

PID Learning and Testing Program

This program enables you to run a PID controller function block in the easy simulation tool in order to understand and learn about the closed-loop

control processes. The program contains three screens:



Start screen

Entry screen with company name and time



Value display screen

Shows an overview of all values



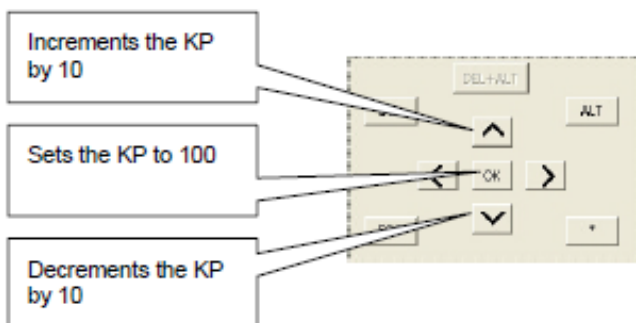
Parameters screen

Is used for entering the proportional gain

Use the Cursor left . right buttons to access the screens:



Enter the **proprtional gain KP** in the Parameters screen. This value is required for the controller to function.



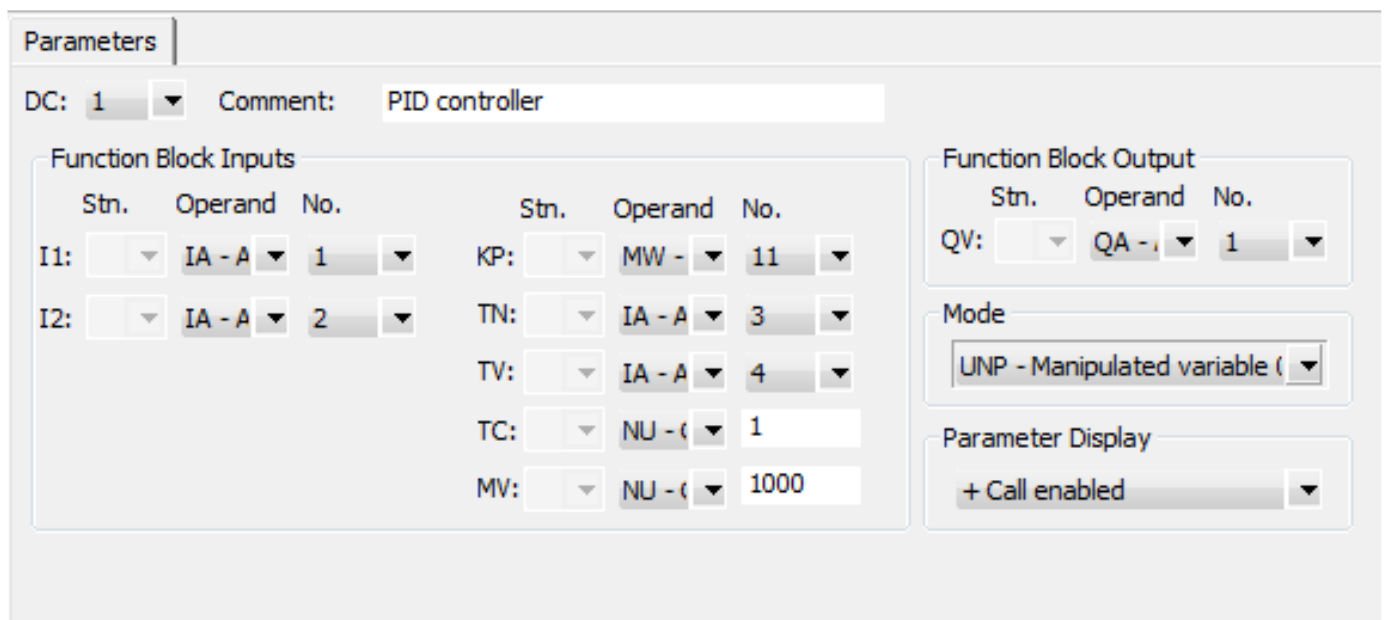
Wiring

Inputs

I01 Enable
 I02 P component active
 I03 I component active
 I04 D component active
 I05 Manual manipulated value
 IA1 Setpoint
 IA2 Actual value
 IA3 Reset time EN
 IA4 Rate time TV

Parameters

The other required values, **TC** and **MV**, are entered as fixed values in the Parameters tab. The following parameters are entered:



Parameters

DC: 1 ▼ Comment: PID controller

Function Block Inputs			Function Block Output		
Stn.	Operand	No.	Stn.	Operand	No.
I1:	IA - A	1	KP:	MW -	11
I2:	IA - A	2	TN:	IA - A	3
			TV:	IA - A	4
			TC:	NU - C	1
			MV:	NU - C	1000

QV: QA - 1

Mode: UNP - Manipulated variable (

Parameter Display: + Call enabled

The following tests require the KP value in screen 3 to be set to 100. 100 means that the proportional gain is 1 : 1.

Activating P controller

Switch on inputs 1 and 2

Increase the actual value IA1 on the slide adjuster

Adjust the setpoint IA 2

Result: The manipulated variable is always the difference between the setpoint and the actual value.

PI controller

Add input 3 to the P control system

Move up the slide adjuster IA3 a little so that there is a reset time

Result: If the actual value does not react, the manipulated variable is increased

PID controller

Add input 4 to the PI control system

Slightly increase the slide adjuster for IA4

Result: The differential component is active