

# Modicon M258

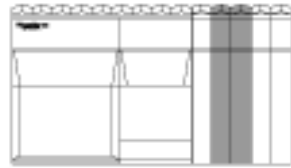
Exemplo de configuração do módulo DM72F0 para contagem pela função Standard Encoder e bloco ENCODER\_M258.

- Esquemas de Ligação:

The following figure shows the wiring diagram of the expert I/O with encoder:

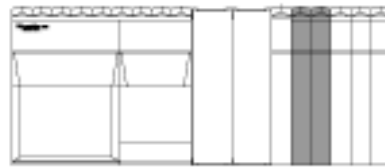
TM258LD42DT

TM258LF42DT●●



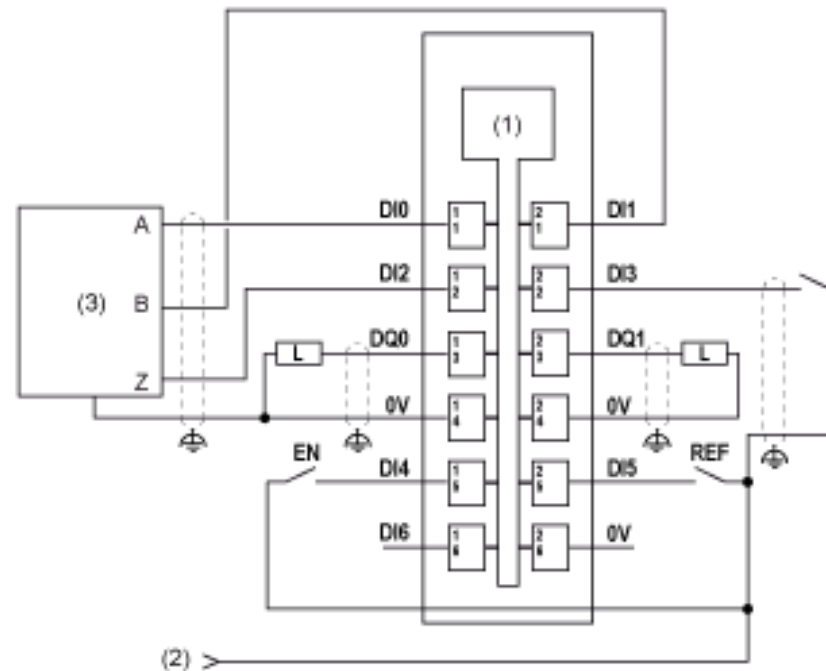
TM258LD42DT4L

TM258LF42DT4L●●



TM258LF66DT4L●●

TM258LF42DR●●



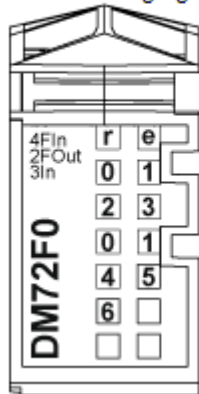
- 1 Internal electronics
- 2 24 Vdc Embedded expert modules power by external connection
- 3 Encoder

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- Esquemas de Ligação:

## Status LEDs

The following figure shows the LEDs for the Expert I/O:



The table below describes the Expert I/O status LEDs:

| LED | Color                           | Status       | Description                                     |
|-----|---------------------------------|--------------|-------------------------------------------------|
| r   | Green                           | Off          | No power supply                                 |
|     |                                 | Single Flash | Reset mode                                      |
|     |                                 | Flashing     | Preoperational mode                             |
|     |                                 | On           | Normal operation                                |
| e   | Red                             | Off          | OK or no power supply                           |
| e+r | Steady red / single green flash |              | Invalid firmware                                |
| 0-3 | Green                           | On           | Input status of the corresponding input 0...3   |
| 0-1 | Yellow                          | On           | Output status of the corresponding output 0...1 |
| 4-6 | Green                           | On           | Input status of the corresponding input 4...6   |

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- Standard Encoder:

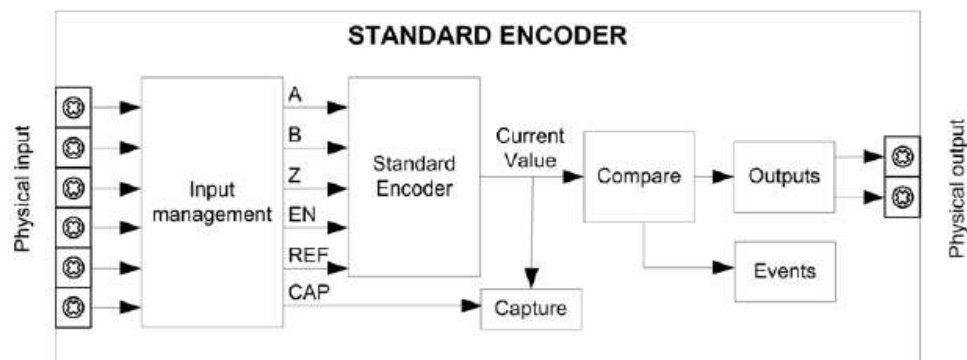
Detalhamento dos parâmetros de configuração do **ENCODER\_M258**:

## Adding a StandardEncoder Function Block

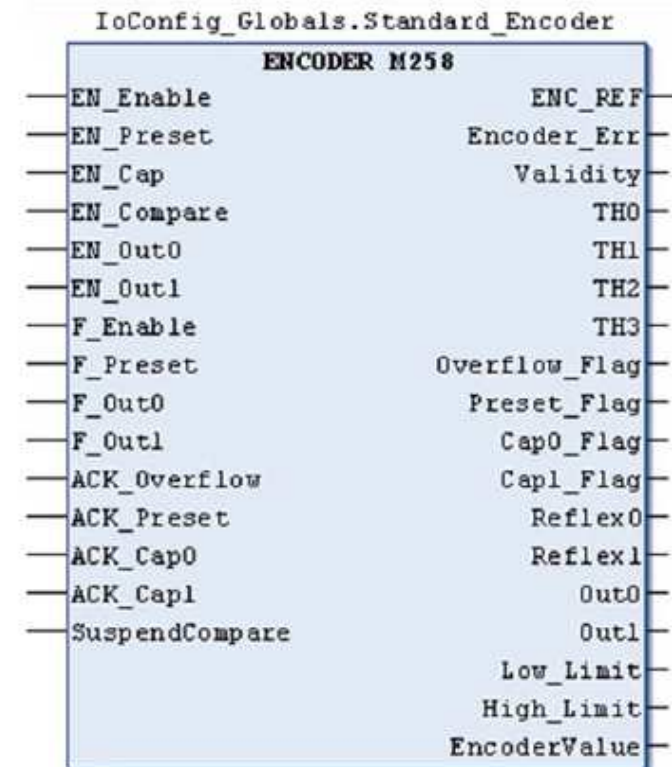
| Step | Description                                                                                                                                                                                                                                                                                                                            |
|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Insert the Encoder_M258 function block with the insert box assistant. The function block can be found at this path: <b>Function Block (Libraries) → SEC_EXP → ENCODER → ENCODER_M258</b>                                                                                                                                               |
| 2    | Type the Encoder_M258 instance name or look for the function block instance by clicking on:<br><br>Using the input assistant, the Encoder_M258 instance can be selected at the following path: <b>Global Variables → PLC Logic → IoConfig_Globals</b> |

## Synopsis Diagram

The following diagram provides an overview of the **Standard Encoder** in **Incremental** mode:



A and B are the counting inputs of the encoder.  
EN is the enable input of the encoder.  
Z and REF are the reference inputs of the encoder.  
CAP is the capture input of the encoder.



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- Standard Encoder:

## Detalhamento dos parâmetros de configuração do ENCODER\_M258:

### I/O Variables Description

The following table describes the input variables:

| Inputs         | Type | Comment                                                                                                                                                                                                                                                                                                                                                                      |
|----------------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EN_Enable      | BOOL | TRUE = authorizes the encoder enable via the Enable input (if configured).                                                                                                                                                                                                                                                                                                   |
| EN_Preset      | BOOL | TRUE = authorizes the encoder synchronization and starts via the Sync input (if configured).                                                                                                                                                                                                                                                                                 |
| EN_Cap         | BOOL | TRUE = enables the Capture input (if configured).                                                                                                                                                                                                                                                                                                                            |
| EN_Compare     | BOOL | TRUE = enables the comparator operation (using Thresholds 0, 1, 2, 3): <ul style="list-style-type: none"><li>• basic comparison (TH0, TH1, TH2, TH3 output bits)</li><li>• reflex (Reflex0, Reflex1 output bits)</li><li>• events (to trigger external tasks on threshold crossing)</li></ul>                                                                                |
| EN_Out0        | BOOL | TRUE = enables Output0 to echo the Reflex0 value (if configured, on DM72F modules).                                                                                                                                                                                                                                                                                          |
| EN_Out1        | BOOL | TRUE = enables Output1 to echo the Reflex1 value (if configured, on DM72F modules).                                                                                                                                                                                                                                                                                          |
| F_Enable       | BOOL | Forces the <a href="#">Enable condition</a> .                                                                                                                                                                                                                                                                                                                                |
| F_Preset       | BOOL | Forces the Preset condition.                                                                                                                                                                                                                                                                                                                                                 |
| F_Out0         | BOOL | TRUE = forces Output0 to 1 (if Reflex0 is configured).                                                                                                                                                                                                                                                                                                                       |
| F_Out1         | BOOL | TRUE = forces Output1 to 1 (if Reflex1 is configured).                                                                                                                                                                                                                                                                                                                       |
| ACK_Overflow   | BOOL | On rising edge, resets the Overflow_Flag.                                                                                                                                                                                                                                                                                                                                    |
| ACK_Cap0       | BOOL | On rising edge, resets Cap0_Flag.                                                                                                                                                                                                                                                                                                                                            |
| ACK_Cap1       | BOOL | On rising edge, resets Cap1_Flag.                                                                                                                                                                                                                                                                                                                                            |
| SuspendCompare | BOOL | TRUE = the comparator operation results are frozen: <ul style="list-style-type: none"><li>• TH0, TH1, TH2, TH3, Reflex0, Reflex1 output bits maintain their last value.</li><li>• Hardware Outputs 0, 1 maintain their last value.</li><li>• Events are masked. EN_Compare, EN_Reflex0, EN_Reflex1, F_Out0, F_Out1 remain operational while SuspendCompare is set.</li></ul> |

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- Standard Encoder:

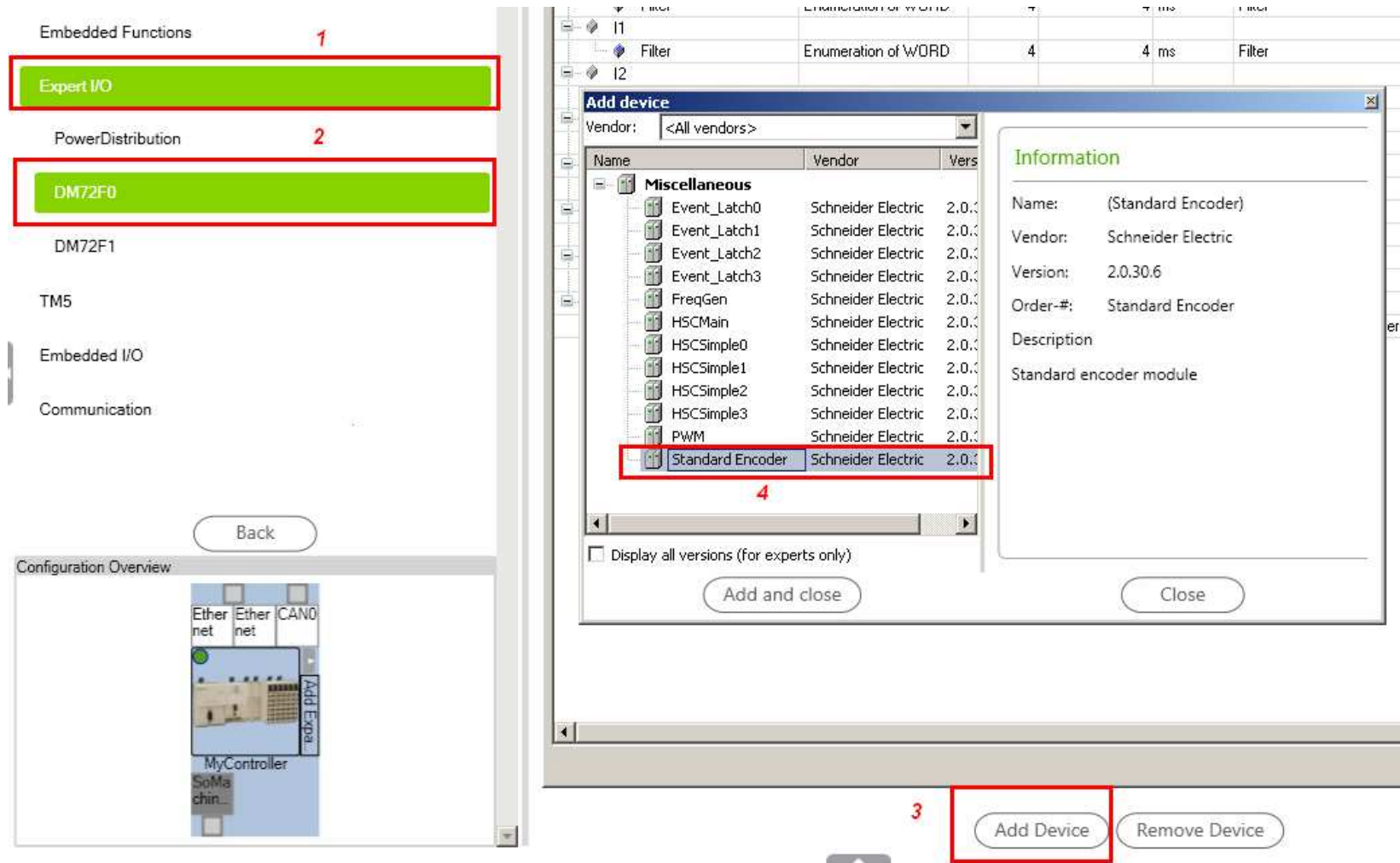
## Detalhamento dos parâmetros de configuração do ENCODER\_M258:

| Outputs       | Type                       | Comment                                                                                                                                                 |
|---------------|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| ENC_REF       | <a href="#">EXPERT_REF</a> | Reference to the Encoder.                                                                                                                               |
| Encoder_Err   | BOOL                       | TRUE = indicates that an error was detected.<br>Use the <a href="#">EXPERTGetDiag</a> function block to get more information about this detected error. |
| Validity      | BOOL                       | TRUE = indicates that the output values on the function block are valid.                                                                                |
| TH0           | BOOL                       | Set to 1 when CurrentValue > Threshold 0 (if configured).<br>Only active when EN_Compare is set.                                                        |
| TH1           | BOOL                       | Set to 1 when CurrentValue > Threshold 1 (if configured).<br>Only active when EN_Compare is set.                                                        |
| TH2           | BOOL                       | Set to 1 when CurrentValue > Threshold 2 (if configured).<br>Only active when EN_Compare is set.                                                        |
| TH3           | BOOL                       | Set to 1 when CurrentValue > Threshold 3 (if configured).<br>Only active when EN_Compare is set.                                                        |
| Overflow_Flag | BOOL                       | Set to 1 when the encoder rolls over its limits.                                                                                                        |
| Preset_Flag   | BOOL                       | Set to 1 after the encoder <a href="#">presets</a> .                                                                                                    |
| Cap0_Flag     | BOOL                       | Set to 1 when a new capture value is stored in the Capture register.<br>This flag must be reset before a new capture is allowed.                        |
| Cap1_Flag     | BOOL                       | Set to 1 when a new capture value is stored in the Capture register.<br>This flag must be reset before a new capture is allowed.                        |
| Reflex0       | BOOL                       | State of Reflex0 (if configured).<br>Only active when EN_Compare is set.                                                                                |
| Reflex1       | BOOL                       | State of Reflex1 (if configured).<br>Only active when EN_Compare is set.                                                                                |
| Out0          | BOOL                       | Indicates the state of Output0.                                                                                                                         |
| Out1          | BOOL                       | Indicates the state of Output1.                                                                                                                         |
| Low_Limit     | BOOL                       | Only managed for incremental linear in Lock on limit. Set to 1 when the encoder exceeds - 2.147.483.648. Resets to 0 when encoder presets or resets.    |
| High_Limit    | BOOL                       | Only managed for incremental linear in Lock on limit. Set to 1 when the encoder exceeds + 2.147.483.648. Resets to 0 when encoder presets or resets.    |
| EncoderValue  | DINT                       | Current value of the Encoder.                                                                                                                           |

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- Standard Encoder:

Acrescentar a configuração Standard Encoder:



# Modicon M258

- Standard Encoder:

Para visualizar a configuração reservada aos canais, entre em **Summary**:

The screenshot displays the Schneider Electric Modicon M258 configuration software interface. On the left, a sidebar contains a tree view with the following items: Expert I/O, PowerDistribution, DM72F0, Standard\_Encoder, DM72F1, M5, mbedded I/O, and ommunication. Below this is a 'Back' button and a 'Configuration Overview' section showing a small diagram of a control cabinet with labels for 'Ether net', 'Ether net', 'CAN0', 'MyController', and 'SoMa chin...'. The main area shows a configuration table with columns for I2, Filter, and Enumeration of WORD. Below this, the 'IO Summary' dialog box is open, showing two tables: 'Inputs' and 'Outputs'. The 'Inputs' table has columns 'Channels' and 'Configuration', with rows for I1.0 through I4.0. The 'Outputs' table has columns 'Channels' and 'Configuration', with rows for Q0.0 through Q1.1. A red box highlights the 'Inputs' table, and another red box highlights the 'Summary...' button at the bottom right of the dialog box.

| I2 | Filter | Enumeration of WORD | 4 | 4 ms | Filter |
|----|--------|---------------------|---|------|--------|
| I3 | Filter | Enumeration of WORD | 4 | 4 ms | Filter |

### IO Summary

#### Inputs

| Channels | Configuration               |
|----------|-----------------------------|
| I1.0     | Standard_Encoder - A        |
| I1.1     | Standard_Encoder - B        |
| I1.2     |                             |
| I1.3     |                             |
| I1.4     |                             |
| I1.5     |                             |
| I1.6     |                             |
| I2.0     | DM72F0 - Shortcut detection |
| I3.0     |                             |
| I3.1     |                             |
| I3.2     |                             |
| I3.3     |                             |
| I3.4     |                             |
| I3.5     |                             |
| I3.6     |                             |
| I4.0     | DM72F1 - Shortcut detection |

#### Outputs

| Channels | Configuration |
|----------|---------------|
| Q0.0     |               |
| Q0.1     |               |
| Q1.0     |               |
| Q1.1     |               |

OK

Summary...

# Modicon M258

- Standard Encoder:

## Configuração Standard Encoder:

The screenshot displays the 'm258\_encoder.project - SoMachine' software interface. The 'Configuration' tab is active, and the 'Standard\_Encoder' component is selected in the left-hand tree view. The main configuration area is titled 'Standard Encoder Configuration' and contains three sub-sections:

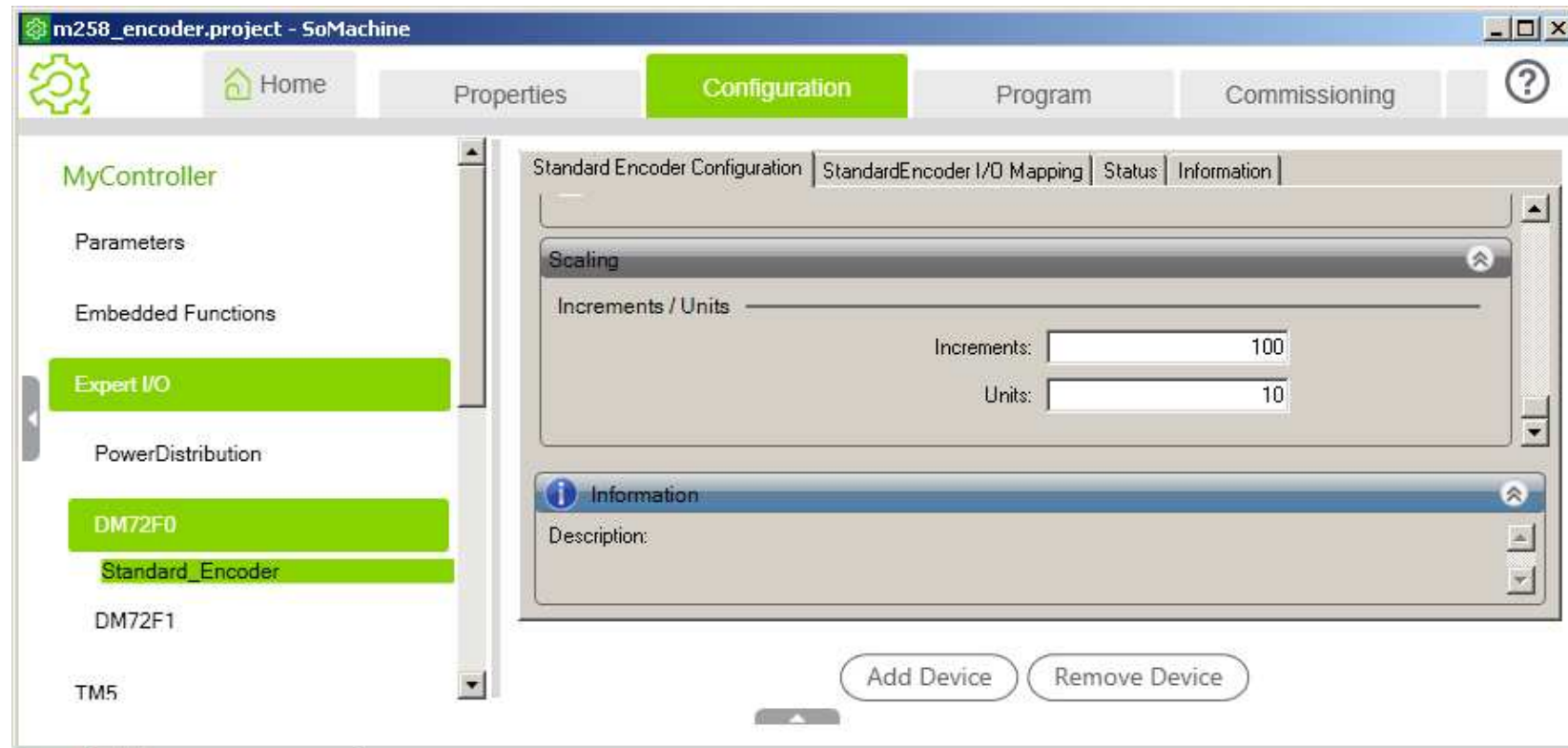
- Encoder common configuration:**
  - Mode: Incremental
  - Input: Normal Quadrature X1
  - Axis Type: Linear
- Input Usage:**

| Input  | Mode     | Period | Unit |
|--------|----------|--------|------|
| I0 (A) | 0.002    | ms     |      |
| I0 (B) | 0.002    | ms     |      |
| I2     | Disabled | 0.002  | ms   |
| I3     | Disabled | 0.002  | ms   |
| I4     | Disabled | 0.002  | ms   |
| I5     | Disabled | 0.002  | ms   |
- Preset Condition:**
  - Preset condition: None
  - Preset: 1000000

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- Standard Encoder:

Configuração Standard Encoder:



# Modicon M258

- Standard Encoder:

Para habilitar a contagem, utilize as variáveis EN\_Enable, F\_Enable e F\_Preset e observe que a variável **Validity** e **Preset\_Flag** estarão habilitadas para a contagem.

The screenshot displays the Schneider Electric SoMachine software interface for configuring a Modicon M258 Standard Encoder. The 'Program' tab is active, showing the 'MyController.Application.Counting' ladder logic. A callout box points to the 'Validity' and 'Preset\_Flag' variables in the 'IoConfig\_Globals.Standard\_Encoder' block, which are set to 'TRUE'. The 'Properties' panel on the right shows the 'Validity' property set to 'TRUE' and the 'Preset\_Flag' property set to 'TRUE'. The 'Tools' panel on the bottom right shows the 'Boolean Operators' section.

| Expression    | Type | Value   | Prepared value | Comment |
|---------------|------|---------|----------------|---------|
| encoder_value | DINT | 1001523 |                |         |
| f_enable      | BOOL | TRUE    |                |         |
| th0           | BOOL | FALSE   |                |         |
| th1           | BOOL | FALSE   |                |         |

**IoConfig\_Globals.Standard\_Encoder**

| Variable        | Value |
|-----------------|-------|
| en_enable       | TRUE  |
| en_preset       | FALSE |
| en_cap          | FALSE |
| en_compare      | FALSE |
| en_out0         | FALSE |
| en_out1         | FALSE |
| f_enable        | TRUE  |
| f_preset        | TRUE  |
| f_out0          | FALSE |
| f_out1          | FALSE |
| ack_overflow    | FALSE |
| ack_preset      | FALSE |
| ack_cap0        | FALSE |
| ack_cap1        | FALSE |
| suspend_compare | FALSE |

**ENCODER\_M258**

| Variable      | Value                 |
|---------------|-----------------------|
| ENC_REF       | 33                    |
| Encoder_Err   | encoder_err FALSE     |
| Validity      | validity TRUE         |
| TH0           | th0 FALSE             |
| TH1           | th1 FALSE             |
| TH2           | th2 FALSE             |
| TH3           | th3 FALSE             |
| Overflow_Flag | overflow_flag FALSE   |
| Preset_Flag   | preset_flag TRUE      |
| Cap0_Flag     | cap0_flag FALSE       |
| Cap1_Flag     | cap1_flag FALSE       |
| Reflex0       | reflex_0 FALSE        |
| Reflex1       | reflex_1 FALSE        |
| Out0          | out_0 FALSE           |
| Out1          | out_1 FALSE           |
| Low_Limit     | low_limit FALSE       |
| High_Limit    | high_limit FALSE      |
| EncoderValue  | encoder_value 1001523 |

Counting.encoder\_value: DINT