

SCM5B39

Current Output Modules



Description

Each SCM5B39 current output module provides a single channel of analog output. The track-and-hold circuit in the input stage can be operated in a hold mode where one DAC can supply many output modules, or a track mode where one DAC is dedicated to each module. In addition to the track-and-hold circuit, each module provides signal buffering, isolation, filtering, and conversion to a high level current output (Figure 1).

Setting of the track or hold mode is controlled by the logic state of WR EN $\bar{}$, module pin 23. When pin 23 is low, the track mode is enabled. If pin 23 is high, the hold mode is enabled. The module is designed with a completely isolated computer side circuit which can be floated to $\pm 50V$ from Power Common, pin 16. This complete isolation means that no connection is required between I/O Common and Power Common for proper operation of the track and hold circuit. For a low state, simply connect pin 23, the Write-Enable pin, to I/O Common, pin 19.

The SCMPB02 and SCMPB06 backpanels allow host computer control of the WR EN $\bar{}$ control line, which allows multiplexing of one host DAC to up to 64 SCM5B39 output modules. During power-up, the output remains at 0mA for 100ms on all models except the SCM5B39-07, which allows the track-and-hold circuit to be initialized.

A special circuit in the output stage of the module provides protection against accidental connection of power-line voltages up to 240VAC on all models.

► Features

- Accepts High Level Voltage or Process Current Input
- Unipolar or Bipolar Current Output
- 1500Vrms Transformer Isolation
- ANSI/IEEE C37.90.1 Transient Protection
- Output Protected to 240VAC Continuous
- 110dB CMR
- 400Hz Signal Bandwidth
- $\pm 0.03\%$ Accuracy
- $\pm 0.005\%$ Linearity
- CSA Certified, FM Approved, CE and ATEX Compliant
- Mix and Match SCM5B Types on Backpanel

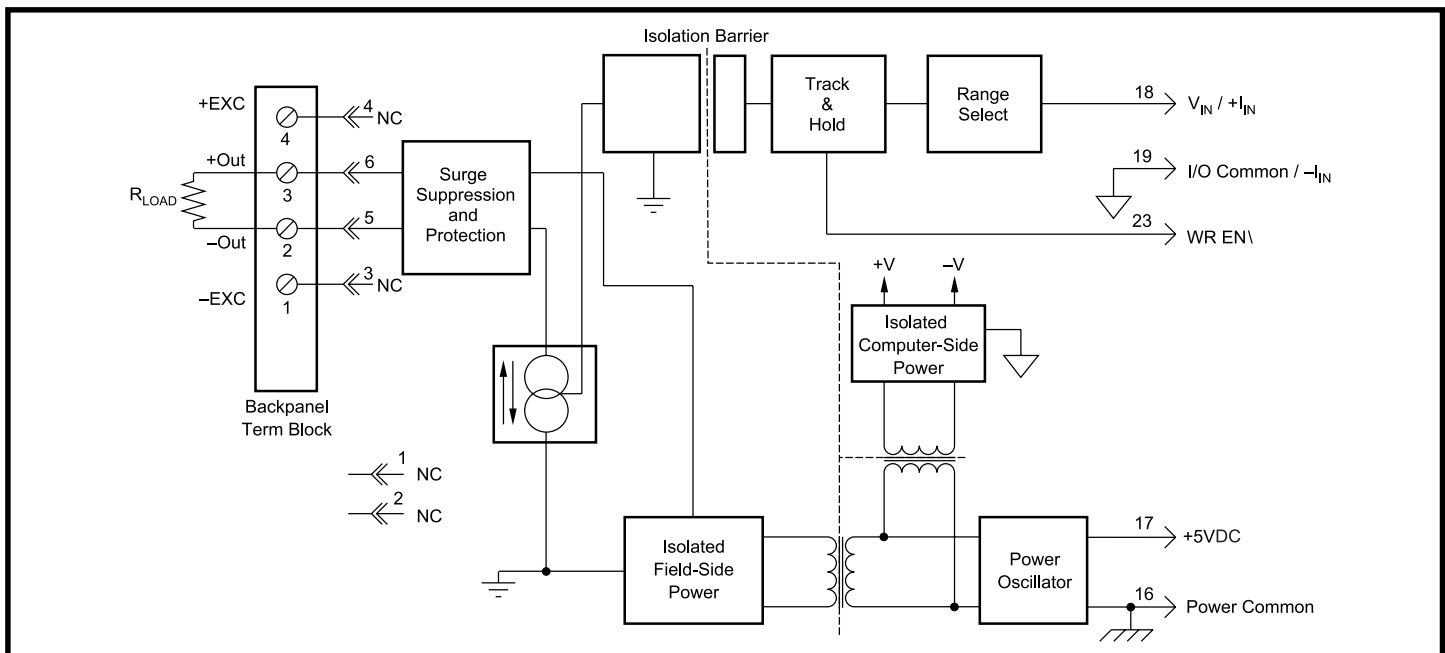


Figure 1: SCM5B39 Block Diagram

Specifications Typical at $T_A = +25^\circ\text{C}$ and +5V power

| Module | Unipolar Output Current SCM5B39-01,-02,-03,-04,-05 | Bipolar Output Current SCM5B39-07 |
|--|---|---|
| Input Voltage Range | $\pm 5\text{V}$ or 0V to $+5\text{V}$ | $\pm 10\text{V}$ |
| Input Current Range (-05) | 0 to 20mA | N/A |
| Input Voltage Maximum | $\pm 36\text{V}$ (no damage) | * |
| Input Current, Maximum (-05) | 75mA (no damage) | N/A |
| Input Resistance | 50M Ω | 2M Ω |
| Input Resistance (-05) | 250 Ω | N/A |
| Output Current Range | 0 to 20mA or 4 to 20mA | $\pm 20\text{mA}$ |
| Over Range Capability | 10% | * |
| Output Compliance Voltage (Open Circuit) | 22VDC | $\pm 15\text{VDC}$ |
| Load Resistance Range | 0 to 650 Ω (0 to 750 Ω for Power Supply Voltage greater than 4.95VDC) | 0 to 450 Ω (0 to 500 Ω for Power Supply Voltage greater than 4.95VDC) |
| Output I Under Fault, max Output Protection | 26mA | * |
| Continuous | 240Vrms max | * |
| Transient | ANSI/IEEE C37.90.1 | * |
| CMV, Output to Input | | |
| Continuous | 1500Vrms max | * |
| Transient | ANSI/IEEE C37.90.1 | * |
| CMR (50Hz or 60Hz) | 110dB | * |
| NMR (-3dB) | 80dB per Decade above 400Hz | 80dB per Decade above 275Hz |
| Accuracy | $\pm 0.03\%$ Span | $\pm 0.05\%$ Span |
| Nonlinearity | $\pm 0.005\%$ Span | $\pm 0.03\%$ Span |
| Stability | | |
| Zero | $\pm 0.5\mu\text{A}/^\circ\text{C}$ | * |
| Span | $\pm 20\text{ppm}/^\circ\text{C}$ | $\pm 40\text{ppm}/^\circ\text{C}$ |
| Noise | | |
| Output Ripple, 100kHz bandwidth | 10 μA p-p | * |
| Bandwidth, -3dB | 400Hz | 275Hz |
| Rise Time, 10 to 90% Span | 1.0ms | 1.2ms |
| Sample and Hold | | |
| Output Droop Rate | 40 $\mu\text{A}/\text{s}$ | * |
| Acquisition Time | 50 μs | * |
| Track-and-Hold Enable Control | | |
| Max Logic "0" | +0.8V | * |
| Min Logic "1" | +2.4V | * |
| Max Logic "1" | +36V | * |
| Input Current "0" | 0.5 μA | * |
| Power Supply Voltage | +5VDC $\pm 5\%$ | * |
| Power Supply Current | 170mA | 130mA |
| Power Supply Sensitivity | $\pm 0.5\mu\text{A}/\%$ typ | * |
| Mechanical Dimensions (h)(w)(d) | 2.28" x 2.26" x 0.6" (58mm x 57mm x 15mm) | * |
| Environmental | | |
| Operating Temp. Range | -40°C to $+85^\circ\text{C}$ | * |
| ATEX Group II, Category 3 | -20°C to $+40^\circ\text{C}$ | * |
| Storage Temp. Range | -40°C to $+85^\circ\text{C}$ | * |
| Relative Humidity | 0 to 95% Noncondensing | * |
| Emissions EN61000-6-4 | ISM, Group 1 | * |
| Radiated, Conducted | Class A | * |
| Immunity EN61000-6-2 | ISM, Group 1 | * |
| RF | Performance A $\pm 0.5\%$ Span Error | * |
| ESD, EFT, Surge, Voltage Dips | Performance B | * |

NOTES:

* Same as -01, -02, -03, -04, -05 modules.

Ordering Information

| Model | Input Range | Output Range | Bandwidth |
|------------|--------------|----------------|-----------|
| SCM5B39-01 | 0V to +5V | 4mA to 20mA | 400Hz |
| SCM5B39-02 | -5V to +5V | 4mA to 20mA | 400Hz |
| SCM5B39-03 | 0V to +5V | 0mA to 20mA | 400Hz |
| SCM5B39-04 | -5V to +5V | 0mA to 20mA | 400Hz |
| SCM5B39-05 | 0mA to 20mA | 0mA to 20mA | 400Hz |
| SCM5B39-07 | -10V to +10V | -20mA to +20mA | 275Hz |

Refer to SCM5B392 specifications, p.27, for additional current output models.