

4 Installation and Commissioning

4.1 Hardware adaptation

This application has been realized with a CPU of the SIMATIC S7-1200 product family. Each S7-1200 CPU has 2 integrated analog inputs for receiving voltage signals from 0 to 10 V.

Depending on the design of your selected actuator, the hardware configuration of your S7-1200 might need adjustment.

The configuration options of S7-1200 for operating the "PID_Compact" compact controller are introduced below.

4.1.1 Input signal

The controlled variable is acquired as an adapted floating-point number "Input" or as an analog value from the "Input_PER" I/O. The "PID_Compact" offers the conversion of the analog value into the physical unit in the configuration screen.

The modules for the analog value acquisition are listed below.

Controlled variable acquisition

Table 4-1

Analog inputs	Article number	Type		Resolution
		Voltage	Current	
2 x onboard	all CPUs	0 to 10V	no	10 bits
SB 1231 AI 1 x 12 bit	6ES7231-4HA30-0XB0	±10V, ±5V, ±2.5V	0 to 20 mA	11 bits + sign
SM 1231 AI 4 x 13 bit	6ES7231-4HD32-0XB0	±10V, ±5V, ±2.5V	0 to 20 mA 4 to 20 mA	12 bits + sign
SM 1231 AI 8 x 13 bit	6ES7231-4HF32-0XB0	±10V, ±5V, ±2.5V	0 to 20 mA 4 to 20 mA	12 bits + sign
SM 1234 AI 4 x 13 bit / AO 2 x 14 bit	6ES7234-4HE32-0XB0	±10V, ±5V, ±2.5V	0 to 20 mA 4 to 20 mA	12 bits + sign
SM 1231 AI 4 x 16 bit	6ES7231-5ND32-0XB0	±10V, ±5V, ±2.5V, ±1.25V	0 to 20 mA 4 mA to 20 mA	15 bits + sign

Controlled variable acquisition (temperature)

Table 4-2

Thermocouple	Article number	Type	Resolution	
		Temperature / Voltage	Temperature	Voltage
SB 1231 AI 1 x 16 bit TC	6ES7231-5QA30-0XB0	Electrically isolated, TC and mV	0.1 °C/0.1 °F	15 bits + sign
SM 1231 AI 4 x 16 bit TC	6ES7231-5QD32-0XB0	Electrically isolated, TC and mV	0.1 °C/0.1 °F	15 bits + sign
SM 1231 AI 8 x 16 bit TC	6ES7231-5QF32-0XB0	Electrically isolated, TC and mV	0.1 °C/0.1 °F	15 bits + sign