Micro-DCI ™ Micro-Mite
53SL6000 Single Loop Controllers

- **High-Power, Extra-Compact Controller**
- **8 Standard Control Templates**
- **Flexible Control Logic**
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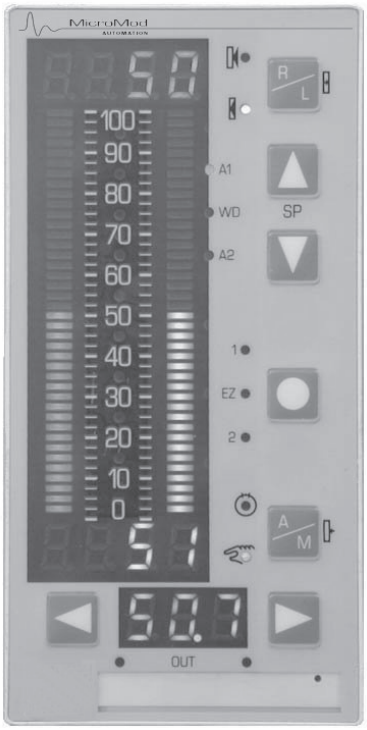
- **Easy setup - front panel or industry's easiest configuration software**
- **Easy-Tune™ PID self-tuning algorithm**
- **Expandable I/O Options**
- RS-232 & RS-485 **Communication Options**
- **Easy to Install**
- **Rugged, NEMA 4 Packaging**
- **2-Year Warranty**



The 53SL6000 Micro-Mite is a highly versatile, cost-effective panel-mounted PID process controller that can provide a wide range of control loop applications, from basic to complex. Process information is presented clearly on the LED display and large pushbutton keys with tactile feedback make operation fast and easy. The Micro-Mite comes with all control functionality included in the base unit, from single PID to cascade and override control with math and logic operations. Additional I/O is easily added with plug-in modules.

Fully configurable through the easy-to-navigate front panel menus or PC configuration software, the Micro-Mite can be commissioned rapidly and then tuned using the Easy-Tune feature. Serial communication options ensure easy integration into a control system.

Easy Operation
The 53SL6000 Micro-Mite was designed with operators in mind. Large pushbuttons make it easy to adjust process parameters even while wearing work gloves. The highly visible bargraphs and digital readouts provide at-a-glance process information and status indication.

Easy Installation
With just 2 inches (51mm) behind the panel and weighing only 1.5 kg, the Micro-Mite saves space and installs quickly and easily even in cabinets only 6 inches deep. The NEMA 4 faceplate makes it ideal for dusty or washdown areas.

Easy Configuration
Configuration from the controller faceplate is fast and easy, using a simple and intuitive menu scheme that is easily navigated using the large pushbuttons.

The LoopMaster configuration software provides and even easier configuration method as well as control strategy documentation. The strategy can be printed as a configuration logic drawing and parameter list.

FLEXIBLE I/O OPTIONS

The base controller includes:

- 2 analog inputs (0/4-20mA)
- 1 analog output (0/4-20mA)
- 2 digital inputs (dry contact or voltage)
- 2 digital outputs

Easily installed plug-in modules provide additional I/O capability:

- 1 or 2 universal analog inputs (supporting current, voltage, frequency, pulse, thermocouple, RTD)
- 2 digital inputs & 2 digital outputs

STANDARD CONTROL STRATEGIES

The Micro-Mite controller includes eight standard control strategy templates. These can be loaded and used as-is or modified for more advanced control using the controller keypad or LoopMaster software.

- Single Loop Control - standard PID control with local and/or remote setpoint
- Analog Back-up Control / DDC - used in conjunction with a PLC, DCS or other control system to act as a signal selector and automatic control backup station
- Ratio Control - automatically maintains the control output in proportion to a “wild” variable
- Auto/Manual Selector - performs as a Manual Loader in manual mode
- Single Station Cascade Control - the output of the primary controller is used as the setpoint signal for the secondary controller. The output of the secondary loop is used to drive the field device.
- Single Station Override Control - two standard PID loops operate interdependently to control a single final element. Neither variable may exceed a safe limit: the primary loop is in control unless its output tries to exceed the high or low limit defined by the limiting loop.
- Dual Indicator with Re-Transmitted PV - indicator Station displaying a maximum of two analog values. Either one of the two signals may be selected for use as the station’s output value.
- Proportional Speed Floating Control - for use with motorized valves

ADVANCED CONTROL FEATURES

The 53SL6000 features advanced control functions that provide the power to bring even the most complex process under control. Customize the standard control strategies using the front face or the PC software and the easy-to-use function blocks.

Easy-Tune™
Once the controller is configured, the Easy-Tune algorithm can be used to determine the optimal PID characteristic constants for rapid commissioning.

PID with 3-Step Output
When a motorized valve or a heating or cooling unit is a two-or three-state device requiring discrete input signals, the Micro-Mite controller is an ideal choice. A duty cycle generator capable of producing time-proportioned three-state outputs, configurable between 1 and 9999 seconds at a 50 msec resolution, is part of the 53SL6000 standard functionality.

Powerful Characterizer Block
A thirteen-segment signal characterizer/function generator, third-order polynomial, setpoint ramp-&-hold and standard signal conditioning functions are all standard in the Micro-Mite.

Math & Logic
Algebraic and polynomial equations, signal selection, log and exponential functions and logic operators address a wide range of process applications.

Gas Flow Compensation
Pressure and temperature compensated gas flow equations for both linear and square root flow elements are provided to compute the mass flow or “standard volume” flow of a gas. The equations handle both perfect and imperfect gases.

COMMUNICATIONS

The Micro-Mite controller offers RS-232 or RS-485 serial communications with secure DataLink protocol. Used in conjunction with MicroMod’s E-Port Ethernet Gateway, the controllers can easily be connected to plantwide networks, operator interface panels and HMI software.

TECHNICAL SPECIFICATIONS

Input Signals

Analog Inputs - Standard

Quantity	2
Signal Range	0 to 20 mA or 4 to 20 mA
Input Impedance	250 Ω
Measurement Error	≤ ±0.02 mA

Analog Inputs - Additional Optional

Quantity	1 or 2
Current Single Range	0 to 20 mA 4 to 20 mA
Voltage Signal Range	0 to 5 V, ±5.3V 1 to 5 V 0 to 83 mV, ±83 mV
Frequency Signal Range	0.5 Hz to 30 kHz 2.5 Hz to 100 kHz 8 Hz to 100 kHz
Pulse Input	0 to 100 kHz
Minimum Pulse Width Duration	5 microseconds
Thermocouples (cold junction compensated)	J,K,T,E,R,S,B,N,U,L,F,C,G,D, Chinese E and S, PLII
RTD	Platinum 100 Ω (0.00385, 0.00392, and 0.00391) Copper 10,53,100 Ω (all 0.00427) Nickel 100 Ω (0.00618), 120 Ω (0.00672)
Common Mode Voltage	250 Vrms
Common Mode Rejection	160 dB
Filter Time Constant	25 ms
Measurement Error	≤±0.2% of full scale
Input Sampling Range	300 ms

Digital Input (dry contact or voltage input)

Quantity	Standard: 2 (reference to power common) Optional: 2 additional inputs
Voltage input	Off: 0 to 1 V dc; On: 4 to 24 V dc
Recognition Level Input Impedance	1000 Ω
Contact Recognitation Duration	50 ms minimum

Output Signals

Analog Output

Quantity	1
Signal Range	0 to 20 mA or 4 to 20 mAdc
Load Range	0 to 750 Ω
Output Accuracy	±0.2%

Digital Output - Standard

Quantity	2
Closed Contact (ON)	
Operating Voltage	30 Vdc maximum
Voltage Drop	2.0 V dc maximum
Operating current	50 mA dc maximum
Short Circuit Current	100 mA maximum
Open Contact (OFF)	≤1 mA leakage

Digital Output - Additional Optional (isolated)

Quantity	2
Contact	Switching Voltage: ≤250 V
Load	Switching Current: ≤5 A
Capacity	Switching Power: ≤1250 V ac; ≤30 W @ 250 Vdc
Type	Form C

Communications - Optional

RS-485 Module	Networking of up to thirty-two instruments on a four-wire bus (Micro-DCI Datalink).
RS-232 Module	Point-to-point communication on a three-wire interface (TxD, R, S, com)

Environmental Characteristics

Operating Temperature	-5 to +50ºC (23 to 122ºF)
Storage Temperature	-40 to 85ºC (-40 to 185ºF)
Humidity	5 to 95% RH, noncondensing
Physical Shock	
Operation	5 g, 1/2 sine wave, 11 m
Storage & Transport	ASTM D4169, DC1
Vibration	
Operation	point-to-point constant displacement 0.76 mm, 5 to 14 Hz; 0.3 g, 14 to 200 Hz
Storage & Transport	ASTM D999; B 3-100 Hz 0.5g
Corrosion	ISA S71.04 airborne contaminants G3 for 10 years.
Enclosure Rating	Faceplate: NEMA 4 (IP64) Housing: NEMA 1 (IP20)

Performance Characteristics

Program Execution	50 ms
I/O Sample Rate	50 ms
Display Update	50 ms

Power Supply 93.5 to 276 Vac, 47-63Hz

Power Consumption 20 W/35 VA (with modules

Transmitter Supply (2)

Rated Voltage	+25 V ±1 V
Ripple	≤ 200 Mv P-P
On-load Current	≤ 50 mA

Physical Characteristics

Weight	1.5 kg (3.3 lb)
Dimensions	
Bezel	72 x 140 mm (2.83 x 5.67 in.)
Case	67 x 137 mm (2.625 x 5.41 in.)
Depth	
without modules	51 mm (2 in)
without modules	118 mm (4.66 in)

Approvals

FM Approved and CSA Certified Class I, Division 2, Groups A, B, C, D

CE Certified EN 61000-3, EN 61000-4 and EN 61010-1

Model Code	53SL6 01 - 05	__ 06	__ 07	__ 08	A 09	__ 10	0 11
Micro-Mite™ Controller	53SL6						
Power Supply							
120/240 Vac 50/60 Hz with Transmitter Supply		0					
Additional Analog Inputs							
None (base unit includes 2 current inputs, 1 current output)			0				
Universal Analog Input			1				
Dual Universal Analog Input			2				
Additional Digital I/O							
None (base unit includes 2 digital inputs, 2 digital outputs)				0			
Two Digital In + Two Digital Out				3			
Design Level					A		
Communication Options							
None						0	
RS-485						1	
RS-232						2	
Enclosure							
Standard Panel Mount							0

Communication Option Information:

Selecting the correct communication module and cable to be used between a PC running 53HC26000 LoopMaster software and the 53SL6000 Micro-Mite controller the cable type depends on the communications being used.

If Communications Module = RS-232, order cable 698B239U01
If Communications Module = RS-485, order cable 172M100U02

An RS-232/485 converter and USB-to-Serial adaptor are included with the LoopMaster software.

MicroMod AUTOMATION & CONTROLS

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