



## S320 Flow Computer for Precise Measurement and Control

The Meriam Model S320 is a high quality industrial process flow computer designed for precise measurement and control applications. Extraordinary performance is attributable to a 32-bit floating point digital signal processor integrated into a well planned platform utilizing state-of-the-art hardware and software.

Programmed in a high level language, the S320 comes with an extensive library of standard application functions and examples. Units are configured to your specific requirements. If you choose to modify the unit, programs can be written on any PC (using included software development tools) and downloaded via a dedicated serial link. The operating system may be DOS, Windows '95, NT or OS2.

In addition to the programming link, three serial interfaces are included for control, data collection, calibration and configuration. This allows communication with other computers and S320 units. The two standard RS485 ports can communicate with many devices using a single cable. This reduces wiring costs, improves signal quality and eliminates analog signal cards where field devices have RS485 capability.

The standard software permits the use of calibration data to characterize the primary flow elements and transducers. This allows less expensive devices to be applied, while meeting your system performance objectives.

# S320 Flow Computer

## for Precise Measurement and Control

### Applications

**Flow Measurement:** The S320 Flow Computer can be used with nearly all differential pressure producing primary flow elements such as orifice plates, nozzles, venturis, annular averaging pitot tubes and laminar flow elements. Devices that are essentially (but not absolutely) linear like LFE, turbine, vortex, impeller, positive displacement meters, etc. may be used with appropriate transducers. Regardless of sensor type, all flow devices will benefit from the S320's capability to characterize the flow element and transducers from test/calibration data. System and component offset and gain errors (sometimes overlooked in the data acquisition chain) are easily corrected. Non-linearity, frequently associated with the primary flow sensor, may be reduced by interpolation, spline or polynomial methods with the S320.

Compensation or correction for variations in process gas pressure, temperature and humidity will improve the accuracy of the flow calculations. The S320 equations consider the effects of measured operating condition changes on gas properties such as viscosity and density. Precise calculations are made using stored gas property data for 14 common gases. Actual, standardized volume and mass flows are calculated using ideal or real gas laws. Calculation results are displayed and available for analog or digital transmission, data collection or control.

**Leak Detection:** When combined with Meriam's laminar flow elements, leaks as small as 1 SCCM are easily measured. The speed and precision at which the LFE/S320 system quantifies the leak rate makes it the best choice for high volume parts testing. It is superior to pressure decay, mass meters or other flow testing techniques.

**Control:** The S320 is an elegant, scalable and configurable control system. Capabilities include PI or PID algorithms, 8 digital inputs and 8 digital outputs, timer/counter functions and as many as 5 analog voltage, current, frequency or pulse width modulation outputs form any of the measured or calculated perimeters. The S320 can stand alone or be easily integrated into your process control, PC or PLC system providing localized signal processing, control and digital multi-drop bus communication.

Meriam will provide primary flow elements, transducers and S320 Flow Computers as components or complete systems with standard software and services specific to your application requirements.

### Signal Processing Slot Cards

(as many as 5 series 100, 200, 300 or 500 cards may be used)

- Type 100 (2) analog inputs; sigma delta A/D
- Type 110 (2) analog inputs; integrating A/D
- Type 200 (2) analog outputs; sigma delta A/D
- Type 310 (1) analog in and out; flash-converter
- Type 400 digital I/O expansion bus for modules below
  - Module 410 (16) digital inputs; DIN Rail mount
  - Module 420 (16) digital outputs; DIN Rail mount
  - Module 430 (8) each digital in/out; DIN Rail mount
  - LEDIG diagnostic adapter for digital I/O with status LEDs
- Type 510 (2) frequency and duty cycle inputs



### Ordering Information

To order Meriam's S320 Flow Computer custom-made to your specifications, please contact your Meriam sales representative with the following information:

- Number of Analog and Digital Inputs Required
- Application type: Laminar Flow Element, Accutube Averaging Pitot Tube, Orifice plate, Flow nozzle or Leak Detection
- Number of Analog and Digital Outputs Required
- Power Supply: 2, 3, or 4 Amp

### Specifications

Basic Electronic Components	32 Bit floating point digital signal processor; Real time clock Flash ROM; Battery backed RAM 256kb RAM memory, 512kb option
Display, Keypad	Three 6 digit numeric LED Three 4 digit alphanumeric LED Three parameter function keys Two arrow keys
Power Requirements	24 volts DC, approx. 8 watts
Enclosure	DIN front panel 96x96mm (3.78" x 3.78") Depth 185mm (7.28") with connectors Cutout 92x92mm (3.62"x3.62")