

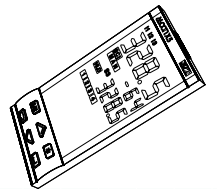
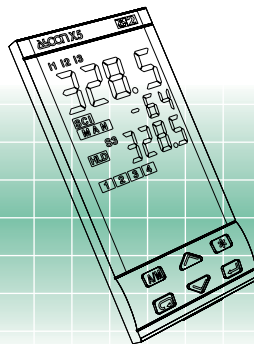
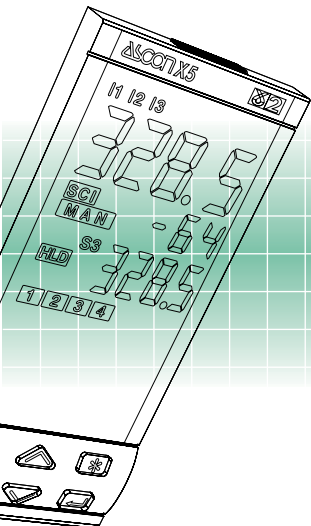
Process controller with PROFIBUS DP and Modbus Master/Slave 1/8 DIN - 48 x 96 mm gammadue[®] series X5 line

Sophisticated multifunction process controller with high level communications

By its three different kinds of serial communications:

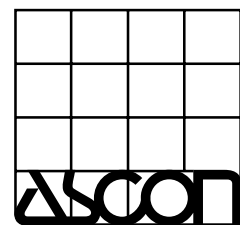
- PROFIBUS DP Slave
- Modbus Master
- Modbus Slave,

the gammadue[®] X5 line can interface, on different levels, with other devices, by exchanging informations, after processing them by mathematical package. The frequency input, added to the traditional inputs, two retransmission or control analogue outputs and four programs allow you to use it for the most diversified control strategies.



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ISO 9001 Certified



Tuning

Two methods of tuning are available:

- one shot **initial Fuzzy-Tuning**
- self-teaching **continuous Adaptive-Tuning**

Fuzzy-Tuning

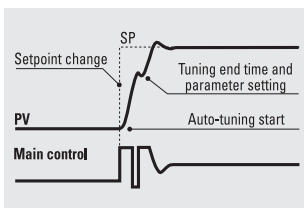
Two methods of initial tuning are available:

- **Auto-Tuning "one shot"**
- **Natural frequency "one shot"**

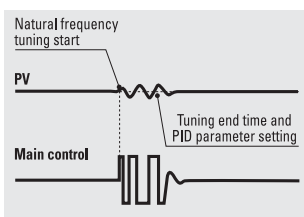
The **Fuzzy-Tuning** automatically selects one of the two methods which assure the best result for each condition.

The **Auto-Tuning** method works best on the step response basis.

When activated, if a deviation exists between the Setpoint and process variable larger than 5% of scale range, the controller modifies the output value. Then, in a short time, it calculates the PID parameters and the new algorithm is operational immediately. The main advantages of this method are fast calculation and quick implementation.



The **Natural frequency** method works best when the process variable is very near to the Setpoint. When activated, it causes a process oscillation around the Setpoint value. The main advantage of this method is a reduced disturbance to the process.



Adaptive-Tuning

It is self-teaching and waits for process change to recalculate the new PID parameters.

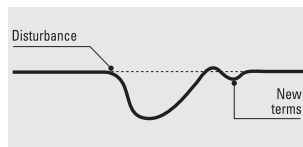
The new PID calculation does not influence the control output, avoiding any disturbance.

The PID optimisation is done only when necessary (e.g. Setpoint changes or process disturbances like load changes).

No action by the operator is required.

The operating mode of Adaptive-Tuning is safe and user friendly. It tests the process response after a disturbance, it memorises the intensity and frequency of the reaction, then the Adaptive-Tuning checks the new information with its statistical data base.

The correct PID algorithm is then ready to implement. This tuning is ideal for non-linear processes where the PID parameters must be adapted to changing conditions.



Integrity in data copy

Configuration software

A **software** tool is available to improve both the **configuration and the parameterization**. All the data can be stored to file. It is also possible to down-load the linearisation of the "custom" input by using the polynomial's coefficients and to configure the PROFIBUS DP profile file.

Memory chip

The **memory chip** makes possible a fast and safe transfer of data related to the configuration and all parameters. With a simple operation, the information can be stored and copied to the **memory chip**. The procedure can be protected by a password.



Setpoint programmer

Up to 4 profiles with 16 segments can be programmed. Number of cycles as well as the max. allowed deviation can be configured.

The time base can be selected from seconds, minutes and hours. Run, Hold and Stop functions can be performed by means the front keypad, by external commands or by serial communications.

