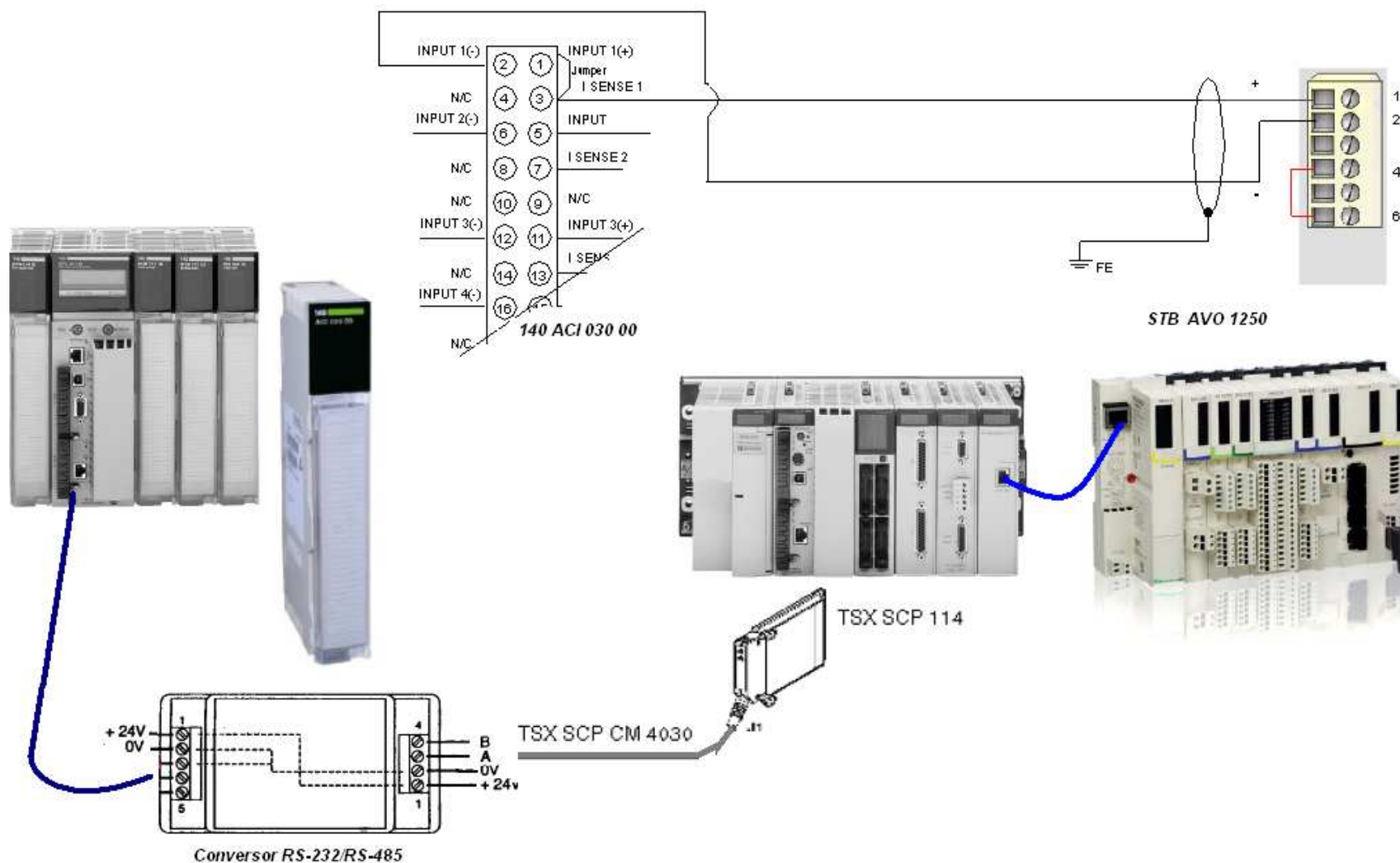


Modicon Premium

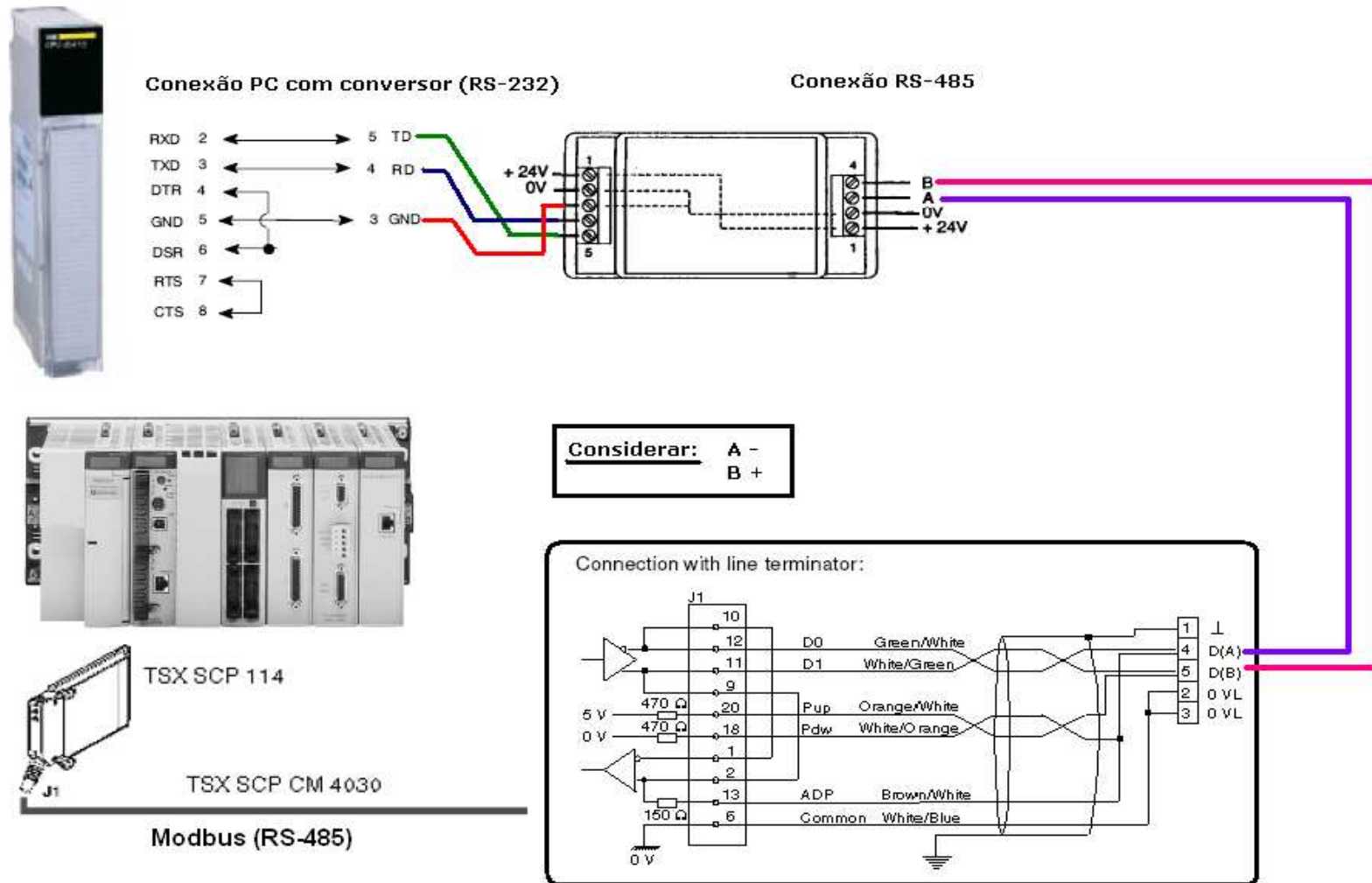
Exemplo de utilização da função SEND_REQ para leitura de entrada analógica (Input Register – 3x / Função 04 – Protocolo Modbus) a partir do Modicon Quantum.

- Hardware:



Arquitetura

- Comunicação via Modbus:



Modicon TSX Premium

● Troca de dados em Modbus - Códigos de função e comunicação:

The following requests are addressed to the slave device with which you wish to carry out read or write operations of variables.

These requests use the `READ_VAR`, `SEND_REQ` and `WRITE_VAR` communication functions. [↗](#) and [↗](#).

Modbus request	Function code	Communication function
Read bits	16#01	READ_VAR
Read words (until 125 registers)	16#03	READ_VAR
Writing a bit or n bits	16#05 or 16#0F	WRITE_VAR
Writing a word or n words	16#06 or 16#10	WRITE_VAR
Input bits reading	16#02	SEND_REQ
Read input words (until 124 registers)	16#04	SEND_REQ

Note: Write utilities can be sent in transmission. In this case no response is returned to the transmitter. It is therefore recommendable to configure a time-out to acknowledge the activity bit of the function.

The UNI-TE Action-object request (request code 16#0F) is used to transmit all Modbus functions. [↗](#).

After executing this request, the report is always **16#CF00**.

To check the exchange, it is also necessary to test the content of the first word in the reception table.

Possible values of the first word:

- 0 : indicates that the exchange has been performed,
- 1: indicates that the exchange has not been performed.

The transmission buffer should contain the following information:

- first word:
 - Byte 0: function code,
 - Byte 1: sub-function code.
- second word: Modbus function identifier, which is always 16#0296,
- third word = 0: reserved,
- fourth word: Modbus function parameters,
- fifth word: Modbus function parameters,
- n th word: Modbus function parameters.

Note: This function is not available in Modbus master mode on the Terminal port.

Modicon TSX Premium

● Troca de dados em Modbus – SEND_REQ:

The UNI-TE Action-object request (request code 16#9F) is used to transmit all Modbus functions. [7](#).

After executing this request, the report is always 16#CF00.

To check the exchange, it is also necessary to test the content of the first word in the reception table.

Possible values of the first word:

- 0 : indicates that the exchange has been performed,
- 1: indicates that the exchange has not been performed.

The transmission buffer should contain the following information:

- first word:
 - Byte 0: function code,
 - Byte 1: sub-function code.
- second word: Modbus function identifier, which is always 16#0296,
- third word = 0: reserved,
- fourth word: Modbus function parameters,
- fifth word: Modbus function parameters,
- nth word: Modbus function parameters.

Note: This function is not available in Modbus master mode on the Terminal port.

Modicon TSX Premium

● UnityPro – ADDR:

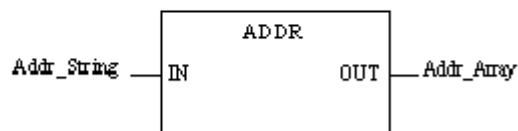
Function Description

The ADDR function is used to convert a character string into an address that can be used directly by communication functions.

The additional parameters [EN](#) and [ENO](#) can be configured.

FBD representation

Representation:



Parameter Description

The following table describes the input parameters:

Parameter	Type	Comment
Addr_String	STRING	Character string-type variable representing the device address on a bus or network. Examples: '{5.6}SYS', '{1.2}0.4.5.2'

The following table describes the output parameters:

Parameter	Type	Comment
Addr_Array	ADDR_TYPE or ARRAY [0..5] OF INT	Array of 6 integers representing the Addr_String address. Addr_Array may be used directly as the first input parameter of the communication EFs.

Modicon TSX Premium

• UnityPro – SEND_REQ:

Function Description

The **SEND_REQ** function is used to code and send all UNI-TE and Modbus/Jbus requests, as well as receive the associated responses.

Parameter Description

The following table describes the input parameters:

Parameter	Type	Comment
Address	ARRAY [0.. 5] OF INT	Address of the destination entity of the exchange. The type of address depends on the request sent. It is therefore possible, for example, to broadcast the RUN request (ALL, 0 for the TSX SCY 11601 module) whereas it is impossible to send an identification request to several devices simultaneously.
Request_Code	INT	Request to be sent to the destination device, also called server . Requests may be UNI-TE requests or Modbus requests.
Data_to_Send	ARRAY [n... m] OF INT	Integer table to be sent to the destination device of the request. This table depends on the request sent. It must have a minimum length of 1 element, even if the request used does not require data to be sent (for example an identification request). Note: It is imperative that the length of the data to be sent (in bytes) be assigned to the fourth word of the management table before launching the function, in order for this to be correctly executed.

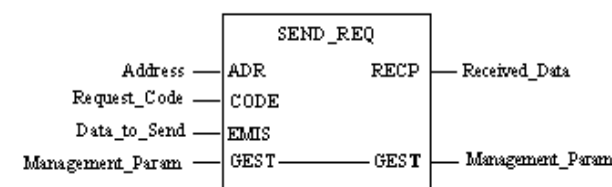
The following table describes the input/output parameters:

Parameter	Type	Comment
Management_Param	ARRAY [0.. 3] OF INT	Exchange management table

The following table describes the output parameters:

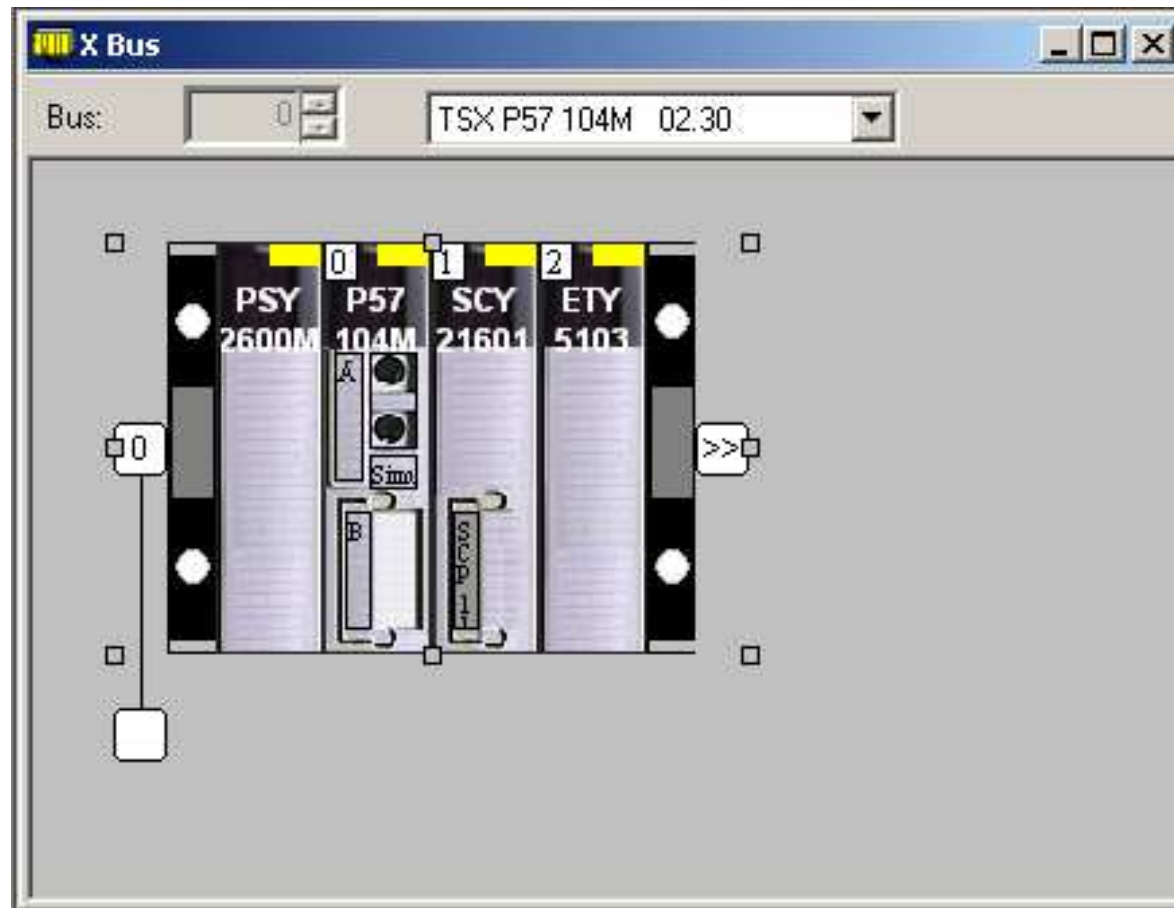
Parameter	Type	Comment
Received_Data	ARRAY [n... m] OF INT	Integer table containing the data returned by the server device which was the destination of the request. Although certain requests do not require a response (for example a Run request), it is nevertheless necessary to reserve a minimum table of 1 integer each time the SEND_REQ function is used. Note: The size of the data received is written automatically by the system in the fourth word of the management table . Note: In certain cases (reading of word tables for example) it is necessary to resequence the objects received by using the ROR1_ARB function (shift of a byte in a table).

FBD Representation



UnityPro

- Configuração de hardware:



UnityPro

- I/O Scanning:

The screenshot shows the 'Ethernet_1' configuration window. The 'Model Family' is set to 'TCP/IP 10/100 Regular connection'. The 'Module Address' is set to Rack 0, Module 2, Channel 0. The 'Module IP Address' is set to 10.161.47.51, Subnetwork Mask is 255.255.255.0, and Gateway Address is 0.0.0.0. The 'Module Utilities' section has 'IO Scanning' set to YES, 'Global Data' set to NO, 'Address Server' set to NO, and 'NTP' set to NO.

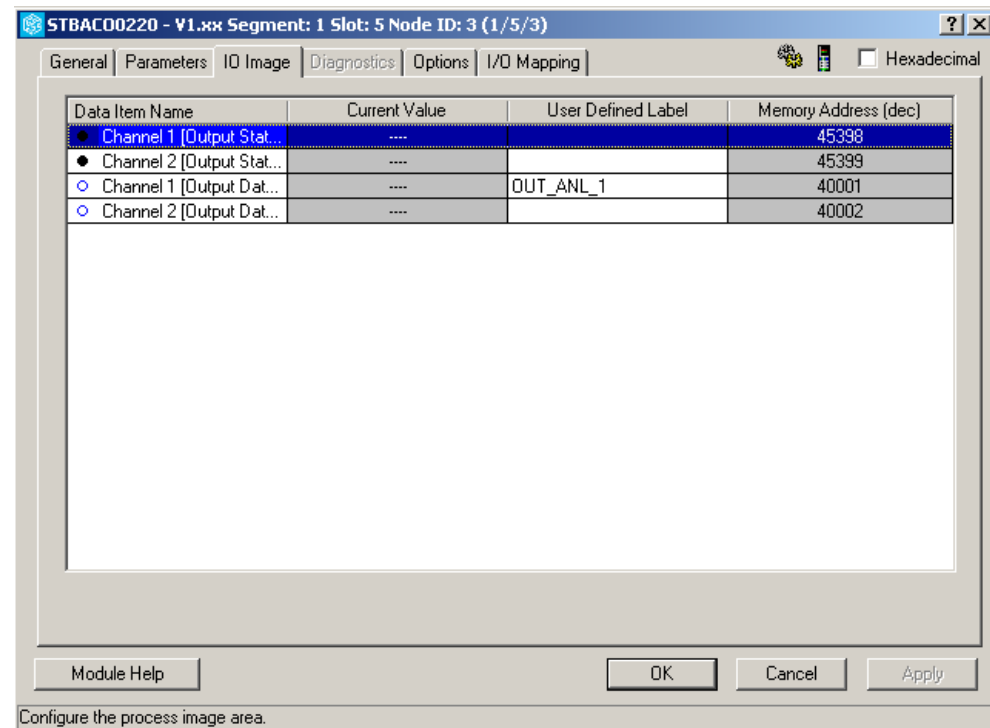
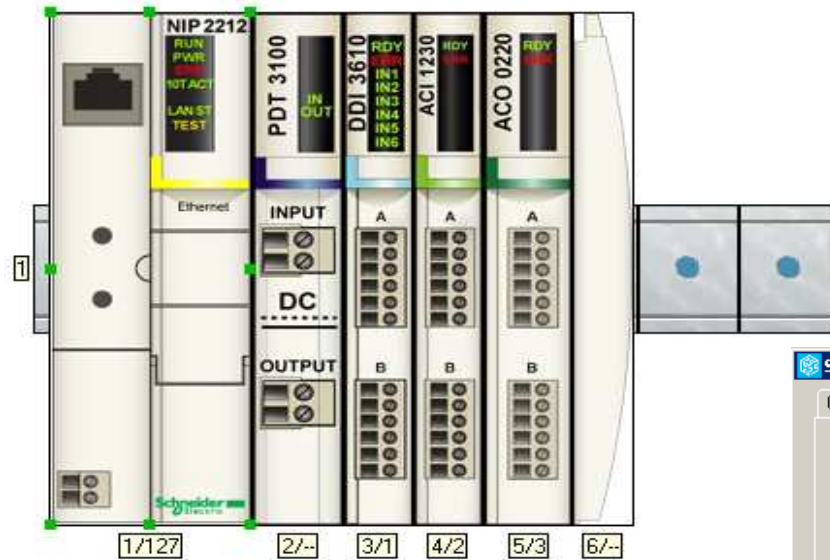
The 'IO Scanning' tab is selected. The 'Master %MW zones' section shows 'Read Ref.' from 0 to 7 and 'Write Ref.' from 100 to 101. The 'Device Control Block (%MW): from' and 'to' fields are empty.

The 'Scanned peripherals' table is shown below:

	IP address	Device Name	Unit ID	Slave Syntax	Health Timeout (ms)	Repetitive rate (ms)	RD Master Object	RD Ref Slave	RD length	Last value (Input)	Master Object
1	10.161.47.34	STB_ANL	255	Index	1500	60	%MW0	5391	8	Hold last	%MW0
2											
3											
4											
5											
6											
7											
8											

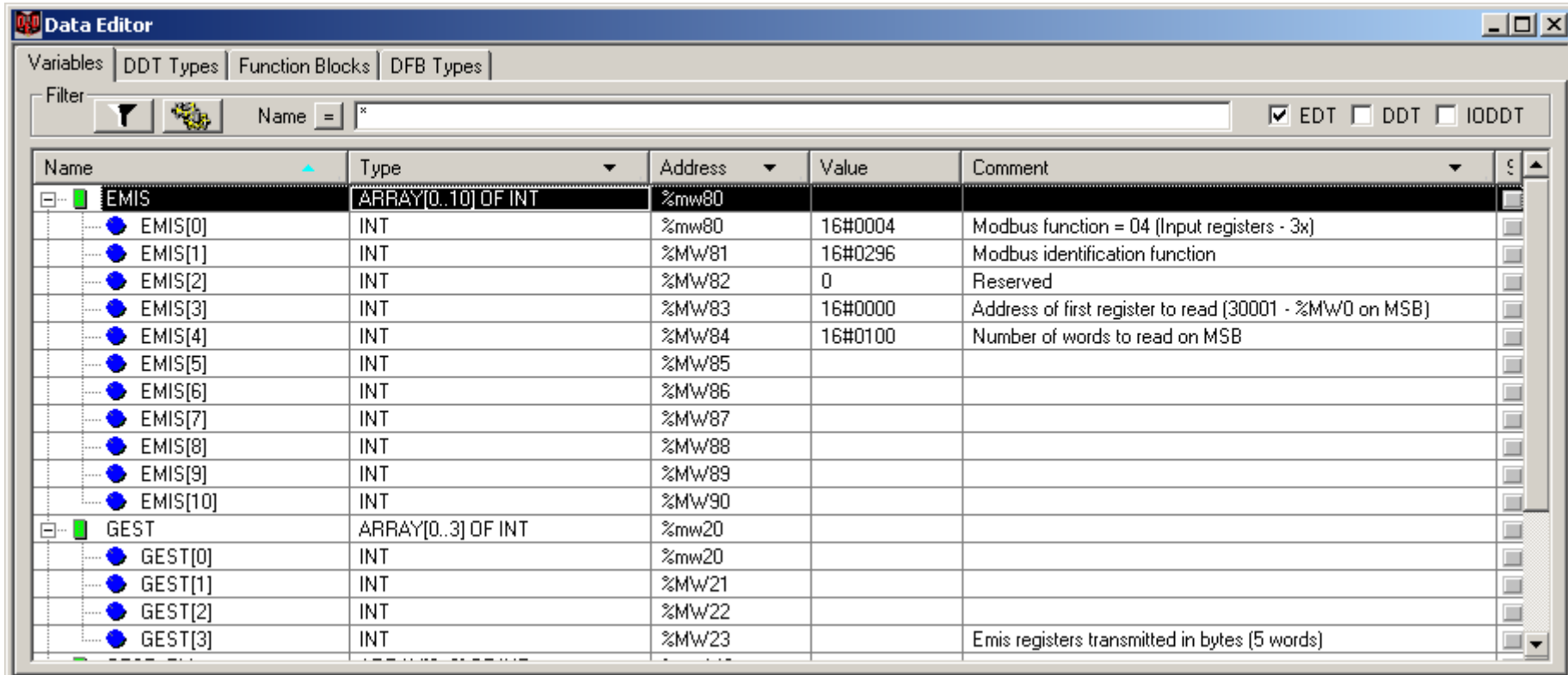
Advantys STB

- Configuração:



UnityPro

- Data Editor:

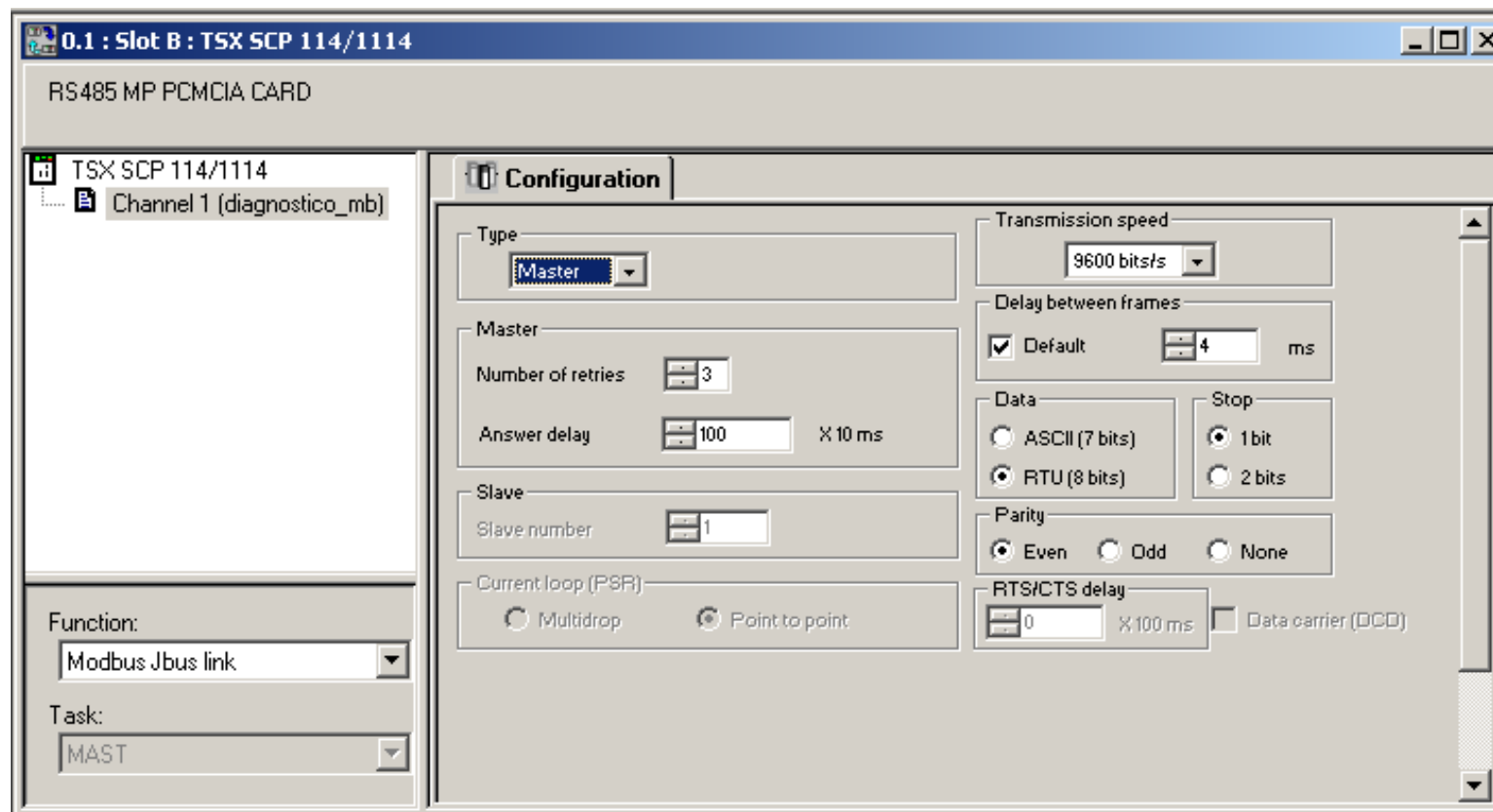


The screenshot shows the 'Data Editor' window in UnityPro. It has tabs for 'Variables', 'DDT Types', 'Function Blocks', and 'DFB Types'. The 'Variables' tab is active. A filter bar at the top shows 'Name = *'. On the right, there are checkboxes for 'EDT' (checked), 'DDT', and 'IODDT'. The main table lists variables with columns for Name, Type, Address, Value, and Comment. The table is organized into two main sections: 'EMIS' and 'GEST'.

Name	Type	Address	Value	Comment
EMIS	ARRAY[0..10] OF INT	%mw80		
EMIS[0]	INT	%mw80	16#0004	Modbus function = 04 (Input registers - 3x)
EMIS[1]	INT	%Mw81	16#0296	Modbus identification function
EMIS[2]	INT	%Mw82	0	Reserved
EMIS[3]	INT	%Mw83	16#0000	Address of first register to read (30001 - %Mw0 on MSB)
EMIS[4]	INT	%Mw84	16#0100	Number of words to read on MSB
EMIS[5]	INT	%Mw85		
EMIS[6]	INT	%Mw86		
EMIS[7]	INT	%Mw87		
EMIS[8]	INT	%Mw88		
EMIS[9]	INT	%Mw89		
EMIS[10]	INT	%Mw90		
GEST	ARRAY[0..3] OF INT	%mw20		
GEST[0]	INT	%mw20		
GEST[1]	INT	%Mw21		
GEST[2]	INT	%Mw22		
GEST[3]	INT	%Mw23		Emis registers transmitted in bytes (5 words)

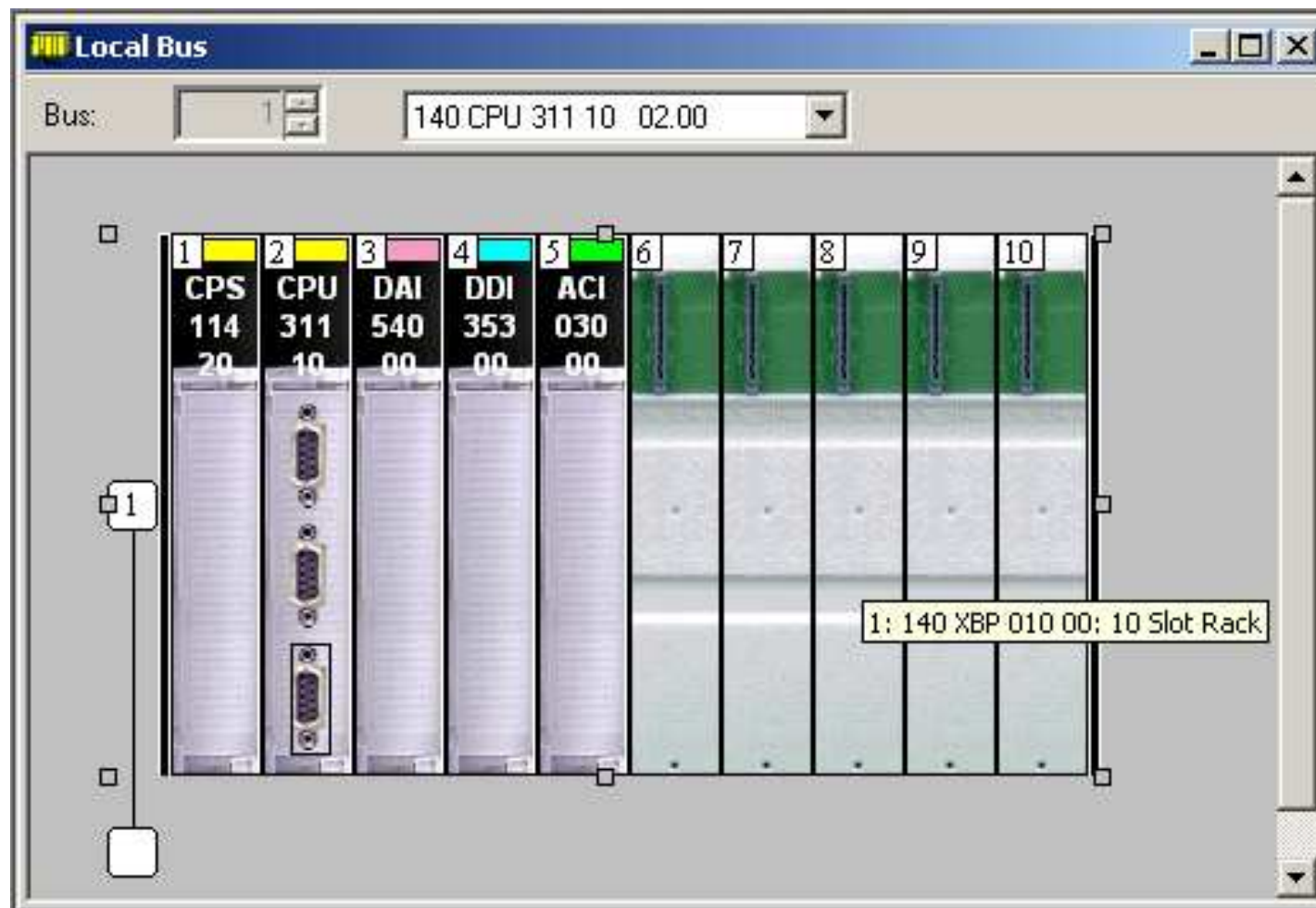
UnityPro

- TSXSCP114:



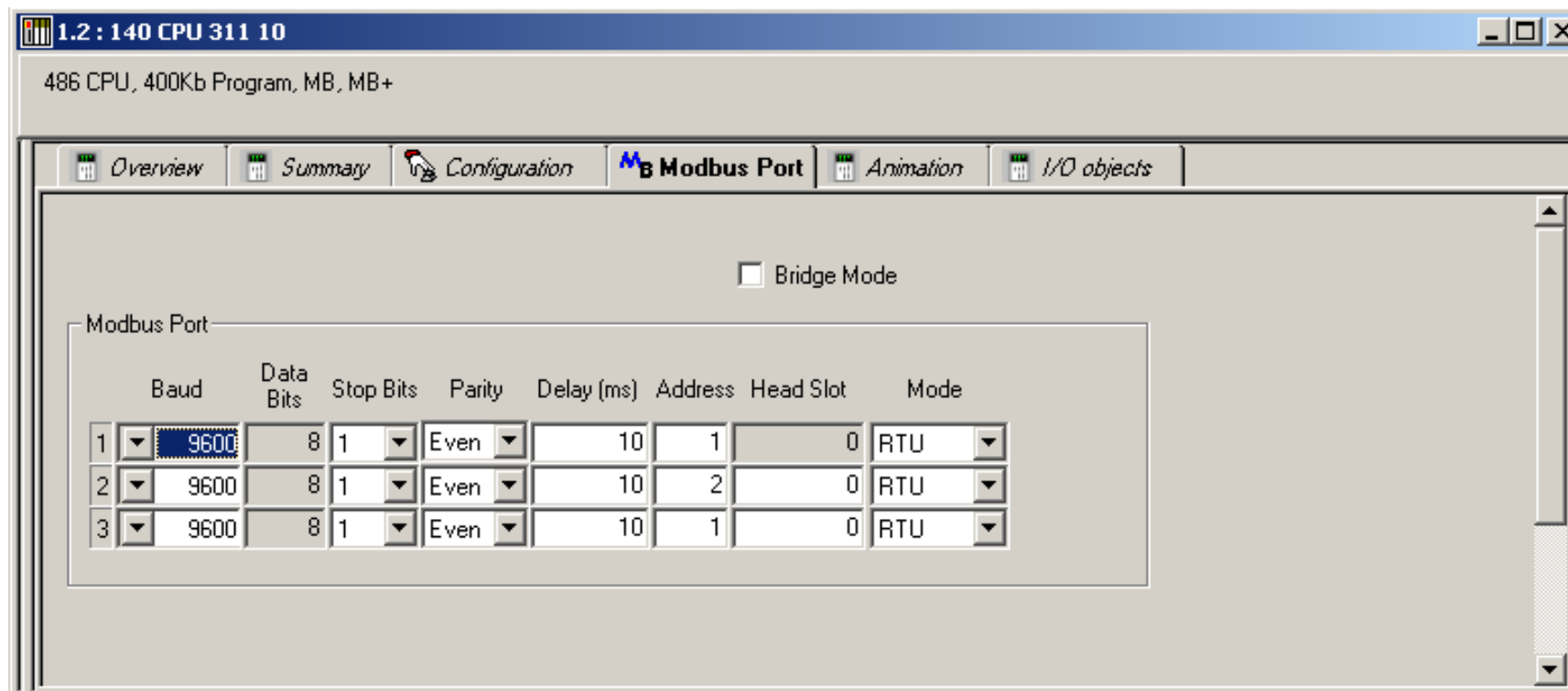
UnityPro

- Configuração:



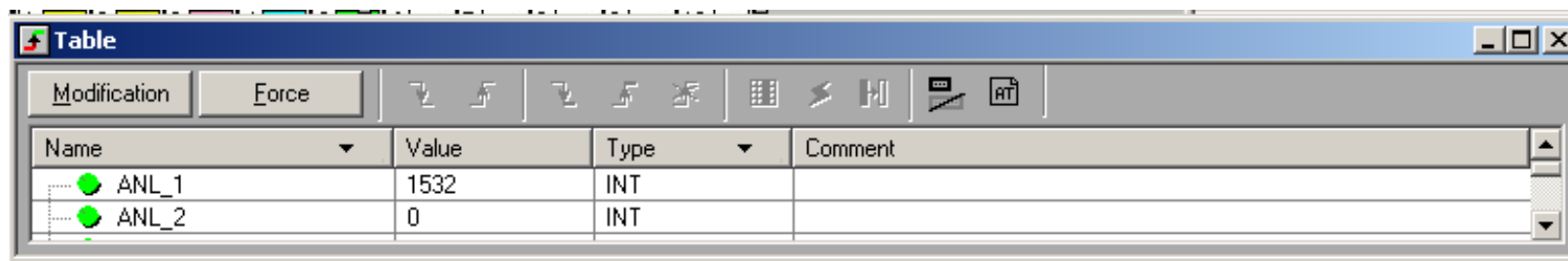
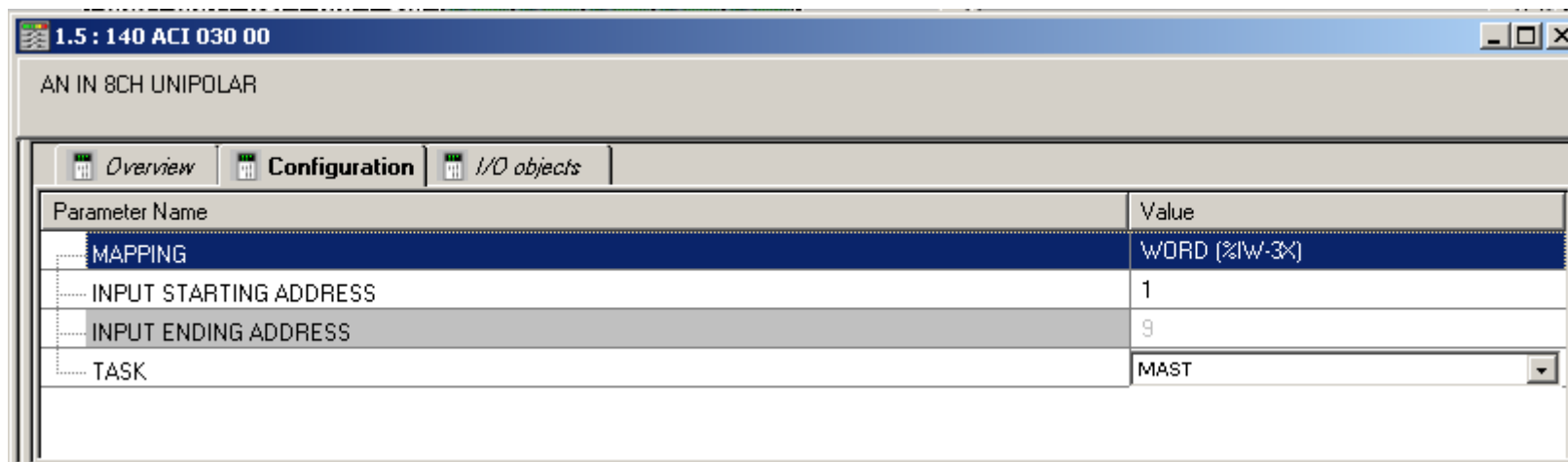
UnityPro

- Configuração da porta Modbus:



UnityPro

- Entrada Analógica:



UnityPro

- Exemplo de envio da instrução no TSX Premium e Animation Tables:

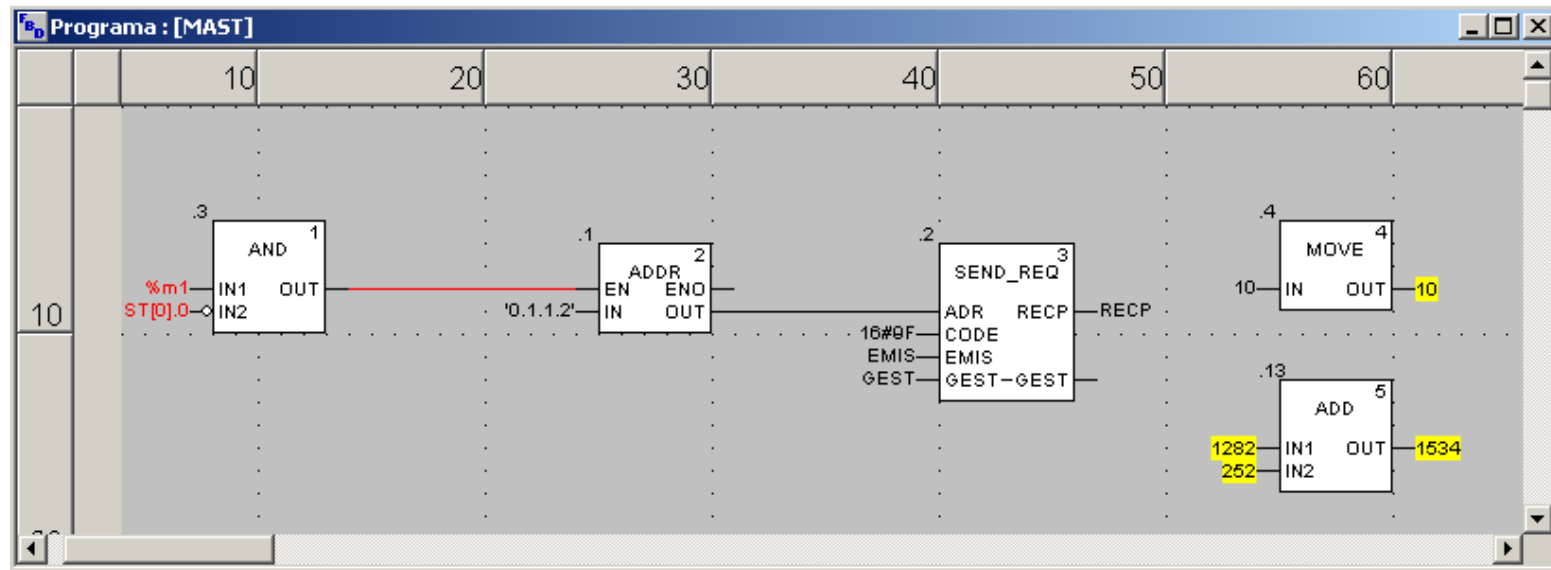


Table			
Modification Force			
Name	Value	Type	Comment
xxxLOUT_ANL_1	12000	INT	STB_ANL_R1_S5_STBAC00220_Channel 1 [Output Data]
EMIS		ARRAY[0..10] O...	
GEST		ARRAY[0..3] OF...	
RECP		ARRAY[1..30] O...	
%m1	0	EBOOL	
valor_lido	1534	INT	