APPLICATION NOTE:

I/O COPY AND ALARMS ON MODBUS

SENECA s.r.l.

Via Austria 26, PADOVA – ITALY

Tel. +39.049.8705355 – 8705359 Fax. +39.049.8706287

Website: www.seneca.it

Customer service: supporto@seneca.it (IT), support@seneca.it (Other)

Commercial information: commerciale@seneca.it (IT), sales@seneca.it (Other)

APPLICATION NOTE

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ATTENTION!

Contact your telephone provider for information on GSM and GPRS service costs. It is best to quantify log and SMS costs before setting up and installing Z-GPRS3, Z-UMTS, Z-LOGGER3.

The use of Z-GPRS3 and Z-UMTS is in data roaming mode (for example, abroad with an Italian SIM card) may generate unexpected costs. Contact your telephone provider for further information.

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ATTENTION!

-Contact your telephone service provider for GSM and GPRS service costs especially when using Z-GPRS3 or Z-UMTS with a sim card issued by a country other than the one in which it is used (international roaming).

-It is best to estimate telephone costs before setting up Z-GPRS3 and Z-UMTS.

-The cost of each SMS is set by the telephone service provider.

-GPRS send/receive costs can be tied to Kbytes sent/received, a monthly ceiling included in a package or GPRS connection time. Contact your telephone service provider for further information.

-Check the data quantity sent via GPRS and SMS before using Z-GPRS3 and Z-UMTS.

Please remember that mobile phone service providers consider the entire communication that permits file transmission as data traffic (and therefore data transmission overhead, the number of connection attempts, etc. must also be included in the count) and not just the dimensions of each 2G/3G transaction.

1. PRELIMINARY INFORMATION ON SEAL

Further information about SEAL can be found in the SEAL Quick Guide and the SEAL online help; further information on Z-GPRS3, Z-UMTS and Z-LOGGER3 can be found in the user manual.

The sample setting refers to Z-GPRS3 but it is the same for the other RTUs.

2. PURPOSE OF THE GUIDE

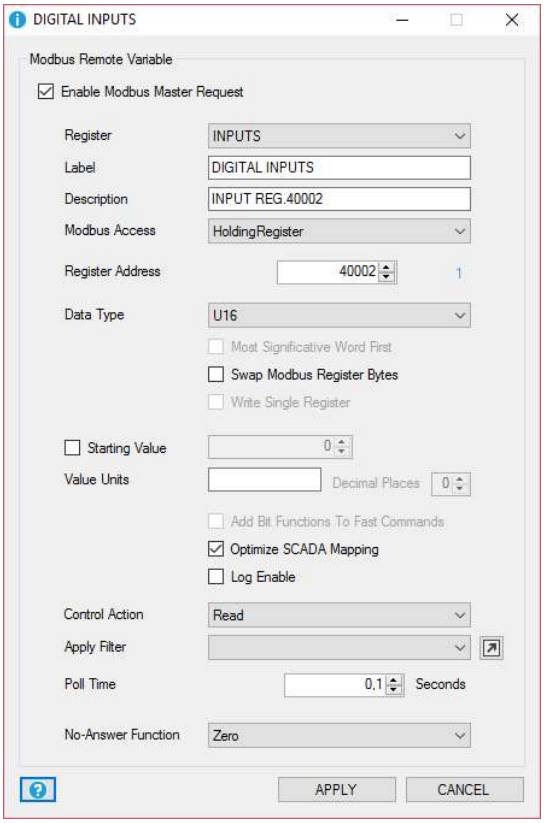
The purpose of this guide is to show how it is possible to copy the status of some digital inputs of a modbus RTU slave and write this status to the digital outputs of another Modbus RTU slave.

3. DEFINITIONS OF THE MODBUS VARIABLES

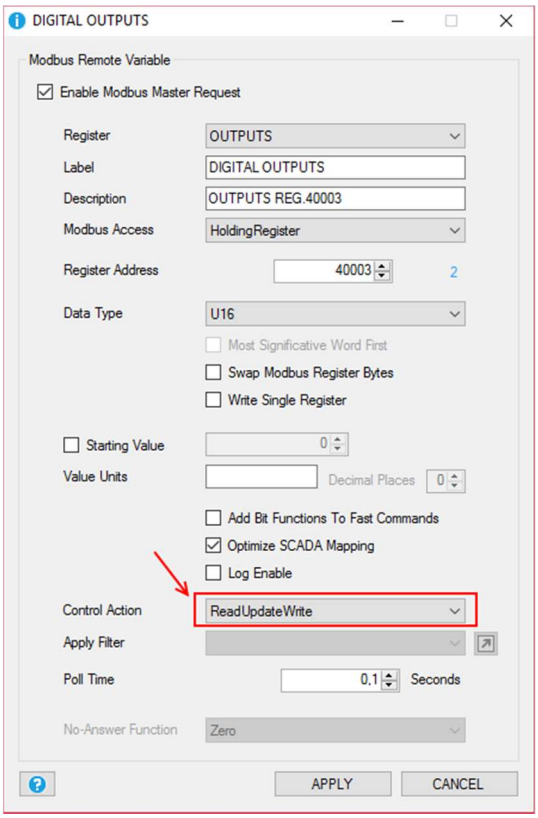
First of all you have to define the Modbus variables of the modules of digital inputs and outputs.

As input module, use Seneca Z-10-DIN with slave 1 address, for the exits use the Z-10-DOUT module with slave 2 address.

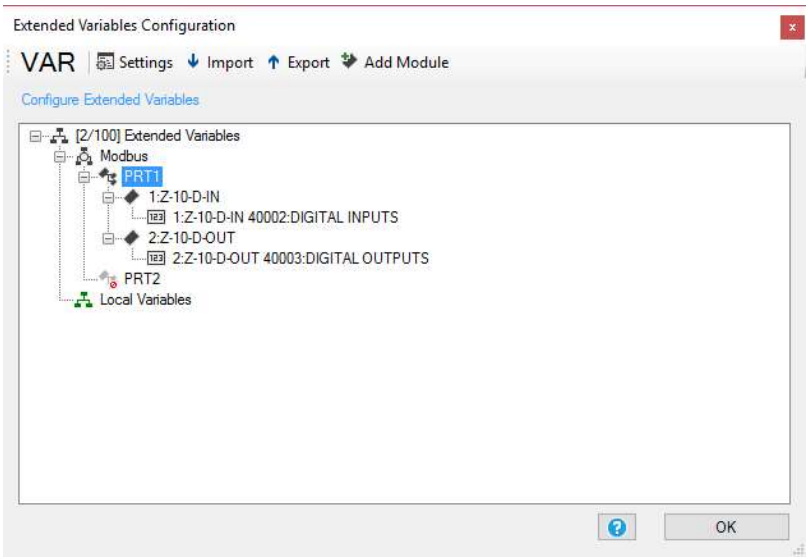
In Z-10-DIN, read the Inputs 40002 register:



For the Z-10-DOUT, read and write the OUTPUTS register declaring it ReadUpdateWrite (that is in reading and writing):



Therefore you get:



4. DEFINITION OF THE INPUT COPY ACTIONS ON OUTPUTS AND SMS SENDING

First of all, isolate the digital inputs of the Z-10-DIN module.

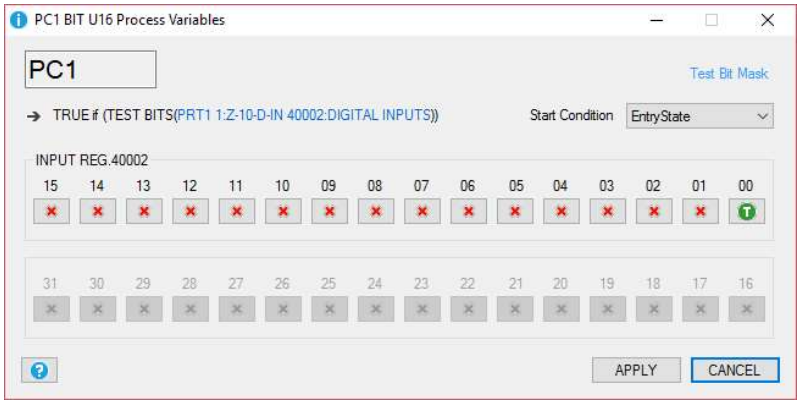
In the Z-10-DIN user manual you can see that inputs IN1 ... IN10 are defined like this in the "INPUTS" register:

Inputs	Digital inputs 1..10 status value Bit 0 (LSB) = IN1 status Bit 1 = IN2 status Bit 2 = IN3 status Bit 3 = IN4 status Bit 4 = IN5 status Bit 5 = IN6 status Bit 6 = IN7 status Bit 7 = IN8 status Bit 8 = IN9 status Bit 9 = IN10 status Bit 10..14 = not used Bit 15 (MSB) = not used For example if the register value is: 813 decimal = (MSB)0000 0011 0010 1101(LSB) binary IN1 = 1 IN2 = 0 IN3 = 1 IN4 = 1 IN5 = 0 IN6 = 1 IN7 = 0 IN8 = 0 IN9 = 1 IN10 =1	Unsigned 16 bits	R	0	40002	1

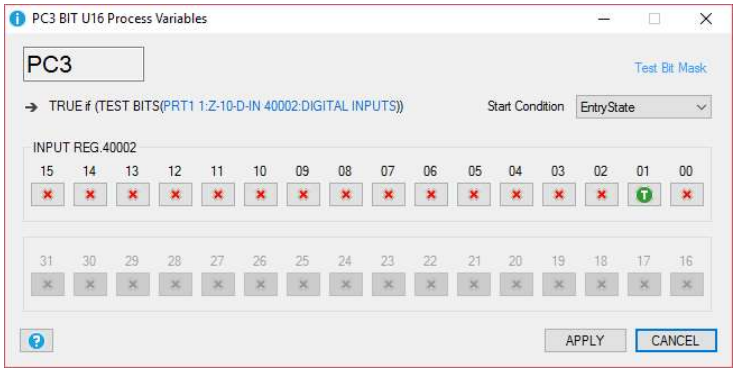
Therefore, to isolate IN1, it is necessary to extract the value of Bit 0, Bit1 for IN2.

In Seal there is the "BIT" block allowing the extraction of one or more bits from a Modbus register.

In particular, if you want to extract BIT 0 (IN1):



If you want to extract BIT 1 (IN2):



At this point, using a SEC block, you send the alarm SMS and copy the input value to the outputs of the Z-10-DOUT module.

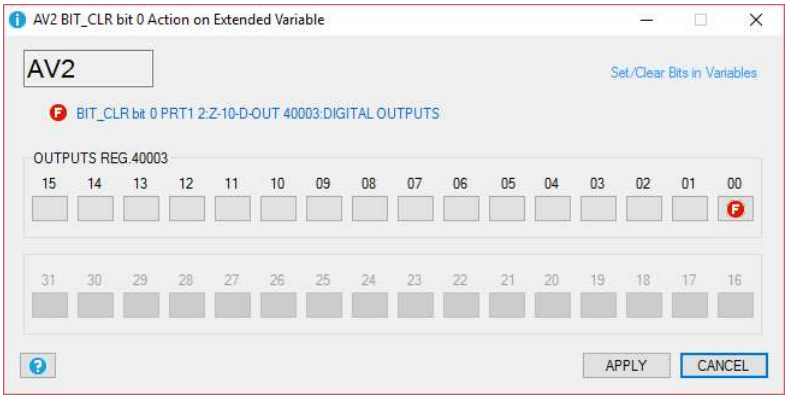
The Z-10-DOUT user manual states that outputs 1 and 2 in the OUTPUTS register are bits 0 and 1 (as in Z-10-DIN):

Outputs	0-1	Bit	R/W		40003
	These bits aren't used			/	Bit [15:10]
	Output OUT10 state: 0=LOAD10 is deactivated (there is no current through LOAD10); 1=LOAD10 is activated (there is current through LOAD10)			/	Bit 9
	Output OUT9 state: 0=LOAD9 is deactivated (there is no current through LOAD9); 1=LOAD9 is activated (there is current through LOAD9)			/	Bit 8
	Output OUT8 state: 0=LOAD8 is deactivated (there is no current through LOAD8); 1=LOAD8 is activated (there is current through LOAD8)			/	Bit 7
	Output OUT7 state: 0=LOAD7 is deactivated (there is no current through LOAD7); 1=LOAD7 is activated (there is current through LOAD7)			/	Bit 6
	Output OUT6 state: 0=LOAD6 is deactivated (there is no current through LOAD6); 1=LOAD6 is activated (there is current through LOAD6)			/	Bit 5
	Output OUT5 state: 0=LOAD5 is deactivated (there is no current through LOAD5); 1=LOAD5 is activated (there is current through LOAD5)			/	Bit 4
	Output OUT4 state: 0=LOAD4 is deactivated (there is no current through LOAD4); 1=LOAD4 is activated (there is current through LOAD4)			/	Bit 3
	Output OUT3 state: 0=LOAD3 is deactivated (there is no current through LOAD3); 1=LOAD3 is activated (there is current through LOAD3)			/	Bit 2
	Output OUT2 state: 0=LOAD2 is deactivated (there is no current through LOAD2); 1=LOAD2 is activated (there is current through LOAD2)			/	Bit 1
	Output OUT1 state: 0=LOAD1 is deactivated (there is no current through LOAD1); 1=LOAD1 is activated (there is current through LOAD1)			/	Bit 0

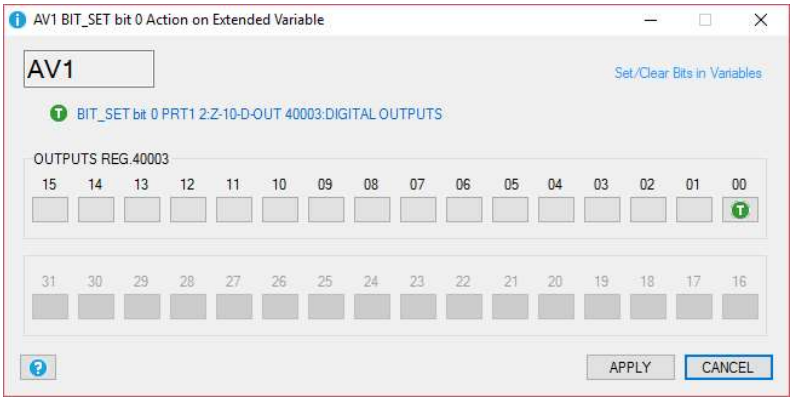
To bring the bit of a SEAL output register to 1 or 0, use the BIT_CLR and BIT_SET blocks.

The BIT_CLR block brings a bit to 0, the BIT_SET block brings a bit to 1:

If you want to bring bit0 to 0 (OUT1):



If you want to bring bit0 to 1 (OUT1):



So: