



PLC-Siemens, HW Description  
School of Information Technology  
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Asean-Factori 4.0 project

Chiang Rai, 6-19 November 2022

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Asean-Factori 4.0

# PLC

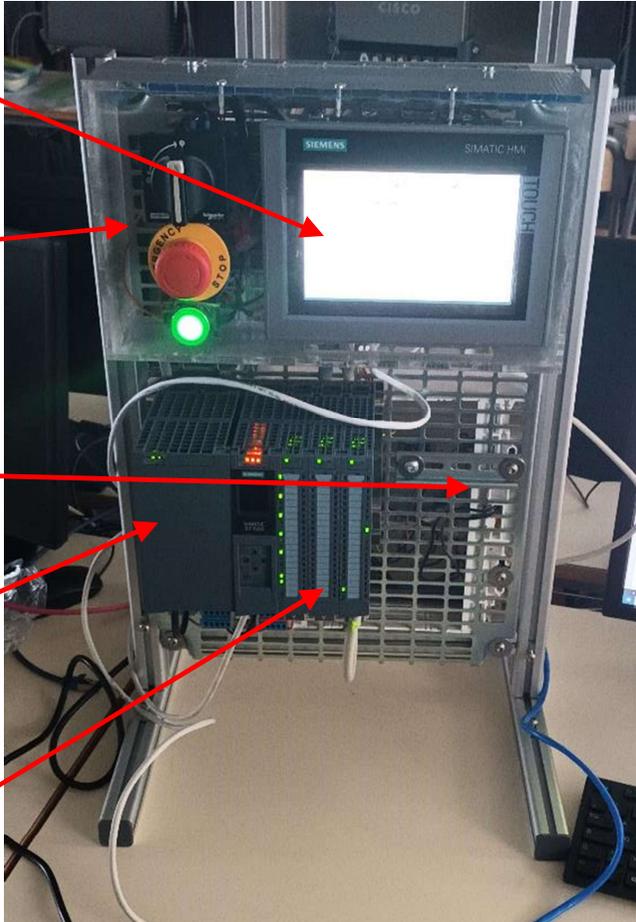
Display

ON/OFF  
block

Extension  
Rail

Power  
Supply

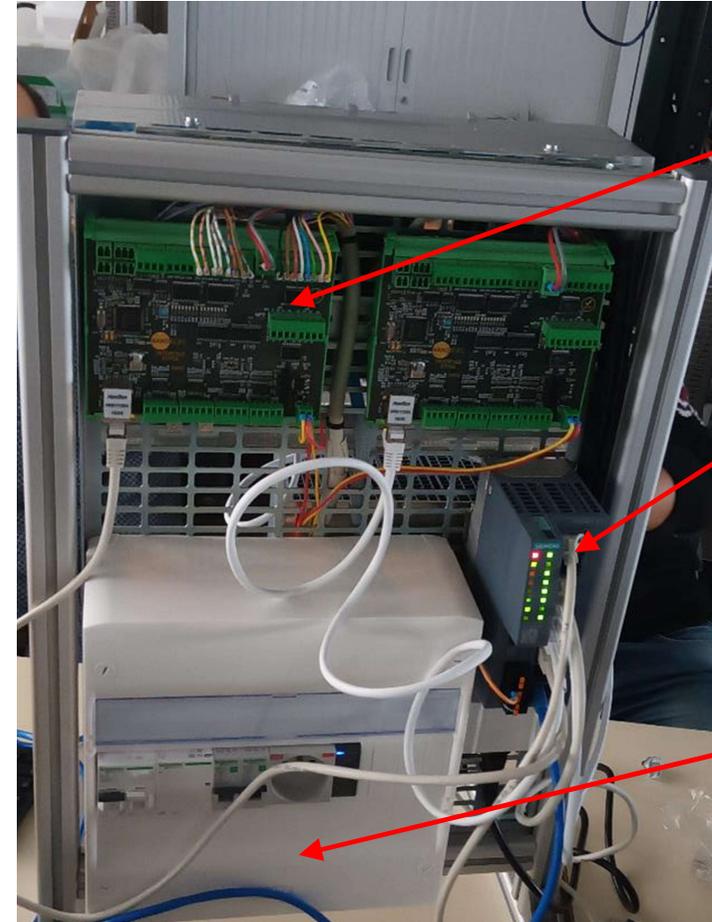
PLC



GICS  
card (x2)

Switch

AC Power  
Block



# PLC Elements

## SIEMENS

PLC: SIMATIC, S7-1500,

CPU 1512C-1PN

6ES7512-1CK01-0AB0

Display: SIMATIC HMI / TOUCH TP700 Comfort

6AV2 124-0GC01-0AX0

Switch: SCALANCE XC208

Power supply: 6EP1333-4BA00 24v/190W

Process simulator: GICS, NANO ELEC



# SIMATIC S7-1500

The following figure shows the analog on-board I/O (X10) of the CPU 1512C-1 PN.



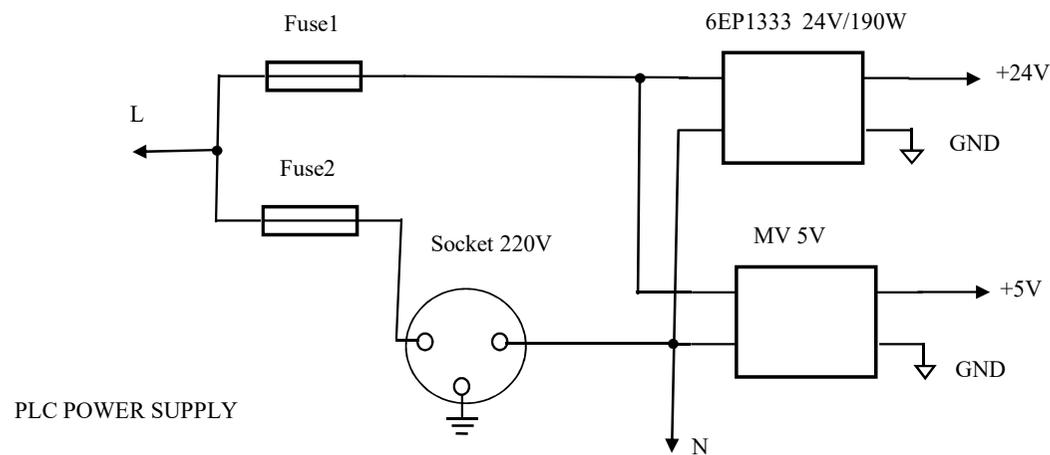
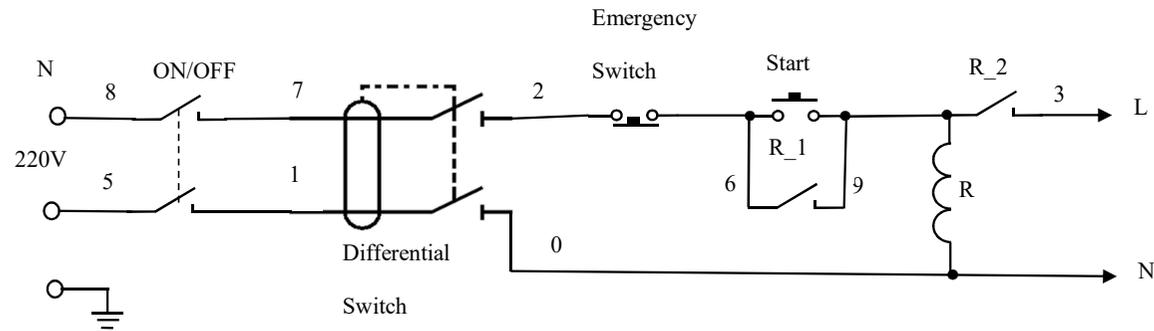
Figure 2-2 Analog on-board I/O

The following figure shows the digital on-board I/O (X11 and X12) of the CPU 1512C-1 PN.



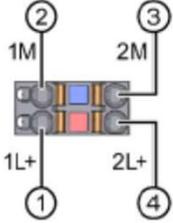
Figure 2-3 Digital on-board I/O

# Industrial Grade Power Supply



# SIMATIC S7 Power Supply

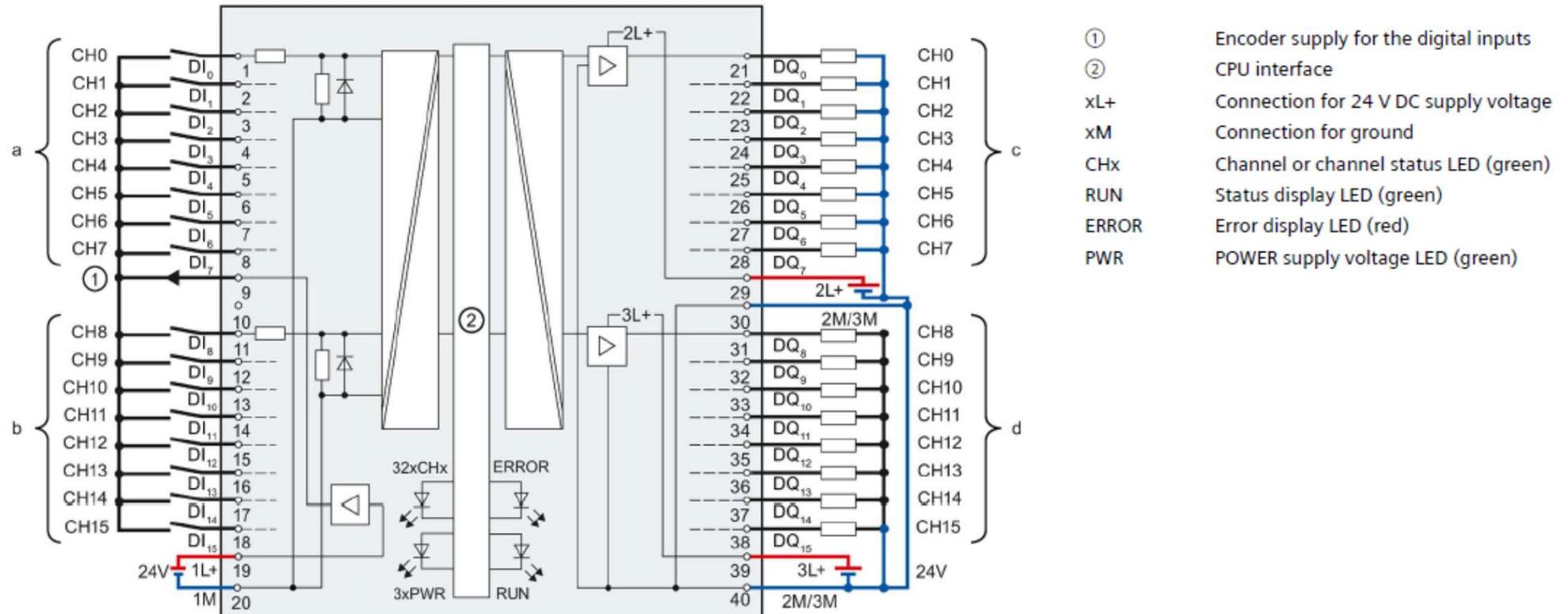
Table 4-1 Pin assignment 24 V DC supply voltage

View	Signal name <sup>1)</sup>		Description
Connector			
	1	1L+	+ 24 V DC of the supply voltage
	2	1M	Ground of the supply voltage
	3	2M	Ground of the supply voltage for loop-through <sup>2)</sup>
	4	2L+	+ 24 V DC of the supply voltage for loop-through <sup>2)</sup>

1) 1L+ and 2L+ as well as 1M and 2M are bridged internally

2) Maximum 10 A permitted

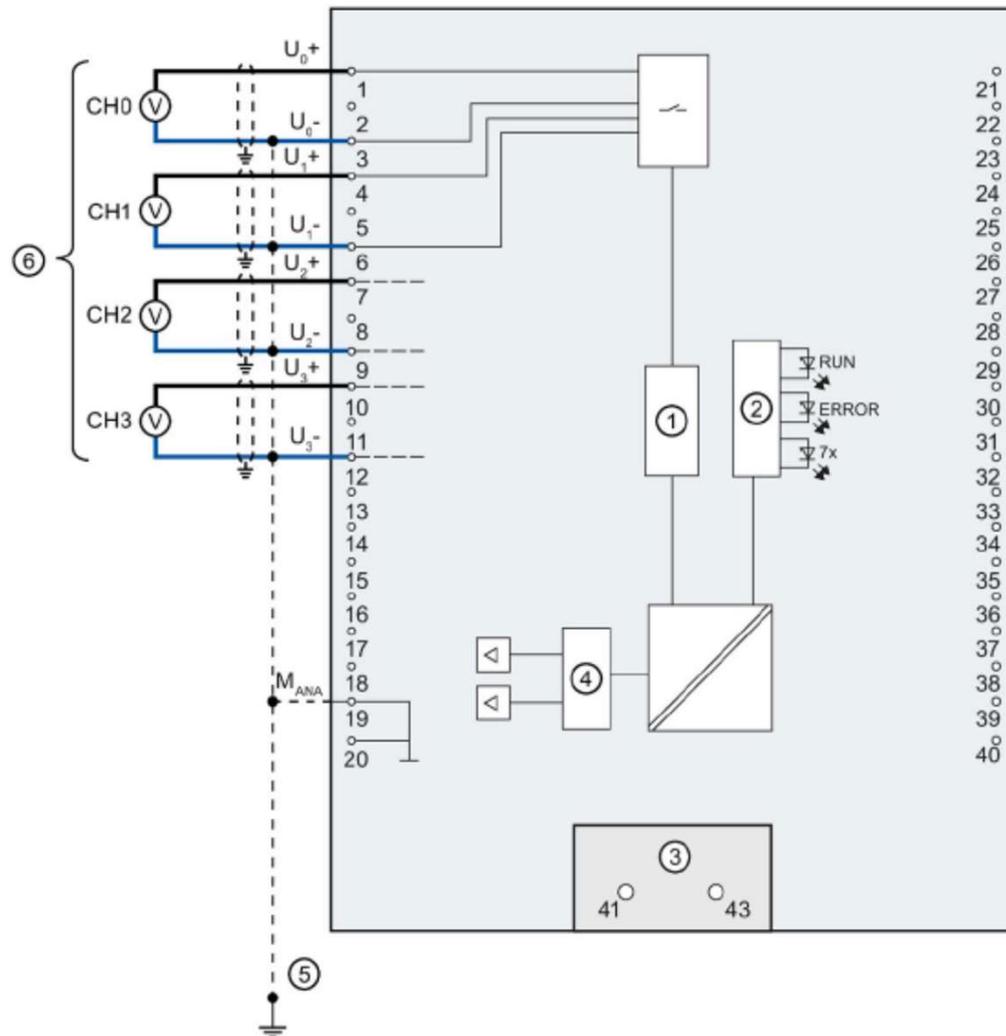
# X11, X12 Digital I/O



**Block diagram and terminal assignment X11**

The figure below shows you how to connect the digital on-board I/O X11 and the assignment of the channels to the addresses (input byte a and b, output byte c and d).

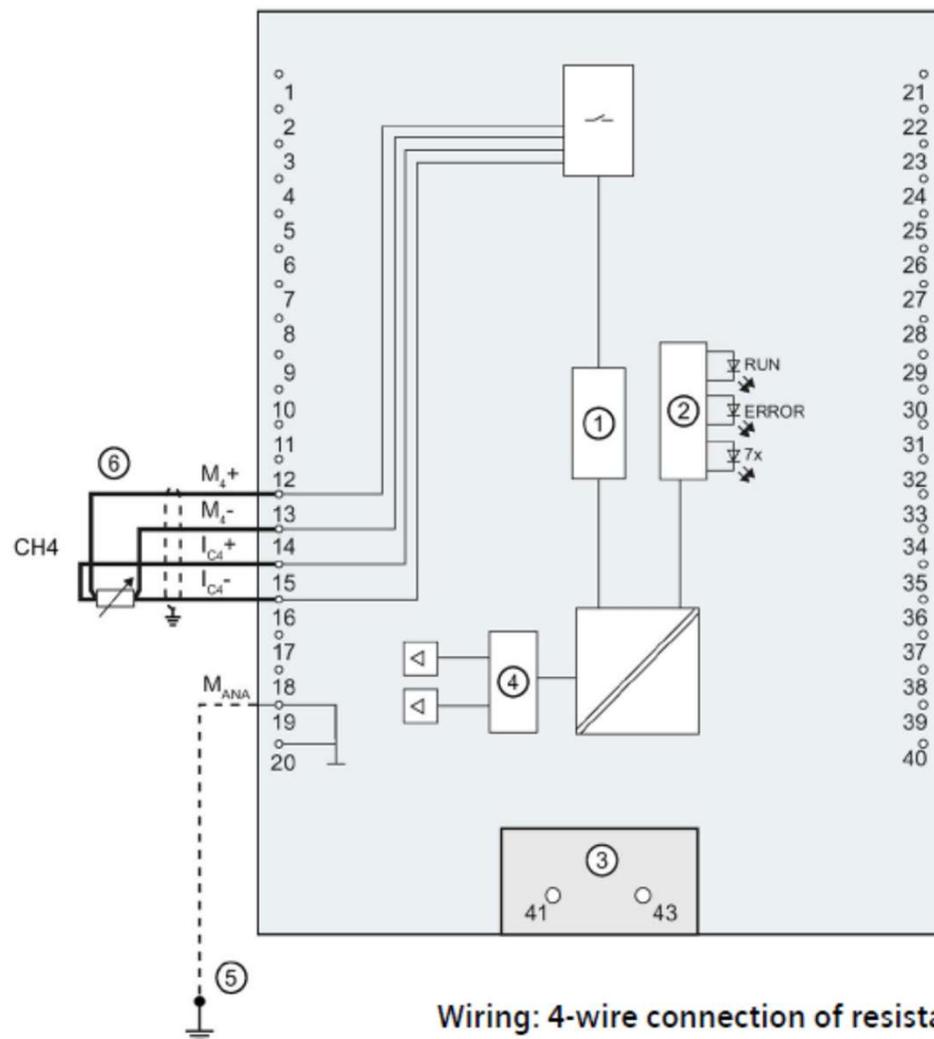
# X10 Voltage Measurement (ADC)



Wiring: Voltage measurement

- ① Analog-to-digital converter (ADC)
- ② LED interface
- ③ Infeed element (for shielding only)
- ④ Digital-to-analog converter (DAC)
- ⑤ Equipotential bonding cable (optional)
- ⑥ Voltage measurement

# X10 4 Wire Connection (ADC)

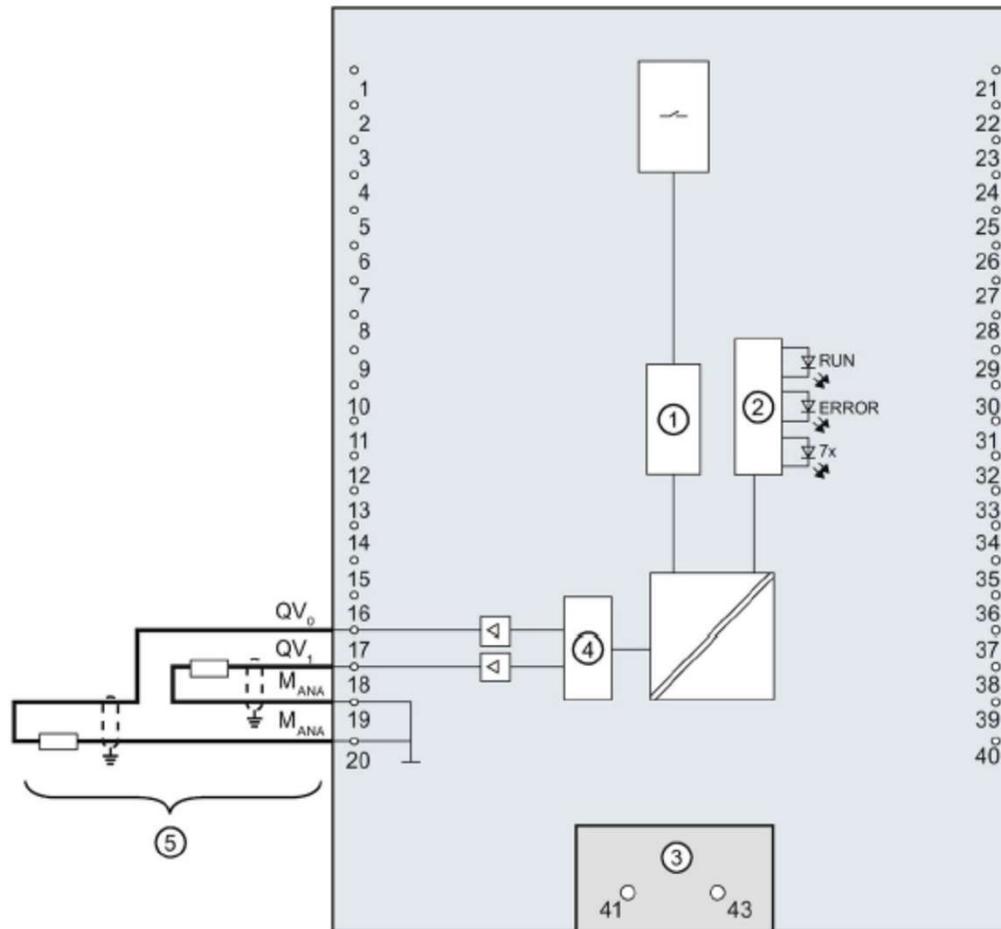


- ① Analog-to-digital converter (ADC)
- ② LED interface
- ③ Infeed element (for shielding only)
- ④ Digital-to-analog converter (DAC)
- ⑤ Equipotential bonding cable (optional)
- ⑥ 4-wire connection

This input is for special applications.  
Please refer to the technical documentation  
of the PLC for more information !

Wiring: 4-wire connection of resistance-type sensors or thermal resistors (RTD)

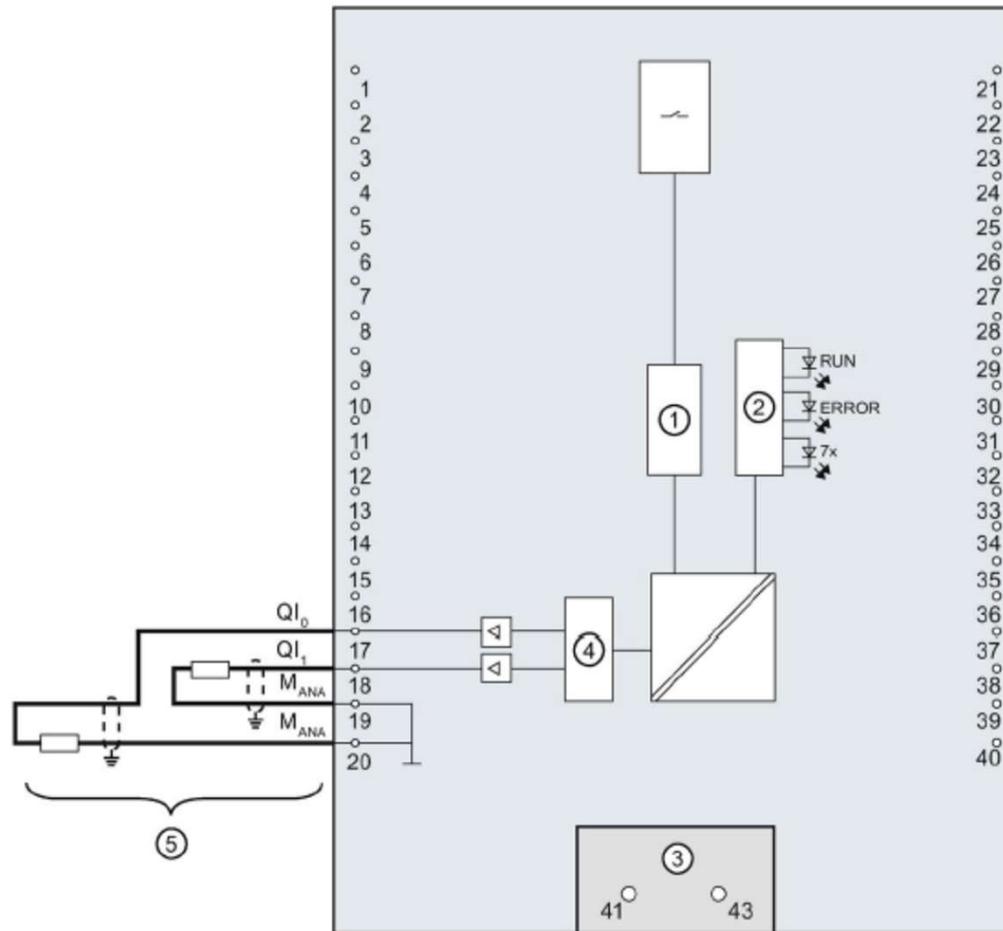
# X10 Voltage Output (DAC)



## Wiring: Voltage output

- ① Analog-to-digital converter (ADC)
- ② LED interface
- ③ Infeed element (for shielding only)
- ④ Digital-to-analog converter (DAC)
- ⑤ 2-wire connection CH0 and CH1

# X10 Current Output (DAC)

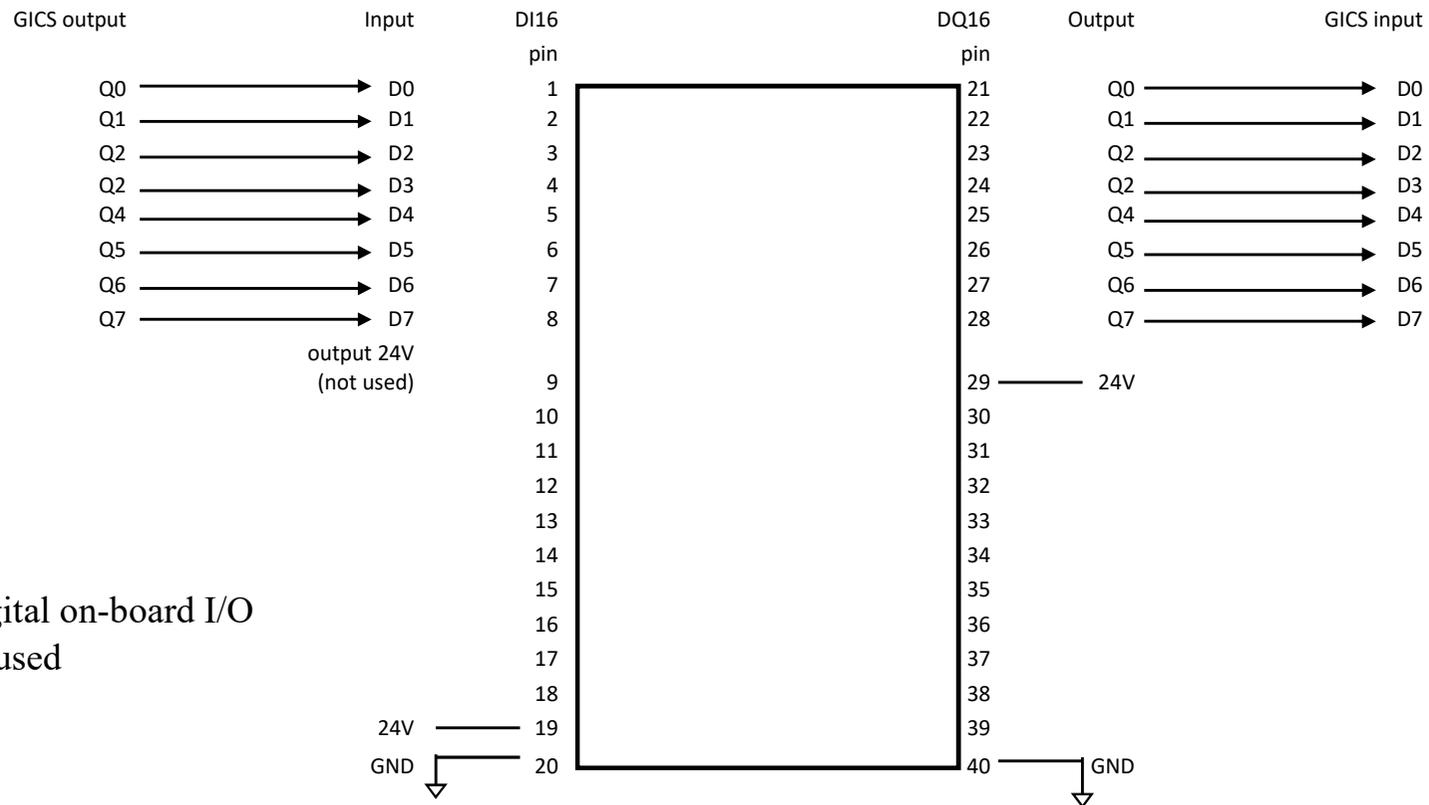


## Wiring: Current output

- ① Analog-to-digital converter (ADC)
- ② LED interface
- ③ Infeed element (for shielding only)
- ④ Digital-to-analog converter (DAC)
- ⑤ Current output CH0 and CH1

# X12 – GICS Card Digital Input / Output Wiring Diagram

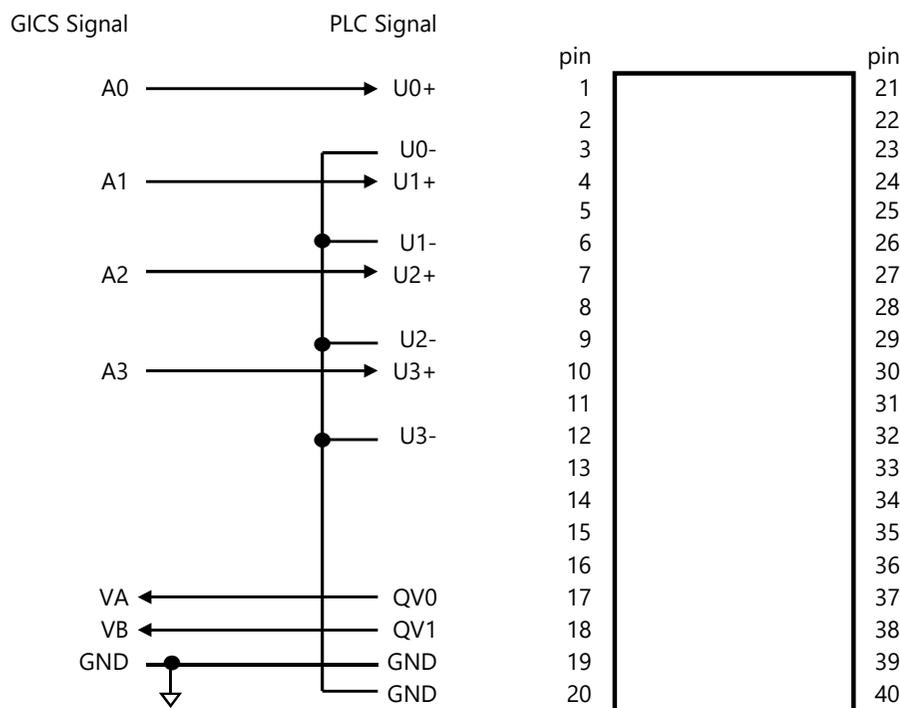
PLC Digital on-board I/O X12



X11 PLC Digital on-board I/O modul is not used

# X10 – GICS Card Analog Input / Output Wiring Diagram

PLC Digital on-board I/O X12



This part is  
not used

# GICS Simulation Card

## VERY IMPORTANT:

GICS card should answer to ping :

**Left card : 10.1.29.194**

**Rigth card : 10.1.29.195**

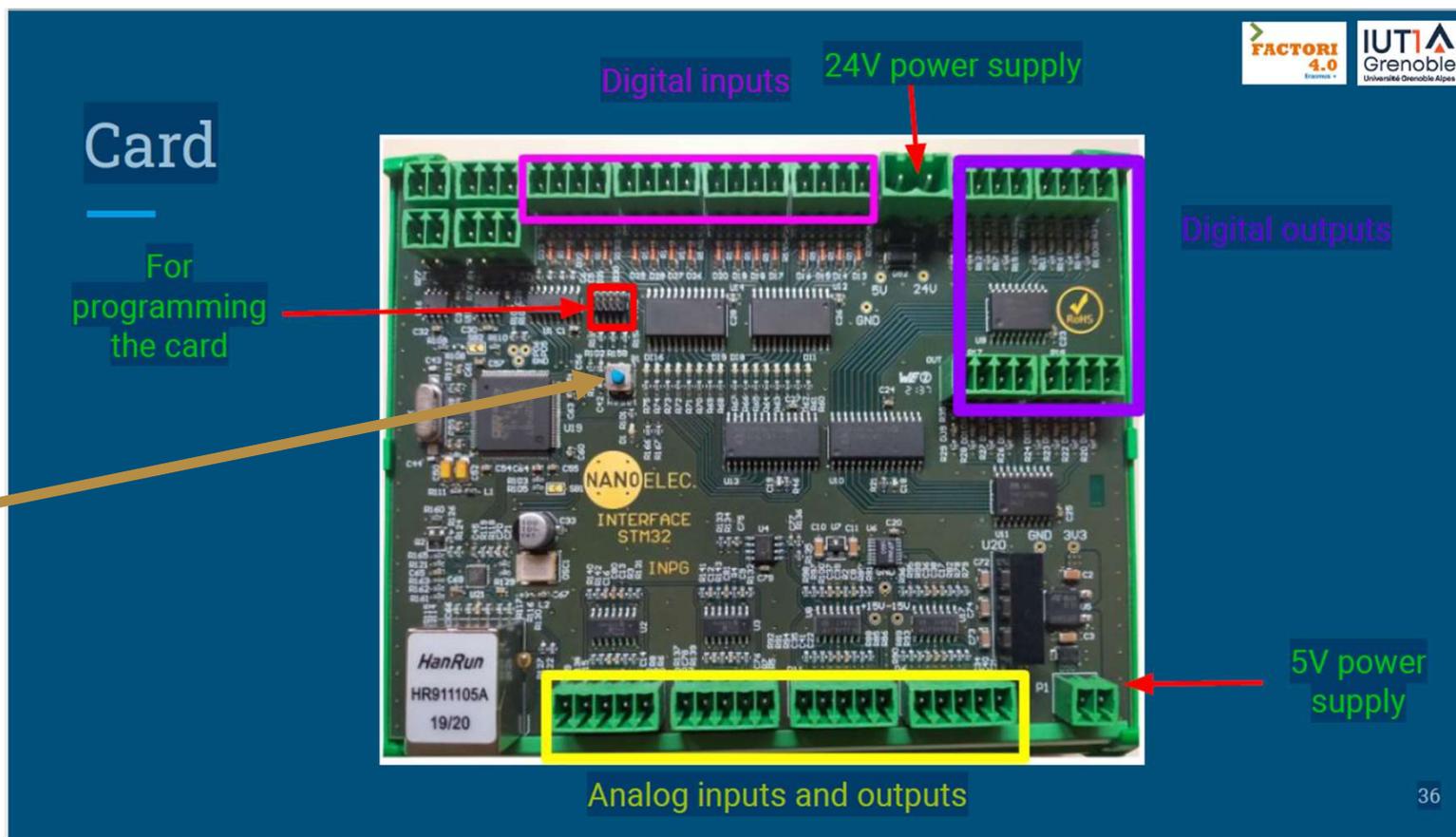
If it is not the case, push on the **RESET button** .

Unplug the 5V power supply and plug it again.

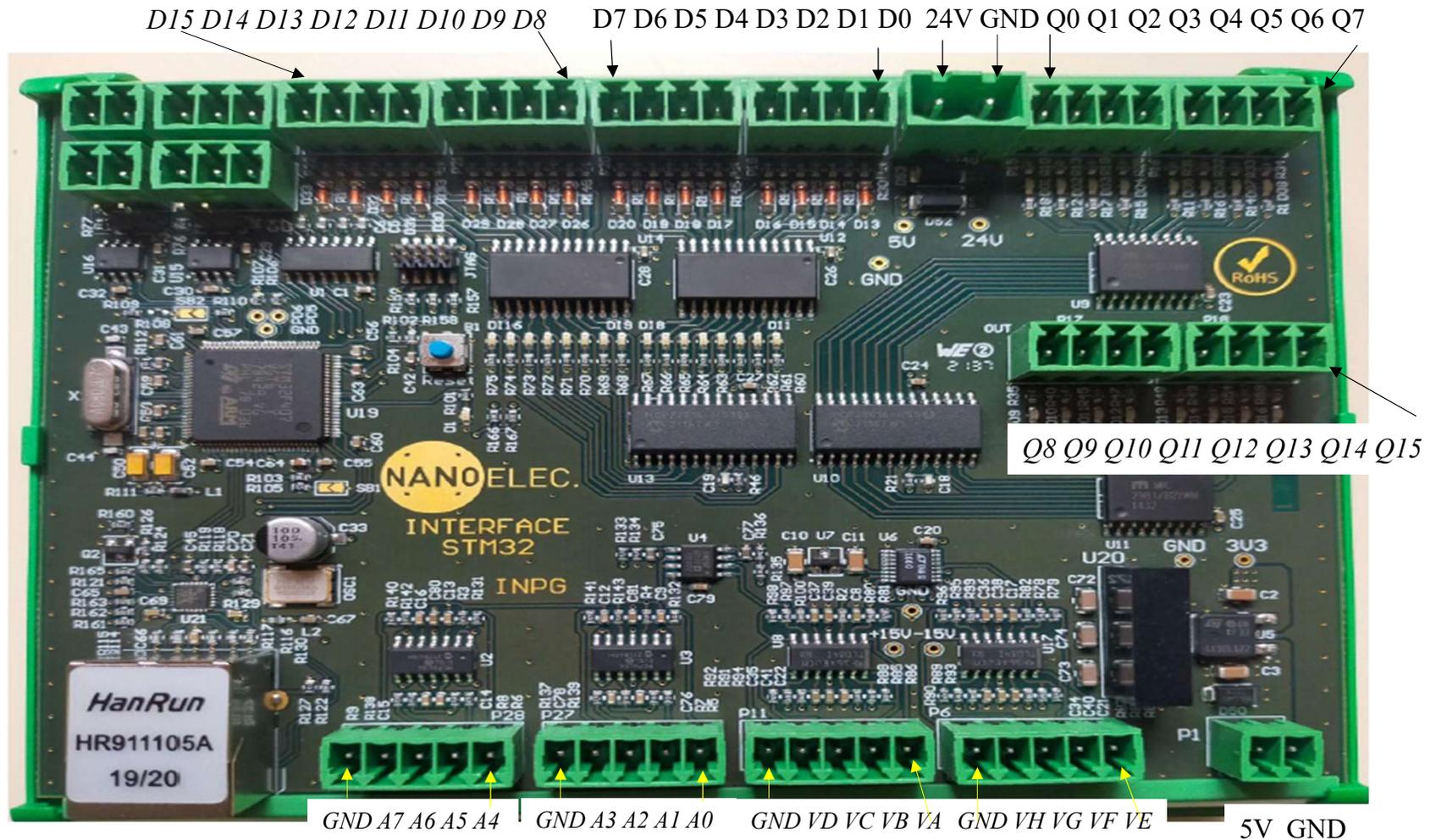
There are two powers supply on the card:

- +5V
- +24V

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# GICS simulation card input-output



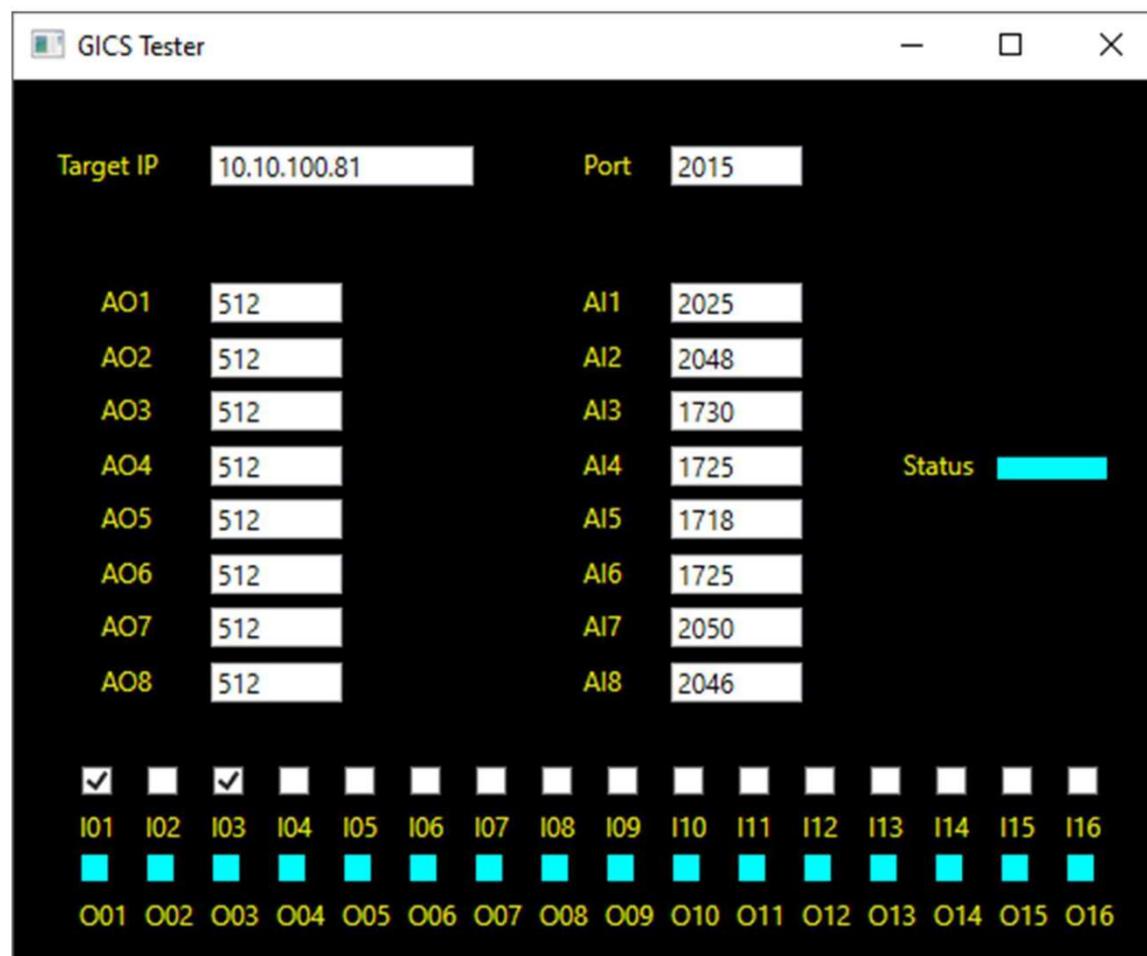
Di Digital INPUT  
Qi Digital OUTPUT

*D8 – D15 not connected*  
*Q8 - Q15 not connected*

Vi Analog INPUT  
Ai Analog OUTPUT

# GICS Tester

- I01 to I15 corresponds to Digital inputs (to be activated remotely)
- Q01 to Q15 corresponds to digital outputs (will be activated by the programme running on the PLC)
- A... corresponds to the Analog Inputs and Outputs



# Electromagnetic Compatibility

