

Technical Guide

PLCnext Engineer

Como transferir uma variável do tipo **REAL** através de uma comunicação Modbus ou Profinet.



PLCnext Technology 
Designed by PHOENIX CONTACT



PLCnext Control



PLCnext Engineer



PLCnext Store



PLCnext Community

INTRODUÇÃO

A comunicação MODBUS utiliza como padrão a transferência de variáveis do tipo WORD. Já a comunicação PROFINET a troca de dados é feita através de variáveis do tipo BYTE.

Portanto a transferência de variáveis do tipo REAL, requer uma preparação, quebrando esta variável em WORD ou BYTES, transmitindo e posteriormente é necessário reconstruí-la. Alguns equipamentos fazem isso de forma automática, porém quando realizamos a comunicação entre dois controladores esse preparação é necessária.

INTRODUÇÃO

- Variável do tipo REAL = 32 Bits
- Variável do tipo DWORD = 32 Bits
- Variável do tipo WORD = 16 Bits
- Variável do tipo BYTE = 8 Bits

DWORD																															
31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
WORD 1																WORD 0															
15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0
BYTE 3								BYTE 2								BYTE 1								BYTE 0							
7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0	7	6	5	4	3	2	1	0

Criar um novo projeto no PLCnext Engineer



**PLCnext
Engineer**
Engineering Software
Version 2021.0 (Build 4.7.1137.0)

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PHOENIX CONTACT GmbH & Co. KG
32823 Blomberg

For up-to-date software versions
and error removals, visit
www.phoenixcontact.com



Selecione o modelo do controlador e sua versão de firmware

Start Page





PHENIX CONTACT
INSPIRING INNOVATIONS

PLCnext Engineer 2021.0

(Build 4.7.1137.0)

Recent projects
C:\Users\Public\...\Projects\PROJETO_0_2021.pcwex

Project templates

-  AXC F 1152 v00 / 2020.6.0
-  AXC F 1152 v00 / 2021.0.0
-  AXC F 2152 v00 / 2020.6.0
-  AXC F 2152 v00 / 2021.0.0

Need help?

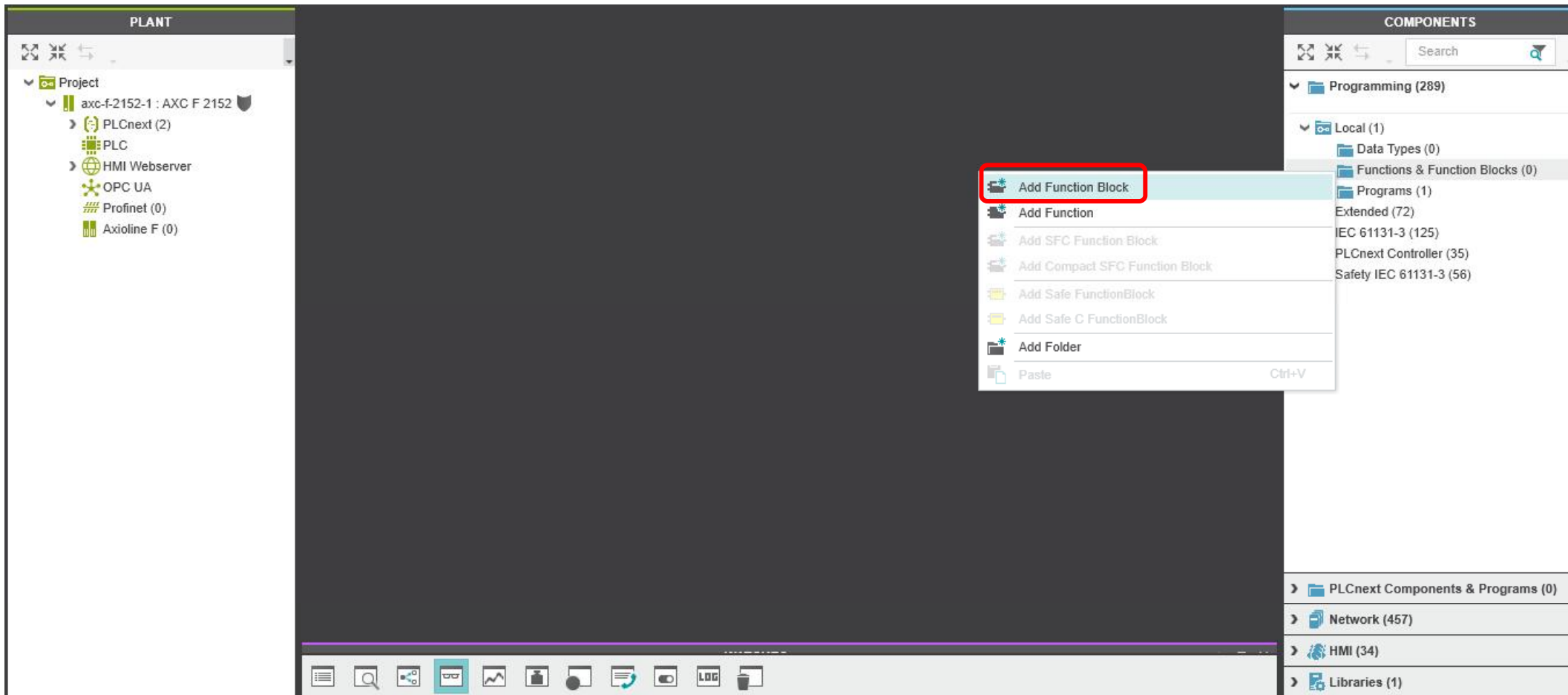
Welcome to PLCnext Engineer
The Start Page welcomes you introducing PLCnext Engineer. The Start Page is shown every time you start PLCnext Engineer and is automatically closed when opening or creating a project.

Recent projects
The 'Recent projects' list shows the projects that you have recently opened in PLCnext Engineer. Click the project name to open the desired project.

Project templates
The 'Project templates' list provides a list of predefined project templates to help you get started. Selecting a project template creates a new PLCnext Engineer project with the desired controller type already added.

Further help
If you do not know what to do after a project is opened, you can find further help [here](#).

Criar o FB(Function Block) que irá quebrar a variável REAL em 4 BYTES



Criar o FB(Function Block) que irá quebrar a variável REAL em 4 BYTES

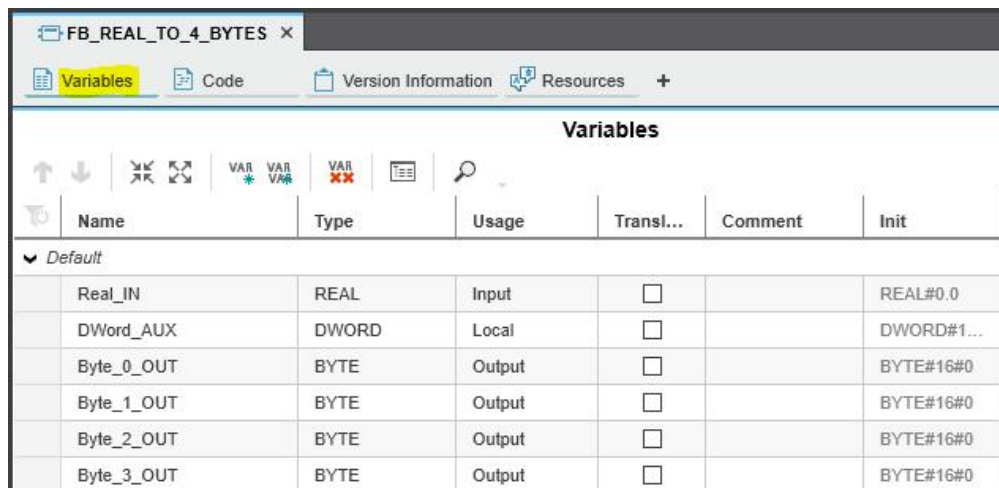
The screenshot displays the Siemens STEP 7 software interface. The main workspace is titled "Select the programming language of your first worksheet below". It offers three options for creating a new worksheet:

- Add ST Code Worksheet:** A text editor showing the following code:

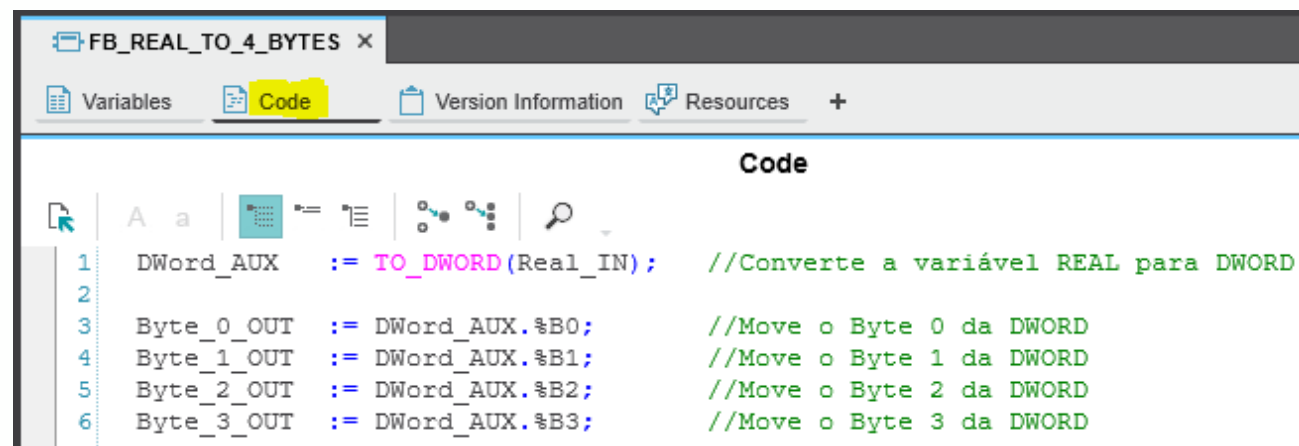
```
1 IF condition = TRUE THEN
2   opC := opA AND opC;
3 END_IF
```
- Add LD Code Worksheet:** A ladder logic diagram showing two inputs, opA and opB, connected to an AND gate, which is then connected to an output opC.
- Add NOLD Code Worksheet:** A network diagram labeled "Network (1) Network One" showing two normally closed contacts, C001 and C002, connected in series.

The "COMPONENTS" sidebar on the right shows a tree view of the project structure. The "FB_REAL_TO_4_BYTES" component is highlighted in yellow under the "Functions & Function Blocks (1)" category.

Criar o FB(Function Block) que irá quebrar a variável REAL em 4 BYTES

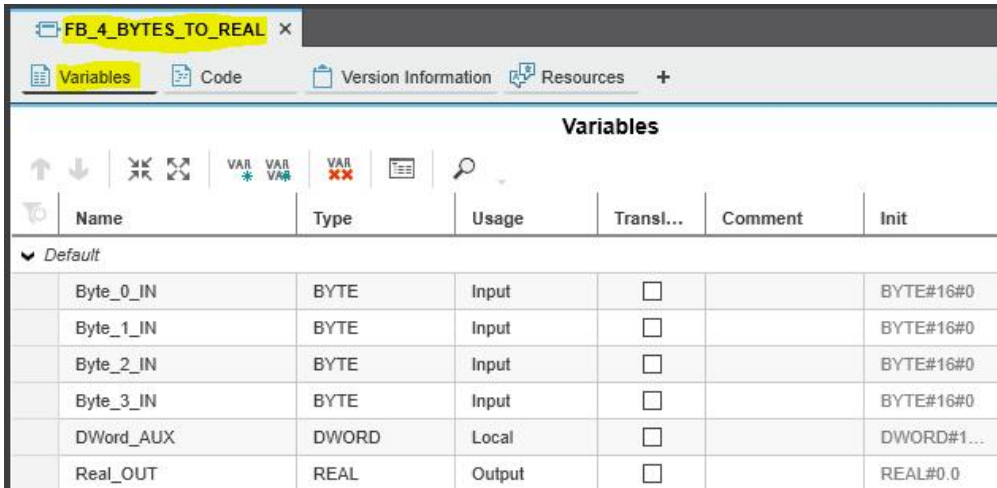


Name	Type	Usage	Transl...	Comment	Init
Real_IN	REAL	Input	<input type="checkbox"/>		REAL#0.0
DWord_AUX	DWORD	Local	<input type="checkbox"/>		DWORD#1...
Byte_0_OUT	BYTE	Output	<input type="checkbox"/>		BYTE#16#0
Byte_1_OUT	BYTE	Output	<input type="checkbox"/>		BYTE#16#0
Byte_2_OUT	BYTE	Output	<input type="checkbox"/>		BYTE#16#0
Byte_3_OUT	BYTE	Output	<input type="checkbox"/>		BYTE#16#0

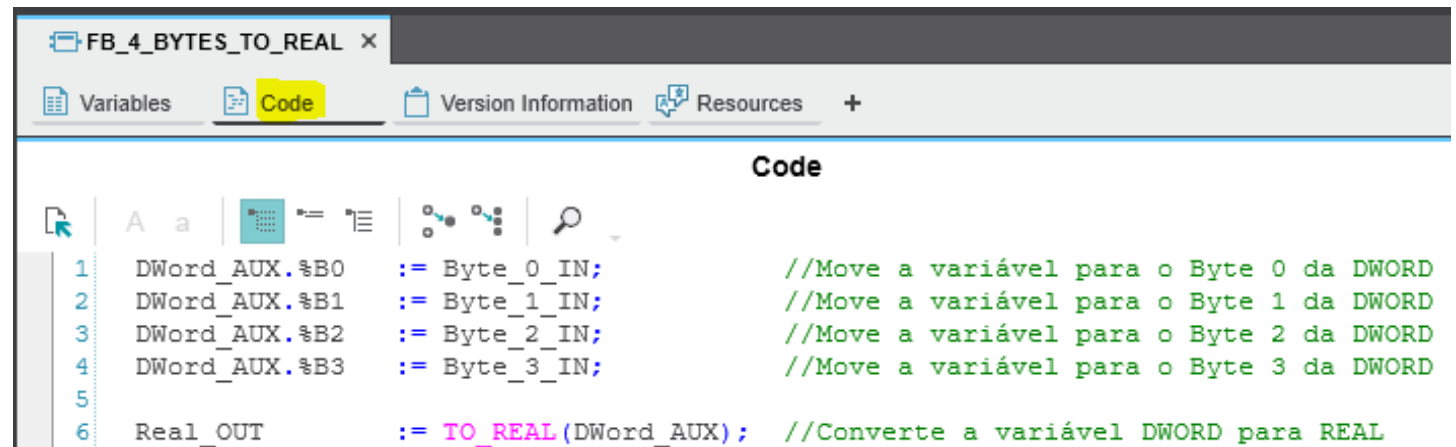


```
1 DWord_AUX := TO_DWORD(Real_IN); //Converte a variável REAL para DWORD
2
3 Byte_0_OUT := DWord_AUX.%B0; //Move o Byte 0 da DWORD
4 Byte_1_OUT := DWord_AUX.%B1; //Move o Byte 1 da DWORD
5 Byte_2_OUT := DWord_AUX.%B2; //Move o Byte 2 da DWORD
6 Byte_3_OUT := DWord_AUX.%B3; //Move o Byte 3 da DWORD
```


Criar o FB(Function Block) que irá reconstruir 4 BYTES em uma variável REAL



Name	Type	Usage	Transl...	Comment	Init
Byte_0_IN	BYTE	Input	<input type="checkbox"/>		BYTE#16#0
Byte_1_IN	BYTE	Input	<input type="checkbox"/>		BYTE#16#0
Byte_2_IN	BYTE	Input	<input type="checkbox"/>		BYTE#16#0
Byte_3_IN	BYTE	Input	<input type="checkbox"/>		BYTE#16#0
DWord_AUX	DWORD	Local	<input type="checkbox"/>		DWORD#1...
Real_OUT	REAL	Output	<input type="checkbox"/>		REAL#0.0



```
1 DWord_AUX.%B0 := Byte_0_IN; //Move a variável para o Byte 0 da DWORD
2 DWord_AUX.%B1 := Byte_1_IN; //Move a variável para o Byte 1 da DWORD
3 DWord_AUX.%B2 := Byte_2_IN; //Move a variável para o Byte 2 da DWORD
4 DWord_AUX.%B3 := Byte_3_IN; //Move a variável para o Byte 3 da DWORD
5
6 Real_OUT := TO_REAL(DWord_AUX); //Converte a variável DWORD para REAL
```

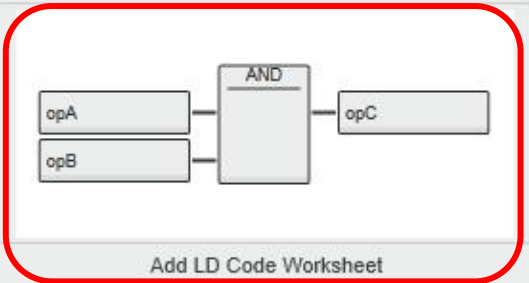
Instanciar os FBs criados no programa "Main"

Main x

Select the programming language of your first worksheet below

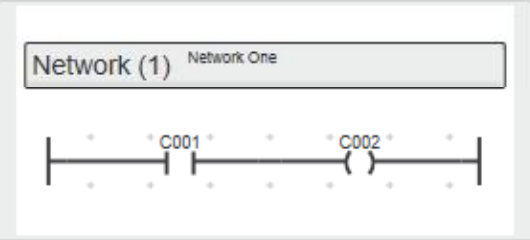
```
1 IF condition = TRUE THEN
2   opC := opA AND opC;
3 END_IF
```

Add ST Code Worksheet



Add LD Code Worksheet

Network (1) Network One



Add NOLD Code Worksheet

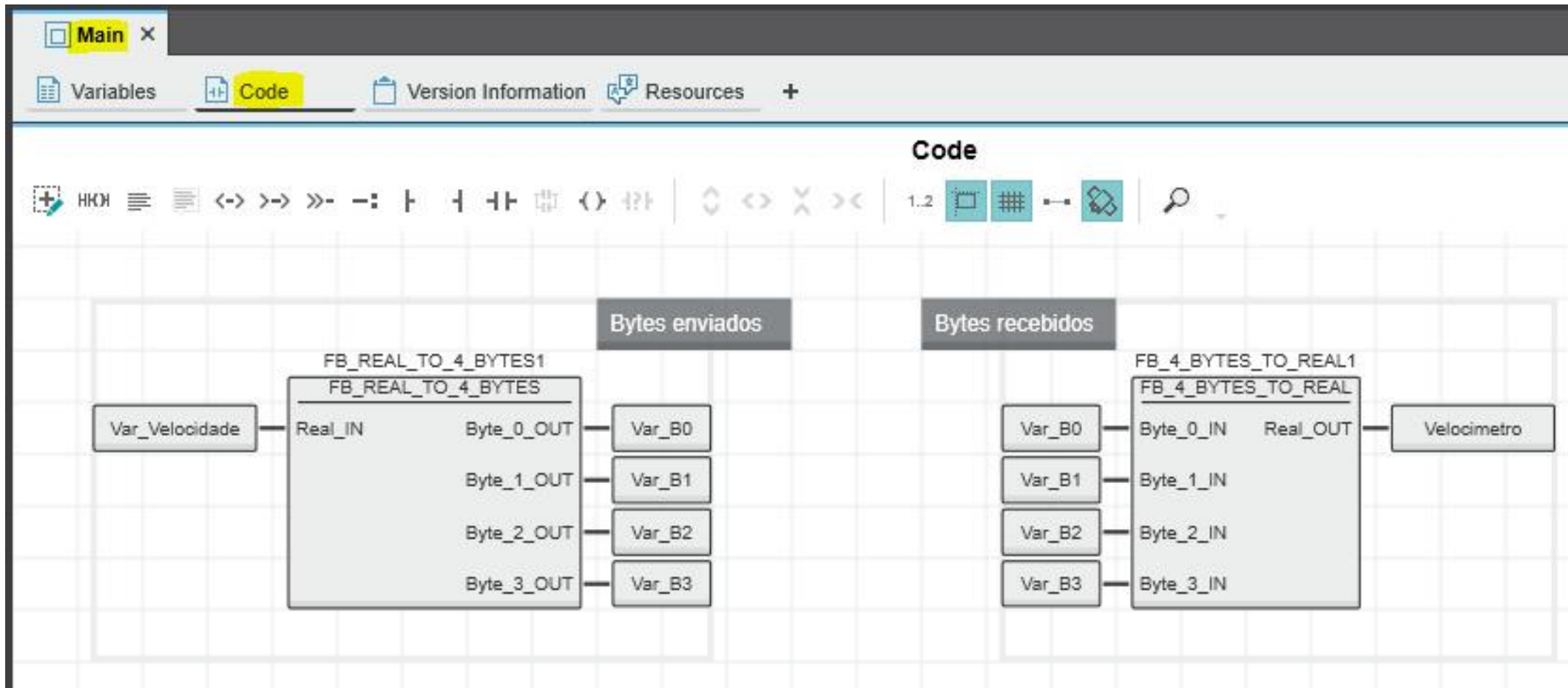
COMPONENTS

Search

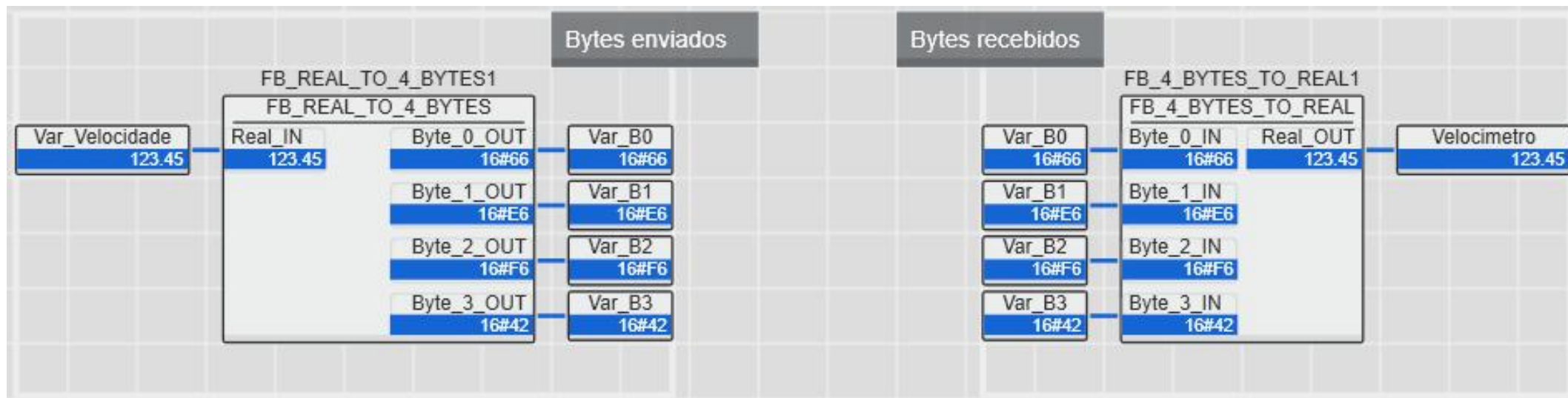
- Programming (291)
- Local (3)
 - Data Types (0)
 - Functions & Function Blocks (2)
 - FB_4_BYTES_TO_REAL
 - FB_REAL_TO_4_BYTES
 - Programs (1)
 - Main
- Extended (72)
- IEC 61131-3 (125)
- PLCnext Controller (35)
- Safety IEC 61131-3 (56)

Close

Instanciar os FBs criados no programa “Main”



Em modo Debug "Online"



Pronto!!!

Os próximos passos referentes a configurar da comunicação MODBUS ou PROFINET, estão detalhados em outros guias, que tratando especificamente destas comunicações.