# ORMEC

## SMLC with Integrated Servo Drive

The SMLC-SA combines ORMEC's high-performance drive technology with the IEC-61131-3 programming capabilities of the SMLC controller into a single, compact, cost-effective package. Standard PLCopen motion control function blocks reduce your software development costs and powerful ORMEC extensions make solving your toughest motion applications a snap. Application-specific function blocks such as Reciprocating Flying Shear and Rotary Knife are available to provide solutions right out of the box.

A total of fourteen models cover an output power range from 600 watts to 24,000 watts. The SA230 series offers eight models with continuous output currents from 2.5 to 60 amps RMS/phase for 115 to 230 VAC input. The SA460 series offers six models with continuous output currents from 5 to 50 amps RMS/phase for 230 to 460 VAC input.

The SMLC-SA uses the same development and commissioning tools as the SMLC product line, providing seamless scalability from one to sixteen axes. The CoDeSys Integrated Development Environment (IDE) and runtime engine are world class IEC-61131-3 tools used in hundreds of products worldwide. These are robust, full-featured tools with extensive diagnostic capabilities. ServoWire Pro is an easy to use, integrated suite of configuration, diagnostic and maintenance utilities to assist in the commissioning of the drive.

In addition to the built-in I/O there is a complete line of networked I/O expansion modules available based on Ethernet that can handle thousands of I/O points. HMI and factory networking support is provided via built-in Modbus/TCP as well as via the free OPC server.

The ServoWire Motion & Logic Controller - Single Axis (SMLC-SA) is a standard off-the-shelf, cost-effective control platform. Program motion control and logic using standard IEC 61131-3 tools. PLCopen standard motion control function blocks plus powerful ORMEC extensions reduce your software development costs and bring new levels of motion performance to single-axis applications.

## KEY FEATURES

❏ **Powerful enough to control your entire machine.**
❏ **Program logic and motion using all five IEC 61131-3 languages.**
❏ **Application-specific function blocks provide solutions right out of the box.**
❏ **Broad power range, 600 to 24,000 watts (30+ horsepower).**
❏ **Broad input voltage range, 115 to 480 VAC.**
❏ **High performance Intel processor.**
❏ **Reliable, robust, QNX real-time operating system.**
❏ **Industrial, all metal enclosure.**
❏ **Removable program storage (compact Flash).**
❏ **Built-in I/O: 27 digital and 4 analog, expandable to thousands.**
❏ **Two Ethernet and two serial ports included.**

## Features

### Logic Controller
- 32-bit microprocessor
- QNX RTOS
- IEC-61131-3 programming
- PLCopen compliant motion control function blocks
- Additional ORMEC specific motion control function blocks
- Two Ethernet ports
- 2 serial ports
- 64Mb compact Flash based program storage
- 128Mb RAM
- 32k battery backed SRAM for real time non-volatile variable storage

### Built-in I/O
The SMLC-SA includes the following 29 built-in I/O:
- 2 High Speed Sensor inputs
- 12 Digital inputs, optically isolated
- 13 Digital outputs, optically isolated
- 1 14-bit Analog input (2nd optional)
- 1 14-bit Analog output (2nd optional)

### Network I/O Options
You can expand the SMLC-SA I/O using the following interface:
- Wago 750 Series Ethernet I/O (Modbus/TCP)

### Networking Options
The SMLC-SA includes the following network options that can be used for connection to an HMI, another machine or to a factory network:
- Modbus/TCP Server
- OPC Server
- Ethernet/IP (Industrial Protocol)

## Other Features
- Diagnostic LEDs for the controller
- Two digit display for drive status
- UL/CE approvals: UL Listed and CE Mark (low voltage directive & EMC)

### Drive Output
- IGBT pulse width-modulated with sinusoidal or trapezoidal commutation
- Internal shunt regulator for regenerative load dissipation (except 203 and 205)
- Peak currents up to 200% of RMS continuous capability
- Compatible w/ DC brushless rotary, linear, DC brush & voice coil motors
- Field Oriented Control (FOC) and Space Vector Modulation (SVPWM) for optimal performance at all motor speeds

### Motor Feedback Interface
- Encoder or Resolver Interface
- Quadrature feedback 4x decoding with data rates to 8 Mhz (after decode) and open wire detection
- Three differential input channels for motor commutation feedback
- Support for Yaskawa Sigma II and Tamagawa serial encoders.
- Pacer encoder input (optional)
- Industry Standard D-sub interface connector (25-pin, Encoder/female; Resolver/male).

### Drive I/O
- High speed sensor inputs are software configurable for NPN or PNP output transistors, level or edge triggered response, one microsecond position capture and can initiate motion within one servo loop update.
- Externally powered 5-24 VDC opto-isolated general purpose I/O

## Specifications

### Main Circuit Power
**SMLC-SA203, 205, 210, 217, 220, 225, 235, 260**
- 115/230 VAC, +15%, -20%, 50/60 Hz

**SMLC-SA405, 410, 417, 425, 435, 450**
- 230/480 VAC, +10%, -20%, 50/60 Hz

### Control Circuit Power
- 115/230 VAC, 1.0/0.5A (+15%, -20%), 50/60 Hz, 56 Watts RMS, (230 VAC only on SMLC-SA435 and 450 models)

### Control Loop Update Rates
- Position loop update rate: up to 2.66Khz
- Velocity loop update rate: up to 5kHz
- Torque loop update rate: 10kHz

### Environmental
- Ambient operating is 0 to 50C
- Ambient storage is –20 to 70C
- Humidity operating/storage is 90% RH or less (non-condensing)

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### Dimensions (Approximate) in inches

| Model | Height | Width | Depth |
|---|---|---|---|
| SMLC-SA203, SA205, SA210 | 9.0 | 4.2 | 8.3 |
| SMLC-SA217 | 9.0 | 5.4 | 8.3 |
| SMLC-SA220 | 9.0 | 5.5 | 8.3 |
| SMLC-SA225, SA235, SA260 | 12.0 | 8.6 | 8.45 |
| SMLC-SA405 | 11.0 | 6.1 | 8.3 |
| SMLC-SA410 | 11.0 | 6.2 | 8.3 |
| SMLC-SA417, SA425 | 12.0 | 8.6 | 8.45 |
| SMLC-SA435, SA450 | 14.0 | 9.6 | 9.45 |

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### ORDERING GUIDE

**SMLC Model SA**

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Pacer Support (optional)
P = add incremental Pacer support
0 = no pacer support

Analog I/O (optional)
A = Analog I/O included
0 = option not included

Absolute Encoder Support (optional)
B = add back-up Battery for absolute enc.
0 = no battery added

Primary Feedback
S = Serial & Encoder Feedback Interface
R = Resolver Feedback Interface

Maximum Continuous Current
03 = 2.5 A rms/ph (115/230 VAC model)
05 = 4.1 A rms/ph (115/230 VAC model)
05 = 5 A rms/ph (460 VAC model)
10 = 8.2 A rms/ph (115/230 VAC model)
10 = 10 A rms/ph (460 VAC model)
17 = 13.9 A rms/ph (115/230 VAC model)
17 = 17 A rms/ph (460 VAC model)
20 = 16.3 A rms/ph (115/230 VAC model)
25 = 25 A rms/ph (both VAC models)
35 = 35 A rms/ph (both VAC models)
50 = 50 A rms/ph (460 VAC model)
60 = 60 A rms/ph (115/230 VAC model)

Bus Voltage
2 = 115/230 VAC
4 = 460 VAC