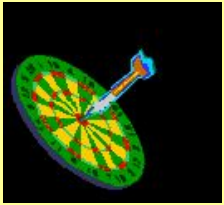# EXERCISES : Analog module
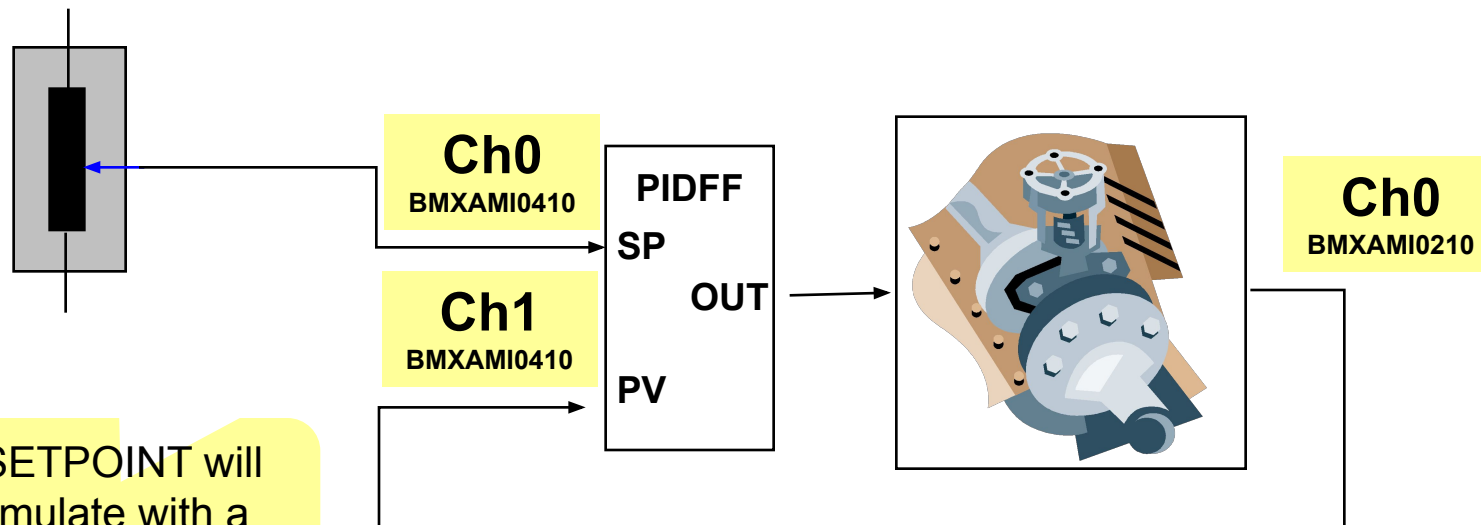
6 – Analog module

■ **Goal** :

– **Use an Analog Input (BMX AMI 0410) and Output (BMX AMO 0210) module.**

We will use these modules in order to realize a valve's regulation (this valve will be simulate by a DFB called ' VALVE')

Ch0
BMXAMI0410

Ch1
BMXAMI0410

PIDFF

SP

OUT

PV

Ch0
BMXAMI0210

The SETPOINT will be simulate with a potentiometer

Telemecanique

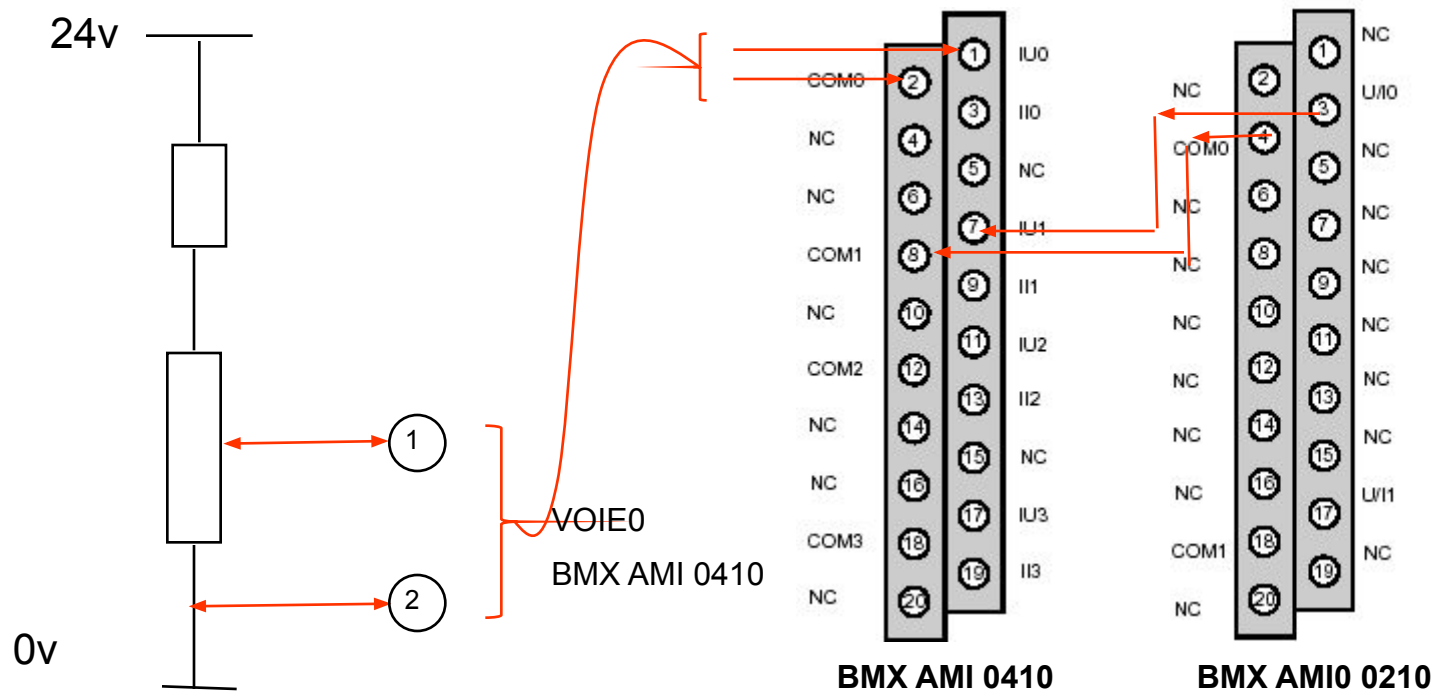# Solution

Telemecanique

a brand of Schneider Electric

6 – Analog modules

■ Wiring

– This is what we have with our cards

6 – Analog module

Configuration Methodology :

1. Realize the configuration for the BMX AMI 0410 in order to read voltage 0-10 V dc between 0 to 5000 on the CHANNEL 0 in MAST task and NORMAL cycle.

2. Realize the configuration for the BMX AMI 0410 in order to read voltage 0-10 V dc between 0 to 10000 on the CHANNEL 1 in MAST task and NORMAL cycle.

3. Realize the configuration for the BMX AMO 0210 in order to write voltage -/+10 V dc between -10000 to 10000, with a wiring control and a fallback value of 1000 on the CHANNEL 0 in the MAST TASK

4. Create the IODDT for the BMXAMI0410
   channel 0   In_ana0……
   channel 1   In_ana1
    and for the BMXAMO0210
   channel 0   O_ana1.

⊞ ▨	In_ana1	T_ANA_IN_BMX	%CH0.4.0
⊞ ▨	IN_ana2	T_ANA_IN_BMX	%CH0.4.1
⊞ ▨	O_Ana1	T_ANA_OUT_...	%CH0.5.0

6 – Analog modules

■ **Programming**

– Create a DFB '**VALVE**'

With :

- 2 inputs
- 1 output
- Section with only a EFB   MUL_REAL
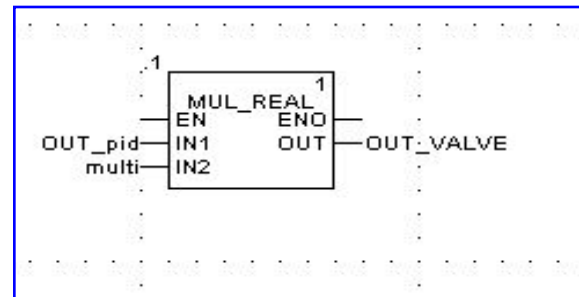
6 – Analog modules

- ■ Programming

- – Create a FBD section named "Ex_7"

1. Convert In_Ana1.value as an REAL
2. Convert In_Ana2.value as an REAL
3. Create a instance of a PIDFF function named "LT1"
4. Program this instance using LT1 with SP connect to the output of convert In_Ana1.value PV connect to the output of convert In_Ana2.value.
5. Named the output of the controller EX7_LT1_OUT, in REAL format.
6. Connect this output to the DFB 'VALVE'
7. Convert the output of the DFB in INT and call it O_ana1_value

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Schneider
Electric

■ Possible solution
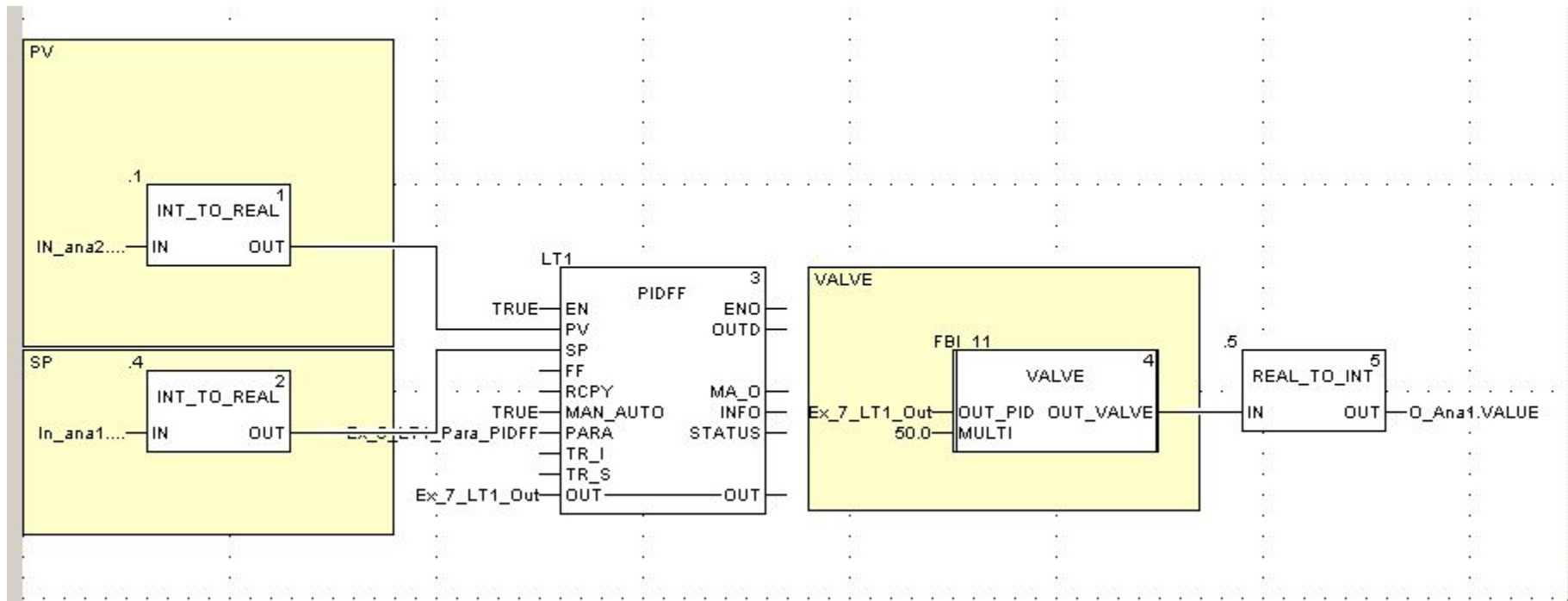
6 – Analog modules

- PIDFF configuration

Ex_5_LT1_Para_PIDFF	Para_PIDFF		
id	UINT		
pv_inf	REAL		0.0
pv_sup	REAL		10000.0
out_inf	REAL		0.0
out_sup	REAL		100.0
rev_dir	BOOL		0
mix_par	BOOL		0
aw_type	BOOL		0
en_rcpy	BOOL		0
kp	REAL		0.01
ti	TIME		t#2.0s
td	TIME		
kd	REAL		
pv_dev	BOOL		
bump	BOOL		0
dband	REAL		
gain_kp	REAL		
ovs_att	REAL		
outbias	REAL		
out_min	REAL		0.0
out_max	REAL		100.0
outrate	REAL		
ff_inf	REAL		
ff_sup	REAL		
otff_inf	REAL		
otff_sup	REAL		