from 0xD520 to 0xD527	with same meaning of "Setup Digital Input 1"
-----	-----	-----
Setup Digital Input 256	from 0xF2E0 to 0xF2E7	with same meaning of "Setup Digital Input 1"

## Setup Output

### Setup Output 1

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
5300	21248	2	NORMALY	R/W	0: output normally open [default]      1: output normally closed
5302	21250	2	TYPE	R/W	0: not used                              2: audible-ISA                      4: repeat input 1: visual-ISA [default]                3: repeat alarm                      5: group state
5304	21252	2	REPEATED INPUT/ALARM	R/W	1 ÷ 16 (only for alarm input)
5306	21254	2	GROUP	R/W	1 ÷ 16

### Setup Output 2

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
5320	21280	2	NORMALY	R/W	0: output normally open [default]      1: output normally closed
5322	21282	2	TYPE	R/W	0: not used                              2: audible-ISA                      4: repeat input 1: visual-ISA [default]                3: repeat alarm                      5: group state
5324	21284	2	REPEATED INPUT/ALARM	R/W	1 ÷ 16 (only for alarm input)
5326	21286	2	GROUP	R/W	1 ÷ 16

### Setup Output 3

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
5340	21312	2	NORMALY	R/W	0: output normally open [default]      1: output normally closed
5342	21314	2	TYPE	R/W	0: not used                              2: audible-ISA                      4: repeat input 1: visual-ISA [default]                3: repeat alarm                      5: group state
5344	21316	2	REPEATED INPUT/ALARM	R/W	1 ÷ 16 (only for alarm input)
5346	21318	2	GROUP	R/W	1 ÷ 16

### Setup Output 4

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
5360	21344	2	NORMALY	R/W	0: output normally open [default]      1: output normally closed
5362	21346	2	TYPE	R/W	0: not used                              2: audible-ISA                      4: repeat input 1: visual-ISA [default]                3: repeat alarm                      5: group state
5364	21348	2	REPEATED INPUT/ALARM	R/W	1 ÷ 16 (only for alarm input)
5366	21350	2	GROUP	R/W	1 ÷ 16

## Alarm Texts

### Alarm Texts 1

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
6000	24576	2	ALARM TEXT INDEX	R/W	1°, 2°, 3°, 4° characters (ASCII format)
6002	24578	2	ALARM TEXT ROW 1	R/W	1°, 2°, 3°, 4° characters (ASCII format)
6004	24580	2	ALARM TEXT ROW 1	R/W	5°, 6°, 7°, 8° characters (ASCII format)
6006	24582	2	ALARM TEXT ROW 1	R/W	9°, 10°, 11°, 12° characters (ASCII format)
6008	24584	2	ALARM TEXT ROW 2	R/W	1°, 2°, 3°, 4° characters (ASCII format)
600A	24586	2	ALARM TEXT ROW 2	R/W	5°, 6°, 7°, 8° characters (ASCII format)
600C	24588	2	ALARM TEXT ROW 2	R/W	9°, 10°, 11°, 12° characters (ASCII format)
600E	24590	2	ALARM TEXT ROW 3	R/W	1°, 2°, 3°, 4° characters (ASCII format)
6010	24592	2	ALARM TEXT ROW 3	R/W	5°, 6°, 7°, 8° characters (ASCII format)
6012	24594	2	ALARM TEXT ROW 3	R/W	9°, 10°, 11°, 12° characters (ASCII format)
6014	24596	2	HELP ALARM TEXT ROW 1	R/W	1°, 2°, 3°, 4° characters (ASCII format)
6016	24598	2	HELP ALARM TEXT ROW 1	R/W	5°, 6°, 7°, 8° characters (ASCII format)
6018	24600	2	HELP ALARM TEXT ROW 1	R/W	9°, 10°, 11°, 12° characters (ASCII format)
601A	24602	2	HELP ALARM TEXT ROW 2	R/W	1°, 2°, 3°, 4° characters (ASCII format)
601C	24604	2	HELP ALARM TEXT ROW 2	R/W	5°, 6°, 7°, 8° characters (ASCII format)
601E	24606	2	HELP ALARM TEXT ROW 2	R/W	9°, 10°, 11°, 12° characters (ASCII format)
6020	24608	2	HELP ALARM TEXT ROW 3	R/W	1°, 2°, 3°, 4° characters (ASCII format)
6022	24610	2	HELP ALARM TEXT ROW 3	R/W	5°, 6°, 7°, 8° characters (ASCII format)
6024	24612	2	HELP ALARM TEXT ROW 3	R/W	9°, 10°, 11°, 12° characters (ASCII format)

**Alarm Texts 2** from 0x6050 to 0x607D with same meaning of “Alarm Texts 1”

**Alarm Texts 256** from 0x9FC0 to 0x9FED with same meaning of “Alarm Texts 1”

## Group Texts

### Group Texts 1

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
A000	40960	2	ALARM TEXT INDEX	R/W	1°, 2°, 3°, 4° characters (ASCII format)
A002	40962	2	ALARM TEXT ROW 1	R/W	1°, 2°, 3°, 4° characters (ASCII format)
A004	40964	2	ALARM TEXT ROW 1	R/W	5°, 6°, 7°, 8° characters (ASCII format)
A006	40966	2	ALARM TEXT ROW 1	R/W	9°, 10°, 11°, 12° characters (ASCII format)
A008	40968	2	ALARM TEXT ROW 2	R/W	1°, 2°, 3°, 4° characters (ASCII format)
A00A	40970	2	ALARM TEXT ROW 2	R/W	5°, 6°, 7°, 8° characters (ASCII format)
A00C	40972	2	ALARM TEXT ROW 2	R/W	9°, 10°, 11°, 12° characters (ASCII format)
A00E	40974	2	ALARM TEXT ROW 3	R/W	1°, 2°, 3°, 4° characters (ASCII format)
A010	40976	2	ALARM TEXT ROW 3	R/W	5°, 6°, 7°, 8° characters (ASCII format)
A012	40978	2	ALARM TEXT ROW 3	R/W	9°, 10°, 11°, 12° characters (ASCII format)

**Group Texts 2** from 0xA050 to 0xA063 with same meaning of “Group Texts 1”

**Group Texts 3** from 0xA0A0 to 0xA0B3 with same meaning of “Group Texts 1”

**Group Texts 4** from 0xA0F0 to 0xA103 with same meaning of “Group Texts 1”

**Group Texts 5** from 0xA140 to 0xA153 with same meaning of “Group Texts 1”

**Group Texts 6** from 0xA190 to 0xA1A3 with same meaning of “Group Texts 1”

**Group Texts 7** from 0xA1E0 to 0xA1F3 with same meaning of “Group Texts 1”

**Group Texts 8** from 0xA230 to 0xA243 with same meaning of “Group Texts 1”

**Group Texts 9** from 0xA280 to 0xA293 with same meaning of “Group Texts 1”

**Group Texts 10** from 0xA2D0 to 0xA2E3 with same meaning of “Group Texts 1”

**Group Texts 11** from 0xA320 to 0xA333 with same meaning of “Group Texts 1”

**Group Texts 12** from 0xA370 to 0xA383 with same meaning of “Group Texts 1”

**Group Texts 13** from 0xA3C0 to 0xA3B3 with same meaning of “Group Texts 1”

**Group Texts 14** from 0xA410 to 0xA423 with same meaning of “Group Texts 1”

**Group Texts 15** from 0xA460 to 0xA473 with same meaning of “Group Texts 1”

**Group Texts 16** from 0xA4B0 to 0xA4C3 with same meaning of “Group Texts 1”

### Switch ON/OFF - Log

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Type
A500	42240	2	1 <sup>st</sup> LOG - TIME	R	byte order/meaning: EMPTY, HOUR, MINUTE, SECOND
A502	42242	2	1 <sup>st</sup> LOG - DATA	R	byte order/meaning: DAY, MONYH, YEAR, YEAR
A504	42244	2	1 <sup>st</sup> LOG – EVENT TYPE	R	0: switch off            1: switch on
A506	42246	2	2 <sup>nd</sup> LOG - TIME	R	byte order/meaning: EMPTY, HOUR, MINUTE, SECOND
A508	42248	2	2 <sup>nd</sup> LOG - DATA	R	byte order/meaning: DAY, MONYH, YEAR, YEAR
A50A	42250	2	2 <sup>nd</sup> LOG – EVENT TYPE	R	0: switch off            1: switch on
---	---	---	---	---	---
A6FA	42746	2	64 <sup>th</sup> LOG - TIME	R	byte order/meaning: EMPTY, HOUR, MINUTE, SECOND
A6FC	42748	2	64 <sup>th</sup> LOG - DATA	R	byte order/meaning: DAY, MONYH, YEAR, YEAR
A6FE	42750	2	64 <sup>th</sup> LOG – EVENT TYPE	R	0: switch off            1: switch on

Note: time and date is 0 if the log it is not present

### Alarms - Log

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Type
A700	42752	2	1 <sup>st</sup> LOG - TIME	R	byte order/meaning: EMPTY, HOUR, MINUTE, SECOND
A702	42754	2	1 <sup>st</sup> LOG - MILLISECONDS	R	
A704	42756	2	1 <sup>st</sup> LOG - DATA	R	byte order/meaning: DAY, MONYH, YEAR, YEAR
A706	42758	2	1 <sup>st</sup> LOG – EVENT TYPE	R	0: firstout alarm        2: alarm recovery        4: reset 1: alarm entry            3: alarm acknowledge
A708	42760	2	1 <sup>st</sup> LOG – INPUT	R	Input that produced the alarm.
A70A	42762	2	1 <sup>st</sup> LOG - GROUP	R	Group of alarm. 0: group 1 ... 15: group 15
A70C	42764	2	2 <sup>nd</sup> LOG - TIME	R	byte order/meaning: EMPTY, HOUR, MINUTE, SECOND
A70E	42766	2	2 <sup>nd</sup> LOG - DATA	R	byte order/meaning: DAY, MONYH, YEAR, YEAR
A710	42768	2	2 <sup>nd</sup> LOG - INPUT	R	Input that produced the alarm.
A712	42770	2	2 <sup>nd</sup> LOG – EVENT TYPE	R	0: firstout alarm        2: alarm recovery        4: reset 1: alarm entry            3: alarm acknowledge
A714	42772	---	2 <sup>nd</sup> LOG - GROUP	R	Group of alarm. 0: group 1 ... 15: group 15
---	---	---	---	---	---
---	---	---	---	---	---
---	---	---	---	---	---
BEF2	48882	2	512 <sup>th</sup> LOG - TIME	R	byte order/meaning: EMPTY, HOUR, MINUTE, SECOND
BEF4	48884	2	512 <sup>th</sup> LOG - MILLISECONDS	R	
BEF6	48886	2	512 <sup>th</sup> LOG - DATA	R	byte order/meaning: DAY, MONYH, YEAR, YEAR
BEF8	48888	2	512 <sup>th</sup> LOG – INPUT	R	0: firstout alarm        2: alarm recovery        4: reset 1: alarm entry            3: alarm acknowledge
BEFA	48890		512 <sup>th</sup> LOG – EVENT TYPE	R	Input that produced the alarm.
BEFC	48892		512 <sup>th</sup> LOG – GROUP	R	Group of alarm. 0: group 1 ... 15: group 15

Note: time and date is 0 if the log it is not present

## Password setup

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
BF00	48896	2	ACCESS KEY VALUE	W	0 ÷ 999'999'999 [Default 0: Password disabled]
BF02	48898	2	ACCESS KEY VALID PERIOD	R/W	1 ÷ 60 min [Default: 5 min]
BF04	48900	2	KEYS PROTECTION	R/W	0: Not protected [Default] 1: Protected by password
BF06	48902	2	COMMUNICATION PROTECTION	R/W	0: Not protected [Default] 1: Protected by password (write command only).
BF08	48904	2	ENABLE OPTIONS	R/W	0 ÷ 999'999'999

**Warning:** if COMMUNICATION PROTECT is enabled, it's necessary to write ACCESS KEY register only before send another write command.

## Reset

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
BF20	48928	2	RESET	W	00000001h: Reset to Default 00000002h: Reset Setup 00000004h: Reset Logs 00000008h: Reset Texts

## Date & Time

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
BF40	48960	2	HOUR	R/W	00 to 23 hours (00=Midnight)
BF42	48962	2	MINUTE	R/W	00 to 59 minutes
BF44	48964	2	SECOND	R/W	00 to 59 seconds
BF46	48966	2	DAY OF WEEK	R/W	0001h = Monday      0004h = Thursday      0007h = Sunday 0002h = Tuesday      0005h = Friday 0003h = Wednesday      0006h = Saturday
BF48	48968	2	DAY	R/W	01 to 31 day-of-month
BF4A	48970	2	MONTH	R/W	01 to 12 month
BF4C	48972	2	YEAR	R/W	2000 to 2099 year
BF4E	48974	2	SYNCHRONIZE CLOCK	W	00000000h: only valid parameter (set to 00 second)

## Reply Key Functionality

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
BF60	48992	2	SILENCE	W	Write 1 to reply SILENCE key functionality (see product manual)
BF62	48994	2	ACKNOWLEDGE	W	Write 1 to reply ACK key functionality (see product manual)
BF64	48996	2	RESET	W	Write 1 to reply RESET key functionality (see product manual)

## Display setup

**Warning:** Must be send the entire parameter length (2 words or 1 word – see the long of each parameter) for a correct command setting.

**Warning:** All Write command could be send in Broadcast Mode (Node ID 0) but if the Modbus Register or Modbus Parameters is wrong anything messages are returned.

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
BF80	49024	2	BRIGHTNESS	R/W	01 to 15 [Default: 15 = MAX]
BF82	49026	2	RESERVED – NOT USED	-	-
BF84	49028	2	RESERVED – NOT USED	-	-
BF86	49030	2	RESERVED – NOT USED	-	-
BF88	49032	2	RESERVED – NOT USED	-	-
BF8A	49034	2	FRONTAL LEDS	R/W	0: No      1: Yes[default]

## COM (option)

### COM 1 setup (option)

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
C000	49152	2	OPERATION MODE *	R/W	0000h: Slave mode [Default] 0001h: Master Compalarm mode 0002h: Master IO mode
C002	49154	2	SLAVE CONNECTED (used only in Master Mode)	R/W	0000h ÷ 000Fh (000 ÷ 015 dec) [Default: 0] <b>Note:</b> valid only in Master mode.
C004	49156	2	MASTER TIMEOUT (used only in Master Mode)	R/W	0 ÷ 10000 ms [Default: 800]
C006	49158	2	MASTER SCAN RATE (used only in Master Mode)	R/W	0 ÷ 10000 ms [Default: 1000] Delay between two master request (master mode). <b>Note:</b> this value must be greater than MASTER TIMEOUT.
C008	49160	2	NODE ID*	R/W	0001h ÷ 00F7h (001 ÷ 247 dec) [Default: 1] <b>Note:</b> valid only in Slave Mode.
C00A	49162	2	BAUD RATE*	R/W	0000h:4800Baud 0001h:9600Baud 0002h:19200Baud 0003h:38400Baud [Default] 0004h:57600Baud 0005h:115200Baud
C00C	49164	2	STOP BITS*	R/W	0000h: 1 Stop Bit [Default] 0001h: 2 Stop Bits
C00E	49166	2	PARITY*	R/W	0000h: None [Default] 0001h: Parity Odd 0002h: Parity Even
C010	49168	2	MINIMUM RESPONSE DELAY	R/W	5 ÷ 100 ms [Default: 10] <b>Note:</b> valid only in Slave Mode.

\* The Serial setting will be changed after the command response.

### COM 2 setup (option)

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
C300	49920	2	OPERATION MODE *	R/W	0000h: Slave mode [Default] 0001h: Master Compalarm mode 0002h: Master IO mode
C302	49922	2	SLAVE CONNECTED (used only in Master Mode)	R/W	0000h ÷ 000Fh (000 ÷ 015 dec) [Default: 0] <b>Note:</b> valid only in Master mode.
C304	49924	2	MASTER TIMEOUT (used only in Master Mode)	R/W	0 ÷ 10000 ms [Default: 800]
C306	49926	2	MASTER SCAN RATE (used only in Master Mode)	R/W	0 ÷ 10000 ms [Default: 1000] Delay between two master request (master mode). <b>Note:</b> this value must be greater than MASTER TIMEOUT.
C308	49928	2	NODE ID*	R/W	0001h ÷ 00F7h (001 ÷ 247 dec) [Default: 1] <b>Note:</b> valid only in Slave Mode.
C30A	49930	2	BAUD RATE*	R/W	0000h:4800Baud 0001h:9600Baud 0002h:19200Baud 0003h:38400Baud [Default] 0004h:57600Baud 0005h:115200Baud
C30C	49932	2	STOP BITS*	R/W	0000h: 1 Stop Bit [Default] 0001h: 2 Stop Bits
C30E	49934	2	PARITY*	R/W	0000h: None [Default] 0001h: Parity Odd 0002h: Parity Even
C310	49936	2	MINIMUM RESPONSE DELAY	R/W	5 ÷ 100 ms [Default: 10] <b>Note:</b> valid only in Slave Mode.

## Analog Input (option)

### Analog input 1 (option)

Register <sup>HEX</sup>	Register <sup>DEC</sup>	Word	Description	R/W	Parameters
F500	62720	2	WARNING STATE	R	0: OK; 1: WARNING;
F502	62722	2	ALARM STATE	R	0: OK; 1: ALARM;
F504	62724	2	VALUE	R	Value expressed in d°C [506 = 50.6°C]
F506	62726	2	VALIDATION TIME	R/W	20 ÷ 100'000'000 ms [default: 20] Time after which the change of state of the input is recognized as alarm.

**Analog input 2** from 0xF550 to 0xF567 with same meaning of "Analog input 1"

**Analog input 3** from 0xF5A0 to 0xF5B7 with same meaning of "Analog input 1"

**Analog input 4** from 0xF5F0 to 0xF607 with same meaning of "Analog input 1"



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