

MODBUS Connection and Addressing Information

for

AR2 PLC/Smart Relay

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1. Introduction

An AR2 PLC/Smart Relay may connect an RS-485 MODBUS network via “AR2-S-24VDC-MB1 MODBUS Gateway” as a slave. AR2-S-24VDC-MB1 has 2 separate RS-485 connections; one for AR2 and the other is to connect to MODBUS RTU master. AR2-S-24VDC-MB1 acts as a MODBUS gateway between AR2 and MODBUS RTU master.

AR2-S-24VDC-MB1 sends a request received from MODBUS master to AR2 and sends response from AR2 to MODBUS master.

MODBUS master communicates with AR2 via AR2-S-24VDC-MB1 and AR2 acts as a slave to MODBUS master.

AR2-S-24VDC-MB1 supports only MODBUS RTU mode of communication.

AR2-S-24VDC-MB1 does not support address 0; that is broadcast messages are not accepted.

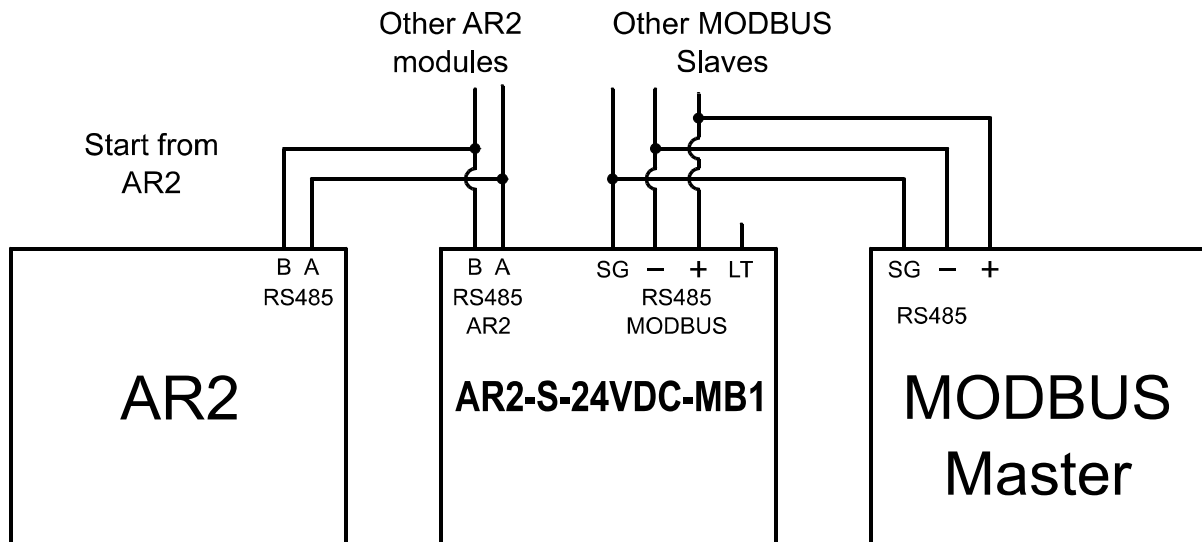
Firmware version 2.4 or greater is required for AR2 for MODBUS connection support.

“GEMO Ladder Editor” version 2.4 or greater is required for MODBUS connection support.

Maximum number of consecutive coils/inputs that can be read and written to is “16” in a single message. If this number is “17” or greater, AR2 will return “03- ILLEGAL DATA VALUE” “Exception” message.

Maximum number of consecutive 16 bits register (holding register or input register) that can be read and written to is “1” in a single message. If this number is “2” or greater, AR2 will return “03- ILLEGAL DATA VALUE” exception message.

1.1 Connection Information



AR2-S-24VDC-MB1 has an internal line termination circuitry for MODBUS RS-485 connection. Refer to AR2-S-24VDC-MB1 users manual for details.

1.2 AR2 Communication Settings

Communication settings between AR2 PLC/Smart Relay and AR2-S-24VDC-MB1 device is factory set and can not be altered by the user. AR2 communicates with AR2-S-24VDC-MB1 via a twisted pair cable, preferably shielded. A <-> A and B <-> B pins that exist on AR2 and AR2-S-24VDC-MB1 are connected to each other. Communication starts automatically. AR2's firmware version must be 2.4 or greater for MODBUS support. AR2 LED that exist on the AR2-S-24VDC-MB1 front panel blinks after the communication between AR2 and AR2-S-24VDC-MB1 is established.

1.3 MODBUS Communication Settings

Only MODBUS RTU mod of communication is supported.

AR2 is connected to an RS485 MODBUS RTU network as a “slave” via AR2-S-24VDC-MB1; AR2 MODBUS gateway. AR2-S-24VDC-MB1 has 2 RS485 port; first one is used to connect to an AR2 and the other is used to connect to a MODBUS RTU Master.

The communication parameters of AR2-S-24VDC-MB1 and MODBUS RTU Master should be the same. The adjustment should be done by the user via MODBUS Settings Screen for AR2 side.

Press Settings->MODBUS Settings to access to MODBUS Settings Screen (requires version 2.4 or later). The attributes located at this screen are listed below. The attributes adjusted by the user are saved at the non-volatile memory of AR2 and automatically transferred to AR2-S-24VDC-MB1 and activated after a successful communication between AR2 and AR2-S-24VDC-MB1.

After power on, if AR2-S-24VDC-MB1 can not communicate successfully with AR2, it uses following communication settings; 9600 baud, even parity, 1 stop bit, slave address = 10.

2 LEDs blink when a communication is successful between AR2-S-24VDC-MB1 and AR2, and between AR2-S-24VDC-MB1 and MODBUS master.

1.3.1 Baud Rate

This is the communication speed between AR2-S-24VDC-MB1 and MODBUS master. User may select; 9600, 19200 or 38400 baud.

1.3.2 “Parity / Stop Bit”

This is the communication Parity/Stop Bit between AR2-S-24VDC-MB1 and MODBUS master. User may select; “1 Stop Bit, Even Parity”, “1 Stop Bit, Odd Parity”, “1 Stop Bit, No Parity”, “2 Stop Bits, No Parity”.

MODBUS specification does not define “1 Stop Bit, No Parity”. At this option, a transmitted or received character is composed of 10 bits. In MODBUS specification, a character is composed of 11 bits. AR2-S-24VDC-MB1 supports both 10 bits and 11 bits reception and transmission.

But suggested option is either “1 Stop Bit, Even Parity” or “1 Stop Bit, Odd Parity”. Because error detection at these options are more powerful.

1.3.3 Slave Address

This is the slave address of AR2-S-24VDC-MB1 (hence AR2) at the MODBUS RTU network.

“0” (or broadcast messages) address is not supported.

1.3.4 Allow Master to Write into; Check Box

This is the authentication of the Master to write any data into any register/coil of AR2. User should select the check box to give permission to MODBUS master to write. A single permission covers all coils and registers in AR2.

If the permission is not given (check box is not selected) AR2 returns “03- ILLEGAL DATA VALUE” exception message.

1.3.5 Allow Master to Read from; Check Box

This is the authentication of the Master to read any data from any register/coil of AR2. User should select the check box to give permission to MODBUS master to read. A single permission covers all coils and registers in AR2.

If the permission is not given (check box is not selected) AR2 returns “03- ILLEGAL DATA VALUE” exception message.

1.3.6 Minimum Delay before Response to Master

With this setting, user may delay a ready response of AR2-S-24VDC-MB1 to the MODBUS master. This delay is in milliseconds. For fastest response this setting should be “0”.

This feature may be helpful when connecting AR2-S-24VDC-MB1 to MODBUS masters running on non-real time computing environment (like a PC running Windows or Linux operation systems).

MODBUS specification defines a 3,5 character long minimum silence duration for any master/slave to start sending a new message or response to a received message. This duration may be very short for a slow or for a non-real time MODBUS Master. This delay setting instructs AR2-S-24VDC-MB1 to delay a response to the MODBUS Master (hence delay to occupy the RS485 half duplex line). Of course this delay will decrease the communication performance.

This delay is applied to all responses from AR2-S-24VDC-MB1 to MODBUS master, including the “Exception” messages.

1.4 Supported MODBUS Messages

1.4.1 “01 (0x01) Read Coils”

Maximum 16 consecutive “Coil” can be read with a single message.

1.4.2 “02 (0x02) Read Discrete Inputs”

Maximum 16 consecutive “Discrete Input” can be read with a single message.

1.4.3 “03 (0x03) Read Holding Registers”

Maximum a single (1) 16bits “Holding Register” can be read with a single message.

1.4.4 “04 (0x04) Read Input Registers”

Maximum a single (1) 16bits “Input Register” can be read with a single message.

1.4.5 “05 (0x05) Write Single Coil”

Only a single coil may be written with this message.

1.4.6 “06 (0x06) Write Single Register”

Only a single (1) 16bits “Holding Register” may be written with this message.

1.4.7 “15 (0x0F) Write Multiple Coils”

Maximum 16 consecutive “Coil” can be written with a single message.

1.4.8 “16 (0x10) Write Multiple registers”

Maximum a single (1) 16bits “Holding Register” can be written with a single message.

1.5 Exception Messages

1.5.1 “01 - ILLEGAL FUNCTION”

AR2 responds with this exception message when any message with an message ID not listed above is received successfully from the master.

1.5.2 “02 - ILLEGAL DATA ADDRESS”

AR2 responds with this exception message when a received message points an address (read or write) that is not listed at the tables below.

1.5.3 “03- ILLEGAL DATA VALUE”

AR2 responds with this exception message when;

- Data value is not valid or defined for addressed register,
- A violation of minimum/maximum limits that are defines at AR2 ladder diagram,
- “Allow Master to Write into” check box in the editors MODBUS windows is not checked and a “write” message is sent,
- “Allow Master to Read from” check box in the editors MODBUS windows is not checked and a “read” message is sent,

1.5.4 “04- SLAVE DEVICE FAILURE”

AR2-S-24VDC-MB1 responds with this message when AR2 is not live.

1.6 Unsupported Cases

AR2-S-24VDC-MB1 does not support MODBUS ASCII mode of communication.

AR2-S-24VDC-MB1 does not support broadcast messages (a message with a slave address of “0”)

More then 16 consecutive coil/input read/write with a single message is not supported.

More than 1 holding register/input register read/write with a single message is not supported.

2. 0x Coils

2.1 MODBUS NetIn Contacts

Contact Name	“0x Coil” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
NetIn1	00001d	0000d	0000h	1st NetIn Contact	Read / Write	1
NetIn2	00002d	0001d	0001h	2nd NetIn Contact	Read / Write	1
NetIn3	00003d	0002d	0002h	3rd NetIn Contact	Read / Write	1
NetIn4	00004d	0003d	0003h	4th NetIn Contact	Read / Write	1
NetIn5	00005d	0004d	0004h	5th NetIn Contact	Read / Write	1
NetIn6	00006d	0005d	0005h	6th NetIn Contact	Read / Write	1
NetIn7	00007d	0006d	0006h	7th NetIn Contact	Read / Write	1
NetIn8	00008d	0007d	0007h	8th NetIn Contact	Read / Write	1
NetIn9	00009d	0008d	0008h	9th NetIn Contact	Read / Write	1
NetIn10	000010d	0009d	0009h	10th NetIn Contact	Read / Write	1
NetIn11	000011d	0010d	000Ah	11th NetIn Contact	Read / Write	1
NetIn12	000012d	0011d	000Bh	12th NetIn Contact	Read / Write	1
NetIn13	000013d	0012d	000Ch	13th NetIn Contact	Read / Write	1
NetIn14	000014d	0013d	000Dh	14th NetIn Contact	Read / Write	1
NetIn15	000015d	0014d	000Eh	15th NetIn Contact	Read / Write	1
NetIn16	000016d	0015d	000Fh	16th NetIn Contact	Read / Write	1

NetIn17	000017d	0016d	0010h	17th NetIn Contact	Read / Write	1
NetIn18	000018d	0017d	0011h	18th NetIn Contact	Read / Write	1
NetIn19	000019d	0018d	0012h	19th NetIn Contact	Read / Write	1
NetIn20	000020d	0019d	0013h	20th NetIn Contact	Read / Write	1
NetIn21	000021d	0020d	0014h	21th NetIn Contact	Read / Write	1
NetIn22	000022d	0021d	0015h	22th NetIn Contact	Read / Write	1
NetIn23	000023d	0022d	0016h	23th NetIn Contact	Read / Write	1
NetIn24	000024d	0023d	0017h	24th NetIn Contact	Read / Write	1
NetIn25	000025d	0024d	0018h	25th NetIn Contact	Read / Write	1
NetIn26	000026d	0025d	0019h	26th NetIn Contact	Read / Write	1
NetIn27	000027d	0026d	001Ah	27th NetIn Contact	Read / Write	1
NetIn28	000028d	0027d	001Bh	28th NetIn Contact	Read / Write	1
NetIn29	000029d	0028d	001Ch	29th NetIn Contact	Read / Write	1
NetIn30	000030d	0029d	001Dh	30th NetIn Contact	Read / Write	1
NetIn31	000031d	0030d	001Eh	31th NetIn Contact	Read / Write	1
NetIn32	000032d	0031d	001Fh	32th NetIn Contact	Read / Write	1
NetIn33	000033d	0032d	0020h	33th NetIn Contact	Read / Write	1
NetIn34	000034d	0033d	0021h	34th NetIn Contact	Read / Write	1
NetIn35	000035d	0034d	0022h	35th NetIn Contact	Read / Write	1
NetIn36	000036d	0035d	0023h	36th NetIn Contact	Read / Write	1
NetIn37	000037d	0036d	0024h	37th NetIn Contact	Read / Write	1

NetIn38	000038d	0037d	0025h	38th NetIn Contact	Read / Write	1
NetIn39	000039d	0038d	0026h	39th NetIn Contact	Read / Write	1
NetIn40	000040d	0039d	0027h	40th NetIn Contact	Read / Write	1
NetIn41	000041d	0040d	0028h	41th NetIn Contact	Read / Write	1
NetIn42	000042d	0041d	0029h	42th NetIn Contact	Read / Write	1
NetIn43	000043d	0042d	002Ah	43th NetIn Contact	Read / Write	1
NetIn44	000044d	0043d	002Bh	44th NetIn Contact	Read / Write	1
NetIn45	000045d	0044d	002Ch	45th NetIn Contact	Read / Write	1
NetIn46	000046d	0045d	002Dh	46th NetIn Contact	Read / Write	1
NetIn47	000047d	0046d	002Eh	47th NetIn Contact	Read / Write	1
NetIn48	000048d	0047d	002Fh	48th NetIn Contact	Read / Write	1

Notes:

1. “Read / Write” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3. 1x Discrete Inputs

3.1 Digital (Discrete) Inputs

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
DIn1	10001d	0000d	0000h	1st Digital Input	Read only	1
DIn2	10002d	0001d	0001h	2nd Digital Input	Read only	1
DIn3	10003d	0002d	0002h	3rd Digital Input	Read only	1
DIn4	10004d	0003d	0003h	4th Digital Input	Read only	1

DIn5	10005d	0004d	0004h	5th Digital Input	Read only	1
DIn6	10006d	0005d	0005h	6th Digital Input	Read only	1
DIn7	10007d	0006d	0006h	7th Digital Input	Read only	1
DIn8	10008d	0007d	0007h	8th Digital Input	Read only	1
DIn9	10009d	0008d	0008h	9th Digital Input	Read only	1
DIn10	10010d	0009d	0009h	10th Digital Input	Read only	1
DIn11	10011d	0010d	000Ah	11th Digital Input	Read only	1
DIn12	10012d	0011d	000Bh	12th Digital Input	Read only	1
DIn13	10013d	0012d	000Ch	13th Digital Input	Read only	1
DIn14	10014d	0013d	000Dh	14th Digital Input	Read only	1
DIn15	10015d	0014d	000Eh	15th Digital Input	Read only	1
DIn16	10016d	0015d	000Fh	16th Digital Input	Read only	1
DIn17	10017d	0016d	0010h	17th Digital Input	Read only	1
DIn18	10018d	0017d	0011h	18th Digital Input	Read only	1
DIn19	10019d	0018d	0012h	19th Digital Input	Read only	1
DIn20	10020d	0019d	0013h	20th Digital Input	Read only	1
DIn21	10021d	0020d	0014h	21th Digital Input	Read only	1
DIn22	10022d	0021d	0015h	22th Digital Input	Read only	1
DIn23	10023d	0022d	0016h	23th Digital Input	Read only	1
DIn24	10024d	0023d	0017h	24th Digital Input	Read only	1
DIn25	10025d	0024d	0018h	25th Digital Input	Read only	1

DIn26	10026d	0025d	0019h	26th Digital Input	Read only	1
DIn27	10027d	0026d	001Ah	27th Digital Input	Read only	1
DIn28	10028d	0027d	001Bh	28th Digital Input	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.1 Filtered Digital (Discrete) Inputs

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
DInFlt1	10257d	0256d	0100h	1st Filtered Digital Input	Read only	1
DInFlt2	10258d	0257d	0101h	2nd Filtered Digital Input	Read only	1
DInFlt3	10259d	0258d	0102h	3rd Filtered Digital Input	Read only	1
DInFlt4	10260d	0259d	0103h	4th Filtered Digital Input	Read only	1
DInFlt5	10261d	0260d	0104h	5th Filtered Digital Input	Read only	1
DInFlt6	10262d	0261d	0105h	6th Filtered Digital Input	Read only	1
DInFlt7	10263d	0262d	0106h	7th Filtered Digital Input	Read only	1
DInFlt8	10264d	0263d	0107h	8th Filtered Digital Input	Read only	1
DInFlt9	10265d	0264d	0108h	9th Filtered Digital Input	Read only	1
DInFlt10	10266d	0265d	0109h	10th Filtered Digital Input	Read only	1
DInFlt11	10267d	0266d	010Ah	11th Filtered Digital Input	Read only	1
DInFlt12	10268d	0267d	010Bh	12th Filtered Digital Input	Read only	1
DInFlt13	10269d	0268d	010Ch	13th Filtered Digital Input	Read only	1

DInFlt14	10270d	0269d	010Dh	14th Filtered Digital Input	Read only	1
DInFlt15	10271d	0270d	010Eh	15th Filtered Digital Input	Read only	1
DInFlt16	10272d	0271d	010Fh	16th Filtered Digital Input	Read only	1
DInFlt17	10273d	0272d	0110h	17th Filtered Digital Input	Read only	1
DInFlt18	10274d	0273d	0111h	18th Filtered Digital Input	Read only	1
DInFlt19	10275d	0274d	0112h	19th Filtered Digital Input	Read only	1
DInFlt20	10276d	0275d	0113h	20th Filtered Digital Input	Read only	1
DInFlt21	10277d	0276d	0114h	21th Filtered Digital Input	Read only	1
DInFlt22	10278d	0277d	0115h	22th Filtered Digital Input	Read only	1
DInFlt23	10279d	0278d	0116h	23th Filtered Digital Input	Read only	1
DInFlt24	10280d	0279d	0117h	24th Filtered Digital Input	Read only	1
DInFlt25	10281d	0280d	0118h	25th Filtered Digital Input	Read only	1
DInFlt26	10282d	0281d	0119h	26th Filtered Digital Input	Read only	1
DInFlt27	10283d	0282d	011Ah	27th Filtered Digital Input	Read only	1
DInFlt28	10284d	0283d	011Bh	28th Filtered Digital Input	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.1 Digital (Discrete) Outputs

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
DQ1	10513d	0512d	0200h	1st Digital Output	Read only	1

DQ2	10514d	0513d	0201h	2nd Digital Output	Read only	1
DQ3	10515d	0514d	0202h	3rd Digital Output	Read only	1
DQ4	10516d	0515d	0203h	4th Digital Output	Read only	1
DQ5	10517d	0516d	0204h	5th Digital Output	Read only	1
DQ6	10518d	0517d	0205h	6th Digital Output	Read only	1
DQ7	10519d	0518d	0206h	7th Digital Output	Read only	1
DQ8	10520d	0519d	0207h	8th Digital Output	Read only	1
DQ9	10521d	0520d	0208h	9th Digital Output	Read only	1
DQ10	10522d	0521d	0209h	10th Digital Output	Read only	1
DQ11	10523d	0522d	020Ah	11th Digital Output	Read only	1
DQ12	10524d	0523d	020Bh	12th Digital Output	Read only	1
DQ13	10525d	0524d	020Ch	13th Digital Output	Read only	1
DQ14	10526d	0525d	020Dh	14th Digital Output	Read only	1
DQ15	10527d	0526d	020Eh	15th Digital Output	Read only	1
DQ16	10528d	0527d	020Fh	16th Digital Output	Read only	1
DQ17	10529d	0528d	0210h	17th Digital Output	Read only	1
DQ18	10530d	0529d	0211h	18th Digital Output	Read only	1

DQ19	10531d	0530d	0212h	19th Digital Output	Read only	1
DQ20	10532d	0531d	0213h	20th Digital Output	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.2 Auxiliary Coils

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
Aux1	10769d	0768d	0300h	1st Auxiliary Relay Output	Read only	1
Aux2	10770d	0769d	0301h	2nd Auxiliary Relay Output	Read only	1
Aux3	10771d	0770d	0302h	3rd Auxiliary Relay Output	Read only	1
Aux4	10772d	0771d	0303h	4th Auxiliary Relay Output	Read only	1
Aux5	10773d	0772d	0304h	5th Auxiliary Relay Output	Read only	1
Aux6	10774d	0773d	0305h	6th Auxiliary Relay Output	Read only	1
Aux7	10775d	0774d	0306h	7th Auxiliary Relay Output	Read only	1

Aux8	10776d	0775d	0307h	8th Auxiliary Relay Output	Read only	1
Aux9	10777d	0776d	0308h	9th Auxiliary Relay Output	Read only	1
Aux10	10778d	0777d	0309h	10th Auxiliary Relay Output	Read only	1
Aux11	10779d	0778d	030Ah	11th Auxiliary Relay Output	Read only	1
Aux12	10780d	0779d	030Bh	12th Auxiliary Relay Output	Read only	1
Aux13	10781d	0780d	030Ch	13th Auxiliary Relay Output	Read only	1
Aux14	10782d	0781d	030Dh	14th Auxiliary Relay Output	Read only	1
Aux15	10783d	0782d	030Eh	15th Auxiliary Relay Output	Read only	1
Aux16	10784d	0783d	030Fh	16th Auxiliary Relay Output	Read only	1
Aux17	10785d	0784d	0310h	17th Auxiliary Relay Output	Read only	1

Aux18	10786d	0785d	0311h	18th Auxiliary Relay Output	Read only	1
Aux19	10787d	0786d	0312h	19th Auxiliary Relay Output	Read only	1
Aux20	10788d	0787d	0313h	20th Auxiliary Relay Output	Read only	1
Aux21	10789d	0788d	0314h	21th Auxiliary Relay Output	Read only	1
Aux22	10790d	0789d	0315h	22th Auxiliary Relay Output	Read only	1
Aux23	10791d	0790d	0316h	23th Auxiliary Relay Output	Read only	1
Aux24	10792d	0791d	0317h	24th Auxiliary Relay Output	Read only	1
Aux25	10793d	0792d	0318h	25th Auxiliary Relay Output	Read only	1
Aux26	10794d	0793d	0319h	26th Auxiliary Relay Output	Read only	1
Aux27	10795d	0794d	031Ah	27th Auxiliary Relay Output	Read only	1

Aux28	10796d	0795d	031Bh	28th Auxiliary Relay Output	Read only	1
Aux29	10797d	0796d	031Ch	29th Auxiliary Relay Output	Read only	1
Aux30	10798d	0797d	031Dh	30th Auxiliary Relay Output	Read only	1
Aux31	10799d	0798d	031Eh	31th Auxiliary Relay Output	Read only	1
Aux32	10800d	0799d	031Fh	32th Auxiliary Relay Output	Read only	1
Aux33	10801d	0800d	0320h	33th Auxiliary Relay Output	Read only	1
Aux34	10802d	0801d	0321h	34th Auxiliary Relay Output	Read only	1
Aux35	10803d	0802d	0322h	35th Auxiliary Relay Output	Read only	1
Aux36	10804d	0803d	0323h	36th Auxiliary Relay Output	Read only	1
Aux37	10805d	0804d	0324h	37th Auxiliary Relay Output	Read only	1

Aux38	10806d	0805d	0325h	38th Auxiliary Relay Output	Read only	1
Aux39	10807d	0806d	0326h	39th Auxiliary Relay Output	Read only	1
Aux40	10808d	0807d	0327h	40th Auxiliary Relay Output	Read only	1
Aux41	10809d	0808d	0328h	41th Auxiliary Relay Output	Read only	1
Aux42	10810d	0809d	0329h	42th Auxiliary Relay Output	Read only	1
Aux43	10811d	0810d	032Ah	43th Auxiliary Relay Output	Read only	1
Aux44	10812d	0811d	032Bh	44th Auxiliary Relay Output	Read only	1
Aux45	10813d	0812d	032Ch	45th Auxiliary Relay Output	Read only	1
Aux46	10814d	0813d	032Dh	46th Auxiliary Relay Output	Read only	1
Aux47	10815d	0814d	032Eh	47th Auxiliary Relay Output	Read only	1

Aux48	10816d	0815d	032Fh	48th Auxiliary Relay Output	Read only	1
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Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.3 Timers

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
Tmr1	11025d	1024d	0400h	1st Timer Output	Read only	1
Tmr2	11026d	1025d	0401h	2nd Timer Output	Read only	1
Tmr3	11027d	1026d	0402h	3rd Timer Output	Read only	1
Tmr4	11028d	1027d	0403h	4th Timer Output	Read only	1
Tmr5	11029d	1028d	0404h	5th Timer Output	Read only	1
Tmr6	11030d	1029d	0405h	6th Timer Output	Read only	1
Tmr7	11031d	1030d	0406h	7th Timer Output	Read only	1
Tmr8	11032d	1031d	0407h	8th Timer Output	Read only	1
Tmr9	11033d	1032d	0408h	9th Timer Output	Read only	1
Tmr10	11034d	1033d	0409h	10th Timer Output	Read only	1
Tmr11	11035d	1034d	040Ah	11th Timer Output	Read only	1
Tmr12	11036d	1035d	040Bh	12th Timer Output	Read only	1

Tmr13	11037d	1036d	040Ch	13th Timer Output	Read only	1
Tmr14	11038d	1037d	040Dh	14th Timer Output	Read only	1
Tmr15	11039d	1038d	040Eh	15th Timer Output	Read only	1
Tmr16	11040d	1039d	040Fh	16th Timer Output	Read only	1
Tmr17	11041d	1040d	0410h	17th Timer Output	Read only	1
Tmr18	11042d	1041d	0411h	18th Timer Output	Read only	1
Tmr19	11043d	1042d	0412h	19th Timer Output	Read only	1
Tmr20	11044d	1043d	0413h	20th Timer Output	Read only	1
Tmr21	11045d	1044d	0414h	21th Timer Output	Read only	1
Tmr22	11046d	1045d	0415h	22th Timer Output	Read only	1
Tmr23	11047d	1046d	0416h	23th Timer Output	Read only	1
Tmr24	11048d	1047d	0417h	24th Timer Output	Read only	1
Tmr25	11049d	1048d	0418h	25th Timer Output	Read only	1
Tmr26	11050d	1049d	0419h	26th Timer Output	Read only	1
Tmr27	11051d	1050d	041Ah	27th Timer Output	Read only	1
Tmr28	11052d	1051d	041Bh	28th Timer Output	Read only	1
Tmr29	11053d	1052d	041Ch	29th Timer Output	Read only	1

Tmr30	11054d	1053d	041Dh	30th Timer Output	Read only	1
Tmr31	11055d	1054d	041Eh	31th Timer Output	Read only	1
Tmr32	11056d	1055d	041Fh	32th Timer Output	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.4 Counters

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
Cnt1	11281d	1280d	0500h	1st Counter Output	Read only	1
Cnt2	11282d	1281d	0501h	2nd Counter Output	Read only	1
Cnt3	11283d	1282d	0502h	3rd Counter Output	Read only	1
Cnt4	11284d	1283d	0503h	4th Counter Output	Read only	1
Cnt5	11285d	1284d	0504h	5th Counter Output	Read only	1
Cnt6	11286d	1285d	0505h	6th Counter Output	Read only	1
Cnt7	11287d	1286d	0506h	7th Counter Output	Read only	1
Cnt8	11288d	1287d	0507h	8th Counter Output	Read only	1
Cnt9	11289d	1288d	0508h	9th Counter Output	Read only	1
Cnt10	11290d	1289d	0509h	10th Counter Output	Read only	1
Cnt11	11291d	1290d	050Ah	11th Counter Output	Read only	1

Cnt12	11292d	1291d	050Bh	12th Counter Output	Read only	1
Cnt13	11293d	1292d	050Ch	13th Counter Output	Read only	1
Cnt14	11294d	1293d	050Dh	14th Counter Output	Read only	1
Cnt15	11295d	1294d	050Eh	15th Counter Output	Read only	1
Cnt16	11296d	1295d	050Fh	16th Counter Output	Read only	1
Cnt17	11297d	1296d	0510h	17th Counter Output	Read only	1
Cnt18	11298d	1297d	0511h	18th Counter Output	Read only	1
Cnt19	11299d	1298d	0512h	19th Counter Output	Read only	1
Cnt20	11300d	1299d	0513h	20th Counter Output	Read only	1
Cnt21	11301d	1300d	0514h	21th Counter Output	Read only	1
Cnt22	11302d	1301d	0515h	22th Counter Output	Read only	1
Cnt23	11303d	1302d	0516h	23th Counter Output	Read only	1
Cnt24	11304d	1303d	0517h	24th Counter Output	Read only	1
Cnt25	11305d	1304d	0518h	25th Counter Output	Read only	1
Cnt26	11306d	1305d	0519h	26th Counter Output	Read only	1
Cnt27	11307d	1306d	051Ah	27th Counter Output	Read only	1
Cnt28	11308d	1307d	051Bh	28th Counter Output	Read only	1

Cnt29	11309d	1308d	051Ch	29th Counter Output	Read only	1
Cnt30	11310d	1309d	051Dh	30th Counter Output	Read only	1
Cnt31	11311d	1310d	051Eh	31th Counter Output	Read only	1
Cnt32	11312d	1311d	051Fh	32th Counter Output	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.5 Counter Comparators

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
CntCmp1	11537d	1536d	0600h	1st Counter Comparator Output	Read only	1
CntCmp2	11538d	1537d	0601h	2nd Counter Comparator Output	Read only	1
CntCmp3	11539d	1538d	0602h	3rd Counter Comparator Output	Read only	1
CntCmp4	11540d	1539d	0603h	4th Counter Comparator Output	Read only	1
CntCmp5	11541d	1540d	0604h	5th Counter Comparator Output	Read only	1
CntCmp6	11542d	1541d	0605h	6th Counter Comparator Output	Read only	1
CntCmp7	11543d	1542d	0606h	7th Counter Comparator Output	Read only	1

CntCmp8	11544d	1543d	0607h	8th Counter Comparator Output	Read only	1
CntCmp9	11545d	1544d	0608h	9th Counter Comparator Output	Read only	1
CntCmp10	11546d	1545d	0609h	10th Counter Comparator Output	Read only	1
CntCmp11	11547d	1546d	060Ah	11th Counter Comparator Output	Read only	1
CntCmp12	11548d	1547d	060Bh	12th Counter Comparator Output	Read only	1
CntCmp13	11549d	1548d	060Ch	13th Counter Comparator Output	Read only	1
CntCmp14	11550d	1549d	060Dh	14th Counter Comparator Output	Read only	1
CntCmp15	11551d	1550d	060Eh	15th Counter Comparator Output	Read only	1
CntCmp16	11552d	1551d	060Fh	16th Counter Comparator Output	Read only	1
CntCmp17	11553d	1552d	0610h	17th Counter Comparator Output	Read only	1
CntCmp18	11554d	1553d	0611h	18th Counter Comparator Output	Read only	1
CntCmp19	11555d	1554d	0612h	19th Counter Comparator Output	Read only	1
CntCmp20	11556d	1555d	0613h	20th Counter Comparator Output	Read only	1

CntCmp21	11557d	1556d	0614h	21th Counter Comparator Output	Read only	1
CntCmp22	11558d	1557d	0615h	22th Counter Comparator Output	Read only	1
CntCmp23	11559d	1558d	0616h	23th Counter Comparator Output	Read only	1
CntCmp24	11560d	1559d	0617h	24th Counter Comparator Output	Read only	1
CntCmp25	11561d	1560d	0618h	25th Counter Comparator Output	Read only	1
CntCmp26	11562d	1561d	0619h	26th Counter Comparator Output	Read only	1
CntCmp27	11563d	1562d	061Ah	27th Counter Comparator Output	Read only	1
CntCmp28	11564d	1563d	061Bh	28th Counter Comparator Output	Read only	1
CntCmp29	11565d	1564d	061Ch	29th Counter Comparator Output	Read only	1
CntCmp30	11566d	1565d	061Dh	30th Counter Comparator Output	Read only	1
CntCmp31	11567d	1566d	061Eh	31th Counter Comparator Output	Read only	1
CntCmp32	11568d	1567d	061Fh	32th Counter Comparator Output	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.6 State Machine; SmA

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
SmAQ1	11793d	1792d	0700h	SmA; 1th Output	Read only	1
SmAQ2	11794d	1793d	0701h	SmA; 2th Output	Read only	1
SmAQ3	11795d	1794d	0702h	SmA; 3th Output	Read only	1
SmAQ4	11796d	1795d	0703h	SmA; 4th Output	Read only	1
SmAQ5	11797d	1796d	0704h	SmA; 5th Output	Read only	1
SmAQ6	11798d	1797d	0705h	SmA; 6th Output	Read only	1
SmAQ7	11799d	1798d	0706h	SmA; 7th Output	Read only	1
SmAQ8	11800d	1799d	0707h	SmA; 8th Output	Read only	1
SmAQ9	11801d	1800d	0708h	SmA; 9th Output	Read only	1
SmAQ10	11802d	1801d	0709h	SmA; 10th Output	Read only	1
SmAQ11	11803d	1802d	070Ah	SmA; 11th Output	Read only	1
SmAQ12	11804d	1803d	070Bh	SmA; 12th Output	Read only	1
SmAQ13	11805d	1804d	070Ch	SmA; 13th Output	Read only	1
SmAQ14	11806d	1805d	070Dh	SmA; 14th Output	Read only	1
SmAQ15	11807d	1806d	070Eh	SmA; 15th Output	Read only	1
SmAQ16	11808d	1807d	070Fh	SmA; 16th Output	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.7 State Machine; SmB

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
SmBQ1	12049d	2048d	0800h	SmB; 1th Output	Read only	1
SmBQ2	12050d	2049d	0801h	SmB; 2th Output	Read only	1
SmBQ3	12051d	2050d	0802h	SmB; 3th Output	Read only	1
SmBQ4	12052d	2051d	0803h	SmB; 4th Output	Read only	1
SmBQ5	12053d	2052d	0804h	SmB; 5th Output	Read only	1
SmBQ6	12054d	2053d	0805h	SmB; 6th Output	Read only	1
SmBQ7	12055d	2054d	0806h	SmB; 7th Output	Read only	1
SmBQ8	12056d	2055d	0807h	SmB; 8th Output	Read only	1
SmBQ9	12057d	2056d	0808h	SmB; 9th Output	Read only	1
SmBQ10	12058d	2057d	0809h	SmB; 10th Output	Read only	1
SmBQ11	12059d	2058d	080Ah	SmB; 11th Output	Read only	1
SmBQ12	12060d	2059d	080Bh	SmB; 12th Output	Read only	1
SmBQ13	12061d	2060d	080Ch	SmB; 13th Output	Read only	1
SmBQ14	12062d	2061d	080Dh	SmB; 14th Output	Read only	1

SmBQ15	12063d	2062d	080Eh	SmB; 15th Output	Read only	1
SmBQ16	12064d	2063d	080Fh	SmB; 16th Output	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.8 Front Panel F Keys

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
Key1	12305d	2304d	0900h	1st Front Panel F Key	Read only	1
Key2	12306d	2305d	0901h	2nd Front Panel F Key	Read only	1
Key3	12307d	2306d	0902h	3rd Front Panel F Key	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.9 Front Panel F Keys - Filtered

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
KeyFlt1	12561d	2560d	0A00h	1st Front Panel F Key - Filtered	Read only	1
KeyFlt2	12562d	2561d	0A01h	2nd Front Panel F Key - Filtered	Read only	1
KeyFlt3	12563d	2562d	0A02h	3rd Front Panel F Key - Filtered	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.10 Analog Comparators

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
AnCmp1	12817d	2816d	0B00h	1th Analog Comparator Output	Read only	1
AnCmp2	12818d	2817d	0B01h	2th Analog Comparator Output	Read only	1
AnCmp3	12819d	2818d	0B02h	3th Analog Comparator Output	Read only	1
AnCmp4	12820d	2819d	0B03h	4th Analog Comparator Output	Read only	1
AnCmp5	12821d	2820d	0B04h	5th Analog Comparator Output	Read only	1
AnCmp6	12822d	2821d	0B05h	6th Analog Comparator Output	Read only	1
AnCmp7	12823d	2822d	0B06h	7th Analog Comparator Output	Read only	1
AnCmp8	12824d	2823d	0B07h	8th Analog Comparator Output	Read only	1
AnCmp9	12825d	2824d	0B08h	9th Analog Comparator Output	Read only	1
AnCmp10	12826d	2825d	0B09h	10th Analog Comparator Output	Read only	1
AnCmp11	12827d	2826d	0B0Ah	11th Analog Comparator Output	Read only	1

AnCmp12	12828d	2827d	0B0Bh	12th Analog Comparator Output	Read only	1
AnCmp13	12829d	2828d	0B0Ch	13th Analog Comparator Output	Read only	1
AnCmp14	12830d	2829d	0B0Dh	14th Analog Comparator Output	Read only	1
AnCmp15	12831d	2830d	0B0Eh	15th Analog Comparator Output	Read only	1
AnCmp16	12832d	2831d	0B0Fh	16th Analog Comparator Output	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.11 Weekly Alarms

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
RTCWA1	13073d	3072d	0C00h	1th Weekly Alarm Contact	Read only	1
RTCWA2	13074d	3073d	0C01h	2th Weekly Alarm Contact	Read only	1
RTCWA3	13075d	3074d	0C02h	3th Weekly Alarm Contact	Read only	1
RTCWA4	13076d	3075d	0C03h	4th Weekly Alarm Contact	Read only	1
RTCWA5	13077d	3076d	0C04h	5th Weekly Alarm Contact	Read only	1

RTCWA6	13078d	3077d	0C05h	6th Weekly Alarm Contact	Read only	1
RTCWA7	13079d	3078d	0C06h	7th Weekly Alarm Contact	Read only	1
RTCWA8	13080d	3079d	0C07h	8th Weekly Alarm Contact	Read only	1

Notes:

1. "Read" permission is given in Editor's "Settings" -> "MODBUS settings" window.

3.12 Yearly Alarms

Contact Name	"1x" Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
RTCYA1	13329d	3328d	0D00h	1th Yearly Alarm Contact	Read only	1
RTCYA2	13330d	3329d	0D01h	2th Yearly Alarm Contact	Read only	1
RTCYA3	13331d	3330d	0D02h	3th Yearly Alarm Contact	Read only	1
RTCYA4	13332d	3331d	0D03h	4th Yearly Alarm Contact	Read only	1
RTCYA5	13333d	3332d	0D04h	5th Yearly Alarm Contact	Read only	1
RTCYA6	13334d	3333d	0D05h	6th Yearly Alarm Contact	Read only	1
RTCYA7	13335d	3334d	0D06h	7th Yearly Alarm Contact	Read only	1

RTCYA8	13336d	3335d	0D07h	8th Yearly Alarm Contact	Read only	1
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Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.13 Run Time Screens

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
Scr1	13585d	3584d	0E00h	1th Run Time Screen Contact	Read only	1
Scr2	13586d	3585d	0E01h	2th Run Time Screen Contact	Read only	1
Scr3	13587d	3586d	0E02h	3th Run Time Screen Contact	Read only	1
Scr4	13588d	3587d	0E03h	4th Run Time Screen Contact	Read only	1
Scr5	13589d	3588d	0E04h	5th Run Time Screen Contact	Read only	1
Scr6	13590d	3589d	0E05h	6th Run Time Screen Contact	Read only	1
Scr7	13591d	3590d	0E06h	7th Run Time Screen Contact	Read only	1
Scr8	13592d	3591d	0E07h	8th Run Time Screen Contact	Read only	1
Scr9	13593d	3592d	0E08h	9th Run Time Screen Contact	Read only	1

Scr10	13594d	3593d	0E09h	10th Run Time Screen Contact	Read only	1
Scr11	13595d	3594d	0E0Ah	11th Run Time Screen Contact	Read only	1
Scr12	13596d	3595d	0E0Bh	12th Run Time Screen Contact	Read only	1
Scr13	13597d	3596d	0E0Ch	13th Run Time Screen Contact	Read only	1
Scr14	13598d	3597d	0E0Dh	14th Run Time Screen Contact	Read only	1
Scr15	13599d	3598d	0E0Eh	15th Run Time Screen Contact	Read only	1
Scr16	13600d	3599d	0E0Fh	16th Run Time Screen Contact	Read only	1
Scr17	13601d	3600d	0E10h	17th Run Time Screen Contact	Read only	1
Scr18	13602d	3601d	0E11h	18th Run Time Screen Contact	Read only	1
Scr19	13603d	3602d	0E12h	19th Run Time Screen Contact	Read only	1
Scr20	13604d	3603d	0E13h	20th Run Time Screen Contact	Read only	1
Scr21	13605d	3604d	0E14h	21th Run Time Screen Contact	Read only	1
Scr22	13606d	3605d	0E15h	22th Run Time Screen Contact	Read only	1

Scr23	13607d	3606d	0E16h	23th Run Time Screen Contact	Read only	1
Scr24	13608d	3607d	0E17h	24th Run Time Screen Contact	Read only	1
Scr25	13609d	3608d	0E18h	25th Run Time Screen Contact	Read only	1
Scr26	13610d	3609d	0E19h	26th Run Time Screen Contact	Read only	1
Scr27	13611d	3610d	0E1Ah	27th Run Time Screen Contact	Read only	1
Scr28	13612d	3611d	0E1Bh	28th Run Time Screen Contact	Read only	1
Scr29	13613d	3612d	0E1Ch	29th Run Time Screen Contact	Read only	1
Scr30	13614d	3613d	0E1Dh	30th Run Time Screen Contact	Read only	1
Scr31	13615d	3614d	0E1Eh	31th Run Time Screen Contact	Read only	1
Scr32	13616d	3615d	0E1Fh	32th Run Time Screen Contact	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.14 System Flags

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
PowerONRst	13841d	3840d	0F00h	1th System	Read only	1

				Flag; PowerONRs t		
ErrRetention	13842d	3841d	0F01h	2th System Flag; ErrRetention	Read only	1
ErrPTC1	13843d	3842d	0F02h	3th System Flag; ErrPTC1	Read only	1
ErrPTC2	13844d	3843d	0F03h	4th System Flag; ErrPTC2	Read only	1
ErrCommAny	13845d	3844d	0F04h	5th System Flag; ErrCommAn y	Read only	1
ErrCommG1	13846d	3845d	0F05h	6th System Flag; ErrCommG1	Read only	1
ErrRTC	13847d	3846d	0F06h	7th System Flag; ErrRTC	Read only	1
ErrCommModbus	13848d	3847d	0F07h	8th System Flag; ErrCommM odbus	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.15 Configuration Flags

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
CfgFlg1	14097d	4096d	1000h	1th Configuratio n Flag	Read only	1
CfgFlg2	14098d	4097d	1001h	2th Configuratio n Flag	Read only	1

CfgFlg3	14099d	4098d	1002h	3th Configuration Flag	Read only	1
CfgFlg4	14100d	4099d	1003h	4th Configuration Flag	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

3.16 MODBUS Network (“NetIn”) Coils

Contact Name	“1x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
NetIn1	14353d	4352d	1100h	1th MODBUS "NetIn" Coil	Read only	1,2
NetIn2	14354d	4353d	1101h	2th MODBUS "NetIn" Coil	Read only	1,2
NetIn3	14355d	4354d	1102h	3th MODBUS "NetIn" Coil	Read only	1,2
NetIn4	14356d	4355d	1103h	4th MODBUS "NetIn" Coil	Read only	1,2
NetIn5	14357d	4356d	1104h	5th MODBUS "NetIn" Coil	Read only	1,2
NetIn6	14358d	4357d	1105h	6th MODBUS "NetIn" Coil	Read only	1,2
NetIn7	14359d	4358d	1106h	7th MODBUS "NetIn" Coil	Read only	1,2
NetIn8	14360d	4359d	1107h	8th MODBUS "NetIn" Coil	Read only	1,2

NetIn9	14361d	4360d	1108h	9th MODBUS "NetIn" Coil	Read only	1,2
NetIn10	14362d	4361d	1109h	10th MODBUS "NetIn" Coil	Read only	1,2
NetIn11	14363d	4362d	110Ah	11th MODBUS "NetIn" Coil	Read only	1,2
NetIn12	14364d	4363d	110Bh	12th MODBUS "NetIn" Coil	Read only	1,2
NetIn13	14365d	4364d	110Ch	13th MODBUS "NetIn" Coil	Read only	1,2
NetIn14	14366d	4365d	110Dh	14th MODBUS "NetIn" Coil	Read only	1,2
NetIn15	14367d	4366d	110Eh	15th MODBUS "NetIn" Coil	Read only	1,2
NetIn16	14368d	4367d	110Fh	16th MODBUS "NetIn" Coil	Read only	1,2
NetIn17	14369d	4368d	1110h	17th MODBUS "NetIn" Coil	Read only	1,2
NetIn18	14370d	4369d	1111h	18th MODBUS "NetIn" Coil	Read only	1,2
NetIn19	14371d	4370d	1112h	19th MODBUS "NetIn" Coil	Read only	1,2
NetIn20	14372d	4371d	1113h	20th MODBUS "NetIn" Coil	Read only	1,2
NetIn21	14373d	4372d	1114h	21th MODBUS "NetIn" Coil	Read only	1,2

NetIn22	14374d	4373d	1115h	22th MODBUS "NetIn" Coil	Read only	1,2
NetIn23	14375d	4374d	1116h	23th MODBUS "NetIn" Coil	Read only	1,2
NetIn24	14376d	4375d	1117h	24th MODBUS "NetIn" Coil	Read only	1,2
NetIn25	14377d	4376d	1118h	25th MODBUS "NetIn" Coil	Read only	1,2
NetIn26	14378d	4377d	1119h	26th MODBUS "NetIn" Coil	Read only	1,2
NetIn27	14379d	4378d	111Ah	27th MODBUS "NetIn" Coil	Read only	1,2
NetIn28	14380d	4379d	111Bh	28th MODBUS "NetIn" Coil	Read only	1,2
NetIn29	14381d	4380d	111Ch	29th MODBUS "NetIn" Coil	Read only	1,2
NetIn30	14382d	4381d	111Dh	30th MODBUS "NetIn" Coil	Read only	1,2
NetIn31	14383d	4382d	111Eh	31th MODBUS "NetIn" Coil	Read only	1,2
NetIn32	14384d	4383d	111Fh	32th MODBUS "NetIn" Coil	Read only	1,2
NetIn33	14385d	4384d	1120h	33th MODBUS "NetIn" Coil	Read only	1,2
NetIn34	14386d	4385d	1121h	34th MODBUS "NetIn" Coil	Read only	1,2

NetIn35	14387d	4386d	1122h	35th MODBUS "NetIn" Coil	Read only	1,2
NetIn36	14388d	4387d	1123h	36th MODBUS "NetIn" Coil	Read only	1,2
NetIn37	14389d	4388d	1124h	37th MODBUS "NetIn" Coil	Read only	1,2
NetIn38	14390d	4389d	1125h	38th MODBUS "NetIn" Coil	Read only	1,2
NetIn39	14391d	4390d	1126h	39th MODBUS "NetIn" Coil	Read only	1,2
NetIn40	14392d	4391d	1127h	40th MODBUS "NetIn" Coil	Read only	1,2
NetIn41	14393d	4392d	1128h	41th MODBUS "NetIn" Coil	Read only	1,2
NetIn42	14394d	4393d	1129h	42th MODBUS "NetIn" Coil	Read only	1,2
NetIn43	14395d	4394d	112Ah	43th MODBUS "NetIn" Coil	Read only	1,2
NetIn44	14396d	4395d	112Bh	44th MODBUS "NetIn" Coil	Read only	1,2
NetIn45	14397d	4396d	112Ch	45th MODBUS "NetIn" Coil	Read only	1,2
NetIn46	14398d	4397d	112Dh	46th MODBUS "NetIn" Coil	Read only	1,2
NetIn47	14399d	4398d	112Eh	47th MODBUS "NetIn" Coil	Read only	1,2

NetIn48	14400d	4399d	112Fh	48th MODBUS "NetIn" Coil	Read only	1,2
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Notes:

1. "Read" permission is given in Editor's "Settings" -> "MODBUS settings" window.
2. Although MODBUS NetIn Coils are and mapped as read/write type ("0x Coil"), another address set is defined to be accessed as ("1x Discrete Input") for programmers convenience. Hence, MODBUS NetIn Coils can be accessed both as ("0x Coil") and ("1x Discrete Input") at the same time with separate addresses.

4. 3x Input Registers - 16 bits

4.1 Timers

Register Name	"3x" Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
Timer1	30001d	0000d	0000h	1th Timers Actual Count Value	Read only	1,2,3,4
Timer2	30002d	0001d	0001h	2th Timers Actual Count Value	Read only	1,2,3,4
Timer3	30003d	0002d	0002h	3th Timers Actual Count Value	Read only	1,2,3,4
Timer4	30004d	0003d	0003h	4th Timers Actual Count Value	Read only	1,2,3,4
Timer5	30005d	0004d	0004h	5th Timers Actual Count Value	Read only	1,2,3,4
Timer6	30006d	0005d	0005h	6th Timers Actual Count Value	Read only	1,2,3,4
Timer7	30007d	0006d	0006h	7th Timers Actual Count Value	Read only	1,2,3,4
Timer8	30008d	0007d	0007h	8th Timers Actual Count Value	Read only	1,2,3,4

Timer9	30009d	0008d	0008h	9th Timers Actual Count Value	Read only	1,2,3,4
Timer10	30010d	0009d	0009h	10th Timers Actual Count Value	Read only	1,2,3,4
Timer11	30011d	0010d	000Ah	11th Timers Actual Count Value	Read only	1,2,3,4
Timer12	30012d	0011d	000Bh	12th Timers Actual Count Value	Read only	1,2,3,4
Timer13	30013d	0012d	000Ch	13th Timers Actual Count Value	Read only	1,2,3,4
Timer14	30014d	0013d	000Dh	14th Timers Actual Count Value	Read only	1,2,3,4
Timer15	30015d	0014d	000Eh	15th Timers Actual Count Value	Read only	1,2,3,4
Timer16	30016d	0015d	000Fh	16th Timers Actual Count Value	Read only	1,2,3,4
Timer17	30017d	0016d	0010h	17th Timers Actual Count Value	Read only	1,2,3,4
Timer18	30018d	0017d	0011h	18th Timers Actual Count Value	Read only	1,2,3,4
Timer19	30019d	0018d	0012h	19th Timers Actual Count Value	Read only	1,2,3,4
Timer20	30020d	0019d	0013h	20th Timers Actual Count Value	Read only	1,2,3,4
Timer21	30021d	0020d	0014h	21th Timers Actual Count Value	Read only	1,2,3,4

Timer22	30022d	0021d	0015h	22th Timers Actual Count Value	Read only	1,2,3,4
Timer23	30023d	0022d	0016h	23th Timers Actual Count Value	Read only	1,2,3,4
Timer24	30024d	0023d	0017h	24th Timers Actual Count Value	Read only	1,2,3,4
Timer25	30025d	0024d	0018h	25th Timers Actual Count Value	Read only	1,2,3,4
Timer26	30026d	0025d	0019h	26th Timers Actual Count Value	Read only	1,2,3,4
Timer27	30027d	0026d	001Ah	27th Timers Actual Count Value	Read only	1,2,3,4
Timer28	30028d	0027d	001Bh	28th Timers Actual Count Value	Read only	1,2,3,4
Timer29	30029d	0028d	001Ch	29th Timers Actual Count Value	Read only	1,2,3,4
Timer30	30030d	0029d	001Dh	30th Timers Actual Count Value	Read only	1,2,3,4
Timer31	30031d	0030d	001Eh	31th Timers Actual Count Value	Read only	1,2,3,4
Timer32	30032d	0031d	001Fh	32th Timers Actual Count Value	Read only	1,2,3,4

Notes:

1. "Read" permission is given in Editor's "Settings" -> "MODBUS settings" window.

2. When timer mode is "Min:Sec"; Register content is evaluated as follows:

Example 1: If register content is 59; timer actual value is 00:59 (00 minutes: 59 seconds)

Example 2: If register content is 60; timer actual value is 01:00 (01 minutes: 00 seconds)

Example 3: If register content is 299; timer actual value is 04:59 (04 minutes: 59 seconds)

Example 4: If register content is 300; timer actual value is 05:00 (05 minutes: 00 seconds)

Example 5: If register content is 301; timer actual value is 05:01 (05 minutes: 01 seconds)

3. When timer mode is “Hour:Min”; Register content is evaluated as follows:

Example 1: If register content is 59; timer actual value is 00:59 (00 hours: 59 minutes)

Example 2: If register content is 60; timer actual value is 01:00 (01 hours: 00 minutes)

Example 3: If register content is 299; timer actual value is 04:59 (04 hours: 59 minutes)

Example 4: If register content is 300; timer actual value is 05:00 (05 hours: 00 minutes)

Example 5: If register content is 301; timer actual value is 05:01 (05 hours: 01 minutes)

4. When timer mode is ; “1/100 sec.”, “1/10 sec.”, “Hour”, “FstCnt1”, “FstCnt2”, “TmrTick1”, “TmrTick2”, register content is timer actual value except formatting.

Example 1: When timer mode is “1/100 sec.”, if register content is 1652; timer actual value is “16.52 seconds”.

Example 2: When timer mode is “1/10 sec.”, if register content is 1652; timer actual value is “165.2 seconds”.

4.2 Counters

Register Name	“3x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
Counter1	30257d	0256d	0100h	1th Counters Actual Count Value	Read only	1
Counter2	30258d	0257d	0101h	2th Counters Actual Count Value	Read only	1
Counter3	30259d	0258d	0102h	3th Counters Actual Count Value	Read only	1
Counter4	30260d	0259d	0103h	4th Counters Actual Count Value	Read only	1
Counter5	30261d	0260d	0104h	5th Counters Actual Count Value	Read only	1
Counter6	30262d	0261d	0105h	6th Counters Actual Count Value	Read only	1
Counter7	30263d	0262d	0106h	7th Counters Actual Count Value	Read only	1

Counter8	30264d	0263d	0107h	8th Counters Actual Count Value	Read only	1
Counter9	30265d	0264d	0108h	9th Counters Actual Count Value	Read only	1
Counter10	30266d	0265d	0109h	10th Counters Actual Count Value	Read only	1
Counter11	30267d	0266d	010Ah	11th Counters Actual Count Value	Read only	1
Counter12	30268d	0267d	010Bh	12th Counters Actual Count Value	Read only	1
Counter13	30269d	0268d	010Ch	13th Counters Actual Count Value	Read only	1
Counter14	30270d	0269d	010Dh	14th Counters Actual Count Value	Read only	1
Counter15	30271d	0270d	010Eh	15th Counters Actual Count Value	Read only	1
Counter16	30272d	0271d	010Fh	16th Counters Actual Count Value	Read only	1
Counter17	30273d	0272d	0110h	17th Counters Actual Count Value	Read only	1

Counter18	30274d	0273d	0111h	18th Counters Actual Count Value	Read only	1
Counter19	30275d	0274d	0112h	19th Counters Actual Count Value	Read only	1
Counter20	30276d	0275d	0113h	20th Counters Actual Count Value	Read only	1
Counter21	30277d	0276d	0114h	21th Counters Actual Count Value	Read only	1
Counter22	30278d	0277d	0115h	22th Counters Actual Count Value	Read only	1
Counter23	30279d	0278d	0116h	23th Counters Actual Count Value	Read only	1
Counter24	30280d	0279d	0117h	24th Counters Actual Count Value	Read only	1
Counter25	30281d	0280d	0118h	25th Counters Actual Count Value	Read only	1
Counter26	30282d	0281d	0119h	26th Counters Actual Count Value	Read only	1
Counter27	30283d	0282d	011Ah	27th Counters Actual Count Value	Read only	1

Counter28	30284d	0283d	011Bh	28th Counters Actual Count Value	Read only	1
Counter29	30285d	0284d	011Ch	29th Counters Actual Count Value	Read only	1
Counter30	30286d	0285d	011Dh	30th Counters Actual Count Value	Read only	1
Counter31	30287d	0286d	011Eh	31th Counters Actual Count Value	Read only	1
Counter32	30288d	0287d	011Fh	32th Counters Actual Count Value	Read only	1

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

4.3 State Machines

Register Name	“3x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
SmA- StateNo	30513d	0512d	0200h	SmA Actual State No	Read only	1
SmA-Timer	30514d	0513d	0201h	SmA Actual Timer Value	Read only	1,2,3,4
SmB- StateNo	30515d	0514d	0202h	SmB Actual State No	Read only	1
SmB-Timer	30516d	0515d	0203h	SmB Actual Timer Value	Read only	1,2,3,4

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.
2. Please keep in mind that SmX's timer mode may be different for each state. For this reason, SmX's actual timer value should be evaluated with the actual State No, identifying the timer mode.

When SmX's timer mode is “Min:Sec”; Register content is evaluated as follows:

Example 1: If register content is 59; timer actual value is 00:59 (00 minutes: 59 seconds)

Example 2: If register content is 60; timer actual value is 01:00 (01 minutes: 00 seconds)

Example 3: If register content is 299; timer actual value is 04:59 (04 minutes: 59 seconds)

Example 4: If register content is 300; timer actual value is 05:00 (05 minutes: 00 seconds)

Example 5: If register content is 301; timer actual value is 05:01 (05 minutes: 01 seconds)

3. Please keep in mind that SmX's timer mode may be different for each state. For this reason, SmX's actual timer value should be evaluated with the actual State No, identifying the timer mode.

When SmX's timer mode is “Hour:Min”; Register content is evaluated as follows:

Example 1: If register content is 59; timer actual value is 00:59 (00 hours: 59 minutes)

Example 2: If register content is 60; timer actual value is 01:00 (01 hours: 00 minutes)

Example 3: If register content is 299; timer actual value is 04:59 (04 hours: 59 minutes)

Example 4: If register content is 300; timer actual value is 05:00 (05 hours: 00 minutes)

Example 5: If register content is 301; timer actual value is 05:01 (05 hours: 01 minutes)

4. When SmX's timer mode is ; “1/100 sec.”, “1/10 sec.”, “Hour”, “FstCnt1”, “FstCnt2”, “TmrTick1”, “TmrTick2”, register content is timer actual value except formatting.

Example 1: When SmX's timer mode is “1/100 sec.”, if register content is 1652; timer actual value is “16.52 seconds”.

Example 2: When SmX's timer mode is “1/10 sec.”, if register content is 1652; timer actual value is “165.2 seconds”.

4.4 PTC Sensor

Register Name	“3x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
PTC1	30769d	0768d	0300h	Temperature measured by PTC1	Read only	1,2
PTC2	30770d	0769d	0301h	Temperature measured by PTC2	Read only	1,2

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

2. Temperature value measured by PTC sensors is in “Centigrade” scale. This value is 16bit signed. Please refer to examples below:

Example 1: if register value is 59; temperature is 59 centigrade degrees.

Example 1: if register value is 0; temperature is 0 centigrade degrees.

Example 3: if register value is 65535 (or FFFFh); temperature is -1 centigrade degrees.

Example 4: if register value is 65526 (or FFF6h); temperature is -10 centigrade degrees.

4.5 Analog Inputs

Register Name	“3x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
AnIn1	31025d	1024d	0400h	0-10V Analog Value measured at In1 Input	Read only	1,2,3
AnIn2	31026d	1025d	0401h	0-10V Analog Value measured at In2 Input	Read only	1,2,3
AnIn3	31027d	1026d	0402h	0-10V Analog Value measured at In3 Input	Read only	1,2,3
AnIn4	31028d	1027d	0403h	0-10V Analog Value measured at In4 Input	Read only	1,2,3

Notes:

1. “Read” permission is given in Editor's “Settings” -> “MODBUS settings” window.

2. Measured value at analog inputs is 16bit signed. Please refer to examples below:

Example 1: if register value is 59; it is evaluated as 59.

Example 2: if register value is 0; it is evaluated as 0.

Example 3: if register value is 65535 (or FFFFh); it is evaluated as -1.

Example 4: if register value is 65526 (or FFF6h); it is evaluated as -10.

3. The register value is the converted value, calculated according to the parameters entered at the “0-10V Analog Input Parameters” screen of GEMO Ladder Editor.

4.6 AR2-S-24VDC-MB1 Device Identification No (ID) Register

Device ID of AR2-S-24VDC-MB1 is **1C2Fh**.

Register Name	“3x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
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DeviceIDMB1	31281d	1280d	0500h	AR2-S-24VDC-MB1 Device ID	Read only	1
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Notes:

1. This register belongs to AR2-S-24VDC-MB1 not to AR2. Hence AR2-S-24VDC-MB1 responds to any valid inquiry to this register without asking to AR2 at all times (even when “read” permission is not given in “MODBUS Settings” screen of GEMO Ladder Editor). Device ID of AR2-S-24VDC-MB1 is **1C2Fh**.

5. 4x Holding Registers

5.1 Timer “tA” Preset Value

Register Name	“4x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
Timer1-tA	40001d	0000d	0000h	1th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer2-tA	40002d	0001d	0001h	2th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer3-tA	40003d	0002d	0002h	3th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer4-tA	40004d	0003d	0003h	4th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer5-tA	40005d	0004d	0004h	5th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer6-tA	40006d	0005d	0005h	6th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer7-tA	40007d	0006d	0006h	7th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer8-tA	40008d	0007d	0007h	8th Timer Preset tA Value	Read / Write	1,2,3,4,5,6

Timer9-tA	40009d	0008d	0008h	9th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer10-tA	40010d	0009d	0009h	10th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer11-tA	40011d	0010d	000Ah	11th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer12-tA	40012d	0011d	000Bh	12th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer13-tA	40013d	0012d	000Ch	13th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer14-tA	40014d	0013d	000Dh	14th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer15-tA	40015d	0014d	000Eh	15th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer16-tA	40016d	0015d	000Fh	16th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer17-tA	40017d	0016d	0010h	17th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer18-tA	40018d	0017d	0011h	18th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer19-tA	40019d	0018d	0012h	19th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer20-tA	40020d	0019d	0013h	20th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer21-tA	40021d	0020d	0014h	21th Timer Preset tA Value	Read / Write	1,2,3,4,5,6

Timer22-tA	40022d	0021d	0015h	22th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer23-tA	40023d	0022d	0016h	23th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer24-tA	40024d	0023d	0017h	24th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer25-tA	40025d	0024d	0018h	25th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer26-tA	40026d	0025d	0019h	26th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer27-tA	40027d	0026d	001Ah	27th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer28-tA	40028d	0027d	001Bh	28th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer29-tA	40029d	0028d	001Ch	29th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer30-tA	40030d	0029d	001Dh	30th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer31-tA	40031d	0030d	001Eh	31th Timer Preset tA Value	Read / Write	1,2,3,4,5,6
Timer32-tA	40032d	0031d	001Fh	32th Timer Preset tA Value	Read / Write	1,2,3,4,5,6

Notes:

1. “Read / Write” permissions are given in Editor's “Settings” -> “MODBUS settings” window.

2. When timer mode is “Min:Sec”; Register content is evaluated as follows:

Example 1: If register content is 59; timer actual value is 00:59 (00 minutes: 59 seconds)

Example 2: If register content is 60; timer actual value is 01:00 (01 minutes: 00 seconds)

Example 3: If register content is 299; timer actual value is 04:59 (04 minutes: 59 seconds)

Example 4: If register content is 300; timer actual value is 05:00 (05 minutes: 00 seconds)

Example 5: If register content is 301; timer actual value is 05:01 (05 minutes: 01 seconds)

3. When timer mode is “Hour:Min”; Register content is evaluated as follows:

Example 1: If register content is 59; timer actual value is 00:59 (00 hours: 59 minutes)

Example 2: If register content is 60; timer actual value is 01:00 (01 hours: 00 minutes)

Example 3: If register content is 299; timer actual value is 04:59 (04 hours: 59 minutes)

Example 4: If register content is 300; timer actual value is 05:00 (05 hours: 00 minutes)

Example 5: If register content is 301; timer actual value is 05:01 (05 hours: 01 minutes)

4. When timer mode is ; “1/100 sec.”, “1/10 sec.”, “Hour”, “FstCnt1”, “FstCnt2”, “TmrTick1”, “TmrTick2”, register content is timer actual value except formatting.

Example 1: When timer mode is “1/100 sec.”, if register content is 1652; timer actual value is “16.52 seconds”.

Example 2: When timer mode is “1/10 sec.”, if register content is 1652; timer actual value is “165.2 seconds”.

5. Value to be written to this register is accepted by AR2 only when the value is greater then or equal to “tA.Min” and, less then or equal to “tA.Max” values entered at the “Timer Parameters” screen of GEMO Ladder Editor, else an exception message is sent by AR2, discarding the inquiry.

6.Timer tA Preset value is kept at the non-volatile memory of AR2, hence will also be valid after the power on situation, until altered by the user (via front panel entry) or by a valid MODBUS inquiry. Non-volatile memory has an expected read/write lifetime (endurance). So altering this register value too rapidly may degrade the lifetime expectancy for the non-volatile memory; this fact should be taken into consideration. You can consult to the manufacturer for the lifetime expectancy of the non-volatile memory.

5.2 Timer “tB” Preset Value

Register Name	“4x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
Timer1-tB	40257d	0256d	0100h	1th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer2-tB	40258d	0257d	0101h	2th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer3-tB	40259d	0258d	0102h	3th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer4-tB	40260d	0259d	0103h	4th Timer Preset tB Value	Read / Write	1,2,3,4,5,6

Timer5-tB	40261d	0260d	0104h	5th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer6-tB	40262d	0261d	0105h	6th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer7-tB	40263d	0262d	0106h	7th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer8-tB	40264d	0263d	0107h	8th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer9-tB	40265d	0264d	0108h	9th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer10-tB	40266d	0265d	0109h	10th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer11-tB	40267d	0266d	010Ah	11th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer12-tB	40268d	0267d	010Bh	12th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer13-tB	40269d	0268d	010Ch	13th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer14-tB	40270d	0269d	010Dh	14th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer15-tB	40271d	0270d	010Eh	15th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer16-tB	40272d	0271d	010Fh	16th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer17-tB	40273d	0272d	0110h	17th Timer Preset tB Value	Read / Write	1,2,3,4,5,6

Timer18-tB	40274d	0273d	0111h	18th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer19-tB	40275d	0274d	0112h	19th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer20-tB	40276d	0275d	0113h	20th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer21-tB	40277d	0276d	0114h	21th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer22-tB	40278d	0277d	0115h	22th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer23-tB	40279d	0278d	0116h	23th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer24-tB	40280d	0279d	0117h	24th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer25-tB	40281d	0280d	0118h	25th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer26-tB	40282d	0281d	0119h	26th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer27-tB	40283d	0282d	011Ah	27th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer28-tB	40284d	0283d	011Bh	28th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer29-tB	40285d	0284d	011Ch	29th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer30-tB	40286d	0285d	011Dh	30th Timer Preset tB Value	Read / Write	1,2,3,4,5,6

Timer31-tB	40287d	0286d	011Eh	31th Timer Preset tB Value	Read / Write	1,2,3,4,5,6
Timer32-tB	40288d	0287d	011Fh	32th Timer Preset tB Value	Read / Write	1,2,3,4,5,6

Notes:

1. “Read / Write” permissions are given in Editor's “Settings” -> “MODBUS settings” window.

2. When timer mode is “Min:Sec”; Register content is evaluated as follows:

Example 1: If register content is 59; timer actual value is 00:59 (00 minutes: 59 seconds)

Example 2: If register content is 60; timer actual value is 01:00 (01 minutes: 00 seconds)

Example 3: If register content is 299; timer actual value is 04:59 (04 minutes: 59 seconds)

Example 4: If register content is 300; timer actual value is 05:00 (05 minutes: 00 seconds)

Example 5: If register content is 301; timer actual value is 05:01 (05 minutes: 01 seconds)

3. When timer mode is “Hour:Min”; Register content is evaluated as follows:

Example 1: If register content is 59; timer actual value is 00:59 (00 hours: 59 minutes)

Example 2: If register content is 60; timer actual value is 01:00 (01 hours: 00 minutes)

Example 3: If register content is 299; timer actual value is 04:59 (04 hours: 59 minutes)

Example 4: If register content is 300; timer actual value is 05:00 (05 hours: 00 minutes)

Example 5: If register content is 301; timer actual value is 05:01 (05 hours: 01 minutes)

4. When timer mode is ; “1/100 sec.”, “1/10 sec.”, “Hour”, “FstCnt1”, “FstCnt2”, “TmrTick1”, “TmrTick2”, register content is timer actual value except formatting.

Example 1: When timer mode is “1/100 sec.”, if register content is 1652; timer actual value is “16.52 seconds”.

Example 2: When timer mode is “1/10 sec.”, if register content is 1652; timer actual value is “165.2 seconds”.

5. Value to be written to this register is accepted by AR2 only when the value is greater then or equal to “tB.Min” and, less then or equal to “tB.Max” values entered at the “Timer Parameters” screen of GEMO Ladder Editor, else an exception message is sent by AR2, discarding the inquiry.

6.Timer tB Preset value is kept at the non-volatile memory of AR2, hence will also be valid after the power on situation, until altered by the user (via front panel entry) or by a valid MODBUS inquiry. Non-volatile memory has an expected read/write lifetime (endurance). So altering this register value too rapidly may degrade the lifetime expectancy for the non-volatile memory; this fact should be taken into consideration. You can consult to the manufacturer for the lifetime expectancy of the non-volatile memory.

5.3 Counter Preset Value

Register Name	“4x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
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Counter1- Preset	40513d	0512d	0200h	1th Counter Preset Value	Read / Write	1,2,3
Counter2- Preset	40514d	0513d	0201h	2th Counter Preset Value	Read / Write	1,2,3
Counter3- Preset	40515d	0514d	0202h	3th Counter Preset Value	Read / Write	1,2,3
Counter4- Preset	40516d	0515d	0203h	4th Counter Preset Value	Read / Write	1,2,3
Counter5- Preset	40517d	0516d	0204h	5th Counter Preset Value	Read / Write	1,2,3
Counter6- Preset	40518d	0517d	0205h	6th Counter Preset Value	Read / Write	1,2,3
Counter7- Preset	40519d	0518d	0206h	7th Counter Preset Value	Read / Write	1,2,3
Counter8- Preset	40520d	0519d	0207h	8th Counter Preset Value	Read / Write	1,2,3
Counter9- Preset	40521d	0520d	0208h	9th Counter Preset Value	Read / Write	1,2,3
Counter10- Preset	40522d	0521d	0209h	10th Counter Preset Value	Read / Write	1,2,3
Counter11- Preset	40523d	0522d	020Ah	11th Counter Preset Value	Read / Write	1,2,3
Counter12- Preset	40524d	0523d	020Bh	12th Counter Preset Value	Read / Write	1,2,3
Counter13- Preset	40525d	0524d	020Ch	13th Counter Preset Value	Read / Write	1,2,3
Counter14- Preset	40526d	0525d	020Dh	14th Counter Preset Value	Read / Write	1,2,3
Counter15- Preset	40527d	0526d	020Eh	15th Counter Preset Value	Read / Write	1,2,3
Counter16- Preset	40528d	0527d	020Fh	16th Counter Preset Value	Read / Write	1,2,3
Counter17- Preset	40529d	0528d	0210h	17th Counter Preset Value	Read / Write	1,2,3

Counter18- Preset	40530d	0529d	0211h	18th Counter Preset Value	Read / Write	1,2,3
Counter19- Preset	40531d	0530d	0212h	19th Counter Preset Value	Read / Write	1,2,3
Counter20- Preset	40532d	0531d	0213h	20th Counter Preset Value	Read / Write	1,2,3
Counter21- Preset	40533d	0532d	0214h	21th Counter Preset Value	Read / Write	1,2,3
Counter22- Preset	40534d	0533d	0215h	22th Counter Preset Value	Read / Write	1,2,3
Counter23- Preset	40535d	0534d	0216h	23th Counter Preset Value	Read / Write	1,2,3
Counter24- Preset	40536d	0535d	0217h	24th Counter Preset Value	Read / Write	1,2,3
Counter25- Preset	40537d	0536d	0218h	25th Counter Preset Value	Read / Write	1,2,3
Counter26- Preset	40538d	0537d	0219h	26th Counter Preset Value	Read / Write	1,2,3
Counter27- Preset	40539d	0538d	021Ah	27th Counter Preset Value	Read / Write	1,2,3
Counter28- Preset	40540d	0539d	021Bh	28th Counter Preset Value	Read / Write	1,2,3
Counter29- Preset	40541d	0540d	021Ch	29th Counter Preset Value	Read / Write	1,2,3
Counter30- Preset	40542d	0541d	021Dh	30th Counter Preset Value	Read / Write	1,2,3
Counter31- Preset	40543d	0542d	021Eh	31th Counter Preset Value	Read / Write	1,2,3
Counter32- Preset	40544d	0543d	021Fh	32th Counter Preset Value	Read / Write	1,2,3

Notes:

1. “Read / Write” permissions are given in Editor's “Settings” -> “MODBUS settings” window.
2. Value to be written to this register is accepted by AR2 only when the value is greater then or equal to “Min.SET” and, less then or equal to “Max.SET” values entered at the “Counter Parameters” screen of GEMO Ladder Editor, else an exception message is sent by AR2, discarding

the inquiry.

3.Counter Preset value is kept at the non-volatile memory of AR2, hence will also be valid after the power on situation, until altered by the user (via front panel entry) or by a valid MODBUS inquiry. Non-volatile memory has an expected read/write lifetime (endurance). So altering this register value too rapidly may degrade the lifetime expectancy for the non-volatile memory; this fact should be taken into consideration. You can consult to the manufacturer for the lifetime expectancy of the non-volatile memory.

5.4 Counter Comparator Preset Value

Register Name	“4x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
CntCmp1-Preset	40769d	0768d	0300h	1th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp2-Preset	40770d	0769d	0301h	2th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp3-Preset	40771d	0770d	0302h	3th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp4-Preset	40772d	0771d	0303h	4th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp5-Preset	40773d	0772d	0304h	5th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp6-Preset	40774d	0773d	0305h	6th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp7-Preset	40775d	0774d	0306h	7th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp8-Preset	40776d	0775d	0307h	8th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp9-Preset	40777d	0776d	0308h	9th Counter Comparator Preset Value	Read / Write	1,2,3

CntCmp10- Preset	40778d	0777d	0309h	10th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp11- Preset	40779d	0778d	030Ah	11th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp12- Preset	40780d	0779d	030Bh	12th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp13- Preset	40781d	0780d	030Ch	13th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp14- Preset	40782d	0781d	030Dh	14th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp15- Preset	40783d	0782d	030Eh	15th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp16- Preset	40784d	0783d	030Fh	16th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp17- Preset	40785d	0784d	0310h	17th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp18- Preset	40786d	0785d	0311h	18th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp19- Preset	40787d	0786d	0312h	19th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp20- Preset	40788d	0787d	0313h	20th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp21- Preset	40789d	0788d	0314h	21th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp22- Preset	40790d	0789d	0315h	22th Counter Comparator Preset Value	Read / Write	1,2,3

CntCmp23- Preset	40791d	0790d	0316h	23th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp24- Preset	40792d	0791d	0317h	24th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp25- Preset	40793d	0792d	0318h	25th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp26- Preset	40794d	0793d	0319h	26th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp27- Preset	40795d	0794d	031Ah	27th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp28- Preset	40796d	0795d	031Bh	28th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp29- Preset	40797d	0796d	031Ch	29th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp30- Preset	40798d	0797d	031Dh	30th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp31- Preset	40799d	0798d	031Eh	31th Counter Comparator Preset Value	Read / Write	1,2,3
CntCmp32- Preset	40800d	0799d	031Fh	32th Counter Comparator Preset Value	Read / Write	1,2,3

Notes:

1. “Read / Write” permissions are given in Editor's “Settings” -> “MODBUS settings” window.

2. Value to be written to this register is accepted by AR2 only when the value is greater then or equal to “Min.SET” and, less then or equal to “Max.SET” values entered at the “Counter Comparator Parameters” screen of GEMO Ladder Editor, else an exception message is sent by AR2, discarding the inquiry.

3.Counter Comparator Preset value is kept at the non-volatile memory of AR2, hence will also be valid after the power on situation, until altered by the user (via front panel entry) or by a valid MODBUS inquiry. Non-volatile memory has an expected read/write lifetime (endurance). So

altering this register value too rapidly may degrade the lifetime expectancy for the non-volatile memory; this fact should be taken into consideration. You can consult to the manufacturer for the lifetime expectancy of the non-volatile memory.

5.5 SmA, State Machine “A” Timer Preset Value

Register Name	“4x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
SmA; State1-tSet	41025d	1024d	0400h	SmA 1th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State2-tSet	41026d	1025d	0401h	SmA 2th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State3-tSet	41027d	1026d	0402h	SmA 3th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State4-tSet	41028d	1027d	0403h	SmA 4th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State5-tSet	41029d	1028d	0404h	SmA 5th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State6-tSet	41030d	1029d	0405h	SmA 6th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State7-tSet	41031d	1030d	0406h	SmA 7th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State8-tSet	41032d	1031d	0407h	SmA 8th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State9-tSet	41033d	1032d	0408h	SmA 9th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State10-tSet	41034d	1033d	0409h	SmA 10th States' Timer Preset Value	Read / Write	1,2,3,4,5,6

SmA; State11-tSet	41035d	1034d	040Ah	SmA 11th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State12-tSet	41036d	1035d	040Bh	SmA 12th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State13-tSet	41037d	1036d	040Ch	SmA 13th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State14-tSet	41038d	1037d	040Dh	SmA 14th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State15-tSet	41039d	1038d	040Eh	SmA 15th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State16-tSet	41040d	1039d	040Fh	SmA 16th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State17-tSet	41041d	1040d	0410h	SmA 17th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State18-tSet	41042d	1041d	0411h	SmA 18th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State19-tSet	41043d	1042d	0412h	SmA 19th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State20-tSet	41044d	1043d	0413h	SmA 20th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State21-tSet	41045d	1044d	0414h	SmA 21th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State22-tSet	41046d	1045d	0415h	SmA 22th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State23-tSet	41047d	1046d	0416h	SmA 23th States' Timer Preset Value	Read / Write	1,2,3,4,5,6

SmA; State24-tSet	41048d	1047d	0417h	SmA 24th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State25-tSet	41049d	1048d	0418h	SmA 25th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State26-tSet	41050d	1049d	0419h	SmA 26th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State27-tSet	41051d	1050d	041Ah	SmA 27th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State28-tSet	41052d	1051d	041Bh	SmA 28th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State29-tSet	41053d	1052d	041Ch	SmA 29th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State30-tSet	41054d	1053d	041Dh	SmA 30th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State31-tSet	41055d	1054d	041Eh	SmA 31th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State32-tSet	41056d	1055d	041Fh	SmA 32th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State33-tSet	41057d	1056d	0420h	SmA 33th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State34-tSet	41058d	1057d	0421h	SmA 34th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State35-tSet	41059d	1058d	0422h	SmA 35th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State36-tSet	41060d	1059d	0423h	SmA 36th States' Timer Preset Value	Read / Write	1,2,3,4,5,6

SmA; State37-tSet	41061d	1060d	0424h	SmA 37th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State38-tSet	41062d	1061d	0425h	SmA 38th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State39-tSet	41063d	1062d	0426h	SmA 39th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State40-tSet	41064d	1063d	0427h	SmA 40th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State41-tSet	41065d	1064d	0428h	SmA 41th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State42-tSet	41066d	1065d	0429h	SmA 42th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State43-tSet	41067d	1066d	042Ah	SmA 43th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State44-tSet	41068d	1067d	042Bh	SmA 44th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State45-tSet	41069d	1068d	042Ch	SmA 45th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State46-tSet	41070d	1069d	042Dh	SmA 46th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State47-tSet	41071d	1070d	042Eh	SmA 47th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmA; State48-tSet	41072d	1071d	042Fh	SmA 48th States' Timer Preset Value	Read / Write	1,2,3,4,5,6

Notes:

1. “Read / Write” permissions are given in Editor's “Settings” -> “MODBUS settings” window.

2. When SmA timer mode is “Min:Sec”; Register content is evaluated as follows:

Example 1: If register content is 59; timer actual value is 00:59 (00 minutes: 59 seconds)

Example 2: If register content is 60; timer actual value is 01:00 (01 minutes: 00 seconds)

Example 3: If register content is 299; timer actual value is 04:59 (04 minutes: 59 seconds)

Example 4: If register content is 300; timer actual value is 05:00 (05 minutes: 00 seconds)

Example 5: If register content is 301; timer actual value is 05:01 (05 minutes: 01 seconds)

3. When SmA timer mode is “Hour:Min”; Register content is evaluated as follows:

Example 1: If register content is 59; timer actual value is 00:59 (00 hours: 59 minutes)

Example 2: If register content is 60; timer actual value is 01:00 (01 hours: 00 minutes)

Example 3: If register content is 299; timer actual value is 04:59 (04 hours: 59 minutes)

Example 4: If register content is 300; timer actual value is 05:00 (05 hours: 00 minutes)

Example 5: If register content is 301; timer actual value is 05:01 (05 hours: 01 minutes)

4. When SmA timer mode is ; “1/100 sec.”, “1/10 sec.”, “Hour”, “FstCnt1”, “FstCnt2”, “TmrTick1”, “TmrTick2”, register content is timer actual value except formatting.

Example 1: When SmA timer mode is “1/100 sec.”, if register content is 1652; timer actual value is “16.52 seconds”.

Example 2: When SmA timer mode is “1/10 sec.”, if register content is 1652; timer actual value is “165.2 seconds”.

5. Value to be written to this register is accepted by AR2 only when the value is greater then or equal to “t.Min” and, less then or equal to “t.Max” values entered at the “State Machine Designer” screen of GEMO Ladder Editor, else an exception message is sent by AR2, discarding the inquiry.

6.SmA Timer Preset value is kept at the non-volatile memory of AR2, hence will also be valid after the power on situation, until altered by the user (via front panel entry) or by a valid MODBUS inquiry. Non-volatile memory has an expected read/write lifetime (endurance). So altering this register value too rapidly may degrade the lifetime expectancy for the non-volatile memory; this fact should be taken into consideration. You can consult to the manufacturer for the lifetime expectancy of the non-volatile memory.

5.6 SmB, State Machine “B” Timer Preset Value

Register Name	“4x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
SmB; State1-tSet	41281d	1280d	0500h	SmB 1th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State2-tSet	41282d	1281d	0501h	SmB 2th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State3-tSet	41283d	1282d	0502h	SmB 3th States' Timer Preset Value	Read / Write	1,2,3,4,5,6

SmB; State4-tSet	41284d	1283d	0503h	SmB 4th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State5-tSet	41285d	1284d	0504h	SmB 5th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State6-tSet	41286d	1285d	0505h	SmB 6th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State7-tSet	41287d	1286d	0506h	SmB 7th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State8-tSet	41288d	1287d	0507h	SmB 8th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State9-tSet	41289d	1288d	0508h	SmB 9th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State10-tSet	41290d	1289d	0509h	SmB 10th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State11-tSet	41291d	1290d	050Ah	SmB 11th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State12-tSet	41292d	1291d	050Bh	SmB 12th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State13-tSet	41293d	1292d	050Ch	SmB 13th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State14-tSet	41294d	1293d	050Dh	SmB 14th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State15-tSet	41295d	1294d	050Eh	SmB 15th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State16-tSet	41296d	1295d	050Fh	SmB 16th States' Timer Preset Value	Read / Write	1,2,3,4,5,6

SmB; State17-tSet	41297d	1296d	0510h	SmB 17th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State18-tSet	41298d	1297d	0511h	SmB 18th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State19-tSet	41299d	1298d	0512h	SmB 19th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State20-tSet	41300d	1299d	0513h	SmB 20th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State21-tSet	41301d	1300d	0514h	SmB 21th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State22-tSet	41302d	1301d	0515h	SmB 22th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State23-tSet	41303d	1302d	0516h	SmB 23th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State24-tSet	41304d	1303d	0517h	SmB 24th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State25-tSet	41305d	1304d	0518h	SmB 25th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State26-tSet	41306d	1305d	0519h	SmB 26th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State27-tSet	41307d	1306d	051Ah	SmB 27th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State28-tSet	41308d	1307d	051Bh	SmB 28th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State29-tSet	41309d	1308d	051Ch	SmB 29th States' Timer Preset Value	Read / Write	1,2,3,4,5,6

SmB; State30-tSet	41310d	1309d	051Dh	SmB 30th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State31-tSet	41311d	1310d	051Eh	SmB 31th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State32-tSet	41312d	1311d	051Fh	SmB 32th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State33-tSet	41313d	1312d	0520h	SmB 33th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State34-tSet	41314d	1313d	0521h	SmB 34th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State35-tSet	41315d	1314d	0522h	SmB 35th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State36-tSet	41316d	1315d	0523h	SmB 36th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State37-tSet	41317d	1316d	0524h	SmB 37th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State38-tSet	41318d	1317d	0525h	SmB 38th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State39-tSet	41319d	1318d	0526h	SmB 39th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State40-tSet	41320d	1319d	0527h	SmB 40th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State41-tSet	41321d	1320d	0528h	SmB 41th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State42-tSet	41322d	1321d	0529h	SmB 42th States' Timer Preset Value	Read / Write	1,2,3,4,5,6

SmB; State43-tSet	41323d	1322d	052Ah	SmB 43th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State44-tSet	41324d	1323d	052Bh	SmB 44th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State45-tSet	41325d	1324d	052Ch	SmB 45th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State46-tSet	41326d	1325d	052Dh	SmB 46th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State47-tSet	41327d	1326d	052Eh	SmB 47th States' Timer Preset Value	Read / Write	1,2,3,4,5,6
SmB; State48-tSet	41328d	1327d	052Fh	SmB 48th States' Timer Preset Value	Read / Write	1,2,3,4,5,6

Notes:

1. "Read / Write" permissions are given in Editor's "Settings" -> "MODBUS settings" window.

2. When SmB timer mode is "Min:Sec"; Register content is evaluated as follows:

Example 1: If register content is 59; timer actual value is 00:59 (00 minutes: 59 seconds)

Example 2: If register content is 60; timer actual value is 01:00 (01 minutes: 00 seconds)

Example 3: If register content is 299; timer actual value is 04:59 (04 minutes: 59 seconds)

Example 4: If register content is 300; timer actual value is 05:00 (05 minutes: 00 seconds)

Example 5: If register content is 301; timer actual value is 05:01 (05 minutes: 01 seconds)

3. When SmB timer mode is "Hour:Min"; Register content is evaluated as follows:

Example 1: If register content is 59; timer actual value is 00:59 (00 hours: 59 minutes)

Example 2: If register content is 60; timer actual value is 01:00 (01 hours: 00 minutes)

Example 3: If register content is 299; timer actual value is 04:59 (04 hours: 59 minutes)

Example 4: If register content is 300; timer actual value is 05:00 (05 hours: 00 minutes)

Example 5: If register content is 301; timer actual value is 05:01 (05 hours: 01 minutes)

4. When SmB timer mode is ; "1/100 sec.", "1/10 sec.", "Hour", "FstCnt1", "FstCnt2", "TmrTick1", "TmrTick2", register content is timer actual value except formatting.

Example 1: When SmB timer mode is "1/100 sec.", if register content is 1652; timer actual value is "16.52 seconds".

Example 2: When SmB timer mode is "1/10 sec.", if register content is 1652; timer actual value is "165.2 seconds".

5. Value to be written to this register is accepted by AR2 only when the value is greater then or equal to "t.Min" and, less then or equal to "t.Max" values entered at the "State Machine Designer"

screen of GEMO Ladder Editor, else an exception message is sent by AR2, discarding the inquiry.

6.SmB Timer Preset value is kept at the non-volatile memory of AR2, hence will also be valid after the power on situation, until altered by the user (via front panel entry) or by a valid MODBUS inquiry. Non-volatile memory has an expected read/write lifetime (endurance). So altering this register value too rapidly may degrade the lifetime expectancy for the non-volatile memory; this fact should be taken into consideration. You can consult to the manufacturer for the lifetime expectancy of the non-volatile memory.

5.7 Analog Comparator Preset Values

Register Name	“4x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
AnCmp1-Preset	41537d	1536d	0600h	1th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp2-Preset	41538d	1537d	0601h	2th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp3-Preset	41539d	1538d	0602h	3th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp4-Preset	41540d	1539d	0603h	4th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp5-Preset	41541d	1540d	0604h	5th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp6-Preset	41542d	1541d	0605h	6th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp7-Preset	41543d	1542d	0606h	7th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp8-Preset	41544d	1543d	0607h	8th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp9-Preset	41545d	1544d	0608h	9th Analog Comparator Preset Value	Read / Write	1,2,3,4

AnCmp10-Preset	41546d	1545d	0609h	10th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp11-Preset	41547d	1546d	060Ah	11th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp12-Preset	41548d	1547d	060Bh	12th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp13-Preset	41549d	1548d	060Ch	13th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp14-Preset	41550d	1549d	060Dh	14th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp15-Preset	41551d	1550d	060Eh	15th Analog Comparator Preset Value	Read / Write	1,2,3,4
AnCmp16-Preset	41552d	1551d	060Fh	16th Analog Comparator Preset Value	Read / Write	1,2,3,4

Notes:

1. “Read / Write” permissions are given in Editor's “Settings” -> “MODBUS settings” window.

2. Analog Comparator Preset value is 16bit signed. Please refer to examples below:

Example 1: if register value is 259; it is evaluated as 259.

Example 1: if register value is 0; it is evaluated as 0.

Example 3: if register value is 65535 (or FFFFh); it is evaluated as -1.

Example 4: if register value is 65436 (or FF9Ch); it is evaluated as -100.

3. Value to be written to this register is accepted by AR2 only when the value is greater then or equal to “Min.SET” and, less then or equal to “Max.SET” values entered at the “Analog Comparator Parameters” screen of GEMO Ladder Editor, else an exception message is sent by AR2, discarding the inquiry.

4. Analog Comparator Preset value is kept at the non-volatile memory of AR2, hence will also be valid after the power on situation, until altered by the user (via front panel entry) or by a valid MODBUS inquiry. Non-volatile memory has an expected read/write lifetime (endurance). So altering this register value too rapidly may degrade the lifetime expectancy for the non-volatile memory; this fact should be taken into consideration. You can consult to the manufacturer for the lifetime expectancy of the non-volatile memory.

5.8 Analog Comparator Hysteresis Value

Register Name	“4x” Address	Address; Decimal	Address; Hex	Explanation	Access	Notes
AnCmp1-Hys	41793d	1792d	0700h	1th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp2-Hys	41794d	1793d	0701h	2th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp3-Hys	41795d	1794d	0702h	3th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp4-Hys	41796d	1795d	0703h	4th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp5-Hys	41797d	1796d	0704h	5th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp6-Hys	41798d	1797d	0705h	6th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp7-Hys	41799d	1798d	0706h	7th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp8-Hys	41800d	1799d	0707h	8th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp9-Hys	41801d	1800d	0708h	9th Analog Comparator Hysteresis Value	Read / Write	1,2,3

AnCmp10-Hys	41802d	1801d	0709h	10th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp11-Hys	41803d	1802d	070Ah	11th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp12-Hys	41804d	1803d	070Bh	12th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp13-Hys	41805d	1804d	070Ch	13th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp14-Hys	41806d	1805d	070Dh	14th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp15-Hys	41807d	1806d	070Eh	15th Analog Comparator Hysteresis Value	Read / Write	1,2,3
AnCmp16-Hys	41808d	1807d	070Fh	16th Analog Comparator Hysteresis Value	Read / Write	1,2,3

Notes:

1. “Read / Write” permissions are given in Editor's “Settings” -> “MODBUS settings” window.

3. Value to be written to this register is accepted by AR2 only when the value is greater then or equal to “Min.SET” and, less then or equal to “Max.SET” values entered at the “Analog Comparator Parameters” screen of GEMO Ladder Editor, else an exception message is sent by AR2, discarding the inquiry.

6. Analog Comparator Hysteresis value is kept at the non-volatile memory of AR2, hence will also be valid after the power on situation, until altered by the user (via front panel entry) or by a valid MODBUS inquiry. Non-volatile memory has an expected read/write lifetime (endurance). So altering this register value too rapidly may degrade the lifetime expectancy for the non-volatile memory; this fact should be taken into consideration. You can consult to the manufacturer for the lifetime expectancy of the non-volatile memory.

6. References

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