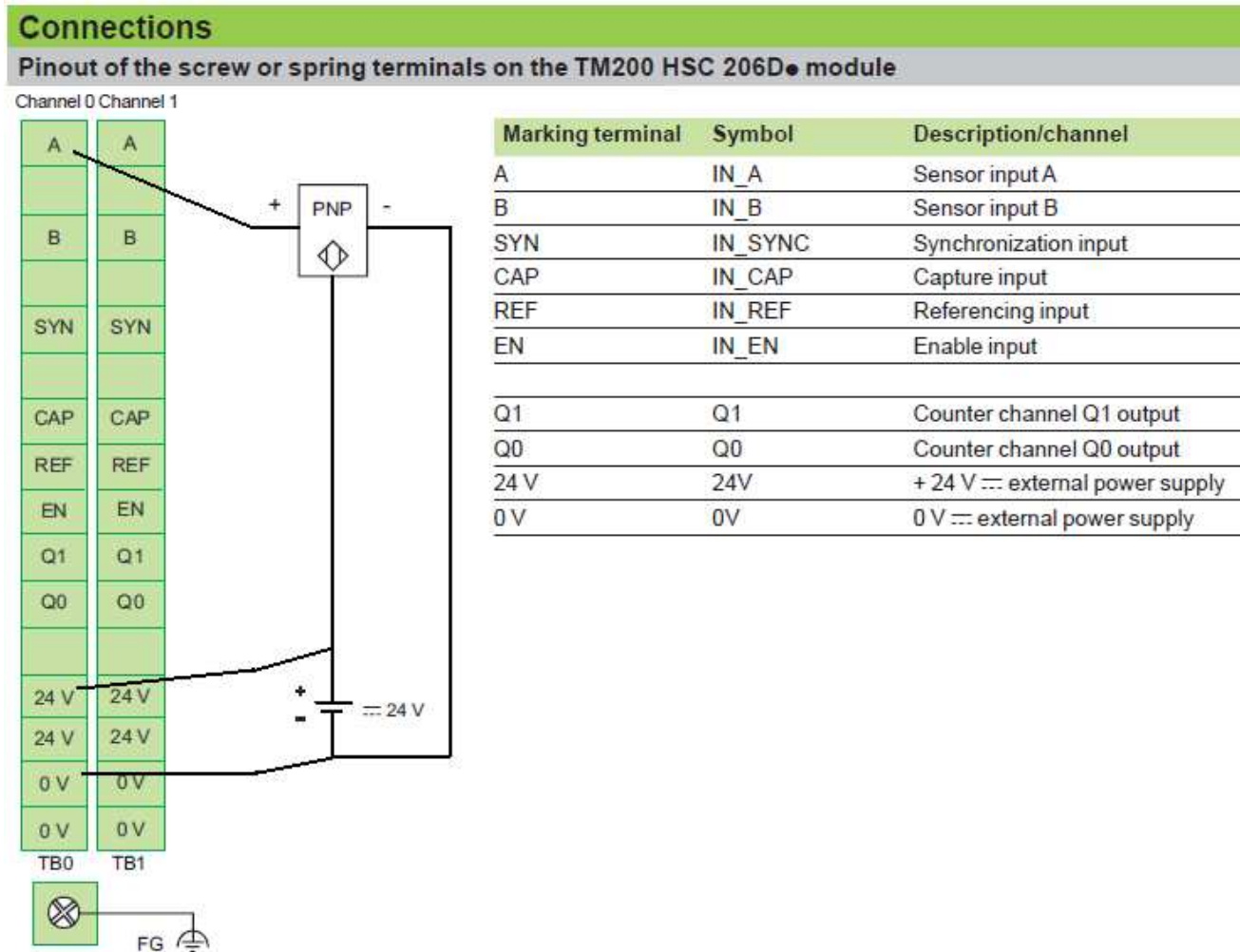


Modicon M238

High Speed Counter on TM200HSC206DT

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- Esquemas de ligação – TM200HSC206DT:



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- Configuração:

Neste exemplo, temos a configuração do canal **HSC0** em One-Shot e colocamos o valor de preset de 5000.

The screenshot displays the configuration window for HSC0 in the software. The 'Parameters' section is expanded, showing the following configuration:

Parameter	Type	Value	Default Value	Unit	Description
HSC					
HSC00					
Type	Enumeration of BYTE	Specialized	Not used		Type of counter
Parameters					
Mode	Enumeration of BYTE	Modulo-loop	One-shot		Counting mode
Preset/Modulo	DINT (0...2147483647)	5000	2147483647		Preset or Modulo value according
Condition	Enumeration of BYTE	Rising on SYNC	Rising on SYNC		Condition setting
Clock Inputs					
Input mode	Enumeration of BYTE	A=UP, B=DOWN	A=UP, B=DOWN		Direction of counting mode
A	Enumeration of BYTE	0.005	0.005	ms	Filtering value reduces the effect
B	Enumeration of BYTE	0.005	0.005	ms	Filtering value reduces the effect
Auxiliary Inputs					
SYNC Edge	Enumeration of BYTE	Rising edge	Rising edge		SYNC signal detection (if no SYNC
SYNC	Enumeration of BYTE	0.005	0.005	ms	Filtering value reduces the effect
EN	Enumeration of BYTE	0.05	0.05	ms	Filtering value reduces the effect
CAP Edge	Enumeration of BYTE	Preset Condition	Preset Condition		CAP signal detection (if no CAP In
CAP	Enumeration of BYTE	0.05	0.05	ms	Filtering value reduces the effect
REF	Enumeration of BYTE	0.05	0.05	ms	Filtering value reduces the effect
Thresholds					
Threshold 0 Value	DINT (0...2147483647)	0	0		This parameter value must be res
Threshold 1 Value	DINT (0...2147483647)	2147483647	2147483647		This parameter value must be res
Reflex Outputs					
Reflex Output 0 Mode	Enumeration of BYTE	None	None		Set the reflex output 0 mode

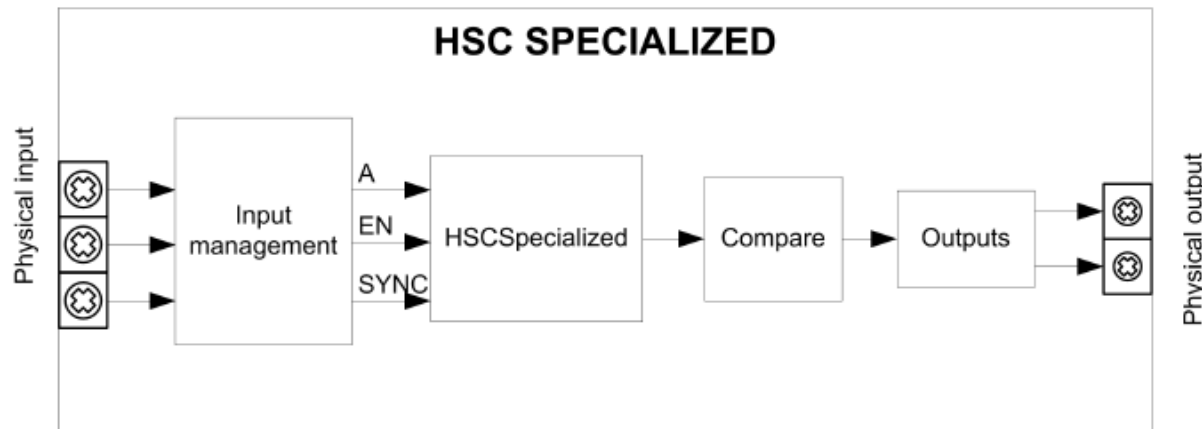
Direction of counting mode
Modifiable by programming ◆ = Yes ◇ = No

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- Descrição do modo de configuração:

Synopsis Diagram

The following diagram provides an overview of the **Specialized** type in **One-shot** mode:



A is the counting input of the counter.

EN is the enable input of the counter.

SYNC is the synchronization input of the counter.

Programmable Filter

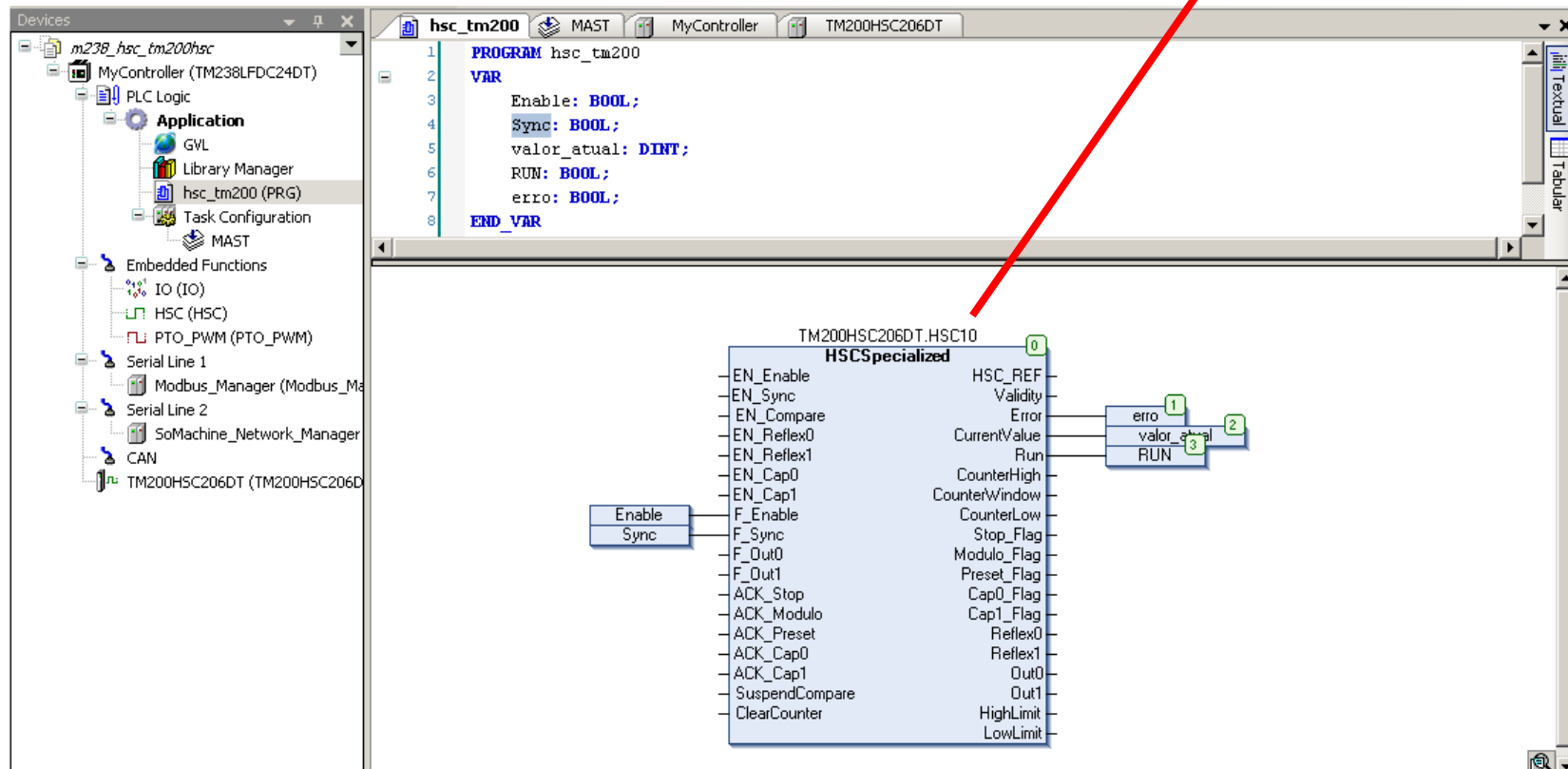
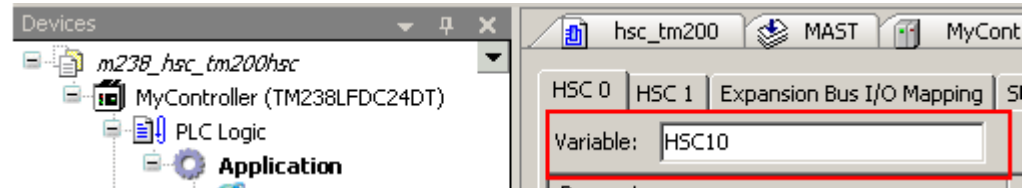
The filtering value on the **Specialized** type input determines the counter maximum frequency as shown in the table below:

Input	Filter value	Maximum counter frequency
A	0.005 ms	60 kHz
	0.45 ms	1 kHz
	1.25 ms	350 Hz
	4.2 ms	100 Hz

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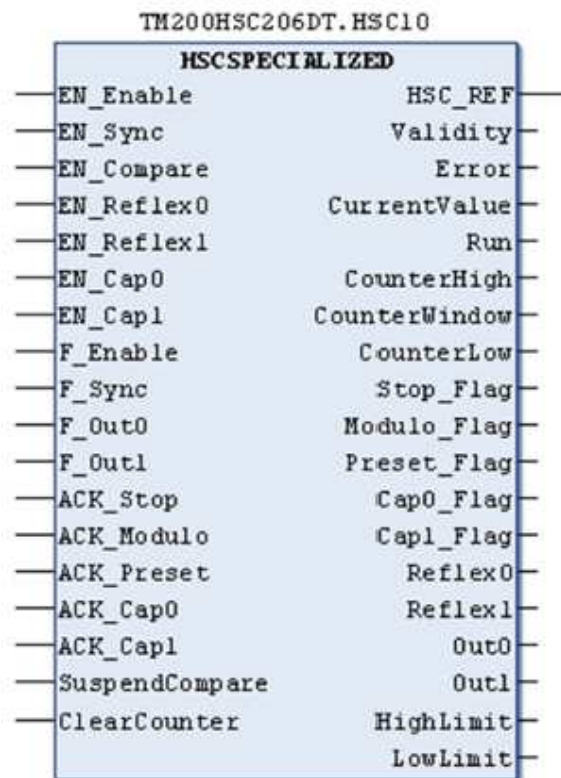
- **Configuração:**

Nesta configuração utiliza-se o bloco **HSCSpecialized** e vincula-se à variável configurada anteriormente no canal.



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- HSCSpecialized:



The following table describes the input variables:

Input	Type	Comment
EN_Enable	BOOL	TRUE = authorizes the counter enable via the Enable input (<i>see page 218</i>).
EN_Sync	BOOL	TRUE = authorizes the counter synchronization and start via the Sync input (<i>see page 214</i>).
EN_Compare	BOOL	TRUE = enables the comparator operation (using Thresholds 0 and 1) (<i>see page 201</i>).
EN_Reflex0	BOOL	TRUE = enables Reflex0 and output0.
EN_Reflex1	BOOL	TRUE = enables Reflex1 and output1.
EN_Cap0	BOOL	Not used
EN_Cap1	BOOL	Not used
F_Enable	BOOL	Forces the Enable condition (<i>see page 218</i>).
F_Sync	BOOL	Forces the Sync condition (<i>see page 214</i>).
F_Out0	BOOL	TRUE = forces physical output Output0 to 1.
F_Out1	BOOL	TRUE = forces physical output Output1 to 1.
ACK_Stop	BOOL	On rising edge, resets Stop_Flag.
ACK_Modulo	BOOL	Not used
ACK_Preset	BOOL	On rising edge, resets Preset_Flag.
ACK_Cap0	BOOL	Not used
ACK_Cap1	BOOL	Not used
SuspendCompare	BOOL	TRUE = the comparator operation (<i>see page 201</i>) results are frozen: <ul style="list-style-type: none"> • CounterLow, CounterWindow, CounterHigh, Reflex0, Reflex1 output bits maintain their last value, • Physical output Output0 and Output1 maintain their last value. <p>NOTE: EN_Reflex0, EN_Reflex1, F_Out0, F_Out1 remain operational while SuspendCompare is set.</p>
ClearCounter	BOOL	On rising edge, resets CurrentValue to 0.

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• HSCSpecialized:

The following table describes the output variables:

Output	Type	Comment
HSC_REF	HSC_REF (see page 228)	Reference to the HSC. To be used with the HSC_REF_IN input pin of the Administrative function blocks.
Validity	BOOL	TRUE = indicates that output values on the function block are valid.
Error	BOOL	TRUE = indicates that an error was detected. HSCGetDiag (see page 234) function block may be used to get more information about this detected error.
CurrentValue	DINT	Current value of the counter.
Run	BOOL	Set to 1 when the counter is running. Switches to 0 when the CurrentValue reaches 0.
CounterHigh	BOOL	Set to 1 when CurrentValue is more than the Threshold1 value (see page 201).
CounterWindow	BOOL	Set to 1 when CurrentValue is: <ul style="list-style-type: none"> • between the Threshold0 and Threshold1, or • equal to one of the two Thresholds.
CounterLow	BOOL	Set to 1 when CurrentValue is less than the Threshold0 value (see page 201).
Stop_Flag	BOOL	Set to 1 when CurrentValue reached 0.
Modulo_Flag	BOOL	Not relevant
Preset_Flag	BOOL	Set to 1 by the synchronization of the counter (see page 214).
Cap0_Flag	BOOL	Not relevant
Cap1_Flag	BOOL	Not relevant
Reflex0	BOOL	State of Reflex0.
Reflex1	BOOL	State of Reflex1.
Out0	BOOL	Indicates the state of Output0.
Out1	BOOL	Indicates the state of Output1.
HighLimit	BOOL	Not relevant
LowLimit	BOOL	Not relevant

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- Em operação:

Ao habilitar no bloco **HSC_Main** as variáveis **F_Enable** e **F_Sync**, a contagem está habilitada e a cada sinal enviado, ocorre o incremento do valor de contagem e o resultado pode ser visualizado em **CurrentValue**.

The screenshot displays the Schneider Electric Modicon M238 software interface. On the left, a tree view shows the project structure, including 'Application [run]' and 'TM200HSC206DT (TM200HSC206DT)'. The main window shows the 'MyController.Application.hsc_tm200' configuration. A table displays the current state of variables:

Expression	Type	Value	Prepared value	Comment
Enable	BOOL	TRUE		
Sync	BOOL	TRUE		
valor_atual	DINT	114		
RUN	BOOL	TRUE		
erro	BOOL	FALSE		

Below the table, a ladder logic diagram shows the 'HSCspecialized' block. The 'Enable' and 'Sync' inputs are connected to 'TRUE' values. The 'Run' input is connected to a 'TRUE' value. The 'CurrentValue' output is connected to a 'valor_atual' variable, which is currently displaying the value 114. The 'Error' output is connected to a 'FALSE' value.