



SRS SIM960 Analog PID Controller

Tools

Added by [Gumerlock, Karl L.](#), last edited by [Gumerlock, Karl L.](#) on Jun 15, 2012

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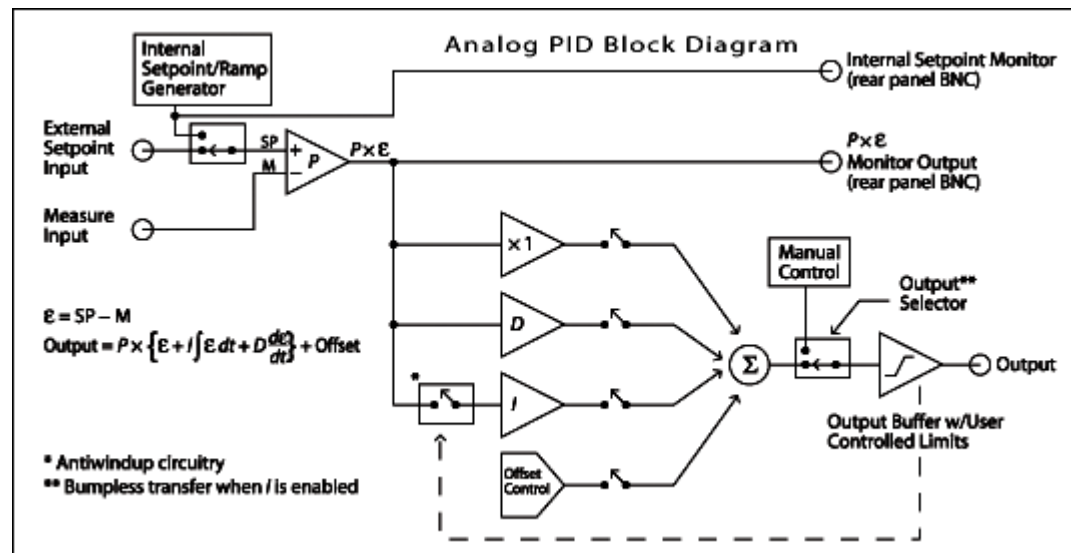
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Important Notes

⚠ Serial Communication Settings Reset After Power Cycle

When the SIM900 is power-cycled, all of the soft settings associated with serial communication are **reset** to the default: 9600-8-N-1 with RTS/CTS flow control, and response terminator CRLF. This may mean that power-cycling a SIM960 could disable communication between it and its soft IOC.

Device Description



The SIM960 Analog PID Controller is a unique instrument intended for the most demanding control applications. It combines analog signal handling with digital control, giving you the best of both worlds. High-bandwidth (100 kHz) control loops may be implemented without discrete time or quantization artifacts.

The low-noise front end brings better performance to noise sensitive applications including laser power and wavelength stabilization, cryogenics, scanning probe microscopy, and others. User settable gain of up to 1000× means greater flexibility, reducing the need for input preamplification. The unit can be used together with the SIM921 AC Resistance Bridge providing a flexible and cost-effective temperature control solution.

An internal ramp generator can control voltage slew rate between predefined start and stop setpoints. The output is clamped within upper and lower user limits to guard against system overload. The conditional integration electronics provide anti-windup on the integrating capacitors, leading to faster recovery from saturation conditions.

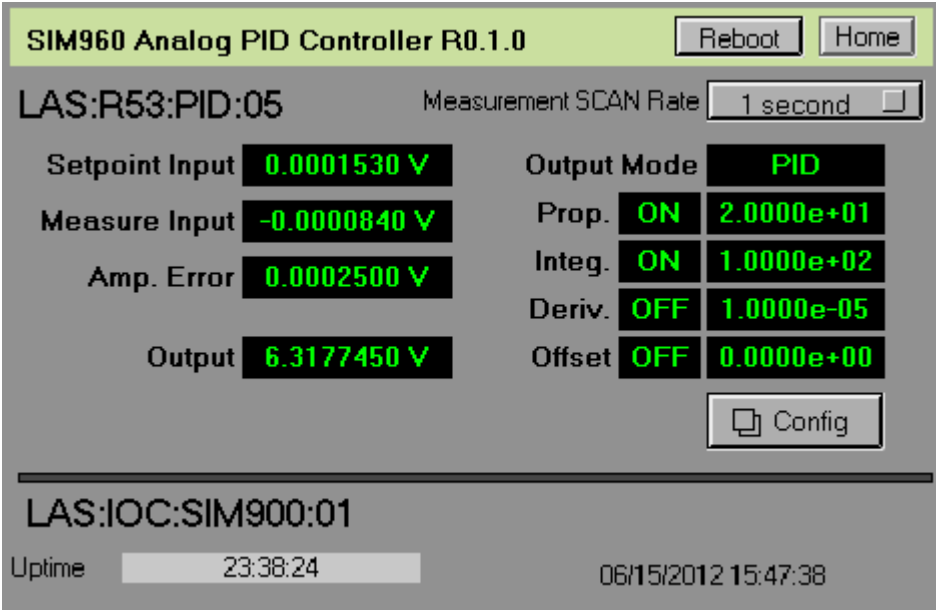
Front-panel control enables easy modification of system parameters and convenient monitoring of input and output signals. Power and serial communication are via a 15-pin D-sub connector which mates with the SIM900 mainframe. All instrument parameters can be set and queried via the serial interface.

The amplified error signal ($P \times ?$) and the output may be monitored with an LED bar display or via the millivolt resolution numeric display. The Setpoint and Measure input signals can also be monitored on the numeric display.

Operation Details

EDM Screens

Main



The main SIM960 EDM screen shows the current setpoint, measure, amplified error, and output voltages, along with a quick view of the PID settings. The *Measurement SCAN Rate* changes the rate at which the voltages are read, and the *Config* button takes you to the SIM960 configuration screen.

Configuration

SIM960 Analog PID Controller Settings R0.1.0

LAS:R53:PID:05 General Readback SCAN Rate

Controller Output Mode **PID**

Output V Limits Upper
Lower

Manual Output V

Action Enable

Gain/Offset Setting

Prop.

Integ.

Deriv.

Offset

Polarity **POSITIVE**

Setpoint Configuration

Source **INTERNAL**

Voltage

Ramping

Ramp Status

Ramp Rate

The configuration screen of the SIM960 gives you access to all of the relevant settings for this device. Readback values are continuously updated at the rate indicated by *General Readback SCAN Rate*, or when setting changes are attempted. Values in green-on-black are readback, and their adjacent blue-on-grey fields allow you to change their values (ENTER captures and sends the value). For more information on operating the SIM960, you will probably want to read the SIM960 user manual.

Implementation Details

Device Setup

The SIM960 is normally used within a SIM900 mainframe. It has a male DA-15 connector with a non-standard pinout that carries both power and communication to the device. It communicates via the RS-232 standard, so it is relatively straightforward to build a cable to operate a SIM960 outside of a SIM900 chassis. We have not had to do so yet. The default RS-232 settings are 9600-8-N-1, RTS/CTS (hardware) flow control.

Setup Instructions for New Device

Standalone

Inside a SIM900

Refer to [SRS SIM900 Mainframe](#), section "Setting Up Child Devices".

IOC Information

The SIM960 IOC currently exists as an independent records database and streamDevice protocol file within the SIM900 IOC. If/when we need to run a SIM960 standalone, it will be forked into its own IOC.

IOC Path

ioc/common/sim900

[Browse Source on Trac](#)

IOC Maintainers

- Karl Gumerlock (klg@slac)

Soft IOC Instances

Refer to the [SRS SIM900 Mainframe](#) page to find IOC info for SIM960s embedded inside SIM900s.

IOC Host	Port	IOCAAdmin PV	Device PVs

Troubleshooting

Resources

Web Links

- [SRS SIM960 Product Page](#)

PDF Documents

- [SIM960 Datasheet](#)
- [SIM960 User Manual \(Rev. 2.0 2006-05-22\)](#)

Software

None